U.S.F.W.S. Biological Opinion for Section 7 Consultation

United States Department of the Interior
Fish and Wildlife Service
Sacramento Fish and Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, California 95825

IN REPLY REFER TO:
1-1-01-F-28

January 9, 2001

Mr. Michael Ritchie
U.S. Department of Transportation
Federal Highway Administration
California Division
980 Ninth Street, Suite 400
Sacramento, California 95814-2724

Subject: Reinitiation of Formal Endangered Species Consultation and Amendment to the Biological Opinion (File # 1-1-96-F-40) for the New Benicia-Martinez Bridge Project

Dear Mr. Ritchie:

This is in response to your letter dated December 18, 2000, requesting a modification of the "in water" work window to complete the new Benicia-Martinez bridge project. At issue are potential impacts to the federally threatened delta smelt (*Hypomesus transpacificus*), its critical habitat, and the federally threatened Sacramento splittail (*Pogonichthys macrolepidotus*) (splittail). The U.S. Fish and Wildlife Service prepared a biological opinion for this project on August 19, 1996, (Service File #1-1-96-F-40).

Our opinion was based on the proposal to work in waters 3-meters or less between December 1 and March 31, to minimize impacts to delta smelt and splittail. However, because of unforseen circumstances, you are requesting a modification of the work window to July 1 through October 31, of any given year. We have reviewed the enclosed California Department of Transportation letter dated November 27, 2000, and conclude that impacts beyond those previously considered are not likely to occur. Therefore, provided all proposed measures to avoid or minimize impacts are implemented, we concur with your request to extend the timing window to July 1 through October 31, and, unless new information reveals effects of the proposed action that may affect listed species in a manner or to an extent not considered, or a new species or critical habitat is designated that may be affected by the proposed action, no further action pursuant to the Endangered Species Act of 1973 is necessary.

If you have any questions, please contact Scott Cotter or Ken Sanchez at (916) 414-6625.

Sincerely,

for Karen J. Miller
Chief, Endangered Species Division

cc: Chuck Morton, Caltrans, Oakland, CA

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
980 Ninth Street, Suite 400
Sacramento, CA. 95814-2724

December 18, 2000

IN REPLY REFER TO
HDA-CA
File #:04-CC-680-23.8/25.5
Document #: P34155

Mr. Wayne S. White, Field Supervisor
Sacramento Fish and Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, CA 95825

Attn: Mr. Scott Cotter

Dear Mr. White:

SUBJECT: NEW BENICIA-MARTINEZ BRIDGE - B.O. REVISION REQUEST - 1-1-96-F-40

It has come to our attention that the work windows identified for the proposed project to construct a new Interstate 680 bridge across the Carquinez Strait in Solano and Contra Costa Counties during Section 7 consultation with the National Marine Fisheries Service and those identified during consultation with the Fish and Wildlife Service in combination do not provide a large enough work window for construction.

This letter is to request a modification of the conditions of the work windows for the Delta Smelt and for the Sacramento splittail to match the work window accepted by the National Marine Fisheries Service for salmonids. The proposed work window would be from July 1 to October 31. The enclosed Caltrans November 27, 2000 letter to Mr. Scott Cotter of your staff contains the analysis for justifying a change in the Biological Opinion.

If you have any questions, please contact Joan Bollman at 916-498-5028 or R. C. Slovensky at 916-498-5774.

Sincerely,

/s/R.C. Slovensky

For
Michael G. Ritchie
Division Administrator

Enclosure

cc:
Calvin Fong, U.S. Army Corps of Engineers, San Francisco Regulatory Branch, w/enc.
Chuck Morton, Caltrans Dist. 4 Environmental Planning North
Susan Simpson, Caltrans Dist. 4 Environmental Planning North
Gary Winters, Caltrans HQ Acting Chief Environmental Program

cc: (E-mail)
Glenn Clinton, HA-CA
R.C. Slovensky, HA-CA
Joan Bollman, HA-CA

Calvin Fong, Chief
404 Regulatory Branch
U.S. Army Corps of Engineers
333 Market Street
San Francisco, CA 94105-2197

DEPARTMENT OF TRANSPORTATION
OAKLAND, CA 94623-0660
(510) 286-4444
TDD (510) 286-4454

Mr. RC Slovensky
Federal Highway Administration
980 9th Street, Suite 400
Sacramento, CA 95814-2724

December 8, 2000

Subject: New Benicia - Martinez Bridge Project Work Windows

Dear Mr. Slovensky,

According to the National Marine Fisheries Service letter dated November 15, 2000 (SWR-00-SA-0222:MCV), Caltrans may work in deep water (>3m) and shallow water (<3m) habitats from July 1 to October 31 of any given year. This work would include the MARAD (open water) dredging and the installation of cofferdams and piles in shallow water. This work window will maintain the 'not likely to adversely affect' status of the project on those species protected by NMFS.

According to the US Fish and Wildlife Service Biological Opinion dated August 19, 1996 (1-1-96-F-40) and their letter dated November 9, 2000 (1-I-01-I-181), Caltrans may work in the shallow water habitat only between December 1 and March 31 of any given year. See the table below for these work 'windows'.

Species	Habitat	Agency	J	F	M	A	M	J	J	A	S	O	N	D
Delta Smelt	Shallow Water	USFWS	xx	xx	xx									xx
Sacramento Splittail	Shallow Water	USFWS	xx	xx	xx									xx
Salmonids *	Shallow Water	NMFS							xx	xx	xx	xx		

* Includes open water MARAD dredging.

As can be seen from the above table, there is a conflict in the allowable work windows between NMFS and the USFWS.

Caltrans proposes to follow the NMFS work window and is requesting that FHWA request that the USFWS modify their work window for the following reasons:

1. As per the BO, Delta Smelt spawn only in fresh water which is not found in the project site.
2. Delta Smelt, while collected at locations with up to 10-12‰ salinity, seems to prefer waters of 2‰. While waters collected at the site have had salinities approaching 0‰, such low salinities have occurred during the winter months in high rainfall and runoff years. Average summertime salinities at the site range from 6‰ to 7‰.
3. Delta Smelt generally spawn from December to July.

Therefore, there would be no impact to the Delta Smelt if the work window was modified to July/October.

The following should also be noted pertaining to Delta Smelt Critical Habitat.

1. Approximately 0.5 acres of Delta Smelt Critical Habitat will be impacted with this project. This has been minimized through the use of cofferdams and construction trestles.
2. Delta Smelt rearing habitat, while associated with Suisun Bay, is generally defined as upstream from the project site.
3. Delta Smelt adult migration would not be affected during the construction of the project because water flows and quality will not be adversely impacted.

Approximately 0.53 acres (0.23 acres temporary and 0.3 acres permanent) of impact to Delta Smelt Critical Habitat will be mitigated by the creation of new tidally influenced habitat of <3m in depth. Approximately 12 acres [a ratio of 1:24 (impact : mitigation)] of new Delta Smelt Critical Habitat will be created immediately adjacent to Suisun Bay.

The proposed change in the Delta Smelt work window would not change the amount or extent of the impact to the Delta Smelt Critical Habitat.

Based on the above information, a change in the work windows would not further impact the Delta Smelt or its Critical Habitat.

In general, the Sacramento Splittail follows the same breeding, rearing, and habitat requirements that the Delta Smelt has. The creation of the 12 acres of new Delta Smelt habitat would also benefit the Sacramento Splittail.

The Caltrans proposal to shift the Delta Smelt and Sacramento Splittail work windows from December/March to July/October should not have any appreciable affect on these listed species.

Therefore, Caltrans is requesting that the FHWA request the USFWS modify their Delta Smelt and Sacramento Splittail work windows from December/March to July/October to match the NMFS work windows.

If you have any questions, call me at 510.286.5681 or email at chuck.morton@dot.ca.gov. I will also transmit this letter electronically for your convenience.

Thank you for your assistance in this matter.

Sincerely,

HARRY Y. YAHATA
DISTRICT DIRECTOR

By:

Chuck Morton
District Branch Chief
Office of Environmental Planning North

cc: LWiecha/CT

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

NOV 13 2000

IN REPLY REFER TO:
1-1-01-I-181

November 9, 2000

Mr. Michael G. Ritchie
U.S. Department of Transportation
Federal Highway Administration
California Division
980 Ninth Street, Suite 400
Sacramento, California 95814-2724

Subject: Adoption of Sacramento Splittail Conference Opinion and Request for Concurrence with a Not Likely to Adversely Affect Determination to the Biological Opinion for the Formal Consultation and Conference on the Proposed Benicia-Martinez Bridge Across Carquinez Strait, Solano and Contra Costa Counties, California (1-1-96-F-40)

Dear Mr. Ritchie:

The U.S Fish and Wildlife Service (Service) received your request, dated September 29, 2000, to adopt the conference opinion on the Benicia-Martinez bridge project (Service file #: 1-1-96-F-40) for the Sacramento splittail (*Pogonichthys macrolepidotus*) (splittail) as a biological opinion. Additionally, your letter requested concurrence that additional work including open water dredging, is not likely to adversely affect splittail, delta smelt (*Hypomesus transpacificus*), or delta smelt critical habitat.

A telephone conversation of October 17, 2000, between Scott Cotter of my staff and Chuck Morton of California Department of Transportation (Caltrans), confirmed that the only new facet of the project will be the dredging of a deepwater navigational channel for the Maritime Administration Suisun Bay Reserve Fleet upstream of the new bridge location. Other activities described in your letter as "additional work not identified in the Biological Assessment" including installation of large diameter piles and cofferdams, were previously addressed in the Service's Biological Opinion on the project (Service file #: 1-1-96-F-40). As stated in your letter, no changes in circumstances or in the proposed project are anticipated that would alter the conclusions regarding the splittail.

The dredging will occur in deep water and is outside the boundaries of designated critical habitat for the delta smelt, thus, the Service has determined that the amount and extent of take will not

exceed that which was analyzed in the original biological opinion. Therefore, we concur with your determination that the additional work may affect, but is not likely to adversely affect the federally listed delta smelt and splittail in accordance with the requirements of the Endangered Species Act of 1973, as amended (Act). If all of the provisions described in the Corps' Public Notice 213921N are followed, no further action pursuant to the Act is necessary. In addition, and for the reasons stated above we adopt your conference opinion as a biological opinion.

However, if new information reveals effects of the project that may affect federally listed species or critical habitat in a manner not identified to date, or if a new species is listed or critical habitat is designated that may be affected by the proposed action, this office should be contacted immediately for further guidance.

Please contact Scott Cotter or Ken Sanchez of my staff at (916) 414-6625, if you have questions regarding this response.

Sincerely,

Karen J. Miller

Karen J. Miller
Chief, Endangered Species Division

cc: U.S. Army Corps, San Francisco, CA

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
CALIFORNIA DIVISION
980 Ninth Street, Suite 400
Sacramento, CA 95814-2724

September 29, 2000

RECEIVED
OCT 4 2000
Office of Environmental Planning, North

IN REPLY REFER TO

HDA-CA
File #:04-CC-680-23.8/25.5
Document #: P32857

Wayne S. White, Field Supervisor
Sacramento Fish and Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, CA 95825

Attn: Ms. Karen J. Miller

Dear: Mr. White:

SUBJECT: BENICIA-MARTINEZ BR. - CONFERENCE OPINION SACRAMENTO SPLITTAIL

This letter is to reinitiate consultation with respect to some additional work that has been added to the proposed project to construct a new Interstate 680 Benicia-Martinez Bridge across the Carquinez Strait in Solano and Contra Costa Counties. This work is described in the third paragraph of this letter. We are also requesting confirmation of the Conference Opinion on Sacramento Splittail.

Your August 19, 1996, Biological Opinion, 1-1-96-F-40, for the project included a Conference Opinion on the Sacramento Splittail. The Biological Opinion addressed impacts to the salt marsh harvest mouse, delta smelt, and Sacramento Splittail. The Sacramento Splittail has subsequently been listed. We agree to the Biological Opinion as written. The amount or extent of incidental take has not been exceeded. There is no new information to indicate new effects to listed species or critical habitat, including the Sacramento Splittail. There has been no modification to the project that causes an effect to listed species or critical habitat that was not considered in either the conference opinion or the biological opinion. No new species have been listed or critical habitat designated by the U. S. Fish and Wildlife Service that were not included in the biological opinion. The National Marine Fisheries Service has subsequently designated the critical habitat for Central California Coast steelhead, California Central Valley steelhead, and Central Valley spring-run salmon.

In order to maintain channel access, dredging a new channel to and from the Maritime Administration Suisun Bay Reserve Fleet upstream of the new bridge location has been added to the project. This

work was not previously identified in the Biological Assessment. The open water dredging will occur during between July 1st and October 31st. Additional work not identified in the Biological Assessment includes installation of large diameter piles and cofferdams. Cofferdams will only be installed in waters which are less than 3 meters deep. The enclosed June 14, 2000, letter from Caltrans provides additional information.

We request your concurrence that the open water dredging, installation of large diameter piles and cofferdams are not likely to adversely effect Federal listed species or critical habitat and confirmation of the Conference Opinion on the Sacramento Splittail.

If you have any questions, please contact Joan Bollman at 916-498-5028 or R. C. Slovensky at 916-498-5774.

Sincerely,

/s/ Joan Bollman

For
Michael G. Ritchie
Division Administrator

Enclosure

cc:
Calvin Fong, U.S. Army Corps of Engineers, San Francisco Regulatory Branch w/cpy encl
Susan Simpson, Caltrans Dist. 4
Chuck Morton, Caltrans Dist. 4
Gary Winters, Caltrans HQ Acting Chief Env. Prog.

cc: (E-mail)
Glenn Clinton, HA-CA
R.C. Slovensky, HA-CA
Joan Bollman, HA-CA
John Gibson, HA-CA
Mary Ann Rondinella, HB-CA
Stephanie Stoermer, HB-CA
Karen Schmidt, HPR-CA

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Ecological Services
Sacramento Field Office
3310 El Camino Avenue, Suite 130
Sacramento, California 95821-6340

IN REPLY REFER TO

1-1-96-I-1797

October 28, 1996

Mr. Fred J. Hempel
U.S. Department of Transportation
Federal Highway Administration
Region 1, California Division
980 Ninth Street, Suite 400
Sacramento, California 95814-2724

Subject: Caltrans Preliminary Mitigation Plan for the Benicia-Martinez Bridge Project, California

Dear Mr. Hempel:

This is in response to the California Department of Transportation's (Caltrans) September 26, 1996, letter requesting the U.S. Fish and Wildlife Service's (Service) preliminary concurrence that their October 3, 1996, Benicia-Martinez Bridge Project Conceptual Mitigation Plan will be adequate to fulfill the requirements of the Service's August 19, 1996, biological opinion (Service File # 1-1-96-F-40). The Service has reviewed the documents provided and is in agreement with the conceptual design of the mitigation site. However, this agreement does not constitute the Service's concurrence that the proposed mitigation plan fulfills the requirements of the biological opinion. The determination will be made when Caltrans provides a Final Mitigation and Monitoring Plan complete with monitoring requirements, success criteria, and contingency measures to be implemented if success criteria are not met.

If you have any questions or concerns please contact Mr. Dan Buford of my staff at (916) 979-2739 (ext. 314).

Sincerely,

Joel A. Medlin
Field Supervisor

cc: FWS-SFO, Wetlands Branch, Sacramento, CA (Jason Davis)
Caltrans-District 4, Oakland, CA (Nino Cerruti)
CDFG, Environmental Services, Sacramento, CA
CDFG, Region III, Yountville, CA

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ecological Services
Sacramento Field Office
2800 Cottage Way, Room E-1823
Sacramento, California 95825-1846

IN REPLY REFER TO:

1-1-96-F-40

August 19, 1996

Fred J. Hempel
U.S. Department of Transportation
Federal Highway Administration
Region 1, California Division
980 Ninth Street, Suite 400
Sacramento, California 95814-2724

Subject: Formal Endangered Species Consultation on the Federal Highway Administration's/California Department of Transportation's Proposed I-680 Bridge Across Carquinez Strait, Solano and Contra Costa Counties, California

Dear Mr. Hempel:

This document transmits the U.S. Fish and Wildlife Service's (Service) biological opinion based on the Service's review of the proposed Benicia-Martinez Bridge Project, Solano and Contra Costa Counties, California, and its effects on the endangered salt marsh harvest mouse (*Reithrodontomys raviventris*), the threatened delta smelt (*Hypomesus transpacificus*) and its critical habitat, and the proposed threatened Sacramento splittail (*Pongonichthys macrolepidotus*) in accordance with section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.)(Act). Your request for formal consultation dated January 18, 1996, was received by the Service on January 23, 1996.

This biological opinion is based on (1) Benicia-Martinez Bridge Project Natural Environment Study and Biological Assessment, dated December 1, 1995 (Caltrans 1995); (2) Supplemental Draft Environmental Impact Statement/Environmental Impact Report, dated March, 1995; (3) additional correspondence between Caltrans and the Service; and (4) other sources of information contained within our files. A complete administrative record of this consultation is on file in this office.

CONSULTATION HISTORY

The FHWA and Caltrans provided information sufficient to initiate formal consultation with the service on January 23, 1996. However, Caltrans later discovered site-specific hydrologic problems that required modifications be made to their mitigation plan. During a visit to Caltrans proposed mitigation site on May 15, 1996, the Service learned that Caltrans' newly configured tidal channel would result in additional impacts to the salt marsh harvest mouse. This new information provided late in the consultation process resulted in changes to this biological opinion that delayed its completion.

BIOLOGICAL OPINION

Description of the Proposed Action

Caltrans and Federal Highway Administration (FHWA) have proposed to construct a new I-680 bridge across Carquinez Strait, between the cities of Benicia in

Solano County, and Martinez in Contra Costa County (Figures 1 and 2). The purpose of the project is to alleviate present and projected congestion in the vicinity of the existing bridge. The new bridge will provide 5 lanes for northbound traffic and will be constructed east of the existing I-680 bridge and Southern Pacific Rail Road bridge. The existing bridge will be modified to accommodate 4 lanes for southbound traffic with the western-most lane becoming an exit at the Marina Vista interchange. A 12-foot wide bicycle/pedestrian lane will be provided on the western side of the west bridge and will be separated from traffic by a concrete barrier. Additionally, the new bridge will be designed and constructed to accommodate rail transit, although the provision of rail transit is not included in the proposed project.

In addition, the proposed project includes improved off-ramps and on-ramps near the Marina Vista/I-680 Interchange (south of the bridge), the Bayshore/Industrial Road/I-680 Interchange, and the East 5th Street/I-780 Interchange (north of the bridge); and includes tidal marsh restoration on a 22.8 acre site. The proposed project will have temporary and permanent wetland impacts affecting 0.08 acre of isolated freshwater marsh, 0.2 acre of delta smelt habitat, and habitat for the salt marsh harvest mouse (harvest mouse) including 2.68 acres of brackish marsh, and 2.6 acres of salt marsh.

Highway widening of I-680 south of the Marina Vista interchange, and the Waterfront Road over-crossing for the toll plaza approach, will impact 1.8 acres of salt marsh habitat and 1.18 acres of brackish marsh habitat in Peyton Marsh (Figure 1, impact areas A-F). Highway widening will also encroach on the upland buffer associated with Peyton Marsh. Highway improvements along I-680 in Benicia will fill 0.08 acre of isolated freshwater marsh.

Bridge construction activities will result in short-term shading impacts to 0.6 acre of brackish marsh along the Martinez shoreline and along the northern edge of Carquinez Strait. Underground utility relocations near the Marina Vista interchange, and the bridge and toll plaza area will temporarily imp 0.9 acre of brackish marsh and 0.2 acre of salt marsh. To minimize tempora effects, Caltrans will revegetate disturbed areas with native brackish marsh and salt marsh vegetation. Caltrans proposes additional measures to avoid and minimize impacts to wetlands, including temporary fencing of adjacent sensitive habitats during construction, and proper control and disposal of discharges and excavated materials on a site specific basis under the supervision of a qualified biologist.

The construction of two piers in waters 3-meters or less will fill 0.2 acre of delta smelt habitat. To minimize impacts to delta smelt, Caltrans will conduct all in-water work to occur in waters 3-meters or less between December 1 and March 31, and create additional habitat, as described below.

To mitigate for temporary and permanent impacts to 5.28 acres of harvest mouse habitat, 0.2 acre of delta smelt habitat, and 0.08 acre of freshwater marsh habitat, Caltrans has proposed to purchase and restore a diked and filled former tidal marsh on a 22.8 acre parcel between Sulfur Springs Creek and Lake Herman Road, and between the Southern Pacific Railroad and Industrial Way (Figure 3). To provide tidal access to the site, Caltrans will extend a channel through a California Department of Fish and Game (CDFG) tidal marsh restoration site associated with the Maritime Administration's Suisun Bay Reserve Fleet's pier project. The tidal channel will access Caltrans' site through large-diameter pipes under the Southern Pacific Railroad. The bottom of the pipes will rest at the invert of the channel. This tidal channel will impact approximately 0.6 acre of habitat on CDFG's site, and is included in the 5.28 acres of harvest mouse habitat impacted. Caltrans will restore the whole 22.8 acre mitigation site to tidal marsh with appropriate upland buffers to compensate for temporary and permanent impacts to harvest mouse habitat. Tidal channels established within the mitigation site will compensate for the

0.2 acre impact to delta smelt habitat. The final mitigation plan will include provisions for monitoring and remedial actions, if necessary, and be approved by the Service prior to initiation of the proposed project. Following completion of the project, Caltrans will deed the mitigation site to the California Department of Fish and Game.

Status of the Species

Salt Marsh Harvest Mouse

The salt marsh harvest mouse (harvest mouse) was federally listed as endangered in 1970 (35 FR 1604). A detailed account of the taxonomy, ecology, and biology of the harvest mouse is presented in the approved Recovery Plan for this species (Service 1984). Supplemental information on the harvest mouse is provided below and in the Service's August 31, 1990, biological opinion on Corps permit application no. 15283E49, which is hereby incorporated by reference.

Harvest mice may be affected by mercury in the intertidal zone. Clark *et al.* (1992) found that harvest mice were captured only at sites where concentrations of mercury or PCBs were below specific levels in house mice (*Mus musculus*). Their results (Clark *et al.* 1992) seem to suggest a southern source of mercury contamination, with mercury an order of magnitude higher in livers of house mice at Calaveras Point than at any other point measured in San Francisco Bay.

Delta smelt.

The delta smelt was federally listed as a threatened species on March 5, 1993 (58 FR 12854; Service 1993). Please refer to the Literature Cited, Service (1993, 1994a) and Department of Water Resources (Water Resources) and Bureau of Reclamation (Reclamation) (1994) for additional information on the biology and ecology of this species. The final rule to list the delta smelt as threatened describes in detail the factors that have contributed to this species' decline (Service 1993).

The delta smelt is a slender-bodied fish with a steely blue sheen on the sides, and appears almost translucent (Moyle 1976). The delta smelt, which has a lifespan of one year, has an average length of 60 to 70 mm (about 2 to 3 inches) and is endemic to Suisun Bay upstream of San Francisco Bay through the Delta in Contra Costa, Sacramento, San Joaquin, Solano and Yolo counties, California. Historically, the delta smelt is thought to have occurred from Suisun Bay upstream to at least the city of Sacramento on the Sacramento River, and Mossdale on the San Joaquin River (Moyle *et al.* 1992, Sweetnam and Stevens 1993). The delta smelt is an euryhaline species (tolerant of a wide salinity range) that spawns in fresh water and has been collected from estuarine waters up to 14 parts per thousand (ppt) salinity (Moyle *et al.* 1992). For a large part of its annual life span, this species is associated with the freshwater edge of the mixing zone (saltwater-freshwater interface; also called X2), where the salinity is approximately 2 ppt (Ganssle 1966, Moyle *et al.* 1992, Sweetnam and Stevens 1993).

The delta smelt is adapted to living in the highly productive Estuary where salinity varies spatially and temporally according to tidal cycles and the amount of freshwater inflow. Despite this tremendously variable environment, the historical Estuary probably offered relatively constant suitable habitat conditions for the delta smelt because it could move upstream or downstream with the mixing zone (Moyle, pers. comm., 1993).

Shortly before spawning, adult delta smelt migrate upstream from the brackish-water habitat associated with the mixing zone to disperse widely into river channels and tidally-influenced backwater sloughs (Radtke 1966, Moyle

1976, Wang 1991). Migrating adults with nearly mature eggs were taken at the Central Valley Project's (CVP) Tracy Pumping Plant from late December 1990 to April 1991 (Wang 1991). Spawning locations appear to vary widely from year to year (Water Resources and Reclamation 1993). Sampling of larval delta smelt in the Delta suggests spawning has occurred in the Sacramento River; Barker, Lindsey, Cache, Georgiana, Prospect, Beaver, Hog, and Sycamore sloughs; in the San Joaquin River off Bradford Island, including Fisherman's Cut, False River along the shore zone between Frank's and Webb tracts, and possibly other areas (Dale Sweetnam, Fish and Game, pers. comm. 1991; Wang 1991). Delta smelt also may spawn north of Suisun Bay in Montezuma and Suisun sloughs and their tributaries (Lesa Meng, Service, pers. comm. 1994; Sweetnam, Fish and Game, pers. comm. 1991).

Delta smelt spawn in shallow, fresh, or slightly brackish water upstream of the mixing zone (Wang 1991). Most spawning occurs in tidally-influenced backwater sloughs and channel edgewaters (Moyle 1976; Wang 1986, 1991; Moyle *et al.* 1992). Although delta smelt spawning behavior has not been observed in the wild (Moyle *et al.* 1992), the adhesive, demersal eggs are thought to attach to substrates such as cattails, tules, tree roots, and submerged branches (Moyle 1976, Wang 1991).

The spawning season varies from year to year, and may occur from late winter (December) to early summer (July). Moyle (1976) collected gravid adults from December to April, although ripe delta smelt were most common in February and March. In 1989 and 1990, Wang (1991) estimated that spawning had taken place from mid-February to late June or early July, with peak spawning occurring in late April and early May. A recent study of delta smelt eggs and larvae (Wang and Brown 1994 as cited in Water Resources and Reclamation 1994) confirmed that spawning may occur from February through June, with a peak in April and May. Spawning has been reported to occur at water temperatures of about 7° to 15° C. Results from a University of California at Davis (UCD) study (Cech and Swanson 1995) indicate that although delta smelt tolerate a wide range of temperatures (<8° C to >25° C), warmer water temperatures restrict their distribution more than colder water temperatures.

Laboratory observations indicate that delta smelt are broadcast spawners that spawn in a current, usually at night, distributing their eggs over a local area (Lindberg 1992 and Mager 1993 as cited in Water Resources and Reclamation 1994). The eggs form an adhesive foot that appears to stick to most surfaces. Eggs attach singly to the substrate, and few eggs were found on vertical plants or the sides of a culture tank (Lindberg 1993 as cited in Water Resources and Reclamation 1994).

Delta smelt eggs hatched in 9 to 14 days at water temperatures ranging from 13° to 16° C during laboratory observations in 1992 (Mager 1992 as cited in Sweetnam and Stevens 1993). In this study, larvae began feeding on phytoplankton on day four, rotifers on day six, and *Artemia nauplii* at day 14. In laboratory studies, yolk-sac fry were found to be positively phototaxic, swimming to the lightest corner of the incubator, and negatively buoyant, actively swimming to the surface. The post-yolk-sac fry were more evenly distributed throughout the water column (Lindberg 1992 as cited in Water Resources and Reclamation 1994). After hatching, larvae and juveniles move downstream toward the mixing zone where they are retained by the vertical circulation of fresh and salt waters (Stevens *et al.* 1990). The pelagic larvae and juveniles feed on zooplankton. When the mixing zone is located in Suisun Bay where there is extensive shallow water habitat within the euphotic zone (depths less than four meters), high densities of phytoplankton and zooplankton may accumulate (Arthur and Ball 1978, 1979, 1980). In general, estuaries are among the most productive ecosystems in the world (Goldman and Horne 1993).

Delta Smelt Swimming Behavior. Observations of delta smelt swimming in a swimming flume and in a large tank show that these fish are unsteady, intermittent, slow-speed swimmers (Swanson and Cech 1995). At low velocities in the swimming flume (<3 body lengths per second), and during spontaneous, unrestricted swimming in a 1 m tank, delta smelt consistently swam with a "stroke and glide" behavior. This type of swimming is very efficient; Weihs (1974) predicted energy savings of about 50 percent for "stroke and glide" swimming compared to steady swimming. However, the maximum speed delta smelt are able to achieve using this preferred mode of swimming, or gait, was less than 3 body lengths per second, and the fish did not readily or spontaneously swim at this or higher speeds (Swanson and Cech 1995). Although juvenile delta smelt appear to be stronger swimmers than adults, forced swimming at 3 body lengths per second in a swimming flume was apparently stressful; the fish were prone to swimming failure and extremely vulnerable to impingement (Swanson and Cech 1995). Unlike fish for which this type of measurement has been made in the past, delta smelt swimming performance was limited by behavioral rather than physiological or metabolic constraints (*e.g.*, metabolic scope for activity) (Brett 1976).

Delta Smelt Critical Habitat

On December 19, 1994, a final rule designating critical habitat for the delta smelt was published in the Federal Register (59 FR 65256; Service 1994a). Please refer to the Service (1994a) for additional information on delta smelt critical habitat.

In determining which areas to designate as critical habitat, the Service considers those physical and biological features that are essential to a species' conservation and that may require special management considerations or protection (50 CFR §424.12(b)).

The Service is required to list the known primary constituent elements together with the critical habitat description. Such physical and biological features include, but are not limited to, the following: (1) space for individual and population growth, and for normal behavior; (2) food, water, air, light, minerals, or other nutritional or physiological requirements; (3) cover or shelter; (4) sites for breeding, reproduction, rearing of offspring, germination, or seed dispersal; and (5) generally, habitats that are protected from disturbance or are representative of the historic geographical and ecological distributions of a species.

In designating critical habitat, the Service identified the following primary constituent elements essential to the conservation of the delta smelt: physical habitat, water, river flow, and salinity concentrations required to maintain delta smelt habitat for spawning, larval and juvenile transport, rearing, and adult migration. Critical habitat for delta smelt is contained within Contra Costa, Sacramento, San Joaquin, Solano, and Yolo counties.

Spawning Habitat. Specific areas that have been identified as important delta smelt spawning habitat include Barker, Lindsey, Cache, Prospect, Georgiana, Beaver, Hog, and Sycamore sloughs and the Sacramento River in the Delta, and the tributaries of northern Suisun Bay.

Larval and Juvenile Transport. Adequate river flow is necessary to transport larvae from upstream spawning areas to rearing habitat in Suisun Bay, and to ensure that rearing habitat is maintained in Suisun Bay. To ensure this, X2 must be located westward of the confluence of the Sacramento-San Joaquin rivers, located near Collinsville (Confluence), during the period when larvae or juveniles are being transported, according to historical salinity conditions. X2 is important because the "entrapment zone" or zone where particles, nutrients, and plankton are "trapped", leading to an area of high productivity, is associated with its location. Habitat conditions suitable

for transport of larvae and juveniles may be needed by the species as early as February 1 and as late as August 31, because the spawning season varies from year to year and may start as early as December and extend until July.

Rearing Habitat. An area extending eastward from Carquinez Straits, including Suisun, Grizzly, and Honker bays, Montezuma Slough and its tributary sloughs, up the Sacramento River to its confluence with Three Mile Slough, and south along the San Joaquin River including Big Break, defines the specific geographic area critical to the maintenance of suitable rearing habitat. Three Mile Slough represents the approximate location of the most upstream extent of historical tidal incursion. Rearing habitat is vulnerable to impacts from the beginning of February to the end of August.

Adult Migration. Adequate flows and suitable water quality are needed to attract migrating adults in the Sacramento and San Joaquin river channels and their associated tributaries, including Cache and Montezuma sloughs and their tributaries. These areas are vulnerable to physical disturbance and flow disruption during migratory periods.

The Service's 1994 and 1995 biological opinions on the CVP and State Water Project (SWP) provided for larval and juvenile transport flows, rearing habitat, and protection from entrainment for upstream migrating adults (Service 1994b, 1995).

Sacramento Splittail

On January 6, 1994, a proposed rule to list the Sacramento splittail (*Pogonichthys macrolepidotus*) as a threatened species was published in the Federal Register (59 FR 862; Service 1994c). Please refer to the Service (1994c, 1994d, 1995), and Water Resources and Reclamation (1994) for additional information on the biology and ecology of the Sacramento splittail.

The Sacramento splittail is a large cyprinid that can reach greater than 12 inches in length (Moyle 1976). Adults are characterized by an elongated body, distinct nuchal hump, and a small blunt head with barbels usually present at the corners of the slightly subterminal mouth. This species can be distinguished from other minnows in the Central Valley of California by the enlarged dorsal lobe of the caudal fin. Sacramento splittail are a dull, silvery-gold on the sides and olive-grey dorsally. During the spawning season, the pectoral, pelvic and caudal fins are tinged with an orange-red color. Males develop small white nuptial tubercles on the head.

Sacramento splittail are endemic to California's Central Valley where they were once widely distributed in lakes and rivers (Moyle 1976). Historically, Sacramento splittail were found as far north as Redding on the Sacramento River and as far south as the site of Friant Dam on the San Joaquin River (Rutter 1908). Rutter (1908) also found Sacramento splittail as far upstream as the current Oroville Dam site on the Feather River and Folsom Dam site on the American River. Anglers in Sacramento reported catches of 50 or more Sacramento splittail per day prior to damming of these rivers (Caywood 1974). Sacramento splittail were common in San Pablo Bay and Carquinez Strait following high winter flows up until about 1985 (Messersmith 1966, Moyle 1976, and Wang 1986 as cited in Water Resources and Reclamation 1994).

In recent times, dams and diversions have increasingly prevented upstream access to large rivers and the species is restricted to a small portion of its former range (Moyle and Yoshiyama 1992). Sacramento splittail enter the lower reaches of the Feather (Jones and Stokes 1993) and American rivers (Charles Hanson, State Water Contractors, *in litt.*, 1993) on occasion, but the species is now largely confined to the Delta, Suisun Bay, and Suisun Marsh (Service 1994c). Stream surveys in the San Joaquin Valley reported observations of Sacramento splittail in the San Joaquin River below the mouth of the Merced

River and upstream of the confluence of the Tuolumne River (Saiki 1984 as cited in Water Resources and Reclamation 1994).

Sacramento splittail are long-lived, frequently reaching five to seven years of age. Generally, females are highly fecund, producing over 100,000 eggs each year (Daniels and Moyle 1983). Populations fluctuate annually depending on spawning success. Spawning success is highly correlated with freshwater outflow and the availability of shallow-water habitat with submersed, aquatic vegetation (Daniels and Moyle 1983). Sacramento splittail usually reach sexual maturity by the end of their second year at which time they have attained a body length of 180 to 200 mm. There is some variability in the reproductive period because older fish reproduce before younger individuals (Caywood 1974). The largest recorded individuals of the Sacramento splittail have measured between 380 and 400 mm (Caywood 1974, Daniels and Moyle 1983). Adults migrate into fresh water in late fall and early winter prior to spawning. The onset of spawning is associated with rising water temperature, lengthening photoperiod, seasonal runoff, and possibly endogenous factors from the months of March through May, although there are records of spawning from late January to early July (Wang 1986). Spawning occurs in water temperatures from 9° to 20° C over flooded vegetation in tidal freshwater and euryhaline habitats of estuarine marshes and sloughs, and slow-moving reaches of large rivers. The eggs are adhesive or become adhesive soon after contacting water (Caywood 1974, and Bailey, UCD, pers. comm., 1994, as cited in Water Resources and Reclamation 1994). Larvae remain in shallow, weedy areas close to spawning sites and move into deeper water as they mature (Wang 1986).

Sacramento splittail are benthic foragers that feed on opossum shrimp, although detrital material makes up a large percentage of their stomach contents (Daniels and Moyle 1983). Earthworms, clams, insect larvae, and other invertebrates are also found in the diet. Predators include striped bass and other piscivores. Sacramento splittail are sometimes used as bait for striped bass.

Sacramento splittail can tolerate salinities as high as 10 to 18 ppt (Moyle 1976, Moyle and Yoshiyama 1992). Sacramento splittail are found throughout the Delta (Turner 1966), Suisun Bay, and the Suisun and Napa marshes. They migrate upstream from brackish areas to spawn in freshwater. Because they require flooded vegetation for spawning and rearing, Sacramento splittail are frequently found in areas subject to flooding.

The 1985 to 1992 decline in Sacramento splittail abundance is concurrent with hydrologic changes to the Estuary. These changes include increases in water diversions during the spawning period from January through July. Diversions, dams and reduced outflow, coupled with severe drought years, introduced aquatic species, and loss of wetlands and shallow-water habitat (Fish and Game 1992) have reduced the species' capacity to reverse its decline.

Environmental Baseline

<u>Salt Marsh Harvest Mouse</u>

The harvest mouse has been documented in the Shell, Peyton, and Martinez Shoreline marshes along I-680 in Contra Costa County, but suitable marsh and adjacent grassland habitat does not exist for the salt marsh harvest mouse in the narrow area of Suisun Marsh in the study area along the Benicia shoreline (Caltrans 1995). Caltrans conducted small mammal surveys along Sulphur Springs Creek (600 trap-nights) and in Shell Marsh (1,200 trap-nights) resulting in the capture of one salt marsh harvest mouse in Shell Marsh. In addition, studies by Shellhammer have resulted in the capture of 6 harvest mice in 1988 (2,270 trap-nights) and one harvest mouse in 1990 (800 trap-nights).

Although salt marsh harvest mice typically prefer wetland habitat dominated by pickleweed (Shellhammer et al. 1982), adjacent upland habitat up to about 150 feet from wetlands also is used, but to a lesser degree (Fisler 1965; John and Shellhammer 1988). How salt marsh harvest mice use upland habitat is not fully understood. In areas where upland habitat lies adjacent to tidal wetlands or seasonal wetlands that undergo inundation, upland habitat provides refugial habitat critical to the species' survival. Where flooding of habitat does not occur, the importance of upland habitats is unclear. Uplands provide a dietary source of green grasses (Fisler 1965), provide movement corridors between isolated marsh segments, and provide a buffer habitat when salt marsh harvest mice are displaced from preferred habitat by high populations of competitive species, such as California voles (Johnson and Shellhammer 1988).

Delta Smelt

Adult delta smelt spawn in central Delta sloughs from February through August in shallow water areas having submersed aquatic plants and other suitable substrates and refugia. These shallow water areas have been identified in the draft Delta Native Fishes Recovery Plan (Service 1994d) as essential to the long-term survival and recovery of delta smelt and other resident fish. A no net loss strategy for these areas is proposed in this Recovery Plan.

The delta smelt is adapted to living in the highly productive Estuary where salinity varies spatially and temporally according to tidal cycles and the amount of freshwater inflow. Despite this tremendously variable environment, the historical Estuary probably offered relatively consistent spring transport flows that moved delta smelt juveniles and larvae downstream to the mixing zone (Peter Moyle, UCD, pers. comm.). Since the 1850's, however, the amount and extent of suitable habitat for the delta smelt has declined dramatically. The advent in 1853 of hydraulic mining in the Sacramento and San Joaquin rivers led to increased siltation and alteration of the circulation patterns of the Estuary (Nichols *et al.* 1986, Monroe and Kelly 1992). The reclamation of Merritt Island for agricultural purposes, in the same year, marked the beginning of the present-day cumulative loss of 94 percent of the Estuary's tidal marshes (Nichols *et al.* 1986, Monroe and Kelly 1992).

In addition to the degradation and loss of estuarine habitat, the delta smelt has been increasingly subject to entrainment, upstream or reverse flows of waters in the Delta and San Joaquin River, and constriction of low salinity habitat to deep-water river channels of the interior Delta (Moyle *et al.* 1992). These adverse conditions are primarily a result of drought and the steadily increasing proportion of river flow being diverted from the Delta by the CVP and SWP (Monroe and Kelly 1992). The relationship between the portion of the delta smelt population west of the Delta as sampled in the summer townet survey and the natural logarithm of Delta outflow from 1959 to 1988 (Water Resources and Reclamation 1994) indicates that the summer townet index increased dramatically when outflow was between 34,000 and 48,000 cfs, placing X2 between Chipps and Roe islands. Placement of X2 at Chipps and Roe islands would duplicate these favorable conditions.

Delta Smelt Critical Habitat.

Critical habitat has been affected by dredging, pile driving, and other actions that destroy spawning and refugial areas. Critical habitat has also been affected by diversions that have shifted the position of X2 upstream. This shift has caused a decreased abundance of delta smelt. Existing baseline conditions and implementation of the Service's 1993 and 1994 biological opinions provide a substantial part of the necessary positive riverine flows and estuarine outflows to transport delta smelt larvae downstream to suitable rearing habitat in Suisun Bay outside the influence of marinas and Federal and State pumping plants.

Sacramento Splittail.

Sacramento splittail have experienced a decline in population as a result of hydrologic changes in the Estuary and loss of shallow water habitat due to dredging and filling. additional changes include increases in water diversions during the spawning period of January through July. Most of the factors that caused delta smelt to decline have also caused the decline of Sacramento splittail. These factors include (1) diversions, (2) dams and (3) reduced outflow, coupled with (4) severe drought years, (5) introduced aquatic species such as the Asiatic clam (Nichols *et al.* 1990), and (6) loss of wetlands and shallow-water habitat (DFG 1992) and appear to have perpetuated the species' decline.

Effects of the Action

Salt Marsh Harvest Mouse

The proposed project will have temporary and permanent impacts to 5.28 acres of harvest mouse habitat. Highway widening will also encroach upon Shell and Peyton marsh's upland buffer. An unknown number of salt marsh harvest mice associated with the habitat to be filled may be killed. To minimize impacts to the harvest mouse and other wetland fill, Caltrans will restore their 22.8-acre mitigation site to tidal marsh with appropriate upland buffers. To provide tidal influence, Caltrans will extend a channel through the Suisun Fleet Reserve's 60 acre restoration site impacting an approximate 0.6 acre of habitat. This acreage is included in the 5.28 acre estimate. The final configuration of the mitigation site will be approved by the Service prior to initiation of any construction affecting listed species. The mitigation site lies adjacent and west of the California Department of Fish and Game's Goodyear Slough unit of the Suisun Marsh, and north of the Suisun Reserve Fleet's mitigation site, where the salt marsh harvest mouse is know to occur. When the appropriate habitat is established, the harvest mouse is expected to immigrate to, and populate the proposed mitigation site.

Delta Smelt

The proposed construction of the two piers in shallow water habitat will impact 0.2 acre of delta smelt habitat. To minimize the impacts to the 0.2 acre of delta smelt habitat, Caltrans will create 0.6 acres of shallow water habitat at the same 22.8 acre site mention above. Further, with the addition of the channel being cut through the Suisun Fleet Reserve's 60 acre restoration site to provide tidal action, additional habitat for delta smelt will be provided. Caltrans has agreed to conduct in-water work in these shallow areas during the months of December 1 through March 31. During this time period, adult delta smelt move up-stream to fresh waters in dead-end sloughs to spawn. Because the fish will be out of the area, the direct effects of construction to individual delta smelt will likely be avoided.

Sacramento Splittail

The proposed project effects mentioned above for delta smelt are similar to those likely at affect the Sacramento splittail.

Cumulative Effects

Cumulative effects are those impacts of future State, local, Tribal, or private actions affecting endangered and threatened species that are reasonably certain to occur in the action area. Future Federal actions that are unrelated to the proposed project will be subject to the consultation requirements established in section 7 of the Act and, therefore, are not considered cumulative to the proposed project.

Salt Marsh Harvest Mouse

One of the most serious cumulative effects on the salt marsh harvest mouse the continued degradation of diked wetlands, typically by the elimination of wetland vegetation by grazing, discing, grubbing, and plowing, and/or the elimination of appropriate hydrologic conditions by installing drains, ditches, and pumps. The extensive and ongoing conversion of salt marshes to brackish and freshwater habitat also has appreciably reduced available tidal habitat for this species. Continued approval of urban developments without maintaining adequate upland habitat adjacent to wetlands also represents a major cumulative effect by likely increasing mortality rates and lowering harvest mouse carrying capacities in affected areas. The proposed project is expected to contribute to future urban development in both Contra Costa and Solano Counties.

Delta Smelt

Cumulative effects on the delta smelt or its critical habitat include any continuing or future non-Federal diversions of water that may entrain adult or larval fish or that may decrease outflows incrementally, thus shifting upstream the position of the delta smelt's preferred habitat. Water diversions through intakes serving numerous small, private agricultural lands and duck clubs in the Delta, upstream of the Delta, and in Suisun Bay contribute to these cumulative effects. These diversions also include municipal and industrial uses, as well as providing water for power plants. State or local levee maintenance and channel dredging activities also destroy or adversely modify critical habitat by disturbing spawning or rearing habitat.

Water is diverted from the Delta by approximately 1,800 local agricultural users. Water is also diverted by cities such as Antioch and Concord to supply domestic needs. The total water diverted from the Delta supplies two-thirds of California's population, and allows irrigation of several million acres farmland (DWR and Reclamation 1994). Of the entities with water storage greater than 100,000 acre-feet (AF), the percent of total storage is the following: (1) Reclamation stores 40.6 percent of Delta water, 42.8 percent of Sacramento River water, and 37.7 percent of San Joaquin River water; (2) DWR stores 17.4 percent of Delta water, 29.0 percent of Sacramento River water, and has no storage for San Joaquin River water; and (3) non-Federal entities (excluding DWR) store 42.0 percent of Delta water, 28.2 percent of Sacramento River water, and 62.3 percent of San Joaquin River water.

Effects on hydrodynamic conditions are inextricably tied to past and present hydraulic modifications that have been made in the Delta for various beneficial purposes, such as levee construction for land reclamation and flood control; channel dredging for navigation and levee maintenance; channel enlargement and deepening for navigation; operation of diversion pumps, siphons, and drainage pumps; and construction of non-Federal export pumping plants and associated facilities for water management. Upstream conditions for fish will continue to deteriorate. Increased demands may further reduce reservoir storage and will adversely affect riverine conditions. Without criteria to reduce Delta habitat degradation (including entrainment losses), ongoing factors and future projects will reduce the survival and abundance of all fish species. Under future conditions, surplus flows are likely to be less available than under existing conditions. Reduced availability will result from: (1) operations that reduce the frequency of spill from upstream reservoirs; (2) build out by senior water right holders; and (3) changes in the criteria that define surplus flows. Because surplus flows combined with required flows in the State Water Quality Control Plan are critical for transporting fish larvae to rearing habitat and maintaining that rearing habitat in a suitable location in Suisun Bay, new diverters of surplus water will reduce the likelihood that fishery declines will be reversed. Possible

adverse hydrodynamic effects on south Delta channels under cumulative future conditions are uncertain but are likely to be significant.

Additional cumulative effects result from the impacts of point and non-point source chemical contaminant discharges. These contaminants include selenium and numerous pesticides and herbicides associated with discharges related to agricultural and urban activities. Implicated as potential sources of mortality for delta smelt and Sacramento splittail, these contaminants may adversely affect delta smelt and Sacramento splittail reproductive success and survival rates. Spawning habitat may also be affected if submersed aquatic plants used as substrates for adhesive egg attachment are lost due to toxic substances.

Sacramento Splittail

The cumulative effects mentioned above for the delta smelt are similar to those likely to affect the Sacramento splittail.

Conclusion

After reviewing the current status of the salt marsh harvest mouse, the environmental baseline for the project area, the effects of the proposed action, and the cumulative effects, it is the Service's biological opinion that the action, as proposed, is not likely to jeopardize the continued existence of the salt marsh harvest mouse.

After reviewing the current status of the delta smelt, the environmental baseline for the project area, the effects of the proposed action, and the cumulative effects, it is the Service's biological opinion that the action, as proposed, is not likely to jeopardize the continued existence of the delta smelt and is not likely to destroy or adversely modify designated critical habitat.

After reviewing the current status of the Sacramento splittail, the environmental baseline for the project area, the effects of the proposed action, and the cumulative effects, it is the Service's conference opinion that the action, as proposed, is not likely to jeopardize the continued existence of the proposed Sacramento splittail.

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 and the ecosystems upon which they depend. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

The Service recommends the following additional actions to promote the recovery of federally listed species and their habitats within the Delta:

1. The Service recommends that the FHWA and Caltrans develop procedures that minimize impacts to tidal marsh and harvest mice by constructing roadside curbs that direct highway runoff away from wetland habitats and into sewer infrastructure when possible.

2. The Service recommends that FHWA and Caltrans continue to design mitigation that promotes conservation of listed species.

In order for the Service to be kept informed of actions minimizing or avoiding adverse effects or benefitting listed species or their habitats, the Servic requests notification of the implementation of any conservation recommendations.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act prohibits take (i.e. to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or attempt to engage in any such conduct) of listed species of fish or wildlife without a special exemption. Harass is defined 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 to include significant habitat modification or degradation that results in death or injury to listed species by impairing behavioral patterns such as breeding, feeding, or sheltering. Incidental take is any take of listed animal species which results from, but is not the purpose of, carrying out an otherwise lawful activity conducted by the Federal agency or the applicant. 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 a prohibited taking provided that such taking is in compliance with the terms and conditions of this incidental take statement.

The measures described below are non-discretionary, and must be implemented by the FHWA so that they become binding conditions of any grant or permit issued to the applicant, as appropriate, in order for the exemption in section 7(o)(2) to apply. The FHWA has a continuing duty to regulate the activity covered by this incidental take statement. If the FHWA (1) fails to require the applicant to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, and/or (2) fails to retain oversight to ensure compliance with the terms and conditions, the protective coverage of section 7(o)(2) may lapse.

Amount or Extent of Take

Salt Marsh Harvest Mouse

For the salt marsh harvest mouse, the Service anticipates that an unquantifiable number of mice would be killed or injured by the proposed action. Harvest mice lack the agility to evade heavy equipment that will be used in the proposed action. Harvest mice may be killed during fill associated with highway widening, and be exposed to higher mortality rates as a result of encroachment upon the refugial upland cover adjacent to Peyton Marsh and Shell Marsh. The level of take is unquantifiable because of the variable, unknown size of the resident population over time, and the difficulty in finding killed or injured small mammals. In such situations, the Service estimates the level of take in terms of acreage of habitat loss. The proposed action would result in the loss of 5.28 acres of habitat available to the harvest mouse. The proposed mitigation, however, will compensate for this loss. The harvest mouse is expected to immigrate to and populate the mitigation site where appropriate habitat becomes established.

Delta Smelt/Sacramento Splittail

The Service anticipates that incidental take of delta smelt and Sacramento splittail will be difficult to detect for the following reasons: The small size of delta smelt and Sacramento splittail eggs and larvae and the unlikelihood of finding dead or impaired specimens. However, the Service anticipates take of these species to occur by the loss of 0.2 acre of refugia and rearing habitat associated with the proposed pier construction. The

proposed project will result in the loss of 0.2 acre of designated delta smelt critical habitat. The proposed mitigation, however, will compensate for this loss.

Effect of the Take

In the accompanying biological opinion, the Service determined that this level of anticipated take is not likely to result in jeopardy to the salt marsh harvest mouse, delta smelt, or Sacramento splittail, or result in the destruction or adverse modification of designated delta smelt critical habitat. Critical habitat for the salt marsh harvest mouse and Sacramento splittail has not been designated, therefore none will be affected.

Reasonable and Prudent Measures

The Service believes the following reasonable and prudent measures are necessary and appropriate to minimize incidental take:

1. Salt Marsh Harvest Mouse

The potential for harassment, harm (including habitat modification), or habitat loss for salt marsh harvest mice shall be minimized and/or compensated.

2. Delta Smelt

The potential for harassment, harm (including habitat modification), or habitat loss for delta smelt and Sacramento splittail shall be minimized and/or compensated.

Terms and Conditions

In order to be exempt from the prohibitions of Section 9 of the Act, the following term and condition, which implements the reasonable and prudent measures described above, must be complied with and included as a special condition in any permit granted by the Federal Highway Administration for this project. This term and condition is non-discretionary:

The Federal Highway Administration shall ensure that the project is implemented as described.

Reporting Requirements

The Federal Highway Administration shall require personnel to report immediately any information about take or suspected take of salt marsh harvest mouse, delta smelt, and/or Sacramento splittail. Applicant shall immediately notify the Service within one working day of any such information. Notification must include date, time, and precise location of the incident/specimen and any other pertinent information. The Service contact is the Endangered Species Division at (916) 979-2752. Any killed specimens that have been taken shall be properly preserved in accordance with Natural History Museum of Los Angeles County policy of accessioning (10% formalin in a quart jar of freezing). Information concerning how the specimen was taken, length of the interval between death and preservation, and any other relevant information shall be written on 100% rag content paper with permanent ink and included in the container with the specimen. Preserved specimens shall be delivered to the Service's Division of Law Enforcement at 3310 El Camino Avenue, Suite 140, Sacramento, California 95821 (916) 979-2986.

A post-operation compliance report prepared by the monitoring biologists shall be forwarded to the Sacramento Field Office within 60 calendar days of the completion of the project. This report shall detail (i) dates the operation

occurred; (ii) pertinent information concerning the applicant's success in meeting project mitigation measures; (iii) an explanation of failure to me such measures, if any; (iv) known project effects on federally listed spec if any; (v) occurrences of incidental take of federally listed species, if any; and (vi) other pertinent information.

The Sacramento Field Office is to be notified within twenty-four hours of the finding of any dead listed species or any unanticipated harm to the species habitat addressed in this biological opinion and, within three working days, follow up such verbal notification in writing. The Service contact person for this is the Assistant Field Supervisor at (916) 979-2725.

Review Requirements

The reasonable and prudent measures, with their implementing terms and conditions, are designed to minimize the effects of incidental take that might otherwise result from the proposed action. With implementation of these measures the Service believes that no more than the unquantifiable number of salt marsh harvest mice associated with 2 acres of pickleweed habitat proposed to be modified will be taken. If, during the course of the action, this minimized level of incidental take is exceeded, such incidental take represents new information requiring review of the reasonable and prudent measures provided. The Federal Highway Administration must immediately provide an explanation of the causes of the taking and review with the Service the need for possible modification of the reasonable and prudent measures.

REINITIATION - CLOSING STATEMENT

This concludes formal consultation and conference on the proposed I-680 bridge across the Carquinez Strait. 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) a if: (1) the amount or extent of incidental take is exceeded; (2) new information reveal effects of the proposed 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 listed species or critical habitat that was not considered in this opinion; or (4) a new species or critical habitat is designated that may be affected by the proposed action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

If the amount or extent of proposed activity as described in the "Description of the Proposed Action" is exceeded, then incidental take of the salt marsh harvest mouse and delta smelt will be assumed to have been exceeded. The causative action shall cease and consultation shall be reinitiated immediately.

The incidental take statement provided with this conference opinion does not become effective for the Sacramento splittail until the species is listed and the conference opinion is adopted as the biological opinion issued through formal consultation. At that time, the project will be reviewed to determine whether any take of the Sacramento splittail has occurred. Modifications of the opinion and the incidental take statement may be appropriate to reflect that take. No take of the Sacramento splittail may occur between the listing of the Sacramento splittail and the adoption of the conference opinion through formal consultation, or the completion of a subsequent formal consultation.

You may ask the Service to adopt the conference opinion incorporated in this consultation as a biological opinion issued through formal consultation, if the Sacramento splittail is listed. The request must be in writing. If the

Service reviews the proposed action and finds that their have been no significant changes in the action as planned, or in the information used during the conference, the Service will adopt the conference opinion as the biological opinion on the project.

Should the Sacramento splittail become listed and after any subsequent adoption of this conference opinion, the FHWA shall request reinitiation of consultation if: (1) the amount or extent of incidental take is exceeded; (2) new information reveal effects of the proposed 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 listed species or critical habitat that was not considered in this opinion; or (4) a new species or critical habitat is designated that may be affected by the proposed action.

If you have any questions regarding this opinion, please contact Dan Buford (salt marsh harvest mouse) or Matthew Vandenberg (delta smelt or Sacramento splittail) at (916) 979-2752.

Sincerely,

Joel A. Medlin
Field Supervisor

cc: ARD-ES, Portland, OR
FWS, Wetlands Branch, Sacramento, CA
CDFG, Region III, Yountville, CA
CDFG, Environmental Services, Sacramento, CA
Chuck Morton, Caltrans-District 4, Oakland, CA

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United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ecological Services
Sacramento Field Office
2800 Cottage Way, Room E-1803
Sacramento, California 95825-1846

In Reply Refer To:
PPN 614

August 18, 1994

Mr. Joe Browne
District Director
State of California
Department of Transportation
Box 23660
Oakland, California 94623-0660

Attention: Michael Kay

Subject: NEPA/Section 404 Integration, Benicia-Martinez Bridge System Project, Carquinez Strait, Contra Costa and Solano Counties, California

Dear Mr. Browne:

The U.S. Fish and Wildlife Service (Service) has reviewed your letter dated July 15, 1994, requesting our concurrence on the purpose and need, criteria for alternative selection, and project alternatives to be evaluated in the Supplemental Draft Environmental Impact Statement (SDEIS/EIR) which is currently being prepared for the proposed project. This request for concurrence is subject to the Memorandum of Understanding (MOU) under the NEPA-Section 404 Integration Process.

The proposed project includes construction of a new parallel bridge across the Carquinez Strait either east or west of the existing Benicia-Martinez Bridge along Interstate 680 between the Cities of Martinez in Contra Costa County and Benicia in Solano County. The proposed project also includes a new toll plaza facility which will accommodate 20 toll booths (from the current capacity of 9 toll booths), new bridge approaches, and a design which would accommodate rail transit. The proposed project has been scaled down from its original version, which would have included additional transportation facilities along Interstate Highways 80, 680, and 780, with the proposed Benicia-Martinez Bridge to be built in the first phase.

Construction of the proposed project would result in the direct loss of approximately 3 and 2.5 acres of freshwater wetlands and salt marsh with the east and west bridge alternatives, respectively. Additional direct impacts include shading of approximately 5.5 acres of tidal salt marsh and loss of native and non-native grassland habitat. The wetlands and other waters of the United States within the project area provide habitat for fish and wildlife resources, including anadromous fish and migratory waterfowl and shorebirds of the Pacific Flyway. The summary of impacts prepared by Caltrans also identifies impacts to

known habitat for the Federally-listed endangered salt marsh harvest mouse and potential impacts to other sensitive species.

Service staff have coordinated with Caltrans staff and attended meetir regarding the proposed project on June 9 and July 21, 1994. The MOU requires the signatory agencies to provide final agreement on the purpose and need statement, the selection criteria, and the alternatives to be evaluated before circulation of the EIS/EIR. The Service concurs with the criteria for alternative selection and project alternatives to be evaluated in the SDEIS/EIR. We also concur with the purpose and need to relieve congestion on the Benicia-Martinez Bridge. However, we do not concur with the need to support economic and community development plans, and recommend that Section 2.3.3 be deleted. The Service does not view the referenced need as the responsibility of Caltrans or the Federal Highway Administration in providing congestion relief, increased mobility, or safety improvement, as enumerated as the appropriate scope of need in the guidance for implementation of the MOU.

We also recommend that you delete the statements included in the Summary Table of Impacts (page 1 of 3) that the east and west alternatives would have "no impact" on growth. The Service believes that the proposed project would be growth inducing because Caltrans has designed it to accommodate future rail transit and to be consistent with regional transportation plans and developments projected in county general plans. As you know, construction of high-transit rail facilities such as the Bay Area Rapid Transit System (BART) are highly growth inducing, as witnessed by the rapid growth in Contra Costa County after BART was constructed to serve that county. We also believe that the proposed project has the potential to result in significant indirect adverse impacts to fish and wildlife resources. Section 1508.8 of the Council on Environmental Quality's (CEQ) regulations implementing the National Environmental Policy Act (NEPA) explains that indirect impacts may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on ecosystems. The Service anticipates that that all indirect and cumulative impacts, with appropriate mitigation, will be fully disclosed and addressed in the SDEIS/EIR, consistent with CEQ guidelines for implementing NEPA.

We will continue to coordinate with Caltrans on mitigation and enhancement measures for the proposed project.

If you have any questions concerning these comments, please contact Ruth Pratt at (916) 978-5801.

Sincerely,

Joel A. Medlin

Joel A. Medlin
Field Supervisor

cc: ARD-ES, Portland, OR
FWS, SFO-HC (K. Young)
COE, San Francisco (J. Gillis)

EPA, San Francisco (M. Monroe)
NMFS, Santa Rosa
FHWA, San Francisco (D. Harris)