Enclosure

BIOLOGICAL OPINION

ACTION AGENCY:	U.S. Army Corps of Engineers, San Francisco
ACTION:	Lower Codornices Creek Improvements Project, Alameda County, California
CONSULTATION CONDUCTED BY:	National Marine Fisheries Service, Southwest Region
FILE NUMBER:	151422SWR04SR9261:ES
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I. CONSULTATION HISTORY

On November 12, 2003, an interagency meeting was held at the U.S. Army Corps of Engineers (Corps) office in San Francisco, California, to discuss the proposed project. The National Marine Fisheries Service (NOAA Fisheries) representative attending the meeting, informed the participants of the documented presence of *Oncorhynchus mykiss* in this watershed, and explained that there was insufficient data to determine conclusively whether *O. mykiss* in Codornices Creek are anadromous Central California Coast (CCC) steelhead, resident rainbow trout, or a mix of the two life history types. However, as there were no barriers known to completely block access by fish from the lower portion of the stream to San Francisco Bay, at least some of the fish occurring in the project area were likely to be CCC steelhead. The Corps was informed by NOAA Fisheries that formal interagency consultation under section 7 of the Endangered Species Act (ESA) would be appropriate as part of the Corps' Clean Water Act section 404 permit process for this project.

On December 5, 2003, the regulatory agencies toured the Lower Codornices Creek Improvements Project site. Habitat conditions suitable for steelhead were noted, and fish passage and hydraulic conditions at culverts within the project reach were briefly inspected. The Corps was informed that juvenile *O. mykiss* were likely to be present in the affected reach of the stream during the proposed dry-season work period. Capture and relocation of juvenile fish would be necessary to avoid stranding of or harm to fish by work activities.

On April 20, 2004, the Corps initiated formal consultation for the Lower Codornices Creek Improvement Project with NOAA Fisheries. Through interagency coordination between the two agencies in the spring of 2004, the information needed to proceed with this consultation was provided to NOAA Fisheries, or was otherwise accessible for consideration and reference. This biological opinion is based primarily on information provided in the following documents:

1. Corps Interagency Meeting notice of November 12, 2003, and associated documents.
2. Subsequent Focused Draft Environmental Impact Report (EIR) for the University Village and Albany/Northwest Berkeley Properties Master Plan Amendments.
3. Codornices Creek Improvements Plan: Draft Initial Study and Proposed Mitigated Negative Declaration. Prepared for the City of Albany, March 4, 2004.
4. Biological Assessment (BA) for the Lower Codornices Creek Improvements Project, Effects to Central California Coast Steelhead, prepared by Hagar Environmental Science, March 15, 2004.

A complete administrative record of this consultation is on file in the NOAA Fisheries Santa Rosa Office, Santa Rosa, California.

The proposed construction of the Lower Codornices Creek Improvements Project depends in part on completion of an interrelated proposal by the University of California, the University Village and Albany/Northwest Berkeley Properties Master Plan Project. The University Village project was not required by the Corps to obtain a section 404 permit, and is not expected to have any effects on steelhead or steelhead habitat.

II. DESCRIPTION OF PROPOSED ACTION

The Corps proposes to permit the applicant, the City of Albany, California, to complete a variety of activities designed to restore approximately 3,000 linear feet of lower Codornices Creek, between San Pablo Avenue on the upstream end and the Union Pacific Rail Road (UPRR) tracks on the downstream end, in the Cities of Albany and Berkeley, California. The City of Albany will widen and recontour the floodplain and riparian areas, stabilize stream banks, remove undersized culverts, install instream habitat structures, plant native vegetation, construct a bicycle and pedestrian path, and replace a stream bypass intake. The Corps is proposing to permit this work under section 404 of the Clean Water Act: Nationwide Permits 27, Stream and Wetland Restoration Activities; and 33, Temporary Construction, Access, and Dewatering. Work is scheduled to occur between June 15 and October 15 in both 2004 and 2005. Revegetation activities will not be confined to the June 15-October 15 work window.

The project's primary goals are to reduce flooding and stream sediment loads; improve channel stability, riparian and aquatic habitat and fish migration conditions; and provide public access to the restored reach of Codornices Creek. To achieve these restoration goals, the floodplain and riparian zone will be widened and recontoured, with a total of 5,000-7,000 cubic yards of soil expected to be moved. Contaminated soil will be removed and disposed of at a Class I or Class II landfill. Channel banks will be regraded and stabilized using biotechnical methods, three undersized culverts removed, instream habitat structures installed and native vegetation planted, and a Class I bicycle/pedestrian path constructed along the channel. In addition, a bypass intake that diverts part of Codornices Creek waters into an adjacent stream, Village Creek, will be replaced. Stream dewatering will be required during construction of the project, using cofferdams and a bypass system, and fish will be captured and relocated to suitable habitat in other reaches of the creek.

Project improvements have been divided into five reaches, beginning at the UPRR crossing, and moving upstream to crossings at Fifth Street, Sixth Street, Eighth Street, Ninth Street, and San Pablo Avenue. Work on the first phase of construction, proposed to take place between June 15 and October 15, 2004, will occur from the UPRR crossing to Sixth Street. In 2005, work from Sixth Street to the San Pablo Avenue crossing is planned.

A. Phase 1 Construction (2004)

1. UPRR Tracks to Fifth Street

Undersized culverts at Fourth and Fifth Streets, each with a capacity less than the two-year flood flow, will be removed and replaced with free-span pedestrian bridges. The footings of both bridges will be above the active channel. Both streambanks will be graded, and a widened floodplain will be planted with a variety of native trees, shrubs, and ground cover. A construction access road will be built along the northern bank of the creek, although no bicycle or pedestrian access along this road is currently proposed.

2. Fifth Street to Sixth Street

In an interrelated action that is part of the University Village project, existing dilapidated housing along the north bank of Codornices Creek, will be demolished and removed, increasing the natural floodplain area from 50 - 70 feet in total width, including the stream. In this wider floodplain, additional stream meander will be constructed to improve sinuosity where the stream is currently constricted and channelized. Landscaping berms or low walls, one to two feet in height, will be installed to prevent minor flooding in this stream section. In addition, a bypass intake is located just upstream of Fifth Street. Due to its design and local sediment deposition caused by the undersized Fifth Street culvert, the bypass currently diverts flow into Village Creek at relatively low stream discharge levels and creates a stranding risk in unsuitable habitat for juvenile steelhead. This risk will be minimized with construction of a new headwall and weir board arrangement of sufficient height for intake of flood flows to begin no more frequently than the 10-year flood event. A culvert at Sixth Street with insufficient capacity, approximately 175 cubic feet per second (cfs), will not be removed in this project, but may be proposed for removal as part of additional channel restoration efforts in the future.

B. Phase 2 Construction (2005)

1. Sixth Street to Eighth Street

The floodplain will be widened to approximately 100 feet in total width and a meandering channel constructed. In order to provide this enlarged riparian corridor and bicycle/pedestrian path right-of-way, the U.S. Postal Service will move a cinder block wall built along the stream at the edge of its facility on the south bank at Eighth Street approximately 12 feet to the south. Non-native vegetation will be removed, native riparian species planted, and landscaping berms or low walls one to two feet in height installed to prevent minor flooding.

2. <u>Eighth Street to Ninth Street</u>

This section of the stream was partially restored in a past, unrelated project, with a small meander created and native riparian vegetation planted. The current project will leave the undersized culvert at Eighth Street, with a capacity of approximately 250 cfs, in place; however, an asphalt apron approximately 75 feet in length below the culvert will be removed and step pools, providing backwater conditions to improve fish passage through the culvert will be installed. At Ninth Street, the streambanks will be re-graded to a shallower slope and stabilized with biotechnical materials. On the north bank, a bicycle/pedestrian path will be constructed.

3. <u>Ninth Street to San Pablo Avenue</u>

In an interrelated action (part of the separate University Village Project) existing dilapidated housing along the north bank of the creek in this reach will be demolished and removed, and adjacent baseball fields set further back from the channel. This work will provide a widened right-of-way of approximately 80 feet, allowing for the proposed restoration of the channel. Streambanks will be graded and the floodplain widened to 50-70 feet. Existing native riparian vegetation will be protected to the extent possible, and additional native trees and shrubs planted to improve habitat and replace removed vegetation. The undersized culvert at Tenth Street will be removed, expanding channel capacity. A bicycle/pedestrian path will be built along the north bank, extending from its eastward end at Tenth Street to Eighth Street.

C. Measures to Minimize and Mitigate Construction Impacts

In addition to the June 15-October 15 work window noted above, the following measures are proposed to protect steelhead, steelhead habitat, and water quality.

1. A qualified fisheries biologist will survey each project reach for steelhead presence prior to the start of the diversion and dewatering process. Native fish and other aquatic vertebrates will be collected from the area being dewatered and relocated to a safe and suitable location above the work site.

2. Existing native vegetation will be preserved where possible to provide riparian canopy in the project reach while immature plantings become established. Where existing mature vegetation cannot be protected from construction impacts, native tree trunks and root wads will be salvaged and installed as biotechnical bank protection and instream habitat structures. Instream habitat features will be constructed according to the California

Department of Fish and Game Salmonid Stream Habitat Restoration Manual (Flosi *et al.* 1998).

3. Contractors will be required to develop and implement two water quality protection plans. The Storm Water Pollution Prevention Plan will minimize the potential for sediment input to the aquatic system and protect water quality and downstream habitats during and after construction. The Toxic Materials Control and Spill Response Plan will regulate the use of hazardous materials, such as petroleum-based products used as fuel and lubricants for equipment as well as other potentially toxic materials associated with project construction. Heavy equipment shall operate only within dewatered areas. Best management practices derived from the California Stormwater Best Management Practice Handbooks, the California Regional Water Quality Control Board Erosion, and Sediment Control Field Manual will be employed at all times during construction to minimize impacts to Codornices Creek.

D. Action Area

The project is located on a half-mile portion of Lower Codornices Creek, from the UPRR bridge upstream to San Pablo Avenue. Because the bridge opening at the UPRR crossing is undersized relative to channel capacity, the railroad crossing serves as a downstream hydraulic control for stream flow passing through the project reach. Potential effects of turbidity and sedimentation arising from construction of the project, however, could affect the stream further downstream to San Francisco Bay, and the action area is defined accordingly. For the purposes of this consultation, the action area encompasses the creek and its associated floodplain and riparian corridor extending laterally to the right of way beyond each bank top, from the San Pablo Avenue crossing downstream to San Francisco Bay.

III. STATUS OF THE SPECIES

This biological opinion analyzes the effects of the project on threatened CCC steelhead. The action area does not include any designated critical habitat for listed anadromous salmonids, so critical habitat will not be further considered in this opinion.

A. Listing Status

CCC steelhead (*Oncorhynchus mykiss*) are listed as threatened under the Federal ESA (August 18, 1997, 62 FR 43937). This Evolutionarily Significant Unit (ESU) includes steelhead in coastal California streams from the Russian River to Aptos Creek, and the drainages of San Pablo and San Francisco bays.

B. Life History and Biological Requirements

O. mykiss exhibits one of the most complex suites of life history traits of any salmonid species (NMFS 1997a). As anadromous steelhead, juveniles of the species migrate from fresh water to the ocean and return as adults to fresh water to spawn. As rainbow trout, the species resides in fresh water throughout its lifetime. Only the anadromous forms of CCC steelhead are listed as a threatened species. Typically, juvenile steelhead will spend one to three years rearing in fresh water before migrating to the ocean (Busby *et al.* 1996). Most steelhead will then spend two to three years in the ocean before returning to their natal streams to spawn. In contrast to other species of the *Oncorhynchus* genus, steelhead may spawn more than once before dying.

Winter steelhead enter rivers and streams in the late fall and winter months, when higher flows and associated lower water temperatures occur. Spawning takes place from December through April, peaking in January and February (Fukushima and Lesh 1998). Steelhead spawn in cool, clear streams featuring suitable water depth, gravel size, and current velocity. Intermittent streams may be used for spawning (Everest 1973, Barnhart 1986). The length of the incubation period for steelhead eggs is dependent on water temperature.

Fry emerge from the gravel, and rear along the stream margins, moving gradually into pools and riffles as they grow larger. Older fry establish and defend territories. The period of highest mortality for juvenile anadromous salmonids usually occurs in the first few months as the population achieves equilibrium with carrying capacity (Murphy and Meehan 1991). In-stream cover such as water depth and turbulence, overhanging riparian vegetation, undercut banks, woody debris, large-particle substrates, and aquatic vegetation has been correlated with fish distribution and abundance (Bjornn and Reiser 1991). In general, diverse stream habitats consisting of shallow riffles and pools with well-developed cover are important factors in maintaining optimal steelhead habitat (Leidy 2000b).

Environmental variables including water temperature, dissolved oxygen levels, and suspended and deposited fine sediments have important physiological and behavioral effects on steelhead during the freshwater rearing period. In many streams of the Central California coast, water temperatures during the summer rearing phase may be limiting for steelhead. Bjornn and Reiser (1991) report optimal temperatures for steelhead rearing range from 54 degrees Fahrenheit (°F) to 64°F, with an upper lethal temperature of approximately 77°F. Due to the need for cool temperatures, food supplies, relatively low turbidity, and adequate dissolved oxygen levels, stream baseflows during summer and early fall are crucial to steelhead rearing success. In California, juveniles usually live in freshwater for two years (Barnhart 1986) – with a range of one to three years (Shapavalov and Taft 1954) – then smoltify and migrate to the sea.

Most downstream smolt migration takes place between February and June. Fukushima and Lesh (1998) report the peak timing of steelhead smolt outmigration in Central California occurs in March, April, and May, while Barnhart (1986) reports most steelhead smolts in California enter the sea in March and April. In creeks where the temperatures are higher and flow conditions lower, the duration of the smolt migration season may be compressed into a shorter period (Bill Cox, California Department of Fish and Game, pers. comm., October 2000). Smolt size varies both annually and according to age (Shapavalov and Taft 1954), and is typically in the range of 130-250 millimeters (mm) (Moyle 1976). Smolts that attain a relatively large size (150-250 mm) before migrating are less vulnerable to predation in the ocean (Meehan and Bjornn 1991).

C. Population Trends

In this biological opinion, NOAA Fisheries assesses the status of a species by examining four types of information, all of which help in understanding a population's ability to survive. These population viability parameters are: abundance, growth rate and trends, spatial structure, and diversity (McElhaney *et al.* 2000). While there is insufficient information to evaluate these population viability parameters for the CCC steelhead ESU in a quantitative sense, NOAA Fisheries has used existing information to determine the general condition of each population. Factors responsible for the current status of the ESU are also described.

While the exact number of steelhead in the CCC ESU is not known, their abundance is known to be substantially reduced from historical levels. The CCC steelhead ESU has declined precipitously, from an estimated 94,000 returning adults in the 1960s to estimates of less than 5,350 in recent times (Busby *et al.*1996, NOAA Fisheries 1997). These numbers indicate roughly a 94 percent decline in the population of steelhead spawning in the ESU. Recent estimates for the Russian River are on the order of 7,000 fish, including hatchery fish (NOAA Fisheries 1997). Abundance estimates for smaller coastal streams in the ESU indicate low but stable levels (NOAA Fisheries 1997), with several streams (Lagunitas Creek, Waddell Creek, Scott Creek, San Vincente Creek, Soquel Creek, and Aptos Creek) having individual run sizes of 500 fish or less (62 FR 43937). Absent information indicating an upward trend in numbers ESU-wide, NOAA Fisheries assumes that the overall ESU growth rate continues to be negative. (For more detailed information on the population trend of CCC steelhead, see Busby *et al.* 1996, NOAA Fisheries 1997, and NOAA Fisheries 2003).

CCC steelhead have maintained a wide distribution throughout the ESU. Presence/absence data show that in a subset of streams sampled in the CCC ESU, most contain steelhead (NOAA Fisheries 1997). Of streams in the ESU for which there is current presence/absence data on steelhead, 218 of 264 streams currently support some juveniles (including the Russian River). Species with broad distributions are more likely to survive environmental fluctuations and stochastic events, even if they suffer local extirpation (Pimm *et al.* 1988). Local extirpation may still increase the risk of extinction, as the distribution of the species has now been decreased. Many streams in and around the San Francisco Bay region no longer support steelhead, indicating that the distribution of the species has contracted.

The interbasin transfer of hatchery steelhead has persisted in various locations and at various times within the CCC steelhead ESU (NOAA Fisheries 1997). This has likely affected the genetic composition of existing stocks. Although some genetic research is being done on CCC steelhead, little information is available to assess the overall diversity of the species.

While CCC steelhead have experienced significant declines in abundance, and long-term population trends suggest a negative growth rate, they have maintained a wide distribution throughout the ESU. This suggests that, while there are significant threats to the population, CCC steelhead possess some continued resilience to environmental fluctuations and human caused perturbations. Nevertheless, in the recent document titled *Preliminary conclusions regarding the updated status of listed ESUs of West Coast salmon and steelhead*, the biological review team concluded that steelhead in the CCC steelhead ESU remain likely to become endangered in the foreseeable future (NOAA Fisheries 2003).

D. Factors Affecting the Species

The factors presenting risks to naturally reproducing CCC steelhead are numerous and varied. A number of documents have addressed the history of human activities, current environmental conditions, and factors contributing to the decline of steelhead listed under the ESA. For example, NOAA Fisheries has prepared a range-wide status review for West Coast steelhead (Busby *et al.* 1996). Additional information is available in Federal Register notices announcing steelhead listing proposals and determinations (August 9, 1996, 61 FR 41541; August 18, 1997, 62 FR 43937; March 19, 1998, 63 FR 13347; February 9, 1999, 64 FR 5740; February 16, 2000, 65 FR 7764). The July 2000 Programmatic Environmental Impact Statement/Report for the CALFED Bay-Delta Program (CALFED 2000) and the October 1999 Programmatic Environmental Impact Statement for the Central Valley Project Improvement Act (DOI 1999) provide excellent summaries of historical and recent environmental conditions for steelhead in the Central Valley, Delta, and San Francisco Bay.

Among the most serious and ongoing threats to the survival of this ESU are changes to natural hydrology, and habitat degradation and loss. The following discussion provides an overview of the types of activities and conditions that adversely affect steelhead in California watersheds.

1. Habitat Degradation and Destruction

A major cause of the decline of steelhead is the loss or severe decrease in quality and function of essential freshwater habitat. Most of this habitat loss and degradation has resulted from anthropogenic watershed disturbances caused by logging, urban development, water diversion, road construction, erosion and flood control, and dam building. Most of this habitat degradation is associated with the loss of essential habitat components necessary for steelhead survival. For example, the loss of deep pool habitat as a result of sedimentation and stream flow reductions has reduced rearing and holding habitat for juvenile and adult salmonids.

Depletion and storage of natural flows have drastically altered natural hydrological cycles in many central California rivers and streams. Alteration of streamflows has increased juvenile salmonid mortality for a variety of reasons: migration delay resulting from insufficient flows or habitat blockages; loss of usable habitat due to dewatering and blockage; stranding of fish resulting from rapid flow fluctuations; entrainment of juveniles into unscreened or poorly screened diversions; and increased juvenile mortality resulting from increased water temperatures (Berggren and Filardo 1993, Chapman and Bjornn 1969, 61 FR 56138).

2. Artificial Propagation

Releasing large numbers of hatchery fish can pose a threat to wild steelhead stocks through genetic impacts, competition for food and other resources, predation of hatchery fish on wild fish, and increased fishing pressure on wild stocks as a result of hatchery production (Waples 1991). The genetic impacts of artificial propagation programs are primarily caused by the straying of hatchery fish and the subsequent hybridization of hatchery and wild fish. Artificial propagation threatens the genetic integrity, and diversity that protects overall productivity against changes in environment (61 FR 56138). The potential adverse impacts of artificial propagation programs are well documented (reviewed in Waples 1991, National Research Council 1995, National Research Council 1996, Waples 1999).

3. Harvest

There are few good historical accounts of the abundance of steelhead harvested along the California coast (Jensen and Startzell 1967). Early records did not contain quantitative data by species until the early 1950s. In addition, the confounding effects of habitat deterioration, drought, and poor ocean conditions on steelhead survival make it difficult to assess the degree to which recreational and commercial harvest have contributed to the species' overall decline in California rivers.

4. Natural Stochastic Events

Natural events such as droughts, landslides, floods, and other catastrophes have adversely affected salmon and steelhead populations throughout their evolutionary history. The effects of these events are now oftentimes exacerbated by multiple anthropogenic changes to watersheds such as water diversion and channelization. The ability of species to rebound from natural stochastic events is now likely limited as a result of these and other existing anthropogenic factors or depressed populations.

Variability in ocean productivity has been shown to affect salmonid production both positively and negatively. Beamish and Bouillion (1993) showed a strong correlation between North Pacific salmon production from 1925 to 1989 and their marine environment. Beamish *et al.* (1997) noted decadal-scale changes in the production of Fraser River sockeye salmon that they attributed to changes in the productivity of the marine environment. Johnson (1988) noted increased adult mortality and decreased average size for Oregon's Chinook and coho salmon during the strong 1982-83 El Niño event. It is unclear to what extent ocean conditions have played a role in the decline of steelhead. However, ocean conditions have likely affected populations throughout their evolutionary history.

E. Status of the Species and Habitat in Codornices Creek

Codornices Creek is a small perennial stream that drains approximately 1.5 square miles of the Berkeley Hills on the east side of San Francisco Bay, opposite the Golden Gate. The watershed extends from the 1,340-foot crest of the Berkeley Hills to the Bay near the Golden Gate Fields horse racing track. Tidal influence extends from the Bay to the I-80 crossing, but does not reach as far upstream as the project site. The climate of the region is Mediterranean, with over 90 percent of annual precipitation occurring between November and April. Cool, moist fog frequently inundates the watershed's land area during the months of May through September, creating a localized temperature differential from nearby areas that are not as affected by fog. Land use in the watershed is nearly entirely urban, with high-density residential and a few commercial areas predominating upstream of San Pablo Avenue and a mix of industrial, dense residential, and small urban parks found from San Pablo Avenue to San Francisco Bay.

The Codornices Creek watershed was converted from its former natural state to urban uses in the late 1800s and early 1900s, and remains highly modified and impacted today. The amount of impermeable surface area in the watershed has affected natural retention of rainfall and increased the stream's runoff efficiency and peak flows. To protect adjacent property from flooding, and in reaction to likely downcutting of the channel resulting from increased runoff, armoring and culverting of the streambed and stream banks has occurred in many areas. Numerous culverts up to 500 feet in length and long, open concrete sections characterize much of Codornices Creek, creating a series of partial or complete velocity and depth barriers to fish passage.

Even with these substantial alterations to the natural stream system, Codornices Creek remains the least culverted stream in the Cities of Albany and Berkeley, and is accessible to and provides suitable habitat for steelhead entering the stream from the Bay. Coats (2003, cited in Hagar 2004) measured stream temperatures in the action area between February and September 2001, finding a Maximum Weekly Average Temperature (MWAT) of 61°F, within the optimum range for juvenile steelhead. Kier Associates (2003) also measured temperatures, finding slightly warmer conditions during their 2003 work than Coats had in 2001, but with the MWAT never exceeding 66°F.

NOAA Fisheries has completed one previous interagency consultation under section 7 of the ESA for a project on Codornices Creek. In August 2002, technical assistance was provided to the Congregation Beth El in the City of Berkeley for bank stabilization and habitat restoration associated with construction of a building along the stream at Oxford Street upstream of the action area. Due to impassible barriers, steelhead were not believed to be present at the project location, and the project was determined not to affect steelhead or their habitat.

In 1981, Leidy (1984) surveyed Codornices Creek and found no steelhead, as did Rich in 1989 (Rich 1990). However, since the time of those surveys, steelhead appear to have recolonized the stream and established a small reproducing population. Jennings (2001) conducted visual surveys in the summer of 2001, and observed an estimated 150 juvenile steelhead between the UPRR tracks and San Pablo Avenue, with an estimated range in length from 1.5 to eight inches. He suggested that a run of six to 12 adult steelhead is likely present in Codornices Creek. Kier Associates (2003) operated a downstream migrant trap just upstream of Eighth Street in the spring of 2002 and 2003. A total of 33 steelhead were captured in 2002, and a total of 22 captured in 2003. Fork lengths measured on these fish were mostly less than 75 mm, consistent with young-of-the year juveniles. A few fish larger than 105 mm -- three in 2002 and five in 2003 -- were also captured, but observations of smoltification on these fish were not made and it is not known whether they were downstream migrating smolts, two- to three-year old juveniles, or resident rainbow trout.

IV. ENVIRONMENTAL BASELINE

The environmental baseline is an analysis of the effects of past and ongoing human and natural factors leading to the current status of the species, its habitat, and the ecosystem in the action area. The environmental baseline includes the past and present impacts of all Federal, State, or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action area that have already undergone formal or early section 7 consultation, and the impact of State or private actions which are contemporaneous with the consultation in process (50 CFR §402.02). The environmental baseline establishes the base condition for the natural resources, human usage, and species status in the action area which is used to evaluate the effects of the proposed action.

A. Environmental Setting in the Action Area

The action area is part of a highly impacted urban stream corridor containing small sections of fair to good quality riparian habitat. Throughout its length, including the action area, Codornices Creek has been affected by more than 100 years of human activities consistent with the intensive urbanization that characterizes the lower portions of the Cities of Berkeley and Albany. Squeezed between the various industrial and commercial uses of its stream banks and floodplain for many decades, the action area of Codornices Creek has been channelized, straightened, and placed in concrete culverts, with much of its riparian vegetation removed. Natural hydrology and water quality have been affected by these land uses (Hagar 2004). Although there is no long-term flow record for Codornices Creek, summer base flow on Codornices Creek in 2001 remained between 0.1 and 0.5 cfs (Coats 2003, as cited in Hagar 2004), providing continuous flow that can maintain rearing conditions for juvenile steelhead in pools in, and upstream of, the action area throughout the summer and fall months.

Several researchers have observed that pockets of good quality riparian habitat exist in the lower reaches of Codornices Creek, including the action area. In 2000, Rich noted that habitat quality for fish had improved in Codornices Creek, including in the action area, since her first survey there in 1989 (Rich 1990). Rich found areas of alternating pools and riffles and gravel substrate suitable for steelhead spawning (Rich 2000). Jennings (2001) noted that most of the stream between the marsh lagoon at the Bay and San Pablo Avenue (the action area) was shaded with vegetative cover, including native willows, oaks, and cattails. Pools greater than three feet in depth were present, and non-native predatory fish common to many urbanized stream systems appeared not to be a problem in this stream. Recent and proposed restoration projects on Codornices Creek are improving on and expanding the remnant areas of quality riparian habitat found in the action area, building public awareness of the stream's value for steelhead and providing the impetus for additional restoration projects.

B. Status of Steelhead in the Action Area

The action area provides suitable habitat for all life stages of steelhead and/or resident rainbow trout including spawning, juvenile rearing and emigration, and migration of adults and rearing juveniles to reaches further upstream (Hagar 2004). Despite the high degree of habitat modification and degradation in Codornices Creek, steelhead are known to occupy parts of the creek in the action area and as far upstream as Albina Avenue (Rich and Associates 2000, Jennings 2001, Kier Associates 2003). As noted above, Jennings (2001) conducted visual surveys and observed an estimated 150 juvenile steelhead in the action area between the UPRR tracks and San Pablo Avenue, with an estimated range in length from 1.5 to eight inches. Kier Associates (2003) operated a downstream migrant trap in the action area as described above, capturing 33 steelhead in 2002, and a total of 22 in 2003.

C. Factors Affecting Environment within the Action Area

Steelhead habitat in the action area has been affected by a broad range of activities occurring since development of the watershed began in the late 1800s, including residential, industrial, and commercial development; channelization and bank armoring; contamination of sites in the lower watershed, removal of riparian vegetation, and more. These activities have adversely affected the proper functioning condition of spawning, rearing, and migratory habitat in Codornices Creek.

Within the action area, culverts at Fifth Street, Eighth Street, and San Pablo Avenue have been identified as partial fish passage barriers due to excessive stream velocities or insufficient depth (Far West Restoration Engineering 2003). Altogether, the stream flows through seven culverts in the action area, none of which are believed to block passage under all flow conditions. These culverts, however, may impede passage for adults and juveniles, under some flow conditions, and they exacerbate flooding in the project area (Design, Community and Environment 2004).

In addition to fish passage barriers, other channel conditions in lower Codornices Creek have adversely affected steelhead habitat in the action area. The creek has been straightened and constrained by the use of extended sections of poured and sacked concrete. This has caused areas of headcutting, bank erosion, and subsequent sediment deposition to develop in several locations. In particular, sediment deposition upstream of Fifth Street, likely due to the undersized culvert under the street crossing at this location, has caused an increase in the streambed elevation adjacent to the entrance to the bypass into Village Creek. As a result, this bypass receives stream flows more frequently and presents an increased risk of stranding to fish drawn into Village Creek.

Throughout the action area, natural stream sinuousity has been reduced, leading to further channel degradation and continuing a cycle of geomorphic conditions that until recently has been addressed with more bank and streambed armoring. Steelhead habitat has consequently been reduced, with loss of pool and riffle habitat and gravel substrate, increased stream temperatures, and decreased food availability and water quality (Hagar 2004).

Since the late 1990s, restoration activities conducted by the Cities of Albany and Berkeley have begun to improve habitat conditions in small areas of the watershed, including a portion of the action area. The currently proposed project is designed to continue the positive trend established by these initial habitat improvements and build support for further restoration activities in the future.

D. Related Construction Projects within the Action Area

Three related projects have been or are expected to be proposed in the action area: the UPRR Bridge 7.29 Replacement Project, for which a Corps permit has been requested by UPRR; construction of a new Target retail outlet, currently underway at a site along Codornices Creek between the UPRR bridge and I-80, for which a Corps permit allowing sediment removal from approximately 100 linear feet of the stream channel is expected to be requested in the near future; and the Village Creek Project, which, while proposed as a separate project, has been coordinated with the Lower Codornices Creek Improvements Project. The Corps anticipates conducting interagency consultation with NOAA Fisheries under section 7 of the ESA for the UPRR and Target projects (Andrew Muss, U.S. Army Corps of Engineers, personal communication, June 2004). The Corps, NOAA Fisheries and other Federal and state regulatory agencies are engaged in discussions with UPRR, Target, and the City of Albany in an attempt to coordinate these projects and minimize their impacts, particularly in regard to stream diversion and dewatering activities.

V. EFFECTS OF THE ACTION

The purpose of this section is to identify the direct and indirect effects of the proposed action on threatened CCC steelhead. Effects of the project associated with construction activities include: (1) fish collection and relocation; (2) entrapment of fish in areas to be dewatered between cofferdams; (3) exposure to increased levels of stream turbidity; and (4) loss of cover and shade provided by riparian vegetation removed as part of channel and bank grading, channel re-contouring, and other activities. Longer term benefits from the project will accrue to CCC steelhead from restoration of the degraded, channelized stream within the action area to a more natural state, characterized by a sinuous channel, diverse native aquatic and riparian habitat, and adequate fish passage conditions conducive to a healthy steelhead population.

A. Short-Term Effects Related to Project Construction

Project implementation will require dewatering of the creek channel and diversion of stream flow in order to accommodate heavy machinery excavating and re-contouring the channel, streambanks and floodplain, removing culverts, and placing instream habitat enhancement structures. Suitable habitat for steelhead will temporarily be lost, and juvenile steelhead and other native fish will need to be captured and relocated upstream of the action area. Soil will be exposed by the excavating and grading activities, and existing riparian vegetation will be removed. Approximately 0.5 miles of the 1.8 miles of stream habitat in Codornices Creek presently known to support steelhead will be affected by these actions.

1. Dewatering and Diversion of Stream Flow

The City of Albany proposes to divert Codornices Creek stream flow around the Phase 1 and Phase 2 work areas, respectively, during construction in 2004 and 2005, and dewater the work sites. For Phase 1 stream diversion, cofferdams will be erected at Sixth and Fifth Streets, and pumps installed to send stream flow into a diversion pipe. The pipe will drain into a sediment trap placed in the channel immediately upstream of the UPRR bridge. Phase 2 stream diversion will require the erection of cofferdams and pumps at San Pablo Avenue and Eighth Street, with the diversion pipe emptying into a sediment trap placed in the channel immediately downstream of Sixth Avenue. Conditions for fish passage will not be provided through the diversion system because habitat downstream of the UPRR bridge is not believed to be suitable for steelhead rearing, and because smolts are not expected to be outmigrating from the stream during the proposed June 15-October 15 work period.

Prior to dewatering, native fish will be collected and moved from the work area with nets and electrofishing gear. Collected fish will be relocated upstream of the action area in suitable habitat in order to avoid their interaction with construction equipment. A qualified fish biologist will conduct the relocation work based on current standards of care for fish collection, transport, and release. Repeated electrofishing passes will be made for each reach to be dewatered, in order to ensure that as many fish as possible are captured and relocated. The City of Albany expects that at least 90 percent of fish present will be collected (Hagar 2004). Consequently, some fish may not be captured during the electrofishing activities. Because these fish would likely be lost during dewatering and subsequent construction activity, visual surveys will be made by the on-site fish biologist to locate and rescue any fish remaining in the stream after electrofishing is completed.

Any fish collecting techniques, whether passive (Hubert 1983) or active (Hayes 1983), have some associated risk to the fish, including stress from handling and transport, disease transmission, injury, or death. Electrofishing is of particular concern. Electrofishing can kill both juvenile and adult fish, and researchers have found serious sublethal effects including spinal injuries (Reynolds 1983, Zeigenfuss 1995, Habera *et al.* 1996, Nielsen 1998, Habera *et al.* 1999, Nordwall 1999, Sharber and Carothers 1988). Estimates of non-lethal spinal and hemorrhagic injury rates resulting from electrofishing range from zero to 23 % (Hollender and Carline 1994, Habera *et al.* 1996, Kocovsky *et al.* 1997). An average 5 % injury rate has been suggested for steelhead in tributaries of the Yakima River in Washington (McMichael *et al.* 1998).

The injury rate for juvenile steelhead relocated in this project is likely to be low, however, because smaller fish (250 mm or less in length) have less risk of injury from electrofishing than do larger adult fish (Hollender and Carline 1994, Dalby, McMahon, and Fredenberg 1996, McMichael *et al.* 1998), and no adult steelhead are expected to be encountered in the work area during the proposed construction season. Based on previous NOAA Fisheries experience with these types of fish relocation projects, it is expected that less than 3% of the fish captured and relocated will be injured or killed.

Using the best available estimate of the number of juvenile steelhead expected to be found in the action area prior to dewatering, up to 150 juvenile steelhead may be affected by construction in 2004, and an equal or slightly lower number in 2005. No adult salmonids are expected to be encountered during construction activities. Assuming a 90 percent capture rate, 15 fish will remain in the area to be dewatered following initial collection. Approximately five of those steelhead can be expected to be captured and relocated during follow-up netting, leaving an estimated 10 juvenile steelhead in the work area. These fish will not survive dewatering and construction activities. An additional 3% of the fish collected by electrofishing and follow-up netting can be expected to suffer some form of injury or mortality during capture and relocation, resulting in the loss of four juvenile steelhead from these activities. In sum, an estimated 14 steelhead may be harmed due to project construction in each of the years 2004 and 2005, resulting in take of no more than 28 juvenile steelhead during the full construction period.

2. <u>Construction Activities</u>

Heavy equipment will operate in the river channel and in dewatered areas, altering the characteristics of the stream channel through disturbance and substrate compaction. Although measures have been developed to avoid spill of contaminants, there is a low risk of equipment fluid leakage contaminating the streambed. Stream bank sediments mobilized during construction may temporarily increase turbidity once streamflow is restored to the channel. These activities present a small level of risk to steelhead habitat, but this risk will be minimized by the project's proposed conservation measures, and steelhead are not expected to be adversely affected.

Following construction and the onset of winter rains, soil exposed during construction will be subject to erosion if not adequately protected from rainfall and stream flow, creating a risk that sediment will be introduced into Codornices Creek. If this occurs to a significant degree, increased turbidity and degraded gravel substrates could result, affecting conditions for steelhead spawning and rearing. To prevent erosion from occurring, grade control, and bioengineering erosion control treatments will be installed as part of the channel and floodplain grading, and re-contouring. These treatments will include the installation of small rock weirs, root wads, and large woody debris structures in the channel; placement of erosion control fabric mats, rolls, and fencing on the re-graded streambanks; hydroseeding of exposed areas; and planting of native shrub and tree species to re-establish vegetative cover of the streambanks. In addition, stream gravels collected at the commencement of work will be replaced in the channel following each work season in order to provide substrate for adult and juvenile steelhead. Finally, the potential impacts associated with dewatered work areas, including increased sedimentation and/or contamination of the stream channel, are expected to be avoided and minimized with proper implementation of the project's conservation measures. Specifically, the Storm Water Pollution Prevention Plan, Toxic Materials Control and Spill Response Plan, and project Best Management Practices (BMPs) are designed to avoid and minimize sediment and toxic material inputs to the stream channel. These measures are expected to prevent adverse affects to steelhead.

3. <u>Loss of Cover and Shade</u>

During the construction period, there will be no instream habitat for steelhead in the work area. Although existing native vegetation will be preserved where possible, grading and recontouring of the channel and other activities will require the removal of mature and immature riparian species now providing cover and shade along Codornices Creek. Planting of native riparian trees and shrubs along the full length of the work area is a key component of the proposed project. However, varying amounts of time will be required for re-establishment of riparian vegetation and associated aquatic biota, depending on location and the species planted. Before riparian functions can be re-established to a significant degree, habitat in restored areas will be limited, and will probably not support full stream productivity for several years. Habitat enhancement features placed in the stream, including large woody debris, boulders, and rock weirs, will provide some replacement cover in the short-term. It is not known how juvenile steelhead will be affected by these habitat changes, but in some areas, small negative effects from predation, stream temperature increase and/or limited food availability during the first one or two years prior to significant vegetation re-growth are possible. At other sites, juvenile steelhead may benefit from improved habitat conditions relative to the former degraded, channelized stream.

B. Long-Term Effects

Long-term effects of the project are expected to be positive and to provide an overall benefit to the steelhead population in Codornices Creek. Significant habitat improvements will be made by removing culverts at Fourth, Fifth, and Tenth Streets, which are undersized relative to natural channel capacity and expected flood flows. Though these culverts have not been analyzed to assess the degree to which they impede fish passage, their removal is expected to result in lowered stream velocities and improved water depths, and reduced bank erosion and channel incision. Sediment transport through the project area is also anticipated to improve once these structures no longer impede stream flow and cause ponding of water on their upstream sides (Hagar 2004). The combination of increased channel sinuousity and installation of instream habitat enhancement structures is expected to improve riffle and pool formation and provide for better gravel retention on the channel bottom. These changes will increase the available spawning and rearing habitat for steelhead. Enhancement of the riparian canopy through the planting of native tree and shrub species will provide shade, cover, and new sources of nutrient input to the stream. Once established, the roots of planted vegetation will contribute to improved bank stability and decreased sedimentation in the stream from bank erosion.

No detrimental long-term effects are expected from the project except for the possibility that harassment of steelhead will occur once improved public access to the stream banks is provided with construction of the bicycle/pedestrian pathway. However, with appropriate signs placed along the path following construction, and the improved public awareness of the steelhead resource in Codornices Creek that is anticipated from this stream habitat restoration project, harassment or poaching is not expected to present a significant risk to adult or juvenile fish.

C. Interrelated Actions

An interrelated action is an action that is part of a larger action and depends on the larger action for its justification (50 CFR 402.02). Construction of Phases 1 and 2 of the Lower Codornices Creek Improvements Project is dependent on work proposed as part of the University of California's University Village Project, occurring immediately adjacent to the Codornices Creek stream corridor. Existing dilapidated housing will be removed and ballfields relocated in order to provide a wider right of way for stream restoration. A Clean Water Act section 404 permit was not required for these actions by the Corps, and they are not expected to have any adverse effects on steelhead or steelhead habitat. However, their completion will facilitate floodplain expansion and restoration of the stream meander and riparian vegetation that is proposed in the Lower Codornices Creek Improvements Project.

IV. CUMULATIVE EFFECTS

Cumulative effects are defined in 50 CFR§ 402.02 as "those effects of future state or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation." Few actions lacking a Federal nexus that may affect the action area in the future are anticipated to occur at this time. Projects that do occur with potential cumulative effects as defined under 50 CFR§ 402.02 will likely consist of upland construction. Some additional input of contaminants may occur from the increased surface water runoff and non-point source pollution these types of projects may generate. However, proposed projects with potential stormwater runoff effects in the Cities of Albany and Berkeley must conform with the Alameda Countywide Clean Water Program. These standards are expected to reduce impacts to water quality and riparian habitat. Other, generalized effects from increased population growth and urbanization are expected to be limited due to the highly developed nature of the Albany-Berkeley area.

VII. INTEGRATION AND SYNTHESIS OF EFFECTS

The project's purpose is to restore and enhance riparian habitat and stream functions in and along Codornices Creek. Once the planted riparian vegetation becomes established, steelhead utilizing the action area for spawning, rearing, and migration will benefit from improved shade, cover, and habitat complexity, and increased food production potential generated by diverse native riparian vegetation. Fish passage conditions will be improved by culvert removal at Fourth, Fifth, and Tenth Streets. Rearing steelhead will benefit from restoration of a more natural channel, as well as better pool and riffle conditions anticipated to develop as a result of the habitat enhancement structures placed in the stream.

Construction of the project is likely to adversely affect steelhead and steelhead habitat. However, conservation measures included in the project proposal avoid and minimize potential impacts associated with degraded water quality, loss of riparian vegetation, and other effects of construction activities. Direct mortality and injury of steelhead during project construction is expected to be minimal due to the project's limited, two-year construction period, the timing of the proposed work, measures designed to minimize and mitigate construction impacts, and a program designed to capture and relocate fish out of the work area. NOAA Fisheries anticipates that these actions will be adequate to ensure a low level of injury or mortality to steelhead.

With the proposed impact conservation measures, the effects of the project are expected to result in minimal adverse effects to threatened CCC steelhead. The loss 28 or fewer juvenile steelhead from the action area is not expected to appreciably reduce the number, distribution, or reproduction of CCC steelhead in Codornices Creek in future years. Any fish lost are likely to be replaced from upstream spawning and rearing in subsequent years. Increased habitat value in the action area and improved fish passage upstream is expected to support additional spawning and rearing in future years, providing an opportunity for the Codornices Creek population to increase its numbers. Accordingly, the proposed project is not anticipated to appreciably reduce the likelihood of the survival and recovery of the steelhead population in Codornices Creek or the survival and recovery of the CCC steelhead ESU.

VIII. CONCLUSION

After reviewing the current status of the CCC steelhead, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is NOAA Fisheries' biological opinion that the proposed Lower Codornices Creek Improvements Project is not likely to jeopardize the continued existence of threatened CCC steelhead.

IX. INCIDENTAL TAKE STATEMENT

Section 9 of the ESA and Federal regulation pursuant to section 4(d) of the ESA prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined by NOAA Fisheries as an act which actually kills or injures fish or wildlife. Such an act may include significant habitat modification or degradation which actually kills or injures fish or wildlife by significantly impairing essential behavioral patterns, including breeding, spawning, rearing, migrating, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the ESA provided that such taking is in compliance with the terms and conditions of this incidental take statement.

The measures described below are nondiscretionary, and must be undertaken by the Corps for the exemption in section 7(o)(2) to apply. The Corps has a continuing duty to regulate the activity covered by this incidental take statement. If the Corps (1) fails to assume and implement the terms and conditions or (2) fails to require its designees to adhere to the terms and conditions of the incidental take statement, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, the Corps must report the progress of the actions and its impact on the species to NOAA Fisheries as specified in the incidental take statement (50 CFR §402.14(I)(3)).

A. Amount or Extent of Take

NOAA Fisheries anticipates that take associated with the Lower Codornices Creek Improvements Project will be in the form of mortality and injury to juvenile steelhead through temporary impacts from dewatering, fish capture and relocation, and construction activities. Lethal take may occur during the fish relocation activities and dewatering of work sites prior to construction. Injury or mortality of up to 28 juvenile steelhead is anticipated to occur during project construction in 2004 and 2005.

B. Effect of the Take

In the accompanying biological opinion, NOAA Fisheries has determined that the anticipated take is not likely to result in jeopardy to CCC steelhead.

C. Reasonable and Prudent Measures

NOAA Fisheries believes that the following reasonable and prudent measures are necessary and appropriate to minimize impacts of incidental take of CCC steelhead:

1. Measures shall be taken to reduce and monitor impacts to steelhead and their habitat associated with stream diversion, dewatering, and fish relocation activities.

2. Measures shall be taken to ensure that instream habitat enhancement structures do not impede fish passage through the action area.

D. Terms and Conditions

The Corps and its permittee, the City of Albany, must comply with the following terms and conditions, which implement the reasonable and prudent measures described above and define the reporting and monitoring requirements. These terms and conditions are non-discretionary.

1. Measures shall be taken to reduce and monitor impacts to steelhead and their habitat associated with stream diversion, dewatering, and fish relocation activities.

1a. Fill material for cofferdams will be fully confined with the use of plastic sheeting, sheetpiles, sandbags, or with other non-porous containment methods, such that sediment does not come in contact with tidal or stream flows and increase turbidity. Alternatively, clean gravel or clean crushed stone may be used without plastic sheeting, sandbags, *etc.*

1b. All pumps used to divert live stream flow will be screened and maintained throughout the construction period to comply with NOAA Fisheries' Fish Screening Criteria for Anadromous Salmonids.

1c. A qualified fisheries biologist shall be on-site to collect and relocate native fish before and during the installation of all cofferdams, bypass pipes or channels, diversion dams, or other facilities designed to dewater or divert stream flows at project work areas.

1d. Fish capture and relocation activities must be completed before 11:00 a.m. each day to minimize risks from thermal impacts. Fish rescue may continue past 11:00 a.m. if the weather is unusually cool due to foggy or cloudy weather.

1e. In order to monitor the impact of incidental take associated with fish relocation activities, the Corps or the project applicant must submit a report to NOAA Fisheries' Santa Rosa Office not later than November 15 of each year in which work is conducted. The report shall include the results and any incidental take that occurred during implementation of the project that included fish relocation. The report shall include: (1) the results of fish capture and relocation operations and names and qualifications of biologists who completed them; (2) any relevant information regarding fish injuries or mortalities; (3) extent of the area dewatered and duration of dewatering; and (4) water and air temperatures taken at the beginning and end of each fish relocation effort. The report shall be sent to:

NOAA Fisheries
Protected Resources Division
San Francisco Bay Team Leader
777 Sonoma Avenue, Room 325
Santa Rosa, California 95404

1f. NOAA Fisheries' San Francisco Bay Team Leader (707-575-6060) shall be contacted within 24 hours if steelhead mortality rates exceed 5% during the fish capture and relocation operation. In addition, NOAA Fisheries shall be contacted within 24 hours if one or more steelhead are injured or killed during any other activities related to the project. The purpose of the contact shall be to review the activities resulting in injury and mortality and to determine if additional protective measures are required.

1g. If following fish capture, relocation, and dewatering, steelhead are collected or observed during construction activities in the work area, NOAA Fisheries' San Francisco Bay Team Leader shall be notified by telephone within 24 hours. All steelhead mortalities must be retained, placed in an appropriately sized whirl-pak or zip-lock bag, labeled with the date and time of collection, fork length, location of capture, and frozen as soon as possible. Frozen samples must be retained until specific instructions are provided by NOAA Fisheries.

2. Measures shall be taken to ensure that instream habitat enhancement structures do not impede fish passage through the action area.

2a. All instream habitat enhancement structures shall be monitored and measured annually for five years following construction. A copy of each year's monitoring report will be sent to NOAA Fisheries, San Francisco Bay Team Leader, 777 Sonoma Avenue, Room 325, Santa Rosa, CA 95404.

2b. The following quantitative criteria shall be used to determine if fish passage has been compromised at instream habitat enhancement structures:

1). Water depths shall equal or exceed one foot when flow is equal to or greater than 4 cfs.
2). Velocity shall be less than 5 feet per second.

3). Depth and velocity criteria shall be met for at least a continuous portion of 10 percent or 4 feet of the total wetted channel width, whichever is greater.

2c. If quantitative or qualitative monitoring of the instream habitat enhancement structures indicates that fish passage for juvenile or adult steelhead has become partially or completely blocked, NOAA Fisheries' San Francisco Bay Team Leader shall be notified by telephone within 72 hours and all necessary steps will taken to ensure that fish passage for juvenile and adult steelhead is promptly restored.

X. CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the ESA directs Federal agencies to utilize their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, or to develop information.

1. Fish passage barriers resulting from poorly designed culverts and long sections of channelized concrete are one the main problems impeding recovery of the steelhead population in Codornices Creek. Degraded riparian habitat is also of prime concern in this regard. The Lower Codornices Creek Improvements Project is a laudable effort to address these two concerns and substantially restore an important reach of steelhead spawning and rearing habitat in the stream. NOAA Fisheries is supportive of this project, and recommends that its objectives be continued in the future with additional channel restoration improvements in lower and upper Codornices Creek.

   In the project reach, undersized culverts at Sixth and Eighth Streets should be considered for removal as soon as feasible, particularly if post-project monitoring or other studies indicate that these culverts are barriers to fish passage. Upstream of the project reach, NOAA Fisheries recommends that the Cities of Albany and Berkeley work with all interested parties to develop a plan for replacing substandard culverts and other fish passage barriers. Riparian habitat restoration should be an integral part of culvert removal and other restoration projects.

2. NOAA Fisheries recommends that the City of Albany work with the Union Pacific Railroad company, California Department of Transportation, and Target Corporation to reduce flooding and restore hydraulic capacity and natural sediment transport to the reach of Codornices Creek immediately upstream of and below the UPRR bridge. Future project permitting by the City should require stream setback distances that provide for improved flood storage, hydraulic capacity, sediment transport and fish habitat in Codornices Creek.

XI. REINITIATION OF CONSULTATION

This concludes formal consultation on the proposed Lower Codornices Creek Improvements Project. As provided in 50 CFR §402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the actions has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded, (2) new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered in this opinion, (3) the action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion, or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, or expected to be exceeded, formal consultation shall be reinitiated immediately. In addition, reinitiation may be required if fish passage barriers have resulted from the instream habitat enhancement structures or performance standards for revegetated sites have not been met.

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