Appendix J

U.S. Fish and Wildlife Service Biological Opinion

2005-072

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-0104-2

FEB 03 2009

Ms. Nancy Haley
Chief, California, North Section
U.S. Army Corps of Engineers
1325 J Street, Room 1480
Sacramento, California 95814-2922

Subject: Review of the Proposed State Route 32 Widening Project (Corps File Number 200600254), Sacramento County, California, for Inclusion with the Vernal Pool Crustaceans Programmatic Consultation (Service file no. 1-1-96-F-001), the Programmatic Consultation for U.S. Army Corps of Engineers 404 Permitted Projects with Relatively Small Effects on the Giant Garter Snake (1-1-F-97-149), and the Valley Elderberry Longhorn Beetle Programmatic Consultation (Service File Number 1-1-96-F-0066).

Dear Ms. Haley:

This letter is in response to your October 2, 2007, letter and supporting documentation requesting section 7 consultation for the Proposed State Route (SR) 32 Widening project (proposed project), in Butte County, California. Your request was received by the U.S. Fish and Wildlife Service (Service) on October 12, 2007. At issue are potential adverse effects to the threatened vernal pool fairy shrimp (*Branchinecta lynchi*), endangered vernal pool tadpole shrimp (*Lepidurus packardi*) (collectively referred to as the vernal pool crustaceans), the threatened valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*) (beetle), the threatened giant garter snake (*Thamnophis gigas*) (snake), and the endangered Butte County meadowfoam (*Limnathes floccose* ssp. *Californica*) (meadowfoam). The proposed project is adjacent to critical habitat for the vernal pool fairy shrimp (unit 9), vernal pool tadpole shrimp (unit 4A), and Butte County meadowfoam (unit 3). This response has been prepared in accordance with section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*) (Act).

The proposed project is adjacent to critical habitat for the vernal pool fairy shrimp (unit 9), vernal pool tadpole shrimp (unit 4A), and Butte County meadowfoam (unit 3). The proposed project is within the Doe Mill Core Recovery Area within the Northeastern Sacramento Valley Vernal Pool Region, as described in the *Recovery Plan for Vernal Pool Ecosystems of California and*

Southern Oregon (Service 2005). Critical habitat has not been designated for the snake, and therefore, none would be adversely affected. Critical habitat has been designated for the valley elderberry longhorn beetle; however, the proposed project is not within critical habitat for this species. Therefore, the proposed project will not destroy or adversely modify critical habitat for the snake or the beetle.

The Service does not concur with your determination that the proposed project is not likely to adversely affect the meadowfoam, the vernal pool crustaceans, and the snake. The Service has determined that the proposed project is likely to adversely affect the meadowfoam, the vernal pool crustaceans, the snake, and the beetle. New information was received on October 21, 2008, in which an elderberry (*Sambucus* sp.) shrub was identified within the proposed project. Therefore, the Service believes the proposed project is likely to adversely affect the beetle. The proposed project is also likely to adversely affect critical habitat for the meadowfoam, and the vernal pool crustaceans. Surveys were conducted for meadowfoam in the right-of-way during the 2004, 2005, and 2008 seasons. This species was detected within the proposed project area during these surveys and from data from surveys from different projects. Guideline-level surveys for vernal pool crustacean species have not been performed; however, vernal pool tadpole shrimp were detected in previous surveys and are assumed to occur within the action area. The project applicant is assuming presence of vernal pool crustaceans and suitable habitat is present onsite for these species. Suitable habitat also occurs within the proposed project site for both the beetle and the snake.

The Service has determined that it is appropriate to append the proposed project to the Service's September 19, 1996, *Programmatic Formal Consultation Permitting Projects with Relatively Small Effects on the Valley Elderberry Longhorn Beetle* (Beetle Programmatic Consultation) (Service file number 1-1-96-F-0066), the February 28, 1996, *Programmatic Formal Endangered Species Act Consultation on Issuance of 404 Permits for Projects with Relatively Small Effects on Listed Vernal Pool Crustaceans Within the Jurisdiction of the Sacramento Field Office, California* (Vernal Pool Programmatic) *(Service file number 1-1-96-F-001)*, and the November 13, 1997, *Programmatic Consultation for U.S. Army Corps of Engineers 404 Permitted Projects with Relatively Small Effects on the Giant Garter Snake* (Snake Programmatic Consultation) (Service file number 1-1-97-F-0149). This document contains programmatic biological opinions for the beetle, vernal pool crustaceans, and the snake, and a separate biological opinion for the meadowfoam.

This consultation is based on the following: (1) phone and electronic mail correspondence between the Service and Gallaway Consulting Inc. between June 2005 through January 2009; (2) the *November 2006, Biological Assessment for the State Route 32 Widening Project*; (3) June 23, 2005 and June 6, 2008, site visits from Service representatives and Gallaway Consulting Inc.; (4) the Corps' October 2, 2007, consultation initiation letter; (5) the October 21, 2008, request from the Service for information for the State Route 32 Widening Project; and (6) other information available to the Service. A complete administrative record of this consultation is on file at the Sacramento Fish and Wildlife Office.

Consultation History

June 23, 2005: Representatives from the Service and representatives from Gallaway Consulting Inc. attended a site visit.

October 12, 2007: The Service received a letter from the Corps, dated October 2, 2007, requesting initiation of formal consultation on the Proposed State Route 32 Widening Project. the November 2006, *Biological Assessment for the State Route 32 Widening Project, City of Chico, Butte County, California was included with the initiation.*

June 6, 2008: Representatives from the Service and representatives from Gallaway Consulting Inc. attended a site visit.

October 21, 2008 The Service received an addendum to the Biological Assessment from Gallaway Consulting Inc.

BIOLOGICAL OPINION

Description of the Proposed Action

The proposed project will widen and improve approximately 2.6 miles of SR 32 (encompassing approximately 45 acres), beginning at the southbound SR 99 ramps at the west end of the project corridor and extending east past Yosemite Drive. State Route 32 will be widened from two to three lanes in each direction from the east side of the SR 99 interchange to just east of Fir Street. The roadway will then be widened from two to four lanes (two in each direction) from Fir Street to 1,400 ft east of Yosemite Drive, where the roadway width will transition down from four lanes to the existing two lanes. The project will consist of modifications to the ramp terminal intersections and the couplet at the SR 99/SR 32 interchange. The intersections of SR 32 with Forest Avenue, El Monte Avenue, Bruce Road, and Yosemite Drive will be improved to include turn pockets. The City and Caltrans evaluated two alternatives: signalized intersection improvements (Alternative 1) or a roundabout at Bruce Road (Alternative 2). Alternative 1 was selected. The intersections of SR 32 with Fir Street and Yosemite Drive will be widened and new traffic signals will be installed. The signals at Forest Avenue and El Monte Avenue will be modified. The project includes construction of the south leg of the Yosemite Drive intersection. A more detailed description of the proposed project can be found in the November 2006, *Biological Assessment for the State Route 32 Widening Project.*

The proposed project will permanently destroy 0.265 acre of vernal pool crustacean habitat and indirectly affect 0.906 acre of vernal pool crustacean habitat. The proposed project would also directly affect 0.0001 acre (one individual located in the uplands on the south side of SR 32) of meadowfoam. The proposed project would also indirectly affect 0.183 acre of meadowfoam habitat which is located on the parcel south of SR 32 between Humboldt Road and Bruce Road.

There is one elderberry cluster within the proposed project. This shrub cluster will be adversely

affected by activities within 20 feet. The applicant has proposed to compensate for this shrub cluster, and this shrub shall be transplanted according to the Service's July 9, 1999, *Conservation Guidelines for the Valley Elderberry Longhorn Beetle.*

The City of Chico (The City) has also proposed to compensate for the permanent and temporary loss of snake habitat. Construction will occur during the snake's active season (May 1 – October 1). If it appears that construction activity may go beyond October 1, the project proponents shall contact the Service as soon as possible, but not later than July 15, to determine if additional measures are necessary to minimize take. The project will permanently destroy 0.093 acre of aquatic habitat and 1.519 acres of upland snake habitat. The applicant has proposed to compensate for the direct impacts by purchasing credits at a Service approved conservation bank within the service area of the proposed project. The applicant will also restore the temporary aquatic impacts of 0.227 acre of habitat for the snake to pre-project conditions within the same season, or at most, the same calendar year.

Conservation Measures

1. The City shall include a copy of the project BO within its construction documents making the primary contractor responsible for implementing all requirements and obligations included within the biological opinion, and to educate and inform all other contractors involved in the project as to the requirements of the biological opinion. A copy of the contract documents containing the biological opinion also will be provided to the Chief of Endangered Species (Central Valley) at the Sacramento Fish and Wildlife Service.
2. The contractor will be responsible for providing a Worker Environmental Awareness Training Program for construction personnel. This shall be conducted by a Service-approved biologist for all construction workers, including contractors, prior to the commencement of construction activities. The program shall provide workers with information on their responsibilities with regard to meadowfoam, snake and vernal pool crustaceans, an overview of the life history of these species, information on take prohibitions, protections afforded these species under the Act, and an explanation of the relevant terms and conditions of the biological opinion. Written documentation of the training must be submitted to the Sacramento Fish and Wildlife Service within 30 days of the completion of training. As needed, training shall be conducted in Spanish for Spanish language speakers.

3. The contractor will be responsible for hiring a qualified biologist to inspect construction-related activities at the proposed construction area to ensure that no unauthorized take of federally-listed species or destruction of their habitat occurs. The biologist shall be available for monitoring throughout all phases of construction that may result in adverse effects to meadowfoam, vernal pool invertebrates, or the snake.

4. The contractor will be responsible for understanding and following the guidelines set forth in the Section 404 permit, Section 401 water quality certification, and Section 1602 streambed alteration agreement.

5. The contractor will prepare a site-specific Storm Water Pollution Prevention Plan (SWPPP) for the project to protect receiving waters from pollution. The SWPPP will include standard sediment and erosion control measures which will include limiting soil disturbances during the winter rainfall season. Given the site-specific conditions of the construction area, the SWPPP for this project will generally include limiting soil disturbances during the winter rainfall season of October 15 through April 15 and fully stabilizing disturbed areas prior to December 1. Standard sediment erosion control measures, such as silt fencing, straw bale barriers, sediment traps, or other measures could also directly reduce the offsite transport of sediment from disturbed slopes. Existing vegetation that can be preserved will be identified and flagged or fenced to avoid disturbance. Erosion in disturbed areas will be controlled through the use of grading operations that eliminate direct routes for conveying runoff to drainage channels and use of soil stabilization Best Management Practices (BMPs), such as mulching, erosion control fabrics, and/or reseeding with grass or other plants where necessary. Standard staging area practices for sediment tracking reduction also will be identified where necessary including vehicle washing and street sweeping. Temporary concentrated flow conveyance systems also will be considered, such as berms, ditches, and outlet flow-velocity dissipation devices to reduce erosion from newly disturbed slopes.

6. The biological monitor will regularly inspect and maintain the BMPs in good working order.

7. The City will incorporate permanent post-construction BMPs in the project design to avoid or minimize long-term water quality impacts, pursuant to the National Pollutant Discharge Elimintation System (NPDES) storm water permit. Appropriate BMPs for the construction area could include stabilization measures such as preservation of existing vegetation, concentrated flow conveyance systems (ditches, berms, drains, flared culvert end sections, outlet protection, and flow-velocity dissipation), and slope roughening or terracing for new cut-and-fill slopes as deemed necessary by the project engineer. Slope protection measures will be implemented to control erosion such as reducing the length of disturbed slopes, reducing the gradient of slopes, and preventing concentrated flow over slope soils. The City will be responsible for long-term inspection and maintenance of the permanent BMPs to ensure that they are maintained in good working order.

8. The contractor will be responsible for complying with all work windows in regards to special-status species. Work windows for this project include:

    i. Working in Dead Horse Slough and South Fork Dead Horse Slough during the dry season (generally June 1 through October 30; however, work may start earlier if the creek is dry) when no habitat is present for anadromous fish.

This window also encompasses the snakes active period who hibernate during the colder months of the year and are not able to escape danger from heavy machinery crushing their winter dens.

ii. Prohibiting the removal of trees during the raptor nesting season (generally March 1 through September 15), or removing necessary trees prior to the nesting season after a pre-construction raptor survey. And no construction will occur within 250 feet of active raptor nests.

9. Prior to the commencement of construction activities, a qualified biologist hired by the contractor will determine the location of high visibility fencing, which will be erected around the habitats of the federally listed species to identify and protect these sensitive areas from encroachment by personnel and equipment. These areas will be avoided by all construction personnel. The fencing shall be inspected before the start of each work day and maintained by the contractor until completion of the project. The fencing may be removed only when the construction of the project is completed.
   i. Fencing will be established 2 feet from the edge of pavement or a minimum distance of 50 feet from the suitable vernal pool crustacean habitat.
   ii. Fencing will be established 2 feet from the edge of the pavement from the suitable meadowfoam habitat.
   iii. Fencing will be established around Dead Horse Slough and South Fork Dead Horse Slough to minimize the amount of disturbance (heavy equipment movement, vehicle movement) to the creek channel.
10. During construction operations, the number of access routes, number and size of staging areas, and the total area of the proposed project activity will be limited to the minimum necessary. Routes and boundaries will be clearly demarcated. Movement of heavy equipment to and from the construction area will be restricted to established roadways to minimize habitat disturbance.
11. During construction operations, stockpiling of construction materials, portable equipment, vehicles and supplies will be restricted to the designated construction staging areas and exclusive of the sensitive areas.
12. After construction activities are complete, any temporary fill or construction debris shall be removed and disturbed areas restored and revegetated to their pre-project conditions. An area subject to "temporary" disturbance includes any area that is disturbed during the project, but that, after project completion, will not be subject to further disturbance and has the potential to be re-vegetated.
13. The contractor shall ensure that activities that are inconsistent with the maintenance of the suitability of vernal pool crustacean habitat and the associated on-site watershed are prohibited. These include, but are not limited to:
   i. the alteration of existing topography that may alter hydrology into habitat for vernal pool crustaceans;
   ii. the placement of any equipment within suitable habitat;

iii. dumping, burning, and/or burying of rubbish, garbage, or any other wastes and fill materials; and

iv. the use of pesticides or other toxic chemicals.

n. The contractor will develop and implement a spill prevention and control program to minimize the potential for—and effects from—spills of hazardous, toxic, or petroleum substances during construction of the project. The program will be a component of the SWPPP. If a spill is reportable under federal, state, or local regulations, the contractor will notify the City, Butte County Environmental Health and California Department of Toxic Substances Control, which has spill response and cleanup ordinances to govern emergency spill response. A written description of reportable releases will be submitted to the Regional Water Quality Control Board. This submittal will include a description of the release, including the type of material and an estimate of the amount spilled; the date of the release; an explanation of why the spill occurred; and a description of the steps taken to prevent and control future releases. The releases will be documented on a spill report form.

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 State Route 32 Widening Project, the action area for the project is limited to the project footprint itself, and a 250 foot buffer outside the project footprint.

Evaluations under Programmatic Consultations

Vernal Pool Crustaceans

This letter is an agreement by the Service to append the proposed project to the *February 28, 1996, Programmatic Formal Endangered Species Act Consultation on Issuance of 404 Permits for Projects with Relatively Small Effects on Listed Vernal Pool Crustaceans Within the Jurisdiction of the Sacramento Field Office, California (1-1-96-F-001),* and represents the Service's biological opinion on the effects of the proposed action. Conservation measures for projects appended to the Programmatic Consultation involve the use of creation and preservation banks in combination with on-site conservation options where such options are appropriate.

The conservation measures identified in the Programmatic Consultation include:

Preservation component. For every acre of vernal pool habitat directly or indirectly affected, at least two vernal pool acres will be dedicated within a Service-approved vernal pool preservation bank; or, based on Service evaluation of site-specific conservation values, three acres of vernal pool habitat may be preserved on the project site or another non-bank as approved by the Service.

Creation component. For every acre of habitat directly affected, at least one vernal pool creation credit will be dedicated within a Service-approved vernal pool conservation bank; or, based on Service evaluation of site-specific conservation values, two acres of vernal pool habitat will be created and monitored on the project site or on another non-bank site as approved by the Service.

The proposed project will result in direct effects to 0.265 acres of habitat for vernal pool crustaceans. The proposed project will also result in indirect effects to 0.906 acres of habitat for vernal pool crustaceans. Both will be compensated at a 2:1 preservation ratio.

The agreed upon conservation responsibilities of the applicant are as follows:

1. Prior to the start of construction, the project applicant will purchase vernal pool preservation credits sufficient to preserve 2.34 acres (0.265 direct +0.906 indirect * 2) at a Service-approved vernal pool conservation bank within a service area covering the project.

2. Prior to the start of construction, the project applicant will purchase vernal pool creation credits sufficient to restore/create 0.265 acre at a Service-approved vernal pool conservation bank within a service area covering the project.

3. The applicant shall also adhere to the avoidance and minimization measures as described in the November 2006, *Biological Assessment for the State Route 32 Widening Project,* and the terms and conditions of the Vernal Pool Programmatic Consultation.

Giant Garter Snake

The Service is tracking losses of habitat within the range of the snake permitted under the *November 13, 1997, Programmatic Formal Consultation for U.S. Army Corps of Engineers 404 Permitted Projects with Relatively Small Effects on the Giant Garter Snake within Butte, Colusa, Glenn, Fresno, Merced, Sacramento, San Joaquin, Solano, Stanislaus, Sutter and Yolo Counties, California (1-1-F-97-149)*, and compensation for those losses, in each county under the jurisdiction of the Sacramento Fish and Wildlife Office. The Service reevaluates the effectiveness of this Snake Programmatic Consultation annually to ensure that continued implementation will not result in unacceptable impacts to the snake or the habitats upon which it depends.

The Snake Programmatic Consultation identifies three levels of project impacts and appropriate conservation measures for each impact level (below). It is the Service's intent that following these Guidelines and Avoidance Measures will reduce habitat degradation while increasing the protected habitat areas across the species' range. These measures include the following:

1. Avoidance of take and disturbance of habitat (Levels 1, 2, and 3);

2. Minimization of disturbance and habitat loss (Levels 1, 2, and 3);

3. Restoration of temporary habitat disturbance and associated impacts to snake habitat (Levels 1 and 2);

4. Replacement of permanent and temporal habitat loss (Levels 2 and 3);

5. Management and monitoring of restored and replacement habitat (Levels 1, 2, and 3); and

6. A management plan for the long-term protection of the restored and replaced habitat area(s) to protect the area(s) in perpetuity as habitat for the snake (Levels 2 and 3).

The proposed project site provides suitable snake habitat including both upland and aquatic habitats. The snake is assumed to occur in Dead Horse Slough, and because of the presence of suitable habitat, the Service believes that the snake is reasonably certain to occur within the proposed project's action area and, therefore, the proposed project is likely to adversely affect the snake through temporary loss of 0.227 acres of potential aquatic habitat and permanently destroy 1.519 acres of upland habitat and 0.093 acres of aquatic habitat.

The agreed upon conservation responsibilities of the applicant are as follows:

1. Construction activities associated with the proposed project will result in temporary loss of 0.227 acre of habitat for the snake (Level 1 Effects). The project applicant will follow the Level 1 project impact mitigation as a result of the temporary loss of habitat. The applicant will restore the temporarily impacted 0.227 acre of habitat for the snake to pre-project conditions within the same season, or at most, the same calendar year. The applicant will also monitor the restored areas with a photo documentation report due 1 year from the implementation of the restoration showing pre-and post project area photos. Construction activities associated with the proposed project will also result in permanent loss of 1.612 acres of habitat for the snake (Level 3 Effects). The project applicant will follow the Level 3 project impact mitigation as a result of the permanent loss of habitat. The applicant will purchase credits at a Service approved conservation bank at a ratio of 3:1 for a total of 4.836 acres.

2. The applicant shall also adhere to the avoidance and minimization measures as described in the November 2006, *Biological Assessment for the State Route 32 Widening Project,* and the terms and conditions of the Snake Programmatic Consultation.

Valley Elderberry Longhorn Beetle

This letter is an agreement by the Service to append the proposed project to the *March 11, 1997, Programmatic Formal Consultation Permitting Projects with Relatively Small Effects on the Valley Elderberry Longhorn Beetle* (Programmatic Consultation) (Service file number 1-1-96-F-0066). The project applicant has proposed to plant elderberry seedlings and associated native riparian species in accordance with the Service's 1999 Conservation Guidelines (Table 1).

Table 1: Proposed compensation ratios for the valley elderberry longhorn beetle for the proposed project.

Location	Stems (maximum diameter at ground level)	Exit Holes	# of Stems	Elderberry Seedling Ratio	# Elderberry Seedlings required	Associated Native Ratio	# Associated Natives required
Non-Riparian	1-3 inches	Yes	6	2:1	12	2:1	24
Non-Riparian	3-5 inches	Yes	4	4:1	16	2:1	32
Non-Riparian	> 5 inches	Yes	1	6:1	6	2:1	12
Total			**11**		**34**		**68**

Therefore, prior to any ground disturbing activities associated with the proposed project, the project applicant shall fulfill the following conservation measures:

1. The project applicant will purchase credits sufficient to plant 34 elderberry shrub seedlings and 68 associated riparian native species at a Service-approved valley elderberry longhorn beetle conservation bank.

2. There is one elderberry cluster within the proposed project. The single elderberry cluster which will be adversely affected will be transplanted as outlined in the Service's 1999 Conservation Guidelines.

Biological Opinion
(Butte County Meadowfoam and vernal pool critical habitat)

Project Description

A general summary of the proposed project is provided on pages 3-4 of this biological opinion. A more in depth description of the proposed action is available in the November 2006 *State Route 32 Widening Project, Chico, Butte County, California.*

Butte County Meadowfoam

The proposed project would directly affect 0.0001 acre of meadowfoam habitat. This impact would occur to an individual plant which was identified and found located in an upland area adjacent to the highway west of Bruce Road. The proposed project would also indirectly affect

0.183 acre. Table 2 summarizes the agreed upon acreage amounts of meadowfoam habitat to be preserved to offset habitat loss resulting from the proposed project.

Table 2: Butte County meadowfoam impacted habitat and proposed conservation measures to offset habitat loss.

Direct Effects (Acres)	Indirect Effects (Acres)	Total Required Preservation	Total Required Creation/Restoration
Butte County Meadowfoam			
0.0001 acre (19:1)	0.183 acre (5:1)	0.917 acre (0.002 + 0.915)	N/A

In addition to the proposed conservation measures described on pages (pages 4-7), the project applicant has also proposed these additional conservation measures:

1. To minimize the adverse effects of the proposed project on meadowfoam, the applicant will purchase a total of 0.917 acre of meadowfoam habitat. The applicant has proposed the following three preservation options:
    i. Purchase 0.917 acre of meadowfoam credits (if available at the time of purchase) from Dove Ridge Mitigation Bank. The actual fee paid will be that in effect at the time of payment.
    ii. Preserve and/or create 0.917 acre of meadowfoam habitat at the proposed Bidwell Ranch conservation area. As part of the mitigation plan for the Chico Municipal Airport project, Bidwell Ranch has been identified by the Service as a suitable meadowfoam conservation area; however, a final management plan has not been developed at this time. A final management plan will be developed by the City prior to the start of construction on SR 32.
    iii. Establish 0.917 acre of new meadowfoam preserve within a Service approved off-site location. The City will be responsible for developing a monitoring plan, placing the property in a USFWS conservation easement, and assuring an endowment fund will be available to protect the property for perpetuity.

Status and Baseline

Butte County Meadowfoam

Butte County meadowfoam was listed as endangered on June 8, 1992 (Service 1992). The final rule to designate critical habitat for 15 vernal pool species, including Butte County meadowfoam, was published on August 6, 2003 (Service 2003). The most recent final rule for critical habitat was published on February 10, 2006 (Service 2006).

Butte County meadowfoam is a small annual with erect stems less than 9.8 inches tall. The stem and leaves are densely pubescent. The alternate leaves are pinnately compound, up to 3.1 inches long, and consist of 5 to 11 leaflets on a long petiole. The individual leaflets are approximately 0.4 inch long and vary from narrow to egg-shaped; their margins may be smooth, toothed, or lobed. A single flower arises in the axil of each upper leaf. The fragrant flowers are cup- or bowl-shaped and consist of 5 petals, 5 sepals, 5 pistils, and 10 stamens on a long flower stalk. The petals are 0.31 to 0.39 inch long, white with yellow veins, and have two rows of hairs at the base. The sepals are about the same length as the petals and are densely pubescent on both their inner and outer surfaces. Although the sepals are not fused, the dense hairs hold them together, preventing the flower from opening fully. The pistils are separate at the base, but the upper parts are fused. Each pistil is capable of producing a nutlet; the nutlets are egg-shaped, 0.12 to 0.18 inch long, and covered with cone-shaped tubercles. As the nutlets mature, the petals turn inward, and at maturity the entire flower, including the nutlets, falls off the plant as a unit. The diploid chromosome number for all *Limnanthes* species is 10 (Mason 1952, Arroyo 1973, McNeill and Brown 1979, Ornduff 1993).

Butte County meadowfoam is found primarily in vernal swales and to a lesser extent on the margins of vernal pools (Arroyo 1973, Dole 1988, Jokerst 1989, BioSystems Analysis, Inc. 1993). Butte County meadowfoam has always been confined to the Northeastern Sacramento Valley Vernal Pool Region. Butte County meadowfoam is believed to occur in five natural centers of concentration, totaling 21 naturally occurring populations (CNDDB 2006). The southernmost area of concentration is the Shippee Road area between Chico and Oroville. Three other centers of concentration are within the City of Chico at the Chico Municipal Airport, Bidwell Ranch, and the vicinity of the Humboldt Road and SR 32 intersection. In addition, a fifth location was found in 2005, on North Table Mountain east of the intersection of Highways 149 and 70. In addition to the 21 natural occurrences, an experimental population of Butte County meadowfoam has been introduced on the Tuscan Preserve in northwestern Butte County (Kelley *et al.* 1994). The introduction site was just outside of the known historical range of the taxon and thus marginally increased its range.

Butte County meadowfoam seeds germinate in the late fall after the rainy season begins. Butte County meadowfoam typically begins flowering in February, reaches peak flowering in March, and may continue into April, if conditions are suitable. Nutlets are produced in March and April, and the plants die back by early May (Jokerst 1989, Dole and Sun 1992). Nutlets of Butte County meadowfoam are apparently dispersed by water and can remain afloat for up to 3 days (Hauptli *et al.* 1978). However, most meadowfoam nutlets are dispersed only short distances. Thus, Butte County meadowfoam nutlets would not be expected to disperse beyond their pool or swale of origin. Birds and livestock are potential sources of long-distance seed dispersal, but specific instances of such dispersal have not been documented (Jain 1978).

Several races of Butte County meadowfoam exist. Jokerst (1989) identified "north" and "south" races of Butte County meadowfoam in the Chico "sphere of influence" based on morphology. Later, in studies of enzyme systems, Dole and Sun (1992) confirmed that these races differed genetically. They also identified genetically distinct races that they called "northeast" and "southwest," with the latter referring to the type locality.

Critical Habitat for the vernal pool crustaceans

There are 35 critical habitat units designated for the vernal pool fairy shrimp, totaling 597,821 acres. There are 18 critical habitat units designated for the vernal pool tadpole shrimp, totaling 228,785 acres (Service 2006). The proposed project is adjacent to unit 9 for the vernal pool fairy shrimp and unit 4A for the vernal pool tadpole shrimp, which was designated on February 10, 2006 (Service 2006). Both units 9 and 4A have the same boundary and are approximately 433 acres in size. Units 9 and 4A contain occurrences of the vernal pool fairy shrimp and vernal pool tadpole shrimp and are considered essential for the conservation of the two species. The proposed project will have indirect affects to 0.09 acres of suitable habitat within Critical Habitat units 9 and 4A.

Critical habitat units 9 and 4A for the vernal pool fairy shrimp and the vernal pool tadpole shrimp contain primary constituent elements that support vernal pool crustacean feeding, growth, breeding, reproduction, and dispersal. These primary constituent elements of critical habitat provide for the physiological, behavioral, and ecological requirements of the vernal pool fairy shrimp.

The first primary constituent element is that vernal pools, swales, and other ephemeral wetlands and depressions are of appropriate sizes and depths so that they typically become inundated during winter rains and hold water for sufficient lengths of time necessary for incubation, reproduction, dispersal, feeding, and sheltering, but which are dry during the summer and do not necessarily fill with water every year. This primary constituent element provides the aquatic environment required for cyst incubation and hatching, growth and maturation, reproduction, feeding, sheltering, and dispersal, and the appropriate periods of dessication for cyst dormancy and to eliminate predators such as bullfrogs, fish, and other aquatic predators that depend on year round inundation of wetland habitats to survive.

The second primary constituent element of the critical habitat for the vernal pool fairy shrimp and the vernal pool tadpole shrimp is to maintain the aquatic phase of the vernal pool habitat. The entire vernal pool complex, including the pools swales, and associated uplands, is essential to support the aquatic functions of the vernal pool habitat. Although the uplands are not actually occupied by vernal pool crustaceans, they nevertheless are essential to the conservation of vernal pool habitat and crustaceans because they are needed to maintain the aquatic phase of vernal pools and swales. Associated uplands are also essential to provide nutrients that form the basis of the vernal pool food chain, including a primary food source for the vernal pool crustaceans.

The third primary constituent element is the geographic, topographic, and edaphic features that support aggregations or systems of hydrologically interconnected pools, swales, and other ephemeral wetlands and depressions within a matrix of surrounding uplands that together form hydrologically and ecologically functional units called vernal pool complexes. These features contribute to the filling and drying of the vernal pool, and maintain suitable periods of pool inundation, water quality, and soil moisture for vernal pool crustacean hatching, growth and reproduction, and dispersal, but not necessarily every year. All of the above described primary

constituent elements do not have to occur simultaneously within a unit for the unit to constitute critical habitat for one of these two species.

Critical Habitat for the Butte County Meadowfoam

There are 4 critical habitat units designated for meadowfoam, totaling 16,636 acres (Service 2006). Critical habitat was designated for meadowfoam on February 10, 2006 (Service 2006). This unit contains occurrences of the meadowfoam and is considered essential for the conservation of the species. The proposed project lies adjacent to Critical habitat unit 3. The acreage amount of this unit totals 1,484 acres. The proposed project will have indirect affects to 0.09 acres of suitable habitat within Critical Habitat unit 3.

Critical habitat unit 3 for meadowfoam contains primary constituent elements that support the growth, reproduction, and dispersal of this species. These primary constituent elements of critical habitat provide for the ecological requirements of meadowfoam. The first primary constituent element of meadowfoam critical habitat is vernal pools, swales, and other ephemeral wetlands and depressions of appropriate sizes and depths that typically become inundated during winter rains and hold water for sufficient lengths of time necessary for growth and reproduction of this species, but which are dry during the summer and do not necessarily fill with water every year.

The second primary constituent element of the critical habitat for the meadowfoam is to maintain the aquatic phase of the vernal pool habitat. The entire vernal pool complex, including the pools swales, and associated uplands, is essential to support the aquatic functions of the vernal pool habitat. Although the uplands are not actually occupied by meadowfoam, they nevertheless are essential to the conservation of vernal pool habitat and listed vernal pool species because they are needed to maintain the aquatic phase of vernal pools and swales.

The third primary constituent element is the geographic, topographic, and edaphic features that support aggregations or systems of hydrologically interconnected pools, swales, and other ephemeral wetlands and depressions within a matrix of surrounding uplands that together form hydrologically and ecologically functional units called vernal pool complexes. These features contribute to the filling and drying of the vernal pool, and maintain suitable periods of pool inundation, water quality, and soil moisture for meadowfoam growth, reproduction, and dispersal, but not necessarily every year. All of the above described primary constituent elements do not have to occur simultaneously within a unit for the unit to constitute critical habitat for meadowfoam.

Effects of the Proposed Action

Effects to Butte County Meadowfoam

Direct Effects

Direct effects would occur to the one isolated meadowfoam plant located within the uplands

where by the proposed project would grade and pave over this existing plant. The proposed action would directly affect Butte County meadowfoam through the destruction of 0.0001 acre to account for this individual.

Indirect Effects

The proposed highway widening would take place within 250 feet of meadowfoam habitat; however, a raised berm located on the southside of Bruce Road would greatly reduce the potential for indirect effects to occur over the entire parcel in which meadowfoam is known to occur. However, the Service believes that indirect effects could occur to Butte County meadowfoam within the parcel where the berm would not protect the known occurrences from increases in run-off,non-native invasive plants, loss of pollinator species, changes in land use patterns (i.e., urbanization), and increases in human intrusion as a result of the expansion and reconstruction of the road. The total indirect impacts to meadowfoam would be 0.183 acre.

Effects to Critical Habitat

This biological opinion on the critical habitat for both meadowfoam and vernal pool crustaceans 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 statute and the August 6, 2004, Ninth Circuit Court of Appeals decision in *Gifford Pinchot Task Force v. U.S. Fish and Wildlife Service* (No. 03-35279) to complete the following analysis with respect to the critical habitat.

Critical Habitat for Vernal Pool Crustaceans and Meadowfoam

The proposed project is adjacent to critical habitat unit 9 for the vernal pool fairy shrimp, unit 4A for the vernal pool tadpole shrimp, and unit 3 for the meadowfoam. The proposed action is not expected to appreciably diminish the value of the proposed critical habitat for the vernal pool crustaceans and meadowfoam, or prevent the critical habitat from sustaining its role in the conservation and recovery of these species. The proposed project would only indirectly affect 0.09 acre of vernal pool habitat within the critical habitat boundary for these species. Adverse effects to the species primary constituent elements will only occur on a small level, therefore the Service believes the proposed project is likely to adversely affect critical habitat but is not significant enough to adversely modify critical habitat for the three vernal pool species.

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 project are not considered in this section, because they require separate consultation pursuant to section 7 of the Act. An undetermined number of future land use conversions and routine agricultural practices are not subject to Federal authorization or funding and may alter the habitat or increase incidental take of the vernal pool crustaceans and Butte County meadowfoam, and are, therefore, cumulative to the proposed project.

Conclusion

After reviewing the current status of the meadowfoam, the 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 State Route 32 project, as proposed, is not likely to jeopardize the continued existence of meadowfoam. The proposed project would also not result in the adverse modification of critical habitat for meadowfoam, or the vernal pool crustaceans because the adverse affects to the species primary constituent elements will occur on a small level and critical habitat for these species will remain functional and retain the ability for the remaining primary constituent elements to serve the intended conservation role for these three species.

INCIDENTAL TAKE STATEMENT

Sections (7)(4) and 7(o)(2) of the Act, which refer to terms and conditions and exemptions on taking listed fish and wildlife species, do not apply to listed plant species. However, section 9(a)(2) of the Act prohibits removal, reduction to possession, and malicious damage or destruction of listed plant species on lands under Federal jurisdiction and the removal, cutting, digging up, or damaging or destroying such species in a knowing violation of any State law or regulation, including State criminal trespass law. Actions funded, authorized or implemented by a Federal agency that could incidentally result in the damage or destruction of such species on Federal lands are not a violation of the Act, provided the Service determines in a biological opinion that the actions are unlikely to jeopardize the continued existence of the species. The California Native Plant Protection Act prohibits the take of State-listed plants.

Reporting Requirements

The Sacramento Fish and Wildlife Office is to be notified within one (1) working day of the finding of any dead federally-listed species or any unanticipated harm to the species addressed in this biological opinion. The Service contact person for this is the Chief, Endangered Species Division at (916) 414-6620 and the Resident Agent-in-Charge of the Service's Law Enforcement Division at (916) 414-6660.

The Corps must require the applicant to report to the Service immediately any information about take or suspected take of federally-listed species not authorized in this biological opinion. The Corps must notify the Service within one (1) working day of receiving such information. Notification must include the date, time, and location of the incident or of the finding of a dead or injured animal. The Service contact is the Resident Agent-in-Charge of the Service's Law Enforcement Division at (916) 414-6660.

Any contractor or employee, who during routine operations and maintenance activities, inadvertently kills or injures a State-listed species must immediately report the incident to their representative. This representative must contact the California Department of Fish and Game immediately in the case of a dead or injured listed species. The California Department of Fish and Game contact for immediate assistance is State Dispatch at (916) 445-0045.

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 and data bases.

1. The Corps should assist the Service in their implementation of the Services' 2005 *Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon.*

2. The Corps should work with Butte County, BCAG, the Service, city governments, and other stakeholders to implement a multi-species HCP in Butte County to further the conservation of special-status species.

In order for the Service to be kept informed of actions that conserve listed species or their habitats, the Service requests notification of the implementation of any conservation recommendations.

REINITIATION–CLOSING STATEMENT

This concludes formal consultation on the proposed State Route 32 Widening Project. 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.

If you have any questions regarding this biological opinion, please contact Jason Hanni, Staff Biologist, or Jana Milliken, the Sacramento Valley Branch Chief, at (916) 414-6645.

Sincerely,

for Susan K. Moore
Field Supervisor

cc:Clif Sellers, City of Chico, Chico, California
Jody Gallaway, Gallaway Consulting Inc., Chico, California

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