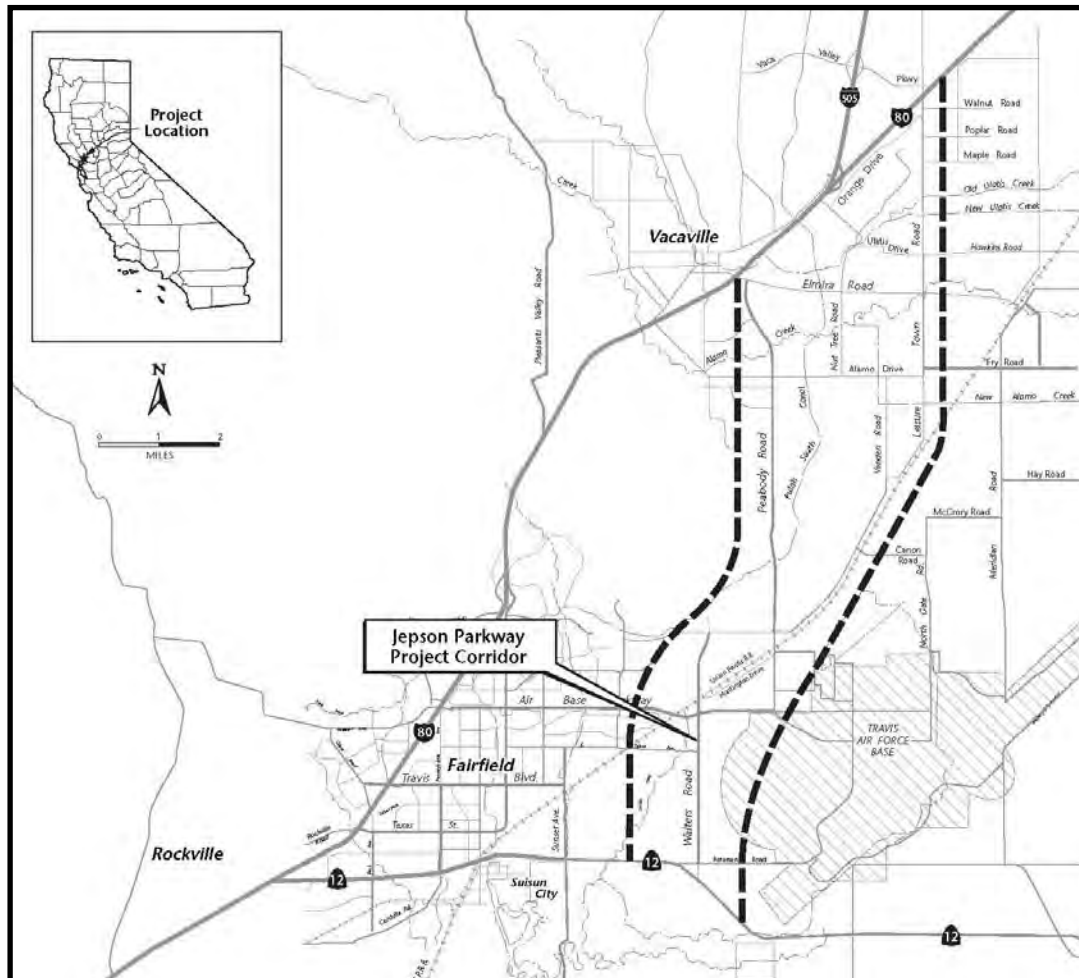


Appendix A ~~A~~ Section 4(f) Evaluation

Section 4(f) Evaluation Jepson Parkway Project



State of California Department of Transportation

Solano Transportation Authority

The environmental review consultation and any other action required in accordance with applicable Federal laws for this project is being, or has been, carried-out by the Caltrans under its assumption of responsibility pursuant to 23 U.S.C. 327.

May 2011



Table of Contents

	Page
Chapter 1 Introduction and Overview of Section 4(f) Process	1-1
1.1 Introduction	1-1
1.2 Regulatory Setting	1-1
1.3 Alternative Selection Process for Projects	1-2
Chapter 2 Description of Proposed Action	2-1
2.1 Purpose of and Need for Action	2-1
2.2 Alternatives	2-1
Chapter 3 Description of Section 4(f) Resources	3-1
3.1 Identification of Section 4(f) Properties	3-1
3.2 Al Patch Park, City of Vacaville	3-1
3.3 Arlington Park, City of Vacaville	3-2
3.4 Will C. Wood High School, City of Vacaville	3-2
3.5 Alamo Creek Bicycle Path, City of Vacaville	3-9
3.6 Proposed Linear Park, City of Fairfield	3-9
Chapter 4 Uses of Section 4(f) Resources	4-1
4.1 Al Patch Park—Permanent Direct Use of 1.7 Acres	4-1
4.2 Arlington Park—No Direct Use or Constructive Use Impacts	4-1
4.3 Will C. Wood High School—Permanent Direct Use of 1.2 Acres	4-2
4.4 Alamo Creek Bicycle Path—No Direct Use or Constructive Use Impacts	4-2
4.5 Proposed Linear Park – No Direct Use or Constructive Use Impacts	4-3
4.6 Summary of Use of Section 4(f) Resources by Alternative	4-5
Chapter 5 Avoidance Alternatives for Section 4(f) Resources	5-1
5.1 Alternatives that Avoid Section 4(f) Resources	5-1
Chapter 6 Measures to Minimize Harm	6-1
6.1 Al Patch Park	6-1
6.2 Arlington Park	6-1
6.3 Will C. Wood High School	6-1
6.4 Alamo Creek Bicycle Path	6-1
Chapter 7 Coordination with Public Agencies and Property Owners Regarding Section 4(f) Properties	8-1
Chapter 8 Least Overall Harm Analysis and Concluding Statement	8-1
8.1 Identification of a Preferred Alternative	8-1
Chapter 9 References Cited	9-1
9.1 Printed References	9-1
9.2 Personal Communications	9-1

Appendix A Consultation and Coordination

List of Tables and Figures

	Page
Table 4-1 Summary of Use of Section 4(f) Resources by Alternative	4-3
Figure 1-1 Jepson Parkway Project Location, Section 4(f) Evaluation	1-3
Figure 3-1 Al Patch Park Master Plan	3-3
Figure 3-2 Arlington Park Location	3-5
Figure 3-3 Wood C. Will High School Athletic Fields	3-7
Figure 3-4 Alamo Creek Bike Path Location	3-11
Figure 3-5 Proposed Linear Park.....	3-13
Figure 4-1 Proposed Linear Park and Walters Road Extension Concepts.....	4-4

List of Abbreviated Terms

APE	area of potential effect
CFR	Code of Federal Regulations
Concept Plan	Jepson Parkway Concept Plan
EIS/EIR	environmental impact statement/environmental impact report
FHWA	Federal Highway Administration
I-80	Interstate 80
JPA	joint powers agreement
MND	mitigated negative declaration
NRHP	National Register of Historic Places
SR 12	State Route 12
STA	Solano Transportation Authority

Chapter 1 Introduction and Overview of Section 4(f) Process

1.1 Introduction

In 2000, the Solano Transportation Authority (STA), Solano County, and the Cities of Vacaville, Fairfield, and Suisun City completed the Jepson Parkway Concept Plan (Concept Plan). This plan, focused on a strategy for developing a Jepson Parkway multimodal corridor that supports the use of alternative travel modes and minimizing impacts on existing and future residential neighborhoods. The concept plan provided guidelines for the four communities spanned by the project to plan and build their individual segments in a coordinated and integrated fashion.

The STA has identified the project, known as the Jepson Parkway Project, as a priority undertaking for Solano County. The project will provide a four- to six-lane parkway between Interstate 80 (I-80) in Vacaville and State Route 12 (SR 12) in Suisun City, consistent with adopted local plans (Figure 1-1).

1.2 Regulatory Setting

Section 4(f) of the Department of Transportation Act of 1966, codified in federal law at 49 U.S.C. 303, declares that “it is the policy of the United States Government that special effort should be made to preserve the natural beauty of the countryside and public park and recreation lands, wildlife and waterfowl refuges, and historic sites.”

Section 4(f) specifies that the Secretary [of Transportation] may approve a transportation program or project . . . requiring the use of publicly owned land of a public park, recreation area, or wildlife and waterfowl refuge of national, State, or local significance, or land of an historic site of national, State, or local significance (as determined by the federal, state, or local officials having jurisdiction over the park, area, refuge, or site) only if:

- there is no prudent and feasible alternative to using that land; and
- the program or project includes all possible planning to minimize harm to the park, recreation area, wildlife and waterfowl refuge, or historic site resulting from the use.

Section 4(f) further requires consultation with the Department of the Interior and, as appropriate, the involved offices of the Department of Agriculture and the Department of Housing and Urban Development in developing transportation projects and programs that use lands protected by Section 4(f). If historic sites are involved, then coordination with the State Historic Preservation Officer is also needed.

In general, according to 23 Code of Federal Regulations [CFR] 771.135(p)(1) and (2), a Section 4(f) “use” occurs with a U.S. Department of Transportation–approved project or program when

- Section 4(f) land is permanently incorporated into a transportation facility;
- there is a temporary occupancy of Section 4(f) land that is adverse in terms of the Section 4(f) preservationist purposes as determined by specified criteria (23 CFR 771.135[p][7]); and
- Section 4(f) land is not incorporated into the transportation project, but the project’s proximity impacts are so severe that the protected activities, features, or attributes that qualify a resource for protection under Section 4(f) are substantially impaired (constructive use).

As outlined in 23 CFR 771.135(p)(4), a constructive use of a protected resource occurs under any of the following situations:

- the predicted noise level increase, attributable to the proposed project, substantially interferes with the use and enjoyment of a noise-sensitive facility or a Section 4(f) resource;
- the proximity of the proposed project substantially impairs the aesthetic features or attributes of a Section 4(f) resource;
- the restricted access substantially diminishes the utility of a publicly owned park, recreation area, or historic site;
- the vibration associated with the proposed project impairs the use of a Section 4(f) resource;
- the ecological intrusion of the proposed project diminishes the value of wildlife habitat in a wildlife or waterfowl refuge adjacent to the project; or
- the proposed project substantially interferes with the access to a wildlife or waterfowl refuge when such access is necessary for established wildlife migration or critical life cycle processes.

A Historic Property Survey Report for this project has been prepared pursuant to National Historic Preservation Act of 1966, Section 106. No historic properties or archaeological resources, on or eligible for the National Register of Historic Places, were identified in the area of potential effect (APE) for this project.

1.3 Alternative Selection Process for Projects

There is a series of tests in the selection process for projects involving Section 4(f). The first test is to determine which alternatives are considered feasible. An alternative is feasible if it is technically possible to design and build that alternative. There are various reasons for which an alternative may be rejected as not being prudent. Among the reasons are that the alternative

- does not meet purpose and need,
- has excessive cost of construction,

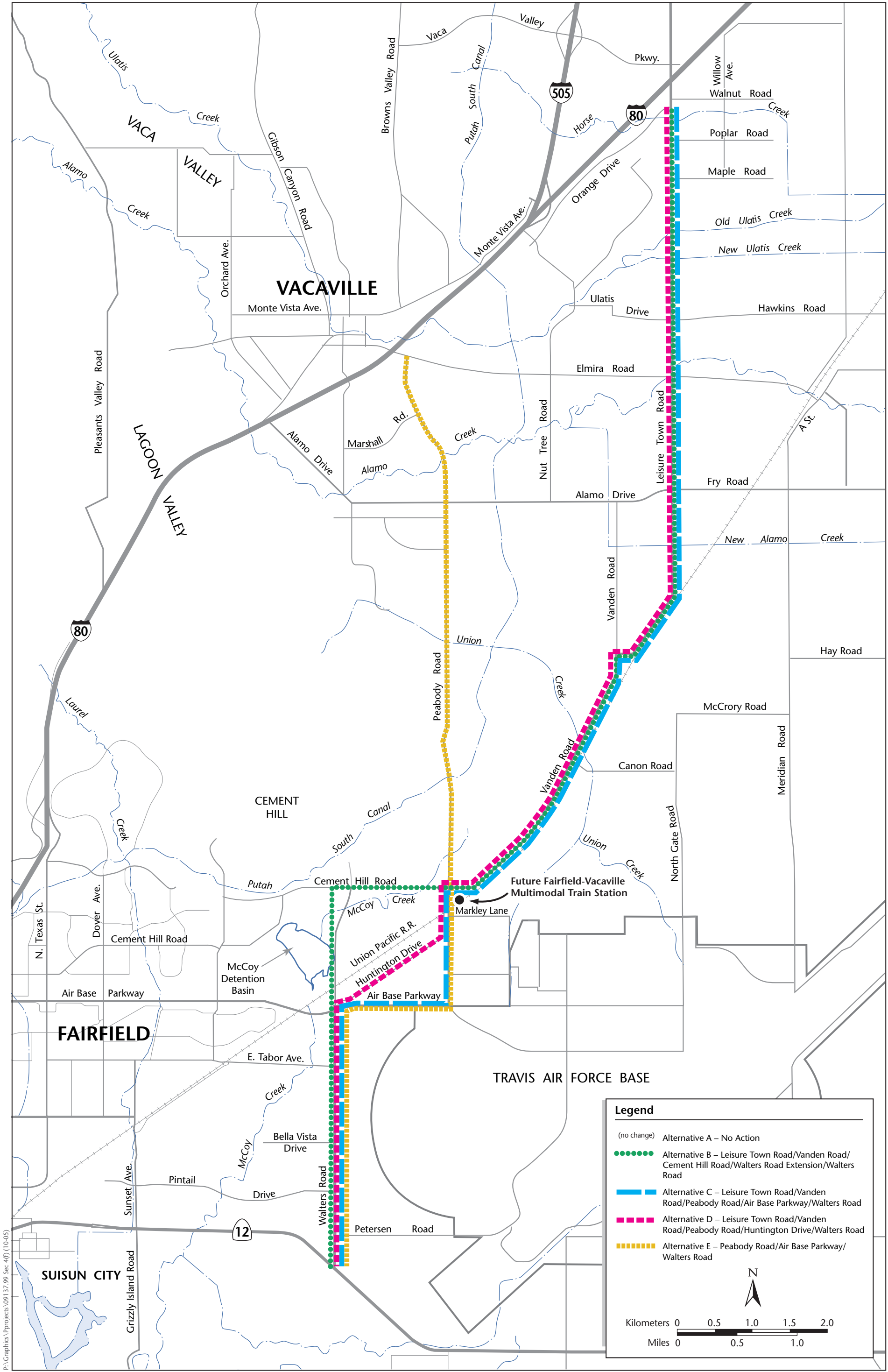


Figure 1-1
Jepson Parkway Project Location
Section 4(f) Evaluation

- has severe operational/safety issues, or
- has unacceptable adverse social, economic, or environmental impacts, or causes serious community disruption.

When sufficient analysis has been completed to demonstrate that an alternative is not feasible and prudent, no additional analysis of that alternative is required. An alternative that avoids the use of land from a 4(f) resource must be selected. If all alternatives use land from 4(f) resources, then an analysis must be performed to determine which alternative results in the least overall harm to the 4(f) resources. To determine which alternative has the least harm, the importance of the 4(f) resource, the potential for mitigation, and input from the agency having jurisdiction over the 4(f) resource are considered. Important non-Section 4(f) environmental impacts (such as impacts on endangered species) associated with these alternative(s) are also considered.

The environmental review consultation and any other action required in accordance with applicable Federal laws for this project is being, or has been, carried-out by the California Department of Transportation (Caltrans) under its assumption of responsibility pursuant to 23 U.S.C. 327.

Chapter 2 Description of Proposed Action

2.1 Purpose of and Need for Action

The following is a summary of the purpose of and need for the Jepson Parkway Project. Implementation of the proposed project will assist Solano Transportation Authority (STA) in meeting the following specific purposes:

- provide an integrated and continuous route for local north-south trips between Vacaville, Fairfield, Suisun City, and unincorporated areas of Solano County as an alternative to using I-80;
- provide local traffic with a safe, convenient route between Vacaville, Fairfield, Suisun City, and unincorporated areas of Solano County using existing roadways when feasible; and
- enhance multimodal transportation options for local trips in central Solano County, including providing a safe and convenient bicycle and pedestrian path and increasing transit use in the area.

The Jepson Parkway Project is needed to:

- address existing and future traffic congestion for north-south mobility in central Solano County;
- improve existing and future roadway safety along the project corridor;
- accommodate traffic associated with future planned growth, as identified in the following adopted local plans: Metropolitan Transportation Commission's 1998 Regional Transportation Plan, Vacaville's 1990 General Plan, Fairfield's 2002 General Plan, Suisun City's 1992 General Plan, and Solano County's 1995 General Plan;
- relieve existing and future (2030) traffic congestion on I-80; and
- support future multimodal transit options and bicycle and pedestrian use.

2.2 Alternatives

In September 2000, the STA, California Department of Transportation, FHWA, U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, National Marine Fisheries Service, and U.S. Environmental Protection Agency began the National Environmental Policy Act/Clean Water Act Section 404 integration process. This integration effort included baseline analyses of several project alternatives, including the project identified in the Concept Plan. The group agreed to the following five alternatives for analysis in the environmental impact statement/environmental impact report:

- **Alternative A: No Build (No Action).** Under Alternative A, the proposed roadway improvements will not be constructed. Ongoing maintenance of existing roads and facilities will continue. The I-80/Leisure Town Road interchange will still be constructed, and Peabody Road from Air Base Parkway to Vanden Road will still be widened from two to four lanes. Without the project, the need to reduce existing and future traffic congestion, improve roadway safety, accommodate planned growth, and support future multimodal transit options and bicycle and pedestrian use in Solano County will be unmet.
- **Alternative B: Leisure Town Road–Vanden Road–Cement Hill Road–Walters Road Extension–Walters Road.** The Alternative B alignment begins in the City of Vacaville at Orange Drive on Leisure Town Road and extends south along Leisure Town Road to the intersection of Leisure Town Road and Vanden Road in unincorporated Solano County. It then extends southwest along Vanden Road to the intersection of Vanden Road, Cement Hill Road, and Peabody Road in the City of Fairfield and travels west along Cement Hill Road to the intersection of Cement Hill Road and a new Walters Road extension. The new extension extends south to the intersection of Walters Road and Air Base Parkway. This alternative then continues south along Walters Road in Fairfield and Suisun City to the intersection with State Route 12.
- **Alternative C: Leisure Town Road–Vanden Road–Peabody Road–Air Base Parkway–Walters Road.** Alternative C provides a four- to six-lane divided arterial for the entire length of the roadway. The Alternative C alignment begins on Leisure Town Road at Orange Drive and is identical to Alternative B until it reaches the intersection of Cement Hill Road, Vanden Road, and Peabody Road. Alternative C does not include improvements to Cement Hill Road or construction of a northern extension of Walters Road. Instead, this alternative continues south on Peabody Road from the intersection with Vanden Road and Cement Hill Road to the intersection with Air Base Parkway. This alternative requires construction of an overcrossing at the UPRR tracks just south of the intersection of Peabody Road, Vanden Road, and Cement Hill Road.
- **Alternative D: Leisure Town Road–Vanden Road–Peabody Road–Huntington Drive–Walters Road.** Alternative D provides a four-lane divided arterial. Alternative D is identical to Alternative B, except that it does not include Cement Hill Road or construction of a northern extension of Walters Road. The Alternative D alignment continues south on Peabody Road from the intersection of Vanden Road and Peabody Road to the intersection of Huntington Drive and Peabody Road. As with Alternative C, this alternative requires construction of an overcrossing at the UPRR tracks just south of the intersection of Peabody Road, Vanden Road, and Cement Hill Road.
- **Alternative E: Peabody Road–Air Base Parkway–Walters Road.** Alternative E provides a four- to six-lane divided arterial along the entire roadway. Two lanes will be added to the existing two- to four-lane facility. The alignment differs from Alternatives B through D in the northern portion, between I-80 and Vanden Road in Vacaville. Instead of starting at the Leisure Town Road interchange, this alternative alignment begins at the intersection of Peabody Road and Elmira Road in Vacaville and travels south along Peabody Road until it meets the Alternative C alignment at the intersection of Vanden Road, Cement Hill Road, and Peabody Road.

Chapter 3 Description of Section 4(f) Resources

3.1 Identification of Section 4(f) Properties

Section 4(f) resources associated with this project include publicly-owned parks and recreational areas. A Historical Resources Evaluation Report was prepared for the project. No archaeological resources or historic properties were identified in the project APE that are listed or eligible for listing on the National Register of Historic Places (NRHP). Also, no wildlife refuges or waterfowl refuges are located within the project limits.

The following Section 4(f) resources are located within the project limits:

- Al Patch Park, a publicly-owned public park in the City of Vacaville;
- Arlington Park, a publicly-owned public park in the City of Vacaville;
- outdoor track/soccer field at Will C. Wood High School in the City of Vacaville;
- Alamo Creek bicycle path, a Class 1 facility in the City of Vacaville; and
- proposed linear park in the City of Fairfield.

The locations of these properties are shown in Figures 3-1 to 3-5, respectively.

3.2 Al Patch Park, City of Vacaville

Al Patch Park is 34.3 acre softball, track, and football field complex located at the southwest corner of the Peabody Road/California Drive intersection in the City of Vacaville (Figure 3-1). Phase I, completed in October 2006, includes three lighted softball fields, a concession/restroom facility, an all-weather track, a lighted football/soccer field, and 150 parking spaces. Future facilities planned for the park include two additional softball fields, batting cages, additional track facilities (shot put, high jump, discus), a play area for children, picnic areas, and additional parking.

Two entrances to the main park and parking areas are from California Drive—one aligned with Quail Drive on the north of California Drive and one near the western corner of the property. Additional future access consists of an entrance with a signal opposite Caldwell Drive from Peabody Road.

When softball leagues are active, it is projected that 50 participants per field per hour will use the softball facilities. Leagues play one game per hour. Approximately 200 participants are projected to use the football field and track during games or events. Because of limited parking for Phase I, the football/track events will alternate with the softball games.

Al Patch Park qualifies as a Section 4(f) resource because it is a publicly-owned public park and recreation area. The park is under the jurisdiction of the City of Vacaville Public Works Department.

3.3 Arlington Park, City of Vacaville

Arlington Park is the second largest community park in the City of Vacaville (Figure 3-2). The park is located on the northeastern corner of the Foxboro Parkway/Peabody Road intersection. The 18-acre park includes group picnic areas, a soccer field, a playground, four backstops, four ball fields, two football fields, a youth recreation center, restrooms, and a concession building. There is off-street parking for 200 vehicles. The park is accessed from Foxboro Parkway.

Arlington Park facilities are used seasonally for National Little League baseball, soccer practice and clinics, and flag football practice. National Little League uses the park for games and for practice for approximately 270 children from February 1-July 15. The Vacaville Youth Traveling Association uses one field three times per week for practice for 20 children from mid-July to September.

Arlington Park qualifies as a Section 4(f) resource because it is a publicly-owned public park and recreation area. The park is under the jurisdiction of the City of Vacaville Community Services Department.

3.4 Will C. Wood High School, City of Vacaville

Will C. Wood High School is one of four high schools in the Vacaville Unified School District. It is located on a 40-acre site at the northwest corner of the Marshall Road/Peabody Road intersection and can be accessed from Marshall Road. An athletic field is located adjacent to Peabody Road (Figure 3-3). Following recent improvements to the athletic field (completed in summer 2007), the athletic field now includes soccer, track and field, and football facilities. Remaining open space on the field is used for general physical education classes.

Will C. Wood High School has a joint facilities use agreement with the City of Vacaville, which acts as a central scheduling clearinghouse for various leagues/teams that use the high school facilities. Individuals and groups who complete a facilities use request form with the school can also use the facilities. Leagues and teams use the Will C. Wood High School facilities almost daily, including weekends. The athletic field and school grounds are locked when not in use. The athletic field is used year-round.

Will C. Wood High School qualifies as a Section 4(f) resource because the facilities available at the school serve public recreational purposes (Federal Highway Administration 1989).

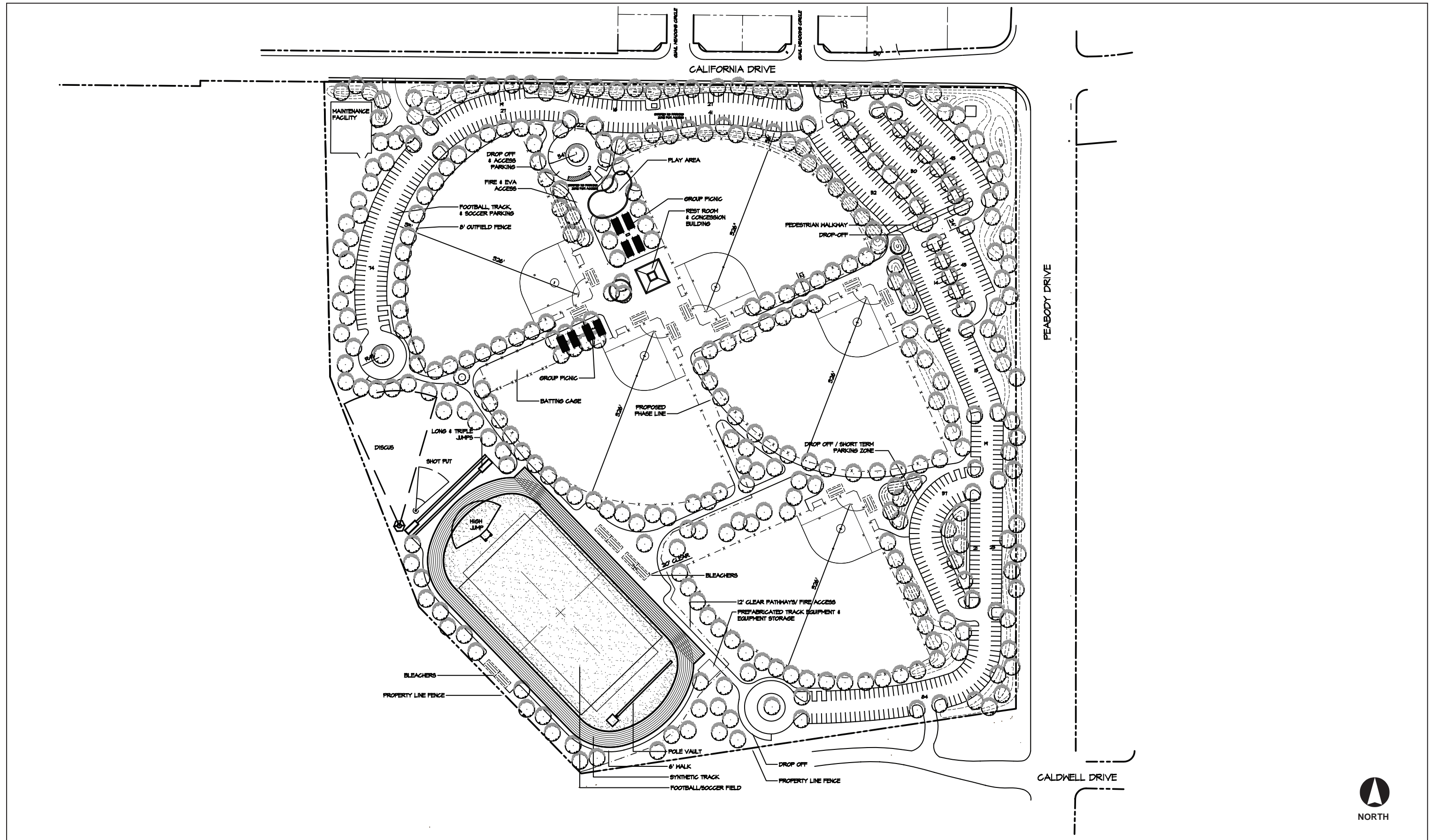


Figure 3-1
Al Patch Park Master Plan



Figure 3-3
Wood C. Will High School Athletic Fields

3.5 Alamo Creek Bicycle Path, City of Vacaville

The Alamo Creek Bicycle Path is a paved Class I bicycle path that runs along Alamo Creek from Nut Tree Road to Marshall Road in Vacaville (Figure 3-4). A Class I bicycle path is a dedicated exclusive bicycle path meant for bicycle and pedestrian traffic. The City of Vacaville has jurisdiction over the bicycle path and owns the land on which the bicycle path is constructed.

The Alamo Creek Bicycle Path can be accessed from Nut Tree Road, Peabody Road, Alamo Drive, and Marshall Road.

The Alamo Creek Bicycle Path qualifies as a Section 4(f) resource because its main function is recreation, and it does not occupy a highway right-of-way (Federal Highway Administration 1989).

3.6 Proposed Linear Park, City of Fairfield

The City of Fairfield's 1994 Peabody-Walters Master Plan (Master Plan) designates an extension of the City's linear park within the abandoned Sacramento Northern Railroad right-of-way. The proposed extension of the linear park is a Section 4(f) resource.¹ The right-of-way crosses Cement Hill Road in the vicinity of the proposed Walters Road Extension included in Alternative B (Figure 3-5). At this location, the proposed extension would consist of a landscaped multi-use (bicycle and pedestrian) trail. Policy 2d of the master plan's Open Space, Conservation, and Recreation policies (see page I-18 of the master plan) states that the "linear park will be used as a major link in tying Peabody-Walters open spaces, parks, and pedestrian/bicycle circulation into an integrated area-wide network".

The joint development of the Walters Road Extension with the Proposed Linear Park, as reflected in the master plan, intersects Cement Hill Road (see Figure 4-1).

¹ *Peabody-Walters Master Plan*, City of Fairfield, Adopted September 6, 1994.

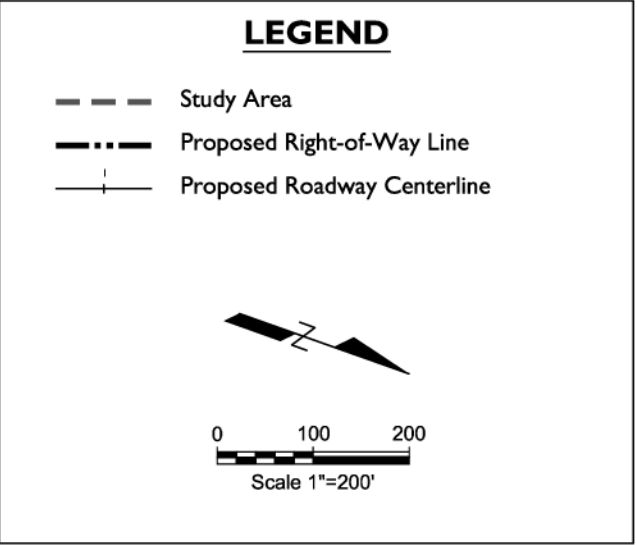
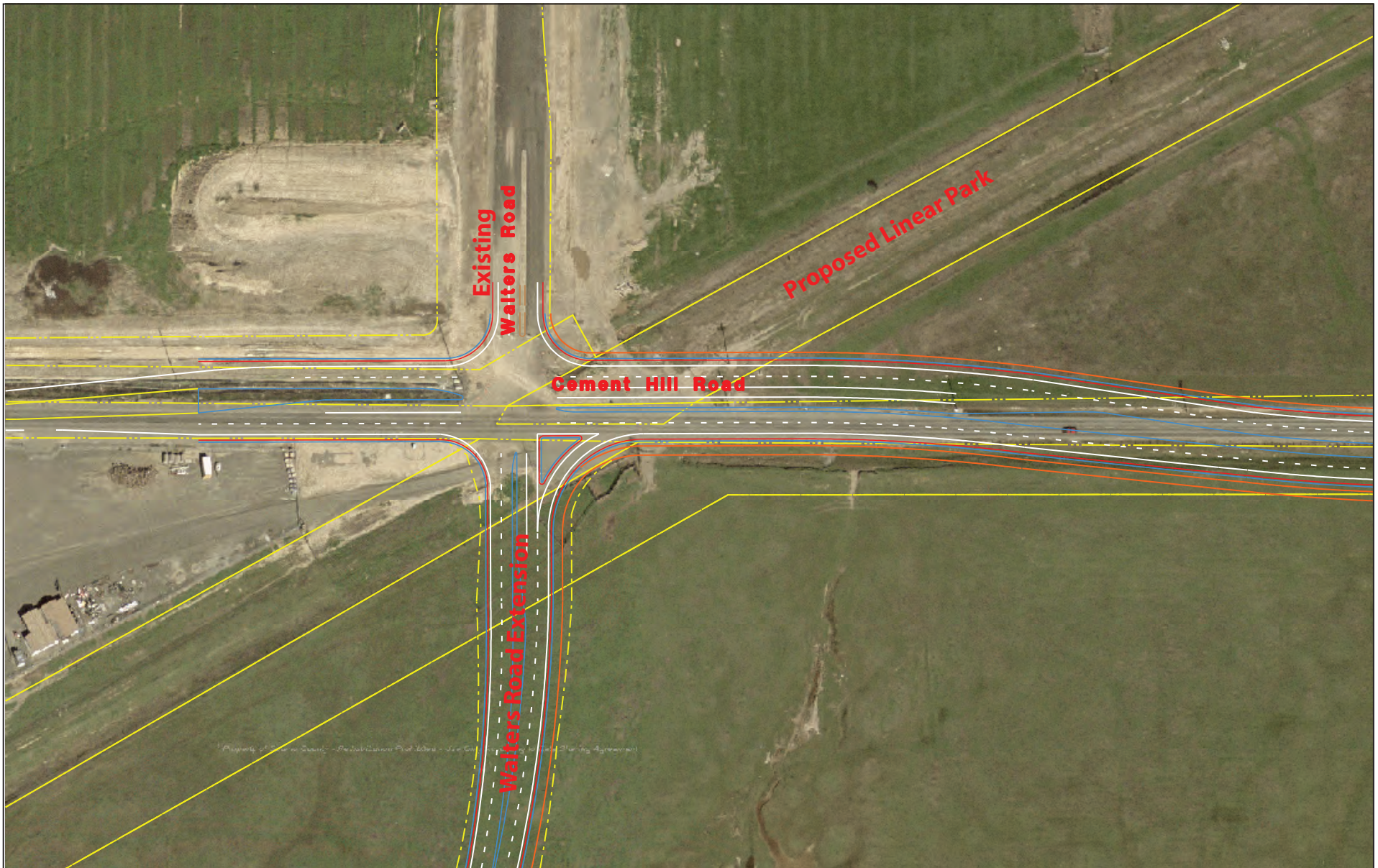


Figure 3-4
Alamo Creek Bike Path Location



Source: PBS&J, 2009.

LEGEND

- Proposed Jepson Parkway Bike Lanes
- Edge of Pavement
- White Line Lane Striping
- Median
- - - Existing Roadway Right-of-Way
- Existing Linear Park Right-of-Way



Figure 3-5
Proposed Linear Park

Chapter 4 Uses of Section 4(f) Resources

This section describes the potential effects of the proposed action on the Section 4(f) resources. As described in section 1.2, “Regulatory Setting,” of this evaluation, a “use” of a Section 4(f) resource occurs when land from the resource is permanently incorporated into a transportation project, when there is a temporary occupancy of land that is adverse, or when a constructive use occurs. A *constructive* use occurs when land from a Section 4(f) resource is not incorporated into the transportation project, but the project’s proximity impacts are so severe that the protected activities, features, or attributes that qualify a resource for protection under Section 4(f) are substantially impaired. Five specific criteria are used to evaluate constructive use impacts: noise, aesthetics, access, vibration, and ecological intrusion. These five criteria are described in section 1.2. Two of the build alternatives, Alternatives B and E, have the potential to affect Section 4(f) resources.

4.1 **Al Patch Park—Permanent Direct Use of 1.7 Acres**

Alternative E would require the permanent use of land from the 34.3-acre Al Patch Park. The land that would be required is along the 1,220-foot frontage on the western edge of Peabody Road. It is estimated that the proposed right-of-way for Alternative E would extend into the property approximately 60 feet, affecting approximately 1.7 acres. The area required for the proposed right-of-way would displace approximately 120 of the proposed 680 parking spaces planned for the park, as well as the proposed landscaped buffer between Peabody Road and the proposed parking. The parking and landscaped buffer along Peabody Road are proposed as part of the Phase II construction for the park.

The City of Vacaville has indicated that the displaced parking is needed to meet City parking standards for parks and that the Phase II park plans cannot be reconfigured to accommodate the 120 displaced parking spaces. Furthermore, the City has indicated that it would not be feasible to lease additional land from the California Medical Facility based on previous negotiations with this State entity.

4.2 **Arlington Park—No Direct Use or Constructive Use Impacts**

Alternative E would not require the permanent use of land from Arlington Park. However, because Arlington Park is located directly adjacent to the Alternative E alignment, evaluation of potential proximity impacts is required.

Aesthetics

Arlington Park is located adjacent to Peabody Road, a major arterial that is already part of the visual setting for this park, and views from the park are not a primary value of this park resource. Because the proximity of Alternative E to Arlington Park would not substantially impair the aesthetic features of the park or degrade its value as a park, there is no constructive use.

Accessibility

Neither the construction of nor the permanent changes made by Alternative E would change or restrict access to Arlington Park from Foxboro Parkway. Because the utility of the park would not be diminished by restricted access, there is no constructive use.

Vibration

Vibration impacts could occur if substantial discontinuities, such as potholes, occurred in a roadway. The proposed new roadway surface would be smooth. Therefore, there is no constructive use related to vibration.

Ecological Intrusion

Arlington Park is a developed park serving active recreation needs. It contains urban habitat consisting of ornamental plantings and manicured lawns. Urban habitat has marginal value for wildlife because of the presence of human disturbances and the lack of native vegetation. Because the park has marginal habitat value, there is no constructive use.

4.3 Will C. Wood High School—Permanent Direct Use of 1.2 Acres

Alternative E would require permanent use of a portion of the outdoor athletic field at Will C. Wood High School. The high school property has a frontage of approximately 1,040 feet along Peabody Road. The proposed right-of-way for Alternative E would extend into the athletic field property along this frontage by approximately 50 feet. The amount of land that would need to be acquired is estimated to be approximately 1.2 acres.

Acquisition of this land would adversely impact the athletic field. The facilities at the field could not be reconfigured on the remaining property without making the facilities smaller. Such a reduction in size would not meet the needs of the school district's physical education and athletic program as they would not meet California Interscholastic Federation standards for the facilities currently provided at the athletic field.

4.4 Alamo Creek Bicycle Path – No Direct Use or Constructive Use Impacts

The Alamo Creek Bicycle Path intersects Peabody Road south of Beelard Drive. Alternative E would displace short sections of the bicycle path on both sides of Peabody Road to conform the bicycle path to the new road right-of-way. These sections of the bicycle path would be reconstructed to the same standards as the existing facility and permanent access to the bicycle path would not be affected. Construction of Alternative E at this location would require approximately three months.

4.5 Proposed Linear Park – No Direct Use or Constructive Use Impacts

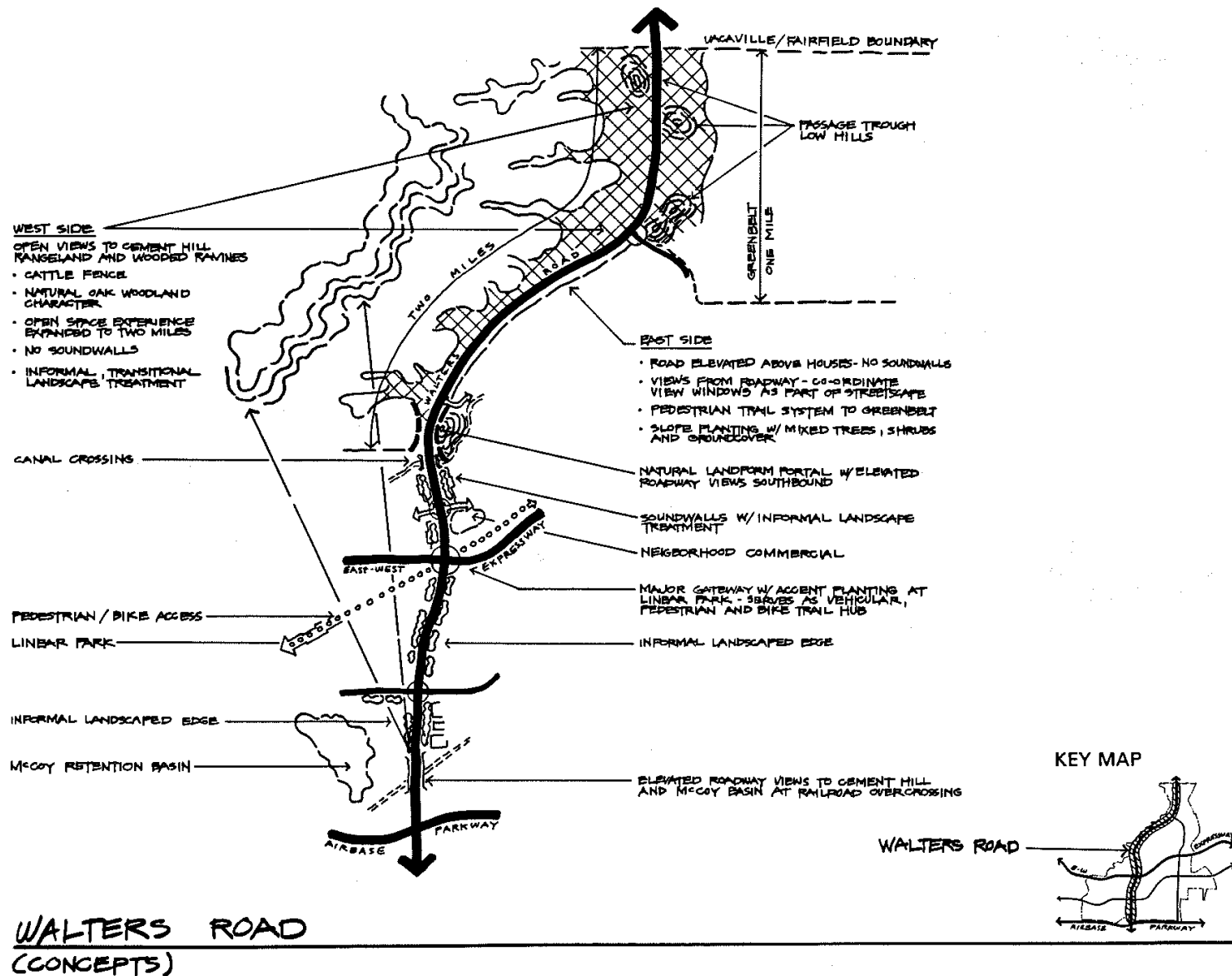
The proposed linear park, when constructed, would cross Cement Hill Road in a southwesterly to northeasterly direction at the location of the proposed intersection of Cement Hill Road and the Walters Road Extension included in Alternative B. Three of the four legs of this intersection exist already. The current intersection of Walters Road and Cement Hill Road is a “T” intersection, controlled by a traffic signal, with Walters Road ending at the intersection on the north side of Cement Hill Road. Under Alternative B, the proposed Walters Road Extension would connect to the south of the existing intersection, creating a full four-legged intersection. A new traffic signal would be installed at the reconfigured intersection. This traffic signal would provide a safe, controlled crossing of Cement Hill Road at the Cement Hill Road/Walters Road intersection for future users of the Proposed Linear Park.

Construction of the Waters Road Extension, the southern leg of the Cement Hill Road/Walters Road intersection, and the widening of Cement Hill would require approximately 0.4 acres from the site of the proposed linear park. However, this area in the Proposed Linear Park has been set aside for use as the Walters Road Extension, beginning with the designation of both the Proposed Linear Park and the Walters Road Extension in the 1994 Peabody-Walters Master Plan (Figure 4-1).

The City of Fairfield continued to work with STA regarding the joint development of the Linear Park and the Jepson Parkway Project as a member of the Jepson Parkway Technical Working Group. The Jepson Parkway Technical Working Group was composed of STA, Caltrans, Solano County, and the cities of Vacaville, Fairfield, and Suisun City. The Jepson Parkway Concept Plan was completed in May 2000. The goals of the plan included the integration of multiple modes of travel in the Jepson Corridor, including bicycle and pedestrian modes. In addition, the objectives of the plan included the maximization of bicycle connections to existing and planned bicycle facilities. The proposed Linear Park in the vicinity of the proposed Walters Road/Cement Hill Road intersection is depicted in figures included in the plan.

Subsequent to the completion of the Jepson Parkway Concept Plan, joint development activities for the proposed extension of the Fairfield Linear Park and the Jepson Parkway Project continued. The City of Fairfield continued to work with STA on the evaluation of the Jepson Parkway alternatives analyzed in the environmental documents completed for the Jepson Parkway Project. The City was an active participant in the preliminary design of the Walters Road Extension and fully supported the designation of Alternative B as the Preferred Alternative for the Jepson Parkway Project.

Therefore, the requirements of Section 4(f) do not apply to the use of the area in the proposed Linear Park reserved for the roadway improvements. Under 23 C.F.R. 774 (i), use (as defined under 23 C.F.R. 774.1) would not occur because the linear park and the roadway improvements are being jointly planned and developed.



Source: Peabody-Walters Master Plan, City of Fairfield, 1994.

Figure 4-1
Proposed Linear Park and Walters Road Extension Concept

4.6 Summary of Use of Section 4(f) Resources by Alternative

Table 4-1 summarizes the amount of property required of the Section 4(f) resources by each alternative.

Table 4-1 Summary of Use of Section 4(f) Resources by Alternative					
Alternative	Al Patch Park, City of Vacaville	Arlington Park, City of Vacaville	Will C. Wood High School, City of Vacaville	Alamo Creek Bicycle Path, City of Vacaville	Proposed Linear Park, City of Fairfield
Alternative A. No Action	No use	No use	No use	No use	No use
Alternative B. Leisure Town Road– Vanden Road–Cement Hill Road–Walters Road Extension–Walters Road	No use	No use	No use	No use	No use
Alternative C. Leisure Town Road– Vanden Road–Peabody Road–Air Base Parkway– Walters Road	No use	No use	No use	No use	No use
Alternative D. Leisure Town Road–Vanden Road–Peabody Road– Huntington Drive– Walters Road	No use	No use	No use	No use	No use
Alternative E. Peabody Road–Air Base Parkway–Walters Road	Use of approx. 1.7 acres and displacement of 120 planned parking spaces and landscaped buffer.	No use	Use of approx. 1.2 acres affecting outdoor athletic facilities.	Use during the approximately 3- month construction period.	No use

Chapter 5 Avoidance Alternatives for Section 4(f) Resources

5.1 Alternatives that Avoid Section 4(f) Resources

Alternatives A, B, C and D would avoid use of the Section 4(f) resources identified. Alternative E uses land from Section 4(f) resources, as described above in Chapter 4, “Uses of Section 4(f) Resources.” Therefore, the potential options for avoidance alternatives consist of the following:

- selecting Alternative A (No Action);
- selecting Alternative B, C, or D (build alternatives that avoid Section 4[f] resources).

Chapter 6 Measures to Minimize Harm

6.1 Al Patch Park

There is no mitigation for Alternative E's displacement of the planned parking and landscaped buffer since the Phase II park plans cannot be reconfigured and it is not feasible to lease additional land from the California Medical Facility. Therefore, only selection of Alternatives A (No-Action Alternative), B, C or D would avoid the displacement of parking and the landscaped buffer proposed for Al Patch Park.

6.2 Arlington Park

Because Arlington Park experiences very high use throughout the year for sports, picnics, and neighborhood recreation and since Alternative E is projected to significantly increase traffic volumes on Peabody Road, this alternative would be required to include some type of fencing or other positive barrier along the Peabody Road perimeter of Arlington Park.

6.3 Will C. Wood High School

There is no vacant site located immediately adjacent to the existing athletic field where the football, track, and soccer facilities could be relocated, if Alternative E is selected, as all adjacent properties have been developed. Relocation of the athletic field onto a site that is located across an existing street from the school is not considered acceptable by the school district since it would pose a safety hazard for students and the public to cross a street in order to reach these facilities from the school site.

Selection of Alternatives A (No-Action Alternative), B, C, or D would avoid the adverse impacts to the existing track/soccer field at Will C. Wood High School.

6.4 Alamo Creek Bicycle Path

During the proposed 3-month construction period, the project sponsors will maintain ongoing use of the bicycle path. This ongoing use could be accomplished by temporary realignment of the bicycle path near the construction zone.

Currently bicycle riders are encouraged to dismount and walk their bicycles to the signalized crossing at Beelard Drive to cross Peabody Road. With the widening of Peabody Road and the significant increase in traffic forecasted under Alternative E, this alternative will be required to extend the Class I bike path along both sides of Peabody Road to connect the existing path to Beelard Drive.

Chapter 7 Coordination with Public Agencies and Property Owners Regarding Section 4(f) Properties

Section 4(f) requires coordination with the agencies that have jurisdiction over the resources eligible for protection under Section 4(f). These agencies include the following:

- City of Vacaville Department of Public Works and Community Services Department,
- Vacaville Unified School District, and
- City of Fairfield Public Works Department.

Appendix A contains a table identifying the coordination efforts with these agencies. This appendix also contains correspondence with these agencies.

Chapter 8 Least Overall Harm Analysis and Concluding Statement

Pursuant to 23 CFR 774 et.seq., the joint planning exemption requirements are satisfied, therefore Caltrans has determined there is no use of a 4(f) resource. As such a least overall harm analysis is not necessary. A brief summary – as reflected in Table 4-2 in Chapter 4 of the FEIS – of Caltrans analysis regarding selection of a preferred alternative follows.

8.1 Identification of a Preferred Alternative

Alternative A was not considered practicable as the preferred alternative because it would not meet the project purpose and need.

The various build alternatives have potential impacts in different environmental categories. Therefore, the identification of the preferred alternative was derived on the basis of a process of elimination that considered each of the related environmental laws. The following is a summary of the reasoning behind identifying Alternative B, as the Preferred Alternative:

While Alternative E appears to have the least overall impacts to natural resources among the build alternatives, Alternative E would result in permanent use of 1.7 acres of land from Al Patch Park and 1.2 acres of land from Will C. Wood High School. Both of these properties are protected by Section 4(f) of the Department of Transportation Act. Section 4(f) prohibits the Secretary of Transportation from approving a project that uses 4(f)-protected property if there is a feasible and prudent alternative to that use. Under Section 4(f) regulations, Alternative E cannot be identified as the preferred alternative unless all of the other build alternatives can be shown not to be prudent and feasible. Alternative E would also result in the acquisition of 26 single-family and 10 multi-family residential units along Peabody Road in the City of Vacaville.

Alternative D would displace industrial and commercial properties in the Tolenas Industrial Park along Huntington Drive in the City of Fairfield and would result in the loss of some 224 local jobs. The severe economic hardship to these employees and the City of Fairfield is not acceptable to the local community. There is no way to construct Alternative D to avoid these impacts; therefore, Alternative D was not considered practicable as the preferred alternative.

A “flyover” ramp proposed to be constructed at the intersection of Peabody Road and Air Base Parkway with either Alternative C or Alternative E would allow viewing by outsiders of areas considered high security areas for government defense, including the Aero Club landing strip and the David Grant Hospital. David Grant Hospital serves sensitive Defense Department missions and is designed to provide emergency functions. This visual access—particularly on a roadway that offers quick access and retreat—poses a concern for homeland defense. Travis Air Force Base officials raised this concern in their comments on the Draft EIR/EIS; see Volume II of the Final EIS, Letter 2. In light its potential homeland defense, residential impacts, and Section 4(f) impacts, Alternative E was not considered practicable as the preferred alternative.

Alternative C, because it would also require the flyover ramp at Peabody Road and Air Base Parkway, would have an impact on homeland defense. Also, as described in the Travis Air Force Base letter referenced above, Alternative C has the potential to affect an area of high habitat value, consisting of a combination of natural and created vernal pools and seasonal wetlands with good populations of Contra Costa goldfields, and a contiguous property that is being developed as a mitigation bank. This site includes mitigation area for vernal pools where efforts are currently underway to propagate and preserve goldfields and other listed and special status plant species. Travis officials have agreed to maintain the portion on the Air Base for preservation of vernal pools, wetlands and these plant species.

Using these lands for Alternative C would violate this agreement. Because of the homeland defense issue and the potential impacts to dedicated wetland and plant preservation areas, Alternative C was not considered practicable as the preferred alternative.

By this process of elimination, Alternative B is the remaining practicable alternative. Similar to other build alternatives, Alternative B would affect vernal pools and other seasonal wetlands as well as other waters of the U.S. along the proposed Walters Road extension and Cement Hill Road. These waters provide high quality habitat for wetland vegetation and wildlife. But in informal consultation with the U.S. Fish and Wildlife Service (USFWS) and the National Environmental Policy Act (NEPA)-404 MOU signatories, avoidance, minimization and mitigation measures have been identified that would achieve the appropriate balancing of resource protection, project construction, and mitigation costs to address these impact issues.

Alternative B was identified as the Preferred Alternative by Caltrans. The identification of Alternative B as preferred has been confirmed pursuant to avoidance and minimization measures stipulated in the USFWS's no-jeopardy Biological Opinion following completion of formal Section 7 consultation. The NEPA-404 MOU signatory agencies also concurred with the designation of Alternative B as the Least Environmentally Damaging Practicable Alternative (LEDPA).

There is no use as defined by 23 CFR 774.17 because the linear park and the Jepson Parkway project are being jointly planned and developed under 23 CFR 774.11(i).

Chapter 9 References Cited

9.1 Printed References

- City of Fairfield. 1994. Peabody-Walters Master Plan. Adopted September 6, 1994.
- City of Vacaville. 2004. Public Works Department. Accessed: July 2004. Available at URL: <http://www.ci.vacaville.ca.us/departments/public_works>. Revised or updated: July 12, 2004.
- Federal Highway Administration. 1989. Section 4(f) policy paper. Originally published: September 24, 1987. Revised June 7, 1989. Washington, DC.
- Federal Highway Administration. March 2, 2005. Revised FHWA Section 4(f) Policy Paper.
- Jones & Stokes. 2004a. Jepson Parkway historical resources evaluation report. Draft. March. (JSA 99-137.) Sacramento, CA. Prepared for Solano Transportation Authority, Suisun City, CA.
- . 2004b. Jepson Parkway relocation impact report. Draft. June. (JSA 99-137.) Sacramento, CA. Prepared for Solano Transportation Authority, Suisun City, CA.
- . 2004c. Jepson Parkway community impact assessment. Draft. May. (JSA 99-137.) Sacramento, CA. Prepared for Solano Transportation Authority, Suisun City, CA.
- Moore Iacofano Goltsman, Inc. 2000. Jepson Parkway concept plan. Prepared for the Solano Transportation Authority, Suisun City, CA. Berkeley, CA.
- Vacaville Unified School District. 2004. Vacaville Unified School District web site. Available at URL: <<http://www.vusd.solanocoe.k12.ca.us>>. Revised or updated: July 14, 2004.

9.2 Personal Communications

- Burke, Timothy. Associate civil engineer. City of Vacaville Department of Public Works. June 8, 2004—letter. June 17, 2004—telephone conversation.
- Coop, Leigh. Director of facilities, Vacaville Unified School District. April 30, 2004 and May 21, 2004—telephone conversations. May 2004 and August/September 2005—email communications. September 25, 2005-letter.
- Cunningham, Shawn. Senior civil engineer. City of Vacaville Public Works Department. August 2005-telephone communication. August 16 and 24, 2005-email communications. August 31, 2005-letter.

Duncan, William. Assistant Public Works Director. City of Fairfield Public Works Department. July and August 2005-email communications. July 31, 2005-letter.

Newsom, Tom. Assistant principal. Travis Community Day School. May 3, 2004—telephone conversation.

Various individuals. City of Vacaville Community Development, Community Services, Youth Community Services, and Public Works Departments. June 18–28, 2004—telephone conversations.

Tepley, Jeannie. Travis Community Day School. June 28, 2004—telephone conversation.

Appendix A Consultation and Coordination

The following table identifies the primary correspondence and other communications with agencies that have jurisdiction over the resources eligible for protection under Section 4(f). The following pages contain selected copies of the listed correspondence and electronic mail communications.

Date	From	To	Regarding
December 9, 1999	Jepson Taskforce	Jepson Taskforce	Meeting to discuss Jepson Parkway Project Alternatives for EIS/R
April 13, 2000	Jepson Taskforce	Jepson Taskforce	Meeting to discuss Jepson Parkway Project Alternatives for EIS/R
June 29, 2000	Jepson Taskforce	Jepson Taskforce	Meeting to discuss Jepson Parkway Project Alternatives for EIS/R
September 7, 2000	Jepson Taskforce	Jepson Taskforce	Meeting to discuss Jepson Parkway Project Alternatives for EIS/R
September 28, 2000	Jepson Taskforce	Jepson Taskforce	Meeting to discuss Jepson Parkway Project Alternatives for EIS/R
April 9, 2003	Brian Miller (City of Fairfield Department of Planning and Development)	Solano Transportation Authority	Letter regarding comments on Draft Project Description for Jepson Parkway Project EIS/R and the Walters Road Extension
May 14, 2004	Kimberly Stevens (Jones & Stokes)	Leigh Coop (Vacaville Unified School District) Paul Hom (City of Vacaville Public Works Engineering) Timothy Burke (City of Vacaville Public Works Engineering)	Letter regarding STA Jepson Parkway Project Section 4(f) Evaluation
June 8, 2004	Timothy Burke (City of Vacaville Public Works Engineering)	Kimberly Stevens (Jones & Stokes)	Letter response to May 14, 2004 letter regarding Al Patch Park
July 29, 2005	Debbie Loh (Jones & Stokes)	William Duncan (City of Fairfield Public Works Department)	Letter requesting concurrence with conclusions of 4(f) evaluation of proposed linear park
August 16, 2005	Shawn Cunningham (City of Vacaville Public Works Department)	Debbie Loh (Jones & Stokes)	Email regarding usage of Arlington Park and construction period near Alamo Creek bicycle path
August 23, 2005	Shawn Cunningham (City of Vacaville Public Works)	Debbie Loh (Jones & Stokes)	Email regarding usage at Arlington Park based on input from the City's Community Services Department

Date	From	To	Regarding
	Department)		
August 31, 2005	Debbie Loh (Jones & Stokes)	Shawn Cunningham (City of Vacaville Public Works Department)	Letter requesting concurrence with conclusions of 4(f) evaluation of City of Vacaville parks and recreational facilities
September 23, 2005	Leigh Coop (Vacaville Unified School District)	Debbie Loh (Jones & Stokes)	Email regarding impacts to the existing track and soccer field at Will C. Wood High School
September 26, 2005	Debbie Loh (Jones & Stokes)	Leigh Coop (Vacaville Unified School District)	Letter requesting concurrence with conclusions of 4(f) evaluation of Vacaville Unified School District facility
June 6, 2008	Solano Transportation Authority	U.S. Department of the Interior	Submittal of draft Section 4(f) for review and comment
June 6, 2008	Solano Transportation Authority	County of Solano	Submittal of draft Section 4(f) for review and comment
June 6, 2008	Solano Transportation Authority	City of Fairfield	Submittal of draft Section 4(f) for review and comment
June 6, 2008	Solano Transportation Authority	City of Vacaville	Submittal of draft Section 4(f) for review and comment
June 6, 2008	Solano Transportation Authority	City of Suisun City	Submittal of draft Section 4(f) for review and comment
April 14, 2011	Wayne Lewis (City of Fairfield Department of Public Works)	Sheryl Garcia (Caltrans)	Joint Planning of the Jepson Parkway and the Fairfield Linear Park.



May 14, 2004

Ms. Leigh Coop
Director, Facilities
Vacaville Unified School District
751 School Street
Vacaville, CA 95688

Subject: Solano Transportation Authority Jepson Parkway Project Section 4(f) Evaluation

Dear Ms. Coop:

The Solano Transportation Authority and the Federal Highway Administration (FHWA) are preparing an environmental impact report/environmental impact statement (EIR/EIS) for the Jepson Parkway Project that will include an evaluation required by Section 4(f) of the U.S. Department of Transportation Act of 1966 (23 CFR 771.135(a)) for any use of publicly-owned land of a public park or recreation area. This evaluation must include the results of coordination with the public official having jurisdiction over the Section 4(f) property. I am writing to initiate this coordination effort with the Vacaville Unified School District.

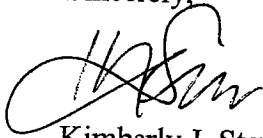
The Solano Transportation Authority, Solano County and the cities of Vacaville, Fairfield and Suisun City completed the Jepson Parkway Concept Plan in 2000. This plan was developed to address intra-county mobility for Solano County residents. The project will provide a four to six lane parkway between Interstate Route 80 (I-80) in the City of Vacaville and State Route 12 (Highway 12) in Suisun City, consistent with adopted local plans. Funds from the FHWA will be used, in part, to finance this project. Enclosed are maps detailing the location of the Jepson Parkway Project corridor (Fig. 2-2) and of one of the alternative alignments being considered, Alternative E: "Peabody Road-Air Base Parkway-Walters Road". The enclosed map shows that Will C. Wood High School would be directly affected by Alternative E.

The Vacaville Unified School District has been identified as the agency with jurisdiction over the Will C. Wood High School playground. A Section 4(f) evaluation must be prepared for U.S. Department of Transportation projects before the use of Section 4(f) properties can be approved by FHWA. School playgrounds that serve public recreation purposes and are considered significant recreational resources may be considered under the Section 4(f) requirements. A "use" occurs when Section 4(f) land must be acquired for a transportation project or when there is an occupancy of land that is adverse in terms of the statute's preservationist purposes. We would appreciate the District's input on this project's Section 4(f) evaluation, including any mitigation measures to minimize construction-related and long-term impacts on the school playground. I will be contacting you again to discuss the Section 4(f) analysis for the Jepson

Ms. Leigh Coop, Director, Facilities, Vacaville Unified School District
May 10, 2004
Page 2

Parkway Project as it relates to the Will C. Wood High School. Thank you for your attention to this matter.

Sincerely,

A handwritten signature in black ink, appearing to read 'KJ Stevens', written over a horizontal line.

Kimberly J. Stevens
Environmental Specialist
Contractor Representing Solano Transportation Authority

Enclosures



Jones & Stokes

May 14, 2004

Mr. Paul Hom, Deputy Director
City of Vacaville Public Works Engineering
650 Merchant Street
Vacaville, CA 95688

Subject: Solano Transportation Authority Jepson Parkway Project Section 4(f) Evaluation

Dear Mr. Hom:

The Solano Transportation Authority and the Federal Highway Administration (FHWA) are preparing an environmental impact statement/environmental impact report (EIS/EIR) for the Jepson Parkway Project that will include an evaluation required by Section 4(f) of the U.S. Department of Transportation Act of 1966 (23 CFR 771.135(a)) for any use of publicly-owned land of a public park or recreation area. This evaluation must include the results of coordination with the public official having jurisdiction over the Section 4(f) property. I am writing to initiate this coordination effort with the City of Vacaville Public Works Engineering.

The Solano Transportation Authority, Solano County and the cities of Vacaville, Fairfield and Suisun City completed the Jepson Parkway Concept Plan in 2000. This plan was developed to address intra-county mobility for Solano County residents. The project will provide a four to six lane parkway between Interstate Route 80 (I-80) in the City of Vacaville and State Route 12 (Highway 12) in Suisun City, consistent with adopted local plans. Funds from the FHWA will be used, in part, to finance this project. Enclosed are maps detailing the location of the Jepson Parkway Project corridor (Fig. 2-2) and of one of the alternative alignments being considered, Alternative E: "Peabody Road-Air Base Parkway-Walters Road". The enclosed map shows that Alternative E would directly affect the future Al Patch Park. Alternative E would not directly affect Arlington Community Park, although it is located adjacent to Alternative E on Peabody Road.

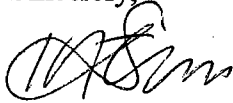
The City of Vacaville Public Works Engineering has been identified as the agency with jurisdiction over the future Al Patch Park and Arlington Community Park. A Section 4(f) evaluation must be prepared for U.S. Department of Transportation projects before the use of Section 4(f) properties can be approved. Planned public parks and recreation areas, such as Al Patch Park, are subject to Section 4(f) requirements if the agency that owns the property has formally designated it as such and if it is determined to be significant for park and recreational purposes. Arlington Community Park qualifies as a Section 4(f) property because it is a publicly owned public park and recreation area. A "use" occurs when Section 4(f) land must be acquired

Mr. Paul Hom, City of Vacaville Public Works Engineering
May 10, 2004
Page 2

for a transportation project or when there is an occupancy of land that is adverse in terms of the statutes' preservationist purpose.

We would appreciate the District's input on this project's Section 4(f) evaluation, including any mitigation measures to minimize construction-related and long-term impacts on the future Al Patch Park and Arlington Community Park. I will be contacting you again to discuss the Section 4(f) analysis for the Jepson Parkway Project as it relates to the future Al Patch Park and Arlington Community Park. Thank you for your attention to this matter.

Sincerely,



Kimberly J. Stevens
Environmental Specialist
Contractor Representing Solano Transportation Authority

cc: Mr. Tim Burke, Project Manager for Al Patch Park

Enclosures



May 14, 2004

Mr. Tim Burke
Project Manager, Al Patch Park
City of Vacaville Public Works Engineering
650 Merchant Street
Vacaville, CA 95688

Subject: Solano Transportation Authority Jepson Parkway Project Section 4(f) Evaluation

Dear Mr. Hom:

The Solano Transportation Authority and the Federal Highway Administration (FHWA) are preparing an environmental impact statement/environmental impact report (EIS/EIR) for the Jepson Parkway Project that will include an evaluation required by Section 4(f) of the U.S. Department of Transportation Act of 1966 (23 CFR 771.135(a)) for any use of publicly-owned land of a public park or recreation area. This evaluation must include the results of coordination with the public official having jurisdiction over the Section 4(f) property. I am writing to initiate this coordination effort with the City of Vacaville Public Works Engineering.

The Solano Transportation Authority, Solano County and the cities of Vacaville, Fairfield and Suisun City completed the Jepson Parkway Concept Plan in 2000. This plan was developed to address intra-county mobility for Solano County residents. The project will provide a four to six lane parkway between Interstate Route 80 (I-80) in the City of Vacaville and State Route 12 (Highway 12) in Suisun City, consistent with adopted local plans. Funds from the FHWA will be used, in part, to finance this project. Enclosed are maps detailing the location of the Jepson Parkway Project corridor (Fig. 2-2) and of one of the alternative alignments being considered, Alternative E: "Peabody Road-Air Base Parkway-Walters Road". The enclosed map shows that Alternative E would directly affect the future Al Patch Park. Alternative E would not directly affect Arlington Community Park, although it is located adjacent to Alternative E on Peabody Road.

The City of Vacaville Public Works Engineering has been identified as the agency with jurisdiction over the future Al Patch Park and Arlington Community Park. A Section 4(f) evaluation must be prepared for U.S. Department of Transportation projects before the use of Section 4(f) properties can be approved. Planned public parks and recreation areas, such as Al Patch Park, are subject to Section 4(f) requirements if the agency that owns the property has formally designated it as such and if it is determined to be significant for park and recreational purposes. Arlington Community Park qualifies as a Section 4(f) property because it is a publicly owned public park and recreation area. A "use" occurs when Section 4(f) land must be acquired

Mr. Tim Burke, City of Vacaville Public Works Engineering
May 14, 2004
Page 2

for a transportation project or when there is an occupancy of land that is adverse in terms of the statutes' preservationist purpose.

We would appreciate the District's input on this project's Section 4(f) evaluation, including any mitigation measures to minimize construction-related and long-term impacts on the future Al Patch Park and Arlington Community Park. I will be contacting you again to discuss the Section 4(f) analysis for the Jepson Parkway Project as it relates to the future Al Patch Park and Arlington Community Park. Thank you for your attention to this matter.

Sincerely,



Kimberly J. Stevens
Environmental Specialist
Contractor Representing Solano Transportation Authority

cc: Mr. Paul Hom, Deputy Director

Enclosures

COUNCIL MEMBERS
LEN AUGUSTINE, Mayor
PAULINE CLANCY, Vice Mayor
STEVE HARDY
RISCHA SLADE
STEVE WILKINS



CITY OF VACAVILLE

650 MERCHANT STREET, VACAVILLE, CALIFORNIA 95688-6908

ESTABLISHED 1850

June 8, 2004

Department of Public Works
Capital Improvement Projects

Jones and Stokes
2600 V Street
Sacramento, CA 95818

Attention: Kimberly J. Stevens, Environmental Specialist

**SUBJECT: SOLANO TRANSPORTATION AUTHORITY JEPSON PARKWAY PROJECT
SECTION 4(f) EVALUATION-AL PATCH PARK**

The City of Vacaville received your letter regarding the EIS/EIR for the Jepson Parkway Project and specifically the Section 4(f) designation for Al Patch Park on Alternative E for the Project. The following is a description and a chronicle of Al Patch Park.

Al Patch Park is located at the southwest corner of Peabody Road and California Drive on California Medical Facility (CMF) land that is leased to the City of Vacaville for a recreational park. The lease is part of a Joint Powers Agreement between the City of Vacaville and CMF. A Mitigated Negative Declaration dated November 3, 1999 was prepared and approved for the Joint Powers Agreement. A separate Mitigated Negative Declaration, dated September 13, 2001, was prepared and approved for Al Patch Park.

Al Patch Park will ultimately include five adult lighted softball fields, an all-weather track, a lighted football field, a concessions/restroom facility, and associated parking (see attachment). Because of limited funding, the park will be constructed in multiple phases. Improvement plans for the first phase (see attachment) were completed in April of this year and bids for the construction of the project have been opened. The construction contract for Al Patch Park, Phase 1 project is scheduled to be awarded at the June 8, 2004 City Council Meeting. The phase 1 project will have two entrances to the park from California Drive. The ultimate park will have an additional signalized entrance opposite Caldwell Drive off of Peabody Road.

I believe the Al Patch Park Project qualifies as a Section 4(f) property because it is publicly owned and designated for a recreational facility. Based on your current alignment, the western Right-of Way of Alternative E for the Jepson Parkway Project may impact the park site, and will be located within a few feet of the Al Patch Park's ultimate parking stalls (within the landscape buffer between the stalls and the current edge of pavement of Peabody Road). Because parking is limited at the park, the City considers any removal of spaces for the widening of Peabody Road to be an adverse impact.

This letter documents potential impacts to the City's park and the City's objection to the Alternative Alignment E of the Jepson Parkway Project as it relates to the Al Patch Park development. Of course, the

DEPARTMENTS: Area Code (707)

www.cityofvacaville.com

Administrative Services 449-5101	City Attorney 449-5105	City Manager 449-5100	Community Development 449-5140	Community Services 449-5654	Fire 449-5452	Housing & Redevelopment 449-5660	Police 449-5200	Public Works 449-5170
--	---------------------------	--------------------------	--------------------------------------	-----------------------------------	------------------	--	--------------------	--------------------------



City would want mitigation measures in place for dust control, traffic control and other typical construction related impacts.

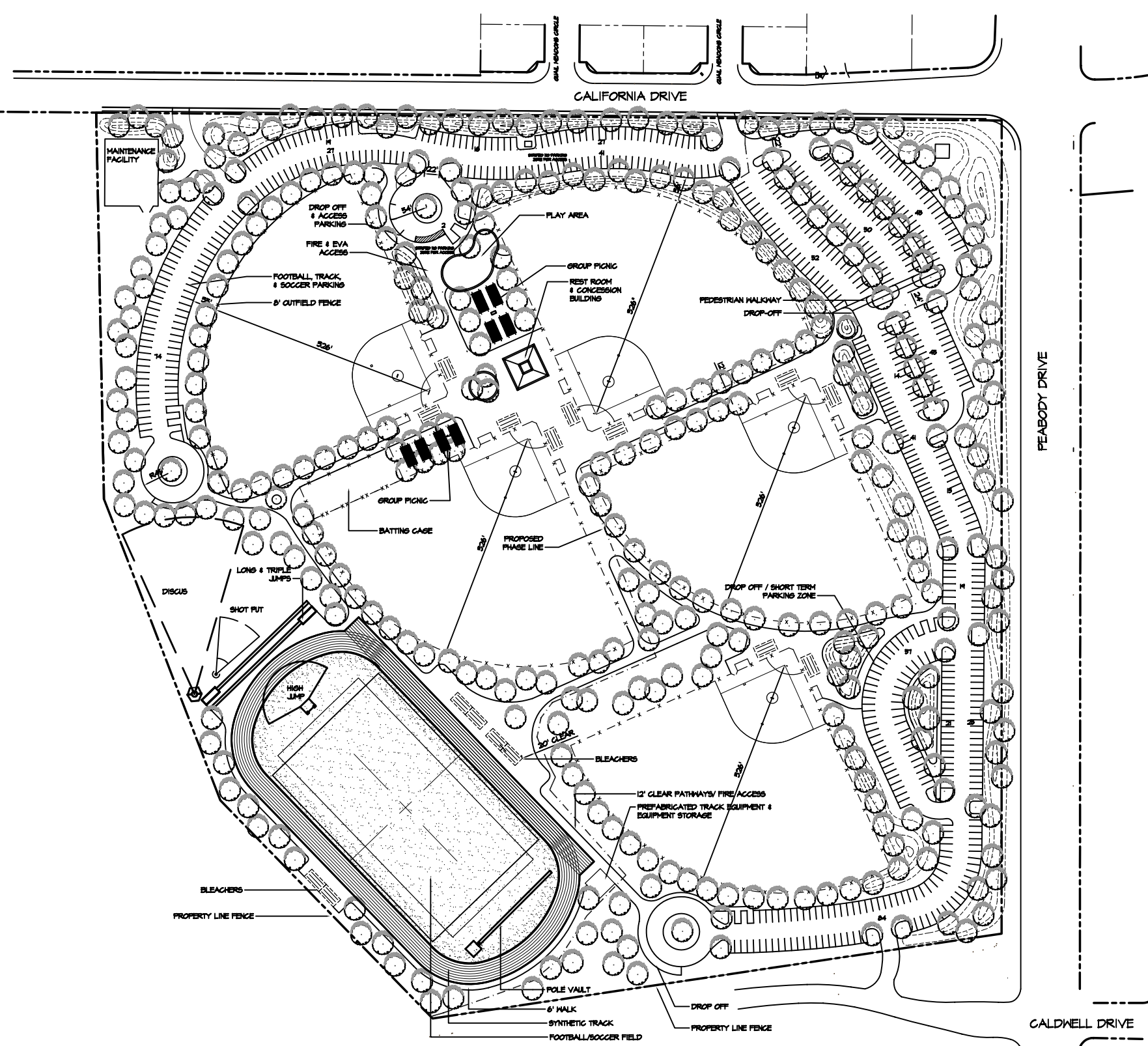
If you have any questions regarding the above information, please feel free to contact me at 707-449-5293.

Sincerely,

A handwritten signature in black ink, appearing to read "Timothy Burke". The signature is fluid and cursive, with the first name "Timothy" and the last name "Burke" clearly distinguishable.

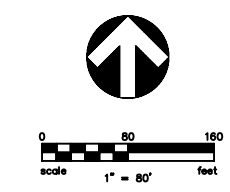
TIMOTHY BURKE
Associate Civil Engineer

cc: Shawn Cunningham
File #589



PARKING SUMMARY
PHASE I
STANDARD STALLS=145
ACCESSIBLE STALLS=5

AL PATCH PARK
MASTER PLAN
VACAVILLE, CALIFORNIA JULY 2003



CARLILE • MACY

CIVIL ENGINEERS • URBAN PLANNERS • LAND SURVEYORS • LANDSCAPE ARCHITECTS
15 THIRD STREET, SANTA ROSA, CA 95401
TEL (707) 542-6451 FAX (707) 542-5212
PROJECT No. 2003PH1

REVISIONS				APPROVED BY:		APPROVED BY:		APPROVED BY:		DRAWN		By		Checked		<div>CITY OF VACAVILLE</div> <div>DEPARTMENT OF PUBLIC WORKS</div> <div><div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><</div></div>	
-----------	--	--	--	--------------	--	--------------	--	--------------	--	-------	--	----	--	---------	--	---	--

REFERENCE FILES: none

-----Original Message-----

From: Hugo Ochoa
Sent: Wednesday, August 24, 2005 9:56 AM
To: Reggie Hubbard; Kerry Walker
Subject: RE: Jepson Parkway 4f concurrence letter

National Little League uses the Arlington for games and practice from February 1 to around July 15. We billed them for 270 kids. VYTA uses one field at Arlington for practice mid July to September. 20 kids three times a week. Hope this what we are looking for.

-----Original Message-----

From: Reggie Hubbard
Sent: Tuesday, August 23, 2005 8:52 AM
To: Hugo Ochoa
Cc: Kerry Walker; Bonnie Whitney
Subject: RE: Jepson Parkway 4f concurrence letter

Hugo, please make sure Kerry gets this info, it's probably something Bonnie can calculate from the league binders.

Reggie Hubbard, Recreation Supervisor

City of Vacaville, Community Services Department

1100 Alamo Drive Vacaville, Ca. 95688

(707) 449-6082

rhubbard@cityofvacaville.com

"Creating Community through People Parks and Programs"

-----Original Message-----

From: Kerry Walker
Sent: Thursday, August 18, 2005 8:52 AM
To: Hugo Ochoa; Jan Smith
Cc: Reggie Hubbard; Chip Wallace
Subject: FW: Jepson Parkway 4f concurrence letter

We need to know the number of users of Arlington Park. Yes this is extremely vague, don't know whether to count daily users (TGIF, volleyball group, cheerleaders) multiple times or one time. Whatever system you use just submit a brief description of it with your numbers. Please don't forget the regular park user groups (some identified above) as well, TGIF, Pre-School, etc. Thank you.

-----Original Message-----

From: Don Schatzel

Sent: Wednesday, August 17, 2005 8:04 AM

To: Kerry Walker

Cc: Rollie Simons

Subject: FW: Jepson Parkway 4f concurrence letter

Can we help Shawn out? Please see his e mail below.

Don Schatzel

Vacaville Community Services Director

40 Eldridge Ave, Suite 14

Vacaville CA 95688

707/449-5655

"We Create Community Through People, Parks and Programs"

-----Original Message-----

From: Shawn Cunningham

Sent: Tuesday, August 16, 2005 8:04 PM

To: 'Debbie Loh'

Cc: Don Schatzel

Subject: RE: Jepson Parkway 4f concurrence letter

Debbie,

I'll review the letter.

With regard to the two questions....

- Arlington Park is the largest public park in the City with the exception of Centennial Park. Arlington has little league fields, soccer fields, hosts football practices, soccer clinics, baseball clinics, has neighborhood playground equipment and basketball courts, reserved picnic facilities to accommodate probably 100 people. I don't think we have accurate numbers of how many people annually use the park, but it would be in the thousands I am sure.
- I would anticipate a 3 month disruption to the bike path at Peabody Road.

Don, do you have any good numbers for Arlington Park??

Shawn Cunningham, Sr. Civil Engineer

City of Vacaville, Dept. of Public Works

slcunningham@ci.vacaville.ca.us

(707)449-5176



August 31, 2005

Shawn Cunningham, Senior Civil Engineer
City of Vacaville Public Works Department
650 Merchant Street
Vacaville, CA 95688-6908

Subject: Jepson Parkway Section 4(f) Evaluation

Dear Mr. Cunningham:

On behalf of the Solano Transportation Authority, I am writing to you to request concurrence with the findings of the Jepson Parkway Section 4(f) evaluation. Section 4(f) of the Department of Transportation Act of 1966 (49 U.S. Government Code 303) declares that "[i]t is the policy of the United State Government that special effort should be made to preserve the natural beauty of the countryside and public park and recreation lands, wildlife and waterfowl refuges, and historic sites." Section 4(f) requires that the Federal Highway Administration (FHWA), as the federal funding agency under the U.S. Department of Transportation and lead agency under the National Environmental Policy Act, make a finding that feasible and prudent avoidance alternatives do not exist. It also requires that mitigation measures be identified that minimize harm to affected parks. FHWA requires that written concurrences be obtained from the agencies with jurisdiction over the affected 4(f) resources regarding the findings of the 4(f) evaluation.

The Section 4(f) evaluation for Jepson Parkway addresses three park/recreation facilities under the jurisdiction of the City of Vacaville: Al Patch Park, Arlington Park, and the Alamo Creek bicycle path. All three facilities would be affected by Alternative E and would be unaffected by Alternatives B, C, and D. Within the City of Vacaville, Alternative E entails widening of Peabody Road from Elmira Road south to the City limit line.

The potential use of these Section 4(f) resources that would occur with implementation of the Jepson Parkway is described below, together with a discussion of proposed mitigation measures.

Al Patch Park

Use of Section 4(f) Resource

Alternative E would require the permanent use of land from the 13.88-hectare (34.3-acre) Al Patch Park. The land that would be required is along the 371.86-meter (1220-foot) frontage on the western edge of Peabody Road. It is estimated that the proposed right-of-way for Alternative E would extend into the property approximately 18.29 meters (60 feet), affecting approximately 0.69 hectare (1.7 acres). The area required for the proposed right-of-way would displace approximately 120 of the proposed 680 parking spaces planned for the park, as well as the

proposed landscaped buffer between Peabody Road and the proposed parking. The parking and landscaped buffer along Peabody Road are proposed as part of the Phase II construction for the park.

The City of Vacaville has indicated that the displaced parking is needed to meet City parking standards for parks and that the Phase II park plans cannot be reconfigured to accommodate the 120 displaced parking spaces. Furthermore, the City has indicated that it would not be feasible to lease additional land from the California Medical Facility based on previous negotiations with this State entity.

Mitigation Measure

Selection of Alternatives A (No-Action Alternative), B, C or D would avoid the displacement of parking and the landscaped buffer proposed for Al Patch Park.

Arlington Park

Use of Section 4(f) Resource

Alternative E would not require the permanent use of land from Arlington Park. However, because Arlington Park is located directly adjacent to the Alternative E alignment, evaluation of potential proximity impacts is required.

Noise. Arlington Park is located in a suburban setting adjacent to the existing Peabody Road. Arlington Park is not a noise-sensitive facility where quiet and serenity are significant attributes. Arlington Park qualifies as an Activity Category B land use under FHWA's noise abatement criteria (23 CFR 772). Activity Category B includes areas such as picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals. Under Activity Category B, a noise impact is considered to occur when the predicted project-related noise levels approach or exceed the FHWA noise abatement criteria threshold of 67 dBA (i.e., 66 dBA or above) (23 CFR 771.135). Based on modeled receivers located to the south of Arlington Park that would be comparable to impacts within the park (receivers 32 and 33 from the Noise Study Report), postproject noise levels at Arlington Park are expected to be a maximum of 68 dB at receiver 32. However, because the increase in noise over future no-project levels is expected to be 2 dB (considered to be imperceptible) at this receiver, noise abatement is not needed.

Because Arlington Park is a suburban park, located in a developed area adjacent to a busy street, where quiet and serenity are not significant attributes of the park experience, and because noise abatement is not needed, there is no constructive use impact attributable to noise.

Aesthetics. Arlington Park is located adjacent to Peabody Road, a major arterial that is already part of the visual setting for this park, and views from the park are not a primary value of this park resource. Because the proximity of Alternative E to Arlington Park would not substantially impair the aesthetic features of the park or degrade its value as a park, there is no constructive use.

Accessibility. Neither the construction of nor the permanent changes made by Alternative E would change or restrict access to Arlington Park from Foxboro Parkway. Because the utility of the park would not be diminished by restricted access, there is no constructive use.

Vibration. Vibration impacts could occur if substantial discontinuities, such as potholes, occurred in a roadway. The proposed new roadway surface would be smooth. Therefore, there is no constructive use related to vibration.

Ecological Intrusion. Arlington Park is a developed park serving active recreation needs. It contains urban habitat consisting of ornamental plantings and manicured lawns. Urban habitat has marginal value for wildlife because of the presence of human disturbances and the lack of native vegetation. Because the park has marginal habitat value, there is no constructive use.

Mitigation Measure

Because Arlington Park experiences very high use throughout the year for sports, picnics, and neighborhood recreation and since Alternative E is projected to significantly increase traffic volumes on Peabody Road, this alternative would include some type of fencing or other positive barrier along the Peabody Road perimeter of Arlington Park.

Alamo Creek Bicycle Path

Use of Section 4(f) Resource

The Alamo Creek Bicycle Path intersects Peabody Road south of Beelard Drive. Alternative E would displace short sections of the bicycle path on both sides of Peabody Road to conform the bicycle path to the new road right of way. These sections of the bicycle path would be reconstructed to the same standards as the existing facility and permanent access to the bicycle path would not be affected.

Solano Transportation Authority has determined this impact to be a temporary occupancy as defined by 23 CFR 771.135(p) (7) and is requesting the City of Vacaville's written concurrence with the following:

- The duration of the occupancy is temporary, i.e. less than the time needed for construction of the project, and there will be no change in ownership of the land.

Mr. Shawn Cunningham
August 31, 2005
Page 4

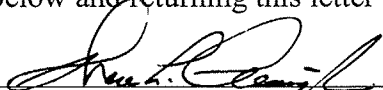
- The scope of work on park land will be minor i.e. both the nature and the magnitude of changes to the public park will be minimal.
- There will be no anticipated permanent adverse physical impact on park land, nor will there be interference with the activities or purposes of the resources, on either a temporary or permanent basis; and
- The land being used will be fully restored, i.e. the condition of the resources will be at least as good as that which existed prior to the project.

Mitigation Measures

During construction, the project sponsors will maintain ongoing use of the bicycle path. This ongoing use could be accomplished by temporary realignment of the bicycle path near the construction zone.

Currently bicycle riders are encouraged to dismount and walk their bicycles to the signalized crossing at Beelard Drive to cross Peabody Road. With the widening of Peabody Road and the significant increase in traffic forecasted under Alternative E, this alternative will be required to extend the Class I bike path along both sides of Peabody Road to connect the existing path to Beelard Drive.

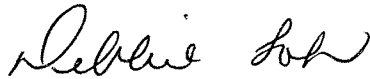
Please indicate your concurrence with the above-described findings for impacts to Al Patch Park and Arlington Park and for the temporary occupancy of Alamo Creek bicycle path by signing below and returning this letter to me.



Shawn Cunningham, Senior Civil Engineer, City of Vacaville Public Works Department

Thank you for your attention to this matter. Please call me at 916-752-0946 if you have questions.

Sincerely,



Debbie Loh
Senior Environmental Planner

cc: Dan Christiansen, Solano Transportation Authority
Bob Grandy, Fehr & Peers
Vicki Axiaq, Jones & Stokes

-----Original Message-----

From: Leigh Coop - VUSD Facilities [mailto:leighc@vacavilleusd.org]

Sent: Friday, September 23, 2005 6:44 AM

To: Debbie Loh

Subject: RE: Jepson Parkway Will C. Wood impacts

Debbie,

On the Peabody Road alternative, the mitigation would be relocation of the entire school in order to have an adequate physical education and athletic program; or alternatively, the purchase of land and relocation of the entire track to another adjacent location to the current school. However, there is no property that is adjacent and does not cross existing streets. This would pose safety hazards for students and the public as they would have to cross the street in order to reach the track. The properties adjacent have now all been developed. To the north, Costco is already there, and there is construction on a new retail outlet of Orchard Hardware going on right next to Costco, so there is nothing vacant.

If these comments can be used and incorporated, that would be fine.



Jones & Stokes

September 26, 2005

Ms. Leigh Coop, Director of Facilities
Vacaville Unified School District
751 School Street
Vacaville, CA 95688-6908

Subject: Jepson Parkway Section 4(f) Evaluation

Dear Ms. Coop,

On behalf of the Solano Transportation Authority, I am writing to you to request concurrence with the findings of the Jepson Parkway Section 4(f) evaluation. Section 4(f) of the Department of Transportation Act of 1966 (49 U.S. Government Code 303) declares that "[i]t is the policy of the United State Government that special effort should be made to preserve the natural beauty of the countryside and public park and recreation lands, wildlife and waterfowl refuges, and historic sites." Section 4(f) requires that the Federal Highway Administration (FHWA), as the federal funding agency under the U.S. Department of Transportation and lead agency under the National Environmental Policy Act, make a finding that feasible and prudent avoidance alternatives do not exist. It also requires that mitigation measures be identified that minimize harm to affected park and recreational facilities. FHWA requires that written concurrences be obtained from the agencies with jurisdiction over the affected 4(f) resources regarding the findings of the 4(f) evaluation.

The Section 4(f) evaluation for Jepson Parkway addresses one school-related recreation facility under the jurisdiction of the Vacaville Unified School District, the outdoor track/soccer field located at Will C. Wood High School. This facility would be affected by Alternative E, but would be unaffected by Alternatives B, C, and D. Within the City of Vacaville, Alternative E entails widening of Peabody Road from Elmira Road south to the City limit line. Alternatives B, C, and D entail widening Leisure Town Road, rather than Peabody Road, within the City of Vacaville.

The potential use of this Section 4(f) resource that would occur with implementation of the Jepson Parkway is described below, together with a discussion of proposed mitigation measures.

Use of Section 4(f) Resource at Will C. Wood High School

Alternative E would require permanent use of a section of the northeast corner of the outdoor track at Will C. Wood High School. The high school property has a frontage of approximately 316.99 meters (1,040 feet) along Peabody Road; the right-of-way for Alternative E would extend into the property approximately 15.24 meters (50 feet) along this frontage. The amount of land that would need to be acquired is estimated to be approximately 0.48 hectare (1.2 acres). This would adversely impact the outdoor track/soccer field. The track/soccer field could not be

Ms. Leigh Coop
September 26, 2005
Page 2

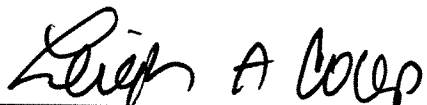
reconfigured on the property without making them smaller, and such a reduction would not meet the needs of the school district's physical education and athletic program.

Mitigation Measure

There is no vacant site located immediately adjacent to the existing track/soccer field where the track and soccer field could be relocated, if Alternative E is selected, as all adjacent properties have been developed. Relocation of the track/soccer field onto a site that is located across an existing street from the school is not considered acceptable by the school district since it would pose a safety hazard for students and the public to cross a street in order to reach these facilities from the school site.

Selection of Alternatives A (No-Action Alternative), B, C, or D would avoid the adverse impacts to the existing track/soccer field at Will C. Wood High School.

Please indicate your concurrence with the above-described findings for impacts to Will C. Wood High School by signing below and returning this letter to me.



10/3/05

Leigh Coop, Director Facilities, Vacaville Unified School District

Thank you for your attention to this matter. Please call me at 916-752-0946 if you have questions.

Sincerely,



Debbie Loh
Senior Environmental Planner

cc: Dan Christiansen, Solano Transportation Authority
Bob Grandy, Fehr & Peers
Vicki Axiaq, Jones & Stokes

Appendix B Agency Consultation Letters

ARTMENT OF TRANSPORTATION

38660

IND, CA 94523-0680

86-4444

MAR 19 2001



March 14, 2001

Mr. Daryl K. Halls
Executive Director
Solano Transportation Authority
333 Sunset Avenue, Suite 200
Suisun City, CA 94585

04-SOL-O- STA
Jepson Parkway

Dear Mr. Halls,

We appreciate the opportunity to be involved with the development of the Jepson Parkway project. For the past several months we have been working together on the National Environmental Policy Act/Clean Water Act section 404 (NEPA/404) process for this project.

A key step in this process occurs when the member agencies give concurrence on the Purpose and Need for the project. This becomes a very important section in the Environmental Impact Statement.

At this time we are pleased to provide Caltrans concurrence with the Purpose and Need for the project. We look forward to continuing our working partnership with you, as the sponsor agency, and the other state and federal agencies on the NEPA/404 process and the other steps in the environmental process. Thank you for the hard work, compromise and effort that has gone into producing this.

Sincerely,

HARRY Y. YAHATA
District Director

By *Jo Ann Cullom*
Jo Ann Cullom
Environmental Coordinator for
Local Assistance Projects

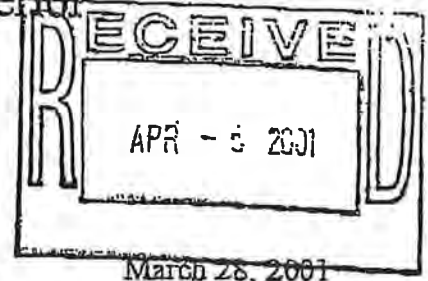


United States Department of the Interior

FISH AND WILDLIFE SERVICE

Sacramento Fish and Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, California 95825-1846

IN REPLY REFER TO:
PPN 2797



Mr. Michael Ritchie, Division Administrator
Federal Highway Administration, California Division
980 Ninth Street, Suite 400
Sacramento, California 95814-2724

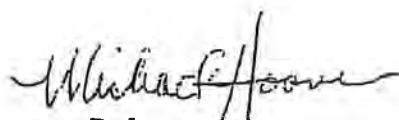
Dear Mr. Ritchie:

The Federal Highway Administration (FHWA), in cooperation with the California Department of Transportation (Caltrans) and the Solano Transportation Authority (STA), is proposing the development of the Jepson Parkway Project, a north-south transportation corridor along the eastern edges of the cities of Vacaville, Fairfield, and Suisun City.

The U.S. Fish and Wildlife Service (Service) has reviewed the February 20, 2001 STA information package describing the Purpose and Need Statement, Criteria for Alternative Screening, and Preliminary Alternatives and concurs with the determination that these elements are acceptable for use in the National Environmental Policy Act (NEPA)/404 Integration Process. We request an opportunity to review the final set of alternatives identified as acceptable for detailed evaluation after the Preliminary Alternatives have been applied to the screening criteria. On March 19, 1999, the Service issued a biological opinion which addressed the effects of water delivery by the U.S. Bureau of Reclamation to the Solano County Water Agency and its member agencies. The *Biological Opinion for the Solano Project Water Service Contract Renewal* included conservation measures for the short-term and long-term protection of listed species and their habitats within the action area (including the cities of Fairfield, Vacaville, and Suisun City). The conservation measures included the preparation and implementation of a Habitat Conservation Plan (HCP) for an incidental take permit under section 10(a)(1)(B) of the Endangered Species Act for indirect effects. While many of the indirect/growth inducing effects of the Jepson Parkway project will be addressed by the Solano Project HCP, the Service is concerned that there may be effects which will not be addressed. The Service recommends close coordination with the Solano Project HCP process to ensure that the indirect/secondary effects of the Parkway project are addressed. We recommend, at the earliest identification of unmitigated effects, that the FHWA and Caltrans assist in the expansion of the Solano Project HCP to include effects of the parkway.

If you have any questions concerning the Service's comments on this project, please contact Jerry Bielfeldt (Wetlands Branch) at (916) 414-6584.

Sincerely,


Dale A. Pierce
Acting Field Supervisor

cc: ARD (ES)-Portland, OR
STA, Suisun City, CA (Daryl K. Halls)
EPA, San Francisco, CA (Attn: Elizabeth Varnhagen)
NMFS, Sacramento, CA (Attn: Kelly Finn)
ACOE, Sacramento, CA (Nancy Haley)
Caltrans, Oakland, CA (JoAnn Cullom)



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IX

75 Hawthorne Street
San Francisco, CA 94105-3901

Mr. Daryl Halls, Executive Director
Solano Transportation Authority
333 Sunset Avenue, Suite 200
Suisun City, California 94585

Dear Mr. Halls:

We are in receipt of your letter dated February 20, 2001 requesting concurrence on the Purpose and Need, Criteria for Screening Alternatives, and Range of Preliminary Alternatives for the **Jepson Parkway Project, Solano County, California**. The request is pursuant to the National Environmental Policy Act/ Section 404 of the Clean Water Act Memorandum of Understanding (NEPA/404 MOU).

We concur with the purpose and need statement dated February 12, 2001 which indicates that project implementation will:

- Provide an integrated and continuous route for local north-south trips as an alternative to using I-80 in central Solano County.
- Provide local traffic with a safe, convenient route using existing roadways when feasible.
- Enhance multimodal transportation options for local trips to central Solano County, including providing a safe and convenient multiuse path and increasing transit use in the area.

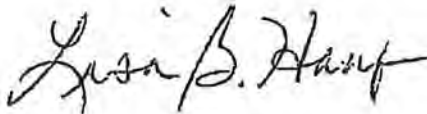
We also concur with the range of Preliminary Alternatives that are described in the document entitled *Jepson Parkway Preliminary Alternatives* dated February 16, 2001. This document depicts a no-build alternative, an alternative that performs low-cost capital improvements to existing roadway and transit systems, a mass transit alternative juxtaposed on each of the proposed alternatives, and six "build" alternatives. The alignments of these preliminary alternatives are roughly illustrated on the map entitled *Potential Alternatives for the Jepson Parkway Project*, dated February 14, 2001.

In order to identify the most reasonable alternatives to be evaluated in greater detail in the draft environmental impact statement (DEIS) that will be prepared, the proposed criteria for screening alternatives have been compiled in a matrix entitled, *Jepson Parkway EIS/EIR Project Alternatives Screening Matrix*, dated February 16, 2001. The 40 screening criteria are grouped into the following categories: natural environmental effects, physical environmental effects,

community effects, transportation effectiveness, engineering feasibility, and financial feasibility. Please note that to meet the requirements of the Section 404 (b)(1) guidelines of the Clean Water Act (CWA), we consider project impacts categorized under natural environmental effects, especially those affecting waters of the United States or endangered species, of great importance. The other categories of screening criteria have relevance in determining the practicability of a proposed alternative and how well it meets the project purpose. We concur with this list of criteria for screening alternatives.

Thank you for this opportunity to participate in the planning for the Jepson Parkway Project under the NEPA/404 MOU. We appreciate your convening regular meetings involving agency representatives to keep us informed and solicit our input to project planning and evaluation. We look forward to continued involvement through the next step which will be an analysis of the beneficial and detrimental aspects of each of these alternatives in order to eliminate those with unacceptable qualities, and ultimately identify the least environmentally damaging practicable alternative (LEDPA) for authorization by the Corps of Engineers under the CWA. If you have any questions or comments, please feel free to contact me at (415) 744-1584 or Liz Varnhagen of my staff at (415-744-1624).

Sincerely,



Lisa B. Hanf, Manager
Federal Activities Office

cc: Jane Hicks, Corps of Engineers, San Francisco
Jerry Bielfeldt, USFWS, Sacramento
Harry Khani, FHWA, Sacramento
Jo Ann Cullom, Caltrans, District 4, Oakland
Nancy Haley, Corps of Engineers, Sacramento



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Sacramento Area Office
650 Capitol Mall, Suite 8-300
Sacramento, CA 95814-4706

June 27, 2001

In Reply Refer To:
SWR-00-SA-0127:FKF

Daryl K. Halls
Executive Director
Solano Transportation Authority
333 Sunset Avenue, Suite 200
Suisun City, CA 94585

0334 2 700

Dear Mr. Halls:

This letter is in response to your letter of April 19, 2001 requesting concurrence from the National Marine Fisheries Service (NMFS) on the final range of alternatives for the Jepson Parkway Project Environmental Impact Statement/Report (EIS/R). We have reviewed the proposed alternatives and concur with the determination that the range of alternatives is acceptable for inclusion in the EIS/R. The Jepson Parkway Plan includes incorporation of transit, a continuous pedestrian and bicycle traffic corridor, landscape design, and an open space element. The project sponsors have considered a broad range of alternatives to identify five action alternatives for detailed evaluation in the pending EIS/R. We look forward to working with you on this and other projects in the future.

If you have any questions or need further information please contact Ms. F. Kelly Finn in our Sacramento Area Office, 650 Capitol Mall, Sacramento, CA 95814. Ms. Finn may be reached by telephone at (916) 930-3610 or by Fax at (916) 930-3629.

Sincerely,

Michael E. Aceituno
Supervisor, Sacramento Area Office

cc: NMFS-PRD, Long Beach, CA
Stephen A. Meyer, ASAC, NMFS, Sacramento, CA





UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IX

75 Hawthorne Street
San Francisco, CA 94105-3901

JUN 29 2001

Daryl Halls
Solano Transportation Agency
333 Sunset Avenue, Suite 200
Suisun City, CA 94585

Dear Mr. Halls:

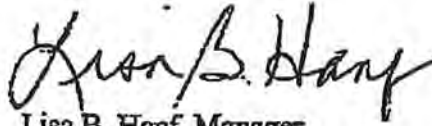
This responds to your letter dated April 19, 2001 requesting concurrence on the list of alternatives to be evaluated in detail in the draft environmental impact statement (DEIS) being prepared for the **Jepson Parkway in Solano County, California**. The U.S. Environmental Protection Agency (EPA) has already concurred with the range of the ten preliminary alternatives in our letter to you dated March 15, 2001. Our comments are offered as part of the National Environmental Policy Act/Clean Water Act Section 404 (NEPA/404) Integration Process.

Your letter indicates that from the ten preliminary alternatives, you would like to eliminate four from further consideration. According to the preliminary Alternatives Screening Report we received on June 8, 2001, the following alternatives should be eliminated from further evaluation in the DEIS. Alternative 2, the Transportation System Management (TSM) alternative consisting of low-cost capital improvements to the existing roadway and transit systems, would not satisfy the project purpose because it would not improve roadway safety or adequately address existing and future traffic congestion. Alternative 3, which is to construct a limited access expressway along any of the proposed alignments was also considered unacceptable for environmental and aesthetic reasons as well as not satisfying the multi-modal goal. Alternative 9, the Mass Transit alternative which would construct an arterial roadway within any of the proposed alignments, was eliminated because it was not believed to adequately address existing or anticipated traffic congestion, or accommodate pedestrian/non-motorized transportation. Alternative 10, which represented a route north of the I-80 corridor, would have potentially large adverse environmental and community impacts, and would open up new areas to development. Finally, Alternative 11 a) and b) would be outside of existing areas of planned development and not adequately serve the Jepson Parkway target communities.

HPA concurs that Solano Transportation Agency's selected six alternatives to carry forward into the draft EIS, alternatives 1, 4, 5, 6, 7 and 8, continue to offer an appropriate range for the purpose of NEPA. We recognize that there are additional difficult resource-based decisions ahead in this evaluation process, and offer our assistance to work with you throughout the NEPA/404 Integration process. If you have any questions concerning NEPA or the

NEPA/404 Memorandum of Understanding, please feel free to contact Liz Varnhagen of my staff at (415) 744-1624. If you have questions about compliance with the Clean Water Act, please contact Mike Monroe in the Water Division at (415) 744-1963.

Sincerely,

A handwritten signature in dark ink, appearing to read "Lisa B. Hanf". The signature is fluid and cursive, with the first name "Lisa" and last name "Hanf" being the most prominent parts.

Lisa B. Hanf, Manager
Federal Activities Office

cc: Jane Hicks, Corps of Engineers, San Francisco
Jerry Bielfeldt, USFWS, Sacramento
Harry Khani, FHWA, Sacramento
Jo Ann Cullom, Caltrans, District 4, Oakland
Nancy Haley, Corps of Engineers, Sacramento



DEPARTMENT OF THE ARMY
SAN FRANCISCO DISTRICT, CORPS OF ENGINEERS
333 MARKET STREET
SAN FRANCISCO, CALIFORNIA 94105-2197

REPLY TO

[JUL 13 2001]

Regulatory Branch

SUBJECT: File Number 24854N

Mr. Daryl Halls
Solano Transportation Authority
333 Sunset Avenue, Suite 200
Suisun City, California 94585

Dear Mr. Halls:

Thank you for your letter of February 20, 2001, requesting concurrence with the Purpose and Need Statement for the Jepson Parkway Project in Solano County, California. You also requested concurrence with the "Criteria for Alternative Screening" ("Jepson Parkway EIS/EIR Project Alternatives Screening Matrix"), and the "Jepson Parkway Preliminary Alternatives", both dated February 16, 2001. In a separate letter dated April 19, 2001, you requested concurrence on the list of alternatives to be evaluated in detail in the EIS/EIR document. Your request for concurrence is pursuant to the Memorandum of Understanding for the National Environmental Policy Act and Clean Water Act Section 404 Integration Process for Surface Transportation Projects in Arizona, California, and Nevada.

Portions of the Jepson Parkway Project are proposed to be built in both the San Francisco and Sacramento Districts of the Corps of Engineers (Corps). By email of July 13, 2001, Sacramento District agreed with San Francisco District's recommendation that both Districts concur with your request.

The Corps concurs with the February 12, 2001, "Purpose and Need for the Proposed Action"; "Criteria for Alternative Screening" ("Jepson Parkway EIS/EIR Project Alternatives Screening Matrix"), and "Jepson Parkway Preliminary Alternatives", both dated February 16, 2001; and the list of alternatives to be evaluated in detail in the EIS/EIR document contained in your letter of April 19, 2001. These alternatives are described in the "Jepson Parkway Preliminary Alternatives" dated March 19, 2001.

If you have questions, please contact Nancy Haley of Sacramento District's Regulatory Branch at 916-557-7772 or Jane Hicks of San Francisco District's Regulatory Branch at 415-977-8439. All correspondence should reference file numbers 200000655 and 24854N.

Sincerely,

Jane M. Hicks

Calvin C. Fong
Calvin C. Fong
Chief, Regulatory Branch

Copy Furnished:

USACE, SPK-CO-R, Sacramento, CA (Attn: N. Haley)
US EPA, San Francisco, CA (Attn: L. Varnhagen)
US FWS, Sacramento-Wetlands Branch, CA (Attn: J. Bielfeldt)
NMFS, Sacramento, CA (Attn: F. K. Finn)
FHWA, Sacramento, CA (Attn: H. Khani)
M. Davis, Jones and Stokes, Oakland, CA

**OFFICE OF HISTORIC PRESERVATION
DEPARTMENT OF PARKS AND RECREATION**

P.O. BOX 942896
SACRAMENTO, CA 94296-0001
(916) 653-6624 Fax: (916) 653-9824
calshpo@ohp.parks.ca.gov
www.ohp.parks.ca.gov



March 2, 2006

Reply To: FHWA060216A

Jennifer Darcangelo
Department of Transportation
PO Box 23660
Oakland, CA 94623-0660

Re: Determinations of Eligibility for the Proposed Jepson Parkway Project, Solano County, CA

Dear Ms. Darcangelo:

Thank you for consulting with me about the subject undertaking in accordance with the *Programmatic Agreement Among the Federal Highway Administration, the Advisory Council on Historic Preservation, the California State Historic Preservation Officer, and the California Department of Transportation Regarding Compliance with Section 106 of the National Historic Preservation Act, as it Pertains to the Administration of the Federal-Aid Highway Program in California (PA)*.

The California Department of Transportation (Caltrans) is requesting my concurrence, pursuant to Stipulation VIII.C.5 of the PA, that the following properties are not eligible for the National Register of Historic Places (NRHP):

- 579 Leisure Town Road, Vacaville, CA
- 5027 Peabody Road, Vacaville, CA

Based on my review of the submitted documentation, I concur.

Thank you for considering historic properties during project planning. If you have any questions, please contact Natalie Lindquist of my staff at (916) 654-0631 or e-mail at nlind@ohp.parks.ca.gov.

Sincerely,

A handwritten signature in cursive script, appearing to read 'Milford Wayne Donaldson'.

Milford Wayne Donaldson, FAIA
State Historic Preservation Officer



DEPARTMENT OF THE ARMY
SAN FRANCISCO DISTRICT, U.S. ARMY CORPS OF ENGINEERS
1455 MARKET STREET
SAN FRANCISCO, CALIFORNIA 94103-1398

FEB 27 2009

Regulatory Division

SUBJECT: File Number 248540N

Ms. Janet Adams
Solano County Transportation Authority
One Harbor Center, Suite 130
Suisun City, California 94585

Dear Ms. Adams:

This letter is written in response to your request of January 22, 2009, for a preliminary jurisdictional determination for the Jepson Parkway Project (See attached Preliminary Jurisdictional Determination Form). The project area includes potential alignment alternatives for the proposed Jepson Parkway Project and is located between State Route 12 southeast of Suisun City and Interstate 80 in Vacaville. Enclosed is a map (Corps Date-stamped February 18, 2009) depicting our preliminary determination. Potentially jurisdictional waters include 121.071 acres of wetlands consisting of seasonal wetlands, perennial and seasonal marsh. Other potentially jurisdictional waters of the U. S. include 11.518 acres of drainage ways, ponds, and ditches. All proposed discharges of dredged or fill material into wetlands or waters of the United States must be authorized by the Corps of Engineers pursuant to Section 404 of the Clean Water Act (CWA) (33 U.S.C. Section 1344). Waters of the United States generally include tidal waters, lakes, ponds, rivers, streams (including intermittent streams), and wetlands.

Your proposed activity appears to be within our jurisdiction and a permit will be required for your project. Application for Corps authorization should be made to this office. To avoid delays it is essential that you refer to the file number at the top of this letter in your application. The application must include plans showing the location, extent and character of the proposed activity. You should note, in planning your project, that upon receipt of a properly completed application and plans, it may be necessary to advertise the proposed work by issuing a Public Notice for a period of 30 days.

You are advised that the Corps *does not* have an established Administrative Appeal Process for findings associated with Preliminary Jurisdictional Determinations, however you may request an Approved Jurisdictional Determination that precisely identifies the limits of waterbodies subject to Clean Water Act and / or Rivers and Harbors Act jurisdiction as described in 33 C.F.R. Part 331.2.

Should you have any questions regarding this matter, please call Cameron Johnson of our Regulatory Division at (415) 503-6790. Please address all correspondence to the Regulatory Division comments on our permit review process, please complete the Customer Survey Form available online at <http://per2.nwp.usace.army.mil/survey.html>.

Sincerely,



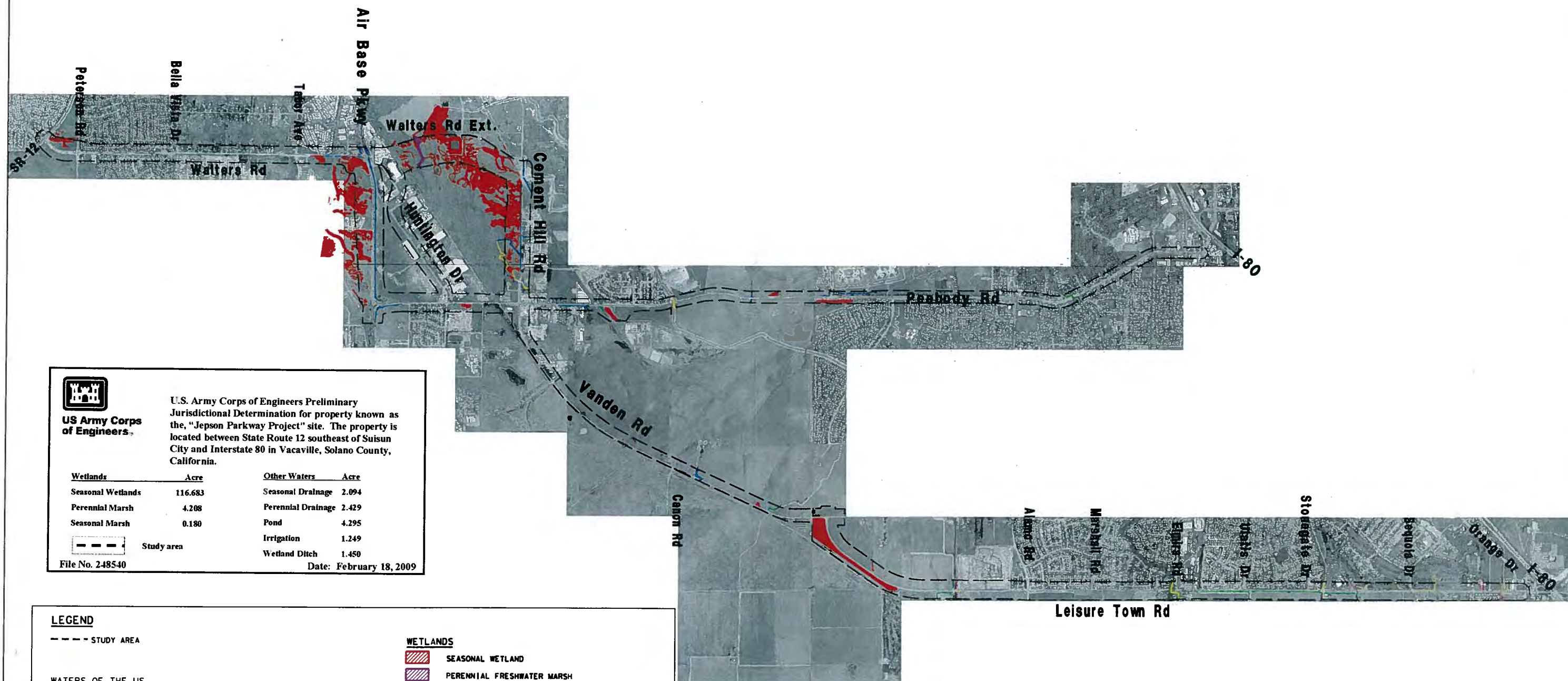
Jane Hicks
Chief, Regulatory Division

Enclosures

Copies Furnished (with map only)

CA RWQCB, Oakland, CA
CA SWRCB, Sacramento, CA

Michael Kay
PBS & J
353 Sacramento Street, Suite 1000
San Francisco, CA 94111



**US Army Corps
of Engineers**

U.S. Army Corps of Engineers Preliminary
Jurisdictional Determination for property known as
the, "Jepson Parkway Project" site. The property is
located between State Route 12 southeast of Suisun
City and Interstate 80 in Vacaville, Solano County,
California.

Wetlands	Acre	Other Waters	Acre
Seasonal Wetlands	116.683	Seasonal Drainage	2.094
Perennial Marsh	4.208	Perennial Drainage	2.429
Seasonal Marsh	0.180	Pond	4.295
		Irrigation	1.249
		Wetland Ditch	1.450

--- Study area

File No. 248540

Date: February 18, 2009

LEGEND

--- STUDY AREA

WATERS OF THE US

- PERENNIAL DRAINAGE
- PERENNIAL DRAINAGE WITH RIPARIAN
- SEASONAL DRAINAGE
- POND (ARTIFICIAL)
- IRRIGATION
- DITCHES (WITH WETLAND CHARACTERISTICS)

WETLANDS

- SEASONAL WETLAND
- PERENNIAL FRESHWATER MARSH
- SEASONAL FRESHWATER MARSH



REV	DATE	DESCRIPTION	CHECKED	APPD

JEPSON PARKWAY PROJECT



SOLANO TRANSPORTATION
AUTHORITY
One Harbor Center
Suite 130
Suisun City, CA 94585
Telephone: (707) 424-6075
Fax: (707) 424-6074

SCALE	1"=100'
DESIGN BY	CEL
DRAWN BY	KAK
DATE	11/03/08
CHECKED BY	SJB
PROJECT NUMBER	100001224

WETLAND DELINEATION MAP JEPSON PARKWAY



DEPARTMENT OF THE ARMY
SAN FRANCISCO DISTRICT, CORPS OF ENGINEERS
333 MARKET STREET
SAN FRANCISCO, CALIFORNIA 94105-2197

MAR 16 2009

Regulatory Division (1145b)

SUBJECT: File Number 248540N

Ms. Janet Adams
Solano County Transportation Authority
One Harbor Center, Suite 130
Suisun City, California 94585

Dear Ms. Adams:

This letter is in response to your request from the Corps for preliminary concurrence that the proposed alignment for the Jepson Parkway project represents the least environmentally damaging practicable alternative (LEDPA). This alternative is described as Alternative B in the *Jepson Parkway Project Draft Environmental Impact Report / Environmental Impact Statement and Draft Section 4(f) Evaluation* (May 2008). The proposed roadway improvement project (Alternative B) is in mid-Solano County between Interstate 80 (I-80) in Vacaville and State Route 12 (SR 12) in Suisun City. The approximately 12 mile corridor is located within the jurisdictions of the cities of Suisun City, Fairfield, and Vacaville, as well as unincorporated portions of Solano County. The proposed project will upgrade a series of two- and four- lane roadways to six lane capacity as well as create new links between existing roadways. The proposed alternative (from North to South) includes widening of Leisure Town Road in Vacaville, widening of Vanden Road and Cement Hill Road in Fairfield, and creation of a new linkage between Cement Hill Road and Air Base Parkway in Fairfield in the Walters Road alignment. Additional improvements include widening of Walters Road between Fairfield and its terminus at SR 12 in Suisun City. Total proposed project impacts to jurisdictional waters of the U. S. include 5.34 acres, including 2.93 acres of proposed impacts to wetlands.

This project is being processed pursuant to the Memorandum of Understanding – National Environmental Policy Act and Clean Water Act Section 404 Integration Process for Surface Transportation Projects in Arizona, California, and Nevada (NEPA-404 Integration MOU). In accordance with the NEPA-404 Integration MOU, the Corps does preliminarily agree;

- a. alignment alternative B complies with the Section 404(b)(1) guidelines and represents the least environmentally damaging practicable alternative, and
- b. incorporation of practicable mitigation measures will allow this alternative to avoid significant degradation of the aquatic environment

At the completion of the Environmental Impact Statement process, before the Corps can issue a permit;

- a. a complete mitigation plan must be submitted to the Corps for review and approval;
- b. the Corps will review and approve all proposed designs of bridge structures, culverts, and other water crossings for conformity with 404(b)(1) guidelines;
- c. a Biological Opinion must be issued by the US Fish & Wildlife Service for the project; and
- d. water quality certification must be provided by the Regional Water Quality Control Board

As this represents a preliminary determination, the Corps reserves the right to revise this position in the event that new information is presented or compelling concerns are raised regarding the design, implementation, or effects of the proposed project.

If you have questions, please contact Cameron Johnson of our Regulatory Division at 415-503-6790. All correspondence should reference file number 248540N.

Sincerely,
ORIGINAL SIGNED
BY
JANE M. HICKS
CHIEF, REGULATORY DIVISION
Jane Hicks
Chief, Regulatory Division

CF:

CA RWQCB, Oakland, CA
CA SWRCB, Sacramento, CA

Michael Kay
PBS & J
353 Sacramento Street, Suite 1000
San Francisco, CA 94111



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southwest Region
501 West Ocean Boulevard, Suite 4200
Long Beach, California 90802-4213

MAY 20 2009

In response refer to:
2009/01732

Jeffrey G. Jensen
Office Chief, Office of Biological Sciences and Permits
California Department of Transportation
P.O. Box 23660
Oakland, California 94623-0660

Dear Mr. Jensen:

This letter is in response to your April 6, 2009, request for initiation of section 7 consultation with NOAA's National Marine Fisheries Service (NMFS), pursuant to the Endangered Species Act (ESA) and the Magnuson-Stevens Fishery Conservation and Management Act (MSA), concerning the Jepson Parkway project (Project) in Solano County, California. You have determined that the proposed project may affect, but is not likely to adversely affect Central Valley (CV) Steelhead (*Oncorhynchus mykiss*). In addition, you have determined that Alternative B is the least damaging practicable alternative under the National Environmental Policy Act (NEPA) and have requested NMFS' comments and/or agreement with this NEPA determination. The proposed project area has been designated as Essential Fish Habitat (EFH) of Pacific salmon pursuant to the MSA. This letter also serves as consultation under the authority of, and in accordance with, the provisions of the Fish and Wildlife Coordination Act of 1934 (FWCA), as amended. NMFS recognizes that the California Department of Transportation (Caltrans) is acting in conjunction with the Federal Highway Administration (FHWA) for this project and has assumed FHWA's responsibilities under Federal environmental laws as allowed by the Memorandum of Understanding between FHWA and Caltrans, which became effective on July 1, 2007.

Caltrans and FHWA propose to improve the corridor between Interstate 80 in Vacaville and State Route 12 in Suisun City. The Project involves widening from two to four lanes for the entire length of the corridor and includes improvements to (from north to south) Leisure Town Road, Vanden Road, Cement Hill Road, and Walters Road. In addition, improvements at Leisure Town Road include crossings over Alamo Creek and New Alamo Creek. The New Alamo Creek Bridge will require an extension of the existing box culvert approximately 50 feet to the west. Existing riprap within the channel will be removed and replaced around the widened pier walls. The Union Creek crossing at Vanden Road will require a raised roadway and a new two span bridge. The McCoy Creek crossing at Cement Hill Road will not require any additional work. However, the McCoy Creek crossing at Walters Road will require an extension of the existing bridge. The Walters Road crossing will require fill between the Union Pacific



Railroad and McCoy Creek with walls retaining the fill on both sides. Construction at this site will be relatively minor and include a storm drainage system to collect storm water runoff.

All proposed in-channel work at New Alamo Creek will be conducted from June 15 through September 30. New Alamo Creek is the only watershed in the project vicinity that may potentially have CV steelhead presence. The proposed project will comply with Caltrans Best Management Practices (BMPs) and a Storm Water Pollution Prevention Plan (SWPPP). A silt fence will be installed around the perimeter of the staging areas and along the slopes adjacent to the work area to prevent silt from entering the channels. In addition, high-visibility fencing will be installed around all environmentally sensitive areas to be avoided by construction activities, and shall remain on-site until the project is completed. Erosion controls will be maintained during the demolition and construction periods. Cofferdams will be placed and dewatered during bridge construction. During the dewatering period, a qualified biologist will inspect and ensure that listed anadromous fish will not be trapped within the temporary cofferdams. At the Walters Road crossing, biofiltration swales will be constructed on the sides of the road to minimize pollution in the creeks from road surface runoff.

ESA Section 7 Consultation

Based on our review of the material provided with your request and the best scientific and commercial information currently available, NMFS concurs that the Jepson Parkway project is not likely to adversely affect CV steelhead. NMFS has reached this determination based on the following reasons:

1. All in-channel work at New Alamo Creek will be conducted during June 15-September 30, when salmonids are not expected to be present in the action area and thus would not be exposed to the effects of the proposed construction activities. During this in-channel work window, water temperatures are generally too warm and low flows make the action area generally unsuitable for anadromous listed fish to be present during this period.
2. Protective fencing will be placed to keep construction activities and vehicles from impacting environmentally sensitive riparian vegetation adjacent to the project site.
3. A qualified biologist will monitor the dewatering of cofferdams to ensure listed salmonids will not get trapped and prevent take of CV steelhead.
4. The following mitigation measures will be incorporated into the proposed project to minimize the potential for water quality impacts that could potentially harm anadromous listed fish and their habitat:
 - The proposed action will include BMPs and SWPPP.
 - A silt fence will be installed around the perimeter of the staging areas and along the slopes adjacent to the work areas to prevent silt from entering the waterways.

- Erosion control methods will be maintained during the demolition and construction periods of the Project.
- Cofferdams will be used to dewater the work areas around the bridge piers. This will keep debris and siltation from entering the channel during construction of pier walls.
- Biofiltration swales will be constructed at the Walters Road crossing to minimize the potential of pollutants entering the creeks.

This concludes ESA consultation for the Jepson Parkway project. This concurrence does not provide incidental take authorization pursuant to section 7(b)(4) and section 7(o)(2) of the ESA. Re-initiation of the consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law), and if: (1) new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not considered; (2) the action is subsequently modified in a manner that causes adverse effects to listed species or critical habitat; or (3) a new species is listed or critical habitat designated that may be affected by this action.

NEPA Comments

NMFS has reviewed your NEPA analysis and the information provided regarding Alternative B, and we concur that it is the least environmentally damaging practicable alternative.

EFH Consultation

With regards to EFH consultation, the proposed project area has been identified as EFH for Chinook salmon in Amendment 14 of the Pacific Salmon Fishery Management Plan pursuant to the MSA. Federal action agencies are mandated by the MSA (section 305(b)(2)) to consult with NMFS on all actions that may adversely affect EFH and NMFS must provide EFH conservation recommendations to those agencies (section 305(b)(4)(A)). Because the proposed action has incorporated specific measures (described above) to minimize impacts to the habitat of salmonids, NMFS has determined that the proposed project will not adversely affect EFH, and additional EFH Conservation Recommendations are not being provided at this time; however, if there is substantial revision to the action, the lead Federal agency will need to re-initiate EFH consultation.


Fish and Wildlife Coordination Act (FWCA)

The purpose of the FWCA is to ensure that wildlife conservation receives equal consideration, and is coordinated with other aspects of water resources development (16 U.S.C. 661). The FWCA establishes a consultation requirement for Federal departments and agencies that undertake any action that proposes to modify any stream or other body of water for any purpose, including navigation and drainage (16 U.S.C 662(a)). Consistent with this consultation requirement, NMFS provides recommendations and comments to Federal action agencies for the

purpose of conserving fish and wildlife resources. The FWCA allows the opportunity to offer recommendations for the conservation of species and habitats beyond those currently managed under the ESA and MSA. Because the proposed project is designed to avoid environmental impacts to aquatic habitat within the action area, NMFS has no additional FWCA comments to provide.

Please contact Monica Gutierrez at (916) 930-3657, or via e-mail at Monica.Gutierrez@noaa.gov if you have any questions or require additional information concerning this project.

Sincerely,


for Rodney R. McInnis
Regional Administrator

cc: Copy to File ARN # 151422SWR2001SA5790
NMFS-PRD, Long Beach, CA
Bryant Chesney, Long Beach, CA
Melanie Brent, P.O. Box 23360, Oakland, California 94623-0660



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IX

75 Hawthorne Street

San Francisco, CA 94105-3901

July 20, 2009

Melanie Brent
Office of Environmental Analysis
California Department of Transportation
111 Grand Avenue
P.O. Box 23660
Oakland, CA 94623-0660

Subject: Preliminary Least Environmentally Damaging Practicable Alternative and Conceptual Mitigation Plan for the Jepson Parkway Project, Solano County, California

Dear Ms. Brent:

The Environmental Protection Agency (EPA) has reviewed the California Department of Transportation's (Caltrans') April 2, 2009 letter requesting agreement on the preliminary least environmentally damaging practicable alternative (LEDPA) and updated Conceptual Mitigation Plan (CMP), provided via email on July 1, 2009 for the Jepson Parkway Project, Solano County, California.

Caltrans' request was made pursuant to the process outlined in the *National Environmental Policy Act/Clean Water Act (CWA) Section 404 Integration Memorandum of Understanding* (NEPA/404 MOU) of April 2006. We appreciate the interagency coordination efforts by Caltrans to identify the preliminary LEDPA and prepare a CMP.

Preliminary LEDPA

EPA agrees that Alternative B is the preliminary LEDPA. Our agreement is based on the information contained in the Draft Environmental Impact Statement (DEIS), information provided in a November 20, 2008 meeting at the Solano Transportation Authority (STA) offices, and information provided in the referenced letters and subsequent email correspondence. According to the U.S. Army Corps of Engineers' preliminary jurisdictional determination, this alternative would impact 5.34 acres of jurisdictional waters of the U.S., including 2.93 acres of wetlands. The July 1, 2009 email from Pat Gelb of PBS&J that included the updated CMP stated that recent efforts to refine the proposed project have resulted in a reduction of potential impacts to 4.92 acres of jurisdictional waters of the U.S., including 2.51 acres of wetlands. Should additional information become available or significant time elapse prior to CWA Section 404 permitting, our agency may revisit this agreement point.

Conceptual Mitigation Plan

EPA has reviewed the current draft of the CMP, transmitted via email on July 1, 2009. The CMP states Caltrans' and STA's intent to purchase credits at mitigation banks for mitigation of impacts to wetlands and waters, as well as impacts to listed species. We have also had ongoing correspondence regarding mitigation ratios and impacts to the Strassberger property with Caltrans and PBS&J staff. Based on these conversations and the information available at this time, EPA agrees with the CMP.

Thank you for the opportunity to provide these comments. EPA will also provide comments on the Final EIS pursuant to the National Environmental Policy Act (NEPA), Council on Environmental Quality (CEQ) regulations (40 CFR Parts 1500-1508), and Section 309 of the Clean Air Act. If you have any questions, please contact Carolyn Mulvihill of my staff at (415) 947-3554 or mulvihill.carolyn@epa.gov, or Jason Brush of EPA's Wetlands Regulatory Office at 415-972-3483 or brush.jason@epa.gov.

Sincerely,



KMG

Kathleen M. Goforth, Manager
Environmental Review Office (CED-2)

cc: Cameron Johnson, Army Corps of Engineers
Janet Adams, Solano Transportation Authority
Michelle Tovar, U.S. Fish and Wildlife Service
Doug Hampton, NOAA Fisheries

Appendix C Title VI Policy Statement

DEPARTMENT OF TRANSPORTATION

OFFICE OF THE DIRECTOR

P.O. Box 942873, MS-49

SACRAMENTO, CA 94273-0001

PHONE (916) 654-5266

FAX (916) 654-6608

TTY 711

*Flex your power!
Be energy efficient!*

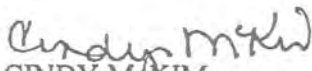
July 20, 2010

**TITLE VI
POLICY STATEMENT**

The California Department of Transportation, under Title VI of the Civil Rights Act of 1964 and related statutes, ensures that no person in the State of California shall, on the grounds of race, color, national origin, sex, disability, or age, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity it administers.

For information or guidance on how to file a complaint based on the grounds of race, color, national origin, sex, disability, or age, please visit the following web page:
http://www.dot.ca.gov/hq/bep/title_vi/t6_violated.htm.

Additionally, if you need this information in an alternate format, such as in Braille or in a language other than English, please contact Charles Wahnnon, Manager, Title VI and Americans with Disabilities Act Program, California Department of Transportation, 1823 14th Street, MS-79, Sacramento, CA 95811. Phone: (916) 324-1353 or toll free 1-866-810-6346 (voice), TTY 711, fax (916) 324-1869, or via email: charles_wahnnon@dot.ca.gov.


CINDY MCKIM
Director

Appendix D Glossary of Technical and Abbreviated Terms

Appendix D **GLOSSARY OF TECHNICAL & ABBREVIATED TERMS**

$\mu\text{g}/\text{m}^3$	micrograms per cubic meter
AADT	Annual Average Daily Traffic, represents an average 24-hour period of traffic on a facility in both directions averaged over one year, or the total of all traffic counted for one year, divided by 365 days.
ABAG	Association of Bay Area Governments
ADA	Americans with Disabilities Act
ADL	Aerially Deposited Lead
AFB	Air Force Base
APE	Area of Potential Effect, the area within which archaeological or historical resources may be affected by a project.
ARB	Air Resources Board
BA	Biological Assessment
BAAB	Bay Area Air Basin
BAAQMD	Bay Area Air Quality Management District
Basin Plans	Water Quality Control Plans
BART	Bay Area Rapid Transit
Beneficial Use	Use of a natural water resource that enhances the social, economic, and environmental well-being of the user. Twenty-one beneficial uses are defined for the waters of California, ranging from municipal and domestic supply to fisheries and wildlife habitat.
BMP	Best Management Practice
BO	Biological Opinion
CAAQS	California Ambient Air Quality Standards
CDFG	California Department of Fish and Game
CDMG	California Department of Mines and Geology
CEDD	California Employment Development Department
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CESA	California Endangered Species Act
CFGF	California Fish and Game Code
CFR	Code of Federal Regulations
CGS	California Geological Survey
CIA	Community Impact Assessment

CMP	Congestion Management Program
CNDDDB	California Natural Diversity Database
CNEL	Community Noise Equivalent Level
CNPS	California Native Plant Society
CO	Carbon Monoxide
Concept Plan	Jepson Parkway Concept Plan
Corps	U.S. Army Corps of Engineers
Cortese	Hazardous Waste and Substances Site List (or Cortese List) is named after State Assemblyman Dominic Cortese. PRC § 65962.5 requires Cal EPA to develop an updated Cortese list at least annually.
CPUC	California Public Utilities Commission
CRHP	California Register of Historical Places
CRLF	California red-legged frog
CTP	Comprehensive Transportation Plan
CTS	California tiger salamander
CWA	Clean Water Act
dB	decibels, a measurement unit for noise.
dBA	A-weighted decibels, the measurement of noise that best represents human perception.
dbh	Diameter at Breast Height
DEIR	Draft Environmental Impact Report
Department	California Department of Transportation or Caltrans
Draft MSHCP	Solano County Draft Multi-Species Habitat Conservation Plan
DOC	California Department of Conservation
DOF	California Department of Finance
DOT	U.S. Department of Transportation
EIR/EIS	Environmental Impact Report /Environmental Impact Statement
EO	Executive Order
EPA	U.S. Environmental Protection Agency
ESA	Federal Endangered Species Act of 1973; alternatively, can refer to a designated Environmentally Sensitive Area or Environmental Site Assessment
FEMA	Federal Emergency Management Agency
FERC	Federal Energy Regulatory Commission
FERS	Floodplain Evaluation Report Summary
FHWA	Federal Highway Administration
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act

FIRMs	Flood Insurance Rate Maps
FIS	Flood Insurance Studies
FMMP	Farmland Mapping and Monitoring Program
FPPA	Federal Farmland Protection Policy Act
FSSD	Fairfield-Suisun Sewer District
FTA	Federal Transit Administration
HCM	Highway Capacity Manual
HCP	Habitat Conservation Plan
HDM	Highway Design Manual
HOV	High-Occupancy Vehicle
HPSR	Historic Property Survey Report
ISA	Initial Site Assessment, a review of all published data sources on hazardous waste sites and hazardous waste releases in the vicinity of a project.
LAFCO	Local Agency Formation Commission
Lead Agency	Public agency that has primary responsibility for carrying out or approving a project that may have a significant effect on the environment and preparing the environmental document.
L_{eq}	Equivalent Sound Level
$L_{eq}[h]$	1-hour A-weighted Equivalent Sound Level
LEDPA	Least Environmentally Damaging Practicable Alternative
LESA	Land Evaluation and Site Assessment
LHS	Location Hydraulic Study
L_{max}	Maximum Sound Level
L_{min}	Minimum Sound Level
LOS	Level of Service
LU	landscape unit
LUST	leaking underground storage tank
L_x	Percentile-Exceeded Sound Level
Maintenance Area	A federal term to describe any geographic region of the United States designated nonattainment pursuant to the CA and subsequently redesignated to attainment subject to the requirement to develop a maintenance plan under Section 175A of the CAA.
MBTA	Migratory Bird Treaty Act
MCE	maximum credible earthquake
mg/kg	milligrams/kilogram
mg/l	milligrams per liter
MIS	Major Investment Study, prepared during the early planning phase to analyze

the range of modal alternatives and cost/benefits of “major metropolitan transportation investments,” which are defined as being highway or transit improvements of substantial cost that are expected to have a significant effect on capacity, traffic flow, level of service or mode share at the transportation corridor or subarea scale. TEA-21 eliminated the requirement for a separate MIS document, but the analysis still must be conducted.

Mmax	moment magnitude
MOU	Memorandum of Understanding
mph	Miles per Hour
MPO	Metropolitan Planning Organization, a federal designation for the forum for cooperative transportation decision-making for an urbanized area with population of more than 50,000.
MSAT	Mobile Source Air Toxics
MTC	Metropolitan Transportation Commission
MUTCD	Manual on Uniform Traffic Control Devices
NAAQS	National Ambient Air Quality Standards
NAC	Noise Abatement Criteria
NAHC	Native American Heritage Commission
NCCP	Natural Community Conservation Plan
ND	Negative Declaration
NEPA/404	National Environmental Policy Act (NEPA)/Clean Water Act (CWA) Section 404 Integration
NEPA	National Environmental Policy Act
NES	Natural Environment Study
NFIP	National Flood Insurance Program
NHPA	National Historic Preservation Act of 1966
NMFS	National Marine Fisheries Service
NO	nitric oxide
NO ₂	Nitrogen Dioxide
NOAA Fisheries	National Oceanic and Atmospheric Administration Fisheries Service
NOI	Notice of Intent
Nonattainment Area	Any geographic region of the United States that the EPA has designated as a nonattainment area for a transportation related pollutant(s) for which a NAAQS exists.
NOP	Notice of Preparation
NO _x	nitrogen oxide
NPDES	National Pollutant Discharge Elimination System Permit, required for facilities and activities that discharge waste into surface waters from a confined pipe or channel.

NRCS	Natural Resources Conservation Service
NRCS	U.S. Department of Agriculture, Natural Resources Conservation Service
NRHP	National Register of Historic Places
NSVAB	Northern Sacramento Valley Air Basins
NWIC	Historical Resources Information System, Northwest Information Center
O ₃	Ozone
OHWM	Ordinary high water mark, a distinguishing characteristic of Other Waters of the U.S.
OSHA	Occupational Safety and Health Administration
PA	Programmatic Agreement
PCBs	Polychlorinated Biphenyls
PG&E	Pacific Gas and Electric Company
PM ₁₀	Particulate Matter Less Than or Equal to 10 Microns in Diameter
PM _{2.5}	Particulate Matter Less Than or Equal to 2.5 Microns in Diameter
ppm	Parts Per Million
ppt	Parts Per Thousand
PRC	California Public Resources Code
Profile	Used to describe the vertical alignment and elevation of the roadway surface along a designated line, typically, the center of the roadway or median.
PSA	Preliminary Site Assessment
RCRA	Resource Conservation and Recovery Act
Responsible Agency	A “public agency, other than the lead agency that has responsibility for carrying out or approving a project” (PRC 21069). The CEQA Guidelines further explain the statutory definition by stating that a “responsible agency” includes “all public agencies other than the Lead Agency which have discretionary approval power over the project” (14 CCR 15381). State and local public agencies that have discretionary authority to issue permits, for example, fall into this category.
RIR	Relocation Impact Report
ROG	Reactive Organic Gases
ROW	right-of-way
RTP	Regional Transportation Plan
RWQCB	Regional Water Quality Control Board
SAA	Streambed Alteration Agreement
SACOG	Sacramento Area Council of Governments
Scoping	A process for determining the scope of issues to be addressed in an EA and EIS and for identifying significant issues to be analyzed in depth in an EIS.
SCWA	Solano County Water Agency

SFBAAB	San Francisco Bay Area Air Basin
SHPO	State Historic Preservation Officer
SID	Solano Irrigation District
Significance	CEQA defines a "significant effect on the environment" as "a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project, including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance. An economic or social change by itself shall not be considered a significant effect on the environment. A social or economic change related to a physical change may be considered in determining whether the physical change is significant" (15382). CEQA requires that the lead agency identify each "significant effect on the environment" resulting from the project and avoid or mitigate it. The CEQA Guidelines include mandatory findings of significance for certain effects, thus requiring the preparation of an EIR.
SIP	State Implementation Plan, the portion (or portions) of an applicable implementation plan approved or promulgated, or the most recent revision thereof, under sections 110, 301(d) and 175A of CAA.
SMP	Stormwater Management Plan
SO ₂	Sulfur Dioxide
SR	State Route
STA	Solano Transportation Authority
SWMP	Storm Water Management Plan
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	California State Water Resources Control Board, the principal authority for regulating the quantity and quality of waters in the state, established by act of the California legislature in 1967.
TCM	Transportation Control Measure, any measure specifically identified and committed to in the applicable implementation plan that is either one of the types listed in § 108 of the CAA, or any other measure for the purpose of reducing emissions or concentrations of air pollutants from transportation sources by reducing vehicle use or changing traffic flow or congestion conditions. Notwithstanding the above, vehicle technology-based, fuel-base, and maintenance-based measures that control the emissions from vehicles under fixed traffic conditions are not TCMs for the purposes of project-level conformity.
TIP	Transportation Improvement Program, a staged, multi-year, intermodal program of transportation projects that is consistent with the metropolitan transportation plan. It is a federal term.
TMP	Traffic Management Plan
TRB	Transportation Research Board
TSCA	Toxic Substances Control Act of 1976, federal law enacted to give EPA the ability to track industrial chemicals produced in or imported into the U.S.
TUSD	Travis Unified School District

U.S.	United States
UPRR	Union Pacific Railroad
URMP	Urban Runoff Management Program
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
V/C	volume-to-capacity ratio
VELB	Valley Elderberry Longhorn Beetle
VIA	Visual Impact Assessment
WDR	Waste Discharge Requirement
WQOs	Water Quality Objectives
YSAQMD	Yolo-Solano Air Quality Management District

Appendix E USFWS Species List



United States Department of the Interior
FISH AND WILDLIFE SERVICE

Sacramento Fish and Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, California 95825



May 19, 2010

Document Number: 100519122905

Sam Bacchini
PBS&J
1200 2nd Street
Sacramento, CA 95814

Subject: Species List for Jepson Parkway

Dear: Mr. Bacchini

We are sending this official species list in response to your May 19, 2010 request for information about endangered and threatened species. The list covers the California counties and/or U.S. Geological Survey 7½ minute quad or quads you requested.

Our database was developed primarily to assist Federal agencies that are consulting with us. Therefore, our lists include all of the sensitive species that have been found in a certain area *and also ones that may be affected by projects in the area*. For example, a fish may be on the list for a quad if it lives somewhere downstream from that quad. Birds are included even if they only migrate through an area. In other words, we include all of the species we want people to consider when they do something that affects the environment.

Please read Important Information About Your Species List (below). It explains how we made the list and describes your responsibilities under the Endangered Species Act.

Our database is constantly updated as species are proposed, listed and delisted. If you address proposed and candidate species in your planning, this should not be a problem. However, we recommend that you get an updated list every 90 days. That would be August 17, 2010.

Please contact us if your project may affect endangered or threatened species or if you have any questions about the attached list or your responsibilities under the Endangered Species Act. A list of Endangered Species Program contacts can be found at www.fws.gov/sacramento/es/branches.htm.

Endangered Species Division



U.S. Fish & Wildlife Service
Sacramento Fish & Wildlife Office
Federal Endangered and Threatened Species that Occur in
or may be Affected by Projects in the Counties and/or
U.S.G.S. 7 1/2 Minute Quads you requested

Document Number: 100519122905

Database Last Updated: April 29, 2010

Quad Lists

Listed Species

Invertebrates

Branchinecta conservatio

Conservancy fairy shrimp (E)

Critical habitat, Conservancy fairy shrimp (X)

Branchinecta lynchi

Critical habitat, vernal pool fairy shrimp (X)

vernal pool fairy shrimp (T)

Desmocerus californicus dimorphus

valley elderberry longhorn beetle (T)

Elaphrus viridis

Critical habitat, delta green ground beetle (X)

delta green ground beetle (T)

Lepidurus packardii

Critical habitat, vernal pool tadpole shrimp (X)

vernal pool tadpole shrimp (E)

Fish

Acipenser medirostris

green sturgeon (T) (NMFS)

Hypomesus transpacificus

Critical habitat, delta smelt (X)

delta smelt (T)

Oncorhynchus mykiss

Central Valley steelhead (T) (NMFS)

Oncorhynchus tshawytscha

Central Valley spring-run chinook salmon (T) (NMFS)

winter-run chinook salmon, Sacramento River (E) (NMFS)

Amphibians

Ambystoma californiense

California tiger salamander, central population (T)

Rana draytonii

California red-legged frog (T)

Reptiles

Thamnophis gigas

giant garter snake (T)

Birds

Rallus longirostris obsoletus

California clapper rail (E)

Sternula antillarum (= *Sterna*, = *albifrons*) *browni*

California least tern (E)

Mammals

Reithrodontomys raviventris

salt marsh harvest mouse (E)

Plants

Cirsium hydrophilum var. *hydrophilum*

Suisun thistle (E)

Cordylanthus mollis ssp. *mollis*

soft bird's-beak (E)

Lasthenia conjugens

Contra Costa goldfields (E)

Critical habitat, Contra Costa goldfields (X)

Orcuttia inaequalis

San Joaquin Valley Orcutt grass (T)

Proposed Species

Plants

Cirsium hydrophilum var. *hydrophilum*

Critical habitat, Suisun thistle (PX)

Cordylanthus mollis ssp. *mollis*

Critical habitat, soft bird's-beak (PX)

Quads Containing Listed, Proposed or Candidate Species:

DENVERTON (481B)

ELMIRA (498C)

County Lists

No county species lists requested.

Key:

(E) *Endangered* - Listed as being in danger of extinction.

(T) *Threatened* - Listed as likely to become endangered within the foreseeable future.

(P) *Proposed* - Officially proposed in the Federal Register for listing as endangered or threatened.

(NMFS) Species under the Jurisdiction of the [National Oceanic & Atmospheric Administration Fisheries Service](http://www.noaa.gov/fisheryservice/). Consult with them directly about these species.

Critical Habitat - Area essential to the conservation of a species.

(PX) *Proposed Critical Habitat* - The species is already listed. Critical habitat is being proposed for it.

(C) *Candidate* - Candidate to become a proposed species.

(V) Vacated by a court order. Not currently in effect. Being reviewed by the Service.

(X) *Critical Habitat* designated for this species

Important Information About Your Species List

How We Make Species Lists

We store information about endangered and threatened species lists by U.S. Geological Survey 7½ minute quads. The United States is divided into these quads, which are about the size of San Francisco.

The animals on your species list are ones that occur within, **or may be affected by** projects within, the quads covered by the list.

- Fish and other aquatic species appear on your list if they are in the same watershed as your quad or if water use in your quad might affect them.
- Amphibians will be on the list for a quad or county if pesticides applied in that area may be carried to their habitat by air currents.
- Birds are shown regardless of whether they are resident or migratory. Relevant birds on the county list should be considered regardless of whether they appear on a quad list.

Plants

Any plants on your list are ones that have actually been observed in the area covered by the list. Plants may exist in an area without ever having been detected there. You can find out what's in the surrounding quads through the California Native Plant Society's online [Inventory of Rare and Endangered Plants](#).

Surveying

Some of the species on your list may not be affected by your project. A trained biologist and/or botanist, familiar with the habitat requirements of the species on your list, should determine whether they or habitats suitable for them may be affected by your project. We recommend that your surveys include any proposed and candidate species on your list. See our [Protocol](#) and [Recovery Permits](#) pages.

For plant surveys, we recommend using the [Guidelines for Conducting and Reporting Botanical Inventories](#). The results of your surveys should be published in any environmental documents prepared for your project.

Your Responsibilities Under the Endangered Species Act

All animals identified as listed above are fully protected under the Endangered Species Act of 1973, as amended. Section 9 of the Act and its implementing regulations prohibit the take of a federally listed wildlife species. Take is defined by the Act as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect" any such animal.

Take may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or shelter (50 CFR §17.3).

Take incidental to an otherwise lawful activity may be authorized by one of two procedures:

- If a Federal agency is involved with the permitting, funding, or carrying out of a project that may result in take, then that agency must engage in a formal [consultation](#) with the Service.

During formal consultation, the Federal agency, the applicant and the Service work together to avoid or minimize the impact on listed species and their habitat. Such consultation would result in a biological opinion by the Service addressing the anticipated effect of the project on listed and proposed species. The opinion may authorize a limited level of incidental take.

- If no Federal agency is involved with the project, and federally listed species may be taken as part of the project, then you, the applicant, should apply for an incidental take permit. The Service may issue such a permit if you submit a satisfactory conservation plan for the species that would be affected by your project.

Should your survey determine that federally listed or proposed species occur in the area and are likely to be affected by the project, we recommend that you work with this office and the California Department of Fish and Game to develop a plan that minimizes the project's direct and indirect impacts to listed species and compensates for project-related loss of habitat. You should include the plan in any environmental documents you file.

Critical Habitat

When a species is listed as endangered or threatened, areas of habitat considered essential to its conservation may be designated as critical habitat. These areas may require special management considerations or protection. They provide needed space for growth and normal behavior; food, water, air, light, other nutritional or physiological requirements; cover or shelter; and sites for breeding, reproduction, rearing of offspring, germination or seed dispersal.

Although critical habitat may be designated on private or State lands, activities on these lands are not restricted unless there is Federal involvement in the activities or direct harm to listed wildlife.

If any species has proposed or designated critical habitat within a quad, there will be a separate line for this on the species list. Boundary descriptions of the critical habitat may be found in the Federal Register. The information is also reprinted in the Code of Federal Regulations (50 CFR 17.95). See our [Map Room](#) page.

Candidate Species

We recommend that you address impacts to candidate species. We put plants and animals on our candidate list when we have enough scientific information to eventually propose them for listing as threatened or endangered. By considering these species early in your planning process you may be able to avoid the problems that could develop if one of these candidates was listed before the end of your project.

Species of Concern

The Sacramento Fish & Wildlife Office no longer maintains a list of species of concern. However, various other agencies and organizations maintain lists of at-risk species. These lists provide essential information for land management planning and conservation efforts. [More info](#)

Wetlands

If your project will impact wetlands, riparian habitat, or other jurisdictional waters as defined by section 404 of the Clean Water Act and/or section 10 of the Rivers and Harbors Act, you will need to obtain a permit from the U.S. Army Corps of Engineers. Impacts to wetland habitats require site specific mitigation and monitoring. For questions regarding wetlands, please contact Mark Littlefield of this office at (916) 414-6580.

Updates

Our database is constantly updated as species are proposed, listed and delisted. If you address proposed and candidate species in your planning, this should not be a problem. However, we recommend that you get an updated list every 90 days. That would be August 17, 2010.

California Department of Fish and Game
Natural Diversity Database
Jepson Parkway
CNDDDB Query for the Denverton and Elmira 7.5 minute quadrangle maps.

Scientific Name/Common Name	Element Code	Federal Status	State Status	GRank	SRank	CDFG or CNPS
1 Actinemys marmorata western pond turtle	ARAAD02030			G3G4	S3	SC
2 Agelaius tricolor tricolored blackbird	ABPBXB0020			G2G3	S2	SC
3 Ambystoma californiense California tiger salamander	AAAAA01180	Threatened	unknown code...	G2G3	S2S3	SC
4 Asio flammeus short-eared owl	ABNSB13040			G5	S3	SC
5 Astragalus tener var. tener alkali milk-vetch	PDFAB0F8R1			G1T1	S1.1	1B.2
6 Athene cunicularia burrowing owl	ABNSB10010			G4	S2	SC
7 Atriplex cordulata heartscale	PDCHE040B0			G2?	S2.2?	1B.2
8 Atriplex depressa brittlescale	PDCHE042L0			G2Q	S2.2	1B.2
9 Atriplex joaquiniana San Joaquin spearscale	PDCHE041F3			G2	S2	1B.2
10 Branchinecta conservatio Conservancy fairy shrimp	ICBRA03010	Endangered		G1	S1	
11 Branchinecta lynchi vernal pool fairy shrimp	ICBRA03030	Threatened		G3	S2S3	
12 Branchinecta mesoallensis midvalley fairy shrimp	ICBRA03150			G2	S2	
13 Buteo regalis ferruginous hawk	ABNKC19120			G4	S3S4	
14 Buteo swainsoni Swainson's hawk	ABNKC19070		Threatened	G5	S2	
15 Centromadia parryi ssp. parryi pappose tarplant	PDAST4R0P2			G4T2	S2.2	1B.2
16 Cirsium hydrophilum var. hydrophilum Suisun thistle	PDAST2E1G1	Endangered		G1T1	S1.1	1B.1
17 Coastal Brackish Marsh	CTT52200CA			G2	S2.1	
18 Cordylanthus mollis ssp. hispidus hispid bird's-beak	PDSCR0J0D1			G2T2	S2.1	1B.1
19 Cordylanthus mollis ssp. mollis soft bird's-beak	PDSCR0J0D2	Endangered	Rare	G2T1	S1.1	1B.2
20 Delphinium recurvatum recurved larkspur	PDRAN0B1J0			G2	S2.2	1B.2
21 Downingia pusilla dwarf downingia	PDCAM060C0			G3	S3.1	2.2
22 Dumontia oregonensis hairy water flea	ICBRA23010			G1G3	S1	
23 Elaphrus viridis Delta green ground beetle	IICOL36010	Threatened		G1	S1	

California Department of Fish and Game
Natural Diversity Database
Jepson Parkway
CNDDDB Query for the Denverton and Elmira 7.5 minute quadrangle maps.

Scientific Name/Common Name	Element Code	Federal Status	State Status	GRank	SRank	CDFG or CNPS
24 Fritillaria pluriflora adobe-lily	PMLIL0V0F0			G3	S3	1B.2
25 Geothlypis trichas sinuosa saltmarsh common yellowthroat	ABPBX1201A			G5T2	S2	SC
26 Hydrochara rickseckeri Ricksecker's water scavenger beetle	IICOL5V010			G1G2	S1S2	
27 Isocoma arguta Carquinez goldenbush	PDAST57050			G1	S1.1	1B.1
28 Lasiurus blossevillii western red bat	AMACC05060			G5	S3?	SC
29 Lasthenia conjugens Contra Costa goldfields	PDAST5L040	Endangered		G1	S1.1	1B.1
30 Laterallus jamaicensis coturniculus California black rail	ABNME03041		Threatened	G4T1	S1	
31 Lathyrus jepsonii var. jepsonii Delta tule pea	PDFAB250D2			G5T2	S2.2	1B.2
32 Legenere limosa legenere	PDCAM0C010			G2	S2.2	1B.1
33 Lepidurus packardii vernal pool tadpole shrimp	ICBRA10010	Endangered		G3	S2S3	
34 Lilaeopsis masonii Mason's lilaeopsis	PDAPI19030		Rare	G3	S3.1	1B.1
35 Linderiella occidentalis California linderiella	ICBRA06010			G3	S2S3	
36 Melospiza melodia maxillaris Suisun song sparrow	ABPBXA301K			G5T2	S2	SC
37 Navarretia leucocephala ssp. bakeri Baker's navarretia	PDPLM0C0E1			G4T2	S2.1	1B.1
38 Northern Claypan Vernal Pool	CTT44120CA			G1	S1.1	
39 Orcuttia inaequalis San Joaquin Valley Orcutt grass	PMPOA4G060	Threatened	Endangered	G2	S2.1	1B.1
40 Plagiobothrys hystriculus bearded popcorn-flower	PDBOR0V0H0			G1	S1.1	1B.1
41 Pogonichthys macrolepidotus Sacramento splittail	AFCJB34020			G2	S2	SC
42 Rallus longirostris obsoletus California clapper rail	ABNME05016	Endangered	Endangered	G5T1	S1	
43 Reithrodontomys raviventris salt-marsh harvest mouse	AMAFF02040	Endangered	Endangered	G1G2	S1S2	
44 Sidalcea keckii Keck's checkerbloom	PDMAL110D0	Endangered		G1	S1.1	1B.1
45 Sorex ornatus sinuosus Suisun shrew	AMABA01103			G5T1	S1	SC
46 Symphyotrichum lentum Suisun Marsh aster	PDASTE8470			G2	S2	1B.2

California Department of Fish and Game
Natural Diversity Database
Jepson Parkway
CNDDDB Query for the Denverton and Elmira 7.5 minute quadrangle maps.

Scientific Name/Common Name	Element Code	Federal Status	State Status	GRank	SRank	CDFG or CNPS
47 Trifolium amoenum showy rancheria clover	PDFAB40040	Endangered		G1	S1.1	1B.1
48 Trifolium depauperatum var. hydrophilum saline clover	PDFAB400R5			G5T2?	S2.2?	1B.2
49 Valley Needlegrass Grassland	CTT42110CA			G1	S3.1	

Appendix F Farmland Conversion Impact Rating

FARMLAND CONVERSION IMPACT RATING

PART I (To be completed by Federal Agency)		Date Of Land Evaluation Request February 13, 2004	
Name Of Project Jepson Parkway		Federal Agency Involved Federal Highway Administration	
Proposed Land Use Roadway widening and related improvements		County And State Solano County, CA	
PART II (To be completed by SCS)		Date Request Received By SCS 2/13/04	
Does the site contain prime, unique, statewide or local important farmland? (If no, the FPPA does not apply - do not complete additional parts of this form)		Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Acres Irrigated: 171,700 Average Farm Size: 391
Major Crop(s) Hay, Wheat, Pasture	Farmable Land In Govt. Jurisdiction Acres: 233,000 %: 40	Amount Of Farmland As Defined In FPPA Acres: NOT AVAILABLE	
Name Of Land Evaluation System Used CA STATE	Name Of Local Site Assessment System NONE	Date Land Evaluation Returned By SCS 2/24/03	

PART III (To be completed by Federal Agency)	Alternative Site Rating			
	Site X B	Site X C	Site X D	Site X E
A. Total Acres To Be Converted Directly	75.4	68.6	64.5	29.6
B. Total Acres To Be Converted Indirectly	0	0	0	0
C. Total Acres In Site	270.0	270.0	260.0	210.0
PART IV (To be completed by SCS) Land Evaluation Information				
A. Total Acres Prime And Unique Farmland	31.2	31.2	31.2	0
B. Total Acres Statewide And Local Important Farmland	2.1	2.1	2.1	0
C. Percentage Of Farmland In County Or Local Govt. Unit To Be Converted	0.00014	0.00014	0.00014	0
D. Percentage Of Farmland In Govt. Jurisdiction With Same Or Higher Relative Value	0	0	0	0
PART V (To be completed by SCS) Land Evaluation Criterion Relative Value Of Farmland To Be Converted (Scale of 0 to 100 Points)	48.8	54.9	55.6	48.8

PART VI (To be completed by Federal Agency)	Maximum Points				
Site Assessment Criteria (These criteria are explained in 7 CFR 658.5(b))					
1. Area In Nonurban Use	15	7	7	7	2
2. Perimeter In Nonurban Use	10	4	4	4	1
3. Percent Of Site Being Farmed	20	9	9	9	3
4. Protection Provided By State And Local Government	20	9	9	9	3
5. Distance From Urban Builtup Area	NA	0	0	0	0
6. Distance To Urban Support Services	NA	0	0	0	0
7. Size Of Present Farm Unit Compared To Average	10	0	0	0	0
8. Creation Of Nonfarmable Farmland	25	0	0	0	0
9. Availability Of Farm Support Services	5	5	5	5	5
10. On-Farm Investments	20	10	10	10	5
11. Effects Of Conversion On Farm Support Services	25	0	0	0	0
12. Compatibility With Existing Agricultural Use	10	5	5	5	5
TOTAL SITE ASSESSMENT POINTS	160	49	49	49	24
PART VII (To be completed by Federal Agency)					
Relative Value Of Farmland (From Part V)	100	48.8	54.9	55.6	48.8
Total Site Assessment (From Part VI above or a local site assessment)	160	49	49	49	24
TOTAL POINTS (Total of above 2 lines)	260	97.8	103.9	104.6	72.8

Site Selected:	Date Of Selection	Was A Local Site Assessment Used? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Reason For Selection:		

STEPS IN THE PROCESSING THE FARMLAND AND CONVERSION IMPACT RATING FORM

Step 1 — Federal agencies involved in proposed projects that may convert farmland, as defined in the Farmland Protection Policy Act (FPPA) to nonagricultural uses, will initially complete Parts I and III of the form.

Step 2 — Originator will send copies A, B and C together with maps indicating locations of site(s), to the Soil Conservation Service (SCS) local field office and retain copy D for their files. (Note: SCS has a field office in most counties in the U.S. The field office is usually located in the county seat. A list of field office locations are available from the SCS State Conservationist in each state).

Step 3 — SCS will, within 45 calendar days after receipt of form, make a determination as to whether the site(s) of the proposed project contains prime, unique, statewide or local important farmland.

Step 4 — In cases where farmland covered by the FPPA will be converted by the proposed project, SCS field offices will complete Parts II, IV and V of the form.

Step 5 — SCS will return copy A and B of the form to the Federal agency involved in the project. (Copy C will be retained for SCS records).

Step 6 — The Federal agency involved in the proposed project will complete Parts VI and VII of the form.

Step 7 — The Federal agency involved in the proposed project will make a determination as to whether the proposed conversion is consistent with the FPPA and the agency's internal policies.

INSTRUCTIONS FOR COMPLETING THE FARMLAND CONVERSION IMPACT RATING FORM

Part I: In completing the "County And State" questions list all the local governments that are responsible for local land controls where site(s) are to be evaluated.

Part III: In completing item B (Total Acres To Be Converted Indirectly), include the following:

1. Acres not being directly converted but that would no longer be capable of being farmed after the conversion, because the conversion would restrict access to them.

2. Acres planned to receive services from an infrastructure project as indicated in the project justification (e.g. highways, utilities) that will cause a direct conversion.

Part VI: Do not complete Part VI if a local site assessment is used.

Assign the maximum points for each site assessment criterion as shown in §658.5(b) of CFR. In cases of corridor-type projects such as transportation, powerline and flood control, criteria #5 and #6 will not apply and will be weighed zero, however, criterion #8 will be weighed a maximum of 25 points, and criterion #11 a maximum of 25 points.

Individual Federal agencies at the national level may assign relative weights among the 12 site assessment criteria other than those shown in the FPPA rule. In all cases where other weights are assigned, relative adjustments must be made to maintain the maximum total weight points at 160.

In rating alternative sites, Federal agencies shall consider each of the criteria and assign points within the limits established in the FPPA rule. Sites most suitable for protection under these criteria will receive the highest total scores, and sites least suitable, the lowest scores.

Part VII: In computing the "Total Site Assessment Points", where a State or local site assessment is used and the total maximum number of points is other than 160, adjust the site assessment points to a base of 160. Example: if the Site Assessment maximum is 200 points; and alternative Site "A" is rated 180 points:

Total points assigned Site A = $\frac{180}{200} \times 160 = 144$ points for Site "A."

Maximum points possible 200

Appendix G List of Technical Studies

List of Technical Studies

- España Geotechnical Consulting. 2005. Initial Site Assessment for the Proposed Jepson Parkway Project, Solano County, California. July. Prepared for Jones & Stokes, Sacramento, CA. Roseville, CA.
- PBS&J. 2007. Updated Transportation/Circulation Impacts Report: Jepson Parkway Project. November. Prepared for Solano Transportation Authority Prepared for Solano Transportation Authority and the California Department of Transportation.
- Jones & Stokes. 2005. Visual Resources Technical Report: Jepson Parkway Project. September. (Updated by PBS&J, March 2008) Sacramento, CA. Prepared for Solano Transportation Authority and the California Department of Transportation.
- Jones & Stokes. 2005. Hydrology and Water Quality Technical Report: Jepson Parkway Project. August. Sacramento, CA. (Addendum by PBS&J, March 2011) Prepared for Solano Transportation Authority and the California Department of Transportation.
- PBS&J. 2008. Updated Air Quality Technical Report: Jepson Parkway Project. May. Updated by PBS&J, February 2011. Prepared for Solano Transportation Authority and the California Department of Transportation.
- PBS&J. 2008. Updated Noise Study Technical Report: Jepson Parkway Project. May (Revised October 2008). Prepared for Solano Transportation Authority and the California Department of Transportation.
- PBS&J. 2010. Noise Abatement Decision Report (NADR): Jepson Parkway Project. November. Prepared for Solano Transportation Authority and the California Department of Transportation.
- Jones & Stokes. 2005. Delineation of Waters of the United States: Jepson Parkway Project. October. Sacramento, CA. Prepared for Solano Transportation Authority and the California Department of Transportation.
- Jones & Stokes. 2006. Historic Property Survey Report: Jepson Parkway Project. January. Sacramento, CA. Prepared for Solano Transportation Authority and the California Department of Transportation.
- Jones & Stokes. 2006. Natural Environment Study: Jepson Parkway Project. February. (Updated by PBS&J, December 2007 and August 2009) Sacramento, CA. Prepared for Solano Transportation Authority and the California Department of Transportation.
- Trott, R. 2006. Community Impact Assessment: Jepson Parkway Project. February. (Updated by PBS&J, April 2008) (Addendum by PBS&J, August 2009) Sacramento, CA. Prepared for Solano Transportation Authority and the California Department of Transportation.
- Trott, R. 2006b. Relocation Impact Report: Jepson Parkway Project. February. (Updated by PBS&J, December 2007) Sacramento, CA. Prepared for Solano Transportation Authority and the California Department of Transportation.

- PBS&J. 2008. Mobile Source Air Toxics Analysis. January. Prepared for Solano Transportation Authority and the California Department of Transportation.
- Ninyo & Moore. 2008. Updated Initial Site Assessment Jepson Parkway Project. April. Prepared for PBS&J, San Francisco, CA.
- PBS&J. 2008. Updated Location Hydraulic Study Jepson Parkway Project. March. (Addendum by PBS&J, March 2011) Prepared for Solano Transportation Authority and the California Department of Transportation.
- PBS&J. 2009. Biological Assessment: Jepson Parkway Project, Solano County, California. March. Prepared for Solano Transportation Authority and the California Department of Transportation.
- PBS&J. 2009 Jepson Parkway Project Biological Assessment for NOAA Fisheries No Effect Documentation Prepared for Environmental Impact Statement. March. Prepared for Solano Transportation Authority and the California Department of Transportation.
- Project Level PM2.5 Conformity Documentation, February 2011.

Appendix H Mitigation Monitoring and Reporting Record

Date: May 2011
Environmental Coordinator:
Solano Transportation Authority
Phone: (707) 424-6075

MITIGATION MONITORING and REPORTING RECORD
(MMRR)
Page 1 of 33

Task and Brief Description	Responsible Agency	Timing / Phase	Action Taken to Comply with Task	Task Completed	Remarks	Environmental Compliance
<u>Community Impacts</u>						
<p><i>Mitigation Measure CI-1: Reconstruct Displaced Driveways and Replace Displaced Fencing, Signage, Trees, and Landscaping.</i></p> <ul style="list-style-type: none"> Reconstruct driveways displaced by roadway construction to allow for safe property access and use. To the extent possible, fencing, signage, trees, and other landscaping displaced by the project on affected residential, business, and agricultural properties shall be replaced. 	STA or its representative	Design/ Construction				
<p><i>Mitigation Measure CI-2: Relocate the Travis Unified School District Facility.</i></p> <ul style="list-style-type: none"> If the project would make the TUSD property untenable for continued use as a district meeting and storage facility, the project sponsors shall coordinate with the TUSD to locate and purchase a site for relocation of the facility. 	STA or its representative	Design/ Construction				
<u>Utilities/Emergency Services</u>						
<p><i>Mitigation Measure UT-1: Notify Emergency Service Providers and Allow Emergency Vehicles on Closed Roadways.</i></p> <ul style="list-style-type: none"> Emergency service providers such as police, fire, and ambulance services shall be notified at least one week before any streets or intersections are closed during the construction phase. To the extent possible, emergency vehicles shall be allowed through roadway segments temporarily closed for construction purposes. These measures shall also be incorporated into the Transportation Management Plan to be prepared for the project. 	STA or its representative	Preconstruction				

Date: May 2011
Environmental Coordinator:
Solano Transportation Authority
Phone: (707) 424-6075

MITIGATION MONITORING and REPORTING RECORD
(MMRR)
Page 2 of 33

0
0.0
RPSTPL 6249 (004)

Task and Brief Description	Responsible Agency	Timing / Phase	Action Taken to Comply with Task	Task Completed	Remarks	Environmental Compliance
<u>Traffic and Transportation/Pedestrian and Bicycle Facilities</u>						
<p><i>Mitigation Measure TRA-1: Evaluate Unsignalized Study Intersections in the Corridor for Signal Warrants.</i></p> <ul style="list-style-type: none"> A full set of warrants for unsignalized study intersections in the corridor shall be investigated based on field-measured traffic data and a thorough study of traffic and roadway conditions by an experienced engineer under the direction of STA or the local jurisdiction. Regular monitoring of actual traffic conditions and accident data shall be undertaken by the jurisdiction responsible for implementation to prioritize and program intersections for signalization where warrants are met. 	STA or its representative	Design/ Post construction monitoring				
<p><i>Mitigation Measure TRA-2: Implement Traffic Management Plan During Construction.</i></p> <ul style="list-style-type: none"> Prepare and implement a construction phasing plan and Traffic Management Plan (TMP) that defines how traffic operations would be managed and maintained during each phase of construction and shall include the following: <ul style="list-style-type: none"> At least one lane in each direction of the alignment will be available at all times during the construction process. All cross-traffic lanes will be kept open during construction except for during temporary non-peak-hour closures. At least one lane under flagger control will be provided at all times during temporary intersection closures. Property owners of all businesses adjacent to the construction areas shall be consulted. To the maximum practical extent, the plan shall: <ul style="list-style-type: none"> Identify the locations for temporary detours and temporary roads to facilitate local traffic patterns and 	STA or its representative	Preconstruction				

Date: May 2011
Environmental Coordinator:
Solano Transportation Authority
Phone: (707) 424-6075

MITIGATION MONITORING and REPORTING RECORD
(MMRR)
Page 3 of 33

Task and Brief Description	Responsible Agency	Timing / Phase	Action Taken to Comply with Task	Task Completed	Remarks	Environmental Compliance
<p>through-traffic requirements. If temporary roadway or intersection closures are required for construction purposes, the TMP will specify off-peak timeframes for closures.</p> <ul style="list-style-type: none"> • Detail how access will be maintained to individual businesses, residences, and farm lands where construction activities may interfere with ingress and egress. Any driveway closures shall take place during non-business hours. • Notify affected businesses and residents at least two weeks in advance of lane or roadway closures or impacts related to access. Personnel of emergency response services such as fire and police protection will also be notified one to two weeks in advance of any lane or road closures so that alternate routes can be taken. • Specify predetermined haul routes from staging areas to construction sites and to disposal areas of agreement with the appropriate jurisdiction(s) prior to construction. The routes shall follow streets and highways that provide the safest route, minimize truck traffic impacts to sensitive receptors, and have the least impact on traffic. • Require the contractor to provide information to the public using signs, press releases, and other media tools of traffic closures, detours, or temporary displacement of left-turn lanes. • Identify a single phone number that property owners and businesses can call for construction scheduling, phasing, and duration information, as well as for complaints. • Identify construction activities that must take place during off-peak traffic hours or result in temporary road closures due to concerns regarding traffic safety or traffic congestion. Any road closures will be done at night under ordinary circumstances. If unforeseen 						

Task and Brief Description	Responsible Agency	Timing / Phase	Action Taken to Comply with Task	Task Completed	Remarks	Environmental Compliance
circumstances require road closing during the day, the appropriate jurisdiction(s) shall be consulted.						
<u>Visual/Aesthetics</u>						
<p><i>Mitigation Measure VIS-1: Install Temporary Visual Barriers between Construction Staging Areas and Residences.</i></p> <ul style="list-style-type: none"> During construction, fencing (e.g., chain link with slats or fencing made of windscreen material) will be installed to obstruct undesirable views of construction staging areas from adjacent residences. 	STA or its representative	Preconstruction				
<p><i>Mitigation Measure VIS-2: Prepare and Implement a Lighting Plan.</i></p> <ul style="list-style-type: none"> Prepare and implement a lighting plan: <ul style="list-style-type: none"> Street lights will be cut-off-type fixtures that cast low-angle illumination to minimize incidental spillover of light onto adjacent properties and open space. Fixtures that project upward and horizontally shall not be used. Street lights will be shaded and directed away from the residential and open space areas adjacent to the project site. Street light lamps will provide natural light qualities, and will be used only where necessary for safety and security purposes. Street light mountings will be downcast and the height of placement minimized to reduce potential for backscatter into the nighttime sky and incidental spillover into adjacent properties and open space. Street light mountings shall have low-sheen, nonreflective finishes. 	STA or its representative	Design/ Preconstruction				

Date: May 2011
Environmental Coordinator:
Solano Transportation Authority
Phone: (707) 424-6075

MITIGATION MONITORING and REPORTING RECORD
(MMRR)
Page 5 of 33

Task and Brief Description	Responsible Agency	Timing / Phase	Action Taken to Comply with Task	Task Completed	Remarks	Environmental Compliance
<p><i>Mitigation Measure VIS-3: Construct Walls and Barriers with Low-Sheen and Non-Reflective Surface Materials.</i></p> <ul style="list-style-type: none"> Retaining walls and barriers (e.g., railings) will be designed with low-sheen, nonreflective surface materials to reduce potential for glare. 	STA or its representative	Design				
<p><i>Mitigation Measure VIS-4: Incorporate Design Characteristics to Minimize Visual Obtrusion.</i></p> <ul style="list-style-type: none"> Structural and vertical elements will have a minimum profile to reduce visual intrusion and obstruction. Supports, piers, and railings will have an “open” structure (i.e., “transparency”) wherever possible to facilitate views beyond. Vertical elements will be designed at even intervals and spacing to create aesthetic rhythm. Finished surfaces on all vertical features will have color and sheen that minimize contrast with the daytime sky. Major vertical elements at locations identified by the local agency, such as bridges and creek crossings, will be celebrated through public art and landscape enhancements and will be used as community gateway features. 	STA or its representative	Design				
<p><i>Mitigation Measure VIS-5: Provide Aesthetic Treatments to All Noise Barriers.</i></p> <ul style="list-style-type: none"> Aesthetic treatments to all noise barriers that may be required for the chosen alternative will be added, including landscaping and low-sheen and non-reflective surface materials. 	STA or its representative	Design				

Task and Brief Description	Responsible Agency	Timing / Phase	Action Taken to Comply with Task	Task Completed	Remarks	Environmental Compliance
<u>Hydrology and Floodplains</u>						
<p><i>Mitigation Measure HYD-1: Prepare Detailed Master Drainage Plan (MDP) and Implement Plan Requirements.</i></p> <ul style="list-style-type: none"> • Prepare a detailed drainage report (also called a master drainage plan or runoff design report) for the entire construction area. • Include in the project design, drawings, and plans the flow and drainage control requirements identified in the MDP in order to prevent flood and flood flow impacts. • The drainage system will be designed in accordance with the flood control design criteria of Solano County and the Solano County Water Agency (SCWA). • The MDP shall ensure that project design and drainage plans comply with Executive Order 11988, Sections 3.b and 4.c. • The MDP shall be prepared by a registered water resources civil engineer before site development begins. <ul style="list-style-type: none"> • A description of the proposed maintenance program for the drainage system(s). 	STA or its representative	Design/ Preconstruction				
<p><i>Mitigation Measure HYD-2: Improve Culverts under Vanden Road and Raise Roadway.</i></p> <ul style="list-style-type: none"> • The existing culverts under Vanden Road at Union Creek shall be replaced with a bridge or large culvert sufficient for adequate hydraulic capacity during a 100-year flood event. A detailed hydraulic analysis (see Mitigation Measure HYD-1) of the design configurations shall be conducted. • The roadway shall also be raised in this area by approximately 1.6 feet to 3.3 feet above the existing road elevation to be higher than the elevation of the mapped floodplain. 	STA or its representative	Design/ Preconstruction				

Date: May 2011
Environmental Coordinator:
Solano Transportation Authority
Phone: (707) 424-6075

MITIGATION MONITORING and REPORTING RECORD
(MMRR)
Page 7 of 33

Task and Brief Description	Responsible Agency	Timing / Phase	Action Taken to Comply with Task	Task Completed	Remarks	Environmental Compliance
<u>Geology, Soils, and Seismicity</u>						
<p><i>Mitigation Measure GEO-1: Prepare and Implement Paleontological Mitigation Plan.</i></p> <ul style="list-style-type: none"> A Paleontological Mitigation Plan shall be prepared by a qualified paleontologist (M.S. or PhD in paleontology or geology familiar with paleontological procedures and techniques) that addresses, at a minimum the following: pre-excavation survey, literature review, repository review; training for construction personnel; monitoring and data recovery; specimen curation; and documentation requirements. 	STA or its representative	Design				
<u>Hazardous Waste and Materials</u>						
<p><i>Mitigation Measure HAZ-1: Develop a Health and Safety Plan to Address Worker Health and Safety.</i></p> <ul style="list-style-type: none"> A Health and Safety Plan (HSP) shall be prepared to address worker safety when working with potentially hazardous materials, including biological contaminants, potentially lead-based paint, transformer fluids, soils potentially containing ADL, and other construction-related materials within the right-of-way for any soil disturbance. Confirm the location of underground pipeline crossings and prepare and implement the HSP for excavation work at these pipeline crossings prior to excavation activities. 	STA or its representative	Preconstruction				

Task and Brief Description	Responsible Agency	Timing / Phase	Action Taken to Comply with Task	Task Completed	Remarks	Environmental Compliance
<p><i>Mitigation Measure HAZ-2: Perform Additional Literature Review to Identify Potential for Historical Contamination.</i></p> <ul style="list-style-type: none"> During the design phase, STA shall perform a literature review, including a file review at the Solano County Resource Management Agency, to determine past site uses and the extent of any hazardous materials issues that may exist at the Adco Auto Wreckers on Cement Hill Road. If there is a potential for contamination from these sites within the proposed alignment in this area, soil sampling and screening for potential contaminants shall be conducted. If contaminated soil and/or groundwater are encountered during the site screening, a Health and Safety Plan shall be completed to address potential worker health and safety issues while working with contaminated soil and/or groundwater and a Soil Management Plan shall be completed to address excavation, removal, and disposal of contaminated soil. 	STA or its representative	Preconstruction				
<p><i>Mitigation Measure HAZ-3: Conduct Soil Sampling and Analysis to Identify and Remove Contaminated Soil.</i></p> <ul style="list-style-type: none"> The construction contractor shall perform a detailed walking reconnaissance of the UPRR and former Sacramento Northern Railroad tracks immediately adjacent to or intersected by the planned roadway alignment. If potentially contaminated sites are encountered, a Soil Management Plan shall be completed to address testing, excavation, removal, and disposal of contaminated soil. 	STA or its representative	Preconstruction				
<p><i>Mitigation Measure HAZ-4: Conduct Sampling, Testing, Removal, Storage, Transportation, and Disposal of Yellow Striping along Existing Roadway.</i></p> <ul style="list-style-type: none"> Before construction, sampling and testing of yellow pavement striping scheduled for removal shall be performed to determine whether lead is present. 	STA or its representative	Construction				

Task and Brief Description	Responsible Agency	Timing / Phase	Action Taken to Comply with Task	Task Completed	Remarks	Environmental Compliance
<p><i>Mitigation Measure HAZ-5: Conduct Sampling and Analysis of Transformer Fluid from Electrical Transformers.</i></p> <ul style="list-style-type: none"> If leaks from electrical transformers that will either remain within the project construction zone or require removal or relocation are encountered before or during construction, the transformer fluid shall be sampled and analyzed by qualified personnel for detectable levels of PCBs. If PCBs are detected, the transformer shall be removed and disposed of in accordance with regulatory agency requirements. Any stained soil encountered below electrical transformers with detectable PCB levels shall also be handled and disposed of in accordance with regulatory agency requirements. 	STA or its representative	Preconstruction/ Construction				
<p><i>Mitigation Measure HAZ-6: Conduct Testing for Aerially Deposited Lead in Surface and Near-Surface Soils.</i></p> <ul style="list-style-type: none"> During the design phase of the project, the contractor shall conduct a preliminary investigation and screening for ADL for portions of the project located immediately adjacent to Leisure Town Road (north of Alamo Drive) and Walters Road (from south of Air Base Parkway to Petersen Road) to determine the levels of lead in the surface and near-surface soils. If ADL is encountered above the regulatory thresholds, a Soil Management Plan, approved by the Solano County Resource Management Agency or other appropriate regulatory authority, shall be completed to address excavation, removal, and disposal of contaminated soil. 	STA or its representative	Preconstruction				
<p><i>Mitigation Measure HAZ-7: Time Construction to Avoid Exposure of Construction Workers to Respiratory Irritants from Aerially Applied Chemicals.</i></p> <ul style="list-style-type: none"> Construction activities adjacent to agricultural fields shall not occur during aerial application of chemicals and for at least 	STA or its representative	Construction				

Task and Brief Description	Responsible Agency	Timing / Phase	Action Taken to Comply with Task	Task Completed	Remarks	Environmental Compliance
<p>24 hours following application or for as long as recommended by the chemical label, whichever time period is greater.</p> <ul style="list-style-type: none"> The contractor shall coordinate with individual growers on the timing of aerially applied chemicals on parcels within or adjacent to the corridor to avoid effects on workers during construction. 						
<p><i>Mitigation Measure HAZ-8: Test Soil and Groundwater at LUST and UST sites and Remove Contaminated Soil.</i></p> <ul style="list-style-type: none"> Soil and groundwater samples will be taken using direct push Geoprobe equipment within the vicinity of the UST and LUST sites. Leaking storage tanks at the Bonfare Market shall be inspected and sampled for contamination. Impacted groundwater will be containerized in a Baker tank and analyzed prior to evaluating disposal options. An environmental report summarizing field activities and analytical results will be prepared for sites. 	STA or its representative	Construction				
<p><i>Mitigation Measure HAZ-9: Phase 2 Environmental Site Assessments (ESA).</i></p> <ul style="list-style-type: none"> Site specific Phase 2 ESAs will be conducted for each parcel that requires a full or partial right-of-way take. 	STA or its representative	Design/ Preconstruction				
<u>Air Quality</u>						
<p><i>Mitigation Measure AQ-1: Implement Construction Mitigation Measures to Reduce Construction Equipment Exhaust Emissions.</i></p> <p>To the extent possible, the following construction equipment exhaust control measures may be implemented as part of the project:</p>	STA or its representative	Construction				

Date: May 2011
Environmental Coordinator:
Solano Transportation Authority
Phone: (707) 424-6075

MITIGATION MONITORING and REPORTING RECORD
(MMRR)
Page 11 of 33

Task and Brief Description	Responsible Agency	Timing / Phase	Action Taken to Comply with Task	Task Completed	Remarks	Environmental Compliance
<ul style="list-style-type: none"> Restricting unnecessary vehicle idling to 5 minutes; requiring use of late model engines; requiring use of low-emission diesel products; requiring use of alternative fuels; requiring use of engine retrofit technology; requiring use of after-treatment products; and/or implementing other options as they become available. 						
<p><i>Mitigation Measure AQ-2: Implement Construction Mitigation Measures to Reduce Construction Emissions, as Required by the BAAQMD.</i></p> <p>The following control measures may be implemented, to the extent possible, as part of the project:</p> <ul style="list-style-type: none"> Water exposed surfaces twice daily Cover all trucks hauling soil, sand, and other loose materials or maintain at least 2 feet of freeboard Pave, apply water three times daily, or apply nontoxic soil stabilizers on all unpaved access roads, parking areas, and staging areas at construction sites Sweep daily with water sweepers all paved access roads, parking areas, and staging areas at construction sites Sweep streets daily with water sweepers if visible soil material is carried onto adjacent public streets Hydroseed or apply nontoxic soil stabilizers to inactive construction areas (previously graded areas inactive for 10 days or more) Enclose, cover, water twice daily, or apply nontoxic soil binders to exposed stockpiles (dirt, sand, etc.) 	STA or its representative	Construction				

Task and Brief Description	Responsible Agency	Timing / Phase	Action Taken to Comply with Task	Task Completed	Remarks	Environmental Compliance
<ul style="list-style-type: none"> Limit traffic speeds on unpaved roads to 15 mph Install sandbags or other erosion control measures to prevent silt runoff to public roadways Replace vegetation in disturbed areas as quickly as possible. 						
<u>Noise</u>						
<p><i>Mitigation Measure N-1: Employ Noise-Reduction Construction Measures.</i></p> <ul style="list-style-type: none"> The construction contractor will employ noise-reducing construction practices such that noise from construction does not exceed 90 dBA at noise-sensitive uses during daytime hours. Measures that can be used to limit noise may include the following: <ul style="list-style-type: none"> Locating equipment as far as practical from noise-sensitive uses Using sound-control devices such as mufflers on equipment Turning off idling equipment Using equipment that is quieter than standard equipment Selecting construction-access routes that affect the fewest number of people Using noise-reducing enclosures around noise-generating equipment Constructing barriers between noise sources and noise-sensitive land uses or taking advantage of existing barrier features (terrain, structures) to block sound transmission Temporarily relocating residents during periods of high construction noise that cannot be reduced effectively by other means 	STA or its representative	Construction				

Task and Brief Description	Responsible Agency	Timing / Phase	Action Taken to Comply with Task	Task Completed	Remarks	Environmental Compliance
<ul style="list-style-type: none"> The construction contractor will prepare a detailed noise control plan based on the construction methods proposed. 						
<p><i>Mitigation Measure N-2: Prohibit Nighttime Construction Activities.</i></p> <ul style="list-style-type: none"> Consistent with Vacaville Noise Ordinance, construction activities are prohibited between 10:00 p.m. and 6:00 a.m. Monday through Saturday or until 8:00 a.m. on Sunday mornings. 	STA or its representative	Construction				
<p><i>Mitigation Measure N-3: Disseminate Essential Information to Residences and Implement a Complaint/Response Tracking Program.</i></p> <p>The construction contractor shall:</p> <ul style="list-style-type: none"> Notify residences within 500 feet of the construction areas of the construction schedule in writing before construction. Designate a noise disturbance coordinator who will be responsible for responding to complaints regarding construction noise. <p>The noise coordinator shall:</p> <ul style="list-style-type: none"> Determine the cause of the complaint and ensure that reasonable measures are implemented to correct the problem. Post a contact telephone number for the noise disturbance coordinator on construction site fences and in the written notification of the construction schedule sent to nearby residents. 	STA or its representative	Construction				
<u>Biological Environment</u>						
<p><i>Mitigation Measure BR-1: Avoid and Minimize Potential Indirect Disturbance of Riparian Communities.</i></p> <p>To the extent possible, the contractor will avoid and minimize potential indirect disturbance of riparian communities by implementing the following measures:</p>	STA or its representative	Preconstruction/ Construction				

Task and Brief Description	Responsible Agency	Timing / Phase	Action Taken to Comply with Task	Task Completed	Remarks	Environmental Compliance
<ul style="list-style-type: none"> Riparian communities, such as those along Old Alamo Creek, that are located adjacent to all construction zones, will be protected by installing temporary construction fencing to protect riparian vegetation outside the construction zone. The potential for long-term loss of riparian vegetation within the construction zone will be minimized by trimming vegetation rather than removing entire shrubs. Shrubs that need to be trimmed will be cut at least 1 foot above ground level to leave the root systems intact and allow for more rapid regeneration. To protect nesting birds, STA or the appropriate local agency will not allow pruning or removal of woody riparian vegetation between February 15 and August 15. A certified arborist will be retained to perform any necessary pruning or root cutting of riparian trees within the construction zone to further minimize harm to vegetation and ensure rapid regeneration. Areas that undergo vegetative pruning and tree removal will be inspected immediately before construction, immediately after construction, and one year after construction to determine the amount of existing vegetative cover, cover that has been removed, and cover that resprouts. Work in riparian areas, such as those along Old Alamo Creek, will be conducted between June 15 and October 15, and disturbed areas will be stabilized with erosion control measures before October 15. 						
<p><i>Mitigation Measure BR-2: Compensate for Permanent Loss of Riparian Communities.</i></p> <ul style="list-style-type: none"> Compensate for construction-related permanent loss of riparian communities, such as those along Old Alamo Creek, due to direct impacts at a minimum ratio of 2:1 (2 acres restored or created for every 1 acre permanently affected) as 	STA or its representative	Construction				

Date: May 2011
Environmental Coordinator:
Solano Transportation Authority
Phone: (707) 424-6075

MITIGATION MONITORING and REPORTING RECORD
(MMRR)
Page 15 of 33

Task and Brief Description	Responsible Agency	Timing / Phase	Action Taken to Comply with Task	Task Completed	Remarks	Environmental Compliance
<p>described in the Draft MSHCP. Compensation requirements are based on a total direct impact on 2.1 acres.</p> <ul style="list-style-type: none"> Funds will be contributed to an approved mitigation bank for riparian restoration activities along the Old Alamo Creek corridor or on other public lands in the project vicinity. STA or the appropriate local agency will contact appropriate individuals to determine whether there is a potential to create, restore, or enhance riparian habitat in appropriate preserves. A riparian restoration plan will be developed and implemented that involves creating or enhancing riparian habitat in the construction area or project vicinity. Potential mitigation sites in the Old Alamo Creek corridor will be evaluated as part of a formal riparian mitigation plan. 						
<p><i>Mitigation Measure BR-3: Plant Native Trees in Rural Landscaping Areas.</i></p> <ul style="list-style-type: none"> Plant native trees in rural areas as part of project landscaping. For rural areas in annual grassland communities, landscaping will include coast live oak (<i>Quercus agrifolia</i>), valley oak (<i>Quercus lobata</i>), interior live oak (<i>Quercus wislizenii</i>), and coyote brush (<i>Baccharis pilularis</i>). For drainages in rural areas, landscaping will include box elder (<i>Acer negundo</i> var. <i>californicum</i>), California black walnut (<i>Juglans californica</i> var. <i>hindsii</i>), valley oak (<i>Quercus lobata</i>), California sycamore (<i>Platanus racemosa</i>), Fremont's cottonwood (<i>Populus fremontii</i>), California blackberry (<i>Rubus ursinus</i>), and Goodding's willow (<i>Salix gooddingii</i>). Monitor planted trees for five years, and ensure survivorship of a minimum of 80 percent of planted trees after five years by replanting any trees that do not survive. 	STA or its representative	Construction				

Task and Brief Description	Responsible Agency	Timing / Phase	Action Taken to Comply with Task	Task Completed	Remarks	Environmental Compliance
<p><i>Mitigation Measure BR-4: Obtain and Comply with Conditions of Clean Water Act Permits and Streambed Alteration Agreement.</i></p> <ul style="list-style-type: none"> Before any construction activities are initiated, obtain the following permits: <ul style="list-style-type: none"> CWA Section 404 permit from the Corps, or Report of Waste Discharge for Waters of the State, CWA Section 401 water quality certification from the RWQCB CWA Section 402/NPDES permit from State Water Resources Control Board (SWRCB) (requiring preparation of a SWPPP) CFGF Section 1602 streambed alteration agreement from CDFG Copies of these permits will be provided to the contractor with the construction specifications. Once the necessary permits are obtained, implement Mitigation Measures BR-8 and BR-9 as indicated in the above permits. 	STA or its representative	Preconstruction				
<p><i>Mitigation Measure BR-5: Implement Measures to Protect Water Quality.</i></p> <ul style="list-style-type: none"> The contractor shall implement the general measures recommended in Section 3.10, Water Quality and Stormwater Runoff, to protect water quality and aquatic resources in Old Alamo Creek, Union Creek, McCoy Creek, tributary streams, and wetlands. Compliance with regulatory requirements described in Section 3.10, Water Quality and Stormwater Runoff, will concurrently satisfy water quality protection requirements under this section. 	STA or its representative	Construction				

Task and Brief Description	Responsible Agency	Timing / Phase	Action Taken to Comply with Task	Task Completed	Remarks	Environmental Compliance
<p><i>Mitigation Measure BR-6: Avoid and Minimize Disturbance of Waters of the United States and Nonjurisdictional Wetlands.</i></p> <ul style="list-style-type: none"> The contractor will minimize indirect impacts on waters of the United States and nonjurisdictional wetlands throughout the study area by implementing the following measures: <ul style="list-style-type: none"> To maintain hydrologic connections, the project design will include culverts for all seasonal and perennial drainages that are waters of the United States, and/or waters of the State. Construction activities will be prohibited in saturated or ponded waters during the wet season (spring and winter) to the maximum extent possible. Where determined necessary, geotextile cushions and other appropriate materials (e.g., timber pads, prefabricated equipment pads, geotextile fabric) will be used in saturated conditions to minimize damage to the substrate and vegetation. Exposed slopes and streambanks will be stabilized immediately following completion of construction activities. In highly erodible stream systems, banks will be stabilized using a nonvegetative material that will bind the soil initially and break down within a few years. During construction, trees, shrubs, debris, or soils that are inadvertently deposited below the ordinary high-water mark (OHWM) of any streams will be removed in a manner that minimizes disturbance of the creek bed and bank. All activities will be completed promptly to minimize their duration and resultant impacts. 	STA or its representative	Construction				

Task and Brief Description	Responsible Agency	Timing / Phase	Action Taken to Comply with Task	Task Completed	Remarks	Environmental Compliance
<ul style="list-style-type: none"> Construction inspectors will routinely inspect protected areas to ensure that protective measures are in place and effective. All protective measures will remain in place until all construction activities near the resource have been completed and will be removed immediately following construction and reclamation activities. 						
<p><i>Mitigation Measure BR-7: Modify Roadway Design to Maintain Natural Hydrology and Reduce Resource Loss.</i></p> <ul style="list-style-type: none"> To maintain as much of the natural hydrology within the Walters Road extension segment of the alignment as possible, minimize placement of fill in waters of the United States and non-jurisdictional wetlands, and minimize impacts on Contra Costa goldfields, the roadway alignment has been modified by shifting the centerline, and/or widening primarily to one or the other side; narrowing inside shoulder widths; and using structure to span and avoid direct impacts to wetlands; an additional 670 feet of structure is proposed to be incorporated to reduce direct impacts to seasonal wetlands and Contra Costa goldfields in this area. 	STA or its representative	Design/ Construction				
<p><i>Mitigation Measure BR-8: Compensate for the Permanent and Temporary Filling of Seasonal Wetland, Freshwater Marsh, and Pond.</i></p> <ul style="list-style-type: none"> As part of compliance with the CWA Section 404 permit, compensate for filling waters of the United States (direct impacts) to ensure no net loss of habitat functions and values. Compensation for seasonal wetlands, freshwater marshes, and ponds will be provided at a minimum ratio of 2:1 (2 acres of mitigation for every 1 acre of waters of the United States filled) or 9:1 (9 acres of mitigation for every 1 acre of waters of the United States filled) in areas where Contra Costa goldfields are present (see Section 3.15.5, Threatened and 	STA or its representative	Preconstruction/ Construction				

Task and Brief Description	Responsible Agency	Timing / Phase	Action Taken to Comply with Task	Task Completed	Remarks	Environmental Compliance
<p>Endangered Species). Compensation ratios for wetland habitats supporting other threatened or endangered species also are described in Section 3.15.5.</p> <ul style="list-style-type: none"> Implement one or more of the following options to compensate for potential impacts associated with filling waters of the United States and non-jurisdictional wetlands: <ul style="list-style-type: none"> Mitigation bank credits will be purchased at a locally approved bank. Funds equal to the amount needed to purchase mitigation bank credits will be contributed to the preservation of vernal pool complexes within the McCoy Creek watershed, a High Conservation Value Area identified in the Draft MSHCP. A wetland restoration plan will be developed and implemented that involves creating or enhancing seasonal wetland and freshwater marsh either in the study area or in the project vicinity. 						
<p><i>Mitigation Measure BR-9: Compensate for the Permanent and Temporary Filling of Other Waters of the United States.</i></p> <ul style="list-style-type: none"> Compensate for filling other waters of the United States (a direct impact) in seasonal and perennial drainages. This compensation is being provided pursuant to CEQA/NEPA and FHWA policies on mitigating effects to natural lands. Most drainages in the study area, including Union Creek and its tributaries, McCoy Creek and its tributaries, and unnamed drainages, do not support riparian habitat. Compensation for loss of other waters of the United States in these drainages will include restoration or enhancement of stream channel habitat at a minimum ratio of 1:1 (1 acre restored or enhanced for every 1 acre permanently affected). 	STA or its representative	Preconstruction/ Construction				
<ul style="list-style-type: none"> Retain a restoration ecologist to develop a mitigation plan that identifies erosion control, habitat replacement, and 						

Task and Brief Description	Responsible Agency	Timing / Phase	Action Taken to Comply with Task	Task Completed	Remarks	Environmental Compliance
<p>maintenance and enhancement of habitat as the primary mitigation goals.</p> <ul style="list-style-type: none"> Compensation for non-jurisdictional drainage impacts, which include irrigation and roadside ditches, will include maintenance or reconstruction of the irrigation drainages after road construction and replacement of the roadside drainages with a new system to convey stormwater. 						
<p><i>Mitigation Measure BR-10: Conduct a Biological Resources Education Program for Construction Crews and Enforce Construction Restrictions.</i></p> <ul style="list-style-type: none"> The contractor shall conduct worker environmental awareness training (WEAP) for construction crews before project implementation. The education program will include a brief overview of the special-status species that are known to or could potentially occur in the study area. <p>Restrictions and guidelines that must be observed by construction personnel are listed below:</p> <ul style="list-style-type: none"> Project-related vehicles will be driven at or below the posted speed limit on hard-surfaced roads and at or below 15 mph on unpaved roads in the study area. Off-road travel using project-related vehicles and construction equipment, and all ground disturbing activities will be restricted to the designated construction area. All food-related trash will be disposed of in closed containers and removed from the study area at least once per week during the construction period. Construction personnel will not feed or otherwise attract wildlife to the study area. No pets or firearms will be allowed in the study area. To prevent possible resource damage from hazardous 	STA or its representative	Preconstruction. Construction				

Date: May 2011
Environmental Coordinator:
Solano Transportation Authority
Phone: (707) 424-6075

MITIGATION MONITORING and REPORTING RECORD
(MMRR)
Page 21 of 33

Task and Brief Description	Responsible Agency	Timing / Phase	Action Taken to Comply with Task	Task Completed	Remarks	Environmental Compliance
<p>materials such as motor oil or gasoline, construction personnel will not service vehicles or construction equipment outside designated staging areas.</p> <ul style="list-style-type: none"> Any worker who encounters damaged vegetation or causes harm to a special-status plant or wildlife species will immediately report the incident to the biological monitor. The monitor will immediately notify STA or the appropriate local agency, which will provide verbal notification to the USFWS Endangered Species Office in Sacramento, California, and to the local CDFG warden or biologist within three working days. STA or the appropriate local agency will follow up with written notification to USFWS and CDFG within five working days. The designated environmental inspector shall be responsible for ensuring that construction personnel adhere to the guidelines and restrictions. WEAP training sessions shall be conducted as needed for new personnel brought onto the job during the construction period. 						
<p><i>Mitigation Measure BR-11: Retain a Biologist to Monitor Construction Activities.</i></p> <ul style="list-style-type: none"> Retain a biological monitor to monitor all construction activities located within 250 feet of special-status plant and wildlife populations (including Contra Costa goldfields and vernal pool crustaceans). The monitor will ensure compliance with all conservation measures and applicable resource agency permits and prevent any potential take of listed species, or impacts to sensitive habitat. 	STA or its representative	Preconstruction/ Construction				

Task and Brief Description	Responsible Agency	Timing / Phase	Action Taken to Comply with Task	Task Completed	Remarks	Environmental Compliance
<p><i>Mitigation Measure BR-12: Install Construction Barrier Fencing around the Construction Area.</i></p> <ul style="list-style-type: none"> The contractor shall install orange construction barrier fencing to identify environmentally sensitive areas in the construction area, including Old Alamo Creek, Union Creek, McCoy Creek, unnamed drainages, wetlands, elderberry shrubs, special-status plant populations, oak trees, and any trees that support nests of special-status bird species. The protected areas will be designated as environmentally sensitive areas and clearly identified on the construction plans. The fencing will be installed before construction activities are initiated and will be maintained throughout the construction period. Temporary fences around the environmentally sensitive areas will be installed as one of the first orders of work. 	STA or its representative	Preconstruction/ Construction				
<p><i>Mitigation Measure BR-13: Minimize Potential Impacts on Special-Status Plant Species during Construction.</i></p> <p>The contractor will minimize potential construction-related impacts on special-status plant species by implementing the following measures to the extent possible:</p> <ul style="list-style-type: none"> In areas that contain special-status plants, construction activities will be conducted during the period when special-status plants are not flowering or fruiting (i.e., generally between August and January). As described in the Draft MSHCP, the topsoil from the area within the study area that contains the potentially affected special-status plant populations will be excavated with the roots, rhizomes, and seed bank in place; depth of excavation will be determined after further research on the species and site conditions. 	STA or its representative	Construction				

Date: May 2011
Environmental Coordinator:
Solano Transportation Authority
Phone: (707) 424-6075

MITIGATION MONITORING and REPORTING RECORD
(MMRR)
Page 23 of 33

Task and Brief Description	Responsible Agency	Timing / Phase	Action Taken to Comply with Task	Task Completed	Remarks	Environmental Compliance
<p><i>Mitigation Measure BR-14: Compensate for Loss of Pappose Spikeweed.</i></p> <ul style="list-style-type: none"> STA or the appropriate local agency will compensate for the permanent loss of occupied pappose spikeweed habitat. This compensation will include preservation at a ratio of 3:1 (3 acres preserved for each 1 acre of occupied habitat removed during construction). 	STA or its representative	Preconstruction/ Construction				
<p><i>Mitigation Measure BR-15: Implement Mitigation Measure BR-7: Modify Roadway Design to Maintain Natural Hydrology and Reduce Resource Loss.</i></p> <ul style="list-style-type: none"> Implementation of Mitigation Measure BR-7 requires modifications to roadway design that will reduce impacts on special status plants. 	STA or its representative	Design/ Construction				
<p><i>Mitigation Measure BR-16: Conduct Preconstruction Surveys for Western Pond Turtle.</i></p> <ul style="list-style-type: none"> A clearance survey for western pond turtles shall be conducted by a qualified biologist in all areas of aquatic habitat that cannot be avoided, within 24 hours prior to construction. If any western pond turtles are found, they should be moved, or encouraged to move to a safe location outside the construction zone. 	STA or its representative	Preconstruction/ Construction				
<p><i>Mitigation Measure BR-17: Conduct Preconstruction Surveys for Active Burrowing Owl Burrows and Implement the CDFG Guidelines for Burrowing Owl Mitigation, if Necessary.</i></p> <p>Retain a qualified biologist to conduct preconstruction surveys for active burrows according to CDFG guidelines. If no burrowing owls are detected, no further mitigation will be required. If active burrowing owls are detected in the survey area, STA or the appropriate local agency will implement the following measures:</p> <ul style="list-style-type: none"> Occupied burrows will not be disturbed during the nesting season (February 1 to August 31). 	STA or its representative	Preconstruction/ Construction				

Task and Brief Description	Responsible Agency	Timing / Phase	Action Taken to Comply with Task	Task Completed	Remarks	Environmental Compliance
<ul style="list-style-type: none"> When destruction of occupied burrows is unavoidable during the non-nesting season (September 1 to January 31), unsuitable burrows will be enhanced (enlarged or cleared of debris) or new burrows created (installing artificial burrows) at a ratio of 2:1 on protected lands approved by CDFG. Newly created burrows will be installed following guidelines established by CDFG. If owls must be moved away from the study area, passive relocation techniques (e.g., installing one-way doors at burrow entrances) will be used instead of trapping. At least one week will be allowed to accomplish passive relocation and allow owls acclimate to alternate burrows. If active burrowing owl burrows are found and the owls must be relocated, STA or the appropriate local agency will offset the loss of foraging and burrow habitat in the study area by acquiring and permanently protecting a minimum of 6.5 acres of foraging habitat per occupied burrow identified in the study area. If avoidance is the preferred method of dealing with potential impacts, no disturbance should occur within 160 feet of occupied burrows during the nonbreeding season (September 1 to January 31) or within 250 feet during the breeding season. 						
<p><i>Mitigation Measure BR-18: Implement the CDFG Guidelines for Swainson's Hawk Foraging Habitat Mitigation and Conduct Preconstruction Surveys for Nesting Swainson's Hawks.</i></p> <ul style="list-style-type: none"> The Staff Report Regarding Mitigation for Impacts to Swainson's Hawk (<i>Buteo swainsoni</i>) in the Central Valley of California (CDFG 1994b) recommends mitigation of the removal of suitable Swainson's hawk foraging habitat at a ratio determined by the distance to the nearest active nest. 	STA or its representative	Preconstruction/ Construction				

Date: May 2011
Environmental Coordinator:
Solano Transportation Authority
Phone: (707) 424-6075

MITIGATION MONITORING and REPORTING RECORD
(MMRR)
Page 25 of 33

Task and Brief Description	Responsible Agency	Timing / Phase	Action Taken to Comply with Task	Task Completed	Remarks	Environmental Compliance
<ul style="list-style-type: none"> If construction is scheduled to occur during the Swainson's hawk breeding season (generally March 1 through August 31), STA or the appropriate local agency will retain a qualified wildlife biologist to conduct preconstruction surveys for nesting Swainson's hawks in suitable habitat within a 0.25-mile radius of the construction site. 						
<p><i>Mitigation Measure BR-19: Avoid Disturbance of Nesting Special-Status and Non-Special-Status Migratory Birds and Raptors.</i></p> <p>To avoid impacts on potentially nesting Cooper's hawk, white-tailed kite, northern harrier, and non-special-status migratory birds and raptors, implement the following avoidance and minimization measures:</p> <ul style="list-style-type: none"> To the extent possible, vegetation removal activities associated with the proposed action will be conducted outside the breeding season (generally between March 1 and August 31) for migratory birds and raptors. If vegetation removal activities are to take place during the breeding season for these species (generally between March 1 and August 31), a qualified wildlife biologist will be retained to conduct focused nesting surveys for Cooper's hawk, white-tailed kite, northern harrier, and non-special-status migratory birds and raptors. If other active non-special-status migratory bird nests are found in the study area, and if construction activities must occur during the breeding season, STA or the appropriate local agency will consult USFWS to develop and implement an MOU to promote the conservation of migratory bird populations. If surveys indicate that no special-status or non-special-status birds are nesting in or adjacent to the study area, no further mitigation will be required. 	STA or its representative	Preconstruction/ Construction				

Task and Brief Description	Responsible Agency	Timing / Phase	Action Taken to Comply with Task	Task Completed	Remarks	Environmental Compliance
<p><i>Mitigation Measure BR-20: Implement Mitigation Measure BR-7: Modify Roadway Design to Maintain Natural Hydrology and Reduce Resource Loss.</i></p> <ul style="list-style-type: none"> Implementation of Mitigation Measure BR-7 requires modifications to roadway design that will reduce impacts on threatened and endangered plant and wildlife species. 	STA or its representative	Design				
<p><i>Mitigation Measure BR-21: Compensate for the Permanent Loss of Contra Costa Goldfields.</i></p> <ul style="list-style-type: none"> Concurrently with implementation of Mitigation Measure BR-4, develop and implement a plan to compensate for the permanent loss of Contra Costa goldfields. The Contra Costa goldfields compensation plan will include mitigation for impacts on seasonal wetlands because the species is associated with seasonal wetlands. This compensation for permanent or temporary loss of Contra Costa goldfields in the study area, which has been determined in consultation with the USFWS and is described in their Biological Opinion for the project, a copy of which is included in this document in Appendix J, USFWS Biological Opinion and consistent with CEQA/NEPA and FHWA policies on mitigating effects to threatened or endangered species, will consist of the following: <p>As recommended in the Draft MSHCP, occupied Contra Costa goldfields habitat will be preserved in perpetuity at a combine total of 30.6 acres (prior to the groundbreaking of each construction phase STA will purchase 9.54 acres of Goldfield preservation). A total of 30.6 acres of the Contra Costa goldfields habitat will be protected (1.98 acres of habitat created and 28.62 acres will be preserved).</p>	STA or its representative	Preconstruction				

Date: May 2011
Environmental Coordinator:
Solano Transportation Authority
Phone: (707) 424-6075

MITIGATION MONITORING and REPORTING RECORD
(MMRR)
Page 27 of 33

Task and Brief Description	Responsible Agency	Timing / Phase	Action Taken to Comply with Task	Task Completed	Remarks	Environmental Compliance
<p>Compensation for areas of Contra Costa goldfields indirectly affected in the study area will consist of the following:</p> <p>a. Occupied Contra Costa goldfields habitat will be preserved in perpetuity at a combine total of 30.6 acres (1.98 acres of habitat created and 28.62 acres will be preserved).</p>						
<p><i>Mitigation Measure BR-22: Minimize Potential Impacts on Listed Vernal Pool Crustaceans and Contra Costa Goldfields.</i></p> <p>a. Salvage of seeds, or topsoil with seeds for use in suitable enhanced, restored, and/or created Contra Costa goldfields pools, if such enhancement, restoration, or creation is approved by the USFWS.</p> <p>b. Construction will occur in the dry season (when pools are dry) unless otherwise authorized by the USFWS.</p> <p>c. In areas where complete avoidance, buffer areas, or equally effective protective measures to reduce the effects of surface disturbance and compaction are not feasible, the following measures shall be implemented:</p> <p>i. Prior to allowing any vehicles or heavy equipment into Walters Road extension Area, STA or their agent shall install wooden mats in all areas where vehicles will encroach upon vernal pool crustacean and/or Contra Costa goldfields habitat.</p> <p>ii. Wooden mats shall only remain in the habitat areas as long as necessary for the construction work in the area. As soon as the work is completed, all fabric, wooden mats and any other construction related materials shall be removed from the site.</p> <p>d. Mowing for fire hazards and other maintenance activities shall be limited to those detailed in the 404 permit.</p> <p>e. Discharge of water and/or dust control shall only occur in accordance with the Regional Water Quality Control Board permits.</p>	STA or its representative	Construction				

Task and Brief Description	Responsible Agency	Timing / Phase	Action Taken to Comply with Task	Task Completed	Remarks	Environmental Compliance
<p><i>Mitigation Measure BR-23: Compensate for Permanent Losses of Vernal Pool Fairy Shrimp and Vernal Pool Tadpole Shrimp Habitat.</i></p> <ul style="list-style-type: none"> To compensate for impacts on habitat for federally listed vernal pool fairy shrimp and vernal pool tadpole shrimp, preserve and create additional habitat for these species determined in consultation with the USFWS and is described in their Biological Opinion for the project, a copy of which is included in this document in Appendix J, USFWS Biological Opinion. This compensation, which is being provided pursuant to CEQA/NEPA and FHWA policies on mitigating effects to threatened or endangered species, will be achieved using the following: <ul style="list-style-type: none"> In areas considered to be occupied Contra Costa goldfields habitat, compensation for loss of vernal pool crustacean habitat will be accomplished concurrently with compensation for Contra Costa goldfields. (i.e., affected seasonal wetlands, including vernal pools, occupied by both CCGF and VP crustaceans are mitigated the same as those occupied only by CCGF, which exceeds the ratio for VP crustaceans). Suitable vernal pool crustacean habitat not occupied by Contra Costa goldfields will be preserved at a 4:1 ratio (4 acres preserved for every 1 acre of habitat directly or indirectly affected). Preservation lands will be established at a USFWS-approved conservation area, or preservation credits will be purchased from a USFWS-approved mitigation bank. 	STA or its representative	Preconstruction/ Construction				

Date: May 2011
Environmental Coordinator:
Solano Transportation Authority
Phone: (707) 424-6075

MITIGATION MONITORING and REPORTING RECORD
(MMRR)
Page 29 of 33

Task and Brief Description	Responsible Agency	Timing / Phase	Action Taken to Comply with Task	Task Completed	Remarks	Environmental Compliance
c. Suitable vernal pool crustacean habitat not occupied by Contra Costa goldfields will be created at a 2:1 ratio (2 acres created for every 1 acre of habitat directly affected). Vernal pools will be created at a USFWS-approved conservation area, or creation credits will be purchased from a USFWS-approved mitigation bank.						
<p><i>Mitigation Measure BR-24: Minimize Impacts on Valley Elderberry Longhorn Beetle.</i></p> <ul style="list-style-type: none"> • Impacts on suitable elderberry shrubs shall be avoided during all phases of the proposed project where feasible. • For those shrubs that will not be directly removed by the project, any ground disturbing activities within 100 feet of elderberry plants with stems measuring 1.0 inch or greater in diameter at ground level shall conform to the following avoidance measures: <ul style="list-style-type: none"> a. STA shall provide a minimum setback of at least 20 feet from the drip line of each suitable elderberry shrub. The setbacks shall be fenced and flagged to prevent equipment and materials encroachment into the setback zone. Fire fuel breaks (disked land) may not be included within the 20 foot setback. b. Signs will be erected every five feet along the edge of the setback zone with the following information, "This area is habitat of the valley elderberry longhorn beetle, a threatened species, and must not be disturbed. This species is protected by the Endangered Species Act of 1973, as amended. Violators are subject to prosecution, fines, and imprisonment." c. Construction contractors shall be instructed about the status of the beetle, the need to protect its elderberry host plant, the need to avoid damaging the elderberry plants and the possible penalties for not complying with these requirements. 	STA or its representative	Preconstruction/ Construction				

Date: May 2011
Environmental Coordinator:
Solano Transportation Authority
Phone: (707) 424-6075

MITIGATION MONITORING and REPORTING RECORD
(MMRR)
Page 30 of 33

0
0.0
RPSTPL 6249 (004)

Task and Brief Description	Responsible Agency	Timing / Phase	Action Taken to Comply with Task	Task Completed	Remarks	Environmental Compliance
d. No insecticides, herbicides, fertilizers, or other chemicals that might harm the beetle or its host plant shall be used in the buffer areas, or within 100 feet of any elderberry plant with one or more stems measuring 1.0 inch or greater in diameter at ground level. e. Mowing of grasses/ground cover shall occur only from July through April to reduce fire hazard. No mowing shall occur within 50 feet of elderberry plant stems. f. Trimming of elderberry stems less than one inch in diameter may occur between September 1 and March 14.						
<p><i>Mitigation Measure BR-25: Compensate for Impacts on Valley Elderberry Longhorn Beetle.</i></p> <ul style="list-style-type: none"> To compensate for impacts on habitat for valley elderberry longhorn beetle, STA or the appropriate local agency will preserve and create additional habitat for these species using acreage approved by USFWS. All elderberry shrubs with one or more stems measuring one inch or more in diameter that will be directly affected by construction activities will be transplanted to a conservation area in accordance with USFWS's Conservation Guidelines for Valley Elderberry Longhorn Beetle.¹ Each elderberry stem measuring one inch or more in diameter at ground level that is within 100 feet of construction activities will be replaced in a conservation area with elderberry seedlings or cuttings at a ratio between 1:1 and 8:1. A mix of native tree and plant species representative of those associated with the elderberry shrubs in the study area will be planted in the conservation area. 	STA or its representative	Preconstruction/ Construction				

¹ U.S. Fish and Wildlife Service, 1999. Conservation guidelines for the valley elderberry longhorn beetle. July 9. Sacramento, CA.

Date: May 2011
Environmental Coordinator:
Solano Transportation Authority
Phone: (707) 424-6075

MITIGATION MONITORING and REPORTING RECORD
(MMRR)
Page 31 of 33

Task and Brief Description	Responsible Agency	Timing / Phase	Action Taken to Comply with Task	Task Completed	Remarks	Environmental Compliance
<ul style="list-style-type: none"> Each transplanted elderberry shrub will have at least 1,800 square feet of area. Maintenance, remedial measures, and reporting will be conducted, following the requirements of the USFWS guidelines (1999). 						
<p><i>Mitigation Measure BR-26: Minimize Potential Impacts on California Tiger Salamanders.</i></p> <ul style="list-style-type: none"> The contractor will minimize potential impacts on California tiger salamanders and their aquatic and terrestrial habitats during construction by implementing the following measures, consistent with the requirements of the USFWS Biological Opinion and CDFG Incidental Take Permit: <ul style="list-style-type: none"> a. To minimize disturbance of breeding and dispersing California tiger salamanders, all construction activity within California tiger salamander upland habitat (defined as all habitat within 1.24 miles of aquatic habitat) will be conducted during the dry season between May 1 and October 15 or before the onset of the rainy season, whichever occurs first. b. To minimize disturbance and mortality of adult and juvenile California tiger salamanders in aquatic habitat and underground burrows, STA or the appropriate local agency will minimize the extent of ground-disturbing activities within these habitats (grasslands within 1.24 miles of aquatic habitat) by requiring the contractor to limit the work area to the minimum necessary for construction. c. Consistent with Mitigation Measure BR-11, STA or the appropriate local agency will ensure that a qualified wildlife biologist monitors all construction activities within California tiger salamander upland habitat. 	STA or its representative	Preconstruction/ Construction				

Task and Brief Description	Responsible Agency	Timing / Phase	Action Taken to Comply with Task	Task Completed	Remarks	Environmental Compliance
<p><i>Mitigation Measure BR-27: Compensate for Removal and Disturbance of California Tiger Salamander Habitat.</i></p> <ul style="list-style-type: none"> Compensate for the removal or disturbance of potential upland habitat suitable aquatic habitat for California tiger salamanders, This compensation will be achieved as follows: STA or the appropriate local agency will preserve 68.1 acres of additional upland habitat within a USFWS-approved conservation area and aquatic habitat at a minimum 3:1 ratio (3 acres created or preserved for each 1 acre removed). 	STA or its representative	Preconstruction/ Construction				
<p><i>Mitigation Measure BR-28: Educate Construction Crews on Invasive Species Control and Prevention, and Monitor Compliance.</i></p> <ul style="list-style-type: none"> Consistent with the Draft MSHCP, the Executive Order on Invasive Species, E.O. 13112, and subsequent guidance from the Federal Highway Administration, avoid introducing or spreading invasive weeds into previously uninfested areas by ensuring that the biological resources education program for construction crews includes education on weed identification and the importance of controlling and preventing the spread of invasive weeds. Small, isolated infestations will be treated with CDFG-approved eradication methods at an appropriate time to prevent or destroy viable plant parts or seeds. All equipment will be washed before entering the study area. Equipment will be washed off site at a paved facility, located away from environmentally sensitive areas. The resource monitors will routinely inspect construction activities to verify that construction equipment is being washed. The contractor will implement measures set forth in the SWPPP to revegetate and restore disturbed areas immediately after construction is complete. 	STA or its representative	Preconstruction/ Construction				

Date: May 2011
Environmental Coordinator:
Solano Transportation Authority
Phone: (707) 424-6075

MITIGATION MONITORING and REPORTING RECORD
(MMRR)
Page 33 of 33

Task and Brief Description	Responsible Agency	Timing / Phase	Action Taken to Comply with Task	Task Completed	Remarks	Environmental Compliance
<p><i>Mitigation Measure BR-29: Implement Revegetation and Restoration Measures Required in the Storm Water Pollution Prevention Plan.</i></p> <ul style="list-style-type: none"> Once construction is complete, the contractor shall implement the measure set forth in the SWPPP to revegetate and restore disturbed areas immediately after construction. The revegetation portion of the SWPPP will require the use of certified weed-free native and non-native mixes. The SWPPP will also specify that all disturbed areas will be weeded and reseeded in subsequent years if determined necessary. 	STA or its representative	Construction/ Post construction				

Appendix I Wetlands Only Practicable Alternative Finding

Pursuant to Executive Order 11990 – Protection of Wetlands

ALTERNATIVES:

The Preferred Alternative for the Jepson Parkway Project is Alternative B. This Alternative would provide a four-lane divided arterial for the 12-mile-long corridor between Orange Drive in the north and the SR 12/Walters Road intersection in the south by widening existing Leisure Town Road, Vanden Road, Cement Hill Road, and Walters Road, and constructing a northern extension of Walters Road between Cement Hill Road and Air Base Parkway; a grade separation (overpass) of the UPRR mainline tracks as part of the Walters Road Extension; improvements such as bridge widening or culvert extensions at the Leisure Town Road crossings of Alamo Creek, New Alamo Creek, and Union Creek; a new overcrossing of McCoy Creek and McCoy detention pond; new bicycle and pedestrian paths; landscaping; and relocation of existing utilities (see Section 2.2.2).

Under the Preferred Alternative, the project would involve new fill amounting to 2.70 acres in seasonal wetlands and 4.69 acres in vernal pools including 3.02 acres of suitable habitat for Contra Costa goldfields, as well as 2.0 acres of Gairdner's yampah, and 1.0 acre of Pappose spikeweed from the widening of existing roadways and the extension of Walters Road.

There would be no effect on wetlands or vernal pools under Alternative A, the No-Build Alternative, but this alternative is not practicable because it would not address the project purpose and need and would result in worsening congestion along the local roadway network, I-80, and SR12; exacerbate safety conditions by diverting ever larger amounts of local travel to Interstate and State facilities; and fail to support multi-modal alternatives, such as transit and non-motor travel. Alternative E would fill 0.30 acres of seasonal wetlands and 0.96 acres of vernal pools, but is not practicable because it would use land from Al Patch Park and Will C. Wood High School, which is protected under Section 4(f) of the DOT Act, and it would provide above-ground visual access to facilities at Travis Air Force Base, creating a risk for homeland defense. Alternative D would fill 0.91 acres of seasonal wetlands and 1.45 acres of vernal pools, but is not practicable because it would displace industrial and commercial properties resulting in the loss of some 224 jobs, which would adversely affect the local economy and is unacceptable to the community. Alternative C would fill 0.91 acres of seasonal wetlands and 1.45 acres of vernal pools, but is not practicable because it also would create a risk for homeland defense by providing above-ground visual access to facilities at Travis Air Force Base, and because it would impact areas along Air Base Parkway that have been dedicated to propagation and preservation of Contra Costa goldfields and other special status plants (see Section 3.15.3.3).

STA and Caltrans have reviewed various alignment alternatives to identify a Walters Road extension alignment that would avoid seasonal wetlands and vernal pools. It is not possible to avoid crossing the wetlands and vernal pools entirely because of their location with respect to the existing Cement Hill Road and Walters Road. Bridging these areas entirely would have been prohibitively expensive given the length of structure required.

MEASURES TO MINIMIZE HARM:

The project has been designed to minimize impacts to wetlands and vernal pools within the project corridor. Widening has been accomplished to one side of the roadway to avoid or reduce impacts wherever possible. The alignment of the proposed Walters Road extension has been adjusted to minimize impacts, and bridge structures have been incorporated to avoid major water bodies and interrupting drainages. Design plans incorporate measures to maintain the flow of water onto the remaining sites. All seasonal wetland/vernal pool areas disturbed during construction will be fully restored following construction activities. The development of restoration plans will be coordinated with the U.S. Army Corps of Engineers, the U.S. Fish and Wildlife Service, and the U.S. Environmental Protection Agency. Seasonal wetland/vernal pool and other waters adjacent to the project that can be avoided during construction will be designated as Environmentally Sensitive Areas.

FINDING:

Based on the considerations reported above, it is determined that there is no practicable alternative to the proposed new construction in wetlands and that the proposed action includes all practicable measures to minimize harm to wetlands that may result from such construction.

Appendix J USFWS Biological Opinion



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Sacramento Fish and Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, California 95825-1846



In reply refer to:
81420-2008-F-1791-2

MAY 27 2010

Mr. James Richards
California Department of Transportation
Environmental Planning and Engineering
111 Grand Avenue
Oakland, California 94623-0660

Subject: Biological Opinion for the Proposed Jepson Parkway Project, Solano County,
California (District 4-SOL-0-STA)

Dear Mr. Richards:

This letter is in response to your March 4, 2009, request for formal consultation on the proposed Jepson Parkway Project (proposed project) in Solano County, California. You determined that the proposed project is likely to adversely affect the federally-listed as threatened vernal pool fairy shrimp (*Branchinecta lynchi*), endangered vernal pool tadpole shrimp (*Lepidurus packardii*) (collectively vernal pool crustaceans), endangered Contra Costa goldfields (*Lasthenia conjugens*) (goldfields), threatened California tiger salamander (*Ambystoma californiense*) (salamander), threatened valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*) (beetle), and critical habitat for the vernal pool crustaceans and goldfields. Your request was also for concurrence that the proposed project may affect but is not likely to adversely affect the federally-listed as threatened Delta green ground beetle (*Elaphrus viridis*), endangered Conservancy fairy shrimp (*Branchinecta conservatio*), endangered Suisun thistle (*Cirsium hydrophilum* var. *hydrophilum*), endangered soft bird's-beak (*Cordylanthus mollis* ssp. *mollis*), threatened San Joaquin Valley orcutt grass (*Orcuttia inaequalis*), endangered California clapper rail (*Rallus longirostris obsoletus*), threatened California red-legged frog (*Rana draytonii*), endangered salt-marsh harvest mouse (*Reithrodontomys raviventris*), and threatened giant garter snake (*Thamnophis gigas*). The U.S. Fish and Wildlife Service (Service) received your request on March 5, 2009. The proposed project is located in the cities of Vacaville, Fairfield, Suisun City, and unincorporated areas of Solano County.

**TAKE PRIDE
IN AMERICA** 

Based upon the information provided, the Service concurs that the proposed action will adversely affect vernal pool crustaceans, goldfields, salamander, beetle, and critical habitat for vernal pool crustaceans and goldfields. Based on the fact that habitat assessments revealed no suitable habitat for these species, the Service concurs that the proposed action is not likely to adversely affect delta green ground beetle, Conservancy fairy shrimp, Suisun thistle, soft bird's-beak, salt-marsh harvest mouse, and the California clapper rail. In addition, botanical surveys, which were conducted in various years from 1999-2008, inside the Biological Study Area (BSA) in accordance with the Service's "Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed, and Candidate Plants" (September 23, 1996 version) (Plant Guidelines), detected no listed plants. The BSA is defined as the area within the project boundary and surrounding areas within 250 feet of the edge of project disturbance.

The Service concurs that the proposed action is not likely to adversely affect the California red-legged frog based on the fact that a habitat assessment revealed no suitable habitat for this species. This habitat assessment was performed pursuant to the Service's "Revised Guidance on Site Assessments and Field Surveys for the California red-legged frog" (August 2005). Additionally, the only known records for the California red-legged frog are from the tri-city/county open space area, roughly defined by Interstate Highways 80, 680 and 780 between Vallejo, Cordelia, and Benicia, and the hills north of I-80 (identified as the Jameson Canyon-Lower Napa River Core Recovery Area) and in the Stebbins Cold Canyon Preserve in the northwest corner of Solano County. The closest known record is within 8 miles of the BSA. The BSA is outside of the known range of the giant garter snake, with the closest known occurrence of the giant garter snake over 10 miles to the east of the BSA. Therefore, the Service concurs that the proposed action is not likely to adversely affect the giant garter snake.

The Service concurs that the proposed action is not likely to adversely affect the San Joaquin Valley orcutt grass. The Service has made this determination based on botanical surveys done to the Plant Guidelines conducted in various years from 1999-2008, and habitat assessments in the BSA. This species primarily occurs in a 36-mile long strip in Fresno, Merced and Madera counties, on the east side of the San Joaquin Valley, with one disjunct population on the Muzzy Ranch just east of Travis Air Force Base. The Muzzy Ranch population is the only known population for this species outside the eastern half of the San Joaquin Valley.

This response is in accordance with section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*) (Act) and represents the Service's biological opinion on the effects of the proposed project on vernal pool crustaceans, goldfields, salamander, and the beetle, and critical habitat for vernal pool crustaceans and goldfields.

This biological opinion is based on information provided in the following: (1) the October 2005 *Biological Assessment-Jepson Parkway Project*; (2) the February 2006 *Natural Environment Study Jepson Parkway Project*; (3) the May 2008, *Draft Environmental Impact Report / Environmental Impact Statement (EIR/EIS) on the Jepson Parkway Project* (4) the March 2009, *Biological Assessment for the Jepson Parkway Project*; (5) the July 10, 2009, revised conceptual

mitigation plan; (6) electronic mail correspondence (e-mail) and telephone conversations between representatives of the Service, PBS&J, Solano Transportation Authority (STA), and California Department of Transportation (Caltrans), on the proposed action; (7) references cited in this biological opinion; and (8) other information available to the Service.

CONSULTATION HISTORY

- April 12, 2006: The Service received a request for formal consultation from the Federal Highway Administration (FHWA) on the proposed project and the attached October 2005 *Biological Assessment-Jepson Parkway Project*, and the February 2006 *Natural Environment Study Jepson Parkway Project* (NES).
- May 10, 2006: The Service sent a request to FHWA for additional information on the proposed project.
- September 28, 2007: The Service received the biological section for the administrative draft EIR/EIS from PBS&J.
- October 1, 2007: The Service received exhibits from the NES from PBS&J.
- October 4, 2007: The Service met with representatives of PBS&J to discuss past communication on the proposed project.
- October 10, 2007: The Service met with STA, and representatives of PBS&J to discuss existing project data based on previous studies, and identify data gaps.
- October 23, 2007: The Service received a letter from Caltrans withdrawing formal consultation on the proposed project because a preferred alternative had not been designated.
- November 5, 2007: The Service received a packet of environmental documents from PBS&J on the proposed project.
- February 12, 2008: The Service received minutes from a multi agency meeting that was held on January 10, 2008 to discuss the proposed project. The Service was not in attendance at this meeting, due to schedule conflicts.
- May 29, 2008: The Service received the updated Biological section to review from the Draft EIR/EIS from PBS&J.
- June 4, 2008: The Service received the *Draft EIR/EIS on the Jepson Parkway Project*.

- June 5, 2008: The Service met with representatives of PBS&J to discuss information to be included in the Biological Assessment.
- August 5, 2008: The Service sent a letter commenting on the Draft EIR/EIS.
- September 12, 2008: The Service received a set of draft effects maps for the proposed project.
- September 26, 2008: The Service met with representatives of PBS&J to go over direct and indirect effects to vernal pools and discuss the conceptual mitigation plan.
- November 20, 2008: The Service met with representatives from California Department of Fish and Game (CDFG), National Marine Fisheries Service (NMFS), STA, and PBS&J to discuss the proposed project.
- March 5, 2009: The Service received the request for formal consultation on the proposed project and the attached March 2009 *Biological Assessment for the Jepson Parkway Project* from Caltrans.
- April 2, 2009: The Service sent an e-mail asking for additional information on the proposed project.
- April 30, 2009: The Service met with representatives of Caltrans and PBS&J to discuss the additional information needed by the Service.
- July 10, 2009: The Service received a formal response to the request for additional information which included a revised conceptual mitigation plan.
- August 10, 2009: The Service sent an e-mail to PBS&J asking for some additional information on the conceptual mitigation proposal implementation timeframe.
- August 18, 2009: The Service received an e-mail from PBS&J clarifying the implementation timeframe.
- September 8, 2009: The Service sent an e-mail to PBS&J discussing the conceptual mitigation plan as it relates to goldfield conservation.
- October 10, 2009: The Service and representative's from PBS&J had a conference call to discuss the conceptual mitigation plan as it relates to goldfields.
- November 25, 2009: The Service sent an e-mail to PBS&J requesting some pools to be added to the impact analysis for goldfields.

BIOLOGICAL OPINION

Description of the Proposed Action

Project Purpose and Need

The proposed project is located in Township 6N, Range 1W, Sections (12, 13, 24, 25, and 35); Township 5N, Range 1W, Sections (2, 3, 9, 10, 11, 15, 16, 17, 20, 21, 28, and 29); Elmira USGS 7.5 minute Quadrangle; Township 5N, Range 1W, Sections (28, 29, 32 and 33); Denverton USGS 7.5 minute Quadrangle. The proposed project is designed to address existing and future traffic congestion, improve safety, and facilitate the use of alternative modes of transportation. The proposed project will meet the following specific purposes:

- Provide an integrated and continuous route for local north-south trips between Vacaville, Fairfield, Suisun City, and unincorporated areas of central Solano County as an alternative to using Interstate 80 (I-80).
- Provide local traffic a safe, convenient route between Vacaville, Fairfield, Suisun City, and unincorporated areas of central Solano County using existing roadways when feasible.
- Enhance multimodal transportation options for local trips in central Solano County, including providing a safe, convenient bicycle and pedestrian path and options for transit use in the area.

Caltrans is the National Environmental Policy Act (NEPA) lead agency and STA is the California Environmental Quality Act (CEQA) lead for the project. STA, in partnership with Solano County and the cities of Suisun City, Fairfield, and Vacaville is responsible for overall project funding, completion of the mitigation requirements as set forth in the Final EIR/EIS and project permits, right-of-way acquisition and construction administration for the proposed project. Funding for the proposed project will be provided by a combination of state, federal and local funds, which Caltrans will provide oversight for.

Project Alignment and Facilities

The proposed project will be constructed along local roadways in the cities of Vacaville, Fairfield, and Suisun City, as well as in unincorporated Solano County, California. The proposed project is designed to provide a four-lane divided arterial for the entire length of the corridor and includes improvements to (from north to south) Leisure Town Road, Vanden Road, Cement Hill Road, and Walters Road. The proposed project includes the widening of existing roadways; construction of a northern extension of Walters Road between Cement Hill Road and the intersection of Air Base Parkway; a grade separation (overpass) of the Union Pacific Railroad (UPRR) mainline tracks as part of the Walters Road Extension; improvements at the Leisure

Town Road crossings of Alamo Creek and New Alamo Creek; a new crossing of McCoy Creek; bicycle and pedestrian paths; landscaping; and utilities relocation.

The alignment for the proposed project begins in Vacaville on Leisure Town Road at Orange Drive. It extends south along Leisure Town Road to the intersection of Leisure Town Road and Vanden Road in unincorporated Solano County. The alignment then extends southwest along Vanden Road to the intersection of Cement Hill Road/Vanden Road and Peabody Road in Fairfield. From here, the alignment continues west along Cement Hill Road to the intersection of Cement Hill Road and the north end of the Walters Road Extension, extends south along the Walters Road Extension to the intersection of Walters Road and Air Base Parkway, and then continues south along Walters Road in Fairfield and Suisun City to the Walters Road/State Route (SR) 12 intersection.

The proposed project is supported by the City of Fairfield (City) because it will provide an additional north/south crossing of the UPRR mainline tracks in eastern Fairfield. The proposed Walters Road Extension is approximately one mile southwest of the Peabody Road crossing. The City desires an additional crossing of the UPRR mainline tracks, as provided by the proposed project because:

- The additional crossing will provide an alternative crossing in the event the main entrance to Travis Air Force Base (AFB) is closed for security reasons and the closure backs up traffic into the adjacent Air Base Parkway/Peabody Road intersection; and
- The additional crossing and the Walters Road extension alignment will provide a valuable transportation network improvement. This will provide important redundant connections that will ease future congestion on the already heavily traveled Air Base Parkway and Peabody Road.

Leisure Town Road

Under the proposed project, Leisure Town Road will be widened to four lanes from Orange Drive south to the New Ulatis Creek Bridge, a distance of approximately 1.3 miles. The road will be widened to the east to retain the westerly right-of-way line of Leisure Town Road. This portion of the roadway will consist of curb and gutter, an eight-foot outside shoulder, and two 12-foot lanes in each direction (for a total of four lanes) separated by a 16-foot-wide median. Left-turn lanes will be provided at all local street intersections by reducing the 16-foot-wide median width. A 10-foot-wide sidewalk will be constructed on both the east and west sides of Leisure Town Road, except for the east side of Leisure Town Road between Sequoia Drive and Maple Road. Because of constrained right-of-way, sidewalks in these segments will not be separated from the roadway by a landscaped area.

The median will be raised and landscaped, except near Poplar Road, where the median will be paved and striped to allow dual left-turn lanes. The right-of-way width for this section of Leisure Town Road will be approximately 100 feet.

South from the New Ulatis Creek Bridge to Alamo Drive, a distance of approximately two miles, Leisure Town Road will continue to be widened to four lanes under the proposed project. The roadway will continue to be widened to the east to retain the westerly right-of-way line. This portion of the roadway will consist of curb and gutter, an eight-foot outside shoulder, two 12-foot lanes in each direction (for a total of four lanes) separated by a 16-foot-wide raised, and landscaped median. Left-turn lanes will be provided at all local street intersections by reducing the 16-foot-wide median width.

A 10-foot-wide landscaped area will be provided on the east side of Leisure Town Road in this segment. On the west side, the existing southbound lane and shoulder will be removed and reconstructed as a part of a linear park to buffer existing residential uses. The 35- to 55-foot-wide linear park will consist of landscaping and a 10-foot-wide meandering bicycle and pedestrian path that will link to the existing Alamo Creek bicycle path just south of the intersection of Leisure Town and Elmira Roads. The bicycle and pedestrian path will be separated from the roadway by at least five feet and from the right-of-way line by at least two feet. The right-of-way width for this section of Leisure Town Road will be 125 feet to 145 feet.

Roadway improvements in this segment will include the widening of approximately 300 feet of Elmira Road east of Leisure Town Road to conform to the reconfigured Leisure Town Road/Elmira Road intersection.

From the signalized intersection at Alamo Drive southwest to the New Alamo Creek the roadway widening will be to the east. From New Alamo Creek southwest to the Vanden Road intersection, a distance of approximately 1.7 miles, Leisure Town Road will be widened to the west approximately 85 feet to retain the existing southeasterly right-of-way. The alignment shifts to the east 650 feet south of Alamo Drive to align with the existing westerly right-of-way north of Alamo Drive. This portion of the segment will consist of curb and gutter, an eight-foot outside shoulder, a 12-foot outside lane, and a 12-foot inside lane in each direction (for a total of four lanes) separated by a 16-foot-wide raised, landscaped median. A 10-foot-wide landscaped area will be provided on the southeasterly side of Leisure Town Road, and a minimum 55-foot-wide linear park will be provided on the northwesterly side. The linear park will consist of a 10-foot-wide meandering bicycle and pedestrian path and 45 feet of landscaped area. The bicycle and pedestrian path will be separated from the roadway by at least five feet and from the back of the right-of-way line by at least two feet. The right-of-way width for this section of Leisure Town Road will be 145 feet.

Leisure Town Road crosses Horse Creek, Old Ulatis Creek, New Ulatis Creek, Alamo Creek, and New Alamo Creek. Existing bridges crossing Horse Creek, Old Ulatis Creek, and New Ulatis Creek have recently been upgraded and will not need additional work to accommodate

implementation of the proposed project. However, the roadway crossings of Alamo Creek and New Alamo Creek will be widened as part of the proposed project. The 3-span bridge over New Alamo Creek will be widened approximately 50 feet. The existing wall type piers will be widened to the west. These piers are on the edge of the creek bank.

Construction during the dry season will require minor dewatering within the excavation for the pier footings and small coffer dams will be around the excavation area. Best Management Practices (BMP'S) will be used for handling the dewatering operations and the intermittent flow of the creek will not be disturbed during construction. The existing box culvert at Alamo Creek will either be extended or replaced with large culverts. All waterways with seasonal or perennial flows will be completely spanned with bridges or extensions of existing culverts. No waterways will have new culverts.

Vanden Road

From the intersection of Leisure Town Road and Vanden Road, the alignment of the proposed project continues southwest on Vanden Road to the intersection of Peabody Road. Under the proposed project, Vanden Road between Leisure Town Road and the beginning of the Vanden Road realignment portion (to the old railroad grade approximately one half mile northeast of the Peabody Road intersection) will be widened to the west of the existing roadway right-of-way to include a combination 10-foot-wide bicycle and pedestrian path and landscaped strip. At the signalized intersection of Vanden and Leisure Town Roads, the improvements will be extended 500 feet north of the intersection to conform to the existing two-lane Vanden Road section. This portion of Vanden Road will consist of an eight-foot outside shoulder, two 12-foot lanes (for a total of four lanes), and a two-foot-wide inside shoulder in each direction separated by a 16-foot-wide landscaped median. No outside curb and gutter or median curb will be constructed except within approximately 400 feet of the Vanden Road/Leisure Town Road and Vanden Road/Canon Road intersections, and within approximately 2,500 feet of intersection of Cement Hill Road/Vanden Road and Peabody Road on each side. The median will be paved adjacent to the residential units south of Leisure Town Road to provide left-turn access to and from Vanden Road. A 20-foot-wide landscaped area will be provided on the southeasterly side of Vanden Road, and a minimum 32-foot-wide area will be provided on the northwesterly side, consisting of a 10-foot-wide meandering bicycle and pedestrian path and landscaped area. The bicycle and pedestrian path will be separated from the roadway by at least 15 feet and from the back of the right-of-way line by at least two feet. The right-of-way width for this section of Vanden Road will be 136 feet.

The intersection of Vanden and Canon Roads will be improved to accommodate turn lanes, northbound acceleration and deceleration lanes, and the bicycle and pedestrian path connection. A traffic signal will also be installed at this intersection. The new traffic signal will be interconnected with the railroad crossing arms. Minor improvements at the railroad crossing on Cannon Road will be completed. The west approach of the intersection of Vanden Road and

Leisure Town Road will be constructed to allow for a connection to the future Foxboro Parkway¹ (opposite Leisure Town Road). Vanden Road will be raised near Union Creek and a new series of replacement concrete box culverts or a short bridge will be constructed to remove the roadway from the floodplain. Culverts along Vanden Road will be upsized within the surrounding constraints as much as possible to facilitate wildlife movement. All of the replacement culverts will be as large or larger than existing culverts. Urban landscaping within this segment will be implemented from the intersection of Peabody Road and Cement Hill Road/Vanden Road to approximately 3,000 feet north along Peabody Road. Rural landscaping will be implemented in the remainder of the segment.

Cement Hill Road

The proposed project alignment turns west onto Cement Hill Road at the intersection of Cement Hill Road/Vanden Road and Peabody Road. Cement Hill Road will be widened from the existing two lanes to four lanes from 600 feet west of its intersection with Peabody Road west to the proposed intersection with the Walters Road Extension, a distance of approximately 0.75 mile. Under the proposed project, the widening will be accomplished by widening Cement Hill Road to the south approximately 34 feet and retaining the existing right-of-way on the north side. This portion of Cement Hill Road will consist of an eight-foot outside shoulder, a 12-foot outside lane, and a 14-foot inside lane in each direction (for a total of four lanes) separated by a 16-foot-wide raised, landscaped median. A 6.5-foot-wide sidewalk will be constructed adjacent to the back of the curb on the north side of Cement Hill Road, with a 3.5-foot landscaped strip between the sidewalk and the right-of-way line. A 10-foot-wide concrete bicycle and pedestrian path will be constructed on the south side of Cement Hill Road, separated from the face of curb by a 5-foot landscaped strip. An additional 5-foot-wide landscaped strip will be located between the bicycle and pedestrian path and the southerly right-of-way line. Driveways will be provided for all existing properties on the north side of Cement Hill Road. Access from north-side businesses or unsignalized local roads to eastbound Cement Hill Road will be restricted to right-turn movements only. The right-of-way width on this portion of Cement Hill Road will be 114 feet.

Walters Road Extension

From the intersection of Cement Hill Road/Walters Road a new roadway alignment will be constructed to the south tying into the existing intersection of Huntington Drive and Walters Road, just north of Air Base Parkway. From Cement Hill Road the alignment will curve to the west along a natural ridge line before spanning the man-made Strassberger Detention Pond with a new 1250-foot long multiple span bridge. The alignment continues south crossing a tributary of McCoy Creek with a 140-foot single span bridge. The alignment then curves back to the east and rises to clear the Union Pacific Railroad with a 160-foot single span bridge. The alignment then

¹ The City of Vacaville General Plan calls for the extension of Foxboro Parkway between Nut Tree Road and Vanden Road (Vacaville General Plan Policy 2.3-I13). The extension is intended to support development of the South Vanden Area as defined in the General Plan, and would occur independent of the Jepson Parkway Project, subject to its own separate environmental evaluation.

heads directly south and ties into the intersection of Air Base Parkway/Walters Road at the existing grade. The intersection of Huntington Drive/Walters Road will be raised two to four feet. The new roadway will be four lanes (two lanes in each direction) with a raised median. The raised median has been narrowed to two feet wide for the entire length of the Walters Road extension. The proposed four-lane Walters Road Extension will consist of a curb and gutter, a 5-foot outside shoulder, a 12-foot outside lane, and a 14-foot inside lane in each direction separated by a two-foot-wide raised median. A 10-foot-wide bicycle and pedestrian sidewalk will be constructed on the east side of Walters Road. The northerly 1,600 feet of sidewalk on the east side of Walters Road will be separated from the curb by a 5-foot-wide landscaped strip on either side and the bicycle and pedestrian sidewalk. The right-of-way width in this section of Walters Road will generally be approximately 72 feet, except at the northerly limits, where Walters Road will be widened an additional 10 feet to the east to accommodate the two 5-foot-wide landscaped strips.

Existing Walters Road

From Air Base Parkway south to East Tabor Avenue, a distance of approximately 2,300 feet, Walters Road will be widened approximately 40 feet to the east. The existing Walters Road (four-lane undivided roadway and right-of-way) will be retained as a part of the new Walters Road. The new roadway will consist of curb and gutter, a 5-foot outside shoulder, a 12-foot outside lane, and a 14-foot inside lane in each direction separated by a raised, landscaped median that will vary in width from five to 16 feet. Northbound left-turn lanes will be provided at the mobile home park entrance, Walters Court, and Air Base Parkway (double left-turn lane). A 10-foot-wide bicycle and pedestrian concrete sidewalk will be constructed immediately behind the back of curb on the east side. The right-of-way width along Walters Road will generally be 97 feet, including the existing right-of-way width, except at the northerly limits by Air Base Parkway, where Walters Road will be widened to the east to accommodate a right-turn lane and the second left-turn lane.

Most of Walters Road in this segment has been widened under previously-approved projects. In this segment, Walters Road consists of a 5-foot outside shoulder and two 12-foot lanes in each direction separated by a minimum 6.5-foot-wide raised, landscaped median. Improvements along the east side of Walters Road included a 5-foot-wide landscaped strip separating the roadway from a 10-foot-wide paved bicycle and pedestrian path. A soundwall was built between the bicycle path and the approved Petersen Ranch development east of Walters Road, with a one-foot separation from the bicycle path.

Between Tabor Avenue and SR 12, the existing Walters Road has been improved to a four-lane roadway, including soundwalls, a 10-foot-wide sidewalk on the east side of Walters Road from Bella Vista Drive to Petersen Road, and traffic signals at the intersections of Walters Road at Tabor Avenue, Petersen Drive, and SR 12. Under the proposed project, some improvements to Walters Road between Bella Vista Drive and SR 12 are proposed, including: restriping Walters Road at SR 12 for an additional left-turn lane; constructing a median along Walters Road from

Petersen Road north approximately 600 feet; and installing signal-interconnect cable from Bella Vista Drive to SR 12.

Proposed Landscaping

In urban areas of the proposed project alignment, landscaping on both sides of the roadway and a landscaped median will be provided wherever feasible. Trees will be planted in the center median, with an understory of low shrubs, native grasses, and groundcover or decomposed granite. At no time will exotic (non-native) invasive plants, such as Pampas Grass (*Cortaderia selloana*), Eucalyptus (*Eucalyptus sp.*), Tamarisk (*Tamarix sp.*), or Giant Reed (*Arundo donax*) be used as part of any plantings along the corridor. Trees in the center median will be planted at regularly spaced intervals 30 to 50 feet. Where left-turn lanes are provided, the median will be too narrow for tree plantings. Vines will be planted at regular intervals along the soundwall.

Within its jurisdiction, the City of Vacaville has committed to consult further with its citizens regarding the specific density and design of the landscaping within the linear park. It is anticipated that the landscaped buffer within the City of Vacaville will be more dense and lush than in other portions of the proposed project alignment to buffer existing residential neighborhoods from the effects of the traffic on the roadway. The landscaped buffers will be funded by development proposed for this area.

In rural areas of the alignment, native trees will be planted on both sides of the roadway at irregular intervals (300 to 500 feet) in clusters, with at least five trees per cluster and native grasses as understory. Trees will also be used to mark intersections and drainages. In drainage areas, trees will be more densely planted to mimic what might occur naturally. New trees will be planted to augment existing vegetation. The median will be planted with native grasses and shrubs.

In industrial areas of the alignment, trees will be planted in the median and spaced approximately 30 feet apart, with an understory of low shrubs, grasses, and decomposed granite. The landscaped strips will be planted with native shrubs and groundcover.

Proposed Utility Improvements

Major drainages in the alignment of the proposed project will be crossed using concrete box culverts or pipe culverts. The existing 5-foot by 10-foot box culvert for Alamo Creek will be extended or replaced with a series of 60-inch culverts underneath the widened Leisure Town Road and Elmira Road. New Alamo Creek will be spanned by widening the existing bridge to the west. Vanden Road will be raised near Union Creek and a new series of concrete box culverts or a short bridge will be constructed. McCoy Creek and the existing man-made detention basin will be spanned with bridges on the Walters Road Extension.

Irrigation facilities will be maintained and extended or reconstructed as required. A storm drain system will be constructed to collect and convey drainage along Leisure Town Road where necessary, connecting to Vacaville's existing storm drain lines where possible. The existing joint pole line (Pacific Gas & Electric Company [PG&E], telephone, and cable) will be relocated in areas where it is within the project right-of-way. Conduit for future fiber-optic communication cable will be installed along the length of the proposed project alignment.

Project Phasing

The proposed project will be implemented in three phases. Funding is currently being provided by segment with funds programmed to complete improvements to the narrow, rural Vanden Road segment (Phase 1) connecting Vacaville and Fairfield; followed by two additional phases to construct the urban segments in Vacaville (Phase 2) and the urban segments in Fairfield (Phase 3). Detailed information on each Phase is included below:

Phase 1: Will include widening Vanden Road from 500-feet east of the Vanden Road/Cement Hill Road/Peabody Road intersection to the Vanden Road/Leisure Town Road intersection. The length of this segment is 2.8 miles, and includes a new bridge crossing at Union Creek. It is anticipated that this phase will take two years to complete.

Phase 2: Will include widening Leisure Town Road from the northern limits of Phase 1 (Vanden/Leisure Town Road intersection) to the south side of the Leisure Town Road/Orange Drive intersection. The length of this segment is 5.0 miles, and includes widening the New Alamo Creek Bridge, an extension of the existing Alamo Creek box culvert, and connection to a pipe storm drain system. It is anticipated that this phase will take three years to complete.

Phase 3: Will include widening Walters Road from Tabor Avenue to Huntington Drive; constructing the Walters Road extension from Huntington Drive to Cement Hill Road; and widening Cement Hill Road from the Walters Road extension through the Vanden Road/Peabody Road/Cement Hill Road intersection to connect with the southern limits of Phase 1. The length of Phase 3 is 2.6 miles, and includes a new railroad overhead crossing of the UPRR, and separate north/south bridges spanning a tributary of McCoy Creek, the Strassberger Detention Pond, and wetland resources, some containing habitat for goldfields north and south of the detention pond. It is anticipated that this phase will take three years to complete.

Phase 1 is anticipated to begin construction in 2010. Phase 2 is expected to begin upon the completion of Phase 1. It is anticipated that Phases 2 and 3 will have some overlap in construction schedules. Based upon the expected length of time to complete each Phase's construction, final completion of the proposed project is expected to be sometime between 2015 and 2018.

Road Construction

The majority of this proposed project involves widening existing narrow roadways to wider arterial sections. In many instances the existing roadway is currently two lanes and will be widened to four lanes with a raised divided median and sufficient topsoil to adequately cover all proposed sideslopes. The topography throughout the corridor is relatively flat and level so the cut and fills for the proposed roadway are small. Fill slopes on Leisure Town Road will be less than five feet, on Vanden Road there will be fill heights between three and six feet in height.

Because of this widening, construction staging will include constructing the first half of the widening while keeping traffic on existing pavement and then switching traffic to the newly constructed section while widening the other side. No detour alignments are anticipated. Culverts and storm drain systems will be constructed as part of the roadway construction. Bridges and bridge widenings will be staged in the same manner as the main roadways (one direction or side at a time), with the exception of the Walters Road extension, which will have bridges built to full width all at once.

During construction, standard highway BMPs will be utilized to minimize sediment transfer, water quality contamination and other construction related effects. Generally BMPs that are anticipated to be utilized include silt fence, inlet protection, and temporary fence around all Environmentally Sensitive Areas (ES) that are to be avoided. On the Walters Road extension the existing man-made Strassberger Detention Pond will be drained so that a temporary access into the pond area can be built to construct the bridge footings and columns. Draining the water during the dry season and constructing a flow channel to a cofferdam will not alter the surrounding natural resources or the hydrology/hydraulics. It is anticipated that this detention pond will be affected for approximately three months during construction. Upon completion this pond will be allowed to fill up to its normal capacity. No effects on federally-listed species are anticipated to occur during the draining of this pond, as it does not represent habitat for any federally-listed plant or wildlife species.

Clearing and Grading

Existing vegetation, trees and topsoil will be cleared from within the construction limits. The existing topsoil will be stockpiled within each phase and applied to finished sideslopes. It is anticipated that there will be sufficient topsoil to adequately cover all proposed sideslope. On the Walters Road extension there will be fill slopes above five feet on the approaches to the three structures. On the Walters Road extension the fill between the UPRR and the McCoy Creek tributary will be constructed with walls retaining the fill on both sides. Throughout the corridor, grading for the project will be relatively minor and appropriate best management practices will be installed to control erosion and construction area runoff.

Bridges and Culverts*Leisure Town Road*

As previously mentioned, the Horse Creek, Ulati Creek, New Ulati Creek crossings will not require any additional work. The bridges for these creeks have previously been widened to accommodate the proposed cross section width. The existing Alamo Creek box culvert will be extended to the east and north to discharge into the existing channel alignment north of Elmira Road. The existing New Alamo Creek bridge will be widened to the west approximately 50 feet.

Storm water runoff will be collected within the roadway curb and gutter and drop inlets and conveyed into storm drainage systems that discharge into the above mentioned creeks. These storm drainage systems will include detention basins along the east side of Leisure Town Road adjacent to the creeks. South of New Alamo Creek the proposed storm drain systems will discharge into the recently constructed South Vanden Area detention basin.

Vanden Road

Along Vanden Road the roadway will be raised and a new two span bridge will be constructed at the Union Creek crossing. With the added width of the proposed roadway, approximately 300 feet of Union Creek will need to be realigned. Currently the creek makes a series of ninety degree bends as it approaches Vanden Road. Existing offsite runoff that crosses under Vanden Road will continue to cross Vanden Road in the same location through improved culvert crossings. Roadway storm water runoff will be collected in roadside ditches and conveyed to cross culvert locations. Biofiltration strips will be implemented in the roadside ditches.

Cement Hill Road

The McCoy Creek crossing at Cement Hill Road will not require any additional work. Storm water runoff will be collected within the roadway curb and gutter and drop inlets and conveyed into storm drainage systems that discharge into biofiltration swales on the south side of the road before reaching existing runoff locations.

Walters Road Extension

The Walters Road extension will span the man-made Strassberger Detention Pond, which receives the McCoy Creek. This bridge span will allow the existing hydrology on the north and south sides of the detention pond to remain intact. An additional bridge will span a tributary of McCoy Creek south of the Strassberger detention pond. Storm water runoff will be collected within the roadway curb and gutter and drop inlets and conveyed into storm drainage systems that discharge into biofiltration swales on the sides of the road before reaching existing runoff locations. These systems will provide similar surface water runoff to the surrounding areas. Biofiltration swales will be constructed within the road construction effect area.

Walters Road

On Walters Road from Huntington Drive to Tabor Avenue the existing storm drainage systems will be modified and expanded to handle the additional lanes. Existing runoff on the east side currently is conveyed through a roadside ditch that is then piped under the road to the west side at two locations, and will continue to be conveyed this way after completion of the proposed project.

Staging Areas and Access Roads

Each construction phase will have separate staging areas. Phase 1 and Phase 2 will utilize adjacent farmland for staging areas to avoid sensitive areas. Because of the relative lack of listed species habitat and natural resources on these adjacent farmland areas, phase specific staging areas have not been identified and it will be up to the contractor to negotiate and secure parcels for staging and small material storage. Implementation of best management practices, construction specifications, and conservation measures mentioned in this biological opinion will ensure no additional effects to listed species or natural resources. Phase 3 work will utilize existing paved surfaces within the Strassberger property south of Cement Hill Road and west of the proposed Walters Road extension. These paved areas have a direct connection to the man-made detention pond that the Walters Road extension will span. Additional minor staging areas within the proposed right-of-way for existing Walters Road and Cement Hill Road will be used and the aforementioned best management practices, construction specifications, and conservation measures implemented to ensure no additional effects to listed species or natural resources

Because the majority of the construction on this project is widening existing roadways, access roads are not required. The only access roads required for constructing this project are along the north edge of the UPRR. In order to construct the Union Pacific Overhead Structure and the bridge crossing of the McCoy Creek tributary an existing farm access road on the property currently owned by Edenbridge Corporation will be utilized to access this area from Air Base Parkway. The remaining portions of the Walters Road extension will be accessed through the man-made Strassberger Detention Pond or via the proposed right-of-way.

Materials Delivery

The project site is close to many material suppliers and because of the urban nature and close proximity to these material sources, major stockpiles will not be required. Staging areas will be utilized to store small amounts of construction materials. Major items such as roadway fill, aggregate base course, asphalt and concrete will be delivered from the material supplier directly to the final location on the project. Bridge girders also will be delivered directly to the project site.

Post-Construction Activities

Areas outside of the proposed right-of-way that will be disturbed during construction (temporary easement, staging areas, and access roads) will be restored after construction is complete. This will include removing all construction materials, including temporary surfacing materials, regrading as necessary to restore the land to pre-construction conditions and seeding and mulching with an approved native seed mixture. Additionally, a plant establishment period will be required from the contractor to ensure planting and seeding is successfully implemented.

Biological Study Area

The BSA is defined as the area within the project boundary and surrounding areas within 250 feet of the edge of project disturbance (described below) from the intersection of Orange Drive and Leisure Town Road in the City of Vacaville, south to the intersection of Leisure Town and Vanden Road, then along Vanden Road across Peabody Road at which point Vanden Road becomes Cement Hill Road, then west along Cement Hill Road to the Walters Road extension area, and finally, south to the connection with existing Walters Road at its intersection with Huntington Drive. From Huntington Drive the BSA continues along Walters Road south to its terminus at SR 12. The BSA also includes all associated access roads, construction footprints, and staging areas.

Land uses in the BSA

Land uses in the BSA include commercial, recreational (golf course), residential, industrial, and agricultural (crop lands and grazing lands). Commercial, residential, and recreational land uses occur along the northern portion of the BSA from the intersection of Leisure Town Road and Orange Drive, south to the intersection of Leisure Town Road and Fry Road. Agricultural and grazing lands dominate the land uses from Frye Road south to the intersection of Leisure Town Road and Vanden Road, and along Vanden Road to just east of its intersection with Peabody Road/Cement Hill Road. Commercial/industrial land uses are present in the vicinity of the Peabody Road/Cement Hill Road/Vanden Road intersection. Lands along Cement Hill Road and the Walters Road extension consist primarily of undeveloped and grazing land. South of the UPRR tracks is a combination of industrial, residential and undeveloped land along existing Walters Road to the project terminus at SR 12. The majority of the corridor is in an area of the County with slopes of less than 15 percent; there are no outstanding topographic features. Properties adjacent to the alignment are owned by public and private entities, including homeowners, business owners, the Cities of Vacaville, Fairfield, Suisun City, and Solano County.

Habitats in the BSA

Annual Grassland

Non-native annual grassland occurs throughout the BSA and is the most prevalent community type in terms of total acreage. Cattle graze on much of the annual grassland along Leisure Town Road, Vanden Road, and on the grassland in the Walters Road Extension area. Plant species commonly observed in this habitat in the BSA include annual bluegrass (*Poa annua*), Mediterranean barley (*Hordeum marinum* ssp. *gussoneanum*), soft chess (*Bromus hordeaceus*), medusa-head (*Taeniantherum caput-medusae*), rattail fescue (*Vulpia myuros*), foxtail barley (*Hordeum murinum* var. *leporinum*), Italian ryegrass (*Lolium multiflorum*), bristly ox-tongue (*Picris echioides*), black mustard (*Brassica nigra*), cut-leaf geranium (*Geranium dissectum*), English plantain (*Plantago lanceolata*), purple star-thistle (*Centaurea calcitrapa*), yellow star-thistle (*Centaurea solstitialis*), little hop clover (*Trifolium dubium*), rose clover (*Trifolium hirtum*), broad-leaved pepperweed (*Lepidium latifolium*), field bindweed (*Convolvulus arvensis*), and red-stem filaree (*Erodium cicutarium*). Native plant species observed included miniature lupine (*Lupinus bicolor*), western blue-eyed grass (*Sisyrinchium bellum*), annual fireweed (*Epilobium brachycarpum*), common bedstraw (*Galium aparine*), turkey mullein (*Croton setigerus*), red maids (*Calandrinia ciliata*), pitgland tarweed (*Holocarpha virgata*), Great Valley gumplant (*Grindelia camporum* var. *camporum*), blue dicks (*Dichlostemma capitatum*), purple needlegrass (*Nasella pulchra*), and blue wild-rye (*Elymus glaucus*).

Agricultural Lands

Agricultural land includes both cultivated cropland and irrigated pasture land. Actively cultivated agricultural land supporting alfalfa or grain crops occupies most of the study area east of Leisure Town Road. The natural vegetation here typically is minimal and weedy, usually occurring only on the fringes of agricultural fields, where it is subject to frequent disturbance. Irrigated pasture land occurs west of Leisure Town Road near its intersection with Vanden Road and in smaller areas near residences along Leisure Town Road.

Developed/Landscaped Areas

Developed/landscaped areas include paved areas and buildings within the urbanized portions of the study area, as well as the associated landscaped vegetation. Parks are included in this community type because they comprise similar species and physical structures as landscaping. Landscape vegetation is usually located in areas that are disturbed by human activity and therefore provides relatively low-quality wildlife habitat.

Ruderal Areas

Ruderal (weedy) vegetation occurs at the edges of the pavement along existing roads within the BSA and in some undeveloped parcels, and typically consists of short-lived non-native annual

and biennial herbaceous plant species that persist in areas that undergo nearly continuous disturbance regimes (e.g., spraying, mowing, plowing). Because ruderal areas typically are disturbed on a regular basis by human activity, they provide low-quality habitat for wildlife. Assemblages of ruderal vegetation were frequently encountered by Jones and Stokes and PBS&J biologists during plant guideline surveys within fallow fields, open roadsides, and unmaintained lots. Plant species observed included bristly ox-tongue, yellow star-thistle, annual fireweed (*Epilobium* sp.), black mustard (*Brassica nigra*), rose clover, vetch (*Vicia sativa*), rip-gut brome, wild oat, California bur-clover (*Medicago polymorpha*), common groundsel (*Senecio vulgaris*), wild radish (*Raphanus sativus*), sweet fennel (*Foeniculum vulgare*), horseweed (*Conyza canadensis*), chicory (*Cichorium intybus*), and Italian thistle (*Carduus pycnocephalus*).

Riparian Woodland

Riparian woodland is located along the banks of Alamo Creek at the Leisure Town Road crossing and along a drainage between Leisure Town Road and Green Tree Golf Course. At the Alamo Creek crossing of Leisure Town Road, the riparian woodland supports valley oak (*Quercus lobata*), Oregon ash (*Fraxinus latifolia*), Fremont's cottonwood (*Populus fremontii*), blue elderberry (*Sambucus mexicana*), and California wild rose (*Rosa californica*). Understory species include Himalayan blackberry (*Rubus discolor*) and sedge (*Cyperus eragrostis*). Willows are the dominant riparian trees along the drainage by the golf course. Riparian woodland is limited in the study area and present in small areas isolated by development and roads. Riparian woodland vegetation provides a variety of important ecological functions and values for wildlife.

Wetlands and Other Waters of the U.S.

There were 45.87 acres of wetlands and other waters of the U.S. delineated in the BSA. Of these wetlands and other waters of the U.S., 5.37 acres will be affected from construction related activities. This includes 2.94 acres of wetlands and 2.43 acres of other waters.

Vernal Pool

This habitat type is found in shallow depressions in open grassland areas within the BSA, particularly along the Walters Road extension, and along existing Walters Road, near its intersection with Air Base Parkway. Vernal pools are depressional features of varying size, and are characterized as having a layer of claypan or hardpan below the surface that inhibits percolation of precipitation during the rainy season. This results in prolonged inundation and saturation regimes that allow a unique assemblage of native plants and animals (many of them restricted to this habitat type) to complete their life cycles before the vernal pools dry out completely at the beginning of the dry season. There are a number of annual herbs and grasses that are considered either "indicator species" or strongly associated with this habitat type. Plant species observed include Great Valley button-celery (*Eryngium castrense*), spikeweed (*Centromadia* sp.), common spikerush (*Eleocharis macrostachya*), bractless hedge-hyssop

(*Gratiola ebracteata*), short woollyheads (*Psilocarphus brevissimus*), goldfields (*Lasthenia* spp.), stalked popcornflower (*Plagiobothrys stipitatus* var. *micranthus*), white-tip clover (*Trifolium variegatum*), and white navarretia (*Navarretia leucocephala*).

Seasonal Swale (mapped as seasonal wetlands)

Seasonal swales are found primarily in the large grazed parcel between Cement Hill Road and along the UPRR tracks along Vanden Road. Swales are low-gradient features in between hill slopes that convey sheet flows from surrounding uplands during the rainy season, and generally do not exhibit pronounced scouring. Soils in this portion of the project area are often alkaline, have poor vegetative coverage and are largely restricted to halophytic (i.e., salt tolerant) species. Plant species observed included Mediterranean barley, salt grass (*Distichlis spicata*), Baltic rush (*Juncus balticus*), saltbush (*Atriplex* sp.), alkali heath (*Frankenia salina*), flat-face calicoflower (*Downingia pulchella*), alkali goldfields (*Lasthenia platycarpha*), forked peppergrass (*Lepidium oxycarpum*), dwarf peppergrass (*Lepidium latipes* var. *latipes*), pickleweed (*Salicornia virginica*), alkali mallow (*Malvella leprosa*), and sticky sandspurrey (*Spergularia macrotheca* var. *longistyla*).

Seasonal Wetland

Seasonal wetlands are not common in the project area; these are generally shallow (i.e., do not pond water for prolonged periods) and were found either along the toe of the UPRR tracks, or within roadside and drainage ditches. Plant species observed included Italian ryegrass, common spikerush, curly dock (*Rumex crispus*), cocklebur (*Xanthium strumarium*), and tall flatsedge (*Cyperus eragrostis*).

Freshwater Emergent Marsh (includes perennial and seasonal freshwater marsh)

Freshwater emergent marsh habitat occurs within deep concave ditches along various roadways throughout the project area, along the shoreline of the Strassberger Detention Basin, and along an intermittent drainage feature located between Cement Hill Road and the UPRR tracks. This habitat type exhibits inundation and/or saturation regimes for prolonged periods, and often contains extensive stands of robust hydrophytic species. Dominant plant species observed included broad-leaved cattail (*Typha latifolia*) and tule (*Schoenoplectus* spp.). Less frequent associates included tall flatsedge, common spikerush, water speedwell (*Veronica anagallis-aquatica*), seep monkeyflower (*Mimulus guttatus*), clustered dock (*Rumex conglomeratus*), and hairy willow-herb (*Epilobium ciliatum*).

Creeks

Creeks that cross the BSA include Horse Creek, Alamo Creek, New Alamo Creek, Ulati Creek, New Ulati Creek, McCoy Creek, and Union Creek. Horse Creek, Alamo Creek, New Alamo creeks, and New Ulati Creek are all tributaries to Ulati Creek, which flows into Cache Slough

and eventually the Sacramento River. McCoy Creek and Union Creek are tributaries to Suisun Slough.

Conservation and Minimization Measures

According to the Biological Assessment and additional information provided to the Service, Caltrans and STA propose that this action will be designed and constructed in the following ways that will minimize effects on federally-listed species. These measures must be implemented. These measures are:

General

1. To minimize the adverse effects from loss of habitat and all vernal pool crustaceans inhabiting 4.69 acres (0.97 direct and 3.72 indirect) from the proposed project on vernal pool crustaceans, STA proposes to protect a combined total of 24.92 acres of aquatic vernal pool crustacean habitat (of the 24.92 acres, 22.60 will be preserved and 2.32 will be created). This combined habitat compensation can be achieved by: 1) purchase of compensation credits at an existing Service-approved bank or banks, as appropriate for the species, 2) or purchase and preservation of a Service-approved parcel and establishment of a conservation easement, development of a management plan, and provision of a perpetual endowment sufficient to cover management and maintenance of protected lands for the benefit and recovery of vernal pool crustaceans, or 3) a combination of these two approaches. 2.64 acres of the preservation will occur prior to groundbreaking on Phase 1. The remainder of the preservation (19.96 acres) will occur prior to groundbreaking on Phase 3. The 2.32 acres of creation will be done on approximately 10 acres of land for both goldfields and vernal pool crustaceans which STA will acquire prior to groundbreaking on Phase 1. The creation of all pools will occur prior to groundbreaking of Phase 3.
2. To minimize the impact of the adverse effects on goldfields from the loss of habitat and all goldfields inhabiting 3.02 acres (0.57 acre direct and 2.45 acres indirect) from the proposed project, STA proposes to protect a combined total of 30.6 acres of goldfield habitat (of the 30.6 acres, 28.62 will be preserved and 1.98 will be created). This combined habitat compensation can be achieved by: 1) purchase of compensation credits at an existing Service-approved bank or banks, as appropriate for the species, 2) or purchase and preservation of a Service-approved parcel and establishment of a conservation easement, development of a management plan, and provision of a perpetual endowment sufficient to cover management and maintenance of protected lands for the benefit and recovery of goldfields, or 3) a combination of these two approaches. STA has proposed to provide preservation for goldfields at the beginning of each Phase even though the impacts to goldfields will not occur until Phase 3. This was proposed to ensure adequate credits will be available at Service-approved goldfields banks. STA has proposed to enter into an agreement with Goldfields Mitigation Bank to hold credits for

future purchase. Prior to the groundbreaking of each Phase, STA will purchase 9.54 acres of goldfield preservation. The 1.98 acres of creation will be done on approximately 10 acres of land for both goldfields and vernal pool crustaceans which STA will acquire prior to groundbreaking on Phase 1. The creation of all pools will occur prior to groundbreaking of Phase 3.

3. To minimize the impact of the adverse effects on salamanders from the loss of habitat and all individual salamanders inhabiting 22.7 acres of upland habitat from the proposed project, STA has proposed to protect in perpetuity a total of 68.1 acres of upland salamander habitat. This upland habitat preservation compensation can be achieved by: 1) purchase of compensation credits at an existing Service/CDFG-approved bank or banks, as appropriate for the species, 2) or purchase and preservation of a Service/CDFG approved parcel and establishment of a conservation easement, development of a management plan, and provision of a perpetual endowment sufficient to cover management and maintenance of protected lands for the benefit and recovery of the salamander, or 3) a combination of these two approaches. The compensation for the salamander will occur in full 18 calendar months following the date of initial project groundbreaking on Phase 1. If this upland habitat preservation compensation is achieved either in whole or in part through the purchase of a Service/CDFG approved parcel, then the following conditions shall apply. Acquisition of land shall either be through conservation easement or fee title. The conservation easement shall name the Service/CDFG as third-party beneficiaries and shall be held by an entity qualified to hold conservation easements subject to Service/CDFG approval. An endowment, based on a management plan and a PAR or PAR-equivalent analysis, to manage the land and monitor the conservation easement shall be held by a Service/CDFG approved entity in an amount approved by the Service /CDFG. The management plan shall be developed and approved by the Service/CDFG prior to or concurrent to the acquisition of land and shall include, but is not limited to: a description of existing habitats and planned habitat creation, restoration and/or enhancement; restoration and/or enhancement success criteria; and adaptive management strategies to be implemented if success criteria are not met or to incorporate new scientific data. Prior to impacts on CTS habitat, STA shall provide, and have approved by CDFG, a Funding Assurance Letter (FAL) stating that sufficient funds to mitigate impacts have been budgeted into the Jepson Parkway Project. The FAL shall be signed by the District Deputy Director of Project Management and the District Deputy Director of Environmental Planning and Engineering and approved by CDFG's Offices of the General Council. The FAL provides evidence that STA has allocated sufficient funding to implement the proposed mitigation, monitoring, and reporting requirements including habitat conservation credits or land acquisition costs, costs of managing the mitigation lands, and an endowment.
4. To minimize the impact of the adverse effects on beetles from the loss of habitat and all individual beetles inhabiting 4 elderberry shrubs (*Sambucus* sp.) with 16 stems, 1 inch or greater in diameter at ground level, within 100 feet from the proposed project

activities, STA proposes to transplant the 4 elderberry shrubs and purchase beetle habitat credits equivalent to 70 elderberry seedlings and 124 associated natives. Minimization ratios are listed and explained in Table 9 of the BA. This habitat preservation compensation can be achieved by: 1) purchase of compensation credits at an existing Service-approved bank or banks, as appropriate for the species, 2) or purchase and preservation of a Service-approved parcel and establishment of a conservation easement, development of a management plan, and provision of a perpetual endowment sufficient to cover management and maintenance of protected lands for the benefit and recovery of the beetle, or 3) a combination of these two approaches. The compensation for the beetle will occur in full prior to groundbreaking on Phase 2 of the proposed project.

Vernal Pool Crustaceans/Contra Costa Goldfields

1. Effects have been minimized by modifying the roadway alignment, shifting the centerline, and/or widening primarily to one or the other side; narrowing inside shoulder widths, and added bridge structures to avoid direct effects to wetlands. An additional 670 feet of bridge has been incorporated to span habitat to reduce effects to wetlands/vernal pools containing or potentially containing vernal pool crustaceans and goldfields.
2. Salvage topsoil with vernal pool crustacean cysts for use in suitable enhanced, restored, and/or created pools, if such enhancement, restoration, or creation is approved by the Service.
3. Construction will occur in the dry season to minimize sedimentation and contamination transport in to listed species habitat, unless otherwise authorized by the Service.
4. Prior to construction activities on the site, a protective fence shall be installed a minimum of one foot (or greater, if feasible) from the edge of all vernal pool crustacean and goldfields habitat indirectly affected, but to be avoided in the immediate vicinity of the proposed construction areas. Prior to initiation of construction activities, a qualified biologist shall inspect the protective fencing to ensure that all wetland features have been appropriately protected. No encroachment into fenced areas shall be permitted during construction and the fence shall remain in place until all construction activities have been completed.
5. In areas where complete avoidance, buffer areas, or equally effective protective measures to reduce the effects of surface disturbance and compaction are not feasible, the following measures shall be implemented:
 - Prior to allowing any vehicles or heavy equipment into Walters Road extension Area, STA or their agent shall install wooden mats in all areas where vehicles will encroach upon vernal pool crustacean habitat. The wooden mats will help

distribute the weight of vehicles and equipment and will prevent substantial disturbance of soil in these areas.

- Wooden mats shall only remain in the habitat areas as long as necessary for the construction work in the area. As soon as the work is completed, all fabric, wooden mats and any other construction related materials shall be removed from the site.
6. STA shall conduct Worker Environmental Awareness Program (WEAP) training for construction crews (primarily crew and construction foreman) before construction activities begin. The WEAP shall include a brief review of the special-status species and other sensitive resources that could occur in the proposed project site (including species life history and habitat preferences) and their legal status. The program shall also cover all mitigation measures, environmental permits and proposed project plans, such as the Stormwater Pollution Prevention Plan (SWPPP), best management practices (BMPs), erosion control and sediment plan, and any other required plans. During WEAP training, construction personnel shall be informed of the importance of avoiding ground-disturbing activities outside of the designated work area. The designated environmental inspector shall be responsible for ensuring that construction personnel adhere to the guidelines and restrictions.
WEAP training sessions shall be conducted as needed for new personnel brought onto the job during the construction period.
 7. A biological monitor will be onsite to monitor construction activities that occur within 250 feet of a wetland, to ensure compliance with all conservation measures and applicable resource agency permits. More than one monitor may be required depending on the distance between construction activities and the proximity to wetland resources.
 8. Salvage of goldfield seeds, or topsoil with seeds for use in suitable enhanced, restored, and/or created goldfields pools, if such enhancement, restoration, or creation is approved by the Service.

California Tiger Salamander

Due to the presence of a UPRR right-of-way adjacent to the BSA along Vanden Road, there is no opportunity to modify the proposed project alignment to lessen the effect on upland habitat for the salamander.

1. A biological monitor will be on site to monitor construction activities that occur along salamander upland habitat to minimize the number of individual salamanders taken during the road widening and improvement along Vanden and Leisure Town Road.

2. All construction activities (including grading) within salamander upland habitat will be restricted to the dry season (May 1 to October 15).
3. Ground-disturbing activities will be minimized in salamander upland habitat and protective fencing will be installed along the perimeter of the construction work area.

Valley Elderberry Longhorn Beetle

1. Effects on elderberry shrubs shall be avoided during all phases of the proposed project where feasible. Complete avoidance is accomplished through establishment and maintenance of a minimum buffer zone of 100 feet from the drip lines of any elderberry shrub. Firebreaks shall not be allowed within these buffer zones, and any areas temporarily disturbed within this buffer zone during construction shall be restored immediately following construction.
2. For those shrubs that will not be directly removed by the project, any ground disturbing activities within 100 feet of elderberry shrubs with stems measuring one inch or greater in diameter at ground level shall conform to the following avoidance measures:
 - STA shall provide a minimum setback of at least 20 feet from the drip line of each elderberry shrub. The setbacks shall be fenced and flagged to prevent equipment and materials encroachment into the setback zone. Fire fuel breaks (disked land) may not be included within the 100 foot setback.
 - Signs will be erected every five feet along the edge of the setback zone with the following information, "This area is habitat of the valley elderberry longhorn beetle, a threatened species, and must not be disturbed. This species is protected by the Endangered Species Act of 1973, as amended. Violators are subject to prosecution, fines, and imprisonment." This signs should be clearly readable from a distance of 20 feet, and must be maintained for the duration of construction (Service 1999).
 - Construction contractors shall be instructed about the status of the beetle, the need to protect its elderberry host plant, the need to avoid damaging the elderberry shrubs and the possible penalties for not complying with these requirements.
 - No insecticides, herbicides, fertilizers, or other chemicals that might harm the beetle or the 3 remaining shrubs shall be used within 100 feet of any elderberry shrub with one or more stems measuring one inch or greater in diameter at ground level.
 - Mowing of grasses/ground cover shall only occur from July through April to reduce fire hazard. No mowing shall occur within 50 feet of elderberry shrub stems on the 3 remaining shrubs. Mowing must be done in a manner that avoids

damaging shrubs (e.g., avoid stripping away bark through careless use of mowing/trimming equipment).

- Trimming of elderberry stems less than one inch in diameter may occur between September 1 and March 14. The recommended period for trimming is between November through the first two weeks in February when the plants are dormant and after they have lost their leaves.
3. For the cases where damage to, or removal of elderberry shrubs or their stems measuring one inch or greater (removal or trimming) will be unavoidable (i.e., shrubs within 20 feet of disturbance), these effects shall be compensated for. Compensation shall include salvaging and planting the affected elderberry shrubs and planting additional elderberry shrubs and associated native riparian plants according to the ratios specified in the biological assessment. Compensation plantings shall occur at a Service-approved compensation site (such as a conservation bank) to be preserved as beetle habitat in perpetuity.
 4. Monitor. A qualified biologist (monitor) must be on-site for the duration of the transplanting of the elderberry shrubs to ensure that the shrubs identified to be removed in this biological opinion, are in fact the ones removed. If shrubs other than those identified in this opinion are removed or disturbed, the monitor must have the authority to stop work until corrective measures have been completed. The monitor must immediately report any unauthorized take of the beetle or modification to its habitat to the Service and to the CDFG, and Caltrans shall reinitiate this formal consultation with the Service to address the additional effects.
 5. Timing. Transplant elderberry plants when the plants are dormant, from approximately November through the first two weeks in February, after they have lost their leaves. Transplanting during the non-growing season will reduce shock to the plant and increase transplantation success.
 6. Plant Additional Seedlings or Cuttings. Each elderberry stem measuring 1.0 inch or greater in diameter at ground level that is adversely affected (i.e., transplanted or destroyed) must be replaced, in the conservation area, with elderberry seedlings or cuttings at a ratio ranging from 1:1 to 8:1 (new plantings to affected stems). Minimization ratios are listed and explained in Table 9 of the BA. Stock of either seedlings or cuttings should be obtained from local sources. Cuttings may be obtained from the plants to be transplanted if the project site is in the vicinity of the conservation area.
 7. Plant Associated Native Species. Studies have found that the beetle is more abundant in dense native plant communities with a mature overstory and a mixed understory. Therefore, a mix of native plants associated with the elderberry shrubs at the project site

or similar sites will be planted at ratios ranging from 1:1 to 2:1 [native tree/plant species to each elderberry seedling or cutting]. These native plantings must be monitored with the same survival criteria used for the elderberry seedlings (see below). Stock of saplings, cuttings, and seedlings should be obtained from local sources. If the parent stock is obtained from a distance greater than one mile from the conservation area, approval by the Service of the native plant donor sites must be obtained prior to initiation of the revegetation work. Planting or seeding the conservation area with native herbaceous species is encouraged. Establishing native grasses and forbs may discourage unwanted non-native species from becoming established or persisting at the conservation area. Only stock from local sources should be used.

Action Area

The action area is defined in 50 CFR § 402.02 as, "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action." For the proposed project, this includes all BSA areas subject to the direct effects and indirect effects (250 feet from the edge of construction) associated with construction of widening of existing roadways; construction of a northern extension of Walters Road between Cement Hill Road and the intersection of Air Base Parkway; a grade separation (overpass) of the UPRR mainline tracks as part of the Walters Road Extension; improvements at the Leisure Town Road crossings of Alamo Creek and New Alamo Creek; a new crossing of McCoy Creek; bicycle and pedestrian paths; landscaping; and utilities relocation

Analytical Framework for the Jeopardy and Adverse Modification Analysis

Jeopardy Determination

In accordance with policy and regulation, the jeopardy analysis in this biological opinion relies on four components: (1) the *Status of the Species*, which evaluates the vernal pool crustaceans, goldfields, salamanders, and beetles range-wide condition, the factors responsible for that condition, and their survival and recovery needs; (2) the *Environmental Baseline*, which evaluates the condition of vernal pool crustaceans, goldfields, salamanders, and beetles in the action area, the factors responsible for that condition, and the relationship of the action area to the survival and recovery of the vernal pool crustaceans, goldfields, salamanders, and beetles; (3) the *Effects of the Action*, which determines the direct and indirect impacts of the proposed federal action and the effects of any interrelated or interdependent activities on the vernal pool crustaceans, goldfields, salamanders, and beetles; and (4) the *Cumulative Effects*, which evaluates the effects of future, non-Federal activities in the action area on the vernal pool crustaceans, goldfields, salamanders, and beetles.

In accordance with policy and regulation, the jeopardy determination is made by evaluating the effects of the proposed federal action in the context of the vernal pool crustaceans, goldfields, salamanders, and beetles current status, taking into account any cumulative effects, to determine

if implementation of the proposed action is likely to cause an appreciable reduction in the likelihood of both the survival and recovery of the vernal pool crustaceans, goldfields, salamanders, and beetles in the wild.

The jeopardy analysis in this biological opinion places an emphasis on consideration of the range-wide survival and recovery needs of the vernal pool crustaceans, goldfields, salamanders, and beetles and the role of the action area in the survival and recovery of the vernal pool crustaceans, goldfields, salamanders, and beetles as the context for evaluating the significance of the effects of the proposed Federal action, taken together with cumulative effects, for purposes of making the jeopardy determination.

Adverse Modification Determination

This Biological Opinion does not rely on the regulatory definition of “destruction or adverse modification” of critical habitat at 50 CFR 402.02. Instead, we have relied upon the statutory provisions of the ESA to complete the following analysis with respect to critical habitat.

In accordance with policy and regulation, the adverse modification analysis in this Biological Opinion relies on four components: (1) the *Status of Critical Habitat*, which evaluates the rangewide condition of designated critical habitat for the vernal pool crustaceans and goldfields in terms of primary constituent elements (PCEs), the factors responsible for that condition, and the intended recovery function of the critical habitat at the provincial and range-wide scale; (2) the *Environmental Baseline*, which evaluates the condition of the critical habitat in the action area, the factors responsible for that condition, and the recovery role of the critical habitat in the action area; (3) the *Effects of the Action*, which determines the direct and indirect impacts of the proposed Federal action and the effects of any interrelated or interdependent activities on the PCEs and how that will influence the recovery role of affected critical habitat units; and (4) *Cumulative Effects* which evaluates the effects of future, non-Federal activities in the action area on the PCEs and how that will influence the recovery role of affected critical habitat units.

For purposes of the adverse modification determination, the effects of the proposed Federal action on the vernal pool crustaceans and goldfields critical habitat are evaluated in the context of the range-wide condition of the critical habitat at the provincial and range-wide scales, taking into account any cumulative effects, to determine if the critical habitat range-wide would remain functional (or would retain the current ability for the PCEs to be functionally established in areas of currently unsuitable but capable habitat) to serve its intended recovery role for the vernal pool crustaceans and goldfields.

The analysis in this Biological Opinion places an emphasis on using the intended range-wide recovery function of vernal pool crustaceans and goldfields critical habitat and the role of the action area relative to that intended function as the context for evaluating the significance of the effects of the proposed Federal action, taken together with cumulative effects, for purposes of making the adverse modification determination.

Status of the Species and Environmental Baseline

Vernal Pool Fairy Shrimp

The vernal pool fairy shrimp (fairy shrimp) was listed as threatened on September 19, 1994 (Service 1994). Simovich *et al.* (1992) and Ericksen and Belk (1999) provide further details about the life history and ecology of this species. The fairy shrimp has a delicate elongate body, large stalked compound eyes, no carapace, and 11 pairs of swimming legs. It swims or glides gracefully upside down by means of complex beating movements of the legs that pass in a wave-like anterior to posterior direction. Fairy shrimp feed on algae, bacteria, protozoa, rotifers, and bits of detritus. The females carry the eggs in an oval or elongate ventral brood sac. The eggs are either dropped to the pool bottom or remain in the brood sac until the female dies and sinks. The "resting" or "summer" eggs are capable of withstanding heat, cold, and prolonged desiccation. When the pools fill in the same or subsequent seasons, some, but not all, of the eggs may hatch. The egg bank in the soil may consist of eggs from several years of breeding (Donald 1983). The eggs hatch when the vernal pools fill with rainwater. The early stages of the vernal pool fairy shrimp develop rapidly into adults. These non-dormant populations often disappear early in the season long before the vernal pools dry up.

The fairy shrimp inhabits vernal pools with clear to tea-colored water, most commonly in grass or mud-bottomed swales, or basalt flow depression pools in unplowed grasslands. The fairy shrimp has been collected from early December to early May. It can mature quickly, allowing populations to persist in short-lived shallow pools (Simovich *et al.* 1992). Fairy shrimps occupy a variety of different vernal pool habitats, from small, clear, sandstone rock pools to large, turbid, alkaline, grassland valley floor pools (Eng *et al.* 1990; Helm 1998;). The pool types where the species has been found include Northern Hardpan, Northern Claypan, Northern Volcanic Mud Flow, and Northern Basalt Flow vernal pools formed on a variety of geologic formations and soil types. Although fairy shrimp have been collected from large vernal pools, including one exceeding 25 acres in area (Eriksen and Belk 1999), it is most frequently found in pools measuring fewer than 0.05 acre in area (Helm 1998; Gallagher 1996). The fairy shrimp occurs at elevations from 33 feet to 4,003 feet (Eng *et al.* 1990), and is typically found in pools with low to moderate amounts of salinity or total dissolved solids (Keeley 1984; Syrdahl 1993). Vernal pools are mostly rain fed, resulting in low nutrient levels and dramatic daily fluctuations in pH, dissolved oxygen, and carbon dioxide (Keeley and Zedler 1998). Although there are many observations of the environmental conditions where fairy shrimp have been found, there have been no experimental studies investigating the specific habitat requirements of this species.

The hydrology that maintains the pattern of inundation and drying characteristic of vernal pool habitats is complex. Vernal pool habitats form in depressions above an impervious soil layer (duripan) or rock substrate. After winter rains begin, this impervious layer prevents the downward percolation of water and creates a perched water table causing the depression (or pool) to fill. Due to local topography and geology, the depressions are generally part of an undulating landscape, where soil mounds are interspersed with basins, swales, and drainages (Nikiforoff

1941; Holland and Jain 1988). These features form an interconnected hydrological unit known as a vernal pool complex. Although vernal pool hydrology is driven by the input of precipitation, water input to vernal pool basins also occurs from surface and subsurface flow from the swale and upland portions of the complex (Zedler 1987, Hanes *et al.* 1990, Hanes and Stromberg 1998). Surface flow through the swale portion of the complex allows vernal pool species to move directly from one vernal pool to another. Upland areas are a critical component of vernal pool hydrology because they directly influence the rate of vernal pool filling, the length of the inundation period, and the rate of vernal pool drying (Zedler 1987; Hanes and Stromberg 1998).

The fairy shrimp has evolved unique physical adaptations to survive in vernal pools. Vernal pool environments are characterized by a short inundation phase during the winter, a drying phase during the spring, and a dry phase during the summer (Holland and Jain 1988). The timing and duration of these phases can vary significantly from year to year, and in some years vernal pools may not inundate at all. In order to take advantage of the short inundation phase, vernal pool crustaceans have evolved short reproduction times and high reproductive rates. Fairy shrimps generally hatch within a few days after their habitats fill with water, and can start reproducing within a few weeks (Eng *et al.* 1990; Helm 1998; Eriksen and Belk 1999). Fairy shrimps can complete their entire life cycle in a single season, and some species may complete several life cycles. Fairy shrimps can also produce numerous offspring when environmental conditions are favorable. Some species may produce thousands of cysts during their life spans.

To survive the prolonged heat and dessication of the vernal pool dry phase, vernal pool crustaceans have developed a dormant stage. After vernal pool crustacean eggs are fertilized in the female's brood sac, the embryos develop a thick, usually multi-layered shell. When embryonic development reaches a late stage, further maturation stops, metabolism is drastically slowed, and the egg, now referred to as a cyst, enters a dormant state called diapause. The cyst is then either dropped to the pool bottom or remains in the brood sac until the female dies and sinks. Once the cyst is desiccated, it can withstand temperatures near boiling (Carlisle 1968), fire (Wells *et al.* 1997), freezing, and anoxic conditions without damage to the embryo. The cyst wall cannot be affected by digestive enzymes, and can be transported in the digestive tracts of animals without harm (Horne 1967). Most fairy shrimp cysts can remain viable in the soil for a decade or longer (Belk 1998).

Although the exact signals that cause fairy shrimp cysts to hatch are unknown, factors such as soil moisture, temperature, light, oxygen, and osmotic pressure may trigger the embryo's emergence from the cyst (Brendonck 1990). Because the cyst contains a well-developed embryo, the animal can quickly develop into a fully mature adult. This allows fairy shrimps to reproduce before the vernal pool enters the dry phase, sometimes within only a few weeks (Helm 1998, Eriksen and Belk 1999). In some species, cysts may hatch immediately without going through a dormant stage, if they are deposited while the vernal pool still contains water. These cysts are referred to as quiescent, and allow the vernal pool crustacean to produce multiple generations in a single wet season as long as their habitat remains inundated.

Another important adaptation of vernal pool crustaceans to the unpredictable conditions of vernal pools is the fact that not all of the dormant cysts hatch in every season. Hathaway and Simovich (1996) found that only 6 percent of endangered San Diego fairy shrimp (*Branchinecta sandiegonensis*) cysts hatched after initial hydration, and only 0.18 percent of Riverside fairy shrimp cysts hatched. The cysts that don't hatch remain dormant and viable in the soil. These cysts may hatch in a subsequent year, and form a cyst bank much like the seed bank of annual plants. The cyst bank may be comprised of cysts from several years of breeding, and large cyst banks of viable resting eggs in the soil of vernal pools containing fairy shrimp have been well documented (Belk 1998). Based on a review of other studies (e.g. Belk 1977; Gallagher 1996, Brendonck 1990), Hathaway and Simovich (1996) concluded that species inhabiting more unpredictable environments, such as smaller or shorter lived pools, are more likely to have a smaller percent of their cysts hatch after their vernal pool habitats fill with water. This strategy reduces the probability of complete reproductive failure if a vernal pool dries up prematurely. This kind of "bet-hedging strategy" has been suggested as a mechanism by which rare species may persist in unpredictable environments (Chesson and Huntly 1989; Ellner and Hairston 1994).

Upland areas associated with vernal pools are also an important source of nutrients to vernal pool organisms (Wetzel 1975). Vernal pool habitats derive most of their nutrients from detritus which is washed into the pool from adjacent uplands, and these nutrients provide the foundation for vernal pool aquatic communities' food chain. Detritus is a primary food source for the vernal pool crustaceans (Eriksen and Belk 1999).

Fairy shrimp generally will not hatch until water temperatures drop to below 50°F (Gallagher 1996; Helm 1998). This species is capable of hatching multiple times within a single wet season if conditions are appropriate. Helm (1998) observed 6 separate hatches of fairy shrimp within a single wet season, and Gallagher (1996) observed 3 separate hatches in vernal pools in Butte County. Helm (1998) observed fairy shrimp living for as long as 147 days. The species can reproduce in as few as 18 days at optimal conditions of 68°F and can complete its life cycle in as little as 9 weeks (Gallagher 1996; Helm 1998). However, maturation and reproduction rates of fairy shrimp are controlled by water temperature and can vary greatly (Eriksen and Brown 1980; Helm 1998). Helm (1998) observed that fairy shrimp did not reach maturity until 41 days at water temperatures of 59°F. Fairy shrimp has been collected at water temperatures as low as 40°F (Eriksen and Belk 1999), however, the species has not been found in water temperatures above about 73°F (Helm 1998; Eriksen and Belk 1999).

The fairy shrimp is known from 32 populations extending from Stillwater Plain in Shasta County through most of the length of the Central Valley to Pixley in Tulare County, and along the central coast range from northern Solano County to Pinnacles in San Benito County (Eng et al. 1990; Fugate 1992; Sugnet and Associates 1993) and a disjunct population on the Agate Desert in Oregon. Five additional, disjunct populations exist: one near Soda Lake in San Luis Obispo County; one in the mountain grasslands of northern Santa Barbara County; one on the Santa Rosa Plateau in Riverside County, one near Rancho California in Riverside County and one on the

Agate Desert near Medford, Oregon. Three of these isolated populations each contain only a single pool known to be occupied by the fairy shrimp. The genetic characteristics of these species, as well as ecological conditions, such as watershed continuity, indicate that populations of these animals are defined by pool complexes rather than by individual vernal pools (Fugate 1992). Therefore, the most accurate indication of the distribution and abundance of these species is the number of inhabited vernal pool complexes.

The primary historic dispersal method for the fairy shrimp likely was large scale flooding resulting from winter and spring rains which allowed the animals to colonize different individual vernal pools and other vernal pool complexes. This dispersal currently is non-functional due to the construction of dams, levees, and other flood control measures, and widespread urbanization within significant portions of the range of this species. Waterfowl and shorebirds likely are now the primary dispersal agents for vernal pool crustaceans (Brusca in. litt.; 1992; Simovich in. litt., 1992). The eggs of vernal pool crustaceans are either ingested (Krapu 1974; Swanson 1974; Driver 1981; Ahl 1991) and/or adhere to the legs and feathers where they are transported to new habitats.

Vernal pool crustaceans are often dispersed from one pool to another through surface swales that connect one vernal pool to another. These dispersal events allow for genetic exchange between pools and create a population of animals that extends beyond the boundaries of a single pool. Instead, populations of vernal pool crustaceans are defined by the entire vernal pool complex in which they occur (Simovich *et al.* 1992, King 1996). These dispersal events also allow vernal pool crustaceans to move into pools with a range of sizes and depths. In dry years, animals may only emerge in the largest and deepest pools. In wet years, animals may be present in all pools, or in only the smallest pools. The movement of vernal pool crustaceans into vernal pools of different sizes and depths allows these species to survive the environmental variability that is characteristic of their habitats.

Vernal pool crustaceans are an important food source for a number of aquatic and terrestrial species. Aquatic predators include insects such as backswimmers (Woodward and Kiesecker 1994), predaceous diving beetles and their larvae, and dragonflies and damselfly larvae. Vernal pool tadpole shrimp are another significant predator of fairy shrimp. Vernal pools provide important habitat for resident and migratory birds, particularly waterfowl and shorebirds. Birds are particularly attracted to the pools because they offer foraging habitat at a time of year when resources are limited (Silveira 1998), and vernal pools help link aquatic resources in the California portion of the Pacific Flyway. Vernal pool crustaceans provide important proteins and calcium vital to the energetic needs of migratory bird migration and reproduction (Proctor *et al.* 1967; Silveira 1998). Vernal pool crustaceans are a major food source for a number of terrestrial vertebrate predators including water fowl, wading birds, toads, frogs, and salamanders (Proctor *et al.* 1967; Krapu 1974; Swanson 1974; Morin 1987; Simovich *et al.* 1991; Silveira 1998). Vernal pool crustaceans depend on the absence of water during the summer months to discourage aquatic predator species such as bullfrogs, garter snakes, and fish (Eriksen and Belk 1999).

The fairy shrimp is imperiled by a variety of human-caused activities, primarily urban development, water supply/flood control projects, and land conversion for agricultural use. Habitat loss occurs from direct destruction and modification of pools due to filling, grading, discing, leveling, and other activities, as well as modification of surrounding uplands which alters vernal pool watersheds. Other activities which adversely affect these species include off-road vehicle use, certain mosquito abatement measures, and pesticide/herbicide use. The main threat to listed vernal pool crustaceans is the loss of habitat associated with human activities, including urban/suburban development, water supply/flood control development, and conversion of natural lands to intensively farmed agricultural uses. According to the 1997 National Resources Inventory, released by the Natural Resources Conservation Service (2000), California ranked sixth in the nation in number of acres of private land developed between 1992 and 1997, at nearly 695,000 acres. Habitat loss occurs from direct destruction and modification of pools due to filling, grading, discing, leveling, and other activities, as well as modification of surrounding uplands which alters vernal pool watersheds. Other activities which adversely affect these species include off-road vehicle use, certain mosquito abatement measures, and pesticide/herbicide use, alterations of vernal pool hydrology, fertilizer and pesticide contamination, activity, invasions of aggressive non-native plants, gravel mining, and contaminated stormwater runoff. State and local laws and regulations do not protect listed vernal pool crustaceans, while other laws and regulations, including the Clean Water Act, have not effectively maintained habitat necessary to conserve and recover these species. Although developmental pressures continue, only a small fraction of vernal pool habitat is protected from the threat of destruction.

A substantial amount of vernal pool habitat has been converted for human uses in spite of Federal regulations implemented to protect wetlands. Current rapid urbanization and agricultural conversion throughout the ranges of these two species continue to pose the most severe threats to the continued existence of the vernal pool tadpole shrimp and vernal pool fairy shrimp.

In addition to direct habitat loss, the vernal pool habitat for the fairy shrimp is also highly fragmented throughout their ranges due to the nature of vernal pool landscapes and the conversion of natural habitat by human activities. Such fragmentation results in small, isolated populations of fairy shrimp which may be more susceptible to extinction due to random demographic, genetic, and environmental events. Should an extirpation event occur in a population that has been fragmented, the opportunities for recolonization would be greatly reduced due to physical (geographical) isolation from other (source) populations.

The proposed project is located within the Solano-Colusa vernal pool region, which was designated based largely on presence of endemic vernal pool species identified in the Service's Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon (Recovery Plan) (Service 2005a). The fairy shrimp has been adversely affected by development and modification of the vernal pool and grassland habitat within the Solano-Colusa vernal pool region and known to be present in much of the undeveloped areas surrounding the proposed project. Excessive impacts to one or more of the vernal pool regions could jeopardize the long-term survival and

recovery of the vernal pool crustaceans by increasing the vulnerability of the remaining vernal pool regions to catastrophic events (Service 2005a).

The global average temperature has risen by approximately 0.6°C during the 20th Century (IFPC 2001, 2007; Adger *et al* 2007). There is an international scientific consensus that most of the warming observed has been caused by human activities (IFPC 2001, 2007; Adger *et al.* 2007), and that it is “very likely” that it is largely due to manmade emissions of carbon dioxide and other greenhouse gases (Adger *et al.* 2007). Ongoing climate change (Anonymous 2007; Inkley *et al.* 2004; Adger *et al.* 2007; Kanter 2007) likely imperils sensitive species, and the resources necessary for their survival. Since climate change threatens to disrupt annual weather patterns, it may result in a loss of their habitats and/or prey, and/or increased numbers of their predators, parasites, and diseases. Where populations are isolated, a changing climate may result in local extinction.

The CDFG’s California Natural Diversity Database includes multiple reported fairy shrimp observations within the action area (CDFG 2010). A small portion of the action area is within the Jepson Prairie Core area described in the Recovery Plan. According to the Recovery Plan (Service 2005a), these core areas were established based on the understanding that these support viable populations of vernal pool species and/or will contribute to the connectivity of habitat and, thus, the increase of dispersal opportunities between populations. The preservation and enhancement of each core area is important to maintain and possibly expand the distribution of vernal pool species range-wide (Service 2005a).

Guideline-level dry-season (in accordance with the Service’s “Interim Survey Guidelines to Permittees for Recovery Permits under Section 10(a)(1)(A) of the Endangered Species Act for the Listed Vernal Pool Branchiopods” (April 19, 1996 version) [Shrimp Guidelines]) surveys for vernal pool crustaceans were conducted by Vollmar Consulting, Natural Resource Specialists, in vernal pools along Air Base Parkway and adjacent to the proposed Walters Road Extension on September 13, 2000, and November 2000-April 2001). A habitat assessment for vernal pool crustaceans was conducted by Vollmar Consulting, Natural Resource Specialists in May February and November of 2005. In addition, guideline level vernal pool crustacean surveys were conducted in portions of the study area in 2000. These surveys detected fairy shrimp in 22 locations within or adjacent to the BSA. This species is also known to occur in pools in and adjacent to Travis Air Force Base, and in the Jepson Prairie Preserve east of Travis AFB. Presence is inferred elsewhere in the BSA where suitable habitat occurs.

The Service has determined that the fairy shrimp occurs within action area because of the presence of extant occurrences, appropriate wetland habitat within the action area, known nearby occurrences within the range of the vernal pool crustaceans, uninterrupted connectivity between occupied habitat and the action area, and the biology and ecology of the animal.

Vernal Pool Tadpole Shrimp

The vernal pool tadpole shrimp (tadpole shrimp) was listed as endangered on September 19, 1994 (Service 1994). Simovich *et al.* (1992) provide further details about the life history and ecology of these animals. The species has dorsal compound eyes, a large shield-like carapace that covers most of the body, and a pair of long cercopods at the end of the last abdominal segment (Linder 1952; Longhurst 1955; Pennak 1989). It is primarily a benthic animal that swims with its legs down. Tadpole shrimp climb or scramble over objects, as well as move along or in bottom sediments. Their diet consists of organic detritus and living organisms, such as fairy shrimp and other invertebrates (Pennak 1989).

The tadpole shrimp occurs in a wide variety of vernal pool habitats including vernal pools, clay flats, ephemeral stock ponds, roadside ditches, and road ruts (Helm 1998). They have been found in pools with water temperatures ranging from 50°F to 84°F and pH ranging from 6.2 to 8.5 (Syrdahl 1993, King 1996). However, vernal pools exhibit daily and seasonal fluctuations in pH, temperature, dissolved oxygen, and other water chemistry characteristics (Syrdahl 1993, Scholnick 1995).

The life history of the tadpole shrimp is linked to the phenology of its vernal pool habitat. After winter rainwater fills the pools, the populations are reestablished from diapaused eggs which lie dormant in the dry pool sediments (Lanway 1974; Ahl 1991). Ahl (1991) found that eggs in one pool hatched within three weeks of inundation and sexual maturation was reached in another three to four weeks. The eggs are sticky and readily adhere to plant matter and sediment particles (Simovich *et al.* 1992). A portion of the eggs hatch immediately and the rest enter diapause and remain in the soil to hatch during later rainy seasons (Ahl 1991). The tadpole shrimp matures slowly and is a long-lived species (Ahl 1991). Adults are often present and reproductive until the pools dry up in the spring (Ahl 1991; Simovich *et al.* 1992).

Tadpole shrimp have relatively high reproductive rates. Ahl (1991) found that fecundity increases with body size. Large females, greater than 0.8 inch carapace length, could deposit as many as 6 clutches, averaging 32 to 61 eggs per clutch, in a single wet season. Tadpole shrimp sex ratios can vary (Ahl 1991). After winter rains fill their vernal pool habitats, dormant vernal pool tadpole shrimp cysts may hatch in as little as 4 days (Ahl 1991).

Additional cysts produced by adult tadpole shrimp during the wet season may hatch without going through a dormant period (Ahl 1991). Tadpole shrimp emerge from their cysts as metanaupliu, a larval stage which lasts for 1.5 to 2 hours. They then molt into a larval form resembling the adult.

Helm (1998) found that tadpole shrimp took a minimum of 25 days to mature and the mean age at first reproduction was 54 days. Other researchers have observed tadpole shrimp generally take between 3 and 4 weeks to mature (Ahl 1991; King 1996). Ahl (1991) found that reproduction did not begin until individuals were larger than 0.39 inch carapace length. Variation in growth

and maturation rates may be a result of differences in water temperature, which strongly influences the growth rates of aquatic invertebrates. King (1996) studied genetic variation among vernal pool tadpole shrimp populations at 20 different sites in the Central Valley. She found that 96 percent of the genetic variation measured was due to differences between sites. This result corresponds with the findings of other researchers that vernal pool crustaceans have low rates of gene flow between separated sites. The low rate of exchange between vernal pool tadpole shrimp populations is probably a result of the spatial isolation of their habitats and their reliance on passive dispersal mechanisms. However, King (1996) also estimated that gene flow between pools within the same vernal pool complex was much higher, and concluded that vernal pool crustacean populations should be defined by vernal pool complex, not by the boundaries of an individual vernal pool.

Based on genetic differences, King (1996) separated tadpole shrimp populations into two distinct groups. One group was comprised of animals inhabiting the floor of the Central Valley, near the Sacramento and San Joaquin Rivers. The other group contained tadpole shrimp from sites along the eastern margin of the Central Valley. King (1996) concluded that these two groups may have diverged because cyst dispersal by overland flooding historically connected populations on the Central Valley floor, while populations on the eastern margin of the valley were not periodically connected by large scale flooding, and were therefore historically more isolated. When dispersal of these foothill populations occurred, it was probably through different mechanisms such as migratory birds.

The tadpole shrimp is known from 19 populations in the Central Valley, ranging from east of Redding in Shasta County south to Fresno County, and from a single vernal pool complex located on the San Francisco Bay National Wildlife Refuge in Alameda County. The species inhabits vernal pools containing clear to highly turbid water, ranging in size from 54 square feet in the Mather Air Force Base area of Sacramento County, to the 93-acre Olcott Lake at Jepson Prairie in Solano County. Vernal pools at Jepson Prairie and Vina Plains (Tehama County) have a neutral pH, and very low conductivity, total dissolved solids, and alkalinity (Barclay and Knight 1984; Eng et al. 1990). These pools are located most commonly in grass-bottomed swales of grasslands in old alluvial soils underlain by hardpan or in mud-bottomed claypan pools containing highly turbid water.

The main threat to the tadpole shrimp is the loss of habitat associated with human activities, including urban/suburban development, water supply/flood control development, and conversion of natural lands to intensively farmed agricultural uses. Habitat loss occurs from direct destruction and modification of pools due to filling, grading, discing, leveling, and other activities, as well as modification of surrounding uplands which alters vernal pool watersheds. Other activities which adversely affect the species include off-road vehicle use, certain mosquito abatement measures, and pesticide/herbicide use, alterations of vernal pool hydrology, fertilizer and pesticide contamination, invasions of aggressive non-native plants, gravel mining, and contaminated stormwater runoff. State and local laws and regulations do not protect the tadpole shrimp, while other laws and regulations, including the Clean Water Act, have not effectively

maintained habitat necessary to conserve and recover these species. Although developmental pressures continue, only a small fraction of vernal pool habitat is protected from the threat of destruction.

In addition to direct habitat loss, the vernal pool habitat for the tadpole shrimp is also highly fragmented throughout their ranges due to the nature of vernal pool landscapes and the conversion of natural habitat by human activities. Such fragmentation results in small, isolated populations of tadpole shrimp which may be more susceptible to extinction due to random demographic, genetic, and environmental events. Should an extirpation event occur in a population that has been fragmented, the opportunities for recolonization would be reduced due to physical (geographical) isolation from other (source) populations.

The proposed project is located within the Solano-Colusa vernal pool region, which was designated based largely on presence of endemic vernal pool species identified in the Recovery Plan (Service 2005a). The tadpole shrimp has been adversely affected by development and modification of the vernal pool and grassland habitat within the Solano-Colusa vernal pool region and known to be present in much of the undeveloped areas surrounding, and within the BSA. Excessive impacts to one or more of the vernal pool regions could jeopardize the long-term survival and recovery of the vernal pool crustaceans by increasing the vulnerability of the remaining vernal pool regions to catastrophic events (Service 2005).

The global average temperature has risen by approximately 0.6°C during the 20th Century (IFPC 2001, 2007; Adger *et al* 2007). There is an international scientific consensus that most of the warming observed has been caused by human activities (IFPC 2001, 2007; Adger *et al.* 2007), and that it is “very likely” that it is largely due to manmade emissions of carbon dioxide and other greenhouse gases (Adger *et al.* 2007). Ongoing climate change (Anonymous 2007; Inkley *et al.* 2004; Adger *et al.* 2007; Kanter 2007) likely imperils sensitive species, and the resources necessary for their survival. Since climate change threatens to disrupt annual weather patterns, it may result in a loss of their habitats and/or prey, and/or increased numbers of their predators, parasites, and diseases. Where populations are isolated, a changing climate may result in local extinction.

The CNDDB includes multiple reported vernal pool tadpole shrimp observations within the BSA (CNDDB 2010). The action area is within the known tadpole shrimp range and there are no significant artificial, hydrological, or landscape barriers between these occupied areas and the action area. Areas within and adjacent to the action area have been assigned various designations relative to the ecological value of associated vernal pool habitat. A portion of the action area is within the Jepson Prairie Core area described in the Recovery Plan (Service 2005).

Guideline-level dry-season (Shrimp Guidelines) surveys for vernal pool crustaceans were conducted by Vollmar Consulting, Natural Resource Specialists, in vernal pools along Air Base Parkway and adjacent to the proposed Walters Road Extension on September 13, 2000, and November 2000–April 2001). A habitat assessment for vernal pool crustaceans was conducted by

Vollmar Consulting, Natural Resource Specialists in May, February, and November of 2005. In addition, guideline level vernal pool crustacean surveys were conducted in portions of the study area in 2000. Although these surveys did not detect tadpole shrimp in the BSA, there are three prior known occurrences of tadpole shrimp within the BSA. This species is also known to occur in pools in south of SR 12 and east of Travis AFB. Presence is inferred elsewhere in the BSA where suitable habitat occurs.

The Service has determined that the tadpole shrimp occurs within action area because of the presence extant occurrences, appropriate wetland habitat within the action area, known nearby occurrences of vernal pool crustaceans, uninterrupted connectivity between occupied habitat and the action area, and the biology and ecology of the animal.

Contra Costa Goldfields

The Service listed Contra Costa goldfields as an endangered species in 1997 (Service 1997). This species does not currently have any State listing status. The California Native Plant Society has considered Contra Costa goldfields rare and endangered since the organization's first list was published (Powell 1974); Contra Costa goldfields are currently on List 1B.

Greene (1888) first described Contra Costa goldfields, naming this species *Lasthenia conjugens*.

The type locality is Antioch, in Contra Costa County (Greene 1888). Hall (1914) later synonymized Contra Costa goldfields under the common species Fremont's goldfields, which at that time was called *Baeria fremontii*. Ferris (1958) proposed the name *Baeria fremontii* var. *conjugens* to recognize the distinctiveness of Contra Costa goldfields. Finally, Ornduff (1966) restored Greene's original name and rank, returning this species to the genus *Lasthenia*. The two closest relatives of Contra Costa goldfields are *L. burkei* (Burke's goldfields) and *L. fremontii* (Fremont's goldfields).

The stems of Contra Costa goldfields are 4 to 12 inches tall, somewhat fleshy, and usually branched. The leaves are opposite and narrow; the lower leaves are entire, but stem leaves have one or two pairs of narrow lobes. The daisy-like flower heads are solitary. Both the disk and ray flowers are golden-yellow, and the ligules are 0.20 to 0.39 inch long. Each head has numerous disk flowers and 6 to 13 ray flowers. The club-shaped achenes are no more than 0.06 inch long and are shiny, olive-green, hairless, and lack a pappus (Greene 1888, Ornduff 1993b). Contra Costa goldfields has a diploid chromosome number of 12 (Ornduff 1966; Ornduff 1993b). Whereas all other species of *Lasthenia* have either completely free phyllaries or phyllaries fused more than two-thirds of their length, Contra Costa goldfields has phyllaries fused from one-quarter to one-half their length. The free phyllaries and presence of a pappus distinguish both *L. burkei* and *L. fremontii* from Contra Costa goldfields (Ornduff 1969; Ornduff 1979; Ornduff 1993b). *Blennosperma* species can be differentiated from Contra Costa goldfields by the alternate leaves, clustered (as opposed to solitary) flower heads, and paler yellow ligules of the former (Ornduff 1993a,b).

Contra Costa goldfields occurred historically in seven vernal pool regions: Central Coast, Lake-Napa, Livermore, Mendocino, Santa Barbara, Santa Rosa, and Solano-Colusa (Keeler-Wolf *et al.* 1998). In addition, several historical occurrences in Contra Costa County are outside of the defined vernal pool regions (Keeler-Wolf *et al.* 1998, (CNDDDB 2010). Many collection sites from the late 19th and early 20th centuries are difficult to pinpoint because locality information on specimen labels often was vague. Ornduff (1966) reported collections from 13 sites in Alameda, Contra Costa, Mendocino, Napa, Santa Barbara, Santa Clara, and Solano Counties. Although he cited three specimens each from Contra Costa (including the type) and Santa Barbara Counties, Ornduff (1966, 1979) noted that the species was most common in Solano County. One additional site in Alameda County was documented in 1959 by G. Thomas Robbins, who collected a specimen (# 3963, housed at the Jepson Herbarium) on the “shore of San Francisco Bay” south of Russell.

Of the 32 occurrences of Contra Costa goldfields recorded between 1884 and 2010 that are currently (through 2010) catalogued in the CNDDDB (2010), 20 are likely extant. However, there is uncertainty due in part to the difficulty of relocating sites based on early vague site descriptions and also because this species may reappear on a site after several years, even if it is absent during a given survey. Contra Costa goldfields presumably remains in all of the vernal pool regions where it occurred historically, except for the Santa Barbara, Livermore, and Mendocino Vernal Pool Regions. However, by far the greatest concentration of this species is in the Solano-Colusa Vernal Pool Region; where 10 occurrences that are presumed extant, plus 1 that may be extirpated. Five occurrences are extant in the Central Coast Vernal Pool Region, including three at the former Fort Ord in Monterey County, one at San Francisco Bay National Wildlife Refuge, and one near Fremont, both in Alameda County (CNDDDB 2010).

Germination, growth, reproduction, and demography are likely to be similar to *Lasthenia burkei*, a close relative that has been studied more intensively. As a vernal pool annual plant, seeds of Contra Costa goldfields would be expected to germinate in response to autumn rains, with the plants maturing in a single growing season, setting seed, and dying back during the summer. However, detailed research on the life cycle has not been conducted. Laboratory germination tests on the related species *L. burkei* (Rancho Santa Ana Botanical Garden unpublished data), indicated that germination occurs rapidly in a single flush (peak germination date the same as first germination date), with relatively high germination rates (49 to 100 percent). *Lasthenia burkei* plants that establish in autumn under natural conditions may tolerate prolonged submergence but do not begin rapid stem growth until vernal pools and swales drain down during late winter or early spring (Ornduff 1969, Patterson *et al.* 1994).

Contra Costa goldfields flowers from March through June (Ornduff 1966, Ornduff 1979, Skinner and Pavlik 1994). The flowers are self-incompatible (Crawford and Ornduff 1989). Although Contra Costa goldfields has not been the subject of pollinator studies, observations suggest that the same insects visit all outcrossed species of *Lasthenia*, rather than concentrating on any particular species (Thorp 1976). Insect visitors to flowers of *Lasthenia* belong to five orders: Coleoptera, Diptera, Hemiptera, Hymenoptera, and Lepidoptera (Thorp and Leong 1998). Most

of these insects are generalist pollinators. All of the specialist pollinators of *Lasthenia* are solitary bees of the family Andrenidae; these pollinators include *Andrena submoesta*, *A. puthua*, *A. baeriae*, *A. duboisi*, *A. lativentris*, and two or three undescribed species (Thorp and Leong 1998). The extent to which pollination of Contra Costa goldfields depends on host-specific bees or more generalist pollinators is currently unknown.

Seed dispersal mechanisms in Contra Costa goldfields are unknown. However, the lack of a pappus or even hairs on the achenes makes wind dispersal unlikely (Ornduff 1976). Seed longevity, survival rates, fecundity, and other demographic parameters have not been investigated. However, as with other vernal pool annuals, population sizes have been observed to vary by up to four orders of magnitude from year to year (CNDDDB 2010). Thus, this species most likely forms a persistent soil seed bank. Seeds of the related species *L. burkei* have been stored artificially for many years with little loss of viability (C. Patterson, pers. comm.). However, the maximum duration of viable seed in the soil is not known.

Contra Costa goldfields typically grows in vernal pools, swales, moist flats, and depressions within a grassland matrix (CNDDDB 2010). However, several historical collections were from populations growing in the saline-alkaline transition zone between vernal pools and tidal marshes on the eastern margin of the San Francisco Bay (P. Baye 2000). The herbarium sheet for one of the San Francisco Bay specimens notes that the species also grew in evaporating ponds used to concentrate salt (P. Baye 2000). The vernal pool types from which this species has been reported are Northern Basalt Flow, Northern Claypan, and Northern Volcanic Ashflow (Sawyer and Keeler-Wolf 1995). The landforms and geologic formations for sites where Contra Costa goldfields occur have not yet been determined. Most occurrences of Contra Costa goldfields are at elevations of 6 to 200 feet, but the recently discovered Monterey County occurrences are at 400 feet and one Napa County occurrence is at 1,460 feet elevation (CNNB 2010). The soil types have not yet been identified for most *Contra Costa goldfields* localities. However, soil series from which it is known are: Aiken, Antioch, Concepcion, Conejo, Crispin, Haire, Linne, Los Robles, Rincon, Solano, and San Ysidro, plus the Arnold-Santa Ynez, Hambright-rock outcrop, and Los Osos complexes. Soil textures, where known, are clays or loams. At least in Solano County and on the shores of San Francisco Bay, Contra Costa goldfields grow in alkaline or saline-alkaline sites (P. Baye 2000, CNDDDB 2010).

Many plant species grow in association with Contra Costa goldfields in various parts of its range, but no comprehensive survey of associates has been undertaken. The two most commonly reported associates are *Lolium multiflorum* (Italian ryegrass) and *Plagiobothrys* spp. (popcorn flower). Other plant species that occur at several Contra Costa goldfields sites include *Cotula coronopifolia* (brass buttons), *Downingia pulchella* (valley downingia), *Eryngium aristulatum* (California eryngo), *Lasthenia glaberrima* (smooth goldfields), *Myosurus minimus* (common mousetail), and *Pleuropogon californicus* (California semaphore grass).

The largest concentration of goldfields in Solano County is within the City of Fairfield's sphere of influence and subject to relatively intense development pressure under the City's general plan.

Numerous construction projects, including residential development, landfill expansion, and drainage channels, are proposed and pose specific threats (Service 1997). Threats due to conversions to vineyards are also continuing. The largest Napa County occurrence of this plant, at Suscol Ridge (CNDDDB 2010), is imminently threatened by vineyard conversion; the site is already under a 25-year lease to a winery (P. Baye 2000). Competition from non-native plants, particularly *Lolium multiflorum* (Italian ryegrass), threatens at least seven occurrences of Contra Costa goldfields, several of which are also targeted for development (CNDDDB 2010).

Non-native grasses such as *Lolium multiflorum* not only shade out short statured plants like Contra Costa goldfields, but can also negatively impact vernal pool hydrology by decreasing inundation periods in pools (Marty 2004). In addition, encroachment by non-native plants often follows surface-disturbing activities, such as discing, grading, filling, ditch construction, and off-road vehicle use, which can alter hydrology and microhabitat conditions (Service 2005a). Management strategies including grazing, mowing, and burning are vital to controlling these weed species. The CNDDDB (2010) also cites inappropriate livestock grazing practices as a threat to seven occurrences of Contra Costa goldfields. However, the removal of livestock grazing from at least one site in Contra Costa County has caused significant population declines in this species (J. Marty, pers. comm. 2004). Therefore, the complete elimination of grazing, as well as overgrazing, may have adverse impacts to the Contra Costa goldfields.

Five occurrences of Contra Costa goldfields are on public lands: three at Fort Ord, and one each at San Francisco Bay National Wildlife Refuge and Travis Air Force Base. These lands are administered by the U.S. Bureau of Land Management, the Service, and the U.S. Air Force, respectively. All of the Fort Ord occurrences are on land within the Habitat Management Plan Habitat Reserve lands and will be conserved and managed in perpetuity (W. Collins *in litt.* 2005; U.S. Army Corps of Engineers 1997). The population at Travis Air Force Base, including over 20 acres of adjacent restored vernal pools, is protected as a special ecological preserve, with protective measures and appropriate management for the species provided in the Travis Air Force Base Land Management Plan.

Seasonal managed cattle grazing has been returned to two conservation sites supporting Contra Costa goldfields: 1) the Warm Springs Seasonal Wetland Unit of the Don Edwards San Francisco Bay National Wildlife Refuge in Alameda County, and 2) the State Route 4 Preserve managed by the Muir Heritage Land Trust in Contra Costa County. The Contra Costa goldfields population at the Warm Springs Unit has declined during the last 10 years due to many factors including competition by non-native plant species. During this time period, grazing, which occurred intermittently at the Warm Springs Unit since the 1800s, has been excluded by the Refuge until a management plan could be developed. The decline in the Contra Costa goldfields population at the Warm Springs Unit cannot be attributed to a single factor, but most likely results from the complex interaction of several variables including current and historical land uses, the abiotic environment, and annual climatic variation. The increasing dominance of non-native grasses, however, coincides with the suspension of livestock grazing, suggesting that the lack of a disturbance regime may be a primary factor in the degradation of habitat for Contra Costa goldfields at this site (Service 2005a). The population of Contra Costa goldfields at the State

Route 4 Preserve, which was protected as part of compensation for the construction of the State Route 4 Gap Closure Project, has also declined in recent years. The decline may be due to a number of causes, including below normal precipitation and competition with non-native species (Pardieck 2003). The site had been grazed heavily for many years resulting in stream channel erosion. Grazing was suspended in 2000 and the numbers of plants dropped sharply in 2001 and continued to decline the following year. Controlled grazing has been reintroduced to control the amount of seed and thatch produced by non-native plants.

The conversion of land to agricultural use and urban development which has become more pronounced over the past 60 years has artificially isolated populations of goldfields from each other, resulting in 5 distinct populations in the area. While these populations are fragments of a previously larger population, they are nevertheless sizeable individually at least in terms of total numbers of plants, ranging in size from 100,000 plants to over 30 million (LSA 2009). These five primary populations are demarcated based on soil type and watershed association. A description of each primary population follows:

- **Northeast Fairfield.** Several sub-populations, separated from each other by existing roads and developments for the most part, exist in northeast Fairfield. These sub-populations are located within the watersheds of McCoy and western Union Creek. The total population is typically in excess of at least 8-10 million individuals annually given weather conditions and grazing regimes (LSA 2009).
- **Potrero Hills Flats.** Two sub-populations exist in this area. One large sub-population occurs at the base of the Potrero Hills at the lower end of the watershed of Union Creek. A second, small sub-population exists to the east in the flats north of Hwy 12, within the lower Denverton Creek watershed.
- **Cordelia Road.** One small, remnant sub-population exists near Cordelia Road in the flats south of a rock quarry, southwest of Fairfield at the lower end of the watershed of Dan Wilson Creek.
- **Lower Ledgewood Creek.** A small sub-population occurring in the lower reaches of the watershed of Ledgewood Creek, southwest of Fairfield.
- **Vanden Road.** A small sub-population has been historically reported as occurring in low areas along the railroad tracks that parallel Vanden Road, north of Travis Air Force Base in the upper region of the watershed of Union Creek. This population appears to be extinct, but other undocumented sub-populations may be present in suitable vernal pool habitats east of Vanden Road, but have not yet been surveyed (LSA 2009).

The proposed project is located within the Solano-Colusa vernal pool region, which was designated based largely on presence of endemic vernal pool species identified in the Recovery Plan (Service 2005a). Goldfields have been adversely affected by development and modification of the vernal pool and grassland habitat within the Solano-Colusa vernal pool region and known to be present in much of the undeveloped areas surrounding the base. Excessive impacts to one or more of the vernal pool regions could jeopardize the long-term survival and recovery of the goldfields by increasing the vulnerability of the remaining vernal pool regions to catastrophic

events (Service 2005a). The action area is within a small portion of the Jepson Prairie Core area described in the Recovery Plan (Service 2005a).

Guideline-level surveys for goldfields have been conducted within the BSA in the bloom time of years 1999, 2000, 2002, 2005, and 2007. Goldfields were detected in the Walters Road extension area, along the south side of Airbase Parkway between Peabody Road and Walters Road, and along the east side of Walters Road, south of Airbase Parkway. Therefore, the Service has determined that Contra Costa goldfields do occur within the action area because of the biology and ecology of the plant, the presence of known and suitable habitat in the action area, as well as on the site.

California Tiger Salamander

On May 23, 2003, the Service proposed to list the Central California Distinct Population Segment (DPS) of the California tiger salamander as threatened. At that time we also proposed reclassification of the Santa Barbara County DPS and Sonoma County DPS from endangered to threatened (68 FR 28647). In the same notice we also proposed a special rule under section 4(d) of the Act to exempt take for routine ranching operations for the Central California DPS and, if reclassified to threatened, for the Santa Barbara and Sonoma County DPSs (68 FR 28668). On August 4, 2004, after determining that the listed the Central California population of the California DPS of the California tiger salamander was threatened (69 FR 472121), we determined that the Santa Barbara and Sonoma County populations were threatened as well, and reclassified the California tiger salamander as threatened throughout its range (69 FR 47212), removing the Santa Barbara and Sonoma County populations as separately listed DPSs (69 FR 47241). In this notice we also finalized the special rule to exempt take for routine ranching operations for the California tiger salamander throughout its range (69 FR 47248). On August 18, 2005, as a result of litigation of the August 4, 2004 final rule on the reclassification of the California tiger salamander DPSs (*Center for Biological Diversity et al. v. United States Fish and Wildlife Service et al.*, C 04-04324 WHA [N.D. Cal. 2005]), the District Court of Northern California sustained the portion of the 2004 rule pertaining to listing the Central California tiger salamander as threatened with a special rule, vacated the 2004 rule with regard to the Santa Barbara and Sonoma DPSs, and reinstated their prior listing as endangered. The List of Endangered and Threatened Wildlife in part 17, subchapter B of Chapter I, title 50 of the Code of Federal Regulations has not been amended to reflect the vacatures contained in this order, and continues to show the rangewide reclassification of the California tiger salamander (salamander[s]) as a threatened species with a special rule.

The salamander is a large, stocky, terrestrial salamander with a broad, rounded snout. Recorded adult measurements have been as much as 8.2 inches long (Petranka 1998; Stebbins 2003). Salamanders exhibit sexual dimorphism (differences in body appearance based on gender) with males tending to be larger than females. The coloration of the adults generally consists of random white or yellowish markings against a black body. The markings tend to be more concentrated on the lateral sides of the body; whereas other salamander species tend to have brighter yellow spotting that is heaviest on the dorsal surface.

The salamander has an obligate biphasic life cycle (Shaffer *et al.* 2004). Although the larvae develop in the vernal pools and ponds in which they were born, the species is otherwise terrestrial and spend most of their post-metamorphic lives in widely dispersed underground retreats (Shaffer *et al.* 2004; Trenham *et al.* 2001). Because they spend most of their lives underground, the animals rarely are encountered even in areas where salamanders are abundant. Subadult and adult salamanders typically spend the dry summer and fall months in the burrows of small mammals, such as California ground squirrels (*Spermophilus beecheyi*) and Botta's pocket gopher (*Thomomys bottae*) (Storer 1925; Loredó and Van Vuren 1996; Petranka 1998; Trenham 1998a). Although ground squirrels have been known to eat these amphibians, the relationship with their burrowing hosts is primarily commensal (an association that benefits one member while the other is not affected) (Loredó *et al.* 1996; Semonsen 1998).

Salamanders may also use landscape features such as leaf litter or desiccation cracks in the soil for upland refugia. Burrows often harbor camel crickets (*Stenelopomatus* species) and other invertebrates that provide likely prey for the amphibians. Underground refugia also provide protection from the sun and wind associated with the dry California climate that can cause excessive drying of amphibian skin. Although salamanders are members of a family of "burrowing" salamanders, they are not known to create their own burrows. This may be due to the hardness of soils in the California ecosystems in which they are found. Salamanders depend on persistent small mammal activity to create, maintain, and sustain sufficient underground refugia for the species. Burrows are short lived without continued small mammal activity and typically collapse within approximately 18 months (Loredó *et al.* 1996).

Upland burrows inhabited by salamanders have often been referred to as aestivation sites. However, "aestivation" implies a state of inactivity, while most evidence suggests that the animals remain active in their underground dwellings. One study has found that salamanders move, feed, and remain active in their burrows (Van Hattem 2004). Because the adults arrive at breeding ponds in good condition and are heavier when entering the pond than when leaving, researchers have long inferred that they are feeding while underground. A number of direct observations have confirmed this (Trenham 2001; Van Hattem 2004). Thus, "upland habitat" is a more accurate description of the terrestrial areas used by salamanders.

Salamanders typically emerge from their underground refugia at night during the fall or winter rainy season (November-May) to migrate to their breeding ponds (Stebbins 1985, 1989; Shaffer

et al. 1993; Trenham *et al.* 2000). The breeding period is closely associated with the rainfall patterns in any given year with less adults migrating and breeding in drought years (Loredo and Van Vuren 1996; Trenham *et al.* 2000). Male salamander are typically first to arrive and generally remain in the ponds longer than females. Results from a 7-year study in Monterey County suggested that males remained in the breeding ponds for an average of 44.7 days while females remained for an average of only 11.8 days (Trenham *et al.* 2000). Historically, breeding ponds were likely limited to vernal pools, but now include livestock stockponds. Ideal breeding ponds are typically fishless, free of non-native predators, and seasonal or semi-permanent (Barry and Shaffer 1994; Petranka 1998).

While in the ponds, adult salamanders mate and then the females lay their eggs in the water (Twitty 1941; Shaffer *et al.* 1993; Petranka 1998). Egg laying typically reaches a peak in January (Loredo and Van Vuren 1996; Trenham *et al.* 2000). Females attach their eggs singly, or in rare circumstances, in groups of two to four, to twigs, grass stems, vegetation, or debris (Storer 1925; Twitty 1941). Eggs are often attached to objects, such as rocks and boards in ponds with no or limited vegetation (Jennings and Hayes 1994). Clutch sizes from a Monterey County study had an averaged of 814 eggs (Trenham *et al.* 2000). Seasonal pools may not exhibit sufficient depth, persistence, or other necessary parameters for adult breeding during times of drought (Barry and Shaffer 1994). After breeding and egg laying is complete, adults leave the pool and return to their upland refugia (Loredo *et al.* 1996; Trenham 1998a). Adult salamanders often continue to emerge nightly for approximately the next two weeks to feed amongst their upland habitat (Shaffer *et al.* 1993).

Salamander larvae typically hatch within 10 to 24 days after eggs are laid (Storer 1925). The larvae are totally aquatic and range in length from approximately 0.45 to 0.56 inches (Petranka 1998). They have yellowish gray bodies, broad fat heads, large, feathery external gills, and broad dorsal fins that extend well up their back. The larvae feed on zooplankton, small crustaceans, and aquatic insects for about six weeks after hatching, after which they switch to larger prey (J. Anderson 1968). Larger larvae have been known to consume the tadpoles of Pacific treefrogs (*Pseudacris regilla*), western spadefoot toads (*Spea hammondi*), and California red-legged frogs (*Rana aurora draytonii*) (J. Anderson 1968; P. Anderson 1968). Salamander larvae are among the top aquatic predators in seasonal pool ecosystems. When not feeding, they often rest on the bottom in shallow water but are also found throughout the water column in deeper water. Young salamanders are wary and typically escape into vegetation at the bottom of the pool when approached by potential predators (Storer 1925).

The salamander larval stage is typically completed in 3 to 6 months with most metamorphs entering upland habitat during the summer (Petranka 1998). In order to be successful, the aquatic phase of this species' life history must correspond with the persistence of its seasonal aquatic habitat. Most seasonal ponds and pools dry up completely during the summer. The peak emergence of these metamorphs is typically between mid-June and mid-July (Loredo and Van Vuren 1996; Trenham *et al.* 2000). Amphibian larvae must grow to a critical minimum body size before they can metamorphose (change into a different physical form) to the terrestrial stage

(Wilbur and Collins 1973). Larval development and metamorphosis can vary and is often site-dependent. Larvae collected near Stockton in the Central Valley during April varied between 1.88 to 2.32 inches in length (Storer 1925). Feaver (1971) found that larvae metamorphosed and left breeding pools 60 to 94 days after eggs had been laid, with larvae developing faster in smaller, more rapidly drying pools. Longer ponding duration typically results in larger larvae and metamorphosed juveniles that are more likely to survive and reproduce (Pechmann *et al.* 1989; Semlitsch *et al.* 1988; Morey 1998; Trenham 1998b). Larvae will perish if a breeding pond dries before metamorphosis is complete (P. Anderson 1968; Feaver 1971). Pechmann *et al.* (1989) found a strong positive correlation between ponding duration and total number of metamorphosing juveniles in five salamander species. In Madera County, Feaver (1971) found that only 11 of 30 sampled pools supported larval salamanders, and 5 of these dried before metamorphosis could occur. Therefore, out of the original 30 pools, only 6 (20 percent) provided suitable conditions for successful reproduction that year. Size at metamorphosis is positively correlated with stored body fat and survival of juvenile amphibians, and negatively correlated with age at first reproduction (Semlitsch *et al.* 1988; Scott 1994; Morey 1998).

Following metamorphosis, juvenile salamanders leave their pools and move to upland habitat. This emigration can occur in both wet and dry conditions (Loredo and Van Vuren 1996; Loredo *et al.* 1996). Wet conditions are more favorable for upland travel but summer rain events seldom occur as metamorphosis is completed and ponds begin to dry. As a result, juveniles may be forced to leave their ponds on rainless nights. Under dry conditions, juveniles may be limited to seeking upland refugia in close proximity to their aquatic larval pool. These individuals often wait until the next winter's rains to move further into more suitable upland refugia. Juveniles remain active in their upland habitat, emerging from underground refugia during rainfall events to disperse or forage (Trenham and Shaffer 2005). Depending on location and other development factors, metamorphs will not return as adults to aquatic breeding habitat for 2 to 5 years (Loredo and Van Vuren 1996; Trenham *et al.* 2000).

Lifetime reproductive success for the salamander is low. Results from one study suggest that the average female bred 1.4 times over their lifespan and produced 8.5 young per reproductive effort that survived to metamorphosis (Trenham *et al.* 2000). This resulted in the output of roughly 11 metamorphic offspring over a breeding female's lifetime. The primary reason for low reproductive success may be that this relatively short-lived species requires two or more years to become sexually mature (Shaffer *et al.* 1993). Some individuals may not breed until they are four to six years old. While salamanders may survive for more than ten years, many breed only once, and in one study, less than 5 percent of marked juveniles survived to become breeding adults (Trenham 1998b). With such low recruitment, isolated populations are susceptible to unusual, randomly occurring natural events as well human-caused factors that reduce breeding success and individual survival. Factors that repeatedly lower breeding success in isolated pools can quickly extirpate a population.

Dispersal and migration movements made by salamanders can be grouped into two main categories: (1) breeding migration; and (2) interpond dispersal. Breeding migration is the

movement of salamanders to and from a pond from the surrounding upland habitat. After metamorphosis, juveniles move away from breeding ponds into the surrounding uplands, where they live continuously for several years. At a study in Monterey County, it was found that upon reaching sexual maturity, most individuals returned to their natal/ birth pond to breed, while 20 percent dispersed to other ponds (Trenham *et al.* 2001). After breeding, adult salamanders return to upland habitats, where they may live for one or more years before attempting to breed again (Trenham *et al.* 2000).

Salamanders are known to travel long distances between breeding ponds and their upland refugia. Generally it is difficult to establish the maximum distances traveled by any species, but salamanders in Santa Barbara County have been recorded dispersing up to 1.3 miles from their breeding ponds (Sweet 1998). As a result of a 5-year capture and relocation study in Contra Costa County, Orlaf (2007) estimated that captured California tiger salamanders were traveling a minimum of 0.5 mile to the nearest breeding pond and that some individuals were likely traveling more than 1.3 miles to and from breeding ponds. Tiger salamanders are also known to travel between breeding ponds. One study found that 20 to 25 percent of the individuals captured at one pond were recaptured later at other ponds approximately 1,900 and 2,200 feet away (Trenham *et al.* 2001). In addition to traveling long distances during juvenile dispersal and adult migration, salamanders may reside in burrows far from their associated breeding ponds.

Although previously cited information indicates that salamanders can travel long distances, they typically remain close to their associated breeding ponds. A trapping study conducted in Solano County during the winter of 2002/2003 suggested that juveniles dispersed and used upland habitats further from breeding ponds than adults (Trenham and Shaffer 2005). More juvenile salamanders were captured at traps placed at 328, 656, and 1,312 feet from a breeding pond than at 164 feet. Approximately 20 percent of the captured juveniles were found at least 1,312 feet from the nearest breeding pond. The associated distribution curve suggested that 95 percent of juvenile salamanders were within 2,099 feet of the pond, with the remaining 5 percent being found at even greater distances. Preliminary results from the 2003-04 trapping efforts at the same study site detected juvenile salamanders at even further distances, with a large proportion of the captures at 2,297 feet from the breeding pond (Trenham *et al.*, unpublished data). Surprisingly, most juveniles captured, even those at 2,100 feet, were still moving away from ponds. In Santa Barbara County, juvenile salamanders have been trapped approximately 1,200 feet away while dispersing from their natal pond (Science Applications International Corporation, unpublished data). These data show that many salamanders travel far while still in the juvenile stage. Post-breeding movements away from breeding ponds by adults appear to be much smaller. During post-breeding emigration from aquatic habitat, radio-equipped adult salamanders were tracked to burrows between 62 to 813 feet from their breeding ponds (Trenham 2001). These reduced movements may be due to adult salamanders exiting the ponds with depleted physical reserves, or drier weather conditions typically associated with the post-breeding upland migration period.

Salamanders are also known to use several successive burrows at increasing distances from an associated breeding pond. Although previously cited studies provide information regarding linear movement from breeding ponds, upland habitat features appear to have some influence on movement. Trenham (2001) found that radio-tracked adults were more abundant in grasslands with scattered large oaks (*Quercus* species), than in more densely wooded areas

Documented or potential salamander predators include coyotes (*Canis latrans*), raccoons (*Procyon lotor*), striped skunks (*Mephitis mephitis*), opossums (*Didelphis virginiana*), egrets (*Egretta* species), great blue herons (*Ardea herodias*), crows (*Corvus brachyrhynchos*), ravens (*Corvus corax*), garter snakes (*Thamnophis* species), bullfrogs (*Rana catesbeiana*), California red-legged frogs (*Rana aurora draytonii*), mosquito fish (*Gambusia affinis*), and crayfish (*Procambarus* species).

The salamander is imperiled throughout its range due to a variety of human activities (Service 2004). Current factors associated with declining salamander populations include continued habitat loss and degradation due to agriculture and urbanization; hybridization with the non-native eastern salamander (*Ambystoma tigrinum*) (Fitzpatrick and Shaffer 2004; Riley *et al.* 2003); and predation by introduced species. Salamander populations are likely threatened by multiple factors but continued habitat fragmentation and colonization of non-native salamanders may represent the most significant current threats. Habitat isolation and fragmentation within many watersheds have precluded dispersal between sub-populations and jeopardized the viability of metapopulations (broadly defined as multiple subpopulations that occasionally exchange individuals through dispersal, and are capable of colonizing or “rescuing” extinct habitat patches). Other threats include predation and competition from introduced exotic species; possible commercial over-utilization; diseases; various chemical contaminants; road kill; and certain mosquito and rodent control operations. Currently, these various primary and secondary threats are largely not being offset by existing Federal, State, or local regulatory mechanisms. The salamander is also prone to chance environmental or demographic events.

The global average temperature has risen by approximately 0.6°C during the 20th Century (IFPC 2001, 2007; Adger *et al.* 2007). There is an international scientific consensus that most of the warming observed has been caused by human activities (IFPC 2001, 2007; Adger *et al.* 2007), and that it is “very likely” that it is largely due to manmade emissions of carbon dioxide and other greenhouse gases (Adger *et al.* 2007). Ongoing climate change (Anonymous 2007; Inkley *et al.* 2004; Adger *et al.* 2007; Kanter 2007) likely imperils sensitive species, and the resources necessary for their survival. Since climate change threatens to disrupt annual weather patterns, it may result in a loss of their habitats and/or prey, and/or increased numbers of their predators, parasites, and diseases. Where populations are isolated, a changing climate may result in local extinction, with range shifts precluded by lack of habitat.

The proposed project is located within the Solano-Colusa vernal pool region, which was designated based largely on presence of endemic vernal pool species identified in the Recovery Plan (Service 2005a). Salamanders have been adversely affected by development and

modification of the vernal pool and grassland habitat within the Solano-Colusa vernal pool region and known to be present in much of the undeveloped areas surrounding the BSA. Excessive impacts to one or more of the vernal pool regions could jeopardize the long-term survival and recovery of the salamander by increasing the vulnerability of the remaining vernal pool regions to catastrophic events.

The salamander is known to be present in much of the undeveloped areas to the south and east of the proposed project site. The CNDDB includes three reported salamander observation adjacent to the proposed project site to the east, within 1 mile (CNDDB 2010). Areas within and adjacent to the action area have been assigned various designations relative to the ecological value of associated vernal pool habitat. The action area is within the Jepson Prairie Core area described in the Service's Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon (Service 2005). The California tiger salamander Central Valley Region, Designated Critical Habitat Unit 2 is located east of the action area, in Jepson Prairie. No protocol surveys were conducted for salamanders specifically for the proposed project, however the entire BSA was evaluated for its potential to support both aquatic and upland habitat. Results from these habitat assessments determined that the BSA did not contain any suitable aquatic habitat for salamanders but that it did contain suitable upland habitat.

The Service has determined that the salamander is reasonably certain to occur within the action area because of the presence of appropriate upland habitat within the action area, the presence of potential breeding ponds adjacent to the action area, known adjacent occurrences within the dispersal range of the salamander, connectivity between occupied habitat and the action area, and the biology and ecology of the animal, especially the ability of the adults to move considerable distances between their breeding ponds and upland habitat.

Valley Elderberry Longhorn Beetle

The beetle was listed as a threatened species under the Act on August 8, 1980 (45 FR 52803). Critical habitat for the species was designated and published in 50 CFR §17.95. Two areas along the American River in the Sacramento metropolitan area have been designated as critical habitat for the beetle. The first area designated as critical habitat for this species is along the lower American River at River Bend (Goethe) and Ancil Hoffman parks (American River Parkway Zone) and the second area is at the Sacramento Zone, an area about a half mile from the American River downstream from the American River Parkway Zone. In addition, an area along Putah Creek, Solano County, and the area west of Nimbus Dam along the American River Parkway, Sacramento County, are considered essential habitat, according to *The Valley Elderberry Longhorn Beetle Recovery Plan* (Service 1984). These critical habitat areas and essential habitat areas within the American River parkway and Putah Creek support large numbers of mature elderberry shrubs with extensive evidence of use by the beetle.

The elderberry shrub (*Sambucus* sp.) is the sole host plant for the beetle. Elderberries are locally common components of the remaining riparian forest and savannah landscapes, and to a lesser

extent the mixed chaparral-foothill woodlands, of the Central Valley. The occupancy rates of the beetle are reduced in non-riparian habitats (e.g., Talley *et al.* in press), indicating that riparian elderberry habitat an important habitat type for the beetle.

Use of elderberry shrubs by the beetle, a wood borer, is rarely apparent. Frequently, the only exterior evidence of the shrub's use by the beetle is an exit hole created by the larva emerging just prior to the pupal stage. Observations of elderberry shrubs along the Cosumnes River and in the Folsom Lake area indicate that larval beetles can be found in elderberry stems with no apparent exit holes; the larvae either succumb prior to constructing an exit hole or not developed sufficiently to construct one. Larvae appear to be distributed in stems which are 1.0 inch or greater in diameter at ground level and can occur living stems. *The Valley Elderberry Longhorn Beetle Recovery Plan* (Service 1984) and Barr (1991) further describe the beetle's life history.

The beetle is a specialist on elderberry plants, and tends to have small population sizes and occurs in low densities (Barr 1991; Collinge *et al.* 2001). It has been observed feeding upon both blue and red elderberry (Service 1984, Barr 1991) with stems greater than or equal to one inch in diameter (Barr 1991). Sightings of the beetle are rare and in most circumstances, evidence of the beetle is derived from the observation of the exit holes left when adults emerge from elderberry stems. The beetle tends to occur in areas with higher elderberry densities, but has lower exit hole densities than a closely related species, the California elderberry longhorn beetle. (Collinge *et al.* 2001).

When the beetle was listed in 1980, the species was known from less than ten localities along the American River, the Merced River, and Putah Creek. By the time the *Valley Elderberry Longhorn Beetle Recovery Plan* was prepared in 1984, additional occupied localities had been found along the American River and Putah Creek. As of 2010, the California Range wide distribution extends from the Sacramento River in Shasta County, southward to an area along Caliente Creek in Kern County (CNDDDB 2010). The California Natural Diversity Database (CNDDDB) contained 190 occurrences for this species in 44 drainages throughout the Central Valley. However, the number of records should be viewed with caution as a record does not necessarily indicate a unique population. In many cases, there are multiple records within close proximity to one another within the same watershed or river. For example, 24 records are known within two miles of the American River (CNDDDB 2010).

The beetle is considered a poor disperser based on the spatial distribution of occupied shrubs (Barr 1991; Collinge *et al.* 2001). Huxel and Hastings (1999) used computer simulations of colonization and extinction patterns based on differing dispersal distances, and found that the short dispersal simulations best matched the 1997 census data in terms of site occupancy. This suggests that dispersal and colonization are limited to nearby sites. At spatial scales greater than 6.2 miles, such as across drainages, beetle occupancy appears to be strongly influenced by regional extinction and colonization processes, and colonization is constrained by limited dispersal (Collinge *et al.* 2001; Huxel and Hastings 1999). Except for one occasion, drainages examined by Barr that were occupied in 1991, remained occupied in 1997 (Collinge *et al.* 2001;

Huxel and Hastings 1999). The one exception was Stoney Creek, which was occupied in 1991, but not in 1997. All drainages found by Barr (1991) to be unoccupied in 1991, were also unoccupied in 1997. Collinge *et al.* (2001) further found that while the proportions of occupancy were similar, the number of sites examined containing elderberry and the density of elderberry at sites had decreased since Barr (1991), resulting in fewer occupied sites and groups. Studies suggest that the beetle is unable to re-colonize drainages where the species has been extirpated, because of its limited dispersal ability (Barr 1991; Collinge *et al.* 2001). This data suggests that drainages unoccupied by the beetle remain unoccupied.

The beetle continues to be threatened by habitat loss and fragmentation, predation by the non-native Argentine ants (*Linepithema humile*) (Holway 1998; Huxel 2000; Huxel and Hastings 1999; Huxel *et al.* 2001; Ward 1987), and possibly other factors such as pesticide drift, non-native plant invasion, improper burning regimes, off-road vehicle use, rip-rap bank protection projects, wood cutting, and over-grazing by livestock.

Habitat destruction is one of the most significant threats to the beetle. Riparian forests, the primary habitat for the beetle, have been severely depleted throughout the Central Valley over the last two centuries as a result of expansive agricultural and urban development (Huxel *et al.* 2001; Katibah 1984; Roberts *et al.* 1977; Thompson 1961). As of 1849, the rivers and larger streams of the Central Valley were largely undisturbed. They supported continuous bands of riparian woodland four to five miles in width along some major drainages, such as the lower Sacramento River, and generally about two miles wide along the lesser streams (Thompson 1961). Most of the riverine floodplains supported riparian vegetation to about the 100-year flood line (Katibah 1984).

A large human population influx occurred after 1849, however, and much of the Central Valley riparian habitat was rapidly converted to agriculture and used as a source of wood for fuel and construction to serve a wide area (Thompson 1961). The clearing of riparian forests for fuel and construction made this land available for agriculture (Thompson 1961). Natural levees bordering the rivers, once supporting vast tracts of riparian habitat, became prime agricultural land (Thompson 1961). As agriculture expanded in the Central Valley, needs for increased water supply and flood protection spurred water development and reclamation projects. Artificial levees, river channelization, dam building, water diversion, and heavy groundwater pumping further reduced riparian habitat to small, isolated fragments (Katibah 1984).

In recent decades, these riparian areas have continued to decline as a result of ongoing agricultural conversion as well as urban development and stream channelization. As of 1989, there were over 100 dams within the Central Valley drainage basin, as well as thousands of miles of water delivery canals and streambank flood control projects for irrigation, municipal and industrial water supplies, hydroelectric power, flood control, navigation, and recreation (Frayer *et al.* 1989). Riparian forests in the Central Valley have dwindled to discontinuous strips of widths currently measurable in yards rather than miles.

Some accounts state that the Sacramento Valley supported approximately 775,000 to 800,000 acres of riparian forest as of approximately 1848, just prior to statehood (Smith 1977; Katibah 1984). No comparable estimates are available for the San Joaquin Valley. Based on early soil maps, however, more than 921,000 acres of riparian habitat are believed to have been present throughout the Central Valley under pre-settlement conditions (Huxel *et al* 2001; Katibah 1984). Another source estimates that of approximately 5,000,000 acres of wetlands in the Central Valley in the 1850s, approximately 1,600,000 acres were riparian wetlands (Warner and Hendrix 1985; Frayer *et al.* 1989).

Based on a CDFG riparian vegetation distribution map, by 1979, there were approximately 102,000 acres of riparian vegetation remaining in the Central Valley. This represents a decline in acreage of approximately 89 percent as of 1979 (Katibah 1984). More extreme figures were given by Frayer *et al.* (1989), who reported that woody riparian forests in the Central Valley had declined to 34,600 acres by the mid-1980s (from 65,400 acres in 1939).

An more recent analysis, completed by The Central Valley Historic Mapping Project, observed similar decreases in the amount of riparian habitat (Geographic Information Center 2003). Loss of riparian habitat between 1900 and 1990 in the Central Valley was about 96 percent in the southern portion of the Valley (Kern County to Fresno County) (16,000 acres remaining), 84 percent in the middle Valley (Merced County to San Joaquin County) (21,000 acres remaining) and 80 percent in the northern Valley (Sacramento and Solano counties to Shasta County) (96,000 acres remaining). Although these studies have differing findings in terms of the number of acres lost (most likely explained by differing methodologies), they attest to a dramatic historic loss of riparian habitat in the Central Valley.

Destruction of riparian habitat in central California has resulted not only in a significant acreage loss, but also has resulted in beetle habitat fragmentation. Fahrig (1997) states that habitat fragmentation is only important for habitats that have suffered greater than 80 percent loss. Riparian habitat in the Central Valley, which has experienced greater than 90 percent loss by most estimates, would meet this criterion as habitat vulnerable to effects of fragmentation. Existing data suggests that beetle populations, specifically, are affected by habitat fragmentation. Barr (1991) found that small, isolated habitat remnants were less likely to be occupied by beetles than larger patches, indicating that beetle subpopulations are extirpated from small habitat fragments. Barr (1991) and Collinge *et al.* (2001) consistently found beetle exit holes occurring in clumps of elderberry bushes rather than isolated bushes, suggesting that isolated shrubs do not typically provide long-term viable habitat for this species.

Habitat fragmentation can be an important factor contributing to species declines because: (1) it divides a large population into two or more small populations that become more vulnerable to direct loss, inbreeding depression, genetic drift, and other problems associated with small populations; (2) it limits a species' potential for dispersal and colonization; and (3) it makes habitat more vulnerable to outside influences by increasing the edge:interior ratio (Primack 1998). Small, isolated subpopulations are susceptible to extirpation from random demographic,

environmental, and/or genetic events (Shaffer 1981; Lande 1988; Primack 1998). While a large area may support a single large population, the smaller subpopulations that result from habitat fragmentation may not be large enough to persist over a long time period. As a population becomes smaller, it tends to lose genetic variability through genetic drift, leading to inbreeding depression and a lack of adaptive flexibility. Smaller populations also become more vulnerable to random fluctuations in reproductive and mortality rates, and are more likely to be extirpated by random environmental factors. When a sub-population becomes extinct, habitat fragmentation reduces the chance of recolonization from any remaining populations. The effect of habitat fragmentation likely is exacerbated by the poor dispersal abilities of the beetle (Collinge *et al* 2001; Talley 2005).

Habitat fragmentation not only isolates small populations, but also increases the interface between habitat and urban or agricultural land, increasing negative edge effects such as the invasion of non-native species (Huxel *et al.* 2001; Huxel 2000) and pesticide contamination (Barr 1991). Several edge effect-related factors may be related to the decline of the beetle.

The invasive Argentine ant (*Linepithema humile*) is a potential threat to the beetle (Huxel 2000). This ant is both an aggressive competitor and predator on native fauna that is spreading throughout riparian habitats in California and displacing assemblages of native arthropods (Ward 1987; Human and Gordon 1997; Holway 1998). The Argentine ant requires moisture and it may thrive in riparian or irrigated areas. A negative association between the presence of the ant and beetle exit holes was observed along Putah Creek in 1997 (Huxel 2000). This aggressive ant could interfere with adult mating or feeding behavior, or prey on eggs and larvae (e.g., Way *et al.* 1992). Surveys along Putah Creek found beetle presence where Argentine ants were not present or had recently colonized, but the beetle was absent from otherwise suitable sites where Argentine ants had become well-established (Huxel 2000). Between 1998 and 2002, the number of sites infested by the Argentine ant increased by 3 along Putah Creek and the American River (30 sites total were examined) (Huxel 2000; Holyoak and Talley 2001). The Argentine ant has been expanding its range throughout California since its introduction around 1907, especially in riparian woodlands associated with perennial streams (Holway 1998; Ward 1987).

Huxel (2000) concluded that, given the potential for Argentine ants to spread with the aid of human activities such as movement of plant nursery stock and agricultural products, this species may come to infest most drainages in the Central Valley along the valley floor, where the beetle is found.

The beetle is also likely preyed upon by insectivorous birds, lizards, and European earwigs (*Forficularia auricularia*) (Klasson *et al.* 2005). These three predators move freely up and down elderberry stems searching for food. The European earwig is a scavenger and omnivore that was often found feeding on tethered mealworm (*Tenebrio monitor*) larvae. The earwig may be common in riparian areas and it may lay its eggs in dead elderberry shrubs. The earwig, like the Argentine ant, requires moisture and is often found in large numbers in riparian and urban areas.

Earwig presence and densities tended to be highest in mitigation sites likely because of the irrigation, although this needs to be statistically tested (Klasson *et al.* 2005).

Invasive exotic plant species may significantly alter the habitat of the beetle. Without adequate eradication and control measures these non-native species may eliminate elderberry shrubs and other native plants. Pest plants of major importance in Central Valley riparian systems include black locust (*Robinia pseudoacacia*), giant reed (*Arundo donax*), red sesbania (*Sesbania punicea*), Himalaya blackberry (*Rubus armeniacus*), tree of heaven (*Ailanthus altissima*), Spanish broom (*Spartium junceum*), Russian olive (*Eleagnus angustifolia*), edible fig (*Ficus carica*), and Chinese tallowtree (*Sapium sebiferum*). Non-woody invasives such as ripgut brome (*Bromus diandrus*), foxtail barley (*Hordeum murinum*), *Lolium multiflorum*, and starthistle/knapweed (*Centaurea* spp.) also may impair elderberry germination or establishment, or elevate the risk of fire. Invasive plant control efforts often are limited by funding, labor, coordination with landowners, and the resilience and spread of their target plants. No rangewide assessment has been completed on the overall degree of impact of invasive plants on the beetle and its habitat. However, there are a number of local efforts to control invasive riparian plant species. For example, the American River Parkway has invasive species removal efforts by Sacramento Weed Warriors (a community stewardship project associated with the California Native Plant Society) and others, and the Cosumnes River Preserve has a group of volunteers who regularly remove exotics and restore native habitats (Talley *et al.* 2006).

Several other factors may threaten the beetle including fire, flooding, and over-grazing by livestock. The condition of elderberry shrubs can be adversely affected by fire, which is often common at the urban-wildland interface. Brush fires initially have a negative effect on shrub condition and, therefore, beetle larvae through direct burning and stem die-off. A year after fire, however, surviving elderberry resprout and display rapid stem growth (Crane 1989). Fires often scarify the hard elderberry seed coat leading to germination of seedlings the following season (Crane 1989). Frequent or repeated fire, however, may kill remaining shoots, root crowns and seeds, causing elderberry to be eliminated from an area for many years since recruitment by seeds is patchy and generally slow (Crane 1989). Elderberry shrubs appeared suitable for the beetle two to six years after burning, but were often uninhabited, with the presence of old, burned exit holes suggesting pre-burn occupancy and post-burn vacancy (Talley *et al.* 2006.). The post-fire lag in occupancy is likely the result of the limited movements of the beetle. Beetle occupancy occurred six to seven years post burn and, as in the alluvial plain of the American River Parkway, is about the same within the post-burn compared with unburned areas (Talley *et al.* in press). No quantitative studies of the net effects of fire on the beetle have been undertaken (e.g., examining beetle and elderberry through time after burns or in areas with varying burn frequencies and magnitude).

The beetle can tolerate flooding of its riparian habitat. The animal has higher occupancy rates in riparian than non-riparian habitats, and associations between the beetle and proximity to rivers were either not observed or there was a weak positive correlation with nearness to the river (Halstead and Oldham 1990; Talley 2005; Talley *et al.* in press). These findings illustrate that

the beetle is not likely harmed by flooding and that higher habitat quality may be associated with rivers. In addition, if elderberry, a facultative riparian shrub, can withstand flooding, then the beetle likely will survive these events. Most floods occur during winter or early spring when the beetle is in its early life history stages, so that the effects of floods are even less likely to affect the beetle. If the shrub is exposed to prolonged flooding (i.e. anoxia) and becomes severely stressed, then the beetle may be affected. The duration and magnitude of flooding at which elderberry stresses is uncertain and the levels of stress that affect the beetle is also unknown. Elderberry shrubs have adaptations that plants use to persist with flooding such as lenticels and aerenchyma, demonstrating that it is probably at least somewhat flood tolerant. Finally, if an area is flooded too frequently so that elderberry cannot survive then no beetles would be able to inhabit the area (Talley 2005).

Another potential factor in the beetle's decline is the effects of inappropriate levels of livestock grazing, which can result in destruction of entire elderberry plants and inhibition of elderberry regeneration. Cattle, sheep and goats readily forage on new elderberry growth, and goats will consume even decadent growth. Well-manicured stands of elderberries, such as occurs due to livestock grazing, have generally been shown to have a relative absence of beetles (Service 1984). The effects on the beetle of both grazing and exotic plant invasions are likely significantly exacerbated by the problem of habitat fragmentation of elderberries. Such fragmentation increases the edge:interior ratio of habitat patches, thereby facilitating the adverse effects of these outside influences.

The global average temperature has risen by approximately 0.6°C during the 20th Century (IFPC 2001, 2007; Adger *et al.* 2007). There is an international scientific consensus that most of the warming observed has been caused by human activities (IFPC 2001, 2007; Adger *et al.* 2007), and that it is "very likely" that it is largely due to manmade emissions of carbon dioxide and other greenhouse gases (Adger *et al.* 2007). Ongoing climate change (Anonymous 2007; Inkley *et al.* 2004; Adger *et al.* 2007; Kanter 2007) likely imperils sensitive species, and the resources necessary for their survival. Since climate change threatens to disrupt annual weather patterns, it may result in a loss of their habitats and/or prey, and/or increased numbers of their predators, parasites, and diseases. Where populations are isolated, a changing climate may result in local extinction, with range shifts precluded by lack of habitat.

There are 9 records for the beetle in the CNDDDB for Solano County. The nearest of these records is approximately three miles to the west of the Walters Road extension portion of the project, in the foothills northwest of the City of Fairfield. Additional records occur along Putah Creek, Lake Berryessa, and the nearby foothills approximately eight miles north of the BSA.

Focused surveys for elderberry shrubs were conducted by Jones & Stokes Associates on October 9, 2001 and October 13, 2005. Additional surveys were conducted by PBS&J in March 27, 2007, April 3, 2007, and September 23, 2008. Surveys detected seven elderberry shrubs within 100 feet from the edge of disturbance; all of which occur along Alamo Creek adjacent to its crossing under Leisure Town Road, just south of Elmira Road. Two shrubs occur

on the east side of Leisure Town Road, four shrubs occur on the west side, and one cluster of stems that are less than one inch in diameter also occurs on the west side. A single potential beetle exit hole was observed on one of the shrubs on the west side of Leisure Town Road. Based on current project designs, it is expected that four of these seven shrubs, two on each side of Leisure town road, will be removed during the construction of road/bridge improvements proposed for these areas. The Service has determined that the beetle is reasonably certain to occur within the project area because of the biology and ecology of the animal, the presence of suitable habitat and the recent observations of a beetle exit hole within an elderberry shrub located in the action area and within the same watershed as the proposed project.

Critical Habitat Status and Baseline

Vernal Pool Fairy Shrimp Critical Habitat

The Service designated 597,821 acres of critical habitat for the vernal pool fairy shrimp in 2005 (Service 2005b). In determining which areas to designate as critical habitat, the Service considers those physical and biological features (primary constituent elements) that are essential to the conservation of the species, and that may require special management considerations and protections (50 CFR § 424.14).

The primary constituent elements of critical habitat for vernal pool fairy shrimp are the habitat components that provide: (1)(i) topographic features characterized by mounds and swales and depressions within a matrix of surrounding uplands that result in complexes of continuously, or intermittently, flowing surface water in the swales connecting the pools described below in paragraph (2)(i), providing for dispersal and promoting hydroperiods of adequate length in the pools; (ii) Depressional features including isolated vernal pools with underlying restrictive soil layers that become inundated during winter rains and that continuously hold water for a minimum of 18 days, in all but the driest years; thereby providing adequate water for incubation, maturation, and reproduction. As these features are inundated on a seasonal basis, they do not promote the development of obligate wetland vegetation habitats typical of permanently flooded emergent wetlands; (iii) Sources of food, expected to be detritus occurring in the pools, contributed by overland flow from the pools' watershed, or the results of biological processes within the pools themselves, such as single-celled bacteria, algae, and dead organic matter, to provide for feeding; and (iv) Structure within the pools described above in paragraph (2)(ii), consisting of organic and inorganic materials, such as living and dead plants from plant species adapted to seasonally inundated environments, rocks, and other inorganic debris that may be washed, blown, or otherwise transported into the pools, that provide shelter. (3) Existing manmade features and structures, such as buildings, roads, railroads, airports, runways, other paved areas, lawns, and other urban landscaped areas do not contain one or more of the primary constituent elements.

A portion of the BSA lies within critical habitat for fairy shrimp, Critical Habitat Unit 16, sub units 16A, 16B, and 16C. The main unit encompasses approximately 12,574 acres and is

essential to the conservation of the species because it is needed to maintain the current geographic and ecological distribution of the species. Critical habitat sub unit 16C is near the intersection of Leisure Town Road and Vanden Road, critical habitat sub unit 16B is near the intersection of Walters Road and Air Base Parkway, and critical habitat sub unit 16A near the intersection of Walters Road and SR 12.

Vernal Pool Tadpole Shrimp Critical Habitat

The Service designated 228,785 acres of critical habitat for the vernal pool tadpole shrimp in 2005 (Service 2005b). In determining which areas to designate as critical habitat, the Service considers those physical and biological features (primary constituent elements) that are essential to the conservation of the species, and that may require special management considerations and protections (50 CFR § 424.14).

The primary constituent elements of critical habitat for vernal pool tadpole shrimp are the habitat components that provide: (1)(i) Topographic features characterized by mounds and swales and depressions within a matrix of surrounding uplands that result in complexes of continuously, or intermittently, flowing surface water in the swales connecting the pools described below in paragraph (2)(i), providing for dispersal and promoting hydroperiods of adequate length in the pools; (ii) Depressional features including isolated vernal pools with underlying restrictive soil layers that become inundated during winter rains and that continuously hold water for a minimum of 41 days, in all but the driest years; thereby providing adequate water for incubation, maturation, and reproduction. As these features are inundated on a seasonal basis, they do not promote the development of obligate wetland vegetation habitats typical of permanently flooded emergent wetlands; (iii) Sources of food, expected to be detritus occurring in the pools, contributed by overland flow from the pools' watershed, or the results of biological processes within the pools themselves, such as single-celled bacteria, algae, and dead organic matter, to provide for feeding; and (iv) Structure within the pools described above in paragraph (2)(ii), consisting of organic and inorganic materials, such as living and dead plants from plant species adapted to seasonally inundated environments, rocks, and other inorganic debris that may be washed, blown, or otherwise transported into the pools, that provide shelter, (3) Existing manmade features and structures, such as buildings, roads, railroads, airports, runways, other paved areas, lawns, and other urban landscaped areas do not contain one or more of the primary constituent elements.

A portion of the BSA lies within tadpole shrimp, critical habitat units 11, sub units 11A, 11B, and 11C. Critical Habitat Unit 11 is identical to critical habitat unit 16 for fairy shrimp. The main unit encompasses approximately 12,574 acres and is essential to the conservation of the species because it is needed to maintain the current geographic and ecological distribution of the species. Critical habitat sub unit 11B is near the intersection of Leisure Town Road and Vanden Road, critical habitat sub unit 11C is near the intersection of Walters Road and Air Base Parkway, and Critical habitat sub unit 11D is near the intersection of Walters Road and SR 12.

Contra Costa Goldfields Critical Habitat

The Service designated 14,730 acres of critical habitat for Contra Costa goldfields in 2005 (Service 2005b). In determining which areas to designate as critical habitat, the Service considers those physical and biological features (primary constituent elements) that are essential to the conservation of the species, and that may require special management considerations and protections (50 CFR § 424.14).

The primary constituent elements of critical habitat for goldfields are the habitat components that provide: (1)(i) Topographic features characterized by isolated mound and intermound complex within a matrix of surrounding uplands that result in continuously, or intermittently, flowing surface water in the depressional features including swales connecting the pools described below in paragraph (2)(i), providing for dispersal and promoting hydroperiods of adequate length in the pools; (ii) Depressional features including isolated vernal pools with underlying restrictive soil layers that become inundated during winter rains and that continuously hold water or whose soils are saturated for a period long enough to promote germination, flowering, and seed production of predominantly annual native wetland species and typically exclude both native and non-native upland plant species in all but the driest years. As these features are inundated on a seasonal basis, they do not promote the development of obligate wetland vegetation habitats typical of permanently flooded emergent wetlands; (3) Existing manmade features and structures, such as buildings, roads, railroads, airports, runways, other paved areas, lawns, and other urban landscaped areas do not contain one or more of the primary constituent elements.

A portion of the BSA lies within goldfields critical habitat unit 4, sub units 4A, 4B, and 4C. This unit encompasses approximately 5,929 acres and is essential to the conservation of the species because it is needed to maintain the current geographic and ecological distribution of the species. Critical habitat sub unit 4A is near the intersection of Leisure Town Road and Vanden Road, critical habitat sub unit 4B is near the intersection of Walters Road and Air Base Parkway, and critical habitat sub unit 4C is near the intersection of Walters Road and SR 12.

Effects of the Action*Vernal Pool Fairy Shrimp/ Vernal Pool Tadpole Shrimp*

Construction of the proposed project will result in the loss of 0.97 wetted acre of vernal pool crustacean habitat. All vernal pool crustaceans occupying the 0.97 acres will be killed upon implementation of the proposed project because the pools will be cut and filled by construction activities. Cysts will be buried and not able to hatch in future years, resulting in both kill of those individuals, but also loss of future generations. Construction of the proposed project will also result in the loss of vernal pool crustaceans occupying 3.72 wetted acres from indirect effects. All vernal pool crustaceans occupying the 3.72 acres will be harmed upon implementation of the proposed action or sometime in the near future due to changes in pool hydrology, erosion, sedimentation, or contamination.

Implementation of the proposed action would result in the loss of vernal pool crustaceans due to: construction and grading activities as they relate to the widening of existing roadways; construction of a northern extension of Walters Road between Cement Hill Road and the intersection of Air Base Parkway; a grade separation (overpass) of the UPRR mainline tracks as part of the Walters Road Extension; bicycle and pedestrian paths; landscaping; and utilities relocation.

In addition to the effects associated with leveling land for road construction purposes (e.g., filling low lying areas), infrastructure development can have indirect effects on the hydrology of vernal pool habitats and the surrounding upland areas. The proposed project involves the coverage of land surfaces with concrete and asphalt, the installation of drainage systems, watering systems, *etc.* These activities can affect the amount and quality of water available to the perched water tables characteristic of vernal pool areas. Changes to the perched water table can lead to alterations in the rate, extent, and duration of inundation (water regime) of the remaining habitat on site after construction (Hanes *et al.* 1990, Hanes and Stromberg 1998). Grading for roads may affect the water regime of vernal pool habitat, particularly when grading involves cutting into the substrata in or near these areas. Exposure of sub-surface layers of soil at road cuts may hasten the loss of water from adjacent habitat by mass flow through networks of cracks, lenses of coarser material, animal burrows, old root channels, or other macroscopic channels. Any decrease in the duration of inundation of vernal pool habitat can affect the reproductive success of species present, including the vernal pool crustaceans.

Erosion and sedimentation associated with road building can alter vernal pool habitat through the transport and deposition of sediments into these areas, thereby altering the depth, temperature, and water quality of a pool or complex.

Cutting and filling a portion of a pool will decrease the size of the pool resulting in a change in the period of inundation and in the capacity of the pool to buffer potential changes in water temperature caused by solar radiation. The biota of vernal pools and swales can change when the hydrologic regime is altered and small changes can have deleterious effects on entire populations of vernal pool crustaceans (Bauder 1986, 1987). Survival of aquatic organisms like vernal pool fairy shrimp and vernal pool tadpole shrimp are directly linked to the water regime of their habitat (Zedler 1987). Therefore, construction within vernal pool areas will, at times, result in the decline of vernal pool crustaceans, including these two listed species.

Indirect effects of the expansion and new roads constructed as part of the proposed project include alteration to surface and subsurface water flow and alteration of inundation patterns; increases in contaminants from roadway surfaces and the use of pesticide and/or mechanical means to control vegetation along right of ways further out into sensitive areas; increases in erosion and sedimentation, potential effects to plant pollinators, the introduction of exotic vegetation, and changes in land use patterns (i.e., urbanization) as a result of the proposed roadway construction. Increases in contamination will occur from roadways being built in areas that no roadways were built before and the increase in vehicle traffic as the proposed project will

be a new route for commuters to get to Hwy 12 from I-80. Contamination of vernal pools from adjacent areas may injure or kill vernal pool species directly or indirectly via pathways including the alteration of chemical properties of a pool, such as pH, and inhibiting and/or disrupting biochemical processes creating less suitable conditions for reproduction, germination, or growth (Service 2005a). Vernal pools next to new or existing roadways may become contaminated from surface runoff by toxic chemical such as petroleum products, grease and oil (Service 2005a). All of these effects may result in decreased cyst viability, decreased hatching success, and decreased survivorship among early life stages, thereby reducing the number of mature adults in future wet seasons.

Expansion (widening and lengthening) of existing roads in or near the watersheds of vernal pool habitat can lead to increases of chemical laden runoff (e.g., petroleum products) from the road surfaces than what presently occurs. This road runoff can kill listed species by poisoning or decreasing their reproductive abilities. Road maintenance activities along expanded roads may include the introduction of pesticides into receiving vernal pools and/or activities such as routine mowing, disking, and/or grading of shoulders and ditches. Pesticides such as herbicides are specifically designed to control vegetation and are generally not target specific, although some are specific to certain types of plants such as broadleaf plants or grasses. Therefore, any spraying of pesticides to control invasive, non-native vegetation may affect vernal pool crustaceans through direct contact and/or indirect spray drift, run-off, sub-surface transport, *etc.*

The effects of vernal pool crustaceans habitat loss will be minimized by the preservation and creation of habitat as outlined in the "Conservation and Minimization Measures".

Vernal Pool Fairy Shrimp and Vernal Pool Tadpole Shrimp Critical Habitat

The proposed action is not expected to appreciably diminish the value of the critical habitat for the vernal pool crustaceans, or prevent critical habitat designations from conservation and recovery of these two species. The project will result in the loss of 1.5 acres total habitat out of 539 total acres in critical habitat sub units 16C and 11B, which lie along Vanden Road just south of its intersection with Leisure Town Road. The project will also result in the loss of 1.2 total acres of aquatic and upland habitat out of 710 total acres in critical habitat sub units 16B and 11C, which lie along existing Walters Road south of its intersection with Airbase Parkway. Where the BSA crosses critical habitat sub units 16A and 11D at the intersection of SR 12 and Walters Road there will be no work for this project outside the existing road footprint, and therefore there will be a not likely to adversely affect on those two critical habitat sub units. The total combined loss of critical habitat units 16 and 11 is 2.70 acres, which is less than half of one percent of the total designated critical habitat in the units.

Primary constituent elements 1, 2, and 3 for the vernal pool crustaceans will stay intact in the remainder of these units during and after project completion and will continue to provide associated upland habitat.

Contra Costa Goldfields

Construction of the proposed project will result in the loss of 0.57 wetted acre of goldfields habitat. All goldfields occupying the 0.57 acres will be killed upon implementation of the proposed project because the pools will be cut and filled by construction activities. Seed will be buried under asphalt and those seeds will no longer be viable to bloom. Construction of the proposed project will also result in the loss of goldfields occupying 2.45 wetted acres from indirect effects. All goldfields occupying the 2.45 acres will be killed upon implementation of the proposed action or sometime in the near future due to changes in pool hydrology, erosion, sedimentation, or contamination. Implementation of the proposed action would result in the permanent loss of goldfields due to: the widening of existing roadways; construction of a northern extension of Walters Road between Cement Hill Road and the intersection of Air Base Parkway; a grade separation (overpass) of the UPRR mainline tracks as part of the Walters Road Extension; bicycle and pedestrian paths; landscaping; and utilities relocation.

In addition to the effects associated with leveling land for construction purposes (i.e., filling low lying areas), infrastructure development can have indirect effects on the hydrology of vernal pool habitats and the surrounding upland areas. Projects involving, or facilitating, the coverage of land surfaces with concrete and asphalt, the installation of drainage systems, watering systems, *etc.*, can affect the amount and quality of water available to the perched water tables characteristic of vernal pool areas. Changes to the perched water table can lead to alterations in the rate, extent, and duration of inundation (water regime) of the remaining habitat. Grading for roads may affect the water regime of vernal pool habitat, particularly when grading involves cutting into the substrata in or near these areas. Exposure of sub-surface layers of soil at road cuts may hasten the loss of water from adjacent habitat by mass flow through networks of cracks, lenses of coarser material, animal burrows, old root channels, or other macroscopic channels. Any decrease in the duration of inundation of vernal pool habitat can affect the reproductive success of species present, including the goldfields. Erosion and sedimentation associated with road building can alter vernal pool habitat through the transport and deposition of sediments into these areas, thereby altering the depth, temperature, and water quality of a pool or complex.

Indirect effects include alteration to surface and subsurface water flow and alteration of inundation patterns; increases in contaminants from roadway surfaces and the use of pesticide and/or mechanical means to control vegetation along right of ways; increases in erosion and sedimentation, potential effects to plant pollinators, the introduction of exotic vegetation, and changes in land use patterns (i.e., urbanization) as a result of the proposed project. All of these effects have the potential to disturb the reproductive abilities of individual plants by decreasing seed and nutlet production, plant death, competition from non-native plants, and lack of pollination, thereby resulting in decreased numbers and/or distribution of plants in subsequent generations.

Roads in or near the watersheds of vernal pool habitat can lead to additional effects through the introduction of chemically laden runoff (i.e., petroleum products) from the road surfaces. The urban runoff from chemical contamination can kill listed species by poisoning or decreasing their reproductive abilities. Road maintenance activities may include the introduction of pesticides into the environment and/or activities such as routine mowing, discing, and/or grading of shoulders and ditches. Pesticides such as herbicides are specifically designed to control vegetation and are generally not target specific, although some are specific to certain types of plants such as broadleaf plants or grasses. Therefore, any spraying of pesticides to control invasive, non-native vegetation may affect goldfields through direct contact and/or indirect spray drift, run-off, sub-surface transport, *etc.*

There is an increased risk of introducing weedy, non-native plants into the vernal pools and swales during construction due to soil disturbance from clearing and grubbing operations and, in general, the vegetation disturbance associated with the use of heavy equipment. Many non-native plants can out-compete native vegetation, thereby reducing the reproductive success of the natives. In extreme cases, entire areas can be permanently devoid of native vegetation as a result of non-native introductions.

The effects of goldfields habitat loss will be minimized by the preservation and creation of habitat as outlined in the "Conservation and Minimization Measures".

Contra Costa Goldfields Critical Habitat

The proposed action is not expected to appreciably diminish the value of the critical habitat for goldfields, or prevent the critical habitat designations from conservation and recovery of this species. The project will result in the loss of 1.5 acres of total habitat out of 539 total acres in critical habitat sub units 4A, which lies along Vanden Road just south of its intersection with Leisure Town Road. The project will also result in the loss of 1.2 acres of upland and aquatic out of 710 total acres in critical habitat sub unit 4B, which lies along existing Walters Road south of its intersection with Airbase Parkway. Where the BSA crosses critical habitat sub unit 4C at the intersection of SR 12 and Walters Road there will be no work for this project outside the existing road footprint, and therefore there will not likely adversely affect that critical habitat sub unit. The total combined loss of to critical habitat to unit 4 is 2.70 acres, which is less than half of one percent of the total designated critical habitat in the units.

Primary constituent elements 1, 2 and 3 for goldfields will stay intact in the remainder of these units during and after project completion and will continue to provide associated upland habitat.

California Tiger Salamander

The proposed project is likely to result in direct adverse effects to the salamander in the Central California DPS (salamander). The proposed project will eliminate salamander habitat and cause direct mortality, injury, or harassment of individual juveniles and adults. Implementation of the

proposed action will result in the permanent loss of 22.7 acres of upland salamander habitat due to: the widening of existing roadways on Leisure Town Road and Vanden Road; bicycle and pedestrian paths; landscaping; and utilities relocation. No permanent or seasonal wetlands or ponds appropriate for salamander breeding will be directly lost or indirectly affected from implementation of the proposed action. The effects of this habitat loss will be minimized by the preservation of upland salamander habitat as outlined in the "Conservation and Minimization Measures".

Mortality or injury of the salamander could occur from being killed by trenching, cutting, and filling to expand and build new roadway portions. Mortality or injury of the salamander could also occur from being crushed by project related equipment or vehicles cutting into existing habitat, and construction debris within the action area. Individual salamanders could also could fall into trenches, pits, or other excavations, and be killed, or unable to escape, be killed due to desiccation, entombment, starvation, or increased predation. Salamander mortality and injury can occur when the animals attempt to cross roads and are hit by vehicles. Mortality or injury of salamanders will be minimized by the biological monitor translocating salamanders that are found on the project site above ground. Therefore, the Service has determined that these effects are reasonably certain to occur.

Valley Elderberry Longhorn Beetle

There are 7 elderberry shrubs identified within the BSA of the proposed project. Of the 7 elderberry shrubs located in the BSA, four are within 100 feet of construction. Implementation of the proposed action will result in direct effects to four shrubs (with 16 total stems greater than one inch diameter at ground level) and to beetles that inhabit those shrubs, due to: The proposed project includes the widening of existing roadways; improvements at the Leisure Town Road crossings of Alamo Creek and New Alamo Creek; and a new crossing of McCoy Creek. No individual beetles inhabiting the three elderberry shrubs greater than 100 feet from construction will be affected as a result of implementation of the proposed action because of the conservation measures proposed by STA as outlined in this biological opinion. Mortality, injury, or harassment of the beetle could occur from the elderberry shrub being trimmed and removed from the project site, particularly if the transplant does not survive once removed from its natural habitat or stems are damaged during transport to the conservation site. Transplantation of elderberry shrubs that are or could be used by beetle larvae is expected to adversely affect the beetle. Beetle larvae may be killed or the beetles' life cycle interrupted during or after the transplanting process. For example: 1. Transplanted elderberry shrubs may experience stress or become unhealthy due to changes in soil, hydrology, microclimate, or associated vegetation. This may reduce their quality as habitat for the beetle, or impair their production of habitat-quality stems in the future. 2. Elderberry shrubs may die as a result of transplantation. 3. Branches containing larvae may be cut, broken, or crushed as a result of the transplantation process.

Cumulative Effects

Cumulative effects include the effects of future State, Tribal, local or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act. There are no cumulative effects from non-Federal actions that are reasonably certain to occur within the action area at this time.

Conclusion

After reviewing the current status of the vernal pool crustaceans, goldfields, Central California DPS salamander, and the beetle, environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the Service's biological opinion that the Jepson Parkway Project, as proposed, is not likely to jeopardize the continued existence of the vernal pool crustaceans, goldfields, Central California DPS salamander, and the beetle. As proposed, the project will not adversely modify critical habitat for the vernal pool crustaceans and goldfields because of the relatively small amount of critical habitat that will be affected.

Primary constituent elements 1, 2 and 3 for vernal pool crustaceans and goldfields will stay intact in the remainder of the critical habitat units during and after project completion and will continue to provide associated upland habitat.

Implementation of the proposed project will have direct permanent effects and indirect effects to vernal pool crustaceans and goldfields as a result of grading and changing hydrology of wetland habitat. Design measures in the project description will minimize effects to vernal pool crustaceans and goldfields by modifying the roadway alignment, shifting the centerline, and/or widening primarily to one side or another, narrowing inside shoulder widths, dry season construction, protective fencing and adding an additional 670 feet of bridge to span habitat. STA has also proposed to preserve habitat off site and acquire a separate parcel to create additional habitat, and preserve it in perpetuity. The habitat that STA has proposed to preserve for goldfields is at the Goldfields Mitigation Bank(bank), which is located entirely within critical habitat and the Jepson Prairie Core area for goldfields, as identified in the recovery plan (Service 2005a). LSA conducted a multi year goldfields population study at this bank and five other sites in Solano County (LSA 2009). LSA identified over 9 million plants at the bank, which was one of the highest identified densities among the sites in the study. The bank is also identified in the Final Administrative Draft of the Solano County Multispecies Habitat Conservation Plan (draft HCP) as being an area of high conservation priority for goldfields (SCWA 2009). The draft HCP has identified the area that the bank is in as subunit 1E, a known core population of goldfields (SCWA 2009). The bank is now protecting in perpetuity 95 percent of this subunit. By STA purchasing compensation credits at this bank they will be contributing to the recovery goals set forth in the recovery plan by helping to protect 90 percent of all known occurrences of goldfields. Therefore the Service has determined that the project as proposed will not indirectly or directly

reduce, appreciably, the likelihood of both the survival and recovery of vernal pool crustaceans and goldfields in the wild.

Implementation of the proposed project will have direct permanent effects to the Central California DPS salamander as a result of grading upland habitat. Design measures in the project description will minimize effects to the Central California DPS salamander by avoiding breeding habitat, such as construction timing and protective fencing, and preserving approximately 68.1 acres of habitat for the salamander. The project also lies in the western-most range of the species in Solano County, and is expanding roads that are already in place and not creating new roads that may create new barriers to salamander movement. The salamander habitat affected by this project occurs in the northern portion of the action area where the widening of existing roads is proposed, and salamander habitat does not occur in the southern portion of the action area where new roadway construction will occur. Therefore the Service has determined that the project as proposed will not indirectly or directly reduce, appreciably, the likelihood of both the survival and recovery of the salamander in the wild.

Implementation of the proposed project will have direct permanent effects to the beetle as result of removing, trimming, and transplantation of elderberry shrubs. Design measures in the project description will minimize effects to the beetle by transplanting and trimming the elderberry shrubs in the dormant season to increase chances the shrub will survive transplantation, and planting additional seedlings and associated natives. Therefore the Service has determined that the project as proposed will not indirectly or directly reduce, appreciably, the likelihood of both the survival and recovery of the beetle in the wild.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harass is defined by the Service as an intentional or negligent act or omission which creates the likelihood of injury to a listed species by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering. Harm is defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by impairing behavioral patterns including breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with this Incidental Take Statement.

The measures described below are non-discretionary, and must be implemented by Caltrans so they become binding conditions of project authorization for the exemption under 7(o) (2) to apply. Caltrans has a continuing duty to regulate the activity that is covered by this incidental

take statement. If Caltrans (1) fails to adhere to the terms and conditions of the incidental take statement through enforceable terms, and/or (2) fails to retain oversight to ensure compliance with these terms and conditions, the protective coverage of 7(o)(2) may lapse.

Sections 7(b)(4) and 7(o)(2) of the Act generally do not apply to listed plant species. However, protection of listed plants is provided to the extent that the Act prohibits the removal and reduction to possession of federally listed plants or the malicious damage of such plants on areas under Federal jurisdiction, or the destruction of listed plants on non-Federal areas in violation of State law or regulation or in the course of any violation of a State criminal trespass law.

Amount or Extent of Take

The Service expects that incidental take of the vernal pool crustaceans, Central California DPS salamander, and beetle may occur during this action. The extent of the take will be difficult to detect or quantify because of the ecology and biology of these species. Additionally, their size and cryptic nature makes the finding of a dead specimen unlikely. Seasonal population fluctuations also may mask the ability to determine the exact extent of take.

Due to the difficulty in quantifying the number of vernal pool crustaceans, Central DPS salamanders, and beetles that will be taken as a result of the proposed action, the Service is quantifying take incidental to the project as the number of acres of vernal pools/ponded depressions (vernal pool crustacean habitat), number of acres of upland habitat (salamander), and number of elderberry stems over 1 inch in diameter (beetle) that will become unsuitable for vernal pool crustaceans, salamanders, and beetles due to direct or indirect effects as a result of the action. Therefore, the Service estimates that the proposed action will result in the take of all vernal pool crustaceans inhabiting 4.69 acres of habitat (0.97 acres direct plus 3.72 acres indirect), all salamanders inhabiting or utilizing 22.7 acres of upland habitat, all beetles inhabiting 16 elderberry stems identified in the action area. Anticipated take is expected to be in the form of harm, harassment, injury, and mortality from habitat loss and modification, construction related disturbance, reduced fitness, and increased vehicular traffic.

Upon implementation of the following reasonable and prudent measures, incidental take associated with the proposed project on the vernal pool crustaceans, salamander, and beetle in the form of mortality, harm, and harassment from habitat loss or degradation will become exempt from the prohibitions described under section 9 of the Act.

Effect of the Take

The Service has determined in this biological opinion that this level of anticipated take is not likely to result in jeopardy to the vernal pool crustaceans, Central California DPS salamander, or the beetle.

Reasonable and Prudent Measures

The following reasonable and prudent measures are necessary and appropriate to minimize the effects of the Jepson Parkway Project on the vernal pool crustaceans, Central California DPS salamander, and beetle:

1. All conservation measures outlined in the project description, and as restated in this Biological Opinion will be fully implemented. Further, these conservation measures shall be supplemented by Terms and Conditions (a) through (d) below.

In order to be exempt from the prohibitions of section 9 of the Act, Caltrans shall ensure they comply with the following terms and conditions, which implement the reasonable and prudent measure described above. These terms and conditions are non-discretionary.

1. The following Term and Conditions will implement Reasonable and Prudent Measure number one (1):
 - a. Caltrans shall minimize the effects from project related activities through implementation of the conservation measures as described in the project description of this biological opinion, unless otherwise supplemented by these Terms and Conditions. Caltrans shall include Special Provisions requiring strict adherence to the Conservation Measures and the *Terms and Conditions* of this biological opinion in the solicitation for bid information. In addition, Caltrans shall educate and inform contractors involved in the project as to the requirements of the biological opinion.
 - b. Caltrans shall provide documentation to the Service on the parcel to be acquired for creation, establishment of a conservation easement, development of a creation and management plan, and provision of a perpetual endowment sufficient to cover management and maintenance of protected lands for the benefit and recovery of vernal pool crustaceans and goldfields prior to groundbreaking on phase 3. All documents must be reviewed and approved by the Service prior to groundbreaking on Phase 3. Please see the attached off-site Compensation site guidance (Sacramento Fish and Wildlife Office Selected Review Criteria for Section 7 Off-Site Compensation Revised Oct. 2009).
 - c. At least 90 days prior to groundbreaking on Phase 3, Caltrans shall submit a plan for Service approval for the collection, storage, and application of inoculum material from affected features into created features. The plan shall outline equipment used for collection, storage methods, personnel, and timing of collection and application.

- d. The Service shall be notified within one (1) working day of the finding of any injured salamanders. Injured salamanders shall be cared for by a licensed veterinarian or other qualified person. Notification must include the date, time, and location of the incident or of the finding of a injured animal clearly indicated on a USGS 7.5 minute quadrangle and other maps at a finer scale, as requested by the Service, and any other pertinent information. The Service contacts are Chris Nagano, Division Chief, Endangered Species Program at the Sacramento Fish and Wildlife Office (916) 414-6600, and the Resident Agent-in-Charge of the Service's Law Enforcement Division (916) 414-6660. Caltrans must also contact CDFG immediately in the case of a dead or injured listed species. The CDFG contact for immediate assistance is State Dispatch at (916) 445-0045.

Reporting Requirements

The Service shall be notified within one (1) working day of the finding of any dead salamanders, beetles, or vernal pool crustaceans. Notification must include the date, time, and location of the incident or of the finding of a dead animal clearly indicated on a USGS 7.5 minute quadrangle and other maps at a finer scale, as requested by the Service, and any other pertinent information. The Service contacts are Division Chief, Endangered Species Program at the Sacramento Fish and Wildlife Office (916) 414-6600, and the Resident Agent-in-Charge of the Service's Law Enforcement Division (916) 414-6660. Caltrans must also contact CDFG immediately in the case of a dead or injured listed species. The CDFG contact for immediate assistance is State Dispatch at (916) 445-0045.

Sightings of any federal or state listed animal species should be reported to the CNDDDB. A copy of the reporting form and a topographic map clearly marked with the location the animals were observed also should be provided to the Service.

CONSERVATION RECOMMENDATIONS

Section 7(a) (1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities that can be implemented to further the purposes of the Act, such as preservation of endangered species habitat, implementation of recovery actions, or development of information or data bases. In order for the Service to be kept informed of actions minimizing or avoiding adverse effects or benefiting listed species or their habitats, the Service requests notification of the implementation of any conservation recommendations. The Service recommends the following conservation actions

1. Enhancing habitat connectivity and wildlife passage across roads as well as reducing road effects should be included in the *Purpose and Needs* section of environmental documents.

2. Caltrans should include a wildlife passage section in their biological assessments that include an analysis of the existing passage and how the project will affect passage. The analysis should include identification of the species' resources on both sides of the project boundaries, an appropriately timed road mortality survey to identify "hot spots", and strategic locations where the species could benefit from the enhancement of an existing crossing or the installation of a new crossing. Caltrans District 4 should coordinate with the University of California at Davis Road Ecology Center to develop a passage and road effects approach. Further guidance is provided by FHWA's *Wildlife Vehicle Collision Reduction Study* available at: <http://www.fhwa.dot.gov/environment/hconnect/wvc/index.htm> (FHWA 2008).
3. Roadways can constitute a major barrier to wildlife movement. Therefore, Caltrans should incorporate culverts, tunnels, or bridges on highways and other roadways that allow safe passage by listed animals and other wildlife. Include photographs, plans, and other information in biological assessments if "wildlife friendly" crossings are incorporated into projects. Efforts should be made to establish upland culverts designed specifically for wildlife movement rather than accommodations for hydrology.
4. Caltrans should consider participating in regional habitat conservation planning in Solano County for listed species, and sensitive species.
5. Caltrans should consider establishing functioning preservation and creation conservation banking systems to further the conservation of listed species. Such banking systems also could possibly be utilized for other required mitigation (i.e., seasonal wetlands, riparian habitats, etc.) where appropriate. Efforts should be made to preserve habitat along roadways in association with wildlife crossings.
6. Caltrans should continue to develop and implement their Early Statewide Biological Mitigation Planning Project that has been developed by the University of California at Davis, Road Ecology Center through Caltrans funding.

REINITIATION - CLOSING STATEMENT

This concludes formal consultation on the proposed Jepson Parkway Project in Solano County, California. As provided in 50 CFR § 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been maintained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

Mr. James Richards

69

If you have questions regarding our response to the Jepson Parkway project, please contact Michelle Tovar, Senior Fish and Wildlife Biologist (Michelle_Tovar@fws.gov) or Jana Affonso, the Sacramento Valley Branch Chief (Jana_Affonso@fws.gov), of my office at (916) 414-6645.

Sincerely,

A handwritten signature in black ink, appearing to read "Susan K. Moore".

Susan K. Moore
Field Supervisor

cc:

Janet Adams, Solano Transportation Authority, Suisun City, California
Sam Bacchini, PBS&J, Sacramento, California
Melissa Escaron, California Department of Fish and Game, Yountville, California
Yolanta Urchamn, Regional Water Board, San Francisco, California
Cameron Johnson, U.S. Army Corps of Engineers, San Francisco, California

Mr. James Richards

70

Address:

Ms. Janet Adams
Director of Projects
Solano Transportation Authority
One Harbor Center, Suite 130
Suisun City, CA 94585

Mr. Sam Bacchini
Senior Scientist
PBS&J
1200 Second Street
Sacramento, California 95814

Ms. Melissa Escaron
California Department of Fish and Game -Bay Delta Region
Habitat Conservation Planning
P.O. Box 47
Yountville, California 94599

Ms. Yolanta Uchman
California Regional Water Quality Control Board
San Francisco Bay Region
1515 Clay Street, Suite 1400
Oakland, California 94612

Mr. Cameron Johnson
USACE, San Francisco District
South Branch
1455 Market Street, 16th Floor
San Francisco, CA 94103

LITERATURE CITED

- Adger, N., P. Aggarwal, S. Agrawala, J. Alcamo, A. Allali, O. Anisimov, N. Arnell, M. Boko, O. Canziani, T. Carter, G. Cassa, U. Confalonieri, R. Cruz, E. de Alba Alcaraz, W. Eastreling, C. Field, A. Fischlin, B. Fitzharris, C. G. Garcia, C. Hanson, H. Harasawa, K. Hennessy, S. Huq, R. Jones, L. K. Bogataj, D. Karoly, R. Klein, Z. Kundzewicz, M. Lal, R. Lasco, G. Love, X. Lu, G. Magrin, L. J. Mata, R. McLean, B. Menne, G. Midgley, N. Mimura, M. Q. Mirza, J. Moreno, L. Mortsch, I. Niang-Diop, R. Nichols, B. Novak, L. Nurse, A. Nyong, M. Oppenheimer, J. Palutikof, M. Parry, A. Patwardhan, P. R. Lankao, C. Rosenzweig, S. Schneider, S. Semenov, J. Smith, J. Stone, J. van Ypersele, D. Vaughan, C. Vogel, T. Wilbanks, P. Wong, S. Wu, and G. Yohe. 2007. Working Group II Contribution to the Intergovernmental Panel on Climate Change Fourth Assessment Report. Climate Change 2007: Climate change impacts, adaptation and vulnerability. Brussels, Belgium.
- Ahl, J. S. 1991. Factors affecting contributions of the tadpole shrimp, *Lepidurus packardii*, to its overwintering egg reserves. *Hydrobiologia* 212: 137-143.
- Anderson, J. D. 1968. Comparison of the food habits of *Ambystoma macrodactylum sigillatum*, *Ambystoma macrodactylum croceum*, and *Ambystoma tigrinum californiense*. *Herpetologica* 24(4): 273-284.
- Anderson, P. R. 1968. The reproductive and developmental history of the California tiger salamander. Masters thesis, Department of Biology, Fresno State College, Fresno, California. 82 pages.
- Anonymous. 2007. Global warming is changing the World. *Science* 316:188-190.
- Barclay, W. R. and A. W. Knight. 1984. Physiochemical processes affecting production in a turbid vernal pond. Pages 126-142 in S. Jain and P. Moyle (editors). *Vernal pools and intermittent streams*. Institute of Ecology Publication No. 28, University of California, Davis, California.
- Barr, C. B. 1991. The Distribution, Habitat, and Status of the Valley Elderberry Longhorn Beetle *Desmocerus californicus dimorphus* Fisher (Insecta: Coleoptera: Cerambycidae). U.S. Fish and Wildlife Service, Sacramento, California. 134 pp.
- Barry, S. J. and H. B. Shaffer. 1994. The status of the California tiger salamander (*Ambystoma californiense*) at Lagunita: A 50-year update. *Journal of Herpetology* 28(2): 159-164.
- Bauder, E. T. 1986. San Diego vernal pools: recent and projected losses, their condition, and threats to their existence. California Department of Fish and Game, Sacramento, California.

- _____. 1987. Threats to San Diego vernal pools and a case study in altered pool hydrology. Pages 209-214 in T.S. Elias (editor). Conservation and management of rare and endangered plants. California Native Plant Society, Sacramento, California.
- Baye, P. 2000. Electronic mail to Ellen Cypher, Endangered Program, Bakersfield, California. 2 pages.
- Belk, D. 1977. Evolution of egg size strategies in fairy shrimps. *Southwestern Naturalist* 22(1): 99-105.
- Belk, D. 1998. Global status and trends in ephemeral pool invertebrate conservation: implications for California fairy shrimp. Pages 147-150 in C. W. Witham, E.T. Bauder, D. Belk, W.R. Ferren, Jr., and R. Ornduff (editors) Ecology, Conservation, and Management of Vernal Pool Ecosystems. California Native Plant Society, Sacramento, California.
- Belk, D., and M. Fugate. 2000. Two new *Branchinecta* (Crustacea: Anostraca) from the southwestern United States. *Southwestern Naturalist* 45:111-117.
- Brendonck, L. 1990. Contributions to the study on the feeding biology of the fairy shrimp *Streptocephalus proboscideus* (Crustacea: Branchiopoda: Anostraca). *Belgian Journal of Zoology* 120: 10-11.
- California Department of Pesticide Regulation (CDPR). 2006. Summary of Pesticide Use Report Data, 2004. Sacramento, California.
- California Natural Diversity Database. California Department of Fish and Game. 2010. RAREFIND. Natural Heritage Division, Sacramento, California.
- Carlisle, D. B. 1968. *Triops* (Entomostraca) eggs killed only by-boiling. *Science* 161: 279-280.
- Chesson, P.L. and N. Huntly. 1989. Short-term instabilities and long-term community dynamics. *Trends in Research in Evolution and Ecology* 4:293-298.
- City of Fairfield, 2004. City of Fairfield General Plan. February. Fairfield, California.
- Coe, T. 1988. The application of Section 404 of the Clean Water Act to vernal pools. Pages 356-358 in J.A. Kusler, S. Daly, and G. Brooks (editors). Urban Wetlands. Proceedings of the National Wetland Symposium. Oakland, California.
- Cole, R. 1983. Letter to Sanford Wilbur regarding research and teaching affiliation between the University of California at Davis and The Nature Conservancy. 1 pg.

- Collinge, S.K., M. Holyoak, C.B. Barr, and J.T. Marty. 2001. Riparian habitat fragmentation and population persistence of the threatened valley elderberry longhorn beetle in central California. *Biological Conservation* 100:103-113.
- Crane, M. F. 1989. *Sambucus nigra* ssp. *coerulea*. In Fire Effects Information System (Online.) United States Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: <http://www.fs.fed.us/database/feis/plants/shrub/samnigc/all.html> (05 September 2005).
- Crawford, D. J., and R. Ornduff. 1989. Enzyme electrophoresis and evolutionary relationships among three species of *Lasthenia* (Asteraceae: Heliantheae). *American Journal of Botany* 76:289-296.
- Donald, D.B. 1983. Erratic occurrence of anostracans in a temporary pond: colonization and extinction or adaptation to variations in annual weather? *Canadian Journal of Zoology* 61:1492-1498.
- Driver, E. A. 1981. Calorific values of pond invertebrates eaten by ducks. *Freshwater Biology* 11: 579-581.
- Ellner, S., and N.G. Hairston, Jr. 1994. Role of overlapping generations in maintaining genetic variation in a fluctuating environment. *American Naturalist* 143:403-417.
- Eng, L. L., D. Belk and C. H. Eriksen. 1990. Californian Anostraca: distribution, habitat, and status. *Journal of Crustacean Biology* 10: 247-277.
- Eriksen, C.H., and D. Belk. 1999. Fairy shrimp of California's puddles, pools, and playas. Mad River Press, Eureka, California.
- Eriksen, C.H. and Brown, R.J. 1980. Comparative respiratory physiology and ecology of phyllopod Crustacea. I. Conchostraca. *Crustaceana* 39: 1-10.
- Fahrig, L. 1997. Relative Effects of Habitat Loss and Fragmentation on Population Extinction. *Journal of Wildlife Management*. 61:603-610.
- Feaver, P. E. 1971. Breeding pool selection and larval mortality of three California amphibians: *Ambystoma tigrinum californiense* Gray, *Hyla regilla* Baird and Girard and *Scaphiopus hammondi hammondi* Girard. Master's thesis, Department of Biology, Fresno State College, Fresno, California. 58 pages.
- Ferris, R. S. 1958. Taxonomic notes on western plants. *Contributions from the Dudley Herbarium* 5:99-108.

- Fitzpatrick, B. M. and H. B. Shaffer. 2004. Environmental-dependent admixture dynamics in a tiger salamander hybrid zone. *Evolution* 58(6): 1282-1293.
- Fruyer, W. E., D. D. Peters, and H. R. Pywell. 1989. Wetlands of the California Central Valley: Status and Trends, 1939 to mid-1980's. U.S. Fish and Wildlife Service, Region 1. Portland, Oregon.
- Fugate, M. L. 1992. Speciation in the fairy shrimp genus *Branchinecta* (Crustacea: Anostraca) from North America.. Ph D dissertation. University of California, Riverside, California, 188 pp.
- Gallagher, S.P. 1996. Seasonal occurrence and habitat characteristics of some vernal pool Branchiopoda in northern California, U.S. *Journal of Crustacean Biology* 16(2):323-329.
- Geographic Information Center. 2003. The Central Valley Historic Mapping Project: California State University, Chico, Department of Geography and Planning and Geographic Information Center. April.
- Gilliom, Robert, J. 1999. Pesticides in the Nation's Water Resources. U.S. Geological Survey. Water Environment Federation Briefing Series Presentation. Capitol Building, Washington D.C. March 19, 1999.
- Greene, E. L. 1888. New or noteworthy species. III. *Pittonia* 1:215-225.
- Hall, H. M. 1914. *Baeria*. *North American Flora* 34(1):76-80.
- Halstead, J.A., and J.A. Oldham. 1990. Revision of the nearctic *Desmocerus* Audinet-Serville with emphasis on the federally threatened valley elderberry longhorn beetle (Coleoptera: Cerambycidae). Environmental Section Staff Report, Kings River Conservation District, Fresno, California.
- Hanes, W.T., B. Hecht, and L.P. Stromberg. 1990. Water relationships of vernal pools in the Sacramento region, California. Pages 49–60 in D.H. Ikeda and R.A. Schlising (editors). Vernal pool plants-their habitat and biology. Studies from the Herbarium Number 8, California State University, Chico, California.
- Hanes, T., and L. Stromberg. 1998. Hydrology of vernal pools on non-volcanic soils in the Sacramento Valley. Pages 38–49 in C.W. Witham E. T. Bauder, D. Belk, W. R. Ferren Jr. and R. Ornduff (editors). Ecology, conservation, and management of vernal pool ecosystems--Proceedings from a 1996 Conference. California Native Plant Society, Sacramento, California.

- Hathaway, S.A. and M.A. Simovich. 1996. Factors affecting the distribution and co-occurrence of two southern Californian anostracans (Branchiopoda), *Branchinecta sandiegonensis* and *Streptocephalus woottoni*. *Journal of Crustacean Biology* 16(4): 669-677.
- Hathaway, S. A., D. P. Sheehan, and M. A. Simovich. 1996. Vulnerability of branchiopod cysts to crushing. *Journal of Crustacean Biology* 16(3): 448-452.
- Helm, B. 1998. The biogeography of eight large branchiopods endemic to California. Pages 124-139 in C.W. Witham, E. Bauder, D. Belk, W. Ferren, and R. Ornduff (editors). *Ecology, Conservation, and Management of Vernal Pool Ecosystems – Proceedings from a 1996 Conference*. California Native Plant Society, Sacramento, California.
- Holland, R.F. 1978. The geographic and edaphic distribution of vernal pools in the Great Central Valley, California. *California Native Plant Society Special Publication* 4:1-12.
- Holland, R. F. 1998. Great Valley vernal pool distribution, photorevised 1996. Pages 71-75 in C. W. Witham, E. T. Bauder, D. Belk, W. R. Ferren Jr. and R. Ornduff (editors). *Ecology, conservation, and management of vernal pool ecosystems--Proceedings from a 1996 Conference*. California Native Plant Society, Sacramento, California.
- Holland, R. F., and S. Jain. 1988. Vernal pools. Pages 515-533 in M. E. Barbour and J. Major, (editors). *Terrestrial vegetation of California*, new expanded edition. California Native Plant Society Special Publication Number 9, Sacramento, California.
- Holway, D.A. 1998. Distribution of the Argentine ant (*Linepithema humile*) in Northern California. *Conservation Biology* 9:1634-1637.
- Holyoak, M., and T. S. Talley. 2001. Population biology and management of the threatened Valley elderberry longhorn beetle. Presentation to U.S. Fish and Wildlife Service November 2001:33 slides.
- Horne, F. R. 1967. Active uptake of sodium by the freshwater notostracan *Triops longicaudatus*. *Comparative Biochemistry and Physiology* 21: 525-531.
- Human, K.G. and D.M. Gordon. 1997. Effects of Argentine Ants on Invertebrate Biodiversity in Northern California. *Conservation Biology* 11:1242-1248.
- Huxell, G.R. 2000. The effects of Argentine ant on the threatened valley elderberry longhorn beetle. *Biological Invasions* 2:81-85.
- Huxel, G. R. and A. Hastings. 1999. Habitat loss, fragmentation, and restoration. *Restoration Ecology* 7:1-7.

- Huxel, G., Holyhoak, M., and Talley, T. 2001. Effects of habitat loss and natural enemies of the valley elderberry longhorn beetle. Riparian Habitat and Floodplains Conference. Sacramento, California.
- IFPC. 2001. Climate Change 2001: The Scientific Basis. Contribution of Working Group I to the Third Assessment Report of the Intergovernmental Panel on Climate Change [Houghton, J.T., Y. Ding, D.J. Griggs, M. Noguer, P.J. van der Linden, X. Dai, K. Maskell, and C.A. Johnson (editors)]. Cambridge University Press, Cambridge, United Kingdom and New York, New York. 881 pages. Available at <http://www.ipcc.ch/>.
- . 2007. Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [Alley, R., T. Berntsen, N.L. Bindoff, Z. Chen, A. Chidthaisong, P. Friedlingstein, J. Gregory, G. Hegerl, M. Heimann, B. Hewitson, B. Hoskins, F. Joos, J. Jouzel, V. Kattsov, U. Lohmann, M. Manning, T. Matsuno, M. Molina, N. Nicholls, J. Overpeck, D. Qin, G. Raga, V. Ramaswamy, J. Ren, M. Rusticucci, S. Solomon, R. Somerville, T.F. Stocker, P. Stott, R.F. Stouffer, P. Whetton, R.A. Wood, D. Wratt. 21 pp. Available at <http://www.ipcc.ch/>.
- Inkley, D.B., M.G. Anderson, A.R. Blaustein, V.R. Burkett, B. Felzer, B. Griffin, J. Price, and T.L. Root. 2004. Global climate change and wildlife in North America. Wildlife Society Technical Review 04-2.
- Jennings, M.R. and M.P. Hayes. 1994. Amphibian and reptile species of special concern in California. California Department of Fish and Game, Rancho Cordova, California. 255 pages.
- Kanter, J. 2007. Scientists detail climate changes, Poles to Tropics. New York Times. April 10, 2007.
- Katibah, E. F. 1984. A Brief History of Riparian Forests in the Central Valley of California. Pages 23-29 in Warner, R. E. And K. M. Hendrix (eds.). California riparian systems: ecology, conservation, and productive management. University of California Press, Berkeley, California.
- Keeler-Wolf, T., Elam, D., Lewis, K. and S, Flint. 1998. California Vernal Pool Assessment Preliminary Report, Western Riverside County Region. California Department of Fish and Game, Sacramento, California, 159 pages.
- Keeley, J.E. 1984. Photosynthetic characteristics of certain vernal pool species, Pages 218-222. In S. Jain and P. Moyle (editors). Vernal Pools and Intermittent Streams. Institute of Ecology, Publication No. 28, University of California, Davis.

- Keeley, J. E. and P. H. Zedler. 1998. Characterization and global distribution of vernal pools. Pages 1-14 in E C. W. Witham, E. T. Bauder, D. Belk, W. R. Ferren Jr. and R. Ornduff (editors). Ecology, conservation, and management of vernal pool ecosystems - proceedings from a 1996 Conference. California Native Plant Society, Sacramento, California.
- King, J. L. 1996. The evolution of diversity in ephemeral pools crustaceans: from genes to communities. Ph D Dissertation. Department of Zoology, University of California, Davis, California. 207 pages.
- Klasson, M., M. Holyoak, and T.S.Talley. 2005. Valley elderberry longhorn beetle habitat management plan: Phase 2 Annual Report to the National Fish and Wildlife Foundation. Sacramento County Department of Regional Parks, Recreation and Open Space, Sacramento, California.
- Krapu, G. L. 1974. Foods of breeding pintails in North Dakota. Journal of Wildlife Management 38(3): 408-417.
- Lande, R. 1988. Genetics and demography in biological conservation. Science 241:1455-1460.
- Lang, J., J.D. Jokerst, and G.E. Sutter. 1989. Habitat and populations of the valley elderberry longhorn beetle along the Sacramento River. USDA Forest Service General Technical Report PSW 110:242-247.
- Lanway, C. S. 1974. Environmental factors affecting crustacean hatching in five temporary ponds. Maser's thesis. California State University, Chico, California.
- Linder, F. 1952. The morphology and taxonomy of the branchiopod Nostraca, with special reference to the North American species. Proceedings U.S. National Museum 102:1-57.
- Longhurst, A.R. 1955. A review of the Nostraca. Bulletin of the British Museum (Natural History) Zoology 3:1-57.
- Loredo, I., and D. Van Vuren. 1996. Reproductive ecology of a population of the California tiger salamander. Copeia 1996(4):895-901.
- Loredo, I., D. Van Vuren and M. L. Morrison. 1996. Habitat use and migration behavior of the California tiger salamander. Journal of Herpetology 30(2): 282-285.
- LSA Associates, Inc. 2009. The Status and Distribution of Contra Costa Goldfields in Solano County, California. Results of Contra Costa Goldfield Population Monitoring for 2006, 2007, 2008 and 2009. CA. Submitted to Solano County Water Agency. Prepared by LSA

Associates, Inc. November 12, 2007 (LSA Project No. SCD430, SCD0601, SWG0701, SWG0801, and SWG0901)

Marty, J. 2004. Managing for diversity in California vernal pool grasslands. Presentation Abstracts. Ecology and Management of California Grasslands. April 2-3, 2004, University of California, Berkeley, California.

Marty, J. Personal communication. 2004. The Nature Conservancy. Sacramento, California.

Morey, S. R. 1998. Pool duration influences age and body mass at metamorphosis in the western spadefoot toad: implications for vernal pool conservation. Pages 86-91 in C.W. Witham, E.T. Bauder, D. Belk, W.R. Ferren Jr., and R. Ornduff (editors). Ecology, Conservation, and Management of Vernal Pool Ecosystems - Proceedings from a 1996 Conference. California Native Plant Society. Sacramento, California. 1998.

Nikiforoff C. C. 1941. Hardpan and microrelief in certain soil complexes of California. Technical Bulletin No. 745. U.S. Department of Agriculture, Washington, D.C.

Orlaf, S. 2007. Migratory Movements of California Tiger Salamanders in Upland Habitat, A Five Year Study, Pittsburg, California. Prepared for Bailey Estates LLC. May 2007.

Ornduff, R. 1966. A biosystematic survey of the goldfield genus *Lasthenia*. University of California Publications in Botany 40:1-92.

Ornduff, R. 1969. The origin and relationships of *Lasthenia burkei* (Compositae). American Journal of Botany 56:1042-1047.

Ornduff, R. 1979. Rare plant status report: *Contra Costa goldfields* Greene. California Native Plant Society, Sacramento, California. 3 pages.

Ornduff, R. 1993a. *Blennosperma*. Page 214 in: J.C. Hickman (editor). The Jepson manual: higher plants of California. University of California Press, Berkeley, California, 1400 pages.

Ornduff, R. 1993b. *Lasthenia*. Pages 298-300 in: J.C. Hickman (editor). The Jepson manual: higher plants of California. University of California Press, Berkeley, California, 1400 pages. VI-27.

Pardieck, B. 2003. Contra Costa Goldfields Management Plan: April, May, June 2003. Unpublished report. Muir Heritage Land Trust, Martinez, California.

- Patterson, C. 2006. Personal communication. Plant Ecologist, Lafayette, California.
- Patterson, C. A., B. Guggolz, and M. Waaland. 1994. Seasonal wetland baseline report for the Santa Rosa Plain, Sonoma County. Unpublished report to the California Department of Fish and Game, Yountville, California. 65 pages + 31 pages appendices.
- Pechmann, J. H. K., D. E. Scott, J. W. Gibbons, and R. D. Semlitsch. 1989. Influence of wetland hydroperiod on diversity and abundance of metamorphosing juvenile amphibians. *Wetlands Ecology and Management* 1(1):3-11.
- Pennak, R.W. 1989. Fresh-water invertebrates of the United States: Protozoa and mollusca. 3rd Edition. Wiley, New York, New York.
- Petranka, J. W. 1998. Salamanders of the United States and Canada. Smithsonian Institution Press, Washington, D.C.
- Powell, W. R. 1974. Inventory of rare and endangered vascular plants of California. Special Publication No. 1, California Native Plant Society, Sacramento, California. 56 pages.
- Primack, R.B. 1998. Essentials of Conservation Biology. Second Edition. Sinaur Associates. Sunderland, Massachusetts.
- Proctor, V.W., C.R. Malone, and V.L. DeVlaming. 1967. Dispersal of aquatic organisms: Viability of disseminules recovered from the intestinal tract of captive killdeer. *Ecology* 48:672-676.
- Roberts, W.G., J.G. Howe, and J. Major. 1977. A Survey of Riparian Forest Flora and Fauna in California. Pages 3-20 in A. Sands (ed.) *Riparian Forests in California: their Ecology and Conservation*. University of California, Davis, California.
- Riley, S.P.D., H.B. Shaffer, S.R. Voss, and B.M. Fitzpatrick. 2003. Hybridization between a rare, native tiger salamander (*Ambystoma californiense*) and its introduced congener. *Biological Applications* 13(5): 1263-1275.
- Sawyer, J. O., and T. Keeler-Wolf. 1995. A manual of California vegetation. California Native Plant Society, Sacramento, California. 471 pages.
- Scholnick, D.A. 1995. Sensitivity of metabolic rate, growth, and fecundity of tadpole shrimp *Triops longicaudatus* to environmental variation. *Biological Bulletin* 189(1):22-28.
- Scott, D. E. 1994. The effect of larval density on adult demographic traits in *Ambystoma opacum*. *Ecology* 75:1383-1396.

- Semlitsch, R. D., D. E. Scott, and J. H. K. Pechmann. 1988. Time and size at metamorphosis related to adult fitness in *Ambystoma talpoideum*. *Ecology* 69: 184-192.
- Semonsen, V.J. 1998. Natural History Notes: *Ambystoma californiense* (California tiger salamander). Survey technique. *Herpetological Review* 29:96.
- Shaffer, H.B., G. B. Pauly, J.C. Oliver, and P.C. Trenham. 2004. The molecular phylogenetics of endangerment: cryptic variation and historic phylogeography of the California tiger salamander, *Ambystoma californiense*. *Molecular Ecology* 13: 3033-3049.
- Shaffer, H. B., R. N. Fisher, and S. E. Stanley. 1993. Status report: the California tiger salamander (*Ambystoma californiense*). Final report for the California Department of Fish and Game.
- Shaffer, M.L. 1981. Minimum Populations Sizes for Species Conservation. *Bioscience* 31: 131-134.
- Silveira, J.G. 1998. Essential vernal pool habitat: action plan. Unpublished report, Sacramento National Wildlife Refuge, Willows, California.
- Simovich, M.A, Sassaman and A. Chovnick. 1991. Post-mating selection of hybrid toads (*Scaphiopus multiplicatus* and *Scaphiopus bombifrons*). *Proceedings of the San Diego Natural Society of Natural History* 5:1-6.
- Simovich, M., R. Brusca, and J. King. 1992. Invertebrate survey 1991 1993 PGT PGE/Bechtel pipeline expansion project. University of San Diego, Alcala Park, San Diego, California.
- Skinner, M.W., and B.M. Pavlik, eds. 1994. Inventory of rare and endangered vascular plants of California. California Native Plant Society Special Publication No. 1 (Fifth Edition). Sacramento. California. vi + 338 pp.
- Smith, S. 1977. A Short Review of the Status of Riparian Forests in California. Pages 1-2 in A. Sands (ed.) *Riparian Forests in California: their Ecology and Conservation*. University of California, Davis, California.
- Solano County Water Agency (SCWA). 2009. Solano Multispecies Habitat Conservation Plan, Version 2.2 Final Administrative Draft. Available at <http://www.scwa2.com/hcp2.2.html>. Prepared by LSA. May 2009. Elmira, California.
- Stebbins, R.C. 1985. A field guide to western reptiles and amphibians. Houghton Mifflin Co. Boston, Massachusetts. Pages 33-37.

- _____. 1989. Declaration of R. C. Stebbins in support of petition of writ of mandate. Sierra Club and Richard Pontuis v. Gilroy City Council, Shappell Industries et al. Santa Clara County Superior Court. March 16, 1989. 11 pages. plus exhibits.
- _____. 2003. A field guide to western reptiles and amphibians. Houghton Mifflin Company, Boston, Massachusetts.
- Storer, T. I. 1925. A synopsis of the amphibia of California. University of California Publications in Zoology 27:1-342.
- Stuart, J.M., M.L. Watson, T.L. Brown, and C. Eustice. 2001. Plastic netting: an entanglement hazard to snakes and other wildlife. Herpetological Review 32(3):162-164.
- Sugnet and Associates. 1993. Preliminary compilation of documented distribution, fairy shrimp and tadpole shrimp proposed for listing. Sugnet and Associates, Sacramento, California, 10 pp.
- Swanson, G. A. 1974. Feeding ecology of breeding blue-winged teals. Journal of Wildlife Management. 38(3): 396-407.
- Sweet, S. 1998. Letter to Dwight Harvey, U.S. Fish and Wildlife Service with an unpublished report titled Vineyard development posing an imminent threat to *Ambystoma californiense* in Santa Barbara County, California. University of California, Santa Barbara, California.
- Syrdahl, R. L. 1993. Distribution patterns of some key macro-invertebrates in a series of vernal pools at Vina Plains Preserve in Tehama County, California. Master's thesis. California State University, Chico, California.
- Talley, T.S. 2005. Spatial ecology and conservation of the Valley elderberry longhorn beetle. Ph.D. dissertation. University of California, Davis, California.
- Talley, T.S., E. Fleishman, M. Holyoak, D. Murphy, and A. Ballard. In press. Rethinking a rare-species conservation strategy in an urbanizing landscape: The case of the Valley elderberry longhorn beetle. Biological Conservation.
- Talley, T.S., D.A. Piechnik, and M. Holyoak. 2006. The effects of dust on the federally threatened Valley elderberry longhorn beetle. Environmental Management 37:647-658.
- Thompson, K. 1961. Riparian forests of the Sacramento Valley, California. Annals of the Association of American Geographers 51: 294-315.
- Thorp, R. W., and J. M. Leong. 1998. Specialist bee pollinators of showy vernal pool flowers. Pages 169-179 in C. W. Witham, E. T. Bauder, D. Belk, W. R. Ferren, Jr., and R. Ornduff

(editors). Ecology, conservation, and management of vernal pool ecosystems: proceedings from a 1996 conference. California Native Plant Society, Sacramento, California. 285 pages.

Trenham, P. 1998a. Radiotracking information. University of California, Davis, California.

_____. 1998b. Demography, migration, and metapopulation structure of pond breeding salamanders. Ph.D. dissertation. University of California, Davis, California.

_____. 2001. Terrestrial habitat use by adult California tiger salamanders. *Journal of Herpetology* 35:343-346.

Trenham, P. C., W. D. Koenig, and H. B. Shaffer. 2001. Spatially autocorrelated demography and interpond dispersal in the salamander *Ambystoma californiense*. *Ecology* 82: 3519-3530.

Trenham, P.C., and H.B. Shaffer. 2005. Amphibian upland habitat use and its consequences for population viability. *Ecological Applications* 15:1158–1168.

Trenham, P. C., H. B. Shaffer, W. D. Koenig and M. R. Stromberg. 2000. Life History and Demographic variation in the CTS (*Ambystoma californiense*). *Copeia* 2000(2): 365-377.

Twitty, V. C. 1941. Data on the life history of *Ambystoma tigrinum californiense* Gray. *Copeia* 1941 (1):1-4.

U.S. Army Corps of Engineers. 1997. Installation-wide Multispecies Habitat Management Plan for Former Fort Ord. April 1997. Sacramento, California.

U.S. Fish and Wildlife Service. 1980. Listing the valley elderberry longhorn beetle as a threatened species with critical habitat. Friday, August 8, 1980. Sacramento, California. *Federal Register* 45:52803-52807.

_____. 1984. Valley Elderberry Longhorn Beetle Recovery Plan. Portland, Oregon. 62 pp.

_____. 1992. Wetland losses within northern California from projects authorized under Nationwide Permit No. 26. Sacramento Field Office, Sacramento, California.

_____. 1994. Endangered and threatened wildlife and plants; determination of endangered status for the Conservancy fairy shrimp, longhorn fairy shrimp, and the vernal pool tadpole shrimp, and threatened status for the vernal pool fairy shrimp. **Federal Register** 59:48136-48153.

_____. 1997. Endangered and threatened wildlife and plants; endangered status for four plants from vernal pools and mesic areas in northern California. Federal Register 62:34029-34038.

_____. 2004. Endangered and threatened wildlife and plants; determination of threatened status for the California Tiger Salamander; and special rule exemption for existing routine ranching activities; final rule. Federal Register 69: 47212-47248.

_____. 2005a. Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon. Portland, Oregon. xxvi + 606 pages.

_____. 2005b. Endangered and threatened wildlife and plants; final designation of critical habitat for four vernal pool crustaceans and eleven vernal pool plants in California and Southern Oregon; Evaluation of Economic Exclusions From August 2003 Final Designation; Final Rule. Federal Register 70:46924-46999.

Vaghti, M.G., M. Holyoak, A. Williams, T.S. Talley, A.K. Fremier and S.E. Greco. Submitted. The ecology and restoration of *Sambucus mexicana* (blue elderberry) in human-altered riparian systems, with implications for threatened *Desmocerus californicus dimorphus* (Valley elderberry longhorn beetle). Restoration Ecology.

Van Hattem, M. G. 2004. Underground ecology and natural history of the CTS. Master of Science thesis. San Jose State University, San Jose, California.

Ward, P.S. 1987. Distribution of the introduced Argentine ant (*Iridomyrex humilis*) in natural habitats of the lower Sacramento Valley and its effects on the indigenous ant fauna. *Hilgardia* 55:1-16.

Warner, R.E. and K.M. Hendrix. 1985. Riparian resources of the Central Valley and California Desert. California Department of Fish and Game. 226 pp.

Way, M.J., M.E. Cammell, and M. R. Paiva. 1992. Studies on egg predation by ants (Hymenoptera: Formicidae) especially on the Eucalyptus Borer *Phoracantha semipunctata* (Coleoptera: Cerambycidae) in Portugal. *Bulletin of Entomological Research* 82:425-432.

Wells, M.L., S.A. Hathaway and M.A. Simovich. 1997. The resilience of anostracan cysts to fire. *Hydrobiologia* 359: 199-202.

Wells, S.M., R. Pyle, and N.M. Collins. 1983. IUCN invertebrate red data book. International Union for the Conservation of Nature and Natural Resources. Cambridge, Great Britain.

Wetzel, R.G. 1975. Limnology. W.B. Saunders Company, Philadelphia, Pennsylvania.

Wilbur, H. M. and J. P. Collins. 1973. Ecological aspects of amphibian metamorphosis. *Science* (n.s.) 182(4119): 1305-1314.

Woodward, B. D. and J. Kiesecker. 1994. Ecological conditions and the notonectid-fairy shrimp interaction. *Southwestern Naturalist* 39(2): 160-164.

Zedler, P.H. 1987. The ecology of southern California vernal pools: a community profile. U.S. Fish and Wildlife Service Biological Report 85 (7.11).

Sacramento Fish and Wildlife Office
Selected Review Criteria for Section 7 Off-Site Compensation
Revised Oct. 2009

Property Assurances and Conservation Easement

- ☐ Title Report (preliminary at proposal, and Final Title Insurance at recordation), shall be no older than six months;
- ☐ Property Assessment and Warranty;
- ☐ Subordination Agreement [if there is any outstanding debt on the property];
- ☐ Legal Description and Parcel Map;
- ☐ Conservation Easement (should use the current multi-agency standardized CE template document); or
- ☐ Non-Template Conservation Easement;

Site Assessment and Development

- ☐ Phase I Environmental Site Assessment;
- ☐ Restoration or Development Plan;
- ☐ Construction Security [if applicable];
- ☐ Performance Security;

Site Management

- ☐ Interim Management Plan;
- ☐ Interim Management Security Analysis and Schedule;
- ☐ Long-Term Management Plan;
- ☐ Endowment Fund Analysis and Schedule;

****Guidelines to assist in understanding what is required are detailed on pages 2–7.**

Guidelines

Property Assurances and Conservation Easement (CE)

Title Report

1. Who holds fee title to property? Should be the Project Applicant. If not, there may be liability and contracting issues.
2. Are there any liens or encumbrances (existing debts or easements) on the property?
 - a. Review necessary supporting instruments to evaluate liens and encumbrances. Property owner should submit a "*Property Assessment and Warranty*," which discusses each and every exception listed on the Preliminary and Final Title Insurance Policies, evaluating any potential impacts to the conservation value that could result from the exceptions (see below).
 - b. The *Property Assessment and Warranty* template is available at http://www.fws.gov/sacramento/es/cons_bank.htm, and should include a summary and full explanation of all exceptions remaining on the title, with a statement that the owner/Grantor accepts responsibility for all lands being placed under the CE as available for the primary purposes of the easement, as stated in the easement, and assures that these lands have a free and clear title and are available to be placed under the CE.
3. Could any of these liens or encumbrances potentially interfere with either biological habitat values or ownership? If existing easements can potentially interfere with the conservation values/habitat of the property, those portions of the land should be deducted from the total compensation acreage (or number of credits) available on the site.
4. A *Subordination Agreement* is necessary if there is any outstanding debt on the property. Review *Subordination Agreement* for adequacy—the lending bank or other lien holder must agree to fully subordinate each lien or encumbrance.

Legal Description and Parcel Map

1. Ensure accuracy of map, and location and acreage protected under the CE.
2. Both the map and the legal description should explain the boundaries of the individual project compensation site. The site should *not* have 'leftover' areas for later use.

Conservation Easement from Template

1. The current CE template can be found at http://www.fws.gov/sacramento/es/cons_bank.htm.
2. Who will hold the easement?
 - a. Must have third-party oversight by a qualified non-profit or government agency. Qualifications include:
 - i. Organized under IRC 501(c)(3);

- ii. Qualified under CA Civil Code § 815;
- iii. Bylaws, Articles of Incorporation, and biographies of Board of Directors on file at, and approved, by USFWS.
 - 1. Must meet requirements of USFWS, including 51% disinterested parties on the Board of Directors;
 - b. Must have satisfactorily completed the CDFG due diligence process for easement/endowment holders and/or be accredited by the Land Trust Accreditation Commission <http://www.landtrustaccreditation.org/home>.
- 3. If not using the multi-agency template, applicant should specify objections they have to the template as provided, and may substantially delay processing as they will require Solicitor review. Alternate CEs must be approved by the USFWS prior to recording.

Non-Template Conservation Easements

- 1. You must either 1) add USFWS as a third-party beneficiary, or 2) add language throughout the document, in all appropriate places, that will assure USFWS the right to enforce, inspect, and approve any and all uses and/or changes under the CE prior to occurrence (including land use, biological management or ownership).
- 2. Include, at a minimum, language to:
 - a. Reserve all mineral, air, and water rights under the CE as necessary to maintain and operate the site in perpetuity;
 - b. Ensure all future development rights are forfeited;
 - c. Ensure all prohibited uses contained in the multi-agency conservation agreement template are addressed; and
 - d. Link the CE, Management Plan, and the Endowment Trust Fund within the document (e.g., note that each exists to support the others, and where each of the documents can be located if a copy is required).
- 3. Insert necessary language, particularly, but not exclusively, per: (can compare to multi-agency CE template)
 - a. Rights of Grantee
 - b. Grantee's Duties
 - c. Reserved Rights
 - d. Enforcement
 - e. Remedies
 - f. Access
 - g. Costs and Liabilities
 - h. Assignment and Transfer
 - i. Merger
 - j. Notices

Site Assessment and Development

Phase I Environmental Site Assessment

1. The Assessment must show that the compensation site is not subject to any recognized environmental conditions as defined by the American Society for Testing and Materials (ASTM) Standard E1527-05 "Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process, available at <http://www.astm.org/Standards/E1527.htm>, (i.e., the presence or likely presence of any Hazardous Substances or petroleum products).
2. If the Phase I Environmental Site Assessment identifies any recognized environmental conditions, the Project Applicant must represent and warrant to the USFWS that all appropriate assessment, clean-up, remedial, or removal action has been completed.

Development Plan [not required if doing preservation only]

1. The overall plan governing construction and habitat establishment activities required to be conducted on the Property, including, without limitation, creation, restoration, and enhancement of habitat.
 - a. This plan should include the baseline conditions of the Property including biological resources, geographic location and features, topography, hydrology, vegetation, past, present, and adjacent land uses, verified *Waters of the U.S. Jurisdictional Determination*, if applicable, species and habitats occurring on the property, a description of the activities and methodologies for creating, restoring, or enhancing habitat types, a map of the approved modifications, overall habitat establishment goals, objectives and Performance Standards, monitoring methodologies required to evaluate and meet the Performance Standards, an approved schedule for reporting monitoring results, a discussion of possible remedial actions, and any other information deemed necessary by the USFWS.
2. Any permits and other authorizations needed to construct and maintain the site shall be included and in place prior to the start of construction of the habitat.
3. Full construction plans for any habitat construction must be *USFWS-approved prior* to the start of construction of the habitat.

Construction Security

- a. The Project Applicant shall furnish a Construction Security in the amount of 100% of a reasonable third party estimate or contract to create, restore, or enhance habitats on the property in accordance with the Development Plan.
- b. The Construction Security shall be in the form of an irrevocable standby letter of credit, or a cashier's check.
 - i. The letter of credit, if chosen, shall be issued for a period of at least one year, and shall provide that the expiration date will be

automatically extended for at least one year on each successive expiration date unless, until extension is no longer necessary.

Performance Security

- c. The Project Applicant shall furnish a Performance Security in the amount of 20% of the Construction Security.
- d. The Performance Security shall be in the form of an irrevocable standby letter of credit, or a cashier's check.
 - i. The letter of credit, if chosen, shall be issued for a period of at least one year, and shall provide that the expiration date will be automatically extended for at least one year on each successive expiration date unless, until extension is no longer necessary.
- 4. The Construction and Performance Securities must:
 - a. Be held by a qualified, Service-approved, non-profit organization or government agency [see requirements under CE above], and
 - b. Be held according to minimum standards for assuring maximum success in earning potential, and will include assurances for no loss of principle, and
 - c. Disbursements or releases from each of the funds must be for documented expenditures, as they occur.

Site Management

Interim Management Plan

- 1. The Interim Management Plan should identify the short-term management, monitoring, and reporting activities to be conducted from the time construction ends until the Endowment Fund has been fully funded for one year and all the Performance Standards in the Development Plan have been met.

Interim Management Security Analysis and Schedule

- a. The Project Applicant shall furnish an Interim Management Security (in the form of a standby letter of credit) in the amount equal to the estimated cost to implement the Interim Management Plan during the first year of the Interim Management Period, as set for in the Interim Management Security Analysis and Schedule
- b. The Interim Management Security Analysis and Schedule shall consist of a table and/or spreadsheet that shows all of the tasks (management, monitoring, reporting), task descriptions, labor (hours), cost per unit, cost frequency, timing or scheduling of the tasks, the total annual funding necessary for each task, and any associated assumptions for each task required by the Interim Management Plan. The total annual expenses should include administration and contingency costs.
- c. The Interim Management Security must:

- i. Be held by a qualified, Service-approved, non-profit organization or government agency [see requirements under CE above], and
- ii. Be held according to minimum standards for assuring maximum success in earning potential, and will assurances for no loss of principle.
- iii. Disbursements or releases from the fund must be for documented expenditures, as they occur.

Long-Term Management Plan (LTMP)

1. The LTMP template can be found at http://www.fws.gov/sacramento/es/cons_bank.htm and identifies the long-term management, monitoring and reporting activities to be conducted after the interim Management Period.
2. The LTMP should include at minimum:
 - a. Purpose of the Project and purpose of the LTMP;
 - b. A baseline description of the setting, location, history, and types of land use activities, geology, soils, climate, hydrology, habitats present (once project meets Performance Standards), and species descriptions;
 - c. Overall management, maintenance and monitoring goals; specific tasks and timing of implementation; and discussion of any constraints, which may affect goals;
 - d. The Endowment Fund Analysis and Schedule (see below),
 - e. Discussion of Adaptive Management actions for reasonably foreseeable events and possible thresholds for evaluating and implementing Adaptive Management;
 - f. Rights of access to the Property and prohibited uses of the Property as provided in the CE; and
 - g. Procedures for Property transfer, land manager replacement, amendments, and notices.
3. A copy of the LTMP must be either recorded with the CE, or the CE must state in its body that the current management plan can be obtained upon request from the USFWS, if not using the CE template.

Endowment Fund Analysis and Schedule

- a. Can use a PAR or PAR-like analysis that must be based upon the final, approved LTMP.
- b. The analysis and schedule shall consist of a table and/or spreadsheet that shows all of the tasks (management, monitoring, reporting), task descriptions, labor (hours), cost per unit, cost frequency, timing or scheduling of the tasks, the total annual funding necessary for each task, and any associated assumptions for each task required by the Interim Management Plan. The total annual expenses should include administration and contingency costs.
- c. The Endowment Fund must:

- i. Be held by a qualified, Service-approved, non-profit organization or government agency [see requirements under CE above], and
- ii. Be held according to minimum standards for assuring maximum success in earning potential, and will include assurances for no loss of principle.
- iii. Disbursements or releases from the fund must be for documented expenditures, as they occur.

Appendix K FHWA Air Conformity Concurrence Letters



U.S. DEPARTMENT OF TRANSPORTATION

FEDERAL HIGHWAY ADMINISTRATION

CALIFORNIA DIVISION

650 Capitol Mall, Suite 4-100

Sacramento, CA. 95814

August 19, 2008

IN REPLY REFER TO

HDA-CA

File # RPSTPL 6249 (004)

Document # P58620

Bijan Sartipi, District Director
California Department of Transportation
District 4
111 Grand Avenue
P.O. Box 23360
Oakland, CA 94612

Attention: Glenn Kinoshita

Dear Mr. Kinoshita:

SUBJECT: Project Level Conformity Determination for the Jepson Parkway Project

On July 22, 2008, the California Department of Transportation (Caltrans) submitted to the Federal Highway Administration (FHWA) a request for a project level conformity determination for the Jepson Parkway Project in the Cities of Vacaville and Suisun City pursuant to 23 U.S.C. 327(a)(2)(B)(ii)(1). The project is in an area that is designated Nonattainment for Ozone and Maintenance for Carbon Monoxide (CO).

The project level conformity analysis submitted by Caltrans indicates that the transportation conformity requirements of 40 C.F.R. Part 93 have been met. The project is included in the Metropolitan Transportation Commission's (MTC) currently conforming *Transportation 2030 Plan (RTP)*, and the *2007 Regional Transportation Improvement Program (RTIP)*. The current conformity determinations for the RTP and RTIP were approved by FHWA and the Federal Transit Administration (FTA) on October 2, 2006. The design concept and scope of the preferred alternative have not changed significantly from those assumed in the regional emissions analysis.

As required by 40 C.F.R. 93.116 and 93.123, the localized CO analyses are included in the documentation. The CO hotspot analysis was performed with the *Transportation Project-Level Carbon Monoxide Protocol*. The analyses demonstrate that the project will not create any new violation of the standards or increase the severity or number of existing violations.

**MOVING THE
AMERICAN
ECONOMY**

Based on the information provided, FHWA finds that the Conformity Determination for the Jepson Parkway Project in the Cities of Vacaville and Suisun City conforms to the State Implementation Plan (SIP) in accordance with 40 C.F.R. Part 93.

Sincerely,



For
Gene K. Fong
Division Administrator



U.S. Department
of Transportation
**Federal Highway
Administration**

California Division

March 15, 2011

650 Capitol Mall, Suite 4-100
Sacramento, CA 95814
(916) 498-5001

In Reply Refer To:
HDA-CA
RPSTPL 6249 (004)

Bijan Sartipi, District Director
California Department of Transportation
111 Grand Avenue
P.O. Box 23360
Oakland, CA 94612

Attention: Allen Baradar, Office Chief, Chief of Environmental Engineering

Dear Mr. Baradar:

SUBJECT: FHWA Project Level Conformity Determination for the Jepson Parkway Project,
Solano County

On February 24, 2011, the California Department of Transportation (Caltrans) submitted a request for a project level conformity determination for the Jepson Parkway Project in Solano County to the Federal Highway Administration (FHWA). The project is in an area that is designated Nonattainment for Ozone and PM 2.5 and Maintenance for Carbon Monoxide (CO).

The project level conformity analysis submitted by Caltrans indicates that the transportation conformity requirements of 40 C.F.R. Part 93 have been met. The project is included in the Metropolitan Transportation Commission's (MTC) currently conforming *Transportation 2035 Plan (RTP)* and the *2011 Regional Transportation Improvement Program (RTIP)*. The current conformity determinations for the RTP and RTIP were approved by FHWA and the Federal Transit Administration (FTA) on December 14, 2010. The design concept and scope of the preferred alternative have not changed significantly from those assumed in the regional emissions analysis.

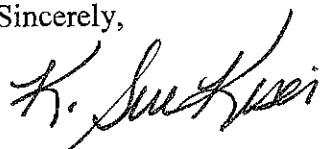
As required by 40 C.F.R. 93.116 and 93.123, the localized CO analyses are included in the documentation. The CO hotspot analysis was conducted using the *Transportation Project-Level Carbon Monoxide Protocol*. The analyses demonstrate that the project will not create any new violation of the standards or increase the severity or number of existing violations.

Based on the information provided, FHWA finds that the Conformity Determination for the Jepson Parkway Project in Solano County conforms to the State Implementation Plan (SIP) in accordance with 40 C.F.R. Part 93.



If you have any questions pertaining to this conformity finding, please contact Stew Sonnenberg, FHWA Air Quality Specialist, at (916) 498-5889, or by email at Stew.Sonnenberg@dot.gov.

Sincerely,

A handwritten signature in black ink, appearing to read "W. C. Waidehich, Jr.", written in a cursive style.

For
Walter C. Waidehich, Jr.
Division Administrator

cc: (email)

Mike Brady, Caltrans HQ

Glenn Kinoshita, D-4

Jermaine Hannon, FHWA

SSonnenberg/km