

UPPER GUADALUPE RIVER FEASIBILITY STUDY BIOLOGICAL ASSESSMENT

Army Corps of Engineers, San Francisco District
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1.0 INTRODUCTION

The Army Corps of Engineers, San Francisco District, is conducting a feasibility study of possible flood control projects along the upper portion of the Guadalupe River, Santa Clara County, California. The study area is shown in figures 1 and 2. The Santa Clara Valley Water District (SCVWD) is the local sponsor for this Corps study. The local sponsor is also conducting their own flood control study, which covers a larger area than the Corps study. The Upper Guadalupe study is separate from the Guadalupe River flood control project now under construction in downtown San Jose, just downstream from the study area.

The local sponsor has issued an Environmental Impact Report/Environmental Impact Statement (EIR/EIS) (SCVWD, 1997) for their preferred alternative, which would use bypass channels and channel widening to provide sufficient capacity for a 100-year flood to be contained within the river channel along the entire length of their study area.

The Corps of Engineers EIR/EIS has two action alternatives. The bypass channel plan consists of the portion of the local sponsor's preferred plan within the study area, and the channel widening plan is the Corp's National Economic Development (NED) plan, the plan with the greatest net economic benefits. The channel widening plan would widen portions of the river channel to provide protection against flood events of up to approximately a 50-year recurrence interval.

At this time, it is expected that the local sponsor's plan (as described in their EIR/EIS) will be constructed, with the cost of the Corps NED plan being used as the basis for federal cost-sharing of construction within the Corps study area, and construction outside of the Corps study area being entirely locally funded.

This Biological Assessment (BA) examines the possible impacts of the Corps channel widening alternative on listed, proposed, and candidate species under the Endangered Species Act of 1973 (ESA), as well as on species of concern. The species discussed are those which the U.S. Fish and Wildlife Service (FWS) indicated may be present in the U.S.G.S. San Jose East and San Jose West quadrangles, in a letter dated March 25, 1997 (Appendix A). This letter also included a list of additional listed, proposed, and candidate species, and species of concern, which may be found in Santa Clara County; however those species included on this list which were not included in the quadrangle lists are not discussed, as none of these species is considered to occur in the study area.

As the local sponsor's EIR/EIS discusses the impacts of their preferred alternative on listed, proposed, and candidate species and therefore functions as a BA for that alternative, the local sponsor's EIR/EIS is hereby incorporated by reference, and this BA will not duplicate that document's discussion of the impacts of the locally preferred alternative inside of or outside of the Corps study area.

2.0 DESCRIPTION OF THE AFFECTED ENVIRONMENT

Following is a description of the affected environment. More comprehensive information is available in SCVWD (1997).

2.1 PHYSICAL ENVIRONMENT

The study area for the Corps study extends along the Guadalupe River from the Southern Pacific Railroad Bridge (north of Willow Street) upstream to Blossom Hill Road. The river reaches under study include nearly all of the upstream portion of the river proper, but does not include the upper portion of the watershed through which flow several sizable creeks which make up the headwaters of the Guadalupe River.

Within the study area, the Guadalupe River flows in an incised channel on an alluvial plain. Much of the channel is natural, but portions have been channelized. The channelized sections have dirt banks for the most part, although small segments of river are lined by gabions or various forms of concrete revetment. Some stretches of river adjacent to Almaden Road in Reach 9 are channelized on one side with a concrete lining, while the other side retains its riparian forest. The uppermost section of the river within the study area (Reach 12) is used for in-stream percolation ponds during the summer. Adjacent to this reach are a number of off-stream percolation ponds, some of which are former gravel pits.

The reaches of the river downstream from Canoas Creek (7-10a) flow year-round. Upstream reaches (primarily 10b through 11) may be dry for up to several months, primarily during dry years. In-stream percolation ponds in reach 12 maintain standing water through the summer. Water quality is probably degraded by urban runoff and homeless encampments. However, oxygen levels typically are near saturation (SCVWD, 1997).

The short portions of Ross and Canoas creeks within the study area have been channelized and primarily have dirt or concrete banks with no woody vegetation. Aquatic habitat value is minimal.

The floodplain of the upper Guadalupe River begins below Blossom Hill Road, with the primary potential breakouts of floodwaters occurring near the Branham Lane bridge and on the north bank of Ross Creek. Northward, the floodplain moves away from the river on both sides,

but remains parallel to the river due to the presence of low-profile natural levees on both banks. The east and west floodplains rejoin the river in Reach 7.

2.2 BIOLOGICAL ENVIRONMENT

Terrestrial and Wetland Habitats and Wildlife

The floodplain of the river has been almost entirely urbanized. Relatively natural habitats are only found in a narrow corridor along the river. In most locations, buildings, roads, parking lots, and landscaped areas encroach within 100 feet of the edge of the incised channel, and often right up to this edge.

Riparian forest is found along most of the length of the river within the study area. These forests have generally been degraded and fragmented by human activities. Nevertheless, parts of the riparian forest in the study area may be among the best remaining in the Santa Clara Valley. None of this forest appears to be fully mature. However, some of this forest is mature enough to provide good avian habitat (including habitat for species which prefer mature forests) as well as SRA cover. The best-developed riparian forests in the study area are in portions of reaches 7 and 9. Other portions lack continuous canopy coverage and large trees, and include substantial components of exotic shrub and tree species, as in much of reaches 10c and 11. Portions of the river channelized in recent decades (reaches 10b and 12) have little or no riparian forest.

Other terrestrial habitats in the study area, such as scrub, ruderal, and urban forest, are of lesser value to wildlife. Ross and Canoas creeks have ruderal vegetation, with small amounts of seasonal freshwater marsh in the channelized bed of Ross Creek. Freshwater marsh is also found in the bed of the Guadalupe River in reaches 10b and 12.

Field studies confirm a high diversity and abundance of bird life within the study area, with 90 species noted (not including species only noted in the off-stream percolation ponds). However, surveys show a low diversity and abundance of terrestrial vertebrates (SCVWD, 1997). This may be due to habitat fragmentation, and predation by domestic and feral cats and dogs.

The local sponsor has completed a delineation of jurisdictional wetlands and other waters of the U.S. Within the study area, these categories are generally limited to the bottom parts of river and creek channels and off-stream percolation ponds.

Aquatic Habitat and Fisheries

The non-estuarine portions of the Guadalupe River system are currently inhabited by a total of 28 fish species, of which ten are native. The only salmonids present are Chinook salmon and rainbow/steelhead trout.

Chinook salmon and their redds have been observed at various locations along the Guadalupe River, especially in the downtown reach of the river (SCVWD, 1997). Overall reproductive habitat conditions in the Guadalupe River are generally marginal for salmon, and only two juveniles have been found to date within the study area.

While steelhead trout redds have been observed in the study area, summer water temperatures within this portion of the river system are often too high for steelhead/rainbow trout, and migration barriers preclude access by steelhead trout to better habitat upstream (SCVWD, 1997). As a result, rainbow trout are not normally found within the study area, and the steelhead trout observed here may not represent a self-sustaining population. However, juveniles found in reach A (downstream of downtown San Jose) in September 1997 suggest that successful reproduction and rearing may occur.

Within the aquatic ecosystem of the Guadalupe River, one major habitat concern is shaded riverine aquatic (SRA) cover, which is associated with riparian forest along the river banks. The riparian forest and SRA cover in the Guadalupe River are believed to have been considerably degraded and reduced in extent relative to pre-European settlement conditions, although based on historical photographs portions within the study area appear to have improved during the last half-century.

The other major habitat concern is barriers to the migration of anadromous fish. The highest quality salmonid habitat in the Guadalupe River watershed is found upstream of the study area along portions of several tributaries. Some of these upstream areas have better habitat conditions, presently harbor year-round populations of rainbow trout, and offer potential spawning and rearing habitat for anadromous salmonids (although some other portions have inferior habitat conditions).

However, there are several obstacles to fish passage that limit the ability of fish to move up the river. The most significant of these is a 13.5-foot-high drop-structure located above Blossom Hill Road, which largely or completely prevents anadromous fish from reaching habitat farther upstream. Steelhead trout may be able to surmount this barrier under unusually high flow conditions, but it is normally a complete barrier to upstream migration of salmonids. The local sponsor plans to remove or modify these barriers to allow migration of anadromous fish to better spawning and rearing habitat upstream.

3.0 DESCRIPTION OF ALTERNATIVES

3.1 INTRODUCTION

Two alternatives are considered in the Corp's EIR/EIS, other than no action. One alternative is the portion of the SCVWD preferred alternative that would be constructed within

the Corps study area. For the purposes of this BA, this alternative will be called the bypass channel plan. The other plan (the Corp's NED plan) will be called the channel widening plan.

The local sponsor's complete plan includes a bypass channel from the Southern Pacific railroad downstream to I-280 (Reach 6), floodway modifications along the portion of the river between U.S. 101 and I-880 (Reach A), and fish passage improvements upstream of Blossom Hill Road (Reach 13). The Corp's feasibility study does not include these reaches, but assumes that the local sponsor will construct these projects regardless of what the Corps does. Construction of these other projects, along with the downtown Guadalupe River project, is therefore relevant to the analysis of cumulative impacts of flood control projects in the watershed.

As part of the channel widening plan, a recreation trail for pedestrian and bicycle use would be provided along the entire length of the project. This trail would be located on maintenance roads within the project right-of-way, except in Reaches 9 and 10a where the trail would be located on the shoulders of Almaden Road. This recreation trail is not discussed in detail in the local sponsor's EIR/EIS because it is not a part of their proposal, but is discussed in the Corps EIR/EIS.

Plans are now being developed for the mitigation of impacts to SRA cover caused by construction of the downtown Guadalupe River flood control project. These plans may include additional improvements to fish passage conditions farther upstream in the watershed, to allow anadromous salmonids access to quality habitat higher up in the watershed. In addition, further fishery habitat improvements in Reach 12 are a possibility. As these plans have not been finalized, they are not discussed further here. In any case, mitigation measures for the two projects will be determined separately, even if some measures for both projects are to be implemented in close proximity.

As discussed above, this Biological Assessment will not further analyze the impacts of the bypass channel plan. The analysis of this alternative's impacts in the SCVWD's EIR/EIS is hereby incorporated by reference.

3.2 CHANNEL WIDENING PLAN

This plan would widen portions of the river banks to increase the capacity of the river to carry flood flows. Widening would result in creation of a flat bench next to the existing channel bottom at an elevation of three feet above the local average of the channel invert. This bench would typically range from 15 to 60 feet in width. From the edge of the bench farther away from the existing channel, there would be a 2:1 slope rising up to the existing grade level. This slope would be internally stabilized.

Excavation for this bench would remove nearly all vegetation on that bank. However, mitigation plantings would be placed along most of the length of the benches. These plantings

would be placed next to the low-flow channel and would restore both riparian forest habitat and SRA cover over time. Additional mitigation plantings would be located in currently barren areas in the study area and would allow complete replacement of lost SRA cover values over time.

Table 1 shows the proposed channel modifications referenced by river station.

Table 1: Description of Channel Widening Plan

River Reach	Approximate River Station	Description of Measures
7	740 - 781 750 773 773 - 781 781	East bank widening Replace Willow Street bridge Replace W. Alma Street bridge 2 - 4 foot high floodwall on the east bank Replace the UPRR bridge
8	781-793 795	1 - 3 foot high floodwalls on the east and west banks Replace the Willow Glen Way bridge
10a	843 - 855	East bank widening
10c	895 - 897.5 897.5 - 906 906 - 912 906	East bank widening West bank widening East and west bank widening Replace Hillsdale Ave. bridge
11	935 - 938 938 - 942 942 - 960	East bank widening West bank widening East bank widening
Canoas Creek	856	Improve bridge and raise existing levees (20-year LOP*)
Ross Creek	950	Trapezoidal channelization from the confluence with the main channel to 750 feet upstream of Jarvis Avenue. 27-ft bottom width. Additional culverts under the Almaden Expressway and Jarvis Avenue and 2,800 feet of floodwall (1 to 3 ft high) on the both banks. (50-year LOP*)

* LOP - Level of Protection

Starting at the downstream end of the study area, this alternative would widen the east bank of the river from the lower end of the study area upstream to the Union Pacific Railroad bridge (Reach 7), with replacement of that bridge. Floodwalls from 2-4 feet high would be constructed along a short section of the east bank in this reach. Low floodwalls from 1 - 3 feet in height would be constructed on the east and west banks of the river from the UPRR bridge upstream to Willow Glen Way (Reach 8). The east bank would also be widened from the Curtner Avenue bridge upstream to the south end of Almaden Road (Reach 10a). In Reach 10b (the general area where the Almaden Expressway crosses the river), the riparian forest/wetland portions of the local sponsor's mitigation plan would be constructed as part of this plan. Portions

of the east and west banks would be widened from near Foxworthy Avenue upstream to Branham Lane (Reaches 10c and 11). The Hillsdale Avenue bridge would be replaced. No work would be done upstream of Branham Lane (Reach 12) except for some mitigation plantings.

Fish passage improvements within the Corps study area under this alternative would be the same as those under the bypass channel plan, including placement of vortex rock weirs, with the exception of proposed vortex rock weirs in Ross Creek and further modification of stream gauge 23B, which would not be done under this alternative.

The SCVWD has an ongoing maintenance program for the upper Guadalupe River. Activities include clearing of vegetation and debris, removal of dead trees, herbicide use, repair of erosion sites, and sediment removal. Major portions of the river are not maintained except on an emergency basis due to the lack of access easements.

Construction of the channel widening plan would result in the implementation of a revised maintenance plan similar to that proposed by the SCVWD for their bypass channel plan. Areas disturbed by project construction would be maintained afterwards to maintain the project's channel capacity, structures and roads, and mitigation areas.

The types of management activities would be similar to those utilized at present, but the mix of activities and their locations would change. Herbicide spraying would decrease in some areas but would increase in maintained floodway areas. Removal of woody vegetation would decrease except for a 25-foot strip centered on the middle of the low-flow channel; removal of woody vegetation within this strip would increase due to acquisition of maintenance and access easements in portions of the project area currently lacking maintenance access. Erosion repairs would probably decrease due to reduced current speeds during high water events. Sediment removal would increase, primarily in reaches 9 and 11 and on benches.

4.0 SPECIES ACCOUNTS, PROJECT IMPACTS, AND MITIGATION MEASURES

All species included on the above-referenced species list are discussed here, even if they are not present in or near the study area. The California Natural Diversity Database was consulted prior to completion of this report.

4.1 ANADROMOUS FISH

Fish Species

Chinook salmon *Oncorhynchus tshawytscha*, Sacramento River winter run, federally listed as endangered

Coho salmon *Oncorhynchus kisutch*, Central California Coast Evolutionarily Significant Unit (ESU), federally listed as threatened
Steelhead trout *Oncorhynchus mykiss*, Central California Coast ESU, federally listed as threatened

The Sacramento River winter-run Chinook salmon is a federally listed endangered population. In February 1995, a petition was filed for a coast-wide status review of all Chinook populations. That status review is currently being conducted by the National Marine Fisheries Service (NMFS). To date, there is no evidence that the endangered Sacramento River winter-run Chinook salmon occur in the Guadalupe River. However, while the Chinook salmon in the Guadalupe River are not currently listed, proposed for listing, or a candidate species, they will be discussed in this section as they are of concern to regulatory agencies and the public.

Historically, the Guadalupe River probably supported self-sustaining populations of steelhead trout. Skinner (1962) suggested that Coho salmon also occurred in this river, but this has not been documented (Leidy, 1984; Ian Gilroy, National Marine Fisheries Service, personal communication 11/6/97). Chinook salmon were probably not native to the streams of south San Francisco Bay, but have been known from the Guadalupe River since at least 1986. This may be due to smolt releases into the Sacramento-San Joaquin system by the California Department of Fish and Game (CDFG). Small runs of adult Chinook salmon and steelhead trout are present in the Guadalupe River today, but Coho salmon are not present. The extent to which the present-day anadromous fish runs are self-sustaining populations or strays from other rivers is not well documented.

A preliminary study of the genetic structure of 29 Guadalupe River Chinook salmon indicated that 21 of the 29 were probably derived from known Merced and Feather River hatchery stocks, while the other eight could represent either a wild population or strays from another hatchery that has not yet been sampled (Nielson, 1995). As noted below, two juvenile Chinook salmon were recently collected in the upper Guadalupe River. One specimen has been frozen for investigation of its genetic affinities.

Most anadromous salmonid spawning in the Guadalupe River occurs downstream of the study area; none is known to occur above Reach 13 (upstream of Blossom Hill Road) because of a barrier to fish passage above Blossom Hill Road. Barriers at the mouths of Ross and Canoas creeks and poor habitat conditions limit salmonid migration up these tributaries. Under current conditions, populations of anadromous salmonids in the river probably fluctuate in response to the occurrence of the moderate-to-high precipitation years that create better environmental conditions for upstream migration of adults, adult spawning, and possible juvenile survival.

There is good documentation for anadromous salmonid spawning attempts in the study area, but evidence for successful reproduction is limited to the capture of several juveniles. Adult salmonids are seen annually in the Guadalupe River in the reaches downstream of the study area. Chinook salmon were observed spawning in the Guadalupe River near Willow Glen

Way (Reaches 8 and 9) in November of both 1986 and 1987, and salmon were observed near the mouth of Los Gatos Creek (downstream of the study area). The presence of adult Chinook salmon was documented in the Guadalupe River in December 1993 and January 1994. In March 1996, two positively identified juvenile Chinook salmon were captured under the Branham Lane bridge, immediately downstream of where redds had been found earlier in the winter.

It is not known whether steelhead trout juveniles are commonly able to survive summer conditions in those portions of the river that are accessible to spawning adults. Three juvenile trout were found in Reaches 9 and 10 in April and May 1995 (The Habitat Restoration Group, 1995), but it is not known if these were juvenile steelhead trout, or rainbow trout washed downstream by high winter flows. In September 1997, several juvenile trout (probably steelhead trout) were found downstream of the study area, suggesting that successful reproduction and rearing may occur in the river. Nevertheless, the paucity of juveniles suggests that habitat conditions for these fish are marginal.

Fishery Habitat Conditions

GENERAL. Anadromous fish utilize the Guadalupe River under present conditions. Although the physical conditions of the study area provide some favorable habitat attributes, these value of these reaches for spawning and rearing is limited by poor substrate conditions, seasonal flows, and partial migration barriers, all of which occur in portions of the river, as well as excessive summer water temperatures (SCVWD, 1997).

The streambed and SRA cover in Reaches 7 through 10a of the study area provide some suitable habitat features for juvenile salmonid rearing, with an overhanging riparian forest canopy, undercut banks, exposed roots, and pools. However, much of the length of these reaches has a muddy channel bottom and little habitat diversity. These reaches generally lack suitable spawning gravel, so the spawning habitat is poor. Also, summer water temperatures may generally be high enough to exclude summer steelhead rearing, although Chinook salmon juveniles could use this area for rearing in the spring.

Reaches 10b through 12 have a lower potential as rearing habitat because the channel is wider and more shallow, the riparian forest canopy is less well developed or even absent, undercut banks are scarce, water temperatures are probably higher, and flows are often minimal or absent during the summer months. However, portions of these upper reaches do provide suitable spawning gravel.

The portions of Ross and Canoas creeks within the study area have been channelized, lack woody vegetation and habitat diversity, and have minimal aquatic habitat value. While the remainder of Canoas Creek is of no value to salmonids, the upper portions of Ross Creek are potential spawning habitat for steelhead trout. Access to both creeks is limited by drop structures where they join the Guadalupe River.

Better salmonid habitat exists in portions of the headwater tributaries to the river, upstream of the study area, but migration of anadromous fish up to these reaches is generally prevented by existing barriers. The headwater tributaries below the dams represent a total of approximately 18 miles of potentially suitable salmonid spawning and rearing habitat that is not presently available to the anadromous steelhead trout or Chinook salmon (Parsons Engineering Science, 1997). While some of this habitat is of low quality, other portions have resident trout populations, indicating that they contain suitable salmonid habitat. Downstream of the study area, anadromous salmonid habitat in the Guadalupe River is present and accessible to adults migrating upstream.

STREAMFLOW. Winter flow regimes in the upper Guadalupe River are regulated to some extent by the three reservoirs (Calero, Almaden, and Guadalupe) in the headwater tributaries. There is perennial flow in the Guadalupe River downstream to the percolation ponds in Reach 12. Water is percolated in these ponds and in the river channel behind gravel dams for groundwater recharge.

In dry years, low water flows combined with partial barriers to migration may in some cases completely prevent adult salmonids from migrating through the study area reaches. During some summers, flows in the river can cease between Branham Lane and Canoas Creek. Records from a stream gauge in the Guadalupe River upstream of Canoas Creek at the upper end of Reach 10c (Gauge Station No. 23B) reveal that periods of no flow in this reach have occurred in every month of the year (although they are unusual during the winter months) and often exceed 50 percent of the time during the summer. These records indicate that the low flows are typically less than 5 cfs when there is flow.

Flows in the lower reaches (7 through 10a) are more reliable during summer months. From 1983 through 1991, streamflows in these reaches were augmented by groundwater pumping releases as part of a toxic waste cleanup program at the IBM and Fairchild Semiconductor properties along Canoas Creek. This program of discharges sustained relatively good year-round flows in the Canoas Creek and these lower reaches for several years and may have helped salmonid populations persist during the drought. However, discharges from the cleanup program have been greatly reduced in recent years and are now minimal.

Ross Creek is not regulated by a reservoir and is an intermittent stream. Some groundwater percolation is also performed in the Ross Creek channel (with water released into Ross Creek from pipelines operated by the SCVWD). Downstream of the study area, Los Gatos Creek is a major tributary to the Guadalupe River; winter flows on this stream are also regulated by reservoirs and instream percolation is carried out in the summer.

WATER QUALITY. Water temperatures and turbidity levels in the upper Guadalupe River are problematic for salmonid spawning and rearing. Oxygen levels do not appear to be a limiting factor. Water temperature is largely influenced by ambient air temperatures, streamflow and the amount of shade over the water surface. Relatively low flows (compared to watersheds with

more favorable precipitation and base flow characteristics) and areas of reduced or minimal shading by vegetation within the study area reaches result in increased water temperatures that are less than optimal to support spawning and rearing of salmonids.

Excessive water temperatures can negatively influence the growth rate, swimming ability, and disease resistance of salmonids, leading to increased mortality of juveniles. Even higher temperatures can be lethal. Acceptable water temperatures would need to be maintained year-round for the river to support juvenile steelhead trout, while Chinook salmon only require suitable temperatures from the time that adults enter the river in the fall until the time juveniles leave the river in the spring.

Under current conditions, summer water temperatures within the study area can reach 80°F, which can be lethal to juvenile salmonids. Water temperatures during the fall may exceed 57°F and preclude spawning migrations of adult Chinook salmon. Summertime temperatures in the water maintained behind gravel dams in the percolation ponds of Reach 12 can range up to 77°F at the surface and would likely exceed the acceptable range for rearing steelhead trout.

In addition, turbidity levels can be undesirably high. This high turbidity may result from sediments in the stream from bank erosion, or could be related to inputs of fine sediment and nutrients from urban runoff.

MIGRATION BARRIERS. Several barriers to fish passage are present within the Guadalupe River channel and in the upstream tributaries. The most important barrier to fish passage is a 13-foot-high drop structure (the Alamitos drop structure) in the river located above Blossom Hill Road at the upper end of Reach 13 (upstream from the study area). This structure is unladdered and effectively prevents any appreciable upstream migration of anadromous salmonids (although steelhead trout may be able to surmount the structure during very high flows). This drop structure was built to control the bottom profile of the river bed and reduce velocities to protect the stream banks, and it is used to divert flows into the groundwater percolation ponds.

Other partial barriers within the study area include an apron and weir structure at Hillsdale Avenue (Reach 10c) and an abandoned concrete vehicle crossing downstream of Ross Creek (Reach 11). These partial barriers appear to mainly be a problem for fish passage during low flows. The weir at the stream gauge station (Station No. 23B) above Canoas Creek (Reach 10), previously a partial barrier, has been modified to enhance upstream fish passage and it is not considered by the SCVWD to have a significant deleterious impact on fish passage at present.

In Ross Creek, excessive water velocities and shallow water depths in a 200-foot-long culvert located under Almaden Expressway may exceed fish swimming capabilities when the water surface elevation in the Guadalupe River is lower than the culvert invert. A steep-sloped, concrete lined channel immediately downstream of the culvert invert may also act as a barrier. Fish passage into Ross Creek may be possible when the creek is inundated by a backwater effect

from the Guadalupe River, which is predicted to occur when flows approach 925 cfs (a 2-year event).

In Canoas Creek, the channel invert at the mouth is over 5 feet above the Guadalupe River channel, but fish passage into Canoas Creek may also be possible during backwater effects from the Guadalupe River when flows approach 1,754 cfs at that location (also a 2-year event). However, the California Department of Fish and Game (CDFG) has indicated that Canoas Creek is not favorable for salmonid reproduction and that fish passage into the creek should be discouraged.

SPAWNING SITES. Spawning sites are determined by the locations of adequate gravels and shallow riffle habitats in the stream channel. The reservoirs in the headwater tributaries act as sediment traps and reduce gravel supplies downstream, affecting the abundance, quality, and relative composition of gravels in the upper Guadalupe River. Natural gravels are scarce downstream of Canoas Creek, except for a few gravel bars in Reach 9. The riffle substrate of most reaches is considered poor, often consisting of relatively large pieces of concrete.

Still, some suitable spawning sites do occur within the study area. During a 1987 survey by The Habitat Restoration Group, 13 potential spawning sites were identified from West Virginia Street upstream to Malone Road, with as many as 31 redds observed at these sites. In 1995 and 1996, SCVWD biologists surveyed the river from the Montague Expressway (downstream of downtown San Jose) upstream to the Alamitos drop structure. Of the 57 redds located, 10 were located within the study area (SCVWD, 1997). Suitable spawning sites are present in the headwater tributaries, above the study area, but are not accessible due to existing barriers.

STREAMBED AND SHADED RIVERINE AQUATIC (SRA) COVER. The study area reaches are predominantly pool habitats with a riffle:pool ratio ranging from 0.73:1 for Reach 8 to 0.06:1 for Reach 10, with a ratio of 0.24:1 for the entire study area. This is below the optimal ratio for an anadromous salmonid fishery, which should have a 1:1 ratio for spawning and rearing habitat. Only about 6 percent (1,784 feet) of the river is run habitat. About 29 percent (17,692 feet) out of the 61,520 feet of the stream bank length is shaded by overhanging riparian vegetation. Slightly more of the west bank is shaded than the east bank in all reaches except Reaches 10 and 12. In terms of surface area, about 16 percent (2.7 acres) of the 16.7 acres of total stream area is shaded, but this ranges from over 48 percent shaded area in Reach 9 to less than 0.1 percent shading in Reach 12 (U.S. Fish and Wildlife Service, 1993).

Undercuts occur along 18 percent of the stream banks, again with more of the west bank undercut than the east bank. Nearly all undercuts are in reaches 7-9. The shaded stream channel and undercut banks help to keep water temperatures down and provide cover for salmonids. These habitat features are virtually absent along the 25 percent (15,380 feet) of the total bank length that has already been modified by manmade structures for bridge abutments (2,350 feet; 4

percent) and bank protection (13,030 feet; 21 percent) using riprap, sacked concrete, rock-filled gabions, and concrete linings (U.S. Fish and Wildlife Service, 1993).

Assumptions

CONSTRUCTION-RELATED IMPACTS:

- All existing vegetation would be eliminated along the banks of the river in areas that are graded to provide a wider channel. Floodwalls are assumed to require a 10-foot wide clearing, although larger tree trunks within this clearing could probably be saved.
- Cofferdams would likely be needed for construction activities. Cofferdams are temporary structures necessary to dewater the creek and allow access across the creek during construction. For this sort of structure, typically, a driving hammer and crane are operated from the banks of the creek to place the fill. A bypass pipe would be used to maintain downstream flows. Materials and the method of placement would be selected to prevent erosion or an increase in creek water turbidity. Upon completion of construction, all material used for the cofferdams would be removed and the bed and banks would be returned to preconstruction contours. The California Construction Best Management Practices (BMP) would be implemented.

Relatively open locations would be selected for placement of the cofferdams. As a result, overall impact should be minor. Since the cofferdams would be removed after construction, no long-term effects are expected. The locations of cofferdams for the channel widening plan would be determined during final design.

- Certain proposed channel modifications, including the removal or modification of partial and complete fish barriers, would result in a long-term benefit to fisheries resources (particularly anadromous species such as steelhead trout and Chinook salmon) by increasing the availability of spawning and rearing habitat for these species. Presently, portions of the upper tributary streams (i.e., Alamitos, Calero, and Guadalupe Creeks) contain better conditions for salmonid spawning and rearing than does the Guadalupe River.
- Permanent loss of riparian vegetation from channel widening and bank stabilization activities would result in short- and long-term loss of physical habitat features (e.g., loss of vegetative cover and undercut banks), possibly increasing mean water temperature from loss of shade and reducing habitat complexity. Mitigation plantings in currently barren areas would offset this impact in the long term as determined by the HEP study.

- In-channel construction activities would be limited to the summer low-precipitation period (April 15-October 15), with the condition that construction requiring stream dewatering or work in the channel invert not commence until May 1 (provided that stream monitoring criteria are satisfied). Should stream monitoring criteria not be met, channel invert work and stream dewatering would not be allowed to commence until June 1. Additionally, the contractor would be required to implement an erosion control plan. These actions would minimize the potential for occurrence of temporary increases in turbidity and suspended particles resulting from in-channel construction and nonpoint-source runoff to the river. Limiting in-channel construction activities to the summer low-precipitation period would also minimize impacts on juvenile and adult salmonids.
- The construction contractor would be required to implement a hazardous materials control and response plan to minimize the potential for accidental spills of petroleum-based products associated with the operation of heavy machinery.

OPERATIONAL IMPACTS:

- Existing channel maintenance tasks include: removing accumulated sediment; cleaning debris from in-channel structures; controlling erosion by placing riprap, sacked concrete, or other materials where needed; using pre-emergent and post-emergent herbicides on maintenance roads and floodways, and selectively in revegetation areas; removing trash and debris; inspecting and monitoring conditions; removing dead trees and pruning live trees that could be hazardous in floods; trimming brush that could impede flood flows; mowing or discing weeds; using herbicides on invasive weeds, noxious plants, and woody plants that could obstruct flood flows or cause structural damage; manual trimming of branches overhanging roadways; manual trimming or herbicide application in areas inaccessible to mechanical equipment; maintaining access roads; and repairing fences.
- Existing channel maintenance activities that affect native vegetation have been approved and monitored through Memoranda of Understanding (MOU) between the SCVWD and CDFG. It is assumed that the local sponsor's proposed maintenance program would supersede the existing MOU. Differences between existing and proposed channel maintenance procedures are minor. The most notable changes under this alternative include more extensive sediment removal; less use of sacked concrete for erosion control; newly constructed roads and ramps that would be treated with pre-emergent and postemergent herbicides in accordance with applicable regulations; maintenance for new irrigation systems and mitigation plantings; and less mechanical and chemical vegetation control.

Beneficial Impacts

INCREASE IN HABITAT AVAILABILITY FOR MIGRATING STEELHEAD TROUT AND CHINOOK SALMON RESULTING FROM REMOVAL OF PARTIAL FISH BARRIERS. Proposed channel modifications include removing an abandoned stream gauge, consisting of a concrete apron and weir, at Hillsdale Avenue (Reach 10C) and a low-flow vehicle crossing (ford) downstream of Ross Creek (Reach 11B). Both structures are partial barriers to upstream migration by adult salmon and steelhead trout and require high flows (over 200 cfs at Hillsdale Avenue and 50-100 cfs at the ford) for successful fish passage. Only during peak urban storm runoff or prolonged watershed runoff do flows allow successful fish passage under existing conditions. Removing the barriers would enable access for migrating fish from the San Francisco Bay upstream to the drop structure above Blossom Hill Road at flows of approximately 10-15 cfs. These structures would be replaced with vortex rock weirs to maintain grade control while enabling fish passage.

The Blossom Hill drop structure is a barrier to fish migrating to the upper tributary streams of the Guadalupe River (i.e., Alamitos, Calero, and Guadalupe creeks). The SCVWD proposes to construct a fishway at the Blossom Hill drop structure. In accordance with a September 1995 settlement agreement, the SCVWD has committed to constructing the fishway by October 15, 1999 (SCVWD, 1997). The fishway would provide access to an additional 2.9 miles of fish habitat from the drop structure to potential fish barriers at Mason Dam on Guadalupe Creek and the gabion structure at Alamitos Creek upstream of Mazzone Drive. While this proposal is not part of either alternative in the Corps study, it would have a significant positive impact on fish passage and would magnify the positive impacts of downstream improvements in fish passage.

Impacts to be Mitigated to Insignificance

POTENTIAL FOR ACUTE AND CHRONIC TOXICITY TO FISHERIES AND REDUCED FISH PRODUCTIVITY RESULTING FROM CONSTRUCTION-RELATED ACTIVITIES. In the absence of preventative measures, activities associated with excavation, channel widening, bridge replacement, floodwalls, maintenance roads, and access ramps could increase erosion processes, thereby increasing sedimentation and turbidity in downstream waterways and causing negative impacts on fisheries. In addition, construction materials, such as concrete, sealants, oil and paint, could adversely affect water quality and aquatic life if accidental spills occurred during project construction.

To prevent these impacts, the construction contractor would be required to implement a Stormwater Pollution Prevention Plan (as required by the Clean Water Act) to minimize the potential for sedimentation of aquatic habitats, including possible steelhead trout and Chinook salmon spawning and rearing habitats. Measures in the plan would include but would not be limited to:

- Conducting all construction work according to site-specific construction plans that minimize the potential for sedimentation of aquatic habitat;
- Identifying all areas requiring clearing, grading, revegetation, and recontouring and minimizing the areas to be cleared and graded;
- Grading spoil sites to minimize surface erosion;
- Avoiding riparian and wetland vegetation, whenever reasonably possible, and identifying and fencing specific trees for riparian habitat maintenance;
- Covering bare areas with mulches and revegetating all cleared areas with native species;
- Preventing equipment operation in flowing water when performing in-channel activities by constructing cofferdams and diverting all streamflows around construction sites; and
- Constructing sediment catch basins across the stream channel immediately below the construction site when performing in-channel construction to prevent sediment-laden water from traveling downstream, and periodically removing accumulated sediments from the catch basin.

Similarly, the Channel Widening Plan would require the contractor to implement a hazardous materials control and spill response plan to reduce the potential for impacts on the aquatic ecosystem in general, as well as spawning, rearing, and egg incubation stages of anadromous salmonids. The plan would control the use of hazardous materials, such as petroleum-based products used in heavy equipment and other potentially toxic materials used during construction. Measures would include but would not be limited to:

- Preventing raw cement, concrete or concrete washings, asphalt, paint or other coating material, oil or other petroleum products, or any other substances that could be hazardous to aquatic life from contaminating the soil or entering watercourses;
- Establishing a spill prevention and countermeasure plan before project construction that includes strict on-site handling rules to keep construction and maintenance materials out of drainages and waterways;
- Cleaning up all spills immediately according to the spill prevention and countermeasure plan and notifying the CDFG immediately of any spills and cleanup procedures;

- Providing staging and storage areas located outside the stream's normal high-water area for equipment, materials, fuels, lubricants, solvents, and other possible contaminants;
- Removing vehicles from the normal high-water area of the stream before refueling and lubricating; and
- Preventing operation of equipment in flowing water.

With implementation of these measures, no significant impacts are expected from sediments or toxic materials entering project area waterways during or after construction.

DIRECT IMPACTS OF CONSTRUCTION ACTIVITIES ON FISH. To further reduce the likelihood of construction impacts on fish, construction would be limited to the April 15 to October 15 period. Construction in the channel invert or other construction activities requiring stream dewatering, heavy equipment operation in the channel, or stream crossings would be limited to the May 1 to October 15 period with the stipulation that such activities can commence before June 1 only if field surveys (consisting of a minimum of 3 days of sampling) indicate that no juvenile salmonids are present in the project vicinity and that average daily water temperatures have exceeded 64°F for a minimum of 3 days in a row at that location (generally, conditions for steelhead trout and Chinook salmon decline when water temperatures exceed 64°F in spring).

By limiting construction to the April 15 to October 15 period, two goals would be achieved: limiting construction to periods when migrating and spawning Chinook salmon and steelhead trout are less likely to be affected, and maximizing the construction period, thereby reducing the number of years required to construct the project (and, specifically, the number of years that impacts on fishery resources could occur).

The proposed construction period, which focuses on protecting migrating and spawning adult Chinook salmon in fall and rearing steelhead trout and Chinook salmon juveniles in spring, was developed by comparing the known life history and habitat requirements for these species with available streamflow and water temperature data for the Guadalupe River. As stated earlier under "Existing Fisheries Resources," adult Chinook salmon enter the lower Guadalupe River as early as August and have been observed in the study area as early as November, when seasonal rains and cooler weather result in improved stream conditions. Measured streamflows and water temperature data further substantiate that optimal conditions for Chinook salmon migration and spawning typically do not occur in the study area until November. Consequently, proposed in-channel construction activities occurring up through October 15 would not affect adult Chinook salmon migration and spawning.

Although construction activities in October would not affect adult steelhead trout migration (adults would not enter the river until December, at the earliest), the potential exists for

construction activities occurring in spring to adversely affect steelhead trout migration and spawning, as well as possibly affecting juvenile steelhead trout and Chinook salmon rearing and outmigration. Adult steelhead trout begin migrating up coastal streams in December and continue into May, although the majority of adults typically migrate prior to mid-April (Shapovalov and Taft 1954). Raleigh et al. (1984) report that optimal conditions for adult migration occur when average maximum water temperatures are between 37.5°F and 64.5°F. Optimal conditions for steelhead trout embryos and smolts occur at water temperatures below 55°F (Raleigh et al. 1984). For Chinook salmon juveniles, optimal conditions for smoltification occur when average maximum water temperatures are between 53.6°F and 64.5°F (Raleigh et al. 1986). In general, conditions for steelhead trout and Chinook salmon decline when water temperatures exceed 64°F in spring.

A review of available water temperature data for the Guadalupe River indicates that mean monthly water temperatures for April 1994 and 1995 averaged 61.5°F. It should be noted that mean water temperatures warmed to 66°F (73°F was the maximum water temperature recorded for the month) in May, despite the higher streamflow conditions and cooler weather that prevailed in spring 1995. Based on these data, the optimal water temperatures for juveniles were exceeded in 1994 and 1995 by late-April to early-May. These limited data suggest that water temperatures can exceed the acceptable range for salmonid eggs and embryos in March and April, and may create suboptimal conditions for smolts by late April and early May.

Because of the variability in environmental conditions from year to year and the lack of a long-term database on Guadalupe River fisheries and water temperature data, it is difficult to accurately predict when conditions in the Guadalupe River become less than favorable for salmonids for any given year. Consequently, the construction period of April 15 to October 15 includes the conditional statements discussed above for in-channel construction activities affecting the channel invert during the April 15 to May 31 period. Adherence to these measures would minimize the potential for adverse impacts on steelhead trout and Chinook salmon populations, while also reducing the number of years required to construct the project. This impact is therefore less than significant, and no further mitigation is required.

POTENTIAL FOR REDUCED FISH MIGRATION AND SPAWNING SUCCESS IN THE GUADALUPE RIVER RESULTING FROM CHANGES IN HYDRAULIC CHARACTERISTICS. Construction of the Channel Widening Plan would widen the existing channel, thereby reducing current velocities and water depths in all or portions of Reaches 7, 10, and 11 during most flood events. The modification of channel geometry may also affect the quality and quantity of spawning gravels because of the reduction in the incidence and magnitude of channel maintenance flows, gravel flushing flows, and sediment transport flows in general.

The Guadalupe River is generally deficient in sediment due to upstream dams that intercept sediment from the upper watershed. A sediment modeling study (Philip Williams and Associates, 1996) has determined that neither the Channel Widening Plan nor the Bypass Channel Plan would result in appreciable sedimentation due to this sediment-starved condition.

Therefore, neither of these plans is likely to significantly increase sedimentation in salmonid habitats, as reductions in water velocity would not be sufficient to cause sediment loads to exceed the sediment carrying capacity of the river.

Field surveys show that the river is deficient in gravel downstream from Canoas Creek (reaches 7-10a). Gravel transport could be reduced in some areas by the Channel Widening Plan, as the low bench height would allow relatively low flows to overflow onto the bench, reducing the velocity and gravel carrying capacity of these flows. However, the capacity of much larger flows to move gravel would be unchanged. In any event, the remaining low flow channel in widened areas would tend to create an area of relatively fast flows (relative to the largely vegetated bench) that would encourage gravel transport in this part of the channel during high flow events.

Gravel transport is not expected to be a problem in Reaches 7 through 10a. This portion of the river has almost no spawning habitat at present. The existing low flow channel would remain to provide fish passage. On the average, water in the low flow channel would reach a depth of three feet before spilling over onto the bench. Instream cover lost due to channel widening would be reestablished through mitigation plantings.

In Reach 10b, a new low flow channel would be created which would improve fish passage and spawning potential, so negative impacts on spawning are not expected in this area. In widened portions of reaches 10c and 11, a low flow channel averaging three feet in depth would remain and would provide fish passage as in lower reaches. It is not known if channel widening in portions of these reaches would affect gravel quantity and quality downstream in Reach 10b. Reach 12 would be unchanged from current conditions.

The net consequences of these changes are uncertain, but any negative impacts on gravel availability that may occur are expected to be offset by improved habitat access for anadromous fish due to removal of, and modification of, barriers to migration. If this alternative is selected, then additional sediment modeling would be appropriate to determine the likely impacts on gravel characteristics in the river.

REDUCED OPPORTUNITY FOR FISH PASSAGE INTO ROSS CREEK. Increases in channel capacity in reach 11b would lower the water surface elevation during even small flood events. The frequency with which water in the Guadalupe River would rise high enough to allow steelhead trout access past the existing barrier and into Ross Creek would be decreased. To mitigate this impact, the local sponsor's plan for improving fish access to Ross Creek would be adopted for this plan. This plan would involve construction of a fish ladder so fish could surmount the sudden gradient drop at the mouth of Ross Creek, and installation of Washington baffles in the new culvert under Almaden Expressway. These mitigation measures would fully mitigate the impact described above and would improve fish passage opportunities over their present condition.

Impacts Not Mitigated to Insignificance

TEMPORARY REDUCTION IN SHADED RIVERINE AQUATIC (SRA) COVER RESULTING FROM THE REMOVAL OF OVERWATER VEGETATION AND UNDERCUT BANKS ALONG THE GUADALUPE RIVER, AND CONSEQUENT REDUCTION IN HABITAT QUALITY AND INCREASES IN WATER TEMPERATURE. Construction activities associated with grading and excavation of streambanks and bank protection activities would result in the removal of overhead cover in the form of overwater riparian forest vegetation along the entire east bank of Reaches 7 and 10a, and portions of the east and west banks in Reaches 10c and 11. Undercuts on banks to be widened would be lost over a period of years following project construction, as the roots that hold these overhanging banks together decay. These losses would primarily be in Reach 7. Table 2 compares SRA impacts by reach.

These losses of SRA cover would adversely affect salmonids in the Guadalupe River by reducing fish egg survival through increased water temperatures, increasing juvenile fish mortality through decreased escape habitat and reduced habitat complexity, and by decreasing juvenile fish growth and survivorship through increased water temperatures. The upstream migrations of adult fish could also be affected by higher water temperatures

The primary mitigation measure for these impacts would be plantings of riparian forest in two types of locations: (1) on the edge of the bench adjacent to the low flow channel, and (2) in currently non-forested areas along the river. The exact acreage of these plantings will be revised based on the results of a recently completed SRA HEP. Riparian forest mitigation plantings would be located preferentially next to the river's low flow channel, to maximize positive impacts on SRA cover. These plantings would extend along nearly the entire length of the benches, and would also extend along much of the length of currently non-forested river bank.

While the full re-creation of all lost riparian forest and SRA cover attributes in these mitigation areas would take up to several decades, significant overhead shade would begin to appear within 5 years and would continue to rapidly improve thereafter. Mitigation planting along currently barren river banks would speed the recovery process. Undercut banks would also be expected to begin to appear within the first decade of vegetation growth. Habitat values and temperature conditions would improve as overhead shade and undercut banks become more extensive over time.

Mitigation plantings are expected to fully compensate for lost annualized SRA cover habitat values over the life of the project. While significant short-term reductions in aquatic habitat values would occur, in the long term mitigation plantings would cause aquatic habitat values to improve over present conditions. Additional improvements in aquatic habitat conditions would occur due to improvements in fish passage conditions and increased cover and habitat complexity resulting from the removal and modification of migration barriers and the installation of vortex rock weirs. Therefore, the only unmitigated impacts would be the temporary loss of SRA cover and consequent habitat quality and water temperature impacts.

TABLE 2: SRA COVER IMPACTS BY REACH
(before mitigation)

REACH	LOCATION OF IMPACTS	LOSS OF AQUATIC SHADE (ACRES)	LOSS OF SHADED STREAMBANKS (FEET)
7	Entire east bank	0.33	1900
8	No impacts	0.00	0
9	No impacts	0.00	0
10a	Entire east bank	0.11	598
10b	No impacts	0.00	0
10c	Portions of each bank	0.09	735
11a	No impacts	0.00	0
11b	Portions of each bank	0.10	465
11c	Entire east bank	0.04	246
12	No impacts	0.00	0

Source: U.S.F.W.S. (1997)

4.2 NON-ANADROMOUS FISH

Delta smelt *Hypomesus transpacificus*, federally listed as threatened

This species occurs from Suisun Bay upstream to the Delta. It is not known from the Guadalupe River, and would not be affected by this alternative.

4.3 WILDLIFE

Endangered species

San Joaquin kit fox, *Vulpes macrotis mutica*

This species occupies areas of open vegetation, primarily grassland, in the San Joaquin Valley and the South Coast Ranges. Each mated pair will typically occupy about one square mile of territory.

No suitable habitat for this species exists within the study area, and no foxes of any species have been seen or trapped within the study area. The only known siting in this general part of Santa Clara County was in 1972-75, seven miles west-northwest of Morgan Hill. There would be no impacts on this species.

American peregrine falcon *Falco peregrinus anatum*

The peregrine falcon rarely visits the study area, and only during winter months. There would be no impacts on this species.

California clapper rail *Rallus longirostris obsoletus*

This species inhabits salt marshes around San Francisco Bay. No suitable habitat is known from the vicinity of the study area. There would be no impacts on this species.

Threatened species

California red-legged frog *Rana aurora draytoni*

The California red-legged frog inhabits streams and rivers, as well as adjacent riparian habitat. Areas with water at least two feet deep and dense bordering vegetation are preferred. This species was once the most common frog in riparian and wetland areas in most lowland portions of California. However, habitat loss and degradation, as well as predation from introduced fish and bullfrogs, have extirpated this species from most of its previous range.

The California red-legged frog is not presently known to occur on the Guadalupe River. However, it is known from the headwaters of Los Gatos Creek, a tributary of the Guadalupe River downstream of the study area, and Alamitos Creek just below Guadalupe Dam, upstream of the study area. Both locations are many miles from the study area.

The upper Guadalupe River does provide possible habitat for California red-legged frogs, with deep pools, vegetated slopes, and undercut banks in some sections. However, numerous predatory introduced fishes such as bluegill and bass occur in the river, and bullfrogs are abundant. Bullfrogs and predatory introduced fishes are known to eat tadpoles and young California red-legged frogs and, therefore, their presence in Guadalupe River severely reduces the value of the habitat for the frogs.

Surveys according to the USFWS recommended survey protocol were conducted in the study area by the Santa Clara Water District biologists in 1997. No red-legged frogs were observed during the survey. Five nights of surveys following the USFWS draft recommended protocol dated January 13, 1995 were conducted by Santa Clara Water District biologists in the Guadalupe River downstream from the study area during the spring and summer of 1996; no California red-legged frogs were found in that area.

Based on the survey results and on the abundance of bullfrogs in the study area, and given the strong tendency for bullfrogs to displace and eliminate red-legged frogs from otherwise suitable habitat, as well as the deleterious impact of exotic predatory fish (USFWS 1996), it is very unlikely that this species occurs in the study area. Therefore, the channel widening plan will not have any effects on this species.

Bay checkerspot butterfly *Euphydryas editha bayensis* (*Occidryas e. b.*)

The Bay checkerspot butterfly is currently restricted to areas of serpentine soil in the San Francisco Bay Region, where its larval food plants have survived the invasion of introduced grasses and forbs. The nearest known population is located west of Calero Reservoir. No suitable habitat is within the study area, and there would be no impacts on this species.

Alameda striped racer *Masticophis lateralis euryxanthus*

This geographically-limited subspecies of the common striped racer is known from Alameda and Contra Costa Counties and could occur in the Mt. Hamilton Range in Santa Clara County. It primarily inhabits coastal scrub or chaparral near water. This snake is also listed by the State of California as threatened.

It is not known to occur in the study area, and surveys and extensive field work have failed to locate any individuals. This species is not expected to occur in the study area, and it would not be affected by this alternative.

Proposed Endangered Species

Riparian brush rabbit *Sylvilagus bachmani riparius*

This rare subspecies of the common brush rabbit only occurs at one known location, in the Central Valley. It is not known to occur in the study area, and field trapping surveys have failed to uncover any individuals. There would be no impacts on this species.

Proposed Threatened Species

Sacramento splittail *Pogonichthys macrolepidotus*

This large cyprinid fish was formerly common in rivers and streams in the Central Valley, Delta, and portions of the San Francisco estuary. It is now largely restricted to the Delta, Suisun Bay and Suisun Marsh, and the Napa River marshes. Fish surveys have failed to find any individuals of this species in the Guadalupe River. There would be no impacts on this species.

Candidate Species

California tiger salamander *Ambystoma californiense*

The California tiger salamander formerly ranged through much of the lowland portion of cismontane California, from the central Sacramento Valley south to Santa Barbara County. It uses animal burrows for cover, and breeds in water bodies lacking fish (such as vernal pools). The nearest known population occurs in the U.S.G.S San Jose East 7.5' quadrangle, in and near an active quarry located on the northeast side of the large hill complex located east of Canoas Creek. However, suitable reproductive habitat does not exist in or near the study area, and surveys have failed to find this species. Therefore, there would be no impacts on this species.

Federal Species of Concern

Greater western mastiff-bat *Eumops perotis californicus*

This large bat occurs in the southern half of California, usually in arid, open areas with suitable roosting habitat (high cliffs) nearby. Suitable habitat is not found in the study area. There would be no impacts on this species.

Pacific western big-eared bat *Plecotus townsendii townsendii*

This bat species roosts in caves and buildings and prefers xerophytic vegetation. Suitable habitat is not found in the study area. There would be no impacts on this species.

Small-footed myotis bat *Myotis ciliolabrum*

This bat species occurs through most of California in a variety of habitats. It is usually solitary. This species could occur in the study area. Temporary disturbance and loss of some roosting and feeding habitat (riparian vegetation) could result from project construction. Mitigation plantings would eventually increase the total habitat available for this species.

Long-eared myotis bat *Myotis evotis*

The long-eared myotis ranges throughout California, often in montane forests. It roosts individually. This species could occur in the study area. Temporary disturbance and loss of some roosting habitat (riparian vegetation) and feeding habitat could result from project construction. Mitigation plantings would eventually increase the total habitat available for this species.

Fringed myotis bat *Myotis thysanodes*

This myotis species occurs in a variety of habitats, most commonly in coastal and montane forests. It forms nursery colonies in old buildings and caves. No bat colonies are known in the study area. There would be no impacts on this species.

Long-legged myotis bat *Myotis volans*

The long-legged myotis occurs throughout California in brushy and forested areas. It roosts in cliffs, buildings, and trees. This species may occur in the study area. Temporary disturbance and loss of some roosting habitat (riparian vegetation) and feeding habitat could result from project construction. Mitigation plantings would eventually increase the total habitat available.

Yuma myotis bat *Myotis yumanensis*

This species is widespread in California, and prefers wooded canyon bottoms. It roosts in large colonies. No bat colonies are known in the study area. There would be no impacts on this species.

San Francisco dusky-footed woodrat *Neotoma fuscipes annectens*

This large rodent inhabits forested and brushy habitats. Like other woodrats, it builds large nests of sticks and other debris. Woodrats have not been found during field surveys and trapping programs in the study area, nor have their nests been noted. However, they could exist in riparian forest or ruderal scrub habitats within the study area.

Temporary disturbance, loss, and fragmentation of some habitat for this species could result from project construction, should it be present in the area. Mitigation plantings would eventually increase the total habitat available and reduce habitat fragmentation (SCVWD, 1997), if the area is utilized by this species.

Tri-colored blackbird *Agelaius tricolor*

This bird inhabits freshwater marshes but also forages in fields. Field surveys did not note any individuals, but it could occur on an occasional basis in the study area, primarily in reaches 10b and 12 during the spring months. Construction of planned mitigation areas in reach 10b could have minor impacts on this species.

Bell's sage sparrow *Amphispiza belli belli*

Bell's sage sparrow inhabits dry brush such as chaparral and sage scrub. Suitable habitat is not found within the study area. There would be no impacts on this species.

Western burrowing owl *Athene cunicularia hypugea*

Contrary to its name, the burrowing owl does not actually dig its own burrows. Instead, it inhabits burrows abandoned by other animals such as ground squirrels. Unlike most owls, it is often active during the day. This species has been declining in the Pacific Coast region, possibly due to poisoning resulting from efforts to control rodents, as well as the expansion of agriculture.

Burrowing owls have been observed in Reach 12 in the past. Between 1988 and 1991, at least one pair was a resident on the banks of the Guadalupe River and percolation ponds of Reach 12. Nesting was not confirmed, but was suspected due to the continued presence of the owls. More recent surveys have failed to find any nesting in the area. However, this species could again utilize habitat in this reach.

The channel widening alternative could result in the temporary disturbance of nesting burrowing owls, if they are present at the time of construction of mitigation areas in Reach 12. This impact would be considered significant because the CDFG includes the burrowing owl on its list of species of special concern and any disturbance of this species could contribute to its decline. However, any impacts would be temporary and localized.

To avoid this potential impact, burrowing owl surveys would be conducted in planned mitigation areas in reach 12 during the nonbreeding season (September-January) and no more than 2 weeks before construction begins, to determine whether burrowing owls are occupying the construction site before construction.

Within 30 days of conducting the survey(s), the results shall be forwarded to the CDFG. If no burrowing owls exist at the construction site, no additional mitigation measures shall be required. If survey results reveal the presence of burrowing owls, monitoring by a qualified wildlife biologist shall be required during construction activities, and a report of monitoring activities shall be forwarded to the CDFG.

The following mitigation measures would be implemented, depending on when construction is scheduled to occur.

- If construction occurs during the nonbreeding season (September-January), construction would be avoided within 160 feet of the active burrow to avoid disturbing or killing the burrowing owls, until the burrow is vacated and destroyed as indicated below. This schedule would comply with laws under the California Fish and Game Code, the federal Migratory Bird Treaty Act, and CDFG's burrowing owl guidelines.
- Monitoring of potential wintering burrows would be necessary to ensure that no owls were killed during grading. A qualified wildlife biologist would survey the affected area within 2 weeks before construction activity begins to determine if

active burrows are present. After determining that active burrows are unoccupied, the burrows would be destroyed to prevent reoccupancy during construction.

- If construction occurs during the breeding season (February-August), the owls would be excluded from the construction area before the breeding season begins and prevented from returning by the following actions:
 - Examining all potential burrows in Reach 12 during the previous nonbreeding season (September-January) to determine the presence or absence of owls,
 - Destroying or collapsing unoccupied burrows to prevent their use during the nonbreeding and breeding seasons, and
 - Monitoring the construction site and continuing to destroy burrows until grading begins to ensure that new burrows constructed by ground squirrels are not occupied by owls and used as dens.
- If no other options are available, relocate burrowing owls. The Corps would prepare a relocation and habitat protection plan in coordination with CDFG and USFWS and obtain permits from both CDFG and USFWS.

Within 60 days of completion of construction activities in Reach 12, a letter report would be submitted to CDFG that includes results of the preconstruction survey, monitoring and preventive actions taken during construction, and postconstruction conditions. With implementation of these mitigation measures, there would be no impact on this species unless relocation becomes necessary.

Saltmarsh common yellowthroat *Geothlypis trichas sinuosa*

This species winters in salt marshes and breeds in fresh to brackish marshes in the spring, inhabiting areas of continuous dense vegetation. There is no record of this species in the study area. Seasonal marsh habitat in reach 10b is marginal at best. Impacts are therefore unlikely.

Ferruginous hawk *Buteo regalis*

This large hawk inhabits open country such as grasslands. It is widespread across much of the U.S., but has declined sufficiently to cause concern. Field surveys failed to note any individuals of this species; however, it could occur on a transient basis, especially in Reach 12. There would be no impacts on this species.

Little willow flycatcher *Empidonax traillii brewsteri*

The little willow flycatcher is the subspecies of the willow flycatcher which occurs in this region of California. This bird favors riparian habitats, mainly in canyons. It is known to occur in the study area, and the channel widening plan would remove some habitat for this species. As this is one of the species used in the terrestrial HEP, project impacts would be fully mitigated by riparian forest plantings. Short-term habitat fragmentation would be mitigated by these plantings (SCVWD, 1997).

Silvery legless lizard *Anneilla pulchra pulchra*

This snake-like lizard inhabits areas of loose soil, especially sand. It is not known from the study area, and no suitable habitat exists in the area due to the texture and structure of local soils. There would be no impacts on this species.

Northwestern pond turtle *Clemmys marmorata marmorata*

The northwestern subspecies of this widespread turtle is found north of San Francisco Bay, so it is not expected to occur in the study area. There would be no impacts on this species.

Southwestern pond turtle *Clemmys marmorata pallida*

This subspecies is generally less common than the northwestern subspecies. It occurs from San Francisco Bay southward in the South Coast Ranges. Foraging habitat in the study area is marginal, and there is no breeding habitat. Surveys have failed to locate any turtles in the study area. Anecdotal reports suggest that individuals can occur there, but due to the poor habitat conditions they have probably dispersed from better habitat upstream. The nearest documented occurrence is in the Santa Teresa Hills south of Calero Reservoir. There would be no impacts on this species.

California horned lizard *Phrynosoma coronatum frontale*

This species prefers areas with loose soil. It occurs in a variety of vegetation types, including grassland and open forests and woodland. Habitats in the study area have limited suitability for this species, and surveys have not located any individuals. There would be no impacts on this species.

Foothill yellow-legged frog *Rana boylei*

This species prefers streams with shallow riffles and sandy or rocky banks. Potential habitat exists in the study area, but surveys have failed to find any individuals of this species. The nearest known occurrences are in the Morgan Hill and Laurel 7.5' quadrangles. There would be no impacts on this species.

Western spadefoot toad *Scaphiopus hammondi*

This toad inhabits relatively arid habitats including drier parts of the South Coast Ranges. Historically, it may have occurred in the vicinity of study area. However, current habitat conditions are unfavorable due to the absence of loose soils and breeding habitat. No individuals were seen during field surveys. There would be no impacts on this species.

Opler's longhorn moth *Adela oplerella*

The larvae of this moth feed on cream cups *Platystemon californicus*. This native wildflower has not been noted in the study area and does not compete well against non-native ruderal herbaceous grasses and forbs. At the IBM facility in nearby Santa Teresa, cream cups only occur on serpentine substrates. This moth is not expected to occur in the study area, and there would be no impacts on this species.

Ricksecker's water scavenger beetle *Hydrochara rickseckeri*

This insect inhabits slow-moving water in streams and ponds. It is not known to occur in Santa Clara County and is considered unlikely to occur in the study area. There would be no impacts on this species.

Unsilvered fritillary butterfly *Speyeria adiastra adiastra*

This butterfly inhabits mixed coniferous forest and redwood forest in the northern portion of its range (the South Bay). No suitable habitat is found in the study area, and there would be no impacts on this species.

San Francisco forktail damselfly *Ischnura gemina*

This relative of the dragonflies occurs in scattered locations in the San Francisco Bay Area. It was inadvertently omitted from the most recent FWS species list, but is discussed here as it has a limited distribution and occurs near the study area.

Potential habitat for this species exists along the river where there is emergent vegetation. However, there are no records of this species occurring in the study area, although it is known from a location three miles away on Coyote Creek. Mitigation work in reach 10b could affect this species if it is present, although the seasonal nature of the marsh vegetation in this reach makes this less likely.

State Species of Concern

Yellow warbler *Dendroica petechia*

The yellow warbler utilizes riparian forest throughout California. Yellow warblers were found nesting in the riparian forest habitat of Reach 6 through 11, placing their nests in shrubs and low trees. The nesting population consists of approximately 10 to 20 pairs.

This species would experience some habitat loss and fragmentation under the channel widening plan. However, as it is used in the terrestrial HEP as a basis for determining mitigation needs for riparian forest, impacts would be fully mitigated. Temporary habitat fragmentation would be mitigated through riparian forest plantings (SCVWD, 1997)

Merlin *Falco columbarius*

This falcon winters in California and forages in grasslands, savannas, and wetlands. It is an uncommon migrant and winter visitor. There would be no impacts on this species.

Sharp-shinned hawk *Accipiter striatus*

The sharp-shinned hawk is an inhabitant of open woodlands and forests as well as edge habitat. It is a rare migrant and winter visitor in the study area. There would be no impacts on this species.

Cooper's hawk *Accipiter cooperii*

The Cooper's hawk generally prefers coniferous forests and woodlands, but can also nest in riparian forest and oak woodland. It has rarely been sighted in the study area, and there are no records of it nesting here. There would be no impacts on this species.

Osprey *Pandion haliaetus*

This bird of prey has not been observed in the study area. It may occur as an aerial transient. There would be no impacts on this species.

Prairie falcon *Falco mexicanus*

The prairie falcon inhabits plains and prairies. Suitable habitat is not present in the study area. One falcon, possibly of this species, was sighted during field surveys; however, this species is at most an occasional transient in the study area. There would be no impacts on this species.

Black swift *Cyposeloides niger*

This species prefers mountainous and coastal areas. It may be an occasional aerial transient in the study area. There would be no impacts on this species.

Willow flycatcher *Empidonax traillii*

This taxon encompasses the little willow flycatcher, described above, which is the only form of this species to occur in or near the study area.

Yellow-breasted chat *Incteria virens*

This bird favors thickets, such as riparian thickets. Field surveys failed to find any individuals of this species, but it could be present on an occasional basis. Minor impacts could occur from project construction. These impacts would be mitigated through riparian forest plantings.

State fully protected species

Black-shouldered (white-tailed) kite *Elanus caeruleus*

This small hawk prefers coniferous forests and woodlands. While it has been sighted in the study area as an uncommon winter visitor, this area is outside of its breeding range. There would be no impacts on this species.

4.4 PLANTS

Federally listed as endangered

Santa Clara Valley dudleya *Dudleya setchellii*,

This succulent perennial occurs in valley grassland with a serpentinite substrate. Known populations nearby are located on the hills east of Canoas Creek and in the upper Canoas Creek watershed east of Highway 82. No suitable habitat occurs within the study area, so this species is not expected to occur here. There would be no impacts on this species.

Metcalf Canyon jewelflower *Streptanthus albidus ssp. albidus*

This annual occurs in valley and foothill grassland with a serpentinite substrate. No suitable habitat occurs in the study area, so this species is not expected to occur here. One old collection (1938) was from the vicinity of Canoas Creek north of what is now Capitol Expressway, and a nearby collection was made in 1994. There would be no impacts on this species.

Contra Costa goldfields *Lasthenia conjugens*

This annual occurs in mesic valley grassland and vernal pools in Napa and Solano counties. It is extirpated in Santa Clara County, and is not expected in the study area. There would be no impacts on this species.

Robust Spineflower *Chorizanthe robusta*

This annual occurs only in coastal sand and scrub areas. It is not known from the study area and would not be affected by either alternative.

Federal species of concern

Mt. Hamilton thistle *Cirsium fontinale* var. *campylon*,

This perennial occupies serpentine seeps in chaparral, woodland, and valley grassland. Suitable habitat does not exist in the study area, so this species is not expected to occur here. The nearest known occurrences are in the Santa Teresa Hills, northwest of Calero Reservoir, and in the Silver Creek area east of Highway 101. There would be no impacts on this species.

South Bay clarkia *Clarkia concinna* ssp. *automixa*

This annual occurs in woodlands in Alameda and Santa Clara counties. The only known occurrence in the San Jose East 7.5' quadrangle is in the Alum Rock area of San Jose. Several other populations have been found in the upper watershed of the Guadalupe River. However, it has not been found in the study area, and is unlikely to occur there. There would be no impacts on this species.

Fragrant fritillary *Fritillaria liliacea*

This member of the lily family occurs in coastal prairie, coastal scrub, and valley grassland, often on serpentine. Populations are known from the vicinity of Calero Reservoir and Almaden Quicksilver County Park south of the study area. The only occurrence known from the San Jose East 7.5' quadrangle is in the Evergreen area of southeast San Jose. It is not known from the study area and is unlikely to occur there. There would be no impacts on this species.

Pappose spikeweed *Hemizonia parryi* ssp. *congdonii*

This annual occurs in alkaline locations in valley grassland. No locations are known near the study area. Suitable habitat does not exist in the study area, so this species is not expected to occur here. There would be no impacts on this species.

5.0 RECREATIONAL TRAIL IMPACTS

This discussion is intended to supplement the discussion of endangered species impacts in the SCVWD's EIR/EIS for the bypass channel plan. Only the potential for additional incremental impacts associated with construction and operation of the planned recreation trail is covered.

Construction of this trail would not have any impacts on listed, proposed, or candidate species. The entire length of the trail would be located either on maintenance roads on project lands, or off-site on non-habitat lands. Three federal species of concern (the little willow flycatcher, the small-footed myotis bat, and the long-legged myotis bat) and one state species of concern (the yellow warbler) may be temporarily disturbed by project construction; the minimal additional construction work associated with trail installation could cause minor and temporary additional impacts to these species. No construction impacts are expected on aquatic resources given the mitigation measures (erosion control and control of potential contaminants during construction) specified above in the section on anadromous fish.

Operation of the trail (recreational use and maintenance) would not affect any listed, proposed, or candidate species. The yellow warbler is likely to experience some degree of disturbance from recreational use adjacent to portions of its habitat. Repeated human intrusion into forest habitat has been shown to have a negative impact on breeding songbirds (Riffell et al., 1996), but it is not known whether this species would be affected, especially considering that the local population is probably at least somewhat acclimated to human disturbance under current conditions. The little willow flycatcher does not breed in this area and would not experience impacts. There would be no operational impacts on anadromous fish.

6.0 CUMULATIVE IMPACTS

Fisheries

Other projects under construction or proposed for the Guadalupe River watershed would affect anadromous salmonids.

Fish passage improvements proposed by the SCVWD in the vicinity of the Blossom Hill drop structure and farther upstream would allow salmon and steelhead trout access farther up the Guadalupe River watershed, allowing access to additional spawning and rearing habitat.

The downtown Guadalupe River flood control project, now under construction, would have significant negative impacts on SRA cover and salmonids. Mitigation measures for these impacts are now being determined, and could include a number of possible measures to reduce and/or compensate for impacts. Any excess SRA mitigation within the boundaries of the upper Guadalupe River project area will be credited towards the downtown Guadalupe project. Given

the recent listing of steelhead trout as endangered, anadromous fisheries impacts of the downtown project will need to be fully mitigated to ensure compliance with the Endangered Species Act.

Flood control measures proposed by the SCVWD for Reach A (between U.S.101 and I-880) would not affect the river's low-flow channel or SRA cover, and would not affect fisheries. The bypass channel exit and maintenance access ramp proposed by the SCVWD for Reach 6 (between I-280 and the Corps study area) would remove minimal quantities of SRA cover in this reach, and fisheries impacts would be insignificant.

Changes in maintenance activities under the channel widening plan would not have an appreciable impact on fisheries.

To summarize, the downtown Guadalupe River project and the upper Guadalupe River project will have significant negative short-term impacts on habitat conditions for Chinook salmon and steelhead trout. Planned mitigation measures are expected to fully mitigate these impacts over time. Implementation of mitigation measures should be completed as quickly as practicable to minimize the temporary negative impacts of these projects. Upon completion of all these projects and full implementation of their mitigation measures, habitat conditions for salmonids are expected to be better than at present.

Other Species

No cumulative impacts would occur on other listed, proposed, or candidate species. Impacts on several species of concern (little willow flycatcher, yellow warbler, yellow-breasted chat, long-eared myotis, long-legged myotis, and small-footed myotis would be insignificant after mitigation.

7.0 CONCLUSION

The channel widening alternative would have temporary negative impacts on Chinook salmon and steelhead trout. Loss of some SRA cover would result in decreased overwater shade, increased water temperatures, decreased aquatic cover and habitat complexity, and degradation of spawning and rearing habitats. Mitigation measures would compensate for these impacts over time, resulting eventually in improved habitat conditions. While spawning and rearing conditions within the study area would be temporarily degraded, improved access to upstream spawning and rearing habitat would provide immediate mitigation for these impacts.

No other listed, proposed, or candidate species would be affected by the channel widening alternative. Impacts to species of concern would be mitigated over time.

8.0 REFERENCES

Habitat Restoration Group (1995) *Salmonid Study of the Guadalupe River, Coyote Creek, and Selected Tributaries; 1994-95 Report of Fieldwork*. August 1995.

Leidy, R.A. (1984), Distribution and ecology of stream fishes in the San Francisco Bay drainage, *Hilgardia* 52 (8):1-175.

Nielson, Dr. Jennifer L. (1995). *Salmon from the Sacramento-San Joaquin Basin and Guadalupe River 1992-1994*.

Phillip Williams & Associates (1995) *Sediment Transport Modeling Study of the Upper Guadalupe River, Phase 2*.

Riffell, Samuel K., Kevin J. Gutwiller, and Stanley H. Anderson (1996). Does repeated human intrusion cause cumulative declines in avian richness and abundance? *Ecological Applications* 6(2):492-505.

Santa Clara Valley Water District (1997). *Draft Environmental Impact Report/Statement for the Upper Guadalupe River Flood Control Project*. Prepared by Parsons Engineering Science, Oakland, California.

Skinner, John E. (1962) *An Historical Review of the Fish and Wildlife Resources of the San Francisco Bay Area*. California State Department of Fish and Game, Water Projects Branch Report No.1.

U.S. Fish and Wildlife Service (1993). *Draft Coordination Act Report, Upper Guadalupe River Flood Control Project*. Ecological Services Sacramento Field Office, October 1993.

U.S. Fish and Wildlife Service (1997). *Revised Draft Fish and Wildlife Coordination Act Report for the Guadalupe River Flood Control Project, Upper Reaches*. Ecological Services Sacramento Field Office, April 1997.

U.S. Fish and Wildlife Service (1996). Final Rule for Listing, in *Federal Register*, page 25817, May 23.



APPENDIX A: U.S. FISH AND WILDLIFE SERVICE SPECIES LIST





IN REPLY REFER TO:

1-1-98-SP-737

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Sacramento Fish and Wildlife Office
3310 El Camino Avenue, Suite 130
Sacramento, California 95821-6340

February 12, 1998

Mr. Peter E. LaCivita
Chief, Environmental Planning Section
Department of the Army
San Francisco District, Corps of Engineers
Attn.: Bill DeJager
333 Market Street
San Francisco, California 94105-2197

Subject: Updated Species Lists for Upper Guadalupe River, Santa Clara County,
California

Dear Mr. LaCivita:

As requested by fax from your agency dated February 9, 1998, you will find enclosed lists of sensitive species that may be present in *or may be affected by* projects in the subject project area (see Enclosure A). These lists fulfill the requirement of the Fish and Wildlife Service (Service) to provide species lists pursuant to section 7(c) of the Endangered Species Act of 1973, as amended (Act).

The animal species on the Enclosure A quad list are those species we believe may occur within, *or be affected by projects within*, the USGS San Jose East and San Jose West Quads, where your project is planned.

Any plants on the Enclosure A quad lists are those *that have actually been observed* in the project quads. Plants on the county list may also occur in the quads where your project is planned.

Some of the species listed in Enclosure A may not be affected by the proposed action. A trained biologist or botanist, familiar with the habitat requirements of the listed species, should determine whether these species or habitats suitable for these species may be affected by the proposed action. For plant surveys, the Service recommends using the enclosed Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed and Candidate Species (Enclosure C).

Some pertinent information concerning the distribution, life history, habitat requirements, and published references for the listed species is available upon request. This information may be

Mr. Peter E. LaCivita

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helpful in preparing the biological assessment for this project, if one is required. Please see Enclosure B for a discussion of the responsibilities Federal agencies have under section 7(c) of the Act and the conditions under which a biological assessment must be prepared by the lead Federal agency or its designated non-Federal representative.

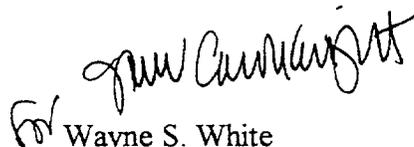
Formal consultation, pursuant to 50 CFR § 402.14, should be initiated if you determine that a listed species may be affected by the proposed project. If you determine that a proposed species may be adversely affected, you should consider requesting a conference with our office pursuant to 50 CFR § 402.10. Informal consultation may be utilized prior to a written request for formal consultation to exchange information and resolve conflicts with respect to a listed species. If a biological assessment is required, and it is not initiated within 90 days of your receipt of this letter, you should informally verify the accuracy of this list with our office.

Candidate species are currently being reviewed by the Service and are under consideration for possible listing as endangered or threatened. Candidate species have no protection under the Endangered Species Act, but are included for your consideration as it is possible that one or more of these candidates could be proposed and listed before the subject project is completed. Should the biological assessment reveal that candidate species may be adversely affected, you may wish to contact our office for technical assistance. One of the potential benefits from such technical assistance is that by exploring alternatives early in the planning process, it may be possible to avoid conflicts that could otherwise develop, should a candidate species become listed before the project is completed.

Enclosure A contains a section called *Species of Concern*. This term includes former category 2 candidate species and describes the taxa whose conservation status may be of concern to the Service and other Federal, State, and private conservation agencies and organizations.

We appreciate your concern for endangered species. Please contact Mr. Michael Thabault, Supervisory Fish and Wildlife Biologist at (916) 979-2752 if you have any questions about the attached list or your responsibilities under the Endangered Species Act. For the fastest response to species list requests, address them to the attention of the section 7 office assistant at this address. If you have any questions about possible impacts to other fish and wildlife, please contact Mike Fris at (916) 979-2107.

Sincerely,


For Wayne S. White
Field Supervisor

Enclosures

ENCLOSURE A

Endangered and Threatened Species that May Occur in or be Affected by
Projects in the Area of the Following California County or Counties
February 11, 1998

SANTA CLARA COUNTY

Listed Species

Mammals

salt marsh harvest mouse, *Reithrodontomys raviventris* (E)

San Joaquin kit fox, *Vulpes macrotis mutica* (E)

Birds

American peregrine falcon, *Falco peregrinus anatum* (E)

California brown pelican, *Pelecanus occidentalis californicus* (E)

California clapper rail, *Rallus longirostris obsoletus* (E)

California least tern, *Sterna antillarum (=albifrons) browni* (E)

marbled murrelet, *Brachyramphus marmoratus* (T)

western snowy plover, *Charadrius alexandrinus nivosus* (T)

bald eagle, *Haliaeetus leucocephalus* (T)

Reptiles

San Francisco garter snake, *Thamnophis sirtalis tetrataenia* (E)

giant garter snake, *Thamnophis gigas* (T)

Amphibians

California red-legged frog, *Rana aurora draytonii* (T)

Fish

tidewater goby, *Eucyclogobius newberryi* (E)

winter-run chinook salmon, *Oncorhynchus tshawytscha* (E)

delta smelt, *Hypomesus transpacificus* (T)

Central California steelhead, *Oncorhynchus mykiss* (T)

South Central California steelhead, *Oncorhynchus mykiss* (T)

Invertebrates

vernal pool fairy shrimp, *Branchinecta lynchi* (T)

bay checkerspot butterfly, *Euphydryas editha bayensis* (T)

Plants

Tiburon paintbrush, *Castilleja affinis ssp. neglecta* (E)

Listed Species

Plants

- Coyote ceanothus, *Ceanothus ferrisae* (E)
- Santa Clara Valley dudleya, *Dudleya setchellii* (E)
- Metcalf Canyon jewelflower, *Streptanthus albidus* ssp. *albidus* (E)
- robust spineflower, *Chorizanthe robusta* (E) *
- Contra Costa goldfields, *Lasthenia conjugens* (E) *
- California sea blite, *Suaeda californica* (E) *

Proposed Species

Mammals

- riparian brush rabbit, *Sylvilagus bachmani riparius* (PE)

Fish

- Sacramento splittail, *Pogonichthys macrolepidotus* (PT)

Candidate Species

Birds

- mountain plover, *Charadrius montanus* (C)

Amphibians

- California tiger salamander, *Ambystoma californiense* (C)

Species of Concern

Mammals

- greater western mastiff-bat, *Eumops perotis californicus* (SC)
- small-footed myotis bat, *Myotis ciliolabrum* (SC)
- long-eared myotis bat, *Myotis evotis* (SC)
- fringed myotis bat, *Myotis thysanodes* (SC)
- long-legged myotis bat, *Myotis volans* (SC)
- Yuma myotis bat, *Myotis yumanensis* (SC)
- San Francisco dusky-footed woodrat, *Neotoma fuscipes annectens* (SC)
- Pacific western big-eared bat, *Plecotus townsendii townsendii* (SC)
- salt marsh vagrant shrew, *Sorex vagrans halicoetes* (SC)
- Sierra Nevada red fox, *Vulpes vulpes necator* (SC)

Species of Concern

Birds

- tricolored blackbird, *Agelaius tricolor* (SC)
- grasshopper sparrow, *Ammodramus savannarum* (SC)
- Bell's sage sparrow, *Amphispiza belli belli* (SC)
- western burrowing owl, *Athene cunicularia hypugea* (SC)
- American bittern, *Botaurus lentiginosus* (SC)
- ferruginous hawk, *Buteo regalis* (SC)
- lark sparrow, *Chondestes grammacus* (SC)
- little willow flycatcher, *Empidonax traillii brewsteri* (SC)
- saltmarsh common yellowthroat, *Geothlypis trichas sinuosa* (SC)
- black rail, *Laterallus jamaicensis* (SC)
- Alameda (South Bay) song sparrow, *Melospiza melodia pusillula* (SC)

Reptiles

- silvery legless lizard, *Anniella pulchra pulchra* (SC)
- northwestern pond turtle, *Clemmys marmorata marmorata* (SC)
- southwestern pond turtle, *Clemmys marmorata pallida* (SC)
- San Joaquin whipsnake, *Masticophis flagellum ruddocki* (SC)
- California horned lizard, *Phrynosoma coronatum frontale* (SC)

Amphibians

- foothill yellow-legged frog, *Rana boylei* (SC)
- western spadefoot toad, *Scaphiopus hammondi* (SC)

Fish

- green sturgeon, *Acipenser medirostris* (SC)
- longfin smelt, *Spirinchus thaleichthys* (SC)

Invertebrates

- Opler's longhorn moth, *Adela oplerella* (SC)
- Ricksecker's water scavenger beetle, *Hydrochara rickseckeri* (SC)
- unsilvered fritillary butterfly, *Speyeria adiastra adiastra* (SC)

Plants

- Mt. Hamilton harebell, *Campanula sharsmithiae* (SC)

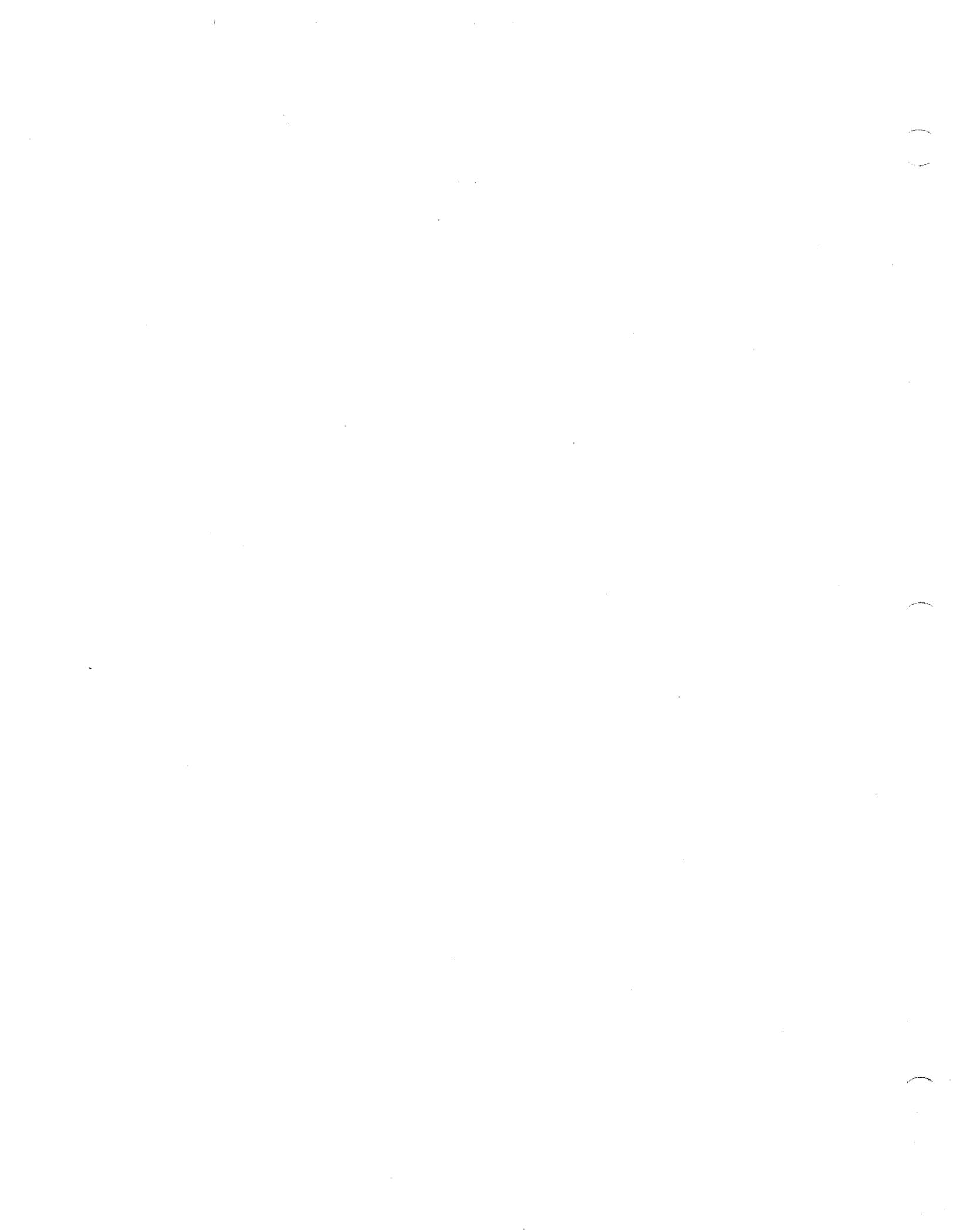
Species of Concern

Plants

- Mt. Hamilton thistle, *Cirsium fontinale* var. *campylon* (SC)
- South Bay clarkia, *Clarkia concinna* ssp. *automixa* (SC)
- Mt. Hamilton coreopsis, *Coreopsis hamiltonii* (SC)
- clustered lady's-slipper, *Cypripedium fasciculatum* (SC)
- interior California larkspur, *Delphinium californicum* ssp. *interius* (SC)
- Brandegee's wooly-star, *Eriastrum brandegeae* (SC)
- Hoover's button-celery, *Eryngium aristulatum* var. *hooveri* (SC)
- San Francisco wallflower, *Erysimum franciscanum* (SC)
- talus fritillary, *Fritillaria falcata* (SC)
- fragrant fritillary, *Fritillaria liliacea* (SC)
- delta tule-pea, *Lathyrus jepsonii* var. *jepsonii* (SC)
- smooth lessingia, *Lessingia micradenia* var. *glabrata* (SC)
- Gairdner's yampah, *Perideridia gairdneri* ssp. *gairdneri* (SC)
- Mt. Diablo phacelia, *Phacelia phacelioides* (SC)
- Salinas Valley popcornflower, *Plagiobothrys uncinatus* (SC)
- rock sanicle, *Sanicula saxatilis* (SC)
- most beautiful (uncommon) jewelflower, *Streptanthus albidus* ssp. *peramoenus* (SC)
- Mt. Hamilton jewelflower, *Streptanthus callistus* (SC)
- alkali milk-vetch, *Astragalus tener* var. *tener* (SC) *
- valley spearscale, *Atriplex joaquiniana* (SC) *
- northcoast bird's-beak, *Cordylanthus maritimus* ssp. *palustris* (SC) *
- caper-fruited tropidocarpum, *Tropidocarpum capparideum* (SC) *
- pappose spikeweed, *Hemizonia parryi* ssp. *congdonii* (SC) *?
- San Francisco Bay spineflower, *Chorizanthe cuspidata* var. *cuspidata* (SC) ?

KEY:

- | | |
|--------------------------------|--|
| (E) <i>Endangered</i> | Listed (in the Federal Register) as being in danger of extinction. |
| (T) <i>Threatened</i> | Listed as likely to become endangered within the foreseeable future. |
| (P) <i>Proposed</i> | Officially proposed (in the Federal Register) for listing as endangered or threatened. |
| (C) <i>Candidate</i> | Candidate to become a <i>proposed</i> species. |
| (SC) <i>Species of Concern</i> | Other species of concern to the Service. |
| (*) <i>Extirpated</i> | Possibly extirpated from the area. |
| <i>Critical Habitat</i> | Area essential to the conservation of a species. |



ENCLOSURE A

Endangered and Threatened Species that May Occur in
or be Affected by Projects in the Following Selected Quads

February 11, 1998

QUAD : 427C SAN JOSE WEST

Listed Species

Birds

American peregrine falcon, *Falco peregrinus anatum* (E)

California clapper rail, *Rallus longirostris obsoletus* (E)

Amphibians

California red-legged frog, *Rana aurora draytonii* (T)

Fish

delta smelt, *Hypomesus transpacificus* (T)

Central California steelhead, *Oncorhynchus mykiss* (T)

Invertebrates

bay checkerspot butterfly, *Euphydryas editha bayensis* (T)

Plants

robust spineflower, *Chorizanthe robusta* (E) *

Proposed Species

Fish

Sacramento splittail, *Pogonichthys macrolepidotus* (PT)

Candidate Species

Amphibians

California tiger salamander, *Ambystoma californiense* (C)

Species of Concern

Mammals

greater western mastiff-bat, *Eumops perotis californicus* (SC)

small-footed myotis bat, *Myotis ciliolabrum* (SC)

long-eared myotis bat, *Myotis evotis* (SC)

fringed myotis bat, *Myotis thysanodes* (SC)

long-legged myotis bat, *Myotis volans* (SC)

QUAD : 427C SAN JOSE WEST

Species of Concern

Mammals

- Yuma myotis bat, *Myotis yumanensis* (SC)
- San Francisco dusky-footed woodrat, *Neotoma fuscipes annectens* (SC)
- Pacific western big-eared bat, *Plecotus townsendii townsendii* (SC)

Birds

- tricolored blackbird, *Agelaius tricolor* (SC)
- Bell's sage sparrow, *Amphispiza belli belli* (SC)
- western burrowing owl, *Athene cunicularia hypugea* (SC)
- ferruginous hawk, *Buteo regalis* (SC)
- little willow flycatcher, *Empidonax traillii brewsteri* (SC)
- saltmarsh common yellowthroat, *Geothlypis trichas sinuosa* (SC)

Reptiles

- silvery legless lizard, *Anniella pulchra pulchra* (SC)
- northwestern pond turtle, *Clemmys marmorata marmorata* (SC)
- southwestern pond turtle, *Clemmys marmorata pallida* (SC)
- California horned lizard, *Phrynosoma coronatum frontale* (SC)

Amphibians

- foothill yellow-legged frog, *Rana boylei* (SC)
- western spadefoot toad, *Scaphiopus hammondi* (SC)

Invertebrates

- Opler's longhorn moth, *Adela oplerella* (SC)
- Ricksecker's water scavenger beetle, *Hydrochara rickseckeri* (SC)
- unsilvered fritillary butterfly, *Speyeria adiaсте adiaсте* (SC)

QUAD : 427D SAN JOSE EAST

Listed Species

Mammals

San Joaquin kit fox, *Vulpes macrotis mutica* (E)

Birds

American peregrine falcon, *Falco peregrinus anatum* (E)

Amphibians

California red-legged frog, *Rana aurora draytonii* (T)

Fish

delta smelt, *Hypomesus transpacificus* (T)

Central California steelhead, *Oncorhynchus mykiss* (T)

Invertebrates

bay checkerspot butterfly, *Euphydryas editha bayensis* (T)

Plants

Santa Clara Valley dudleya, *Dudleya setchellii* (E)

Contra Costa goldfields, *Lasthenia conjugens* (E) *

Metcalf Canyon jewelflower, *Streptanthus albidus* ssp. *albidus* (E)

Proposed Species

Mammals

riparian brush rabbit, *Sylvilagus bachmani riparius* (PE)

Fish

Sacramento splittail, *Pogonichthys macrolepidotus* (PT)

Candidate Species

Amphibians

California tiger salamander, *Ambystoma californiense* (C)

QUAD : 427D SAN JOSE EAST

Species of Concern

Mammals

- greater western mastiff-bat, *Eumops perotis californicus* (SC)
- small-footed myotis bat, *Myotis ciliolabrum* (SC)
- long-eared myotis bat, *Myotis evotis* (SC)
- fringed myotis bat, *Myotis thysanodes* (SC)
- long-legged myotis bat, *Myotis volans* (SC)
- Yuma myotis bat, *Myotis yumanensis* (SC)
- San Francisco dusky-footed woodrat, *Neotoma fuscipes annectens* (SC)
- Pacific western big-eared bat, *Plecotus townsendii townsendii* (SC)

Birds

- Bell's sage sparrow, *Amphispiza belli belli* (SC)
- western burrowing owl, *Athene cunicularia hypugea* (SC)
- ferruginous hawk, *Buteo regalis* (SC)
- little willow flycatcher, *Empidonax traillii brewsteri* (SC)

Reptiles

- silvery legless lizard, *Anniella pulchra pulchra* (SC)
- northwestern pond turtle, *Clemmys marmorata marmorata* (SC)
- southwestern pond turtle, *Clemmys marmorata pallida* (SC)
- California horned lizard, *Phrynosoma coronatum frontale* (SC)

Amphibians

- foothill yellow-legged frog, *Rana boylei* (SC)
- western spadefoot toad, *Scaphiopus hammondi* (SC)

Invertebrates

- Opler's longhorn moth, *Adela oplerella* (SC)
- Ricksecker's water scavenger beetle, *Hydrochara rickseckeri* (SC)

Plants

- Mt. Hamilton thistle, *Cirsium fontinale var. campylon* (SC)

QUAD : 427D SAN JOSE EAST

Species of Concern

Plants

- South Bay clarkia, *Clarkia concinna ssp. automixa* (SC)
 fragrant fritillary, *Fritillaria liliacea* (SC)
 papoose spikeweed, *Hemizonia parryi ssp. congdonii* (SC) *?

KEY:

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|------|---------------------------|--|
| (E) | <i>Endangered</i> | Listed (in the Federal Register) as being in danger of extinction. |
| (T) | <i>Threatened</i> | Listed as likely to become endangered within the foreseeable future. |
| (P) | <i>Proposed</i> | Officially proposed (in the Federal Register) for listing as endangered or threatened. |
| (C) | <i>Candidate</i> | Candidate to become a <i>proposed</i> species. |
| (SC) | <i>Species of Concern</i> | Other species of concern to the Service. |
| (*) | <i>Extirpated</i> | Possibly extirpated from this area. |
| | <i>Critical Habitat</i> | Area essential to the conservation of a species. |

Enclosure B

FEDERAL AGENCIES' RESPONSIBILITIES UNDER SECTIONS 7(a) and (c) OF THE ENDANGERED SPECIES ACT

SECTION 7(a) Consultation/Conference

Requires: (1) federal agencies to utilize their authorities to carry out programs to conserve endangered and threatened species; (2) Consultation with FWS when a federal action may affect a listed endangered or threatened species to insure that any action authorized, funded, or carried out by a federal agency is not likely to jeopardize the continued existence of listed species or result in the destruction or adverse modification of critical habitat. The process is initiated by the federal agency after determining the action may affect a listed species; and (3) Conference with FWS when a Federal action is likely to jeopardize the continued existence of a proposed species or result in destruction or adverse modification of proposed critical habitat.

SECTION 7(c) Biological Assessment-Major Construction Activity¹

Requires federal agencies or their designees to prepare a Biological Assessment (BA) for major construction activities. The BA analyzes the effects of the action² on listed and proposed species. The process begins with a Federal agency requesting from FWS a list of proposed and listed threatened and endangered species. The BA should be completed within 180 days after its initiation (or within such a time period as is mutually agreeable). If the BA is not initiated within 90 days of receipt of the list, the accuracy of the species list should be informally verified with our Service. No irreversible commitment of resources is to be made during the BA process which would foreclose reasonable and prudent alternatives to protect endangered species. Planning, design, and administrative actions may proceed; however, no construction may begin.

We recommend the following for inclusion in the BA: an on-site inspection of the area affected by the proposal which may include a detailed survey of the area to determine if the species or suitable habitat is present; a review of literature and scientific data to determine species' distribution, habitat needs, and other biological requirements; interviews with experts, including those within FWS, State conservation departments, universities and others who may have data not yet published in scientific literature; an analysis of the effects of the proposal on the species in terms of individuals and populations, including consideration of indirect effects of the proposal on the species and its habitat; an analysis of alternative actions considered. The BA should document the results, including a discussion of study methods used, and problems encountered, and other relevant information. The BA should conclude whether or not a listed or proposed species will be affected. Upon completion, the BA should be forwarded to our office.

¹A construction project (or other undertaking having similar physical impacts) which is a major federal action significantly affecting the quality of the human environment as referred to in NEPA (42 U.S.C. 4332(2)C).

²"Effects of the action" refers to the direct and indirect effects of an action on the species or critical habitat, together with the effects of other activities that are interrelated or interdependent with that action.

Enclosure C

GUIDELINES FOR CONDUCTING AND REPORTING BOTANICAL INVENTORIES FOR FEDERALLY LISTED, PROPOSED AND CANDIDATE PLANTS

(September 23, 1996)

These guidelines describe protocols for conducting botanical inventories for federally listed, proposed and candidate plants, and describe minimum standards for reporting results. The Service will use, in part, the information outlined below in determining whether the project under consideration may affect any listed, proposed or candidate plants, and in determining the direct, indirect, and cumulative effects.

Field inventories should be conducted in a manner that will locate listed, proposed, or candidate species (target species) that may be present. The entire project area requires a botanical inventory, except developed agricultural lands. The field investigator(s) should:

1. Conduct inventories at the appropriate times of year when target species are present and identifiable. Inventories will include all potential habitats. Multiple site visits during a field season may be necessary to make observations during the appropriate phenological stage of all target species.
2. If available, use a regional or local reference population to obtain a visual image of the target species and associated habitat(s). If access to reference populations(s) is not available, investigators should study specimens from local herbaria.
3. List every species observed and compile a comprehensive list of vascular plants for the entire project site. Vascular plants need to be identified to a taxonomic level which allows rarity to be determined.
4. Report results of botanical field inventories that include:
 - a. a description of the biological setting, including plant community, topography, soils, potential habitat of target species, and an evaluation of environmental conditions, such as timing or quantity of rainfall, which may influence the performance and expression of target species.
 - b. a map of project location showing scale, orientation, project boundaries, parcel size, and map quadrangle name.
 - c. survey dates and survey methodology(ies).
 - d. if a reference population is available, provide a written narrative describing the target species reference population(s) used, and date(s) when observations were made.

- e. a comprehensive list of all vascular plants occurring on the project site for each habitat type.
 - f. current and historic land uses of the habitat(s) and degree of site alteration.
 - g. presence of target species off-site on adjacent parcels, if known.
 - h. an assessment of the biological significance or ecological quality of the project site in a local and regional context.
5. If target species is(are) found, report results that additionally include:
- a. a map showing federally listed, proposed and candidate species distribution as they relate to the proposed project.
 - b. if target species is (are) associated with wetlands, a description of the direction and integrity of flow of surface hydrology. If target species is (are) affected by adjacent off-site hydrological influences, describe these factors.
 - c. the target species phenology and microhabitat, an estimate of the number of individuals of each target species per unit area; identify areas of high, medium and low density of target species over the project site, and provide acres of occupied habitat of target species. Investigators could provide color slides, photos or color copies of photos of target species or representative habitats to support information or descriptions contained in reports.
 - d. the degree of impact(s), if any, of the proposed project as it relates to the potential unoccupied habitat of target habitat.
6. Document findings of target species by completing California Native Species Field Survey Form(s) and submit form(s) to the Natural Diversity Data Base. Documentation of determinations and/or voucher specimens may be useful in cases of taxonomic ambiguities, habitat or range extensions.
7. Report as an addendum to the original survey, any change in abundance and distribution of target plants in subsequent years. Project sites with inventories older than 3 years from the current date of project proposal submission will likely need additional survey. Investigators need to assess whether an additional survey(s) is (are) needed.
8. Adverse conditions may prevent investigator(s) from determining presence or identifying some target species in potential habitat(s) of target species. Disease, drought, predation, or herbivory may preclude the presence or identification of target species in any year. An additional botanical inventory(ies) in a subsequent year(s) may be required if adverse

conditions occur in a potential habitat(s). Investigator(s) may need to discuss such conditions.

9. Guidance from California Department of Fish and Game (CDFG) regarding plant and plant community surveys can be found in *Guidelines for Assessing the Effects of Proposed Developments on Rare and Endangered Plants and Plant Communities*, 1984. Please contact the CDFG Regional Office for questions regarding the CDFG guidelines and for assistance in determining any applicable State regulatory requirements.

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