CALIFORNIA COASTAL COMMISSION
NORTH CENTRAL COAST DISTRICT
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Th 12b

Prepared August 7, 2007 (for August 9, 2007 hearing)

To: Coastal Commissioners and Interested Persons

From: Charles Lester, Deputy Director
Michael Endicott, North Central Coast District Supervisor
Michelle Jesperson, Coastal Program Analyst

Subject: STAFF REPORT ADDENDUM for Item Th 12b
CDP No. 2-07-2 (County of Marin Public Works Dept)

The purpose of this staff report addendum is to modify Special Conditions 2b and 2f. Modifications to Special Condition 2b will clarify actions regarding protection of nesting birds and roosting bats. After reviewing the staff report, staff ecologist John Dixon suggested that the special condition 2 be modified to include additional protections for California red-legged frog. The modifications are as follows:

DELETE THE FOLLOWING TEXT (AS SHOWN IN STRIKETHROUGH FONT) TO SPECIAL CONDITION 2b. ON PAGE 5:

b. A qualified biologist will conduct pre-construction surveys for nesting birds and roosting bats within 15 days prior to tree or vegetation removal, both in the ground, on trees, and in the marsh vegetation. All active nests shall be flagged and a non-disturbance buffer zone (between 50 and 90 feet depending on the species and type of work) shall be established around the nesting site in coordination with CDFG. ~~Nesting birds or bats may be removed if deemed appropriate by CDFG.~~

ADD THE FOLLOWING UNDERLINED TEXT TO SPECIAL CONDITION 2f. ON PAGE 6:

f. A biological monitor shall be present at the work site throughout the duration of project activities. <u>The biological monitor shall check the silt fencing daily for presence of California red-legged frogs. Frogs that may be found along the fencing shall be relocated. This monitor shall not be an employee of the contractor hired by the County of Marin for the bridge repair construction work</u>.

DELTE TEXT AS SHOWN IN STRIKETHROUGH IN SECTION IV OF FINDINGS AND DECLARATIONS:

Page 15 – Item No 2 under the heading <u>Marine Resources, Biological Resources, and ESHA</u> shall read:

2. A qualified biologist shall conduct pre-construction surveys for nesting birds and roosting bats within 15 days prior to tree or vegetation removal, both in the ground, on trees, and in the marsh vegetation. All active nests will be flagged and non-disturbance buffer zone (between 50 and 90 feet depending on the species and type of work) shall be established around the nesting site in coordination with CDFG. ~~Bats and nesting birds may be removed if deemed appropriate by CDFG.~~

ADD UNDERLINED TEXT TO SECTION IV OF FINDINGS AND DECLARATIONS:

Page 24, paragraph 2 shall read:

In the absence of site specific BO from the USFWS, Special Conditions 2 and 3 will ensure impacts to federally-listed species such as the, California freshwater shrimp, tidewater goby and CRLF will be avoided and/or minimized. These measures will also avoid impacts to the Tomales roach, foothill yellow-legged frog, and western pond turtle. Special Condition 2 incorporates the measures as described in proposed project description (Section IVA3). In addition, the biological monitor required by Special Condition 2(f.) will check the silt fencing daily for California red-legged frogs. This measure will prevent entrapment of frogs along the fence that can lead to frog desiccation or frogs being preyed upon. Also, Special Condition 2(f.) specifies that the biological monitor not be an employee of the contractor doing the construction work so as to minimize the potential for conflicting responsibilities between species protection and completion of work. Special Condition 3 requires that the project be conducted in accordance with any additional measures that may be required by the pending USFWS BO. If the measures required by the USFWS BO change any activities as proposed for this project, the applicant is required to submit an amendment request to the Executive Director in advance of taking any action pursuant to this permit application.

ADD UNDERLINED TEXT AND DELETE STRIKETHROUGH TEXT TO SECTION IV OF FINDINGS AND DECLARATIONS:

Page 25, paragraph 3 of the Analysis shall read:

In order to minimize the temporary impacts to ESHA for staging and access, construction activities will be conducted as quickly as possible, between three to five days. The applicant will conduct pre-construction surveys and establish buffer zones between construction activities and nesting locations of California clapper rail, salt marsh common yellowthroat, pallid bat, and Townsend's western big-eared bat prior to vegetation removal to avoid significant impacts to ESHA or areas adjacent to ESHA. If active bird nests are found during pre-construction surveys, no vegetation removal or any other work shall occur in the buffer zone until the young have fledged, are no longer being fed by parents, or have left the nest and will no longer be impacted by the project. ~~CDFG will be consulted and assist if relocation of bats or bird species is necessary~~. The construction areas will be bound by silt fencing and/or other appropriate erosion control devices to both eliminate discharge into the creek and also exclude potential species such as the CRLF, foothill yellow-legged frog, western pond turtle, Point Reyes mountain beaver, or Point Reyes jumping mouse from entering the construction site. Special Condition 2(f.) requires a biological monitor to check the silt fencing daily for California red-legged frogs to prevent entrapment of frogs along the fence that can lead to frog desiccation or frogs being preyed upon.

Also, Special Condition 2(f.) specifies that the biological monitor not be an employee of the contractor doing the construction work so as to minimize the potential for conflicting responsibilities between species protection and completion of work. After construction is complete, the staging area will be broadcast by hand with a native erosion control seed mix. Special Condition 1(l.) requires revegetation monitoring and reporting to the Executive Director to ensure that riparian vegetation is re-established and no additional erosion occurs from the exposed soils. A willow wall revetment will be constructed along the stream bank to both stabilize the area of the stream bank used for access and also to encourage growth of the pre-existing plant species above the wall. Finally, the proposed project will adhere to Minimization Measures of the Programmatic BO for the CRLF (Exhibit 6) and Terms and Conditions required by the CDFG 1602 Lake and Streambed Alteration Agreement (Exhibit 7) to protect against significant disruption of ESHA or significantly degrade areas adjacent to ESHA.

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Date CDP Filed:	7/19/07
49th Day:	9/6/07
180th Day:	1/15/07
Staff:	M. Jesperson-SF
Staff Report:	7/20/07
Hearing Date:	August 9, 2007

STAFF REPORT: REGULAR CALENDAR

Application:	2-07-002
Applicant:	Marin County Public Works
Project Location:	Sir Francis Drake Blvd. Bridge 104, Inverness, Marin County
Project Description:	Bridge repair consisting of placing 114 sq. ft of riprap around eastern bridge pier, excavating materials to place riprap below grade, and construction of a temporary coffer dam and a permanent 20 ft long willow wall revetment along the southeastern creek bank
Other Approvals:	1. U.S. Army Corps of Engineers Section 404 Nationwide Permit, (pending) 2. U.S. Fish and Wildlife Service, Biological Opinion (pending) 3. National Oceanic and Atmospheric Administration, National Marine Fisheries Biological Opinion No. 2006/05440 4. California Department of Fish and Game 1602 Lake and Streambed Alteration Agreement Notification No. 1600-2006-0673-3 5. Regional Water Quality Control Board, Section 401 Water Quality Certification (pending)
Substantive Project Files:	Biological Assessment and Preliminary Jurisdictional Determination for the County of Marin's Bridge Maintenance Program, Sycamore Associates, LLC 2006; Initial Study/Mitigated Negative Declaration for Marin County Department of Public Works Emergency Bridge Repairs, October 2006

SUMMARY OF STAFF RECOMMENDATION

Marin County proposes to repair the eastern pier of Bridge 104 on Sir Francis Drake Blvd in Inverness. The bridge spans Olema Creek, a tidally influenced creek that empties into Tomales Bay approximately two miles from the project area. Olema Creek is located within critical habitat designation for coho salmon and steelhead, both federally and state-listed endangered species. The creek also provides suitable habitat for other federal and/or state listed species such as the California freshwater shrimp, tidewater goby, and Tomales roach. The creek and adjacent riparian area is foraging habitat for the California Red-legged frog (CRLF), a federally-listed Threatened and California Species of Special Concern and the foothill yellow-legged frog. Suitable habitat also exists for the western pond turtle, the federally-listed endangered California clapper rail, the salt marsh common yellowthroat, the pallid bat, the Townsend's western big-eared bat, the Point Reyes Mountain Beaver, and the Point Reyes Jumping Mouse.

The bridge's eastern pier has substructure damage due to severe weather incidents that have washed away the previous riprap protection and exposed the pier footing. The County proposes to repair the eastern pier by placing 60 tons of one-ton pieces of riprap in a "U" shape around both sides and the nose of the pier, permanently impacting 114 square feet (<0.01 acre) of coastal waters. This work requires partial dewatering of the eastern side of the creek through installation of a coffer dam and temporary impacts to the stream bank and upland riparian area (approximately 942 square feet or 0.02 acres) for use as an access path and staging area during the three to five days of construction.

The project is a repair of an existing structure. As such, under Section 30610 (d) of the Coastal Act and 13252 of the Commission's regulations, the Commission is limited to a review of the repair methodology to determine that it is the least environmental damaging feasible alternative and includes all feasible mitigation measures to avoid adverse environmental impacts. The placement of riprap around the pier footing is repair that is similar in scale and design to the riprap protection that previously existed around the pier footing. In addition, the Coastal Act permits filling of coastal waters for incidental public works purposes such as this bridge repair where no feasible less environmentally damaging alternative exists and all feasible mitigation measures are provided. In this case, there are no feasible less environmental damaging alternatives to the proposed method of repair. However, proposed project construction may result in resource impacts that have not been fully mitigated. Therefore, special conditions are required to assure that all feasible mitigation measures are incorporated to avoid impacts to marine resources, water quality, threatened and endangered species, California species of special concern, and environmentally sensitive habitat areas associated with the project area.

Staff recommends approval of the proposed project with special conditions regarding: 1) construction practices, erosion control, and spill prevention; 2) avoidance and minimization of impacts to environmentally sensitive habitat areas; and 3) other necessary approvals.

STAFF NOTES:

Standard of Review

The proposed development will be performed on a bridge located over a tidally influenced creek in Marin County. This location is considered tidelands or other areas subject to the public trust. Pursuant to Section 30519 of the Coastal Act, the Coastal Commission retains jurisdiction over the review and issuance of Coastal Development Permits in these areas even though the County of Marin has a certified Local Coastal Plan. The standard of review for projects located in the Commission's original jurisdiction is Chapter 3 of the Coastal Act.

I. STAFF RECOMMENDATION

Coastal Development Permit Application 2-07-002

The staff recommends conditional approval of the permit application.

Motion:

> *I move that the Commission approve Coastal Development Permit 2-07-002 pursuant to the staff recommendation.*

Staff recommends a YES vote. Passage of this motion will result in approval of the permit as conditioned and adoption of the following resolution and findings. The motion passes only by affirmative vote of a majority of Commissioners present.

Resolution:

> *The Commission hereby approves the Coastal Development Permit and adopts the findings set forth below on grounds that the development as conditioned will be in conformity with the policies of Chapter 3 of the Coastal Act. Approval of the permit complies with the California Environmental Quality Act because either 1) feasible mitigation measures and/or alternatives have been incorporated to substantially lessen any significant adverse effects of the development on the environment, or 2) there are no further feasible mitigation measures or alternatives that would substantially lessen any significant adverse impacts of the development on the environment.*

II. STANDARD CONDITIONS: See attached Appendix A.

III. SPECIAL CONDITIONS

1. Standards for Repair Work:

   a. Armoring Rock: All new revetment material to be used shall consist of either clean quarry rock or concrete rubble materials that are free of asphalt and waste

materials. Armoring rock shall be stockpiled in the defined staging area only.

b. Fill Material: Only fill excavated from the creek bed may be used for repairs and must be free of debris (vegetation, asphalt, etc.). Excavated fill material shall be temporarily stockpiled at the staging area, outside of the creek bed and stream bank. No permanent fill shall be placed outside the repair plan area as shown in the Bridge 104 Repair and Cross Section Profiles in Exhibit 3.

c. Disposal of Excess Material and Vegetation: All construction debris and cut vegetation shall be removed from the site and disposed of only at an authorized disposal site unless it is viable for replanting. Side casting of such material or placement of any such material within Olema Creek, Lagunitas Creek, or Tomales Bay or any other coastal waters is prohibited.

f. Spill Prevention: To prevent and address spills of equipment fuels, lubricants, and similar materials, the repair work shall incorporate the following measures: (a) no equipment fueling shall occur on the site; (b) all equipment used during construction shall be free of oil and fuel leaks at all times; (c) oil absorbent booms and/or pads shall be on site at all times during project construction and deployed if necessary in the event of a spill; and (d) all spills shall be reported immediately to the appropriate public and emergency services response agencies.

h. Wet Season Work Prohibited: Bridge 104 Repair activities authorized by this permit shall only be performed during the dry season of July 1 through October 1, If necessary, the permittee can request that the Executive Director grant an extension for repair work to be performed through October 15, with written evidence from the U.S. Fish & Wildlife Service, National Marine Fisheries Service, and the California Department of Fish & Game that the extension will not pose additional adverse impacts to any biological resources in the project area.

i. No Fill in Coastal Waters: No permanent or temporary fill of coastal waters is allowed by this permit except for the required riprap and backfilling of excavated material for the scour protection.

j. Pre-construction Contractor Training: Prior to the commencement of any repair activities authorized by this permit, the permittee shall ensure that the contractor understands and agrees to observe the standards for work outlined in these Special Conditions and included as part of the permittee's coastal development permit application.

k. Erosion Control: Construction shall not commence until all temporary erosion control devices (*e.g.*, silt fences) are in place. Erosion controls shall also be used to protect and stabilize stockpiles and exposed soils to prevent movement of materials (*e.g.*, silt fences, plastic sheeting held down with rocks or sandbags over stockpiles, *etc*.). A supply of erosion control materials shall be maintained on site to facilitate a quick response to unanticipated storm events or emergencies.

Erosion control devices are considered temporary structures and shall be removed after completion of construction.

l. Post Construction Revegetation Monitoring: The permittee shall ensure that exposed soils and disturbed areas are completely revegetated and will provide an artificial source of water for these areas until late October or until the winter rains begin. The permittee shall monitor the growth of the vegetation. Within 18 months of completion of the Bridge 104 Repair, the permittee shall submit to the Executive Director a written vegetation monitoring report prepared by a qualified biologist or botanist evaluating the status of the revegetation efforts in areas impacted by construction as compared to the coverage and density of the vegetation in the surrounding undisturbed areas. If the report indicates that the staging or access areas have not been completely revegetated, the permittee shall submit to the Executive Director a revised revegetation program to achieve the objective.

2. Avoidance and Minimization of Impacts to Environmentally Sensitive Habitat Areas (ESHA):

a. A qualified biologist approved by the U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Game (CDFG) shall conduct pre-construction surveys for CRLF, foothill yellow-legged frog, western pond turtles, the Point Reyes mountain beaver and Point Reyes jumping mouse within 15 days prior to any construction-related activity, ground disturbance or bridge repair work. If found, the species shall be relocated by a qualified biologist to an area downstream of the construction area on Lagunitas Creek that provides similar habitat and at least 50 feet away from where the construction activities will occur unless the biologist determines that relocation is inappropriate.

b. A qualified biologist will conduct pre-construction surveys for nesting birds and roosting bats within 15 days prior to tree or vegetation removal, both in the ground, on trees, and in the marsh vegetation. All active nests shall be flagged and a non-disturbance buffer zone (between 50 and 90 feet depending on the species and type of work) shall be established around the nesting site in coordination with CDFG. Nesting birds or bats may be removed if deemed appropriate by CDFG.

c. A qualified biologist shall be present during the construction of any erosion control fencing or cofferdams, and prior to and during the dewatering of the creek. Any coho salmon, steelhead, tidewater goby or Tomales roach encountered in the creek shall be placed in a container filled with water from Olema Creek and relocated downstream according to the Fish Rescue Protocol (Exhibit 8). If California freshwater shrimp are found to be present, they shall be relocated downstream a minimum of 100 feet from the site on Lagunitas Creek to an area that has appropriate overhanging vegetation and undercut banks.

d. A system of coffer dams shall be erected to temporarily dewater the work area and divert the flow of the creek around it. In accordance with CDFG and National Oceanic and Atmospheric Administration (NOAA) fisheries standards, fish screens made up of 1/8" hardware cloth shall be placed above the diversion point and below the outlet of diversion for dewatering. Fish screens shall be installed prior to fish relocation or dewatering. The coffer dam shall be installed in a manner that ensures enough water will continue to move through the area to provide adequate oxygen levels for any fish that may be contained within the area. After the coffer dam has been constructed, a fisheries biologist shall seine the dewatering area multiple times before the area is dewatered. No electrofishing may be used to minimize impacts to tidewater goby. Pumping shall use screen intakes with mesh no larger than five millimeters to avoid injury to tadpoles, salmonids, or other small aquatic species that may have been missed during seining.

e. Erosion control fencing at least three feet high shall be placed between all work areas and the creek to prevent the introduction of material into waterways, to minimize sedimentation and turbidity associated with bridge repairs, and to prevent species of concern from entering the project area. Fencing shall be maintained throughout the course of bridge repair operations, and any damage or disrepair should be repaired before work can proceed.

f. A biological monitor shall be present at the work site throughout the duration of project activities.

g. All vehicles or equipment that have been stationary for more than 15 minutes anywhere in the work area must be checked by the biological monitor for the presence of CRLF or foothill yellow-legged frog prior to it moving or being moved.

h. After repair is complete, the coffer dam shall be removed so surface elevations of water impounded above the cofferdam shall not be reduced by a rate greater than one inch per hour to minimize the risk of beaching and stranding fish as the area upstream becomes dewatered.

i. Contractor education shall be conducted to inform construction crews of the resources of concern and potentially present at the site, measures required to protect them (construction boundaries, flagging, and non-disturbance buffers), reporting requirements and instructions, project biologist contact information, information sheets, and discussion of other permit conditions that must be followed during construction.

j. No heavy equipment shall operate in the live stream, except as may be necessary to construct coffer dams to divert stream flow and isolate the work site.

k. The permittee shall undertake the repair of Bridge 104 in accordance with the following protocols to ensure minimization of impacts to tidewater goby and tidewater goby proposed critical habitat:

i. Effective and appropriate erosion control devices shall be used in accordance with all repair work at all times. Any erosion control devices used are temporary and shall be removed upon completion of project activities.

ii. Any material that slips beyond the cofferdam area into the Olema Creek shall be removed to staging areas and/or hauled off site.

iii. Prior to dewatering, the netting used for seining the area must be a knotless mesh of no greater than 0.125-inch openings in the largest dimension. Netting shall be deployed in such a way that it excludes gobies from the construction area and keeps them from entering the construction zone until the placement of riprap is complete and all work within the creek channel is completed. Use of an electrofisher is not allowed. The results of fish exclusion efforts shall be reported to the USFWS, National Marine Fisheries Service, the U.S. Army Corps of Engineers, and any other relevant agencies.

l. The permittee shall undertake development for the Bridge 104 repair in accordance with the Terms and Conditions of the NOAA, National Marine Fisheries Biological Opinion No. 2006/05440 (Exhibit 5). Any proposed changes in the proposed project that do not adhere to these Terms and Conditions shall be reported to the Executive Director. No changes shall occur without a Commission amendment to this coastal development permit unless the Executive Director determines that no amendment is legally required.

m. The permittee shall conduct the Bridge 104 repair in accordance with the Minimization Measures of the Programmatic Formal Endangered Species Consultation on Issuance of Permits under Section 404 of the Clean Water Act or Authorizations under the Nationwide Permit Program for Projects that May Affect the California Red-legged frog (USFWS, 1999) (Exhibit 6). Any proposed changes in the proposed project that do not adhere to these Minimization Measures shall be reported to the Executive Director. No changes shall occur without a Commission amendment to this coastal development permit unless the Executive Director determines that no amendment is legally required.

n. The permittee shall conduct the Bridge 104 repair in accordance with the Terms and Conditions of the CDFG 1602 Lake and Streambed Alteration Agreement Notification No. 1600-2006-0673-3 for Miller Creek, San Pablo Bay, Olema Creek, Tributary Lagunitas Creek, Thence Tomales Bay, Stemple Creek, Tributary Estero San Antonio, Thence the Pacific Ocean, Marin County (Exhibit 7). Any proposed changes in the proposed project that do not adhere to these Terms and Conditions shall be reported to the Executive Director. No changes shall occur without a Commission amendment to this coastal development permit unless the Executive Director determines that no amendment is legally required.

3. Other Approvals:

a. U.S. Army Corps of Engineers (USACE) Approval. **PRIOR TO COMMENCEMENT OF DEVELOPMENT**, the permittee shall provide to the Executive Director a copy of a permit issued by the USACE, or letter of permission, or evidence that no permit or permission is required. The permittee shall inform the Executive Director of any changes to the project required by the USACE. Such changes shall not be incorporated into the project until the applicant obtains a further amendment to Coastal Development Permit No. 2-07-002, unless the Executive Director determines that no amendment is required.

b. U.S. Fish and Wildlife Service Approval. **PRIOR TO COMMENCEMENT OF DEVELOPMENT**, the permittee shall provide to the Executive Director a copy of a Biological Opinion issued by the USFWS, or letter of permission, or evidence that no biological opinion is required. The permittee shall inform the Executive Director of any changes to the project required by the USFWS. Such changes shall not be incorporated into the project until the applicant obtains a further amendment to Coastal Development Permit No. 2-07-002, unless the Executive Director determines that no amendment is required.

c. Regional Water Quality Control Board (RWQCB) Approval. **PRIOR TO COMMENCEMENT OF DEVELOPMENT**, the permittee shall provide to the Executive Director a copy of the certification issued by the RWQCB, or letter of permission, or evidence that no certification is required. The permittee shall inform the Executive Director of any changes to the project required by the RWQCB certification. Such changes shall not be incorporated into the project until the applicant obtains a further amendment to Coastal Development Permit No. 2-07-002, unless the Executive Director determines that no amendment is required.

d. State Lands Commission Approval. **PRIOR TO THE COMMENCEMENT OF DEVELOPMENT**, the permittee shall submit to the Executive Director, for review and approval, a written determination from the State Lands Commission that:

i. No State or public trust lands are involved in the development; or
ii. State or public trust lands are involved in the development and all permits required by the State Lands Commission for the approved project as conditioned by the Commission have been obtained; or
iii. State or public trust lands may be involved in the development, but pending a final determination, an agreement has been made with the State Lands Commission for the approved project as conditioned by the Commission to proceed without prejudice to that determination.

IV. FINDINGS AND DECLARATIONS

The Commission finds and declares the following:

A. Project Location, Setting, and Description

1. Location

Bridge 104 is located within a Marin County right of way on Sir Francis Drake Blvd where it crosses Olema Creek, approximately 0.3 miles west of Highway 1 and the town of Point Reyes Station (See Exhibits 1 and 2). Bridge 104 is a two-lane bridge approximately 65 feet long and 25 feet wide that is supported mid-span by two concrete wall pylons/piers.

2. Setting

At the location of the project, Olema Creek is tidally influenced, flowing northwest less than 150 feet until it meets Lagunitas Creek. From its confluence with Olema Creek, Lagunitas Creek flows about two miles west and north until it meets Tomales Bay. The banks of Olema Creek are generally steep upstream and downstream of the bridge and are densely vegetated with riparian scrub habitated dominated by arroyo willow (*Salix lasiolepis*) and Himalayan blackbeery (*Rubus discolor*). Landscape plantings immediately adjacent to the top of the northeast creek bank exist and provide a buffer between the bridge and a private home.

3. Biological Resources and Environmentally Sensitive Habitat on Site

As part of the repair project, the applicant conducted a formal biological assessment of the project site (Biological Assessment and Preliminary Jurisdictional Determination for the County of Marin's Bridge Maintenance Program, Sycamore Associates, LLC 2006). The assessment indicates that there are a number of special status species that have the potential to be present in the project area because of documented occurrences or because suitable habitat exists at the project site. No sensitive plant species or sensitive plant communities were found in the area of Bridge No. 104; however, the following special status species are known to occur in the area:

a. Coho Salmon (Oncorhynchus kisutch). Olema Creek is within Critical Habitat designation for the Central California Coast Evoluntionary Significant Unit (ESU) of coho salmon, a federally and state-listed endangered species. CDFG identified coho salmon in Olema Creek during surveys conducted in 2001, 2002, and 2003. The Lagunitas Creek watershed is estimated to support up to ten percent of the population of coho salmon Central California ESU. The biological opinion from the NOAA's National Marine Fisheries Unit for this project indicates that due to the presence of the bridge, associated hard structures and nearby residential development, in-stream and riparian habitat conditions for the anadromous salmonids are degraded. As a result, the project site likely supports lower densities of rearing juvenile salmonids than less disturbed upstream areas.

b. Steelhead (Oncorhynchus mykiss). Olema Creek is also located within the Critical Habitat designation for steelhead. Studies conducted within the Lagunitas Creek watershed have consistently found that steelhead use Lagunitas Creek and numerous tributaries within the watershed for spawning, including Olema Creek.

c. Tidewater Goby (*Eucyclogobius newberryi*). The tidewater goby is a federally- listed endangered species and a California Species of Special Concern, endemic to California. Its habitat includes brackish water habitats along the coast, shallow lagoons, and lower stream reaches where water is brackish to fresh and slow moving or fairly still but not stagnant. Although the Lagunitas Creek watershed is not currently designated Critical Habitat for the tidewater goby, it is within the proposed designation of expanded Critical Habitat that the USFWS is processing. Suitable estuarian marsh habitat is present just downstream from Bridge 104 and the strong tidal influence on Olema Creek at the project site creates conditions suitable for the tidewater goby.

d. Tomales Roach (*Lavinia symmetricus ssp.2*). Tomales roach is a California Species of Special Concern. Tomales roaches are found in small, warm intermittent streams and are frequently found in isolated pools. They are known to occur in Olema Creek because of a reported occurrence close to the site of the Bridge 104 and the presence of suitable habitat.

e. California Freshwater Shrimp (*Syncaris pacifica*). The California freshwater shrimp is California's only extant native stream-dwelling shrimp and is federally-listed as endangered throughout its entire range which includes low elevation and low gradient, perennial freshwater streams from 12 to 36 inches in depth, within undercut banks. Suitable habitat is present at Bridge 104 in the undercut banks and overhanging willow branches along the sides of the creek. Breeding occurs from December to March, when the potential for occurrence greatly increases. Both juveniles and adults have the potential to be present during the spring and summer months.

f. California Red-legged Frog (*Rana aurora draytonii*). California red-legged frog (CRLF) is a federally-listed threatened and a California Species of Special Concern. Optimal habitat includes ponds, stream courses, permanent pools and intermittent streams fed by drainage areas no larger than 300 km. The nearest occurrence of CRLF to the project site was reported in Olema Creek near Sir Francis Drake Blvd in 2005, approximately 0.3 miles southeast of the site. Suitable dispersal habitat is present within the vicinity of Bridge 104, though the breeding habitat is only marginal due to the strong tidal influence.

g. Foothill Yellow-legged Frog (*Rana boylii*). The foothill yellow-legged frog is a California Species of Special Concern. The nearest known occurrence of this frog to Bridge 104 was reported in a tributary of Lagunitas Creek, approximately 5.5 miles east of the project site in 1956 and another more recent occurrence approximately 7 miles southeast of the site in 1998. Marginal suitable habitat is present within the vicinity of Olema Creek, although it is less likely that foothill yellow-legged frog use the area at Bridge 104 because of the dense vegetation and tidal influence at the site.

h. Western Pond Turtle (*Clemmys marmorata*). The western pond turtle is a California Species of Special Concern and the only fresh-water turtle native to greater

California. The western pond turtle prefers aquatic habitat with refuge such as undercut banks and submerged vegetation and requires emergent basking sites such as mud banks, rocks, logs and root wads to thermo-regulate their body temperature. Although western pond turtle was reported in Olema Marsh in 2003, approximately 0.5 miles south of the project site, the habitat in the vicinity of Bridge 104 is marginal because there is little basking habitat available. The western pond turtle may travel through Olema Creek at the bridge location while dispersing up or downstream between areas of suitable habitat.

i. California Clapper Rail (Rallus longirostris obsoletus). The California clapper rail is a federally and state–listed endangered species and a California Fully Protected Species whose habitat includes tidally influenced salt and brackish marshes. While there have been no reported occurrences of the bird within the project area, there is suitable habitat directly south of the site in Olema Marsh (0.5 miles south of the project site), which leaves the potential for the bird to disperse through the bridge repair site.

j. Salt Marsh Common Yellowthroat (Geothlypis trichas sinuosa). The salt marsh common yellowthroat is a California Species of Special Concern. Suitable habitat for nesting and foraging exist in the project area for salt marsh common yellowthroat as well as other passerine and non-passerine species found in riparian areas. These species typically use most habitat types and are known to nest on the ground, in shrubs and trees, and under bridges.

k. Pallid Bat (*Antrozous pallidus*) and Townsend's Western Big-eared Bat (*Corynorhinus (=Plecotus) townsendii towsnedii*). The pallid and Townsend's western big-eared bat are both California Species of Special Concern that have the potential to be present within the project site. Both species use mature trees, snags, crevices, and man-made structures such as bridges for roosting or for forming nursery colonies. Suitable roosting habitat is present in the cracks and crevasses within the bridge structures and within trees around Bridge 104. Roosting occurs between March 1 and July 31st.

l. Point Reyes Mountain Beaver (Aplodontia rufa phaea). The Point Reyes mountain beaver is a California Species of Special Concern and occupies an isolated 285 square kilometer area of Point Reyes National Seashore in western Marine County. The beavers are found in dense stands of vegetation on north-facing slopes and gullies adjacent to perennial streams or springs. Suitable habitat is present among the willow riparian vegetation lining the banks of Olema and Lagunitas Creeks for burrowing or feeding.

m. Point Reyes Jumping Mouse (Zapus trinotatus inornatus). The Point Reyes jumping mouse, a California Species of Special of Special Concern and subspecies of the Pacific jumping mouse, has a habitat range that is restricted to the Point Reyes peninsula and nearby areas of western Marin County. Suitable habitat exists along the riparian vegetation on the banks of Olema Creek and in the nearby marshland.

4. Description of Proposed Project

Bridge 104 requires repair on its eastern pier due to loss of the former scour protection and current exposed pier footing. As a result, the eastern pier has sustained some substructure damage due to high water velocities and flows during severe weather events. The County proposes to repair the eastern pier of the bridge by placing 114 square feet of one-ton size pieces of riprap in a "U" shape around the nose of the pier with the riprap extending 20 feet along each side of the pier. The riprap would protect the pier from future scour and erosion and would reinforce the existing structure. This design buries most of the protective riprap below the grade of the creek channel as shown in the Bridge Repair Plan and Cross Section Profiles in Exhibit 3. Because Olema Creek is tidally influenced in this location and there is water present in the channel during the summer months, partial dewatering through construction of a coffer dam will be necessary for equipment to be in the creek channel to place the rock. The construction is estimated to take three to five days.

Construction of the coffer dam for dewatering purposes will occur by placing sand bags in a "C" shape around the pier and footing on the eastern side of the creek. Excavation is not need to install the coffer dam around the work site. The sand bags will be covered with visquine and will be held down by additional sand bags around the perimeter of the coffer dam as shown in Exhibit 3. A fisheries biologist will seine the area to be dewatered multiple times before pumping occurs. Any biological resources found in the dewatered area will be relocated at least 50 feet downstream of the dewatered area. Dewatering of the area will be done be pumping with screened intakes with mesh no larger than five (5) millimeters (mm).

Prior to placement of the new riprap material, any remnant riprap will be cleared from the project area. A one-tracked mounted excavator will be used to dig and place new rock against the pier. Approximately 32 cubic yards of cut will be excavated around the pier footing eight feet below the creek bed level. One front-end loader will be used to take and deliver material to and from the staging area.

Construction staging and access will occur on the eastern bank south of the bridge structure (Exhibit 3). The footprint of the staging area and access path to the creek totals of 942 square feet and will require 26 cubic yards of grading for the access path between the staging area and creek bed. Approximately 168 square feet of riparian Central Coast scrub vegetation at the staging area and along the stream bank will be temporarily impacted or removed during construction. No trees are located within the bridge repair footprint structures.

After the placement of riprap around the pier is complete but before the coffer dam is removed, a willow wall revetment will be placed at the toe of the slope of the construction area and will span approximately 20 linear feet along the mean high tide line of the creek channel as shown in Exhibit 3. The revetment will be constructed by hand using live willow poles that will be hammered into the river bed and by weaving willow branches between the poles.

Once the repair is complete and the willow wall is constructed, the coffer dam structure will be removed in a manner that will allow flow to resume with the least disturbance to the creek bed. Water will be released slowly back into the dewatered area to prevent erosion and increased

turbidity. Sandbags will be removed such that surface elevations of water impounded above the coffer dam will not be reduced by a rate greater than one inch per hour to minimize the risk of beaching or stranding fish as the area upstream returns to its normal surface flow level.

Best Management Practices and Avoidance and Mitigations Measures

The applicant proposes a number of mitigation measures and Best Management Practices (BMPs) to avoid or minimize impacts to coastal waters, water quality, marine resources, biological resources, and ESHA. These measures and BMPS are incorporated herein as part of project description or are specified in the NOAA's National Marine Fisheries Service (NMFS) Biological Opinion (BO)for Marin County Emergency Bridge Repair Projects, November 2006 (Exhibit 5); the Programmatic Formal Endangered Species Consultation on Issuance of Permits under Section 404 of the Clean Water Act or Authorizations under the Nationwide Permit Program for Projects that May Affect the California Red-legged frog (Exhibit 6); the CDFG 1602 Lake and Streambed Alteration Agreement Notification No. 1600-2006-0673-3 for Miller Creek, San Pablo Bay, Olema Creek, Tributary Lagunitas Creek, Thence Tomales Bay, Stemple Creek, Tributary Estero San Antonio, Thence the Pacific Ocean, Marin County (Exhibit 7); and the Fish Rescue Protocol Associated with Bridge Abutment Repairs on Miller Creek, Olema Creek, Redwood, Creek and Stemple Creek, Marin County (Exhibit 8).

- Water Quality: The applicant will implement construction BMPs in accordance with the Marin County Bridge 104 Repair BMPs and Drawings in Exhibit 4. The applicant also prepared an Erosion and Sediment Control Plan and Storm Water Pollution Prevention Program specific to Bridge 104. The measures contained in these plans are outlined below. All construction methods will be consistent with relevant portions of the Association of Bay Area Governments (ABAG) Standards for Erosion and Sediment Control Measures, the California Storm Water Best Management Practices Handbook (Construction and Industrial/Commercial Handbooks, developed by Camp, Dresser & McKee et al. for the Storm Water Quality Task Force), Caltrans Storm Water Quality Handbook Construction Site Best Management Practices Manual (November 2000), and the County of Marin's Sanitary Facilities & Storm Water Pollution Prevention Plan (Exhibit 9).

    1. Construction will be performed during dry periods and limited to months between July 15th and October 15th. Construction operations shall not be conducted during heavy rains (See BMP Section III-BR3 in Exhibit 4).

    2. The contractor shall train all employees and subcontractors on the water pollution prevention requirements.

    3. Soils stockpiles will be maintained in neat piles at the defined staging area, covered with impervious tarps nightly. Construction materials including equipment and rock will also be stored at the staging area. Waste will be stored in covered dumpsters and removed immediately (See BMP Caltrans WM-3 Stockpile Management in Exhibit 4).

4. Any excess materials that may fall onto Sir Francis Drake Blvd as a result of loading and unloading equipment and construction materials at the staging area shall be collected and disposed of in appropriate offsite location on a daily basis so that it does not enter Olema Creek.

5. Offsite tracking of soils by vehicles or construction equipment will be swept and scraped from such vehicles and equipment and disposed of in appropriate offsite location on a daily basis so that it does not enter Olema Creek.

6. Limits of the staging and access areas to be cleared of vegetation and graded shall be clearly defined and marked to prevent damage by construction equipment.

7. Water will be applied to the graded areas for staging and access to control dust.

8. All vehicle maintenance will be conducted off site. Drip Pans and absorbants will be used for vehicle stored at the staging area over night during construction (See BMP Caltrans NS-9 and 10 for Vehicle Equipment Fueling and Maintenance, Exhibit 4).

9. Construction of the cofferdam will be completed in accordance with cross section design profiles contained in Exhibit 3. Pumped water will be discharged to a filtration/settling system that consists of filter fabric or turbidity curtain downstream of the work area to reduce turbidity.

10. Upon completion of site grading, all exposed dirt surfaces shall be covered to prevent erosion. Native grass seed mix shall be spread by hand broadcasting methods over staging area, access path and any other disturbed or graded surfaces with the exception of the creek bed. The native seek mix will consist of California Brome (*Bromus carintus*), blue wildrye (*Elymus glaucus*), meadow barley (*Hordeum brachyantherum*), and red fescueme (*Festuca rubra*) and be spread uniformly at the designated rates per acres in Erosion Control Plan. The seed shall be of the latest crop and labeled in accordance with the California Food and Agricultural Code.

11. Erosion control blankets shall be installed using COIR North American Green C125BH or equivalent and placed on disturbed creek banks, with the exception of the willow wall revetment area, upon completion of work in the channel. Before straw erosion control blankets are placed, the disturbed slopes shall be smoothed and evenly sloped, seeded by hand broadcasting with native seed mix as indicated in no. 10 above, and lightly raked such that the seed mixes into the soil. After the blankets are in place, any salvaged native plants shall be replanted through minimal slits cut in the blanket (See BMPs-BASMAA Section III-SS-1 Erosion Control Blankets, Mats and Geotextiles and FishNet Guidelines for Hydroseeding, Exhibit 4).

12. The creek bed will be restored to original, pre-construction conditions, except for the new riprap placed for scour protection and the new willow wall revetment. The willow wall revetment will stabilize the bank after grading activities, reduce erosion and deposition of sediment in Olema Creek, and promote vegetative growth within

the area behind where the wall is planted (Seee BMP FishNet Guidelines-Willow Wall Revetment, Exhibit 4).

- Marine Resources, Biological Resources, and ESHA: The applicant will implement the following measures to avoid or minimize potential impacts to the above mentioned marine resources, biological resources, and ESHA as discussed in Section IVA3.

    1. A qualified biologist approved by the USFWS and CDFG will conduct pre-construction surveys for CRLF, foothill yellow-legged frog, western pond turtles, the Point Reyes mountain beaver and Point Reyes jumping mouse within 15 days prior to any construction-related activity, ground disturbance or bridge repair work. If found, the species will be relocated by a qualified biologist if determined appropriate to an area downstream of the construction area on Lagunitas Creek that provides similar habitat and at least 50 feet away from where the construction activities will occur.

    2. A qualified biologist shall conduct pre-construction surveys for nesting birds and roosting bats within 15 days prior to tree or vegetation removal, both in the ground, on trees, and in the marsh vegetation. All active nests will be flagged and non-disturbance buffer zone (between 50 and 90 feet depending on the species and type of work) shall be established around the nesting site in coordination with CDFG. Bats and nesting birds may be removed if deemed appropriate by CDFG.

    3. A qualified biologist shall be present during the construction of any erosion control fencing or coffer dams, and prior to and during the dewatering of the creek. Any coho salmon, steelhead, tidewater goby or Tomales roach encountered in the creek shall be placed in a container filled with water from Olema Creek and relocated downstream according to the Fish Rescue Protocol (Exhibit 8). If California freshwater shrimp are found to be present, they shall be relocated downstream a minimum of 100 feet from the site on Lagunitas Creek to an area that has appropriate overhanging vegetation and undercut banks.

    4. A system of coffer dams shall be erected to temporarily dewater the work area and divert the flow of the creek around it. In accordance with CDFG and NOAA fisheries standards, fish screens made up of 1/8" hardware cloth will be placed above the diversion point and below the outlet of diversion for dewatering. Fish screens shall be installed prior to fish relocation or dewatering. The coffer dam will be installed in a manner that ensures enough water would continue to move through the area to provide adequate oxygen levels for any fish that may be contained within the area. After the coffer dam has been constructed, a fisheries biologist will seine the dewatering area multiple times before the area is dewatered. No electrofishing will be used to minimize impacts to tidewater goby. Pumping will use screen intakes with mesh no larger than five millimeters to avoid injury to tadpoles, salmonids, or other small aquatic species that may have been missed during seining.

    5. Erosion control fencing at least three feet high shall be placed between all work areas and the creek to prevent the introduction of material into waterways, to minimize

sedimentation and turbidity associated with bridge repairs, and to prevent species of concern from entering the project area. Fencing will be maintained throughout the course of bridge repair operations, and any damage or disrepair should be repaired before work can proceed.

6. After repair is complete, the coffer dam will be removed so surface elevations of water impounded above the cofferdam will not be reduced by a rate greater than one inch per hour to minimize the risk of beaching and stranding fish as the area upstream becomes dewatered.

7. Contractor education shall be conducted to inform construction crews of the biological resources of concern and potentially present at the site, measures required to protect them (construction boundaries, flagging, and non-disturbance buffers), reporting requirements and instructions, project biologist contact information, information sheets, and discussion of other permit conditions that must be followed during construction.

8. All Minimization of Adverse Impacts not mentioned above and contained in the Programmatic Formal Endangered Species Act Consultation on the Issuance of Permits under Section 404 of the Clean Water Act or Authorizations under the Nationwide Permit Program for Projects that May Affect the CRLF (USFWS, 1999) (Exhibit 6) shall be implemented.

B. Permit Authority, Extraordinary Methods of Repair and Maintenance

Coastal Act Section 30610(d) generally exempts from Coastal Act permitting requirements the repair or maintenance of structures that does not result in an addition to, or enlargement or expansion of the structure being repaired or maintained. However, the Commission retains authority to review certain extraordinary methods of repair and maintenance of existing structures that involve a risk of substantial adverse environmental impact as enumerated in Section 13252 of the Commission regulations.

Section 30610 of the Coastal Act provides, in relevant part:

> *Notwithstanding any other provision of this division, no coastal development permit shall be required pursuant to this chapter for the following types of development and in the following areas: . . .*
>
> *(d) Repair or maintenance activities that do not result in an addition to, or enlargement or expansion of, the object of those repair or maintenance activities; provided, however, that if the commission determines that certain extraordinary methods of repair and maintenance involve a risk of substantial adverse environmental impact, it shall, by regulation, require that a permit be obtained pursuant to this chapter.* [Emphasis added]

Section 13252 of the Commission administrative regulations (14 CCR 13000 *et seq*.) provides, in

relevant part:

> *(a) For purposes of Public Resources Code section 30610(d), the following extraordinary methods of repair and maintenance shall require a coastal development permit because they involve a risk of substantial adverse environmental impact:…*
>
> *(3) Any repair or maintenance to facilities or structures or work located in an environmentally sensitive habitat area, any sand area, within 50 feet of the edge of a coastal bluff or environmentally sensitive habitat area, or <u>within 20 feet of coastal waters or streams that include:</u>*
>
> *(A) The placement or removal, whether temporary or permanent, of rip-rap, rocks, sand or other beach materials or any other forms of solid materials;*
>
> *(B) The presence, whether temporary or permanent, of mechanized equipment or construction materials.*
>
> *All repair and maintenance activities governed by the above provisions shall be subject to the permit regulations promulgated pursuant to the Coastal Act, including but not limited to the regulations governing administrative and emergency permits. The provisions of this section shall not be applicable to methods of repair and maintenance undertaken by the ports listed in Public Resources Code section 30700 unless so provided elsewhere in these regulations. The provisions of this section shall not be applicable to those activities specifically described in the document entitled Repair, Maintenance and Utility Hookups, adopted by the Commission on September 5, 1978 unless a proposed activity will have a risk of substantial adverse impact on public access, environmentally sensitive habitat area, wetlands, or public views to the ocean.…* [Emphasis added.]

The proposed project is a repair and maintenance project because it does not involve an addition to or enlargement of the existing bridge. The proposed repair to add riprap around the base of the Bridge 104 pier footing will replace riprap that was there before but has washed away. Although certain types of repair projects are exempt from CDP requirements, Section 13252 of the regulations requires a coastal development permit for extraordinary methods of repair and maintenance enumerated in the regulation. The proposed bridge repair involves the placement of riprap, the removal and placement of solid materials, and the presence of mechanized equipment and construction materials within 20 feet of coastal waters. As such, the proposed repair project requires a coastal development permit under Sections 13252(a) (3) of the Commission regulations.

In considering a permit application for a repair or maintenance project pursuant to the above-cited authority, the Commission reviews whether the proposed *method* of repair or maintenance is consistent with the Chapter 3 policies of the Coastal Act. The Commission's evaluation of such repair and maintenance projects does not extend to an evaluation of the conformity with the Coastal Act of the underlying existing development.

The repair of Bridge 104 can have adverse impacts on coastal waters, marine resources, water quality, and ESHA if not properly undertaken with appropriate mitigation. The applicant proposes to repair the bridge by placing 60 tons of one-ton sized riprap in a "U" shape around the eastern pier in an area where riprap previously existed. The "U"-shape is designed so that it will not impact the flow of water through the creek channel. The proposed repair is designed to protect the footing consistent with the Federal Highway Administration's design standards for riprap revetments (1989), rock slope protection and bridge scour and stream instability countermeasures (2001), and the Caltrans bank and shore rock slope protection design (1997) for bridge structures according to the potential stream velocities present at this site. Marin County has included a number of construction, erosion and sediment control and storm water pollution prevention BMPs in the project description as described above to minimize impacts to coastal waters, marine resources, and water quality.

The applicant also proposes numerous avoidance and mitigation measures to protect biological resources of special significance and ESHA. The project will also conform to the terms, conditions, and minimization measures as required by the NOAA/NMFS Biological Opinion (Exhibit 5), the Programmatic Formal Endangered Species Consultation on Issuance of Permits under Section 404 of the Clean Water Act or Authorizations under the Nationwide Permit Program for Projects that May Affect the California Red-legged frog (USFWS, 1999) referred from henceforth as the Programmatic BO on CRLF (Exhibit 6), and CDFG 1602 Lake and Streambed Alteration Agreement (Exhibit 7) to maintain and enhance habitat values for biological resources of special significance, ESHA, and areas adjacent to ESHA

These measures are appropriate; however, additional measures are needed to avoid impacts to marine resources, water quality, and ESHA. The conditions required to meet this standard are discussed in the following findings relevant to water quality, marine resources, and ESHA.

C. Public Access

The proposed bridge repair project is located along Sir Francis Drake Blvd, a road that traverses the southern-most end of the Tomales Bay. A significant area of land and few small roads exist between the bay and the bridge site; however, Sir Francis Drake Blvd is the primary road that connects Highway 1 to Tomales Bay and is the primary route of access around Tomales Bay. As such, the following Coastal Act Public Access policies apply to this project.

Coastal Act Policies

Section 30210 of the Coastal Act states:

> *In carrying out the requirement of Section 4 of Article X of the California Constitution, maximum access, which shall be conspicuously posted, and recreational opportunities shall be provided for all the people consistent with public safety needs and the need to protect public rights, rights of private property owners, and natural resource areas from overuse.*

Section 30211 of the Coastal Act states:

> *Development shall not interfere with the public's right of access to the sea where acquired through use or legislative authorization, including, but not limited to, the use of dry sand and rocky coastal beaches to the first line of terrestrial vegetation.*

Analysis

During construction, vehicles will be parked off of Sir Francis Drake Blvd at an existing turnout point to the right of the eastbound lane less than 20 feet from Bridge 104. Equipment and materials will also be stored at the turnout and staging area located at the top of the creek bank as shown on the Bridge Repair Plan in Exhibit 3. A temporary increase in traffic may occur as a result of construction personnel and equipment accessing the project site; however vehicles will be moved off of the road so as not to impede traffic flow through the area. The proposed repair is intended to prevent bridge failure and subsequent Sir Francis Drake Blvd road closures that would adversely affect traffic flow and access to Tomales Bay. Also, there are no existing public access points to Tomales Bay or the sea at the Bridge 104 location that would be disrupted by construction activities. Therefore, as proposed, the repair project will not interfere with the public's right of access to the sea nor will it impact any existing access or recreational opportunities for the public to enjoy the Tomales Bay and is consistent with Sections 30210 and 30211 of the Coastal Act.

D. Protection of Coastal Waters, Water Quality, and Marine Resources

The proposed repair work involves placement of riprap around the eastern pier of Bridge 104. The placement of riprap will take place below the mean high tide line of Olema Creek. Olema Creek is tidally influenced creek and is adjacent to another creek that feeds into Tomales Bay. As such, the proposed development includes the placement of fill in coastal waters and is subject to Section 30233 of the Coastal Act, which sets forth specific standards with regard to development involving the fill of coastal waters. This repair also has the potential to cause adverse impacts to the marine resources, biological productivity, and quality of the coastal waters of Olema Creek, Lagunitas Creek and Tomales Bay and is therefore regulated by Section 30230 and 30231 of the Coastal Act that require marine resources, biological productivity and quality of coastal waters to be maintained, enhanced, and where feasible, restored.

Coastal Act Policy

Section 30230 of the Coastal Act states:

> *Marine resources shall be maintained, enhanced and where feasible, restored. Special protection shall be given to areas and species of special biological or economic significance. Uses of the marine environment shall be carried in a manner that will sustain the biological productivity of coastal waters and that will maintain healthy populations of all species of marine organisms adequate for long-term commercial, recreational, scientific, and educational purposes.*

Section 30231 states:

> *The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of waste water discharges and entrainment, controlling runoff, preventing depletion of ground water supplies and substantial interference with surface water flow, encouraging waste water reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams.*

Section 30233 (a) states:

a. *Diking, filling or dredging of open coastal waters, wetlands, estuaries, and lakes shall be permitted in accordance with other applicable provisions of this division where there is no feasible less environmentally damaging alternative, and where feasible mitigation measures have been provided to minimize adverse environmental effects and shall be limited to the following:*

    (1) New or expanded port, energy, and coastal-dependent industrial facilities, including commercial fishing facilities,
    (2) Maintaining existing or restoring previously dredged depths in existing navigational channels, turning basins, vessel berthing and mooring areas, and boat launching ramps..
    (3) In open coastal waters, other than wetlands, including streams, estuaries, and lakes, new or expanded boating facilities and the placement of structural pilings for public recreational piers that provide public access and recreational opportunities.
    (4) Incidental public service purposes, including but not limited to burying cables and pipes or inspection of piers and maintenance of existing intake and outfall lines.
    (5) Mineral extraction, including sand for restoring beaches, except in environmentally sensitive areas.
    (6) Restoration purposes.
    (7) *Nature study, aquaculture, or similar resource dependent activities.*

Analysis

1. Allowable Uses

As described above, the project involves repair of an existing structure by placing 60 tons riprap around the eastern pier footing of Bridge 104 on Sir Francis Drake Blvd. As a result, the project will result in 114 square feet (<0.01 acre) of fill in coastal waters. The relevant category of use listed under Section 30233(a) that relates to the proposed repair is subcategory *(4),* stated as follows:

> *(4) Incidental public service purposes, including but not limited to, burying cables and pipes or inspection of piers and maintenance of existing intake and outfall lines.*

Since the proposed repair would be conducted by a public agency in order to prevent future bridge failure and resulting road closure of Sir Francis Drake Blvd, a primary road that connects Highway 1 to Tomales Bay, the Commission finds that the fill expressly serves a public service purpose consistent with Section 30233(a)(4).

In this case, the repair of Bridge 104's eastern pier and prevention of future scour damage would be incidental to the primary public service purpose of the proposed project, which is to allow for the continued use of Sir Francis Drake Blvd. The amount of fill placed to reinforce the existing pier and prevent future substructure damage would be the minimum necessary proposed to accomplish the objective of the repair. Furthermore, the proposed fill is not proposed to expand beyond what previously existed to protect the pier structure. A stabilized structure is therefore, necessary, and incidental to the structure's primary purpose as a bridge of primary road that provides public access to Tomales Bay.

The Commission finds that for the reasons discussed above, the fill associated with the proposed repair of Bridge 104's eastern pier is for an incidental public service purpose, and thus, is an allowable use pursuant to Section 30233(a)(5) of the Coastal Act

2. Alternatives Analysis

Second, Section 30233(a) requires the Commission to evaluate whether there are feasible less environmentally damaging alternatives to the proposed project. Possible alternatives include: (1) the no project alternative; (2) placement of concrete instead of riprap around the eastern pier; and (3) an alternate location for the temporary access and staging area such as the road/bridge above the pier footing. As discussed below, there is no feasible less environmentally damaging alternative to the project as conditioned.

The no project alternative is not the least damaging environmental alternative because it does not meet the objective of the proposed project. The no project alternative would also be more environmentally damaging because if the bridge pier is left in disrepair, it will likely fail causing the whole bridge to collapse into Olema Creek. This would result in significant environmental damage by blocking the natural stream flow and polluting coastal waters with the potential to injure numerous biological resources of significance that rely upon Olema Creek, stream bank and riparian area.

An alternative to placing riprap against the pier would be to excavate the area around the pier footing and pour concrete around the pier itself. This repair method would cause significantly more environmental damage to coastal waters, marine resources, and water quality for the following reasons:

a. Pouring concrete would require a 30 day "cure" time during which time the entire stream channel would need to remain dewatered and would increase the potential for aquatic species to be impacted or displaced. Under the proposed alternative, the creek would only be partially dewatered for a maximum of five days
b. Concrete contains constituents that can leach into the water if not allowed to completely cure which requires a minimum of three weeks without contact with water. The use of concrete would expose aquatic species to active concrete ingredients and could elevate pH levels, adversely impacting the water quality of the stream.

Finally, the proposed temporary staging area and access way locations are the least damaging feasible alternatives. Staging from the top of the bridge/road would not negate the need for construction equipment to work in the creek bed since the riprap pieces are too large to be placed by hand. Staging from the bridge/road would also close the road causing temporary impacts to public access and recreation. The area above the stream bank to the north of the eastern pier is adjacent to a private property and residence; as such, it is not feasible to use the other side of the bridge as a staging area or access way, nor would this alternative result in any less environmental damage than the current proposed staging area and access path.

The proposed project design and amount of riprap used for the repair is the minimum amount necessary to protect the structure and cause the least amount of adverse impact to coastal waters and marine resources. There will be no permanent impacts to coastal waters as a result of construction access and staging. Therefore, the proposed development is the least environmentally damaging feasible alternative to repair the Bridge 104 pier.

3. Feasible Mitigation

The third step in determining that the proposed project is consistent with Section 30233, is to determine whether feasible mitigation measures have been provided to minimize any adverse environmental impacts of the project. The repair construction activities involve the placement of 114 square feet of riprap in coastal waters, construction of a coffer dam and partial dewatering of Olema Creek, excavation of 58 cubic yards of fill material, grading of a staging area and access path to the creek bed, stockpiling of materials, and the removal of vegetation that could result in adverse impacts coastal waters, water quality, and natural vegetation buffer areas that protect riparian habitats. These impacts include fuel or oils spills, improper storage of materials in or adjacent to Olema Creek, and increased turbidity that would adversely impact water quality.

Feasible mitigations to minimize adverse environmental effects of the proposed project can best be accomplished by protecting water quality and reducing discharge of any material into coastal waters during construction. As such, the applicant proposes a number of BMPs for construction activities that will mitigate against any adverse environmental effects to marine resources, biological productivity, water quality, riparian habitat, and natural streams. These BMPS are discussed in Section IVA4, Description of Proposed Project. As specified above, the construction of the riprap protection will be conducted according to Marin County Bridge Repair Project BMP Guidelines and Drawings for Bridge 104 included in Exhibit 4 for vehicle and equipment fueling and maintenance, material use, spill prevention and control, silt fencing, dewatering, gravel bag coffer dam, stockpile management, erosion control blackest, mats and

geotextiles, storm drain inlet protection, hydroseeding, and mulching. Construction will also be consistent with the County of Marin Sanitary Facilities & Storm Water Pollution Prevention Plan (Exhibit 9) to minimize any temporary adverse impacts to coastal waters, marine resources, water quality, and riparian habitat during construction. Furthermore, the applicant proposes to build a willow wall revetment on the creek bed directly south of the pier to stabilize the creek bed and prevent future erosion. All exposed soils resulting from construction access and staging will be re-vegetated using native erosion control seed mix.

Special Condition 1, Standards of Repair further minimizes potential impacts to coastal waters, water quality, and riparian habitat by requiring the applicant to use clean quarry rock, limits fill to only that which is necessary to protect the pier, and adds specificity to spill prevention and erosion control measures as proposed by the applicant. Finally, Special Condition 3a requires that the project adhere to any additional water quality measures required by the pending certification of the Regional Water Quality Control Board. Therefore, as conditioned, the proposed project includes all feasible mitigations to minimize adverse environmental impacts of the project.

4. Maintain and Enhance Habitat Values

The fourth general limitation set by Section 30233 is that any proposed dredge or fill project in coastal waters must maintain and enhance the biological productivity and functional capacity of the habitat, where feasible. Feasible mitigations required by Section 30233 also meet the requirements of Section 30230 and 30231 to: (1) maintain, enhance, and where feasible restore marine resources; (2) protect areas and species of special biological significance; (3) protect biological productivity of coastal waters to maintain healthy populations of marine organisms; (4) maintain natural buffer areas that protection riparian habitats; and (5) minimize alteration of natural streams.

Olema Creek, Lagunitas Creek and Tomales Bay provide Critical Habitat for number of marine species that are considered species of special biological significance. As discussed Section IVA3 above, the project area provides suitable habitat for the coho salmon, steelhead, tidewater goby, California freshwater shrimp, Tomales roach, CRLF, foothill yellow-legged frog, and the western pond turtle.

The avoidance and mitigation measures described above in Section IVA4, the NMFS BO (Exhibit 4), the CDFG 1602 Lake and Streambed Alteration Agreement 1600-2006-0673-3 (Exhibit 7), and the Fish Protection Protocol (Exhibit 8), will avoid and/or minimize impacts to species of special biological significance and sustain biological productivity of coastal waters to maintain healthy population of the marine species. These measures include: (1) limiting work to dry season to avoid the spawning and egg/alevin incubation period of salmon and steelhead; (2) pre-construction surveys conducted by a qualified USFWS and CDFG-approved biologist; (3) capture and relocation of species to pre-determined areas away from construction activities; (4) seining the dewatering areas multiple times prior to pumping; (5) no electro-fishing to avoid adverse impacts to the tidewater goby; (6) pumping the area using five mm mesh screens to avoid injury to aquatic species, and (7) removing the coffer dam at a slow rate to decrease turbidity and impacts to aquatic species upstream.

The applicant has also submitted project information for endangered species consultation to the USFWS for the California freshwater shrimp, CRLF and tidewater goby; however the BO from the USFWS has not been completed. In lieu of a site specific BO, the applicant will conduct the Bridge 104 repair in accordance with the Programmatic BO for CRFL. While both the NMFS BO and the Programmatic BO for CRLF acknowledge that some adverse impact to coho, steelhead, and CRLF are unavoidable; these impacts will not prevent these species from maintaining healthy populations.

In the absence of site specific BO from the USFWS, Special Conditions 2 and 3 will ensure impacts to federally-listed species such as the, California freshwater shrimp, tidewater goby and CRLF will be avoided and/or minimized. These measures will also avoid impacts to the Tomales roach, foothill yellow-legged frog, and western pond turtle. Special Condition 2 incorporates the measures as described in proposed project description (Section IVA3). Special Condition 3 requires that the project be conducted in accordance with any additional measures that may be required by the pending USFWS BO. If the measures required by the USFWS BO change any activities as proposed for this project, the applicant is required to submit an amendment request to the Executive Director in advance of taking any action pursuant to this permit application.

The placement of riprap around the eastern pier footing also has the potential to alter the natural stream. More specifically, the addition of riprap under the bridge will prevent stream channel migration; however, channel migration has already been significantly constrained at this location by the existing bridge piers and previous scour protection. Channel migration generally benefits fish habitat by allowing recruitment of new organic material and gravel or cobble to the stream. While placement of riprap can interfere with the natural ecological processes of streams, the NMFS BO concludes that the proposed project is not expected to significantly affect stream dynamics because of the existing hard structures that constrain Olema Creek. Moreover, the design buries the protective riprap below the grade of the stream channel, and it is not expected to impede or impact water flow through the channel.

Therefore, as conditioned to protect coastal waters, marine resources, water quality and riparian habitat, and including the measures proposed by the applicant, this project is consistent with the direction of Coastal Act Policy 30230, 30231 and 30233.

E. Environmentally Sensitive Habitat (ESHA)

The CRLF, foothill yellow-legged frog, California clapper rail, salt marsh common yellowthroat, pallid bat, Townsend's western big-eared bat, Point Reyes mountain beaver, and Point Reyes jumping mouse are listed species whose habitat meets the definition of ESHA found in the Coastal Act (PRC Section 30107.5) and are located adjacent to coastal waters at Olema Creek. ESHA shall be protected against significant disruption of habitat values and development adjacent to these habitats must also comply with Section 30240 (b) of the Coastal Act.

Coastal Act Policy

Section 30240 states:

> *(a) Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on those resources shall be allowed within those areas.*
>
> *(b) Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas, and shall be compatible with the continuance of those habitat and recreation areas.*

Analysis

The construction staging area is located adjacent to environmental sensitive habitat that is considered suitable habitat for the California clapper rail, a federal and state-listed species, and the salt marsh common yellowthroat, the pallid bat, the Townsend's western big-eared bat, the Point Reyes mountain beaver, and the Point Reyes jumping mouse, all of whom are California Species of Special concern. The CRLF, foothill yellow-legged frog, and western pond turtle may use the access and staging areas as dispersal habitat.

The construction staging area and access path will result in the temporary loss of approximately 942 square feet (0.02 acres) of riparian Central Coastal scrub. This area was chosen as the only feasible point by which to stage the repair because of a variety of factors. First, staging from the eastern side of the creek will require the least amount of disturbance to the banks of Olema Creek because it minimizes the area needed to access the eastern pier and requires only partial dewatering of the creek. Second, the slope along the southeastern location is the most gentle comparatively, thus reducing erosion and possible turbidity to the marine environment. Finally, lowering the rock from the top of the bridge was considered but would not negate the need for construction equipment to access and work in the channel as the riprap rock is too large to be hand placed.

In order to minimize the temporary impacts to ESHA for staging and access, construction activities will be conducted as quickly as possible, between three to five days. The applicant will conduct pre-construction surveys and establish buffer zones between construction activities and nesting locations of California clapper rail, salt marsh common yellowthroat, pallid bat, and Townsend's western big-eared bat prior to vegetation removal to avoid significant impacts to ESHA or areas adjacent to ESHA. CDFG will be consulted and assist if relocation of bats or bird species is necessary. The construction areas will be bound by silt fencing and/or other appropriate erosion control devices to both eliminate discharge into the creek and also exclude potential species such as the CRLF, foothill yellow-legged frog, western pond turtle, Point Reyes mountain beaver, or Point Reyes jumping mouse from entering the construction site. After construction is complete, the staging area will be broadcast by hand with a native erosion control seed mix. Special Condition 1(l.) requires revegetation monitoring and reporting to the Executive Director to ensure that riparian vegetation is re-established and no additional erosion occurs from the exposed soils. A willow wall revetment will be constructed along the stream bank to both stabilize the area of the stream bank used for access and also to encourage growth

of the pre-existing plant species above the wall. Finally, the proposed project will adhere to Minimization Measures of the Programmatic BO for the CRLF (Exhibit 6) and Terms and Conditions required by the CDFG 1602 Lake and Streambed Alteration Agreement (Exhibit 7) to protect against significant disruption of ESHA or significantly degrade areas adjacent to ESHA.

Therefore, ESHA and areas adjacent to ESHA will be protected for the CRLF, foothill yellow-legged frog, western pond turtle, California clapper rail, salt marsh common yellowthroat, pallid bat, Townsend's western big-eared bat, Point Reyes mountain beaver, and the Point Reyes jumping mouse as discussed. The proposed project will not significantly degrade the areas adjacent to ESHA as a result of the Standard of Repairs required in Special Condition 1. As a result, the proposed project, as conditioned is consistent with Coastal Act Section 30240.

F. California Environmental Quality Act (CEQA)

The Coastal Commission's review and analysis of coastal development permit applications has been certified by the Secretary of Resources as being the functional equivalent of environmental review under CEQA. Section 13096 of the California Code of Regulations requires that a specific finding be made in conjunction with coastal development permit applications showing the application to be consistent with any applicable requirements of CEQA. Section 21080.5(d)(2)(A) of CEQA prohibits a proposed development from being approved if there are feasible alternatives or feasible mitigation measures available which would substantially lessen any significant adverse effect which the activity may have on the environment.

This staff report has discussed the relevant coastal resource issues with the proposal, and has recommended appropriate mitigations to address adverse impacts to said resources. Accordingly, the project is being approved subject to conditions which implement the mitigating actions required of the Applicant by the Commission (see Section III, "Special Conditions").

The Commission incorporates its findings on Coastal Act consistency at this point as if set forth in full. As discussed above, the proposed project has been conditioned to achieve consistency between the proposed project and the requirements of the applicable policies of the Coastal Act. These findings address and respond to all public comments regarding potential significant adverse environmental effects of the project that were received prior to preparation of the staff report. Mitigation measures that will minimize or avoid all significant adverse environmental impact have been required.

As conditioned, there are no feasible alternatives or feasible mitigation measures available, beyond those required, which would substantially lessen any significant adverse impact that the activity would have on the environment. Therefore, the Commission finds that the proposed project, as conditioned to mitigate the identified impacts, can be found consistent with the requirements of the Coastal Act and to conform to CEQA. As such, the Commission finds that only as modified and conditioned by this permit will the proposed project not have any significant adverse effects on the environment within the meaning of CEQA.

V. EXHIBITS

1. Vicinity Map
2. Project Site Location Map
3. Bridge 104 Repair Plan and Cross Section Profiles
4. Marin County Bridge Repair Project BMP Guidelines and Drawings for Bridge 104
5. NOAA, National Marine Fisheries Service Biological Opinion for Marin County Emergency Bridge Repair Projects, November 2006
6. Programmatic Formal Endangered Species Consultation on Issuance of Permits under Section 404 of the Clean Water Act or Authorizations under the Nationwide Permit Program for Projects that May Affect the California Red-legged frog (USFWS, 1999)
7. CDFG 1602 Lake and Streambed Alteration Agreement Notification No. 1600-2006-0673-3 for Miller Creek, San Pablo Bay, Olema Creek, Tributary Lagunitas Creek, Thence Tomales Bay, Stemple Creek, Tributary Estero San Antonio, Thence the Pacific Ocean, Marin County
8. Fish Rescue Protocol Associated with Bridge Abutment Repairs on Miller Creek, Olema Creek, Redwood, Creek and Stemple Creek, Marin County (Hanson Environmental Inc. 2006)
9. County of Marin Sanitary Facilities & Storm Water Pollution Prevention Plan

APPENDIX A

STANDARD CONDITIONS

1. Notice of Receipt and Acknowledgment. The permit is not valid and development shall not commence until a copy of the permit, signed by the permittee or authorized agent, acknowledging receipt of the permit and acceptance of the terms and conditions, is returned to the Commission office.

2. Expiration. If development has not commenced, the permit will expire two years from the date on which the Commission voted on the application. Development shall be pursued in a diligent manner and completed in a reasonable period of time. Application for extension of the permit must be made prior to the expiration date.

3. Interpretation. Any questions of intent or interpretation of any condition will be resolved by the Executive Director of the Commission.

4. Assignment. The permit may be assigned to any qualified person, provided assignee files with the Commission an affidavit accepting all terms and conditions of the permit.

5. Terms and Conditions Run with the Land. These terms and conditions shall be perpetual, and it is the intention of the Commission and the permittee to bind all future owners and possessors of the subject property to the terms and conditions.

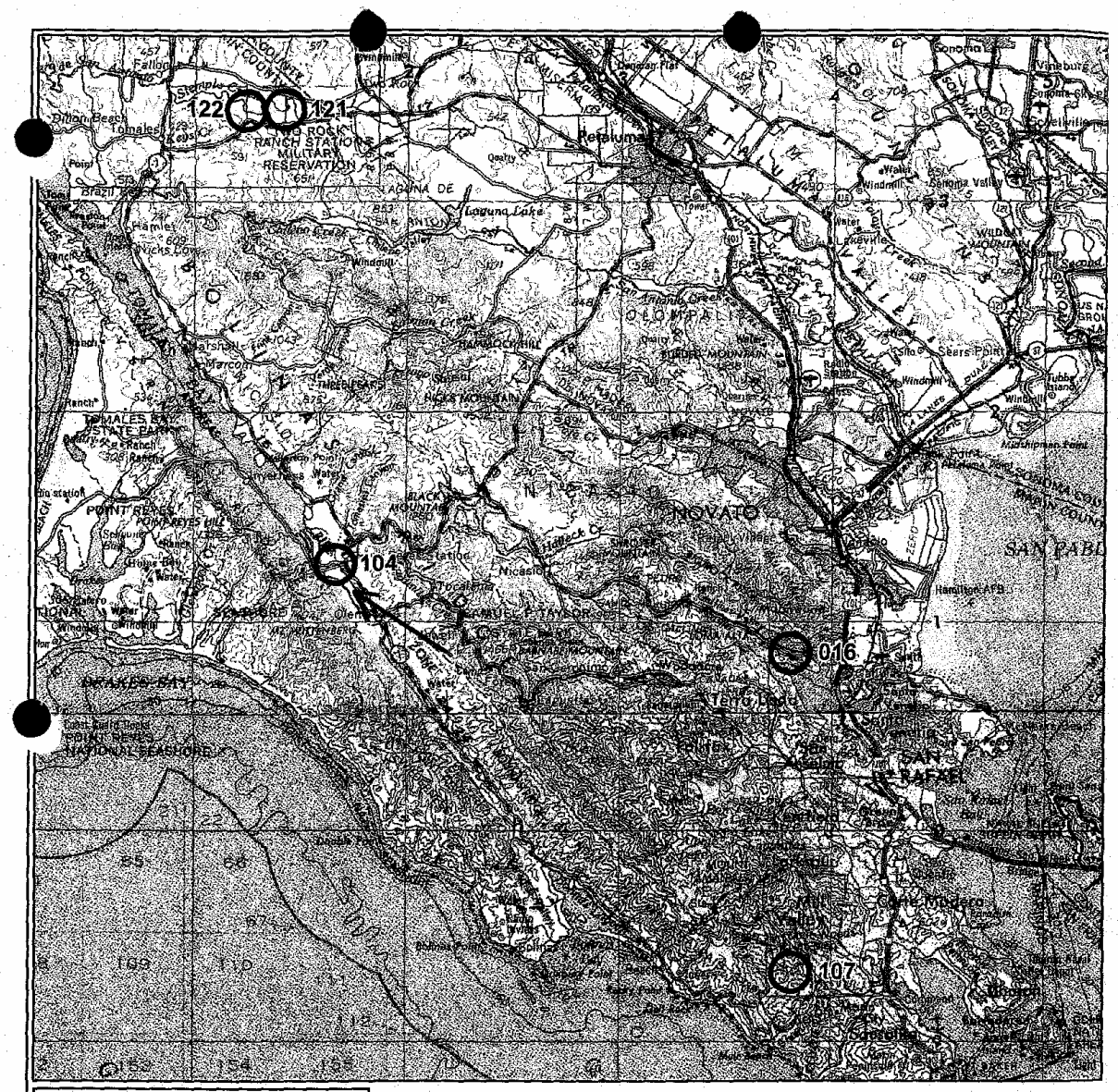


Figure 1
Overview of Bridge Maintenance Locations
Marin County Bridge Maintenance Program
Harris & Associates
Marin County, California

EXHIBIT NO. 1
APPLICATION NO. 2-07-002 Marin Co.
Public Works Dept.
Vicinity Map

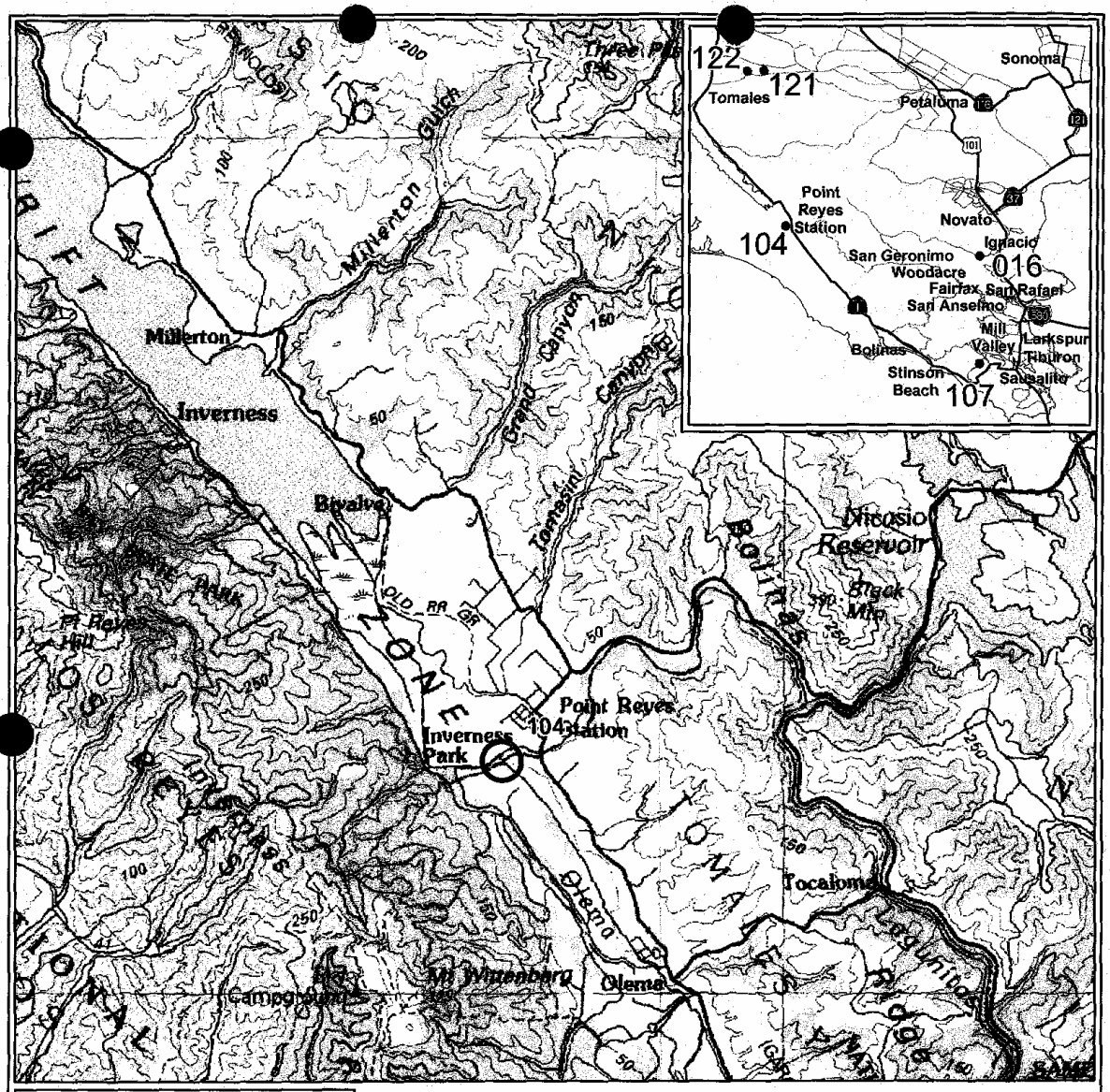


Figure 2

Location of Sir Francis Drake Bridge (#104)

Marin County Bridge Maintenance Program

Harris & Associates

Marin County, California

EXHIBIT NO. 2
APPLICATION NO. 2-07-002 Marin Co.
Public Works Dept.
Project Site Location Map

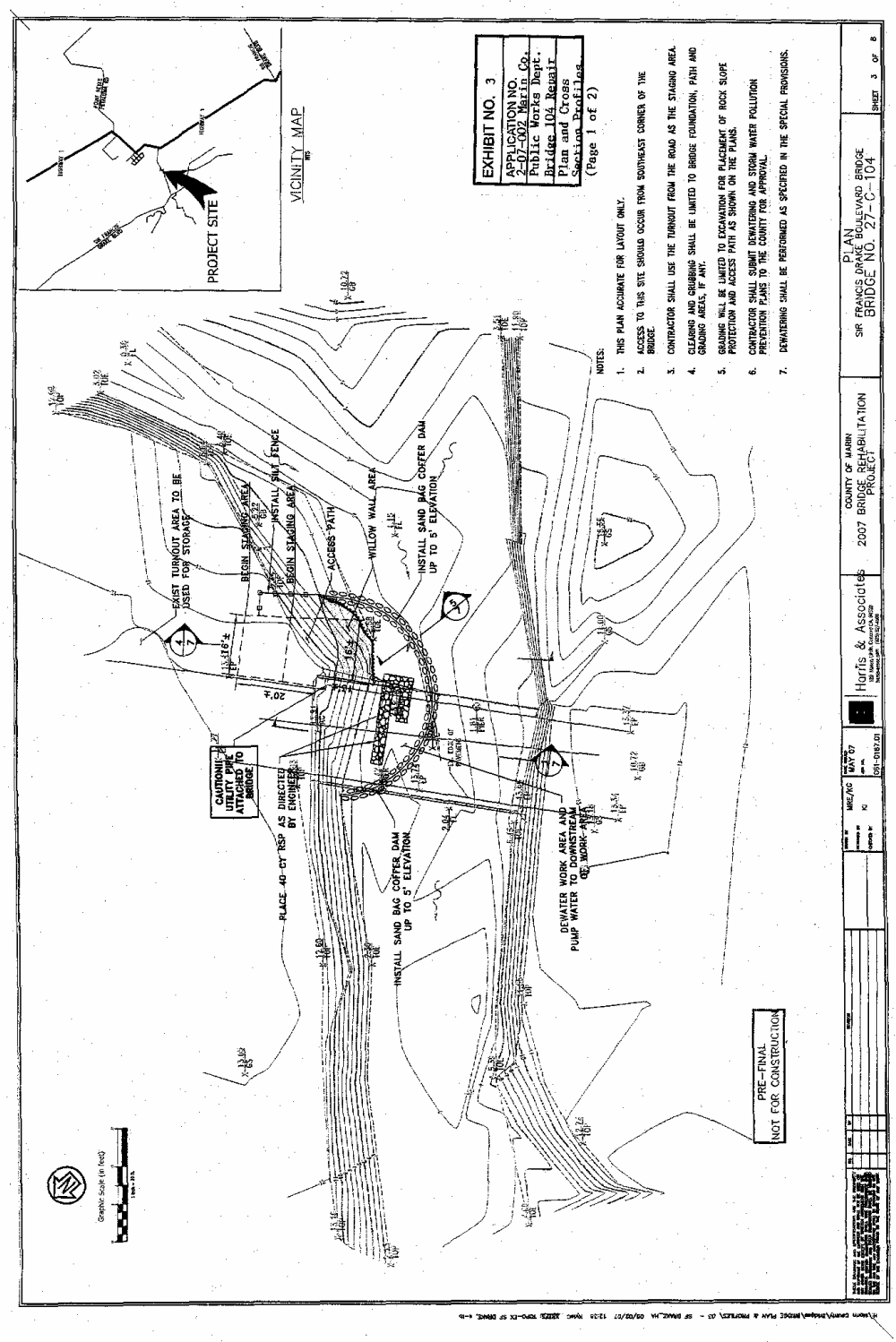


EXHIBIT NO. 3
APPLICATION NO.
2-07-002 Marin Co.
Public Works Dept.
Bridge 104 Repair
Plan and Cross
Section Profiles
(Page 1 of 2)
VICINITY MAP
PROJECT SITE
NOTES:
1. THIS PLAN ACCURATE FOR LAYOUT ONLY.
2. ACCESS TO THIS SITE SHOULD OCCUR FROM SOUTHEAST CORNER OF THE BRIDGE.
3. CONTRACTOR SHALL USE THE TURNOUT FROM THE ROAD AS THE STAGING AREA.
4. CLEARING AND GRUBBING SHALL BE LIMITED TO BRIDGE FOUNDATION, PATH AND GRADING AREAS, IF ANY.
5. GRADING WILL BE LIMITED TO EXCAVATION FOR PLACEMENT OF ROCK SLOPE PROTECTION AND ACCESS PATH AS SHOWN ON THE PLANS.
6. CONTRACTOR SHALL SUBMIT DEWATERING AND STORM WATER POLLUTION PREVENTION PLANS TO THE COUNTY FOR APPROVAL.
7. DEWATERING SHALL BE PERFORMED AS SPECIFIED IN THE SPECIAL PROVISIONS.
EXIST TURNOUT AREA TO BE USED FOR STORAGE
BEGIN STAGING AREA
INSTALL SILT FENCE
ACCESS PATH
WILLOW WALL AREA
INSTALL SAND BAG COFFER DAM UP TO 5' ELEVATION
CAUTION!!
UTILITY PIPE ATTACHED TO BRIDGE
PLACE 40 CY RSP AS DIRECTED BY ENGINEER
INSTALL SAND BAG COFFER DAM UP TO 5' ELEVATION
DEWATER WORK AREA AND PUMP WATER TO DISPOSAL AREA OR WORK AREA
PRE-FINAL
NOT FOR CONSTRUCTION
Graphic Scale (in feet)
Harris & Associates
COUNTY OF MARIN
2007 BRIDGE REHABILITATION PROJECT
PLAN
SIR FRANCIS DRAKE BOULEVARD BRIDGE
BRIDGE NO. 27-C-104
SHEET 3 OF 8

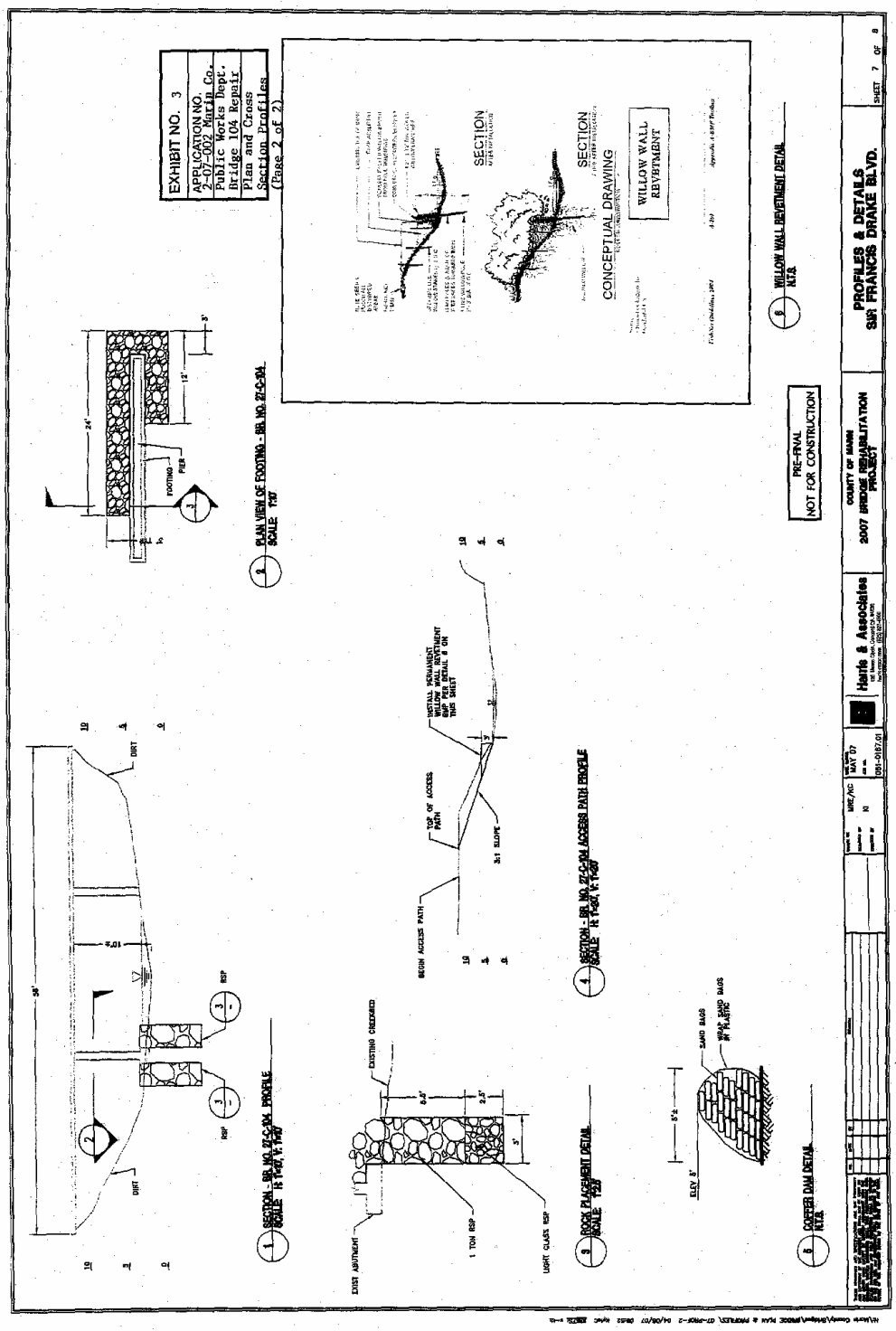


EXHIBIT NO. 3
APPLICATION NO. 2-07-002 Marin Co. Public Works Dept. Bridge 104 Repair
Plan and Cross Section Profiles (Page 2 of 2)
PROFILES & DETAILS
SIR FRANCIS DRAKE BLVD.
COUNTY OF MARIN
2007 BRIDGE REHABILITATION PROJECT
PRE-FINAL
NOT FOR CONSTRUCTION
Harris & Associates
CONCEPTUAL DRAWING
WILLOW WALL REVETMENT
SECTION
SECTION
PLAN VIEW OF FOOTING - BR. NO. 27-C-104
SCALE: 1/8"
SECTION - BR. NO. 27-C-104 PROFILE
SCALE: H 1"=10' V 1"=5'
SECTION - BR. NO. 27-C-104 ACCESS PATH PROFILE
SCALE: H 1"=10' V 1"=5'
ROCK PLACEMENT DETAIL
SCALE: 1"=5'
CUTTER DAM DETAIL
N.T.S.
WILLOW WALL REVETMENT DETAIL
N.T.S.
DIRT
RSP
FOOTING
PIER
EXIST ABUTMENT
EXISTING CREEKBED
1 TON RSP
LIGHT CLASS RSP
BERM ACCESS PATH
TOP OF ACCESS PATH
3:1 SLOPE
INSTALL PERMANENT WILLOW WALL REVETMENT RIP PER DETAIL 8 ON THIS SHEET
SAND BAGS
ELEV. 5'

Attachment F- Bridge #104

Marin County Bridge Repair Project

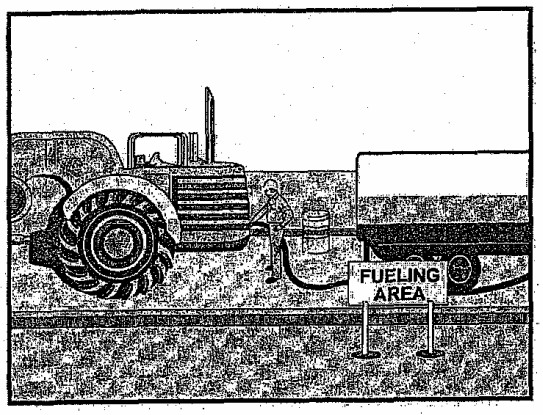
BMP Guidelines and Drawings

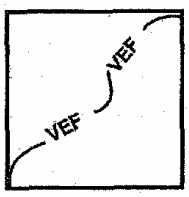
- Vehicle and Equipment Fueling
- Vehicle and Equipment Maintenance
- Material Use
- Spill Prevention and Control
- Silt Fence
- Dewatering
- Gravel Bag Coffer Dam
- Dewatering Nuisance Water
- Stockpile Management
- Erosion Control Blankets, Mats and Geotextiles
- Storm Drain Inlet Protection
- Hydroseeding
- Mulching
- Willow Wall Revetment

EXHIBIT NO. 4
APPLICATION NO.
2-07-002 Marin Co. Public Works Dept.
Marin Co. Bridge Repair Nov. 2006 (Pg. 1 of 46)

Vehicle and Equipment Fueling

NS-9





BMP Objectives
- ○ Soil Stabilization
- ○ Sediment Control
- ○ Tracking Control
- ○ Wind Erosion Control
- ● Non-Storm Water Management
- ○ Materials and Waste Management

Definition and Purpose

Procedures and practices to minimize or eliminate the discharge of fuel spills and leaks into the storm drain system or to watercourses.

Appropriate Applications

These procedures are applied on all construction sites where vehicle and equipment fueling takes place.

Limitations

- On-site vehicle and equipment fueling shall only be used where it's impractical to send vehicles and equipment off-site for fueling.

Standards and Specifications

- When fueling must occur on-site, the contractor shall select and designate an area to be used, subject to approval of the Resident Engineer (RE).
- Absorbent spill clean-up materials and spill kits shall be available in fueling areas and on fueling trucks and shall be disposed of properly after use.
- Drip pans or absorbent pads shall be used during vehicle and equipment fueling, unless the fueling is performed over an impermeable surface in a dedicated fueling area.
- Dedicated fueling areas shall be protected from storm water run-on and runoff, and shall be located at least 15 m from downstream drainage facilities and watercourses. Fueling must be performed on level-grade areas.
- Nozzles used in vehicle and equipment fueling shall be equipped with an automatic shut-off to control drips. Fueling operations shall not be left unattended.

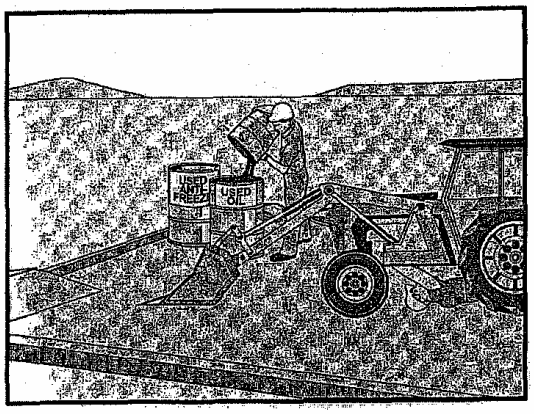
NS-9 Vehicle and Equipment Fueling

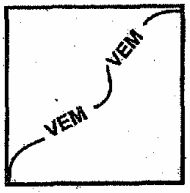
- Protect fueling areas with berms and/or dikes to prevent run-on, runoff, and to contain spills.
- Use vapor recovery nozzles to help control drips as well as air pollution where required by Air Quality Management Districts (AQMD).
- Fuel tanks shall not be "topped-off."
- Vehicles and equipment shall be inspected on each day of use for leaks. Leaks shall be repaired immediately or problem vehicles or equipment shall be removed from the project site.
- Absorbent materials shall be used on small spills instead of hosing down or burying techniques. The spent absorbent material shall be removed promptly and disposed of properly.
- Federal, state, and local requirements shall be observed for any stationary above ground storage tanks.
- Mobile fueling of construction equipment throughout the site shall be minimized. Whenever practical, equipment shall be transported to the designated fueling area.

Maintenance and Inspection

- Fueling areas and storage tanks shall be inspected on a regular basis.
- Keep an ample supply of spill cleanup material on the site.
- Immediately cleanup spills and properly dispose of contaminated soil and cleanup materials.

Vehicle and Equipment Maintenance NS-10





BMP Objectives
- ○ Soil Stabilization
- ○ Sediment Control
- ○ Tracking Control
- ○ Wind Erosion Control
- ● Non-Storm Water Management
- ○ Materials and Waste Management

Definition and Purpose Procedures and practices to minimize or eliminate the discharge of pollutants to the storm drain system or to watercourses from vehicle and equipment maintenance procedures.

Appropriate Applications These procedures are applied on all construction projects where an on-site yard area is necessary for storage and maintenance of heavy equipment and vehicles.

Limitations None identified.

Standards and Specifications

- Drip pans or absorbent pads shall be used during vehicle and equipment maintenance work that involves fluids, unless the maintenance work is performed over an impermeable surface in a dedicated maintenance area.
- All fueling trucks and fueling areas are required to have spill kits and/or use other spill protection devices.
- Dedicated maintenance areas shall be protected from storm water run-on and runoff, and shall be located at least 15 m from downstream drainage facilities and watercourses.
- Drip Pans or plastic sheeting shall be placed under all vehicles and equipment placed on docks, barges, or other structures over water bodies when the vehicle or equipment is planned to be idle for more than one hour.
- Absorbent spill clean-up materials shall be available in maintenance areas and shall be disposed of properly after use.
- Substances used to coat asphalt transport trucks and asphalt spreading equipment shall be non-toxic. Drainage inlet structures and manholes shall

NS-10 Vehicle and Equipment Maintenance

be covered with filter fabric when seal coat, tack coat , slurry seal, or fog seal is applied to adjacent surfaces. Seal coat, tack coat, slurry seal, or fog seal shall not be applied if rainfall or thunderstorms are predicted to occur during the application or curing period.

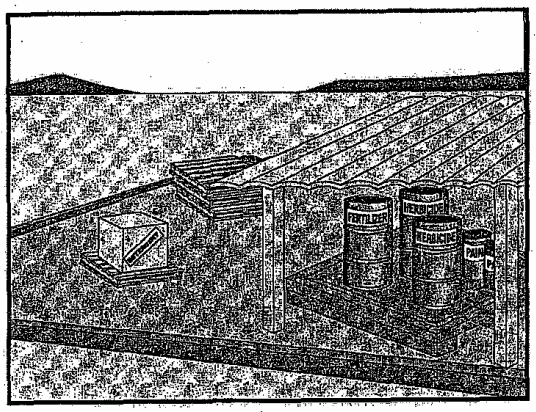
- Use off-site maintenance facilities whenever practical.
- For long-term projects, consider using portable tents or covers over maintenance areas.
- Properly dispose of used oils, fluids, lubricants and spill cleanup materials.
- Do not dump fuels and lubricants onto the ground.
- Do not place used oil in a dumpster or pour into a storm drain or watercourse.
- Properly dispose of or recycle used batteries.
- Do not bury used tires.
- Repair leaks of fluids and oil immediately.
- Provide spill containment dikes or secondary containment around stored oil and chemical drums.

Maintenance and Inspection

- Maintain waste fluid containers in leak proof condition.
- Vehicle and equipment maintenance areas shall be inspected regularly.
- Vehicles and equipment shall be inspected on each day of use. Leaks shall be repaired immediately or the problem vehicle(s) or equipment shall be removed from the project site.
- Inspect equipment for damaged hoses and leaky gaskets routinely. Repair or replace as needed.

Material Use

WM-2



MU

BMP Objectives
- ○ Soil Stabilization
- ○ Sediment Control
- ○ Tracking Control
- ○ Wind Erosion Control
- ● Non-Storm Water Management
- ● Materials and Waste Management

Definition and Purpose

These are procedures and practices for use of construction material in a manner that minimizes or eliminates the discharge of these materials to the storm drain system or to watercourses.

Appropriate Applications

This BMP applies to all construction projects. These procedures apply when the following materials are used or prepared on site:

- Pesticides and herbicides
- Fertilizers
- Detergents
- Plaster
- Petroleum products such as fuel, oil, and grease
- Asphalt and other concrete components
- Hazardous chemicals such as acids, lime, glues, adhesives, paints, solvents, and curing compounds
- Concrete compounds
- Other materials that may be detrimental if released to the environment

Limitations

- Safer alternative building and construction products may not be available or suitable in every instance.

WM-2 Material Use

Standards and Specifications

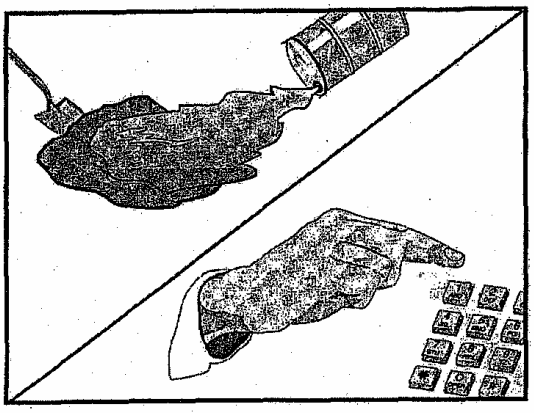
- Material Safety Data Sheets (MSDS) shall be supplied to the Resident Engineer (RE) for all materials.
- Latex paint and paint cans, used brushes, rags, absorbent materials, and drop cloths, when thoroughly dry and are no longer hazardous, may be disposed of with other construction debris.
- Do not remove the original product label, it contains important safety and disposal information. Use the entire product before disposing of the container.
- Mix paint indoors, or in a containment area. Never clean paintbrushes or rinse paint containers into a street, gutter, storm drain or watercourse. Dispose of any paint thinners, residue and sludge(s), that cannot be recycled, as hazardous waste.
- For water-based paint, clean brushes to the extent practical, and rinse to a drain leading to a sanitary sewer where permitted, or into a concrete washout pit or temporary sediment trap. For oil-based paints, clean brushes to the extent practical and filter and reuse thinners and solvents.
- Use recycled and less hazardous products when practical. Recycle residual paints, solvents, non-treated lumber, and other materials.
- Use materials only where and when needed to complete the construction activity. Use safer alternative materials as much as possible. Reduce or eliminate use of hazardous materials on-site when practical.
- Do not over-apply fertilizers and pesticides. Prepare only the amount needed. Strictly follow the recommended usage instructions. Apply surface dressings in smaller applications, as opposed to large applications, to allow time for it to work in and to avoid excess materials being carried off-site by runoff.
- Application of herbicides and pesticides shall be performed by a licensed applicator.
- Contractors are required to complete the "Report of Chemical Spray Forms" when spraying herbicides and pesticides.
- Keep an ample supply of spill clean up material near use areas. Train employees in spill clean up procedures.
- Avoid exposing applied materials to rainfall and runoff unless sufficient time has been allowed for them to dry.

Maintenance and Inspections

- Spot check employees and subcontractors monthly throughout the job to ensure appropriate practices are being employed.

Spill Prevention and Control

WM-4



BMP Objectives
- ○ Soil Stabilization
- ○ Sediment Control
- ○ Tracking Control
- ○ Wind Erosion Control
- ● Non-Storm Water Management
- ● Materials and Waste Management

Definition and Purpose

These are procedures and practices implemented to prevent and control spills in a manner that minimizes or prevents the discharge of spilled material to the drainage system or watercourses.

Appropriate Application

This best management practice (BMP) applies to all construction projects. Spill control procedures are implemented anytime chemicals and/or hazardous substances are stored. Substances may include, but are not limited to:

- Soil stabilizers/binders
- Dust Palliatives
- Herbicides
- Growth inhibitors
- Fertilizers
- Deicing/anti-icing chemicals
- Fuels
- Lubricants
- Other petroleum distillates

To the extent that the work can be accomplished safely, spills of oil, petroleum products, substances listed under 40 CFR parts 110, 117, and 302, and sanitary and septic wastes shall be contained and cleaned up immediately.

WM-4 Spill Prevention and Control

Limitations

- This BMP only applies to spills caused by the contractor.
- Procedures and practices presented in this BMP are general. Contractor shall identify appropriate practices for the specific materials used or stored on-site.

Standards and Specifications

- To the extent that it doesn't compromise clean up activities, spills shall be covered and protected from storm water run-on during rainfall.
- Spills shall not be buried or washed with water.
- Used clean up materials, contaminated materials, and recovered spill material that is no longer suitable for the intended purpose shall be stored and disposed of in conformance with the provisions in these special provisions.
- Water used for cleaning and decontamination shall not be allowed to enter storm drains or watercourses and shall be collected and disposed of in accordance with BMP WM-10, "Liquid Waste Management".
- Water overflow or minor water spillage shall be contained and shall not be allowed to discharge into drainage facilities or watercourses.
- Proper storage, clean-up and spill reporting instruction for hazardous materials stored or used on the project site shall be posted at all times in an open, conspicuous and accessible location.
- Waste storage areas shall be kept clean, well organized and equipped with ample clean-up supplies as appropriate for the materials being stored. Perimeter controls, containment structures, covers and liners shall be repaired or replaced as needed to maintain proper function.

Education

- Educate employees and subcontractors on what a "significant spill" is for each material they use, and what is the appropriate response for "significant" and "insignificant" spills.
- Educate employees and subcontractors on potential dangers to humans and the environment from spills and leaks.
- Hold regular meetings to discuss and reinforce appropriate disposal procedures (incorporate into regular safety meetings).
- Establish a continuing education program to indoctrinate new employees.

Spill Prevention and Control

WM-4

- The Contractor's Water Pollution Control Manager (WPCM) shall oversee and enforce proper spill prevention and control measures.

Clean up and Storage Procedures

- Minor Spills
  - Minor spills typically involve small quantities of oil, gasoline, paint, etc. which can be controlled by the first responder at the discovery of the spill.
  - Use absorbent materials on small spills rather than hosing down or burying the spill.
  - Remove the absorbent materials promptly and dispose of properly.
  - The practice commonly followed for a minor spill is:
    1. Contain the spread of the spill.
    2. Recover spilled materials.
    3. Clean the contaminated area and/or properly dispose of contaminated materials.

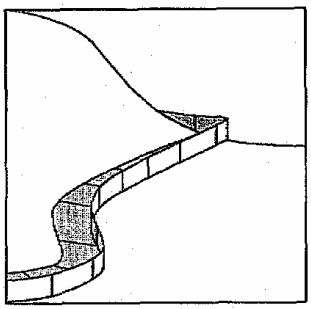
- Semi-Significant Spills
  - Semi-significant spills still can be controlled by the first responder along with the aid of other personnel such as laborers and the foreman, etc. This response may require the cessation of all other activities.
  - Clean up spills immediately:
    1. Notify the project foreman immediately. The foreman shall notify the Resident Engineer (RE).
    2. Contain spread of the spill.
    3. If the spill occurs on paved or impermeable surfaces, clean up using "dry" methods (absorbent materials, cat litter and/or rags). Contain the spill by encircling with absorbent materials and do not let the spill spread widely.
    4. If the spill occurs in dirt areas, immediately contain the spill by constructing an earthen dike. Dig up and properly dispose of contaminated soil.
    5. If the spill occurs during rain, cover spill with tarps or other material to prevent contaminating runoff.

WM-4 Spill Prevention and Control

- Significant/Hazardous Spills
  - For significant or hazardous spills that cannot be controlled by personnel in the immediate vicinity, the following steps shall be taken:
    1. Notify the RE immediately and follow up with a written report.
    2. Notify the local emergency response by dialing 911. In addition to 911, the contractor will notify the proper county officials. It is the contractor's responsibility to have all emergency phone numbers at the construction site.
    3. Notify the Governor's Office of Emergency Services Warning Center, (805) 852-7550.
    4. For spills of federal reportable quantities, in conformance with the requirements in 40 CFR parts 110,119, and 302, the contractor shall notify the National Response Center at (800) 424-8802.
    5. Notification shall first be made by telephone and followed up with a written report.
    6. The services of a spills contractor or a Haz-Mat team shall be obtained immediately. Construction personnel shall not attempt to clean up until the appropriate and qualified staff have arrived at the job site.
    7. Other agencies which may need to be consulted include, but are not limited to, the Fire Department, the Public Works Department, the Coast Guard, the Highway Patrol, the City/County Police Department, Department of Toxic Substances, California Division of Oil and Gas, Cal/OSHA, etc.

Maintenance and Inspection

- Verify weekly that spill control clean up materials are located near material storage, unloading, and use areas.
- Update spill prevention and control plans and stock appropriate clean-up materials whenever changes occur in the types of chemicals on site.



- Sediment Control

Description

A temporary device consisting of permeable fabric that is placed to intercept sheet flow runoff. The silt fencing slows and ponds the runoff, which allows the sediments to settle. The water is then released slowly through the permeable fabric.

Applicability

- Along (not across) streams and channels.
- Along the perimeter of a site.
- Below the toe of exposed or erodible slopes.
- Downslope of exposed soils.
- Around soil stockpiles (see BMP SC-1).

Approach and Standards

- Construct each fence along a level contour to prevent failure via the creation of rills and gullies.
- Keep drainage area upstream of the silt fence to less than 0.25 ac./100 ft (0.3 ha/100m) of fence.
- Keep the length of slope that drains to any point along the fence to 100 feet (30 m) or less.
- Limit the length of any single fence to 500 ft. (150 m.).
- Turn the last 6 feet of the face up slope in a "J" or "L" shape so that ponding can occur.
- Do not connect fence segments, but overlap segments of the fence by at least one foot to ensure complete coverage

- Do not place silt fences in areas that are not suitable for temporary ponding or sediment deposition.
- Do not place silt fences across streams or other drainages that have concentrated flows, as it will lead to undercutting, gully formation and fence failure.
- To strengthen the fence, add gravel backfill on the up-slope side, making sure that the filter fabric is buried deeper than the gravel back fill. In addition, hay bales can be placed behind the filter fabric on the downslope side to strengthen the fence. Up to three hay bales can be place atop of one another as long as they are properly staked to the ground.
- To anchor the fence, rope can be attached to the fence stakes and anchored into the up-slope soil with another stake.

Installation of Fence

- Bury, or key in, filter fabric at least 6 inches below the ground surface and 6 inches across, and then back fill with dirt or gravel.
- Allow 2 to 5 feet at the toe of the slope for sediment to accumulate.
- Make sure that the silt fence is aligned along natural contours to prevent flow diversion.

Limitations

- Do not use for flow diversion.
- Do not use in areas (streams, channels, etc.) where flow is concentrated.
- Requires frequent maintenance.

Requirements

Maintenance

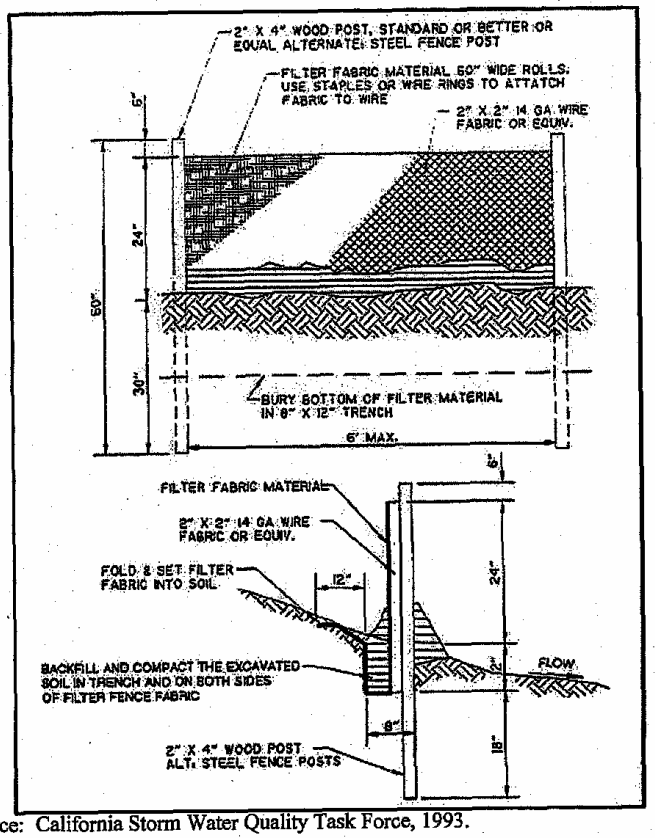
- Inspect prior to and after rain events.
- Remove sediment when accumulations have covered one-third of the fence height.
- Repair any portions of the fence that have been undercut.
- Repair or replace any split, torn, slumping or weathered filter fabric.
- Properly remove and dispose of the silt fence when no longer needed.

Costs

- Costs in staff time for construction, monitoring, and repairs.
- Sediment and device removal and disposal costs.
- Material costs for rocks, filter fabric, and stakes.

Training

- Minimal training necessary but important for proper installation and maintenance.



Source: California Storm Water Quality Task Force, 1993.

References

California Regional Water Quality Control Board, San Francisco Bay Region, *Erosion and Sediment Control Field Manual*, 1998.

California Storm Water Quality Task Force, *Stormwater Best Management Practices Construction Handbook*, March, 1993.

6.5 DEWATERING

DESCRIPTION

Dewatering is the removal of water from the work area. The purpose is to prevent water from interfering with the work (e.g., excavation, bank stabilization, etc.), and to prevent the discharge of contaminants such as suspended sediment and concrete. Dewatering may include damming, creating a stream bypass, pumping or draining. The dewatering of anadromous fish streams must be conducted in consultation with the Department of Fish and Game and NOAA fisheries. A fisheries biologist with state and federal "take" permits will be required to be on-site to relocate any salmonids that become stranded during the dewatering process. An individual project permit may include incidental take requirements specific to the dewatering process.

ENVIRONMENTAL CONCERNS

- ✓ Discharge of sediment or debris to streams or watercourses.
- ✓ Harm to instream aquatic habitat or aquatic species such as fish and amphibians
- ✓ Temporal disruption of fish passage.

BMP OBJECTIVES

- ✓ Protect water quality by reducing erosion and sedimentation.
- ✓ Avoid negative impacts to aquatic and riparian habitat and species.
- ✓ Maintain or restore fish passage.

BEST MANAGEMENT PRACTICES

1) Consult with agency biologists and obtain necessary permits before beginning project (see *Permits* below). Schedule work to take into account the life cycles of salmon and steelhead and any other pertinent threatened or endangered species such as California red-legged frogs, Santa Cruz long-toed salamanders, and San Francisco garter snakes. Consult with agency biologists to identify seasonal work restrictions or limitations on procedures to protect threatened or endangered species in your area. These limitations will be part of the permits you will need to complete this work.

2) If anadromous salmonids are present a fisheries biologist needs to be on site to begin netting fish and moving them downstream as dewatering proceeds.

3) Intakes and outlets should be designed to minimize turbidity and the potential to wash contaminants into the stream.

4) If a work site is to be temporarily dewatered by pumping, intakes should be completely screened with wire mesh not larger than 5 millimeters to prevent amphibians from entering the pump system.

5) A filtration/settling system must be included to reduce downstream turbidity (i.e. filter fabric, turbidity curtain). The selection of an appropriate system is based on the rate of discharge. If feasible, water that is pumped into a pipe should discharge onto the top of bank into a densely vegetated area. This may require extra hose length.

6) Note pre-construction grade prior to placement and return channel bottom, cofferdam areas and discharge sites to preconstruction grades.

7) Once the project work is complete, release water slowly back into the work area to prevent erosion and increased turbidity.

Dewatering BMPs from Fisheries Grants Program Regional General Permit/ Neg/Dec[7]

8) Work must be performed in isolation from the flowing stream. If there is any flow when the work is done, the operator shall construct coffer dams upstream and downstream of the excavation site and divert all flow from upstream of the upstream dam to downstream of the downstream dam. The coffer dams may be constructed with clean river gravel or sand bags, and may be sealed with sheet plastic. Sand bags and any sheet plastic shall be removed from the stream upon project completion. Clean river gravel may be left in the stream, but the coffer dams must be breached to return the stream flow to its natural channel.

9) For minor actions, where the disturbance to construct coffer dams to isolate the work site would be greater than to complete the action (for example, placement of a single boulder cluster), measures will be put in place immediately downstream of the work site to capture suspended sediment. This may include installation of silt catchment fences across the stream, or placement of a filter berm of clean river gravel. Silt fences and other non-native materials will be removed from the stream following completion of the activity. Remove sediment behind the silt fence before removing the fence. Gravel berms may be left in place after breaching, provided they do not impede the stream flow.

10) If it is necessary to divert flow around the work site, either by pump or by gravity flow, the suction end of the intake pipe shall be fitted with fish screens meeting DFG and NMFS criteria to prevent entrainment or impingement of small fish. Any turbid water pumped from the work site itself to maintain it in a dewatered state shall be disposed of in an upland location where it will not drain directly into any stream channel.

11) Measures shall be taken to minimize harm and mortality to listed salmonids resulting from fish relocation and dewatering activities:

a) Fish relocation and dewatering activities shall only occur between June 15 and November 1 of each year.
b) DFG shall minimize the amount of wetted stream channel that is dewatered at each individual project site to the fullest extent possible.
c) All electrofishing shall be performed by a qualified fisheries biologist and conducted according to the National Marine Fisheries Service *Guidelines for Electrofishing Waters Containing Salmonids Listed Under the Endangered Species Act*, June 2000.

[7] Mitigation Measures, Monitoring and Reporting Program for the 2005 Fisheries Restoration Grant Program; Appendix B. California Department of Fish and Game.

Measures to Minimize Impacts to Aquatic Habitat and Species During Dewatering of Project Site[8]

12) Prior to dewatering, determine the best means to bypass flow through the work area to minimize disturbance to the channel and avoid direct mortality of fish and other aquatic vertebrates.

13) Coordinate project site dewatering with a fisheries biologist qualified to perform fish and amphibian relocation activities.

14) Minimize the length of the dewatered stream channel and duration of dewatering.

15) Bypass stream flow around work area, but maintain stream flow to channel below construction site.

16) The work area must often be periodically pumped dry of seepage. Place pumps in flat areas, well away from the stream channel. Secure pumps by tying off to a tree or stake in place to prevent movement by vibration. Refuel in area well away from stream channel and place fuel absorbent mats under pump while refueling. Pump intakes should be covered with 1/8" mesh to prevent entrainment of fish or amphibians that failed to be removed. Check intake periodically for impingement of fish or amphibians.

17) Discharge wastewater from construction area to an upland location where it will not drain sediment-laden water back to stream channel.

Measures to Minimize Injury and Mortality of Fish and Amphibian Species During Dewatering[9]

Prior to dewatering a construction site, fish and amphibian species should be captured and relocated to avoid direct mortality and minimize take. This is especially important if listed species are present within the project site. The following measures are consistent with those defined as *reasonable and prudent* by NOAA for projects concerning several northern California Evolutionary Significant Units for coho salmon, chinook salmon, and steelhead trout.

18) Fish relocation activities must be performed only by qualified fisheries biologists, with a current DFG collectors permit, and experience with fish capture and handling. Check with your local DFG biologist for assistance.

19) In regions of California with high summer air temperatures, perform relocation activities during morning periods.

20) Periodically measure air and water temperatures. Cease activities when water temperatures exceed temperatures allowed by DFG and NOAA.

[8] CALIFORNIA SALMONID STREAM HABITAT RESTORATION MANUAL FISH PASSAGE EVALUATION CH IX April 2003 Guidance to Minimize Impacts Suring Stream Crossing Construction.

[9] same

21) Exclude fish from re-entering work area by blocking the stream channel above and below the work area with fine-meshed net or screens. Mesh should be no greater than 1/8 inch. It is vital to completely secure bottom edge of net or screen to channel bed to prevent fish from re-entering work area. Exclusion screening should be placed in areas of low water velocity to minimize impingement of fish. Screens should be checked periodically and cleaned of debris to permit free flow of water.

22) Prior to capturing fish, determine the most appropriate release location(s). Consider the following when selecting release site(s):

a. Similar water temperature as capture location

b. Ample habitat for captured fish

c. Low likelihood of fish re-entering work site or becoming impinged on exclusion net or screen.

23) Determine the most efficient means for capturing fish. Complex stream habitat generally requires the use of electrofishing equipment, whereas in outlet pools, fish may be concentrated by pumping-down pool and then seining or dipnetting fish.

24) Electrofishing should only be conducted by properly trained personnel following DFG and NOAA guidelines.

25) Minimize handling of salmonids. However, when handling is necessary, always wet hands or nets prior to touching fish.

26) Temporarily hold fish in cool, shaded, aerated water in a container with a lid.

27) Provide aeration with a battery-powered external bubbler. Protect fish from jostling and noise and do not remove fish from this container until time of release.

28) Place a thermometer in holding containers and, if necessary, periodically conduct partial water changes to maintain a stable water temperature. If water temperature reaches or exceeds those allowed by DFG and NOAA, fish should be released and rescue operations ceased.

29) Avoid overcrowding in containers. Have at least two containers and segregate young-of-year (YOY) fish from larger age-classes to avoid predation. Place larger amphibians, such as Pacific giant salamanders, in container with larger fish.

30) If fish are abundant, periodically cease capture, and release fish at predetermined locations.

31) Visually identify species and estimate year-classes of fish at time of release.

32) Count and record the number of fish captured. Avoid anesthetizing or measuring fish.

33) Submit reports of fish relocation activities to DFG and NOAA in a timely fashion.

34) If feasible, plan on performing initial fish relocation efforts several days prior to the start of construction. This provides the fisheries biologist an opportunity to return to the work

area and perform additional electrofishing passes immediately prior to construction. In many instances, additional fish will be captured that eluded the previous days efforts.

35) If mortality during relocation exceeds 5 percent, stop efforts and immediately contact the appropriate agencies.

BMP TOOLBOX

Water Management BMPs
- ✓ Coffer Dam
- ✓ Aqua Barrier
- ✓ Dewatering (pumping or draining)
- ✓ Stream Bypass

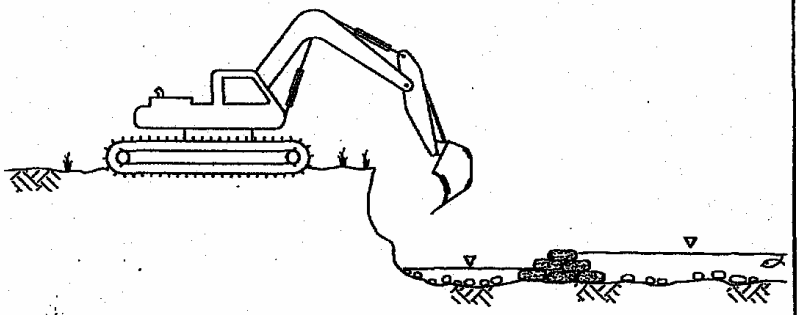
Planning and Prevention BMPs
- ✓ Seasonal Planning

Erosion / Sediment Control BMPs
- ✓ Silt Fence
- ✓ Turbidity Curtain
- ✓ Energy dissipator

PERMITS

6.5 DEWATERING	
Activity or Condition	**Required permit or limitation**
Installation of dewatering system in concurrence with a stream bank and/or channel activity	• U.S. Army Corps of Engineers 404 Permit • Regional Water Quality Control Board 401 Water Quality Certification • Consult DFG biologists and obtain Streambed Alteration Agreement DFG1602 and 2081 incidental Take Permit with CESA/CEQA compliance if anadromous salmonids are present. • NOAA Fisheries Consultation

BENEFITS/LIMITATIONS
- *Difficult to dewater*
- *Inexpensive*
- *Labor intensive to install and remove*
- *Sand may be deposited in stream if bags break, better to use clean gravel*

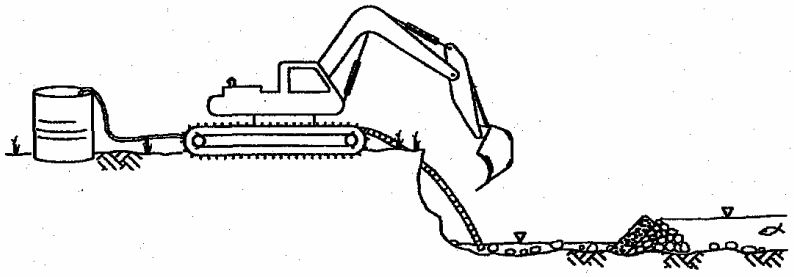


SAND BAG/GRAVEL BAG TECHNIQUE

INSTREAM EROSION AND SEDIMENT CONTROL ISOLATION TECHNIQUES

FILE: Isobreom Techniques3

BENEFITS/LIMITATIONS
- *Allows partial dewatering*
- *Relatively inexpensive*
- *Useful for small streams*
- *Minimal TSS when removed*



NOTES:

Step 1. Install clean gravel

Step 2. Place impermeable soil

Step 3. Do work

Step 4. Decommission berm by removing soil layer first

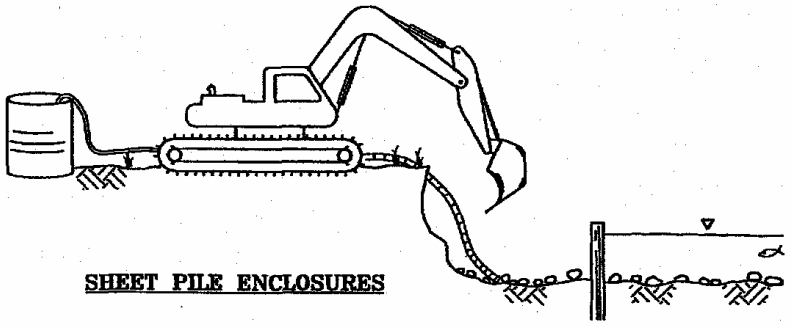
Step 5. Pump work area. Head differential will cause turbo water to flow into work area

Step 6. Remove or spread gravel

GRAVEL/SOIL BERM INSTREAM ISOLATION TECHNIQUE

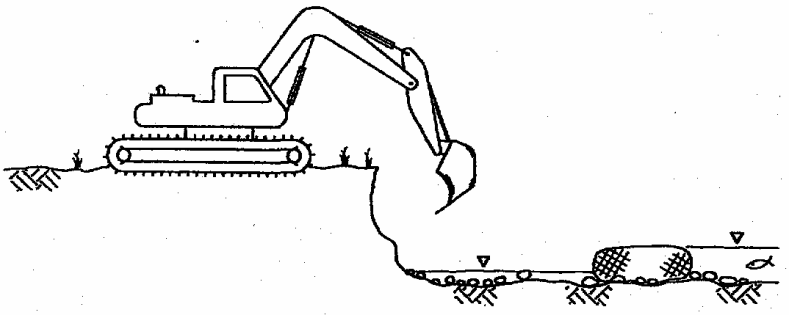
FILE: Berm Instream Techniques

BENEFITS/LIMITATIONS
-Allows full dewatering
-Relatively expensive
-Useful in large rivers, lakes, high velocity
-Not really appropriate for small streams
-Requires staging and heavy equipment access areas



SHEET PILE ENCLOSURES

BENEFITS/LIMITATIONS
-Allows partial dewatering
-Moderately expensive
-Ease of installation and removal unknown
-Can be designed for small streams to large rivers

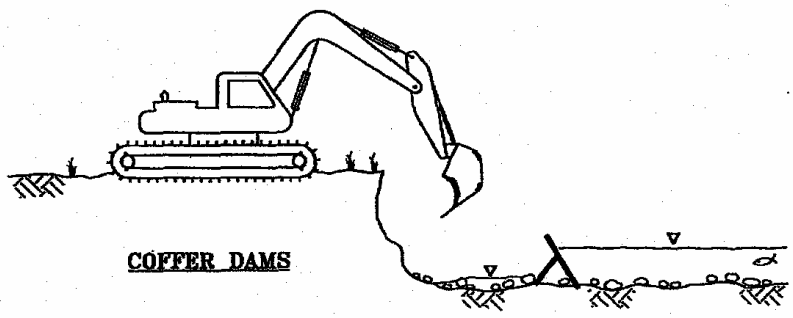


WATER–FILLED GEOTEXTILE (AQUA DAM)

INSTREAM EROSION AND SEDIMENT CONTROL ISOLATION TECHNIQUES

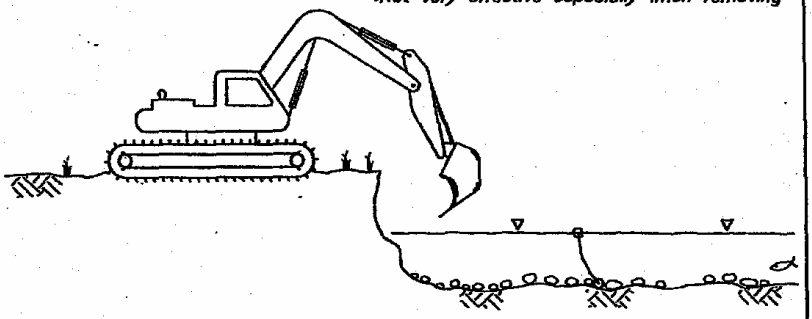
FILE: Instream Techniques2

BENEFITS/LIMITATIONS
-Allows partial dewatering
-Many different types available
-Relatively expensive
-Can be designed for large and small streams
-Ease of installation and removal unknown



COFFER DAMS

BENEFITS/LIMITATIONS
-Does not allow dewatering
-Inexpensive
-Used in slow water lakes only
-Not very effective especially when removing

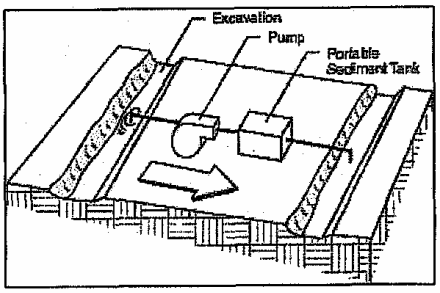


GEOTEXTILES, SILT BARRIERS, CURTAINS

INSTREAM EROSION AND SEDIMENT CONTROL ISOLATION TECHNIQUES

FILE: Instream Techniques1

Water Diversion



- Sediment Control
- Erosion Control
- Pollution Prevention

Description

Practices and methods to remove water from a work area. Dewatering practices should be considered as a last resort control measure, to remove water from a work site after erosion and sediment control measures have been taken.

Applicability

- This applies to flood control channel activities where working under "dry" conditions is necessary or where erosion and sediment control measures have already been applied and water is interfering with work activities. ("Dry" is a relative state essentially meaning that the work is isolated from flowing water).
- Used as a water quality measure to prevent downstream turbidity.

Approach and Standards

- Site should be dewatered if water is present before repairs are begun.
- Bypass water around work sites so work can be done in dry conditions.
- When remaining nuisance water use coffer dams, sumps, water dams, or sheet pilings to keep water out of the work site. Dewater work site so dredging does not cause downstream sedimentation.
- In some dredging instances, dewatering the work site is not necessary. A berm, consisting of accumulated sediment, can be in place as a barrier between the work site and flowing water.
- Properly use gravity systems, or if necessary, pump/generator sets properly to regulate flows to prevent pump damage or wash-out conditions.
- Discharge nuisance water over some form of energy dissipater to keep erosion of the downstream channel to a minimum (see BMPs VR-1 through VR-5).
- Protect diverted water or stored water from getting polluted from construction-related activities.

Water Diversion

Limitations

The controls discussed in this BMP address sediment only. If the presence of polluted water is identified, additional dewatering pollutant treatment controls, such as filtering, should be implemented. Contact the local municipal stormwater program or the Regional Water Quality Control Board for direction.

Requirements

Maintenance

- Inspect dewatering devices and containment systems regularly and repair or replace if the sediment build-up prevents the structure from functioning as designed.
- When floating suction hoses are used, personnel should be assigned to periodically monitor dewatering operations and effluent to ensure that sediment is not discharged into a storm drain or the channel.
- Accumulated sediment removed from a dewatering device must be spread on site and stabilized or disposed of at a disposal site.
- Service pump/generator sets before use. Keep daily records of service and maintenance of your pump/generator systems.

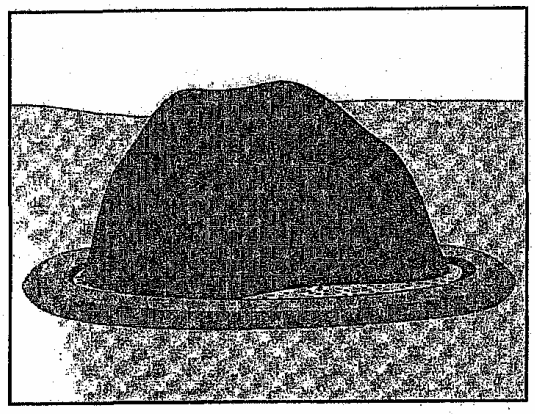
Costs

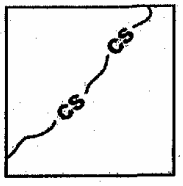
- Materials and maintenance costs for coffer dams, sumps, temporary dams, sheet pilings, hay bales, and/or pump and generator sets.
- Additional costs may be associated with this BMP if dewatering pollutant treatment controls other than sedimentation controls need to be implemented.
- Costs for twenty-four hour security may be needed to prevent vandalism to the pumps, generator, piping, and other materials.
- Staff costs may be necessary to keep the generators fueled if it is necessary to keep the pumps running all night to keep up with flows.

Training

Stockpile Management

WM-3





BMP Objectives
- ○ Soil Stabilization
- ○ Sediment Control
- ○ Tracking Control
- ○ Wind Erosion Control
- ○ Non-Storm Water Management
- ● Materials and Waste Management

Definition and Purpose

Procedures and practices to reduce or eliminate pollution of storm water from stockpiles of soil, and paving materials such as portland cement concrete (PCC) rubble, asphalt concrete (AC), asphalt concrete rubble, aggregate base, aggregate subbase or pre-mixed aggregate and asphalt minder (so called "cold mix" asphalt).

Appropriate Applications

Implemented in all projects that stockpile soil and paving materials.

Limitations

None identified

Standards and Specifications

- Protection of stockpiles is a year-round requirement.
- Locate stockpiles away from concentrated flows of storm water, drainage courses, and inlets.
- Protect all stockpiles from storm water run-on using a temporary perimeter sediment barrier such as berms, dikes, silt fences or sandbag barriers.
- Implement wind erosion control practices as appropriate on all stockpiled material. For specific information see BMP WE-1, "Wind Erosion Control."
- Stockpiles of contaminated soil shall be managed in accordance with BMP WM-7 "Contaminated Soil Management".
- Bagged materials should be placed on pallets and under cover.

WM-3 Stockpile Management

Protection of Non-Active Stockpiles

Non-active stockpiles of the identified materials shall be protected further as follows:

- ***Soil stockpiles:***
  - During the rainy season, soil stockpiles shall be covered or protected with soil stabilization measures and a temporary perimeter sediment barrier at all times.
  - During the non-rainy season, soil stockpiles shall be covered or protected with a temporary perimeter sediment barrier prior to the onset of precipitation.
- ***Stockpiles of portland cement concrete rubble, asphalt concrete, asphalt concrete rubble, aggregate base, or aggregate subbase:***
  - During the rainy season, the stockpiles shall be covered or protected with a temporary perimeter sediment barrier at all times.
  - During the non-rainy season, the stockpiles shall be covered or protected with a temporary perimeter sediment barrier prior to the onset of precipitation.
- ***Stockpiles of "cold mix":***
  - During the rainy season, cold mix stockpiles shall be placed on and covered with plastic or comparable material at all times.
  - During the non-rainy season, cold mix stockpiles shall be placed on and covered with plastic or comparable material prior to the onset of precipitation.

Protection of Active Stockpiles

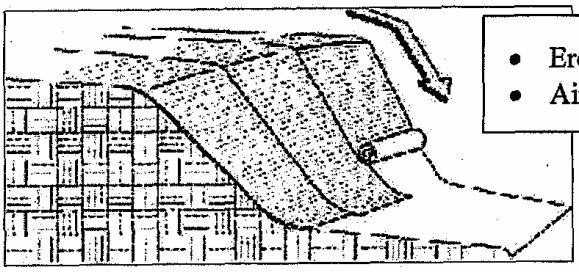
Active stockpiles of the identified materials shall be protected further as follows:

- All stockpiles shall be protected with a temporary linear sediment barrier prior to the onset of precipitation.
- Stockpiles of "cold mix" shall be placed on and covered with plastic or comparable material prior to the onset of precipitation.

Maintenance and Inspections

- Repair and/or replace perimeter controls and covers as needed, or as directed by the RE, to keep them functioning properly.

Section III - SS-1
Erosion Control Blankets, Mats, and Geotextiles



- Erosion Control
- Air Pollution Control

Description

Erosion control blankets are biodegradable or synthetic blankets that are used to stabilize disturbed soils, especially on slopes. Erosion control blankets and mats protect the soil from rain, surface runoff, and wind caused erosion, and can enhance infiltration, decrease soil compaction, and increase protection of seeds from predators.

Applicability

- Channels with flows from 2-feet per second to 4-feet per second (0.6 m/s to 1.2 m/s).
- Channels which will be vegetated and for which the flow velocity is greater than appropriate for the channel.
- Disturbed areas and slopes where mulch needs to be anchored. Blankets or mats can work in areas where crimping or tackifying are not adequate. Steep slopes, steeper than or equal to 1:2 (Vertical/Horizontal).
- Areas and slopes where the danger of erosion is high.
- Slopes adjacent to sensitive areas like streams, wetlands, channels.
- Disturbed areas where plants are slow to mature and provide protection.

Biodegradable and easy-to-install, erosion control blankets are effective measures to reduce erosion and to encourage vegetation growth.

Approach and Standards

- When choosing the materials consider cost, effectiveness, acceptability (i.e., environmental compatibility, regulatory acceptability, and visual impact), vegetation enhancement, installation, and operation and maintenance requirements. Considerations of vegetation enhancement should include native plant compatibility, germination and growth rates, moisture retention, temperature modification, open space or coverage, and nutrient uptake.

- Properly prepare the site to make sure the blanket/mat has complete contact with the soil. Sites can be prepared by grading and shaping the installation area; removing all rocks, dirt clods, vegetation, etc.; preparing the seedbed by loosening the top 2- to 3-inches (50-75 mm) of soil; and applying soil amendments as directed by soil tests, the seeding plan, and manufacturer's recommendations.
- Before installing the blanket, seed the area. All areas disturbed during installation will need to be re-seeded. For turf-reinforcement application, seeding is often performed after mat installation.
- Anchors can include U-shaped wire staples, metal geotextile stake pins or triangular wooden stakes. Wire staples should be at least 11 gauge; metal stake pins should be at least 0.188 in. (5 mm) diameter steel with a 1.5 in. (40 mm) steel washer at the pin head. Drive wire staples and metal stakes flush to soil surface. All anchors should be at least 6- to 18-inches (150-450 mm) long, longer for loose soils, and should resist pull-out.
- Follow the manufacturer's installation recommendations.

Channel Installations:

- Dig initial anchor trench 1-foot deep by 6 inches wide (300 mm by 150 mm) across the channel at the downslope end of the project area.
- Dig intermittent check slots 6-inches deep and 6-inches wide (150 mm by 150 mm) across the channel at 25- to 30-foot intervals (8- to 10-m) along the channel.
- Cut longitudinal channel anchor slots 4-inches deep and 4-inches wide (100 mm by 100 mm) along each side of the installation to bury edges of matting. When possible, extend the matting/blanket 2-to 3-inches (50 mm to 75 mm) above the crest of the channel side slopes.
- Begin at downstream end and in the center of the channel. Place the starting end of the first roll in the anchor trench and secure at 12-inch (300 mm) intervals. The matting/blanket should be initially upside down in the anchor trench.
- As with the first roll, position the next rolls in the anchor trench so that they overlap the preceding roll by at least 3 inches (75 mm).
- Anchor the initial ends of the mats at 2-inch intervals (50 mm) and backfill with soil. Compact the soil.
- Unroll the center strip of matting/blanket upstream. Stop at the next check slot or terminal anchor trench. Unroll adjacent mats/blankets upstream as was done with the center strip. Maintain a 3-inch (75 mm) overlap.
- Fold and secure all rolls and matting so they are snug in all the transverse check slots. Lay the mat/blanket in the bottom of the slot and fold it back against itself. Anchor the two layers of the mat/blanket at 12-inch (300 mm) intervals. Backfill and compact the soil.
- Continue rolling the other mat/blanket widths upstream to the next check lot or anchor trench.

- For non-critical installations, an alternative method is to place two rows of anchors on 6-inch (100 mm) centers at 25-30 foot (8-10 meters) intervals instead of the excavated check slots.
- If necessary, splice the blanket/mat ends to overlap like shingles, by a minimum of 12 inches (300 mm) apart on 12-inch intervals.
- Place the edges of the outside mats/blankets in the longitudinal slots, anchor with staples, backfill and compact the soil.
- Anchor, backfill and compact the upstream end of the mat/blanket in a 12 by 6-inch (300 by 150 mm) terminal trench.
- Secure the mat to the ground using U-shaped wire stables, geotextile pins, or wooden stakes.
- Seed and fill the turf reinforcement matting with soil if needed.

Slope Installations:

- At the top of the slope, anchor the blanket in a 6-inch deep by 6-inch wide trench. Backfill the trench and tamp dirt over the blanket.
- Unroll the blanket down the slope in the same direction that water would flow down the slope. Do not place the blanket horizontally across the slope.
- Overlap the edges of the rolls by 2 to 3 inches (50 mm to 75 mm). Staple the blanket down every 3 feet (1-meter).
- When splicing blankets, place blankets end over end in shingle style with 6 inches (150 mm) overlapping. Staple down the overlapped area about 1-foot (300 mm) apart.
- Blankets should be placed loosely, not stretched, and be stapled down enough to best keep direct soil contact.

Limitations

- High material and labor costs.
- Requires proper site preparation (e.g. smooth grading) to make sure the blanket or matting has enough contact with the soil. Rocky areas are not suitable for rolled blankets.
- Areas where final vegetation will be mowed are not suitable for rolled blankets because the staples can get caught in the mower.
- The use of non-biodegradable plastic sheeting should be kept to covering stock piles, or for temporarily covering small graded areas, because it is easily torn and vandalized and needs to be removed and properly disposed. Plastic sheeting does not allow for any infiltration, which heightens the probability for increased flows and erosion problems downhill and downstream.

Requirements

Maintenance

- Inspect after installation, before and after significant rain, and periodically throughout construction.
- Inspect for erosion and undermining. Perform immediate repairs as necessary.
- For washouts or breakage, repair the damage to the channel or slope (e.g., rills, gullies), before re-installing the blanket.
- When choosing materials, consider the differences in requirements for maintenance frequency, and need for fertilization, and irrigation. Also, consider the durability, longevity, ease of installation and safety as these will contribute to maintenance requirements.

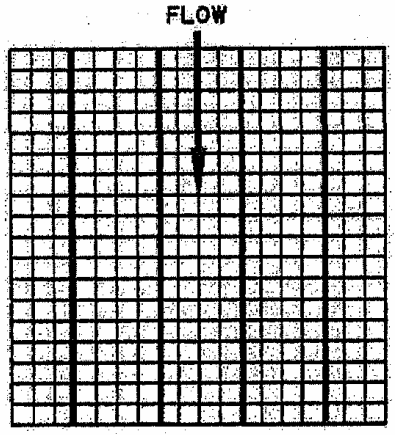
Costs

- Erosion control blankets are more expensive than other forms of erosion control as they have high material and labor costs.
- When choosing the material consider material costs, preparation costs, installation costs, and any add-on costs. Also consider the maintenance frequency and needs for fertilization and irrigation as these contribute costs as well.

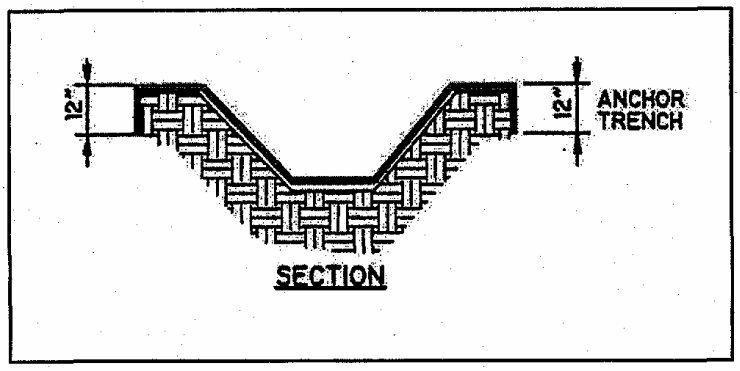
Training

- Minor training on appropriate installation and inspection is needed.

Placement of Erosion Control Blankets In Channels:

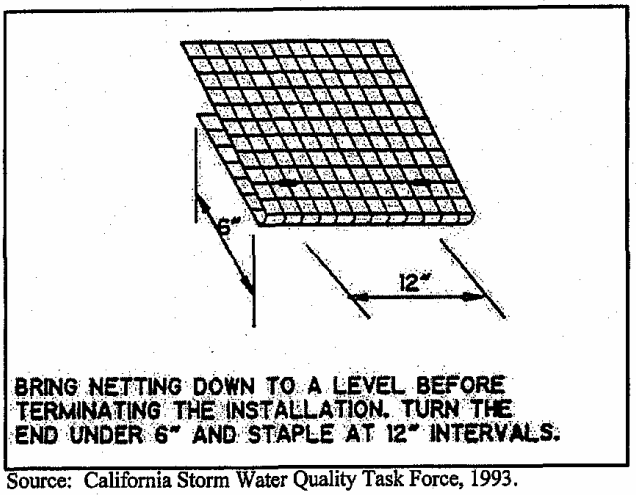


Source: California Storm Water Quality Task Force, 1993.

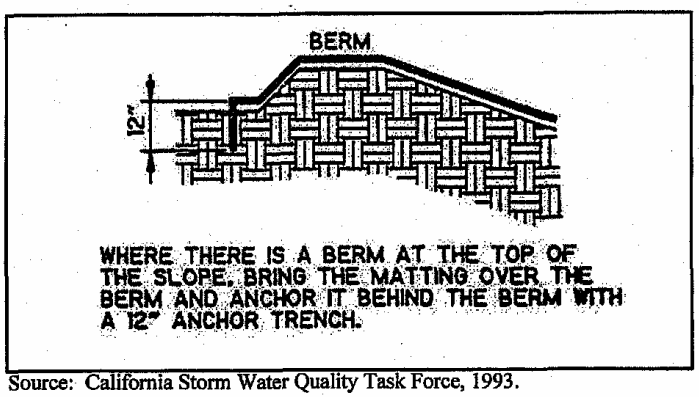


Source: California Storm Water Quality Task Force, 1993.
Note: These techniques work for small channels with low velocities only.

Anchoring Blankets and Mats:

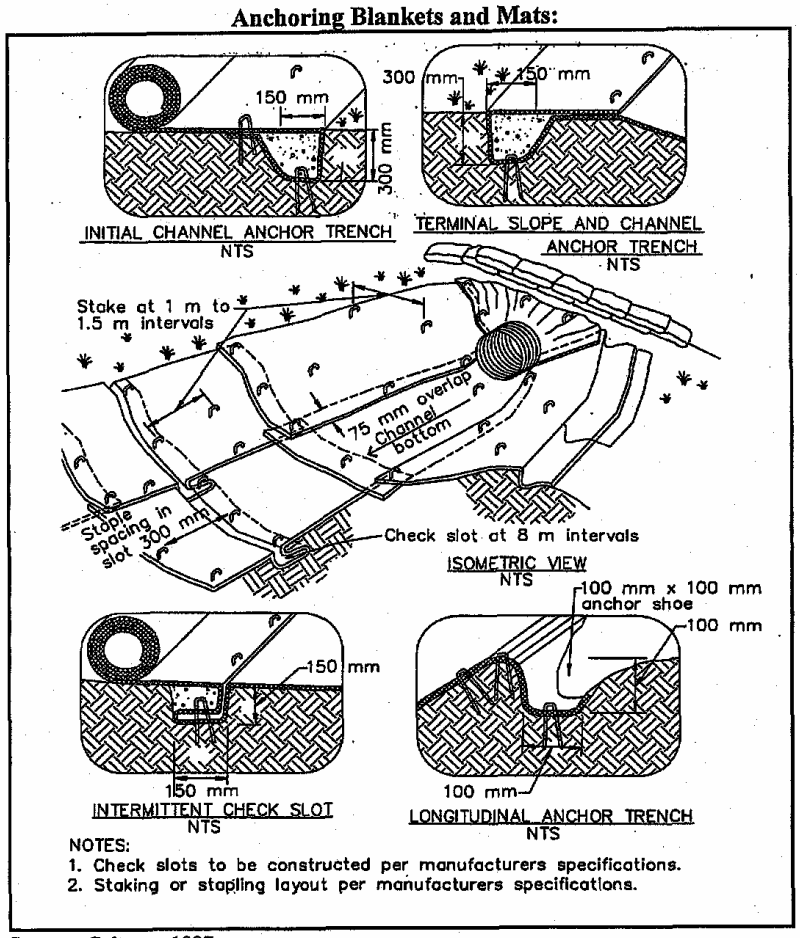


Source: California Storm Water Quality Task Force, 1993.



Source: California Storm Water Quality Task Force, 1993.

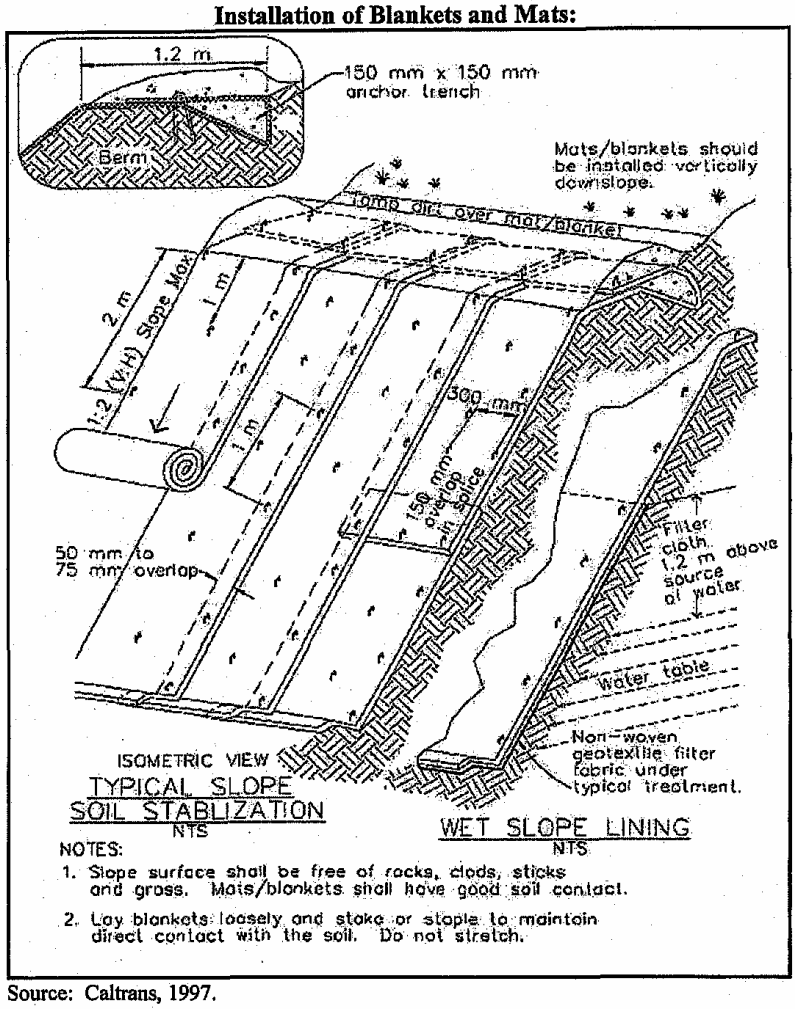
Anchoring Blankets and Mats:



NOTES:
1. Check slots to be constructed per manufacturers specifications.
2. Staking or stapling layout per manufacturers specifications.

Source: Caltrans, 1997.

Installation of Blankets and Mats:



Source: Caltrans, 1997.

References

California Regional Water Quality Control Board, San Francisco Bay Region, *Erosion and Sediment Control Field Manual,* 1998.

California Storm Water Quality Task Force, *Stormwater Best Management Practices Construction Handbook,* ESC20, March, 1993.

Caltrans, *Caltrans Storm Water Quality Handbooks, Construction Contractor's Guide and Specifications,* prepared by Camp Dresser & McKee, Woodward-Clyde, Aguilar Engineering, Psomas & Associates, MK Centennial, CD26B(2), April 1997.

BMP – STORM DRAIN INLET PROTECTION

DESCRIPTION

Curb inlet sediment barriers on storm drains are temporary barriers constructed from concrete block and gravel or gravel filled sandbags.

APPLICATIONS

Curb inlet sediment barriers reduce the sediment discharged into storm drains by ponding the runoff and allowing the sediment to settle out. The structures allow for overflow from high runoff events and the gravel allows the ponds to dewater rapidly. Use this BMP where new construction, reconstruction and/or private development is generating sediment or polluted runoff.

LIMITATIONS

- ✓ Do *not* use this BMP on steep sloping streets.
- ✓ Consider this BMP a "backup," used *in addition to* controlling potential erosion at the source.

CONSTRUCTION GUIDELINES

1) Place the barriers on gently sloping streets where water can pond.
2) The barriers must allow for overflow from a severe storm event. A spillway shall be constructed with the sandbag structures to allow overflow.
3) Sandbags shall be filled with 3/4-inch drain rock or 1/4-inch pea gravel.
4) The sandbags shall be placed in a curved row from the top of curb at least 3 feet into the street. The row should be curved at the ends, pointing uphill.
5) Several layers of bags should be overlapped and packed tightly.
6) Leave a one-sandbag gap in the top row to act as a spillway.

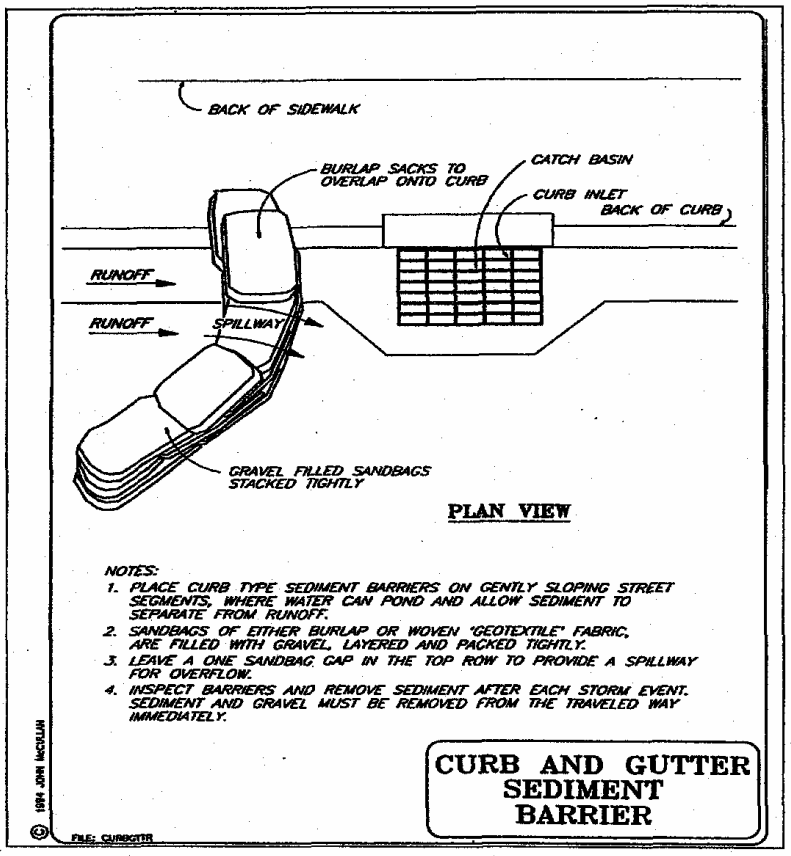
BMP MAINTENANCE

- ✓ Inspect and clean barrier during and after each significant storm and remove sediment from behind sandbag structure after every storm.
- ✓ Any sediment and gravel shall be immediately removed from the traveled way of roads.

- ✓ The removed sediment shall be placed where it cannot enter a storm drain, stream, or be transported off site.
- ✓ If the gravel becomes clogged with sediment, it must be carefully removed from the inlet and either cleared or replaced.

BMP REMOVAL

- ✓ BMP removal should not be necessary.


BACK OF SIDEWALK
BURLAP SACKS TO OVERLAP ONTO CURB
CATCH BASIN
CURB INLET
BACK OF CURB
RUNOFF
RUNOFF
SPILLWAY
GRAVEL FILLED SANDBAGS STACKED TIGHTLY
PLAN VIEW
NOTES:
1. PLACE CURB TYPE SEDIMENT BARRIERS ON GENTLY SLOPING STREET SEGMENTS, WHERE WATER CAN POND AND ALLOW SEDIMENT TO SEPARATE FROM RUNOFF.
2. SANDBAGS OF EITHER BURLAP OR WOVEN 'GEOTEXTILE' FABRIC, ARE FILLED WITH GRAVEL, LAYERED AND PACKED TIGHTLY.
3. LEAVE A ONE SANDBAG GAP IN THE TOP ROW TO PROVIDE A SPILLWAY FOR OVERFLOW.
4. INSPECT BARRIERS AND REMOVE SEDIMENT AFTER EACH STORM EVENT. SEDIMENT AND GRAVEL MUST BE REMOVED FROM THE TRAVELED WAY IMMEDIATELY.
1994 JOHN McCULLAH
FILE: CURBGTTR
CURB AND GUTTER SEDIMENT BARRIER

3) Surface roughening: If the area has been recently loosened or disturbed, no further roughening is required. When the area is compacted, crusted or hardened the soil shall be loosened with discing, raking or harrowing.

4) Spread hydroseed mix uniformly and according to manufacturer's recommendations.

5) Cover hydroseeded areas with other methods as needed.

BMP MAINTENANCE

✓ Inspect during seed establishment period. Re-seed, due to mortality, as necessary. Areas that fail to establish cover adequate to prevent sheet and rill erosion will be reseeded as soon as such areas are identified. Spot seeding can be done on small areas to fill in bare spots where grass did not grow properly.

BMP REMOVAL

✓ BMP removal should not be necessary.

BMP – HYDROSEEDING

DESCRIPTION

Hydroseeding is broadcasting grass seed, tackifier, wood fiber mulch and water on disturbed areas using a hydroseeding machine. This BMP is used to reduce the potential for soil becoming water or air borne, to reduce erosion after vegetation is established, provide vegetative buffers and to aid in habitat protection. Seeding with appropriate seed mixes will also help discourage colonization by non-native and invasive plant species.

APPLICATIONS

Hydroseeding may be used after soil disturbance is completed at construction sites and/or on bare slopes.

LIMITATIONS

- ✓ Hydroseeding should not be used on streambanks or in areas subject to scour.
- ✓ Schedule seeding to fit the germination timing for the specific grasses to be used. Typically this is October and November for cool season California grasses. If seed is applied earlier, increase the seed and mulch quantities

CONSTRUCTION GUIDELINES

1) Select seed mixes appropriate to the season and site conditions. Permit conditions and/or sensitive locations may require special seed mixes. Avoid the use of tall growing flashy fuel types or types with known allelopathy [1] such as annual rye grass. Consider native perennials whenever possible. Commercial fertilizers are seldom recommended as they can leach into the stream and the high nitrogen promotes broadleaf weed growth over native perennial growth. In areas where there is no longer topsoil, consider amending the soil with mycorrhizal inoculants and/or mature screened compost

2) Install needed erosion control practices, such as sediment basins, diversion dikes and channels, prior to hydroseeding. Divert concentrated flows away from hydroseeded areas.

[1] If a plant type is alleleopathic, it exudes chemicals into the surrounding soil that discourage or inhibit other plant types from growing. Eucalyptus is a commonly known alleleopathic species.

3) Surface roughening: If the area has been recently loosened or disturbed, no further roughening is required. When the area is compacted, crusted or hardened the soil shall be loosened with discing, raking or harrowing.

4) Spread hydroseed mix uniformly and according to manufacturer's recommendations.

5) Cover hydroseeded areas with other methods as needed.

BMP MAINTENANCE

✓ Inspect during seed establishment period. Re-seed, due to mortality, as necessary. Areas that fail to establish cover adequate to prevent sheet and rill erosion will be reseeded as soon as such areas are identified. Spot seeding can be done on small areas to fill in bare spots where grass did not grow properly.

BMP REMOVAL

✓ BMP removal should not be necessary.

BMP – MULCHING

DESCRIPTION

Mulching is the application of sterile *weed-free* straw, wood fiber *(as in hydromulch),* local leaf litter, mature screened compost or other suitable materials to the soil surface. This BMP is used to reduce the potential for soil becoming water or air borne, and to encourage vegetation establishment.

Typically, apply an erosion control seed mix to scarified bare ground and cover bare areas where surface erosion and sediment delivery could occur. Rates of about 4,000 pounds/acre, or approximately 50 bales/acre of straw, meet this standard. Use mulch to cover seed to improve microclimatic conditions for germination and seedling survival. Seeding and mulching rates are highly variable, depending on the seed mix used. Consult your local extension office or seed supplier for recommended rates of application and local site conditions.

APPLICATIONS

This BMP may be used to provide protection to the soil surface and to protect newly seeded areas. This BMP may be used in combination with plantings.

LIMITATIONS

- ✓ Mulch may not adhere well to slopes steeper than 2:1.
- ✓ Mulch should not be placed in water bodies or in ditches where water flow is continuous.

CONSTRUCTION GUIDELINES

1) Mulch should be applied so that the soil is covered enough to allow seeds to protect against erosion, but still allow seeds to germinate.

2) Select the appropriate mulch for the site. Local leaf litter or on-site grass mowings may be preferred if available. Rice straw is relatively weed free in upland areas but not necessarily the best choice for wetlands. Irrigated cereal grains and sterile wheat straw may be appropriate, but residual germination may compete with target revegetation species. Wood fiber mulch provided by hydromulchers is the most sterile medium. Mature screened compost is effective both for erosion control and as a soil builder."

BMP – WILLOW WALL REVETMENT

DESCRIPTION

A living revetment built along an eroding stream bank to rebuild the bank and protect it from further erosion.

APPLICATIONS

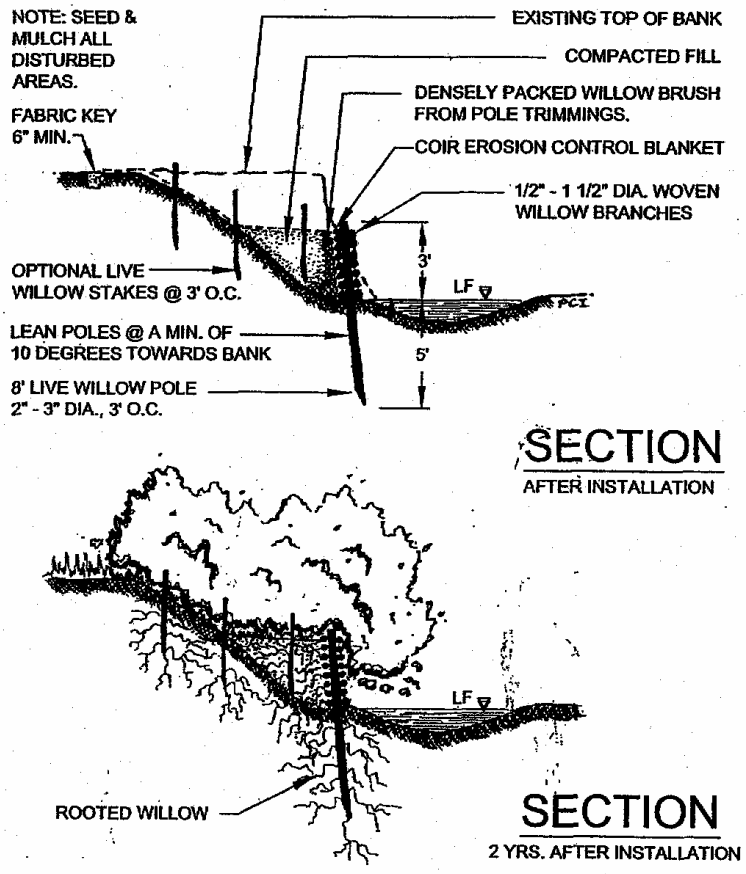
Useful for stream bank protection and re-construction in small to medium river systems. As a living system, the roots grow into the fill soil forming a flexible, porous structure. Provides valuable stream bank habitat for aquatic and terrestrial species.

LIMITATIONS

- ✓ Not suitable for deeply slumped, landslide areas.
- ✓ Drainage areas should be relatively small (generally less than 2,000 acres) with stable streambeds.
- ✓ The system must be built during low flow conditions. May need to divert water around the site and/or dewater.
- ✓ Live cuttings should be taken no earlier than the end of August and kept moist until the rainy season.
- ✓ Willows require nearly full sun conditions to be vigorous. Not to be used in heavy shade. Check to see if willows are growing in the area to confirm if this technique can be used.
- ✓ Maximum height of revetment is three feet, but can be constructed in multiple stair-step under the right moisture regime.
- ✓ Not to be used in a down-cutting stream.

CONSTRUCTION GUIDELINES

1) See drawing for details.
2) Toe of wall starts between the low flow and bank full level. Lay out post positions at 3-foot intervals to conform to bank. Upstream and downstream ends must be tucked into a stable bank feature or keyed with rock.
3) If toe scour is an issue, a boulder toe may be required.



Source:
©Prunuske Chatham, Inc.
Occidental, CA

WILLOW WALL REVETMENT

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

NOV 1 2006

In response refer to:
2006/05440

Lt. Colonel Craig W. Kiley, District Engineer
U.S. Department of the Army
San Francisco District, Corps of Engineers
333 Market Street, 8th Floor
San Francisco, California, 94105-2197

Dear Colonel Kiley:

This document transmits NOAA's National Marine Fisheries Service's (NMFS) biological opinion (Enclosure) based on our review of the U.S. Army Corps of Engineers' (Corps) proposal to issue a permit for emergency maintenance and repair activities at five bridges in Marin County (Corps File Number 400114). The Corps proposes to issue a permit to Marin County Department of Public Works pursuant to Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act. The biological opinion describes NMFS' analysis of the effects of the issuance and implementation of the permit on threatened Central California Coast (CCC) steelhead (*Oncorhynchus mykiss*), endangered CCC coho salmon (*O. kisutch*) and on designated critical habitat for CCC steelhead and CCC coho salmon in accordance with section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

In the enclosed biological opinion, NMFS concludes that the projects are not likely to jeopardize the continued existence of CCC steelhead or CCC coho salmon. NMFS has also concluded the proposed project is not likely to result in the destruction or adverse modification of critical habitat for CCC steelhead and CCC coho salmon. However, NMFS anticipates take of CCC steelhead and CCC coho will occur as a result of the project. An incidental take statement with non-discretionary terms and conditions is included with the enclosed biological opinion.

The Corps' letter of October 27, 2006, also requested consultation for potential adverse effects to Essential Fish Habitat (EFH) under the Magnuson-Stevens Fisheries Conservation and Management Act. NMFS has reviewed the proposed project for potential effects on various life stages of fish species managed with the Pacific Groundfish Management Plan, Coastal Pelagics Fishery Management Plan, and the Pacific Coast Salmon Fishery Management Plan. Based on the project description and the location of the projects on Miller, Stemple, Redwood, and Olema creeks, NMFS has determined that EFH will not be adversely affected by the proposed action. Therefore, no EFH consultation was conducted and no conservation recommendations have been provided by NMFS.

EXHIBIT NO. 5
APPLICATION NO.
2-07-002 Marin Co. Public Works Dept.
NMFS Biological Opinion for Marin Co. 11/2006

Please contact Mr.Gary Stern at (707) 575-6060 if you have any questions concerning this section 7 consultation, or if you require additional information.

Sincerely,

Rodney R. McInnis
Regional Administrator

Enclosure

cc: Russ Strach, NMFS
Bryan Matsumoto, Corps-San Francisco, CA
Liz Lewis, Marin County Department of Public Works, San Rafael, CA
Art Wasserman, 323 Bolinas Road, Fairfax, CA
Marla Lafer, Reg. Water Quality Control Board, Oakland, CA
Jeremy Sarrow, CDFG, Yountville, CA
Copy to file (ARN #151422SWR2006SR00643)

Enclosure

BIOLOGICAL OPINION

ACTION AGENCY: U.S. Army Corps of Engineers, San Francisco

ACTION: Storm Damage Bridge Repair, Marin County, California

CONSULTATION CONDUCTED BY: National Marine Fisheries Service, Southwest Region

TRACKING NUMBER: 2006/05440

DATE ISSUED: November 9, 2006

I. CONSULTATION HISTORY

On September 12, 2006, a Joint Aquatic Resources Permit Application (JARPA) was submitted to the Army Corps of Engineers (Corps) by Sycamore Associates LLC on behalf of Marin County. The JARPA proposed the emergency repair of Bridge No. 016 over Miller Creek at Lucas Valley Road, Bridge No. 104 over Olema Creek at Sir Francis Drake Boulevard, Bridge No. 107 over Redwood Creek at Muir Woods Road, Bridge No. 121 over Stemple Creek at Alexander Road, and Bridge No. 122 over Stemple Creek at Twin Bridge Road. Sycamore Associates provided the Santa Rosa Area Office of NOAA's National Marine Fisheries Service (NMFS) a copy of the JARPA, a biological assessment, and additional information including photographs of each repair site.

On September 21, 2006, a conference call between Sycamore Associates (Michelle Novi and Whitney Fiore) and NMFS (Gary Stern and Daniel Logan) was held to discuss these five Marin County bridge repair projects. Key aspects of the project description were presented to NMFS and measures to avoid or reduce impacts were suggested by NMFS. Due to the urgent nature of the proposed repair work at Bridge No. 107 (Muir Woods Road), NMFS agreed to expedite the section 7 consultation with the Corps to allow for some emergency repair work to be performed in the fall of 2006.

Based on input from NMFS during the September 21, 2006, telephone conference, a revised fish rescue plan was transmitted by Sycamore Associates to NMFS by electronic mail message. The revised fish rescue plan includes electrofishing as a capture method.

By letter of October 27, 2006, the Corps initiated consultation with NMFS for threatened Central California Coast (CCC) steelhead (*Oncorhynchus mykiss*), endangered CCC coho salmon (*O.*

consultation for potential adverse effects to Essential Fish Habitat (EFH) under the Magnuson-Stevens Fishery Conservation and Management Act.

This biological opinion is based primarily on information contained in the following documents:

(1) Biological Assessment and Preliminary Jurisdictional Determination for the County of Marin's Bridge Maintenance Program, Marin County, California prepared by Sycamore Associates; September 2006.

(2) San Francisco Bay Area JARPA for Nationwide Permit Application Np. 3 (Maintenance) for the County of Marin Bridge Maintenance Program, Marin County, California dated September 12, 2006.

(3) Information prepared by Sycamore Associates with the JARPA application dated September 12, 2006.

(4) Revised Fish Rescue Plan dated September 21, 2006.

II. DESCRIPTION OF PROPOSED ACTION

The Corps proposes to issue a permit to Marin County Department of Public Works under Section 404 of the Clean Water Act, as amended (33 U.S.C. 1251 *et seq.*), and Section 10 of the Rivers and Harbors Act, to perform emergency maintenance and repair activities at five bridges in Marin County, California. These bridges have sustained substructure damage as a result of severe weather over the last 20 years, including a large storm on December 31, 2005. The project sites include Bridge No. 016 over Miller Creek at Lucas Valley Road, Bridge No. 104 over Olema Creek at Sir Francis Drake Boulevard, Bridge No. 107 over Redwood Creek at Muir Woods Road, Bridge No. 121 over Stemple Creek at Alexander Road and Bridge No. 122 over Stemple Creek at Twin Bridge Road. Construction is proposed to occur at Bridge No. 107 (Redwood Creek) prior to November 15, 2006. The bridge at Muir Woods requires repair before the next large winter storm event. Construction at the remaining four bridges would occur between July 1 and October 1, 2007.

A. Description of Proposed Work

In order to repair and stabilize each of the five bridges, heavy equipment must access the streambed and install rock riprap in eroded and scoured areas of the streambed. Some areas in the streambed will be further excavated, rock riprap installed, and natural gravel/streambed substrate placed over the riprap. The streambed will be re-contoured to restore an even grade between the area under each bridge and adjacent stream channel. In all areas where the stream is flowing or the bed is wet, the work site will be dewatered. A qualified fisheries biologist will oversee dewatering in accordance with a NMFS-approved Fish Rescue Plan. The biologist will safely relocate any fish or freshwater shrimp encountered during dewatering top suitable areas

downstream or upstream of the construction site. Each repair will take two to five days to complete and impacts to riparian areas and the stream channel will be minimized to the greatest extent possible. Below is a project description for each of the five bridge repair sites.

1. Bridge No. 016 – Lucas Valley Road

The Lucas Valley Road Bridge over Miller Creek will require repair of one of three existing piers. The middle pier is lacking stabilization materials and scour protection. Proposed repair work requires the placement of rock riprap along 35 feet of each side of the middle pier directly underneath the bridge. The project is expected to impact 219 square feet of area at the middle bridge pier.

If water is present, the work site around the middle pier will be dewatered prior to construction. Underneath the bridge and for a distance of approximately 16 feet upstream and five feet downstream, streamflow will be diverted into an open channel or pipe and then discharged back into the channel downstream of the bridge. The total length of the creek diversion will be 75 linear feet. Small cofferdams will be used for dewatering. The cofferdams will remain in place for 1-2 days during construction.

Once dewatered, a small excavator will enter the channel in order to place half-ton (or smaller) rock riprap into position. Any excavated material will be stockpiled and backfilled once repair activities are completed. Construction Best Management Practices (BMPs) and erosion control measures (see description of proposed minimization measures below) will be implemented to ensure no increase in sediment enters the live stream.

2. Bridge No. 104 – Sir Francis Drake Boulevard

The Sir Francis Drake Boulevard Bridge over Olema Creek experienced scour damage at one existing pier at the eastern end of the bridge. Scour protection has washed away and the footing of the pier is visible. Proposed repair involves the placement of one-ton (or smaller) rock riprap to protect the pier from future scour and reinforce the existing structure. Rock riprap will be placed on both sides of the eastern pier and cover the nose of the pier in a "U" shape. The riprap would extend 20 feet on each side of the pier.

Access to the site will be from the southwest side of the channel. The work site is tidally influenced and the site must be dewatered to place the rock riprap. Underneath the bridge and for a distance of approximately 16 feet upstream and five feet downstream, streamflow will be diverted into an open channel or pipe and then discharged back into the channel downstream of the bridge. The total length of the creek diversion will be 45 linear feet.

A small front-loading excavator will be used to remove debris and place the riprap against the pier. Work may be performed at low tide. Any excavated material will be stockpiled and backfilled once repair activities are completed. Construction BMPs and erosion control

measures (see description of proposed minimization measures below) will be implemented to ensure no increase in sediment enters the live stream

3. Bridge No. 107 – Muir Woods Road.

The Muir Woods Road Bridge over Redwood Creek has significant scour on both its eastern and western abutment walls. Repairs will require placement of concrete and riprap along two abutments adjacent to the banks of Redwood Creek. Concrete will be placed within the scour pockets at each abutment. The riprap will extend thirty feet on the eastern abutment, covering approximately two-thirds of the abutment. The riprap will extend 20 feet beyond the upstream end of the abutment. Riprap will be placed along the upstream end of the western abutment and will extend approximately 20 feet upstream.

Prior to construction, the work sites at each abutment will be dewatered for a distance 16 feet upstream and five feet downstream of the bridge. The total length of the creek diversion will be 47 linear feet. Streamflow will be diverted into an open channel maintained between the two abutments. Small cofferdams will be used for dewatering. The cofferdams will remain in place for 10-12 days in order to allow the concrete, poured into the scoured areas around the abutments, to cure.

Once dewatered, a small front-loading excavator will be used to remove debris and place the riprap against the bank/abutments. Any excavated materials will be stockpiled and backfilled once repair activities are completed. Construction BMPs and erosion control measures (see description of proposed minimization measures below) will be implemented to ensure that no increase in sediment enters the live stream.

4. Bridge No. 121 – Alexander Road

The Alexander Road Bridge over Stemple Creek requires repair to both the north and south abutments due to scour. Exposed pilings underneath the bridge will be repaired with the placement of half-ton (or smaller) rock riprap along each 30-foot wide abutment. Access will be from two points, one on each side of the stream. Since work will occur during the dry season, it is anticipated that dewatering of the worksite will not be required. During the dry season, there is no water against the northern abutment pier and a small amount of water against the southern abutment. A small front-loading excavator will be used to remove debris and place riprap against both abutment. Any excavated materials will be stockpiled and backfilled once repair activities are completed. Construction BMPs and erosion control measures (see description of proposed minimization measures below) will be implemented to ensure that no increase in sediment enters the live stream.

5. Bridge No. 122 – Twin Bridge Road

Several of the pilings located underneath the bridge at Twin Bridge Road over Stemple Creek are exposed and scour has eroded the creek bank bottom surrounding the pilings. Proposed

bridge repair work involves the placement of half-ton (or smaller) rock riprap. The riprap will extend through the creek channel starting just beyond the toe of the southern abutment, directly adjacent to the summer low flow channel. The site is typically dry in the summer and no dewatering will be required. The riprap will extend across the channel and into ruderal/non-native grassland, where the second set of exposed pilings is located.

Construction equipment will access the site from the east bank of Stemple Creek. A small front-loading excavator will enter the dry creek bed to place riprap. Any excavated materials will be stockpiled and backfilled once repair activities are completed. Construction BMPs and erosion control measures (see description of proposed minimization measures below) will be implemented to ensure that no increase in sediment enters the live stream.

B. Description of Proposed Minimization Measures

Marin County has proposed the following BMPs, avoidance, and minimization measures:

1) All in-water work during 2006 shall be completed by November 15.

2) All in-water work during 2007 shall be performed between July 1 and October 1.

3) All exposed soils will be revegetated.

4) Vehicle maintenance and refueling will occur each day and well-away from all aquatic areas.

5) Fish will be collected and re-located prior to site de-watering on Miller Creek, Olema Creek, and Redwood Creek.

6) Construction operations will not be conducted during heavy rains.

7) Limits of the area to be cleared and/or graded will be clearly defined and marked to prevent damage by construction equipment.

8) Topsoil overburden will be stockpiled and redistributed within the graded area after rough grading to provide a suitable base for seeding and planting

9) Siltation Fencing will be installed at each site.

10) Post-construction, placement of straw waddles, siltation fencing, and revegetation of all exposed soils will occur.

C. Action Area

The proposed action includes five project sites. Impacts from the project at each site are located underneath existing bridge crossings and extend up to an additional 20 feet upstream and 100 feet downstream of each bridge. At Bridge No. 016 over Miller Creek the area of direct impact extends approximately 75 linear feet on the creek bed under the bridge at Lucas Valley Road and includes an access route on one creek bank. At Bridge No. 104 over Olema Creek, the area of direct impact extends approximately 45 linear feet on the creek bed under the bridge at Sir Francis Drake Boulevard. Both banks of Olema Creek will be affected at Bridge No. 104 due to equipment access on the southwest bank and the project worksite on the northeast bank. At Bridge No. 107 over Redwood Creek, the area of direct impact extends approximately 47 feet on the creek bed under the bridge at Muir Woods Road. Both banks of Redwood Creek will be affected due to access from each bank to the two adjacent abutments. At Bridge No. 121 over Stemple Creek, the area of direct impact extends approximately 50 feet on the creek bed under the bridge at Alexander Road. Two access points, one from each bank, extend the action area of Stemple Creek at Bridge No. 121 to both banks of the creek. At Bridge No. 122 over Stemple Creek, the area direct impact extends approximately 50 feet on the creek bed under the bridge at Twin Bridge Road.

Indirect effects from turbidity and sedimentation arising from project activities will be limited due to the presence of low stream flow conditions or intermittent dry reaches immediately upstream and downstream of each site during the proposed construction period. Based on anticipated intermittently dry or low streamflow condition, potential water quality effects will be limited to a distance of less than 100 feet downstream of each construction site. Consequently, the full action area extends from 145 to 175 feet along the channel at five locations in Miller, Olema, Redwood and Stemple creeks.

III. STATUS OF THE SPECIES AND CRITICAL HABITAT

This biological opinion analyzes the effects of five Marin County bridge repair projects on CCC steelhead Distinct Population Segment (DPS) and CCC coho salmon Evolutionarily Significant Unit (ESU). CCC steelhead are listed as threatened under the Endangered Species Act (ESA) (January 5, 2006, 71 FR 834). The CCC steelhead DPS includes steelhead in coastal California streams from the Russian River to Aptos Creek, and the drainages of Suisun Bay, San Pablo Bay, and San Francisco Bay. CCC coho salmon are listed as endangered under the ESA (June 28, 2005, 70 FR 37160). The CCC coho salmon ESU includes coho salmon in coastal California streams from Punta Gorda in Northern California to and including the San Lorenzo River in Central California.

In addition, this biological opinion analyzes the effects of the projects on designated critical habitat for threatened CCC steelhead (September 2, 2005; 70 FR 52488) and endangered CCC coho salmon (May 5, 1999, 64 FR 24049).

A. Species Description and Life History

1. Steelhead.

Steelhead are anadromous fish, spending some time in both fresh- and saltwater. The older juvenile and adult life stages occur in the ocean, until the adults ascend freshwater streams to spawn. Eggs (laid in gravel nests called redds), alevins (gravel dwelling hatchlings), fry (juveniles newly emerged from stream gravels), and young juveniles all rear in freshwater until they become large enough to migrate to the ocean to finish rearing and maturing to adults. General reviews for steelhead in California document much variation in life history (Shapovalov and Taft 1954, Barnhart 1986, Busby *et al.* 1996, McEwan 2001). Although variation occurs in coastal California, steelhead usually live in freshwater for 1 to 2 years in Central California, then spend 2 or 3 years in the ocean before returning to their natal stream to spawn. Steelhead may spawn 1 to 4 times over their life. Adult steelhead which originated from the Corte Madera Creek watershed typically immigrate from the ocean to freshwater between December and April, peaking in January and February, and juveniles migrate as smolts to the ocean from January through June, with peak emigration occurring in April and May (Fukushima and Lesh 1998). Given the proposed construction period – June 15 through October 31 – and the life history of steelhead, only juvenile steelhead are likely to be present in the action area during construction.

Steelhead fry rear in edgewater habitats and move gradually into pools and riffles as they grow larger. Cover is an important habitat component for juvenile steelhead, both as a velocity refuge and as a means of avoiding predation (Shirvell 1990, Meehan and Bjornn 1991). Steelhead, however, tend to use riffles and other habitats not strongly associated with cover during summer rearing more than other salmonids. Young steelhead feed on a wide variety of aquatic and terrestrial insects, and emerging fry are sometimes preyed upon by older juveniles. Rearing steelhead juveniles prefer water temperatures of 7.2-14.4 degrees Celsius (°C) and have an upper lethal limit of 23.9°C (Barnhart 1986, Bjornn and Reiser 1991). They can survive in water up to 27°C with saturated dissolved oxygen conditions and a plentiful food supply. Fluctuating diurnal water temperatures also aid in survivability of salmonids (Busby *et al.* 1996).

2. Coho salmon.

The life history of the coho salmon in California has been well documented (Shapovalov and Taft 1954, Hassler 1987, Weitkamp *et al.* 1995). In contrast to the life history patterns of other anadromous salmonids, coho salmon in California generally exhibit a relatively simple 3-year life cycle. Adult salmon typically begin their immigration from the ocean to their natal streams after heavy late-fall or winter rains breach the sand bars at the mouths of coastal streams (Sandercock 1991). Coho salmon are typically associated with small to moderately-sized coastal streams characterized by heavily forested watersheds, perennially-flowing reaches of cool, high-quality water, dense riparian canopy, deep pools with abundant overhead cover, instream cover consisting of large, stable woody debris and undercut banks, and gravel or cobble substrates (Sandercock 1991). Immigration generally peaks in December and January, and continues into March, with spawning occurring shortly after arrival at the spawning ground (Shapovalov and Taft 1954).

The eggs generally hatch after four to eight weeks, depending on water temperature. Survival and development rates depend, in part, on fine sediment levels within the redd. Under optimum conditions, mortality during this period can be as low as 10 percent; under adverse conditions of high scouring flows or heavy siltation, mortality may be close to 100 percent (Baker and Reynolds 1986). McMahon (1983) found that egg and fry survival drops sharply when fines make up 15 percent or more of the substrate. The newly-hatched fry remain in the redd from two to seven weeks before emerging from the gravel (Shapovalov and Taft 1954). Upon emergence, fry seek out shallow water, usually along stream margins. As they grow, juvenile coho salmon often occupy habitat at the heads of pools, which generally provide an optimum mix of high food availability and good cover with low swimming cost (Nielsen 1992). Chapman and Bjornn (1969) determined that larger juveniles tend to occupy the head of pools, whereas smaller juveniles are found further down the pools. As the fish continue to grow, they move into deeper water and expand their territories until, by July and August, they reside exclusively in deep pool habitat. Preferred rearing habitat has little or no turbidity and high sustained invertebrate forage production. Juvenile coho salmon feed primarily on drifting terrestrial insects, much of which are produced in the riparian canopy, and on aquatic invertebrates growing within the interstices of the substrate and in leaf litter in pools. Juvenile coho salmon prefer well shaded pools at least 1 m deep with dense overhead cover; abundant submerged cover composed of undercut banks, logs, roots, and other woody debris; and preferred water temperatures of 12-15° Celsius (C) (Brett 1952, Bell 1991, Reiser and Bjornn 1979, McMahon 1983), but not exceeding 22-25°C (Brungs and Jones 1977) for extended time periods. Growth is slowed considerably at 18°C and ceases at 20°C (Stein *et al.* 1972, Bell 1991).

B. Status of Species

1. CCC Steelhead.

While there are no specific estimates of abundance at the population scale, CCC steelhead numbers are substantially reduced from historical levels. A total of 94,000 adult steelhead were estimated to spawn in the rivers of this DPS in the mid-1960s, including 50,000 fish in the Russian River - the largest population within the DPS (Busby *et al.* 1996). Recent estimates for the Russian River are on the order of 4,000 fish (NMFS 1997). Abundance estimates for smaller coastal streams in the DPS indicate low but stable levels with recent estimates for several streams (Lagunitas, Waddell, Scott, San Vincente, Soquel, and Aptos creeks) of individual run sizes of 500 fish or less (62 FR 43937). For more detailed information on the population trend of CCC steelhead, see: Busby *et al.* 1996, NMFS 1997, and NMFS 2005a.
Although CCC steelhead have experienced significant declines in abundance, and long-term population trends suggest a negative growth rate, steelhead have maintained a wide distribution throughout the DPS. This suggests that, while there are significant threats to the population, steelhead possess a resilience that is likely to slow their decline. A recent status review concludes that steelhead in the CCC steelhead DPS remain "likely to become endangered in the foreseeable future" (NMFS 2005a). In June 2004, NMFS evaluated the listing status of CCC steelhead and proposed maintaining the threatened listing determination (69 FR 33102). On

January 5, 2006, NMFS issued a final determination that the CCC steelhead DPS is a threatened species, as previously listed (71 FR 834).

Forestry, urban and rural residential development, water development, flood control, and agricultural activities have contributed to excessive sedimentation, low woody debris abundance and recruitment, elevated water temperature, chemical toxicity, and atypical stream hydrology throughout the streams occupied by CCC steelhead DPS. These factors likely limit production and recovery of the CCC steelhead DPS. Numerous anthropogenic migration barriers (dams and culverts) in the streams of the CCC steelhead DPS impede access to potential habitat, affect sediment transport, and affect water flow and temperature.

2. CCC Coho Salmon

A comprehensive review of estimates of historic abundance, decline, and present status of coho salmon in California is provided by Brown *et al.* (1994). They estimated that annual spawning populations of coho salmon in California ranged between 200,000 and 500,000 fish in the 1940s, which declined to about 100,000 fish by the 1960s, followed by a further decline to about 31,000 fish by 1991. Brown *et al.* (1994) concluded that the California coho salmon population had declined more than 94 percent since the 1940s, with the greatest decline occurring since the 1960s. More recent population estimates vary from approximately 600 to 5,500 adults (NMFS 2005a). Recent NMFS status reviews (NMFS 2001, NMFS 2003, NMFS 2005a) indicate that the CCC coho salmon are likely continuing to decline in number.

CCC coho salmon have also experienced acute range restriction and fragmentation. Adams *et al.* (1999) found that in the mid 1990s coho salmon were present in 51 percent (98 of 191) of the streams where they were historically present, and documented an additional 23 streams within the CCC coho salmon ESU in which coho salmon were found for which there were no historical records.

Recent genetic research in progress by both the NMFS Southwest Fisheries Science Center and the Bodega Marine Laboratory has documented a reduction in genetic diversity within subpopulations of the CCC coho salmon ESU (Daniel Logan, NMFS, personal communication, 2003). The influence of hatchery fish on wild stocks has also contributed to the lack of diversity through outbreeding depression[1] and disease.
Available information suggests that CCC coho salmon abundance is very low, and the ESU is not able to produce enough offspring to maintain itself (population growth rates are negative). CCC coho salmon have experienced range constriction, fragmentation, and a loss genetic diversity. Many subpopulations that may have acted to support the species= overall numbers and geographic distribution have likely been lost. The extant subpopulations of CCC coho salmon may not have enough fish to survive additional natural and human caused environmental

1 Outbreeding depression is the loss of genetic and behavioral diversity in a population through the introduction of parental genotypes that are not well adapted to local environments. Less native genetic material is passed to subsequent generations when native fish hybridize with hatchery fish instead of propagating with other purely native salmon.

change. While the amount of data supporting these conclusions is not extensive, NMFS is unaware of information that suggests a more positive assessment of the condition of the CCC coho salmon ESU and its critical habitat. Recent status reviews for CCC coho salmon conclude that this ESU is presently in danger of extinction (NMFS 2005a), and on June 28, 2005, NMFS changed the ESA designation of this ESU to endangered (70 FR 37160).

C. Status of Critical Habitat

Proposed bridge repair projects include areas with designated critical habitat for CCC coho salmon and CCC steelhead. All four bridge repair sites are within designated critical habitat for CCC coho salmon. Bridge repair sites on Olema and Redwood creeks are within designated critical habitat for CCC steelhead. Bridge repair sites on Miller Creek and Stemple Creek are not within designated critical habitat for steelhead.

Assessment of CCC steelhead designated critical habitat is included in NMFS 2005b, which addresses critical habitat for seven salmon and steelhead ESUs/DPSs. The NMFS Southwest Region established Critical Habitat Analytical Review Teams (CHARTs) consisting of NMFS fishery biologists that assessed the habitat conservation value of Hydrologic Subareas (HSAs) within the ESUs/DPSs. Conservation values of "high", "medium", and "low", were determined from a variety of data sources on quality, quantity, and distribution of physical or biological features associated with spawning, rearing, and migration in each HSA. Because quality of habitat was only one of the rating factors used to determine conservation value, and habitat quality was considered at the geographic scale of an HSA, specific stream reaches within an HSA may, or may not, contain high quality of habitat, regardless of the HSA's overall rating for conservation value.

The HSA containing Olema Creek was identified as low in value for steelhead critical habitat on a three tiered scale of high, medium, and low (NMFS 2005b). The HAS containing Redwood Creek was identified as medium value on a three tiered scale of high, medium, and low. Miller and Stemple creeks were not rated, because they are not designated as critical habitat for steelhead.

The CHARTs did not rate the values of the HSA's for coho salmon critical habitat. The value of Miller Creek for coho salmon critical habitat is likely low due to extensive urban and residential development in the watershed. On Stemple Creek the value for coho salmon critical habitat is likely low on due to extensive agricultural impacts over the past 100 years. On Redwood Creek the value of coho salmon critical habitat likely is medium due to some residential and recreational development, but large portions of the watershed have been protected and remain relatively undisturbed within Federal and State parks. Geographically, Olema Creek represent a relatively small portion of the CCC coho salmon ESU. However, its value to coho salmon is likely high given the current degraded condition of habitat throughout the ESU and it's relationship to the relatively healthy population of CCC coho salmon in Lagunitas Creek. It is estimated that the Lagunitas Creek basin currently supports approximately 10 percent of the remaining wild coho salmon stock within the CCC coho salmon ESU (Weitkamp et al. 1995).

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).

A. Action Area Overview

The action area includes four freshwater streams in northern California Coast range in Marin County. The predominant native vegetation consists of grasslands, oak woodlands, and redwood (*Sequoia sempervirens*) and Douglas fir (*Pseudotsuga menziesii*) forest. The action area has a Mediterranean climate characterized by cool wet winters with typically high runoff, and dry warm summers characterized by greatly reduced instream flows. Fog is a dominant climatic feature, especially along the coast, generally occurring daily in the summer and frequently throughout the rest of the year. Most precipitation falls during the winter and early spring as rain, when occasional flood events do occur. Air temperatures vary throughout the year, usually ranging from 46° F to 56° F.

High seasonal rainfall on bedrock and other geologic units with relatively low permeability, erodible soils, and steep slopes contribute to the flashy nature (stream flows rise and fall quickly) of the watersheds within the action area. In addition, these high natural runoff rates have been increased by extensive road systems and other land uses such as logging and farming. High seasonal rainfall combined with rapid runoff rates on unstable soils deliver large amounts of sediment to river systems. As a result, many river systems within the action area contain a relatively large sediment load, typically deposited throughout the lower gradient reaches of these systems. In the Miller Creek watershed, residential and commercial development of moderate density dominates the creek at lower elevations.

B. Status of the Species/Critical Habitat in the Action Area

This section describes the quality of salmonid habitat in the action area and specific recent information on the status of ESA-listed salmonids present within the action area. The four watersheds in the action are also briefly discussed below.

1. Olema Creek

Olema Creek flows northwest along the San Andreas fault and empties into the lower tidal reach of Lagunitas Creek. The western tributaries to Olema Creek are perennial and are responsible

for maintaining summer base flow in the mainstem. Almost all of Olema Creek watershed is located within Point Reyes National Seashore, as a result, recreational activities comprise the majority of present land use. Cattle grazing also occurs on NPS land, however, livestock exclusion fencing is installed along the majority of Olema Creek and its major tributaries to protect riparian vegetation. Historic land use activities that may have contributed to the decline of ESA-listed salmonid populations within the Olema Creek watershed include logging, stream channel alteration, riparian grazing, and water diversion for residential and agricultural use (Ketcham *et al.* 2004a).

NPS has monitored CCC coho salmon populations in Olema Creek since 1994. Two strong year classes and one weak year class are present and all year classes have shown an increasing trend in the number of returning adult spawners since 1997 (Ketcham *et al.* 2004a). CCC coho salmon juvenile density (determined from summer electrofishing surveys from 1998 through 2003) and smolt outmigration have also exhibited an increasing trend by year class since 1999 (Ketcham *et al.* 2004a). CCC steelhead have been observed throughout the Olema Creek watershed, with a steady decline in observed juvenile density occurring since 1999.

In the area of direct impact, Olema Creek flows from southeast to northwest and is tidally-influenced. Above and below the bridge the creek banks are generally steep and densely vegetated with riparian scrub vegetation including arroyo willow and blackberry. On the northeast creek bank, a residential home is located immediately adjacent to the top of bank. Landscape plants associated with this residence dominate vegetation in this area immediately above the creek. The existing Sir Francis Drake Boulevard bridge at this location is comprised of two lanes and spans 65 feet across Olema Creek. The bridge is 25 feet wide and is supported mid-span by two concrete pylons. The confluence of Olema Creek with Lagunitas Creek is approximately 150 feet downstream of the bridge. Due to the presence of the bridge, associated hardscape and residential development, instream and riparian habitat conditions for anadromous salmonids are degraded. Accordingly, the action area likely supports lower densities of rearing juvenile salmonids than less disturbed areas upstream of this site.

2. Redwood Creek

The majority of the Redwood Creek watershed is located on National Park Service (NPS) and California State Parks land, where recreational activities are the primary land use. Limited agricultural development resulting in agricultural runoff to the creek also occurs, primarily in the lower watershed. Development within the Redwood Creek watershed is primarily associated with recreational facilities including parking lots, roads, visitor buildings, and toilet facilities serviced by septic systems.

Fall electrofishing surveys for juvenile steelhead and coho salmon have been conducted in Redwood Creek by NPS and Dr. Jerry Smith of San Jose State University. Both CCC coho

salmon and CCC steelhead have been present every year between 1992 and 2003 (Smith 2003). However, population abundances vary substantially from year to year, with low population abundances observed in dry years when the creek becomes disconnected, suggesting that the CCC coho salmon and CCC steelhead populations in Redwood Creek are potentially unstable (Smith 2003).

In the action area, Redwood Creek flows from north to south. Around the bridge landings and along the creek banks are large red alders with a dense understory of native vegetation including blackberry and giant chain fern. The bridge for Muir Woods Road is comprised of two-lanes and spans 19 feet across Redwood Creek. The bridge is supported by two concrete pylons at each end. Concrete wingwalls ranging in length from 13 to 35 feet extend to the north and south of the bridge at the toe of each bank. Due to the presence of the bridge and associated hardscape, instream and riparian habitat conditions for anadromous salmonids are slightly degraded.

3. Miller Creek

Miller Creek in eastern Marin County flows east to San Francisco Bay near San Rafael, California. Miller Creek is characterized by moderate urban development in the lower reaches near San Francisco Bay. Threatened CCC steelhead occur in Miller Creek (Leidy et al. 2005). Little information is available to assess the status of the habitat and there is insufficient information to make an accurate evaluation of the population status of CCC steelhead, although the present population abundances are likely significantly reduced from historic levels (Leidy et al. 2005). Coho salmon are not known to occur in Miller Creek.

In the action area, Miller Creek flows from northwest to southeast. The eastern bank of the creek is generally steep and densely vegetated with riparian scrub vegetation dominated by arroyo willow, poison oak, and blackberry. An irrigated lawn area is present on the northeast bank immediately above the stream. The Lucas Valley Road Bridge is a two-lane structure which spans approximately 154 feet across Miller Creek. The bridge is 37 feet across and is supported mid-span by two concrete wall pylons. Due to the presence of the bridge, associated hardscape and residential development, instream and riparian habitat conditions for anadromous salmonids are degraded in the action area. Accordingly, the action area likely supports lower densities of juvenile steelhead than less disturbed areas upstream of this site.

4. Stemple Creek

Stemple Creek in western Marin County flows west into the Arroyo de San Antonio to the north of Tomales Bay. Stemple Creek and adjacent areas are characterized by heavy cattle grazing and other agricultural practices for over the past 100+ years. Grazing has removed significant amounts of riparian vegetation and the erosional/gully features are common. Stream bank and upland areas consist of non-native grassland fields. Large portions of the stream bank are devoid of vegetation. The best available information including this project's biological assessment concludes Stemple Creek does not support a population of CCC steelhead or CCC coho salmon. Thus, proposed repair projects at Bridge No. 121 and Bridge No. 122 on Stemple Creek are not

discussed in the remainder of this biological opinion.

C. Factors Affecting the Species Environment in the Action Area

1. Olema and Redwood Creeks.

Historic land uses included logging, agricultural activities, and preliminary residential development. These land uses required many culverts at road crossings of streams; culverts that were installed with little concern for fish migration and geomorphic matters. Marin County continues to manage the existing roads, drainage facilities, and other infrastructure. Currently, the sites are affected by agricultural and recreational development, land uses which contributes to erosion, chemical toxicity, concentrated surface runoff following precipitation events, and reduced stream flow during low water periods. As with this proposed project, maintenance of the county's bridges in the action area continues to affect listed fish and their habitat in the action area through vegetation management and placement of hardscape material to prevent erosion and stabilize the creek banks.

2. Miller Creek

Aquatic habitat in Miller Creek has been adversely affected by human activities occurring since development of the watershed began in the late 1800s. Residential and commercial development along the stream have resulted in bank armoring, flow diversion, non-point source pollutant contamination, removal of riparian vegetation, and construction of road crossings and other structures that impeded fish passage. These activities have had negative effects on salmonid habitat quality in the action area. The continued maintenance of the county's bridge over Miller Creek in the action area affects steelhead and their habitat in the action area through vegetation management and placement of hardscape material to prevent erosion and stabilize the creek banks.

D. Previous Section 7 Consultations in the Action Area

In 2004, NMFS issued biological opinion to the NPS for their livestock grazing program on NPS lands in Point Reyes National Seashore (PRNS) and the Golden Gate National Recreation Area (GGNRA) in western Marin County, California. This biological opinion addressed the effects of grazing leases on approximately 28,900 acres of park land. These lands are located mainly in the Lagunitas Creek watershed, and include Olema Creek, its largest tributary. The biological opinion concluded that the NPS= grazing lease program is not likely to jeopardize the continued existence of the threatened CCC coho salmon, CCC steelhead, nor is it likely to adversely modify CCC coho salmon critical habitat.

V. EFFECTS OF THE ACTION

The project activities that are expected to affect steelhead, coho, and designated critical habitat for these species include fish relocation, dewatering of stream reaches, and increased mobilization of sediment. Since all riprap will be placed in the channel below grade, the project is not expected to effect channel capacity during high flow events. All such effects are expected to be limited to two to five days of construction in November 2006, on Redwood Creek and four to six days of construction during the summer of 2007 on Miller and Olema creeks. The potential effects of these activities are presented in detail below.

A. Fish Relocation Activities

The project proposes to collect and relocate fish in areas ranging from 45 linear feet in Olema Creek to 75 linear feet in Miller Creek prior to initiating construction activities. Each site includes the total width of the existing bridge and an addition five to 16 feet upstream and downstream of the bridge. Before and during dewatering of the construction site, juvenile steelhead, coho salmon, and other fishes will be captured and relocated away from the work site to avoid direct mortality from heavy equipment operation and minimize the possible stranding of fish in isolated pools. Fish in the immediate project area (approximately 45 to 75 linear feet of channel) will be captured by seine, dip net, and/or electrofisher, and then transported and released to a suitable instream location outside the work area.

Data to precisely quantify the amount of steelhead and coho salmon that will be relocated prior to construction are not available. Juvenile steelhead are expected to be present in the vicinity of Bridge No. 016 on Miller Creek, Bridge No. 104 on Olema Creek, and Bridge No. 107 on Redwood Creek. Juvenile coho salmon are expected to be present in the vicinity of Bridge No. 104 on Olema Creek and Bridge No. 107 on Redwood Creek. Steelhead and coho salmon relocation activities will occur during the summer/fall low-flow period after emigrating smolts have left and before adults have immigrated to the proposed project site. Therefore, NMFS expects the listed steelhead and coho salmon that will be captured during relocation activities will be limited to presmolting juveniles. As described above in the Environmental Baseline section, at most sites few salmonids are expected to be present relative to other areas in each stream.

Fish relocation activities pose a risk of injury or mortality to rearing juvenile salmonids. Any fish collecting gear, whether passive (Hubert 1983, Hubert 1996) or active (Hayes 1983, Hayes *et al.* 1996) has some associated risk to fish, including stress, disease transmission, injury, or death. The amount of unintentional injury and mortality attributable to fish capture varies widely, depending on the method used, the ambient conditions, and the expertise and experience of the field crew. Since fish relocation activities will be conducted by qualified fisheries biologists following both California Department of Fish and Game and NMFS guidelines, direct effects to and mortality of juvenile salmonids during capture will be minimized. Data from two years of similar salmonid relocation activities in Humboldt County indicate that average mortality rate is below one percent (Collins 2004). Those fish that avoid capture may be exposed to risks described in the following section on dewatering.

Although sites selected for relocating fish should have similar water temperature as the capture site and should have ample habitat, in some instances relocated fish may endure short-term stress from crowding at the relocation sites. Relocated fish may also have to compete with other fish causing increased competition for available resources such as food and habitat. Some of the fish released at the relocation sites may choose not to remain in these areas and move either upstream or downstream to areas that have more vacant habitat and a lower density of steelhead or coho salmon. As each fish moves, competition remains either localized to a small area or quickly diminishes as fish disperse. NMFS cannot accurately estimate the number of fish affected by competition, but does not believe this impact will adversely affect the survival chances of individual steelhead or cascade through the watershed population of these species based on the small area that will likely be affected and the small number of salmonids likely relocated.

B. Dewatering

Cofferdams will be used to temporarily divert flows around the work sites in Miller, Olema, and Redwood creeks during the two to five day construction periods. Dewatering activities will affect up to 75 lineal feet of each stream at the construction site.

NMFS anticipates temporary changes in stream flow within and downstream of project sites during dewatering activities. These fluctuations in flow are anticipated to be small, gradual, and short-term. Stream flow in the vicinity of the project sites should be the same as free-flowing conditions except during the actual dewatering event and within the footprint of the dewatered reach where stream flow is bypassed. Stream flow diversion and project work area dewatering are expected to cause temporary loss, alteration, and reduction of aquatic habitat.

Stream flow diversions could harm individual rearing juvenile steelhead or coho salmon by concentrating or stranding them in residual wetted areas before they are relocated (Cushman 1985). Rearing salmonids could be killed or injured if crushed during diversion activities, though direct mortality is expected to be minimal due to relocation efforts prior to dewatering. Juvenile steelhead or coho salmon that avoid capture in the project work area will likely die during dewatering activities due to desiccation, thermal stress, or crushing. NMFS expects that the number of juvenile salmonids that will be killed as a result of stranding during dewatering activities will be less than those killed during relocation.

The temporary cofferdams and water diversion structures in the stream are not expected to impact juvenile steelhead or coho salmon movements in the creeks. Miller Creek normally dries to standing pools during the summer/fall season, and the cofferdams will restrict movement of juvenile steelhead in a manner similar to the seasonally normal isolation of pools by dry land. Redwood Creek and Olema Creek typically have year-round flow at the project sites, but because the duration of project activities at each location will be limited to a few days, adverse impacts, if any, will be minimal and unlikely to affect the survival chances of individual fish.

Benthic (*i.e.*, bottom dwelling) aquatic macroinvertebrates within the project sites may be killed or their abundance reduced when creek habitat is dewatered (Cushman 1985). However, effects to aquatic macroinvertebrates resulting from stream flow diversions and dewatering will be temporary because construction activities will be relatively short-lived, the dewatered reach is small (45 linear feet) and rapid recolonization (about one to two months) of disturbed areas by macroinvertebrates is expected following rewatering (Cushman 1985; Thomas 1985; Harvey 1986). In addition, the effect of macroinvertebrate loss on juvenile salmonids is likely to be negligible because food from upstream sources (via drift) would be available downstream of the dewatered areas since stream flow, if present, will be maintained around the project work sites, and food sources derived from the riparian zone will not be affected by the project. Based on the foregoing, the loss of aquatic macroinvertebrates as a result of dewatering activities is not expected to adversely affect ESA-listed salmonids .

C. Increased Mobilization of Sediment in the Stream Channel

Dewatering will enable project construction to occur in the dry. Contouring of the creek bed and bank may lead to increase sediment runoff into the streams during subsequent winter storms. Installation of siltation fencing is expected to reduce the amount of sediment immediately entering the creek during construction. Following construction, re-vegetation of exposed soils and the placement of straw and other erosion control materials are expected minimize subsequent erosion at the work sites.

Bridge repair construction and other near stream construction activities may cause temporary increases in turbidity (reviewed in Furniss *et al.* 1991; Reeves *et al.* 1991; and Spence *et al.* 1996). NMFS anticipates that short-term increases in turbidity will occur during proposed dewatering activities, construction and removal of cofferdams, and bank/bed construction activities. Sediment may affect salmonids by a variety of mechanisms. High concentrations of suspended sediment can disrupt normal feeding behavior and efficiency (Cordone and Kelly 1961; Bjornn *et al.* 1977; Berg and Northcote 1985), reduce growth rates (Crouse *et al.* 1981), and increase plasma cortisol levels (Servizi and Martens 1992). High turbidity concentrations can reduce dissolved oxygen in the water column, result in reduced respiratory functions, reduce tolerance to diseases, and can also cause fish mortality (Sigler *et al.* 1984; Berg and Northcote 1985; Gregory and Northcote 1993; Velagic 1995; Waters 1995). Even small pulses of turbid water will cause salmonids to disperse from established territories (Waters 1995), which can displace fish into less suitable habitat and/or increase competition and predation, decreasing chances of survival. Increased sediment deposition can fill pools and reduce the amount of cover available to fish, decreasing the survival of juveniles (Alexander and Hansen 1986).

Much of the research discussed in the previous paragraph focused on turbidity levels considerably higher than those expected to result from the proposed construction activities by this project. NMFS expects that temporary increases in turbidity due to these bridge repair projects following winter storm events will increase turbidity to levels considerably less than the turbidity threshold commonly cited as beginning to cause minor behavioral changes (Henley *et al.* 2000), and always less than turbidity levels necessary to injure or kill salmonids. The

applicant proposes to minimize the effects of these activities by following BMPs, minimizing the extent of construction equipment used in the creek channel, and replanting the site with native vegetation. NMFS expects some limited behavioral effects to steelhead and coho salmon juveniles, such as temporarily vacating preferred habitat or temporarily reduced feeding efficiency, to be the most likely results from implementation of the proposed action. These behavioral changes are not likely to reduce the survival chances of individual salmonids.

D. Impacts to Designated Critical Habitat

Primary constituent elements (PCEs) of designated critical habitat for CCC steelhead and CCC coho salmon in the action area include water quality and quantity, foraging habitat, natural cover including large substrate and aquatic vegetation, and migratory corridors free of obstructions. Within the action area, PCEs are degraded in Miller Creek. Urban development near and along lower Miller Creek has reduced the amount of in-stream cover which has reduced habitat diversity and complexity. PCEs are less degraded in Redwood Creek and Olema Creek. However, bank armoring to stabilize eroding areas and support the existing bridges has hardened the stream banks and reduced the amount of riparian vegetation near the stream. The potential effects of this project to designated critical habitat include short-term disturbance of the streambed during construction, localized changes of the streambed at existing bridge pier footings, and the placement of additional hardscape in the creek bed which further precludes channel migration.

For this project most rock riprap will be placed below existing creek grade. Thus, surface conditions on the creek bed are not expected to change significantly except in areas directly adjacent to a bridge footing. Pools which have been scoured out in the streambed at existing bridge footings will be filled and these areas will become shallower in water depth. These pools were created by scour during flood events and, thus, are not natural features of the stream.

The addition of rock riprap under these bridges will further prevent channel migration. Channel migration has already been significantly constrained at these locations by the existing bridge piers and riprap along banks. Channel migration generally benefits fish habitat by allowing for recruitment of new organic material and gravel/cobble to the stream. Channel migration enhances the natural connection between the stream, its floodplain, and the surrounding landscape. Rock riprap and other hardscape material create static or fixed structures which interfere with physical and ecological processes of streams. This proposed project is not expected to significantly affect stream dynamics within action areas, because existing hard structures have already constrained channel migration

Following installation of large rock riprap in scour holes, gravel and cobble substrate will be replaced at each construction site and remain for fish cover, macroinvertebrate productivity, fish spawning, etc. The projects' expected minimal disturbance, small construction areas, and short duration of construction are not expected to degrade PCEs of designated critical habitat for CCC steelhead or CCC coho salmon.

E. Interrelated and Interdependent Actions

Interrelated actions are defined as actions that are part of a larger action and depend on that larger action for their justification (50 CFR §402.02). Interdependent actions are defined as those that have no significant independent utility apart from the proposed action (50 CFR §402.02). NMFS does not anticipate any interrelated or interdependent actions associated with the proposed action.

F. Summary of Effects

Few juvenile steelhead and coho salmon are expected to be within the action areas during construction and those present likely make up a very small proportion from these watersheds or the CCC steelhead DPS or CCC coho salmon ESU. Due to the timing of the proposed actions, no adult steelhead or coho salmon, or migrating steelhead or coho smolts will be adversely affected by the project.

Habitat impacts, including effects to designated critical habitat, due to project construction are expected to be mostly temporary and minor disturbances to the streambed, bank, and flow of the creeks. The condition of the creek bed for a distance of 45 to 75 linear feet in the action areas will be temporarily disturbed by dewatering and construction, but will be restored at the end of construction. The creation of additional hard structure in the creek bed at the base of existing bridge footings and below grade is expected to have minimal impacts on the evolution of stream channel function in the action area due to the extent of existing hardscape at these bridge crossings. Thus, the project is not expected to degrade PCEs of designated critical habitat for CCC steelhead and CCC coho salmon in the action area.

Based on the low mortality rates for relocation efforts and the small number of salmonids present in the action area, NMFS anticipates no more than two percent[2] of the juvenile steelhead or coho salmon present at the construction sites will be harmed or killed by project implementation. This is due to the relocation efforts and the low injury and mortality rates expected during fish collections. Fish that elude capture will remain in the project area during construction activities and could be lost to dessication, thermal stress or crushing by heavy equipment.

Steelhead are well distributed throughout the watersheds of Miller, Redwood and Olema Creeks. Coho salmon are relatively well distributed through the watersheds of Redwood and Olema creeks. Due to the relatively large number of juveniles produced by each spawning pair, steelhead and coho salmon spawning in this watershed in future years are likely to produce enough juveniles to replace the few that may be lost at the project sites due to relocation and dewatering. It is unlikely that the small potential loss of juveniles by this project will impact

[2] Anticipated mortality from electrofishing and dewatering combined may exceed 1 percent of the fish in the area dewatered.

future adult returns.

VI. CUMULATIVE EFFECTS

NMFS is not aware of any future State or private activities that are reasonably certain to occur within the action area.

VII. CONCLUSION

After reviewing the current status of CCC steelhead and CCC coho salmon, the environmental baseline for the action area, the effects of the proposed actions, and the cumulative effects, it is NMFS' biological opinion that the proposed emergency maintenance and repair activities at five bridges in Marin County, California, is not likely to jeopardize the continued existence of threatened CCC steelhead or endangered CCC coho salmon.

After reviewing the current status of critical habitat, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is NMFS' biological opinion that the proposed bridge repair projects are not likely to result in the destruction or adverse modification of designated critical habitat for CCC steelhead or CCC coho salmon.

VIII. 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 NMFS 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 NMFS as specified in the incidental take statement (50 CFR §402.14(I)(3)).

A. Amount or Extent of Take

The number of threatened steelhead and coho salmon that may be incidentally taken during project activities is expected to be small, and limited to the pre-smolt juvenile life history stage. The precise number of fish cannot be accurately quantified due to: (1) the precise number of fish that may be present is unknown; and (2) the precise number of fish that that may be stranded, dessicated or crushed is unknown. Therefore, take from relocation of steelhead and coho salmon is quantified as: All steelhead and coho salmon present in the action areas during the one to five day construction periods at each of the three project sites may be captured by relocation activities.

Based on the low mortality rates for relocation efforts and the small number of salmonids present in the action area, NMFS anticipates no more than two percent of the juvenile salmonids present in the area to be dewatered will be harmed or killed during relocation, dewatering, and construction activities. This is due to the small area affected, the relocation efforts and the low injury and mortality rates expected from electrofishing.

B. Effect of the Take

In the accompanying biological opinion, NMFS has determined that the anticipated take is not likely to result in jeopardy to CCC steelhead or CCC coho salmon.

C. Reasonable and Prudent Measures

NMFS believes the following reasonable and prudent measures are necessary and appropriate to minimize take of CCC steelhead and CCC coho salmon:

1. Undertake measures to ensure that harm and mortality to listed salmonids resulting from fish relocation and dewatering activities is low.

2. Undertake measures to minimize harm to listed salmonids resulting during and from construction of the project.

3. Prepare and submit a report to document the effects of construction and relocation activities and performance.

D. Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the ESA, the Corps, its permittee, and their designees must comply with the following terms and conditions, which implement the

reasonable and prudent measures described above and outline required reporting/monitoring requirements. These terms and conditions are nondiscretionary.

1. The following terms and conditions implement reasonable and prudent measure 1:

   a. The applicant shall retain a qualified biologist with expertise in the areas of anadromous salmonid biology, including handling, collecting, and relocating salmonids; salmonid/habitat relationships; and biological monitoring of salmonids. The Corps shall ensure that all biologists working on this project be qualified to conduct fish collections in a manner which minimizes all potential risks to ESA-listed salmonids. Electrofishing, if used, shall be performed by a qualified biologist and conducted according to *NMFS Guidelines for Electrofishing Waters Containing Salmonids Listed under the Endangered Species Act*, June 2000.

   b. The biologist shall monitor the construction site during placement and removal of channel diversions and cofferdams to ensure that any adverse effects to salmonids are minimized. The biologist shall be on site during all dewatering events to capture, handle, and safely relocate ESA-listed salmonids. The biologist shall notify NMFS biologist Gary Stern at (707) 575-6060 or Gary.Stern@noaa.gov one week prior to capture activities in order to provide an opportunity for NMFS staff to observe the activities.

   c. ESA-listed fish shall be handled with extreme care and kept in water to the maximum extent possible during rescue activities. All captured fish shall be kept in cool, shaded, aerated water protected from excessive noise, jostling, or overcrowding any time they are not in the stream, and fish shall not be removed from this water except when released. To avoid predation, the biologist shall have at least two containers and segregate young-of-year fish from larger age-classes and other potential aquatic predators. Captured salmonids will be relocated, as soon as possible, to a suitable instream location in which suitable habitat conditions are present to allow for adequate survival of transported fish and fish already present.

   d. If any salmonids are found dead or injured, the biologist shall contact NMFS biologist Gary Stern by phone immediately at (707) 575-6060 or the NMFS Santa Rosa Area Office at 707-578-8554. The purpose of the contact is to review the activities resulting in take and to determine if additional protective measures are required. All salmonid mortalities shall be retained, placed in an appropriately-sized sealable plastic bag, labeled with the date and location of collection, fork length, and be frozen as soon as possible. Frozen samples shall be retained by the biologist until specific instructions are provided by NMFS. The biologist may not transfer biological samples to anyone other than the NMFS Santa Rosa Area Office without obtaining prior written approval from the NMFS Santa Rosa Area

Office, Supervisor of the Protected Resources Division. Any such transfer will be subject to such conditions as NMFS deems appropriate.

2. The following terms and conditions implement reasonable and prudent measure 2:

   a. Heavy construction equipment including the front-loading excavator, may not enter or cross the live stream at Olema, Redwood, or Miller creeks.

   b. Cofferdams and associated water diversion structures shall be designed to maintain an open channel at all times in Olema, Redwood and Miller creeks. The open channel shall allow a corridor for the continuous flow of water between areas above the work site and below the work site

   c. 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 stream flow or in direct contact with the natural streambed. All loose fill material for cofferdams shall be completely removed from the channel by November 15. Alternatively, clean gravel or clean crushed stone may be used without plastic sheeting, sandbags, *etc.*

   d. All pumps used to divert live stream flow, outside the dewatered work area, will be screened and maintained throughout the construction period to comply with NMFS' Fish Screening Criteria for Anadromous Salmonids. See: http://swr.ucsd.edu/hcd/fishscrn.pdf

   e. Construction equipment used within the creek channel will be checked each day prior to work within the creek channel (top of bank to top of bank) and, if necessary, action will be taken to prevent fluid leaks. If leaks occur during work in the channel (top of bank to top of bank), the Corps, its permittee, or their contractor will contain the spill and remove the affected soils.

   f. Once construction is completed, all project introduced material (pipe, gravel, cofferdam, *etc.*) must be removed, leaving the creeks as they were before construction. Excess materials will be disposed of at an approved disposal site.

   g. The Corps, its permittee, and their contractors shall allow any NMFS employee(s) or any other person(s) designated by NMFS, to accompany field personnel to visit the project site during activities described in this opinion

3. The following term and conditions implement reasonable and prudent measure 3:

   a. The Corps and applicant shall provide a written report to NMFS by January 15, 2007 for construction at the Muir Woods Road bridge project. For projects constructed during 2007, the Corps and applicant shall provide a written report to NMFS by

January 15, 2008. The reports shall be submitted to NMFS Santa Rosa Area Office, Attention: Supervisor of Protected Resources Division, 777 Sonoma Avenue, Room 325, Santa Rosa, California, 95404-6528. The report shall contain, at a minimum, the following information:

i. **Construction related activities** -- The report shall include the dates construction began and was completed; a discussion of any unanticipated effects or unanticipated levels of effects on salmonids, a description of any and all measures taken to minimize those unanticipated effects and a statement as to whether or not the unanticipated effects had any affect on ESA-listed fish; the number of salmonids killed or injured during the project action; and photographs taken before, during, and after the activity from photo reference points.

ii. **Fish Relocation** -- The report shall include a description of the location from which fish were removed and the release site including photographs; the date and time of the relocation effort; a description of the equipment and methods used to collect, hold, and transport salmonids; if an electrofisher was used for fish collection, a copy of the logbook must be included; the number of fish relocated by species; the number of fish injured or killed by species and a brief narrative of the circumstances surrounding ESA-listed fish injuries or mortalities; and a description of any problems which may have arisen during the relocation activities and a statement as to whether or not the activities had any unforeseen effects.

IX. REINITIATION NOTICE

This concludes formal consultation on the proposed emergency repair of five bridges in Marin County, California. As provided in 50 CFR §402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been 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; (3) the identified action is subsequently modified in a manner that causes an effect to listed species or critical habitat that was not considered in the biological opinion; or (4) a new species is listed or critical habitat designated that may be affected by the identified action. In instances where the amount or extent of incidental take is exceeded, formal consultation shall be reinitiated immediately.

X. LITERATURE CITED

Adams, P.B., M.J. Bowers, H.E. Fish, T.E. Laidig, and K.R. Silberberg. 1999. Historical and current presence-absence of coho salmon (*Oncorhynchus kisutch*) in the Central California Coast Evolutionarily Significant Unit. National Marine Fisheries Service, Southwest Fisheries Science Center, Administrative Report SC-99-02, Tiburon, California.

Alexander, G.R., and E.A. Hansen. 1986. Sand bed load in a brook trout stream. North American Journal of Fisheries Management 6:9-23.

Baker, P., and F. Reynolds. 1986. Life history, habitat requirements, and status of coho salmon in California. Report to the California Fish and Game Commission.

Barnhart, R.A. 1986. Species profiles: life histories and environmental requirements of coastal fishes and invertebrates (Pacific Southwest), steelhead. United States Fish and Wildlife Service Biological Report 82 (11.60).

Bell, M.C. 1991. Fisheries handbook of engineering requirements and biological criteria. 3rd Ed. U.S. Army, Corps of Engineers, Office of the Chief of Engineers, Fish Passage Development and Evaluation Program. Portland, Oregon.

Berg, L., and T.G. Northcote. 1985. Changes in territorial, gill-flaring, and feeding behavior in juvenile coho salmon (*Oncorhynchus kisutch*) following short-term pulses of suspended sediment. Canadian Journal of Fisheries and Aquatic Sciences 42:1410-1417.

Bjornn, T.C., M.A. Brusven, M.P. Molnau, J.H. Milligan, R.A. Klamt, E. Chacho, and C. Schaye. 1977. Transport of granitic sediment in streams and its effect on insects and fish. University of Idaho, Forest, Wildlife, and Range Experiment Station, Bulletin 17, Moscow.

Bjornn, T.C., and D.W. Reiser. 1991. Habitat requirements of salmonids in streams. Pages 83-138 *in* W.R. Meehan, editor. Influences of Forest and Rangeland Management on Salmonid Fishes and Their Habitats. American Fisheries Society Special Publication 19. American Fisheries Society. Bethesda, Maryland. 751 pages.

Brett, J.R. 1952. Temperature tolerance in young Pacific salmon, genus *Oncorhynchus*. Journal of the Fisheries Research Board of Canada 9:265-323.

Brown, L.R., P.B. Moyle, and R.M. Yoshiyama. 1994. Historical decline and current status of coho salmon in California. North American Journal of Fisheries Management 14:237-261.

Busby, P.J., T.C. Wainwright, G.J. Bryant., L. Lierheimer, R.S. Waples, F.W. Waknitz, and I.V. Lagomarsino. 1996. Status review of west coast steelhead from Washington, Idaho, Oregon, and California. United States Department of Commerce, National Oceanic and

Atmospheric Administration Technical Memorandum NOAA Fisheries-NWFSC-27. 261 pages.

CDFG (California Department of Fish and Game). 2002. Status review of California coho salmon north of San Francisco. Report to the California Fish and Game Commission. Candidate Species Status Review Report 2002-3.

Chapman, D.W., and T.C. Bjornn. 1969. Distribution of salmonids in streams, with special reference to food and feeding. *In* T.G. Northcote, ed. Symposium on salmon and trout in streams, pgs. 153-176. H.R. MacMillan Lectures in Fisheries, University of British Columbia, Institute of Fisheries, Vancouver.

Collins, B.W. 2004. Report to the National Marine Fisheries Service for Instream Fish Relocation Activities associated with Fisheries Habitat Restoration Program Projects Conducted Under Department of the Army (Permit No. 22323N) within the United States Army Corps of Engineers, San Francisco District During 2002 and 2003. California Department of Fish and Game, Northern California and North Coast Region. March 24, 2004. Fortuna, California.

Cordone, A.J., and D.W. Kelly. 1961. The influences of inorganic sediment on the aquatic life of streams. California Fish and Game 47:189-228.

Crouse, M.R., C.A. Callahan, K.W. Malueg, and S.E. Dominguez. 1981. Effects of fine sediments on growth of juvenile coho salmon in laboratory streams. Transactions of the American Fisheries Society 110:281-286.

CRWQCB (California Regional Water Quality Control Board). 2001. Assessment of Aquatic Conditions in the Mendocino Coast Hydrologic Unit. California Regional Water Quality Control Board, North Coast Region, Santa Rosa, California

Cushman, R.M. 1985. Review of ecological effects of rapidly varying flows downstream from hydroelectric facilities. North American Journal of Fisheries Management. 5:330-339.

Fukushima L., and E.W. Lesh. 1998. Adult and juvenile anadromous salmonid migration timing in California streams. California Department of Fish and Game 84(3):133-145.

Furniss, M.J., T.D. Roelofs, and C.S. Lee. 1991. Road construction and maintenance. Pages 297-323 *in* W.R. Meehan, editor. Influences of Forest and Rangeland Management on Salmonid Fishes and Their Habitats. American Fisheries Society Special Publication 19. 751 pages.

Gregory, R.S., and T.G. Northcote. 1993. Surface, planktonic, and benthic foraging by juvenile Chinook salmon (*Oncorhynchus tshawytscha*) in turbid laboratory conditions. Canadian Journal of Fisheries and Aquatic Sciences 50:233-240.

Harvey, B.C. 1986. Effects of suction gold dredging on fish and invertebrates in two California streams. North American Journal of Fisheries Management 6:401-409.

Hassler, T.J. 1987. Species profiles: life histories and environmental requirements of coastal fishes and invertebrates (Pacific Southwest) - coho salmon. United States Fish and Wildlife Service Biological Report 82:1-19.

Hayes, D.B., C.P. Ferreri, and W.W. Taylor. 1996. Active fish capture methods. Pages 193-220 *in* B.R. Murphy and D.W. Willis, editors. Fisheries Techniques, 2nd edition. American Fisheries Society. Bethesda, Maryland. 732 pages.

Hayes, M.L. 1983. Active capture techniques. Pages 123-146 *in* L.A. Nielsen and D.L. Johnson, editors. Fisheries Techniques. American Fisheries Society. Bethesda, Maryland. 468 pages.

Henley, W.F., M.A. Patterson, R.J. Neves, and A. Dennis Lemly. 2000. Effects of sedimentation and turbidity on lotic food webs: a concise review for natural resource managers. Reviews in Fisheries Science 8(2):125-139.

Holtby, L.B., B.C. Anderson, and R.K. Kadowaki. 1990. Importance of smolt size and early ocean growth to interannual variability in marine survival of coho salmon (*Oncorhynchus kisutch*). Canadian Journal of Fisheries and Aquatic Sciences 47(11):2181-2194.

Hubert, W.A. 1983. Passive capture techniques. Pages 95-122 *in* L.A. Nielsen and D.L. Johnson, editors. Fisheries Techniques. American Fisheries Society. Bethesda, Maryland. 468 pages.

Hubert, W.A. 1996. Passive capture techniques. Pages 157-192 *in* B.R. Murphy and D.W. Willis, editors. Fisheries Techniques. Second Edition. American Fisheries Society. Bethesda, Maryland. 732 pages.

Ketcham, B.J., G.G. Brown, and O.G. Wolff. 2004a. Olema Creek Watershed Summary Monitoring Report, Marin County, California, 1997-2003. National Park Service, Point Reyes National Seashore. PORE NR-WR-04/02. May 7, 2004.

Leidy, R.A., G.S. Becker, and B.N. Harvey. 2003. Historical Distribution and Current Status of Steelhead/Rainbow Trout (*Oncorhynchus mykiss*) in Streams of the San Francisco Estuary, California. Center for Ecosystem Management and Restoration, Oakland, California.

McEwan, D.R. 2001. Central Valley steelhead. California Department of Fish and Game, Fish Bulletin 179(1):1-44.

McMahon, T.E. 1983. Habitat suitability index models: coho salmon. United States Fish and Wildlife Service, FWS/OBS-82/10.49

Meehan, W.R., and T.C. Bjornn. 1991. Salmonid distribution and life histories. Pages 47-82 *in* Influences of Forest and Rangeland Management on Salmonid Fishes and Their Habitats. W.R. Meehan, editor. American Fisheries Society Special Publication 19. American Fisheries Society. Bethesda, Maryland.

Myers, J.M., R.G. Kope, G.J. Bryant, D. Teel, L.J. Lierheimer, T.C. Wainwright, W.S. Grant, F.W. Waknitz, K. Neely, S.T. Lindley, and R.S. Waples. 1998. Status review of Chinook salmon from Washington, Idaho, Oregon, and California. United States Department of Commerce, National Oceanic and Atmospheric Administration Technical Memo NMFS-NWFSC-35.

Nielsen, J.L. 1992. Microhabitat-specific foraging behavior, diet, and growth of juvenile coho salmon. Transactions of the American Fisheries Society 121:617-634.

NMFS (National Marine Fisheries Service). 1997. Status review update for West Coast steelhead from Washington, Idaho, Oregon, and California. United States Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service. 68 pages.

NMFS (National Marine Fisheries Service). 2001. Status review update for coho salmon (*Oncorhynchus kisutch*) from the Central California Coast and the California portion of the Southern Oregon/Northern California Coasts Evolutionarily Significant Units. United States Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service.

NMFS (National Marine Fisheries Service). 2003. Draft Report of Updated Status of Listed ESUs of Salmon and Steelhead. United States Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Northwest Fisheries Science Center, Seattle, Washington. Available online at (http://www.nwfsc.noaa.gov/trt/brt/brtrpt.cfm)

NMFS (National Marine Fisheries Service). 2005a. Updated Status of Federally Listed ESUs of West Coast Salmon and Steelhead. United States Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service. June 2005. 512 pages.

NMFS (National Marine Fisheries Service). 2005b. Final Assessment of the National Marine Fisheries Service's Critical Habitat Review Teams (CHARTs) for Seven Salmon and

Steelhead Evolutionarily Significant Units (ESUs) in California. July 2005. 23 pages, plus Appendices.

Reeves, G.H., J.D. Hall, T.D. Roelofs, T.L. Hickman, and C.O. Baker. 1991. Rehabilitating and modifying stream habitats. Pages 519-557 *in* W.R. Meehan, editor. Influences of Forest and Rangeland Management on Salmonid Fishes and Their Habitats. American Fisheries Society Special Publication 19. 751 pages.

Reiser, D.W., and T.C. Bjornn. 1979. Habitat requirements of anadromous salmonids. Influence of Forest and Rangeland Management on Anadromous Fish Habitat in the Western United States and Canada. W.R. Meehan, editor. United States Department of Agriculture Forest Service General Technical Report PNW-96.

Sandercock, F.K. 1991. Life history of coho salmon (*Oncorhynchus kisutch*). Pages 396-445 *in* C. Groot and L. Margolis, editors. Pacific Salmon Life Histories. University of British Columbia Press, Vancouver.

Servizi, J.A., and D.W. Martens. 1992. Sublethal responses of coho salmon (*Oncorhynchus kisutch*) to suspended sediments. Canadian Journal of Fisheries and Aquatic Sciences 49:1389-1395.

Shapovalov, L., and A.C. Taft. 1954. The life histories of the steelhead rainbow trout (*Salmo gairdneri gairdneri*) and silver salmon (*Oncorhynchus kisutch*) with special reference to Waddell Creek, California, and recommendations regarding their management. California Department of Fish and Game, Fish Bulletin 98:1-375.

Shirvell, C.S. 1990. Role of instream rootwads as juvenile coho salmon (*Oncorhynchus kisutch*) and steelhead trout (*O. mykiss*) cover habitat under varying stream flows. Canadian Journal of Fisheries and Aquatic Sciences 47:852-860.

Sigler, J.W., T.C. Bjournn, and F.H. Everest. 1984. Effects of chronic turbidity on density and growth of steelhead and coho salmon. Transactions of the American Fisheries Society 113:142-150.

Smith, J.J. 2003. Distribution and Abundance of Juvenile Coho and Steelhead in Redwood Creek in Fall 2003. Annual report submitted to National Marine Fisheries Service on activities conducted under section 10(a)(1)(A) scientific research permit 1080. Jerry J. Smith, Department of Biological Sciences, San Jose State University. December 29, 2003.

Spence, B.C., G.A. Lomnicky, R.M. Hughes, R.P. Novitzki. 1996. An Ecosystem Approach to Salmonid Conservation. Management Technology. Corvallis, Oregon.

Stein, R.A., P.E. Reimers, and J.D. Hall. 1972. Social interaction between juvenile coho (*Oncorhynchus kisutch*) and fall Chinook salmon (*O. tshawytscha*) in Sixes River, Oregon. Journal of the Fisheries Research Board of Canada 29:1737-1748

Thomas, V.G. 1985. Experimentally determined impacts of a small, suction gold dredge on a Montana stream. North American Journal of Fisheries Management 5:480-488.

Velagic, E. 1995. Turbidity study: a literature review. Prepared for Delta planning branch, California Department of Water Resources by Centers for Water and Wildland Resources, University of California, Davis.

Waters, T. F. 1995. Sediment in Streams: Sources, Biological Effects, and Control. American Fisheries Society Monograph 7.

Weitkamp, L.A., T.C. Wainwright, G.J. Bryant, G.B. Milner, D.J. Teel, R.G. Kope, and R.S. Waples. 1995. Status Review of Coho Salmon from Washington, Oregon, and California. United States Department of Commerce, National Oceanic and Atmospheric Administration Technical Memorandum NMFS-NWFSC-24.

A. Federal Register Notices Cited

62 FR 43937: National Marine Fisheries Service. Final Rule: Listing of Several Evolutionary Significant Units of West Coast Steelhead. Federal Register, Volume 62 pages 43937-43954. August 18, 1997.

64 FR 24049: National Marine Fisheries Service. Final Rule and Correction: Designated Critical Habitat; Central California Coast and Southern Oregon/Northern California Coasts Coho Salmon. Federal Register, Volume 64 pages 24049-24062. May 5, 1999.

69 FR 33102: National Marine Fisheries Service. Proposed rule: Proposed Listing Determinations for 27 ESUs of West Coast Salmonids. Federal Register, Volume 69 pages 33102-33179. June 14, 2004.

70 FR 37160: National Marine Fisheries Service. Final Rule: Final Listing Determinations for 16 ESUs of West Coast Salmon, and Final 4(d) Protective Regulations for Threatened Salmonid ESUs. Federal Register, Volume 70 pages 37160-37204. June 28, 2005.

70 FR 52488: National Marine Fisheries Service. Final critical habitat designations for 19 West Coast salmon and steelhead ESUs. Federal Register Volume 70 pages 52488–52627. September 2, 2005.

71 FR 824: National Marine Fisheries Service. Final Listing Determinations for Ten Distinct Population Segments of West Coast Steelhead; Final Rule. Federal Register, Volume 71 pages 834-862. January 5, 2006.

United States Department of the Interior

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January 26, 1999

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Subject: Programmatic Formal Endangered Species Act Consultation on Issuance of Permits under Section 404 of the Clean Water Act or Authorizations under the Nationwide Permit Program for Projects that May Affect the California Red-legged Frog

Dear Messrs. Champ, Fong, and Schubel:

This document transmits the biological opinion of the U.S. Fish and Wildlife Service (Service) on issuance of permits under section 10 (§10) of the Rivers and Harbors Act of 1899 and section 404 (§404) of the Federal Water Pollution Control Act, as amended (Clean Water Act), for projects that may affect the California red-legged frog (*Rana aurora draytonii*). This consultation document has been prepared pursuant to 50 CFR 402 of our interagency regulations governing section 7 of the Endangered Species Act of 1973, as amended (Act).

This programmatic consultation evaluates the effects on California red-legged frogs of certain activities authorized by the Army Corps of Engineers (Corps) under Clean Water Act and Rivers and Harbors Act permits in all of Napa, Solano, Contra Costa, Alameda, San Francisco,

EXHIBIT NO. 6
2-07-002 Marin Co. Public Works Dept.
Programmatic Formal Endangered Species Consultation of Issuance of Permits (USFWS, 1999)

San Mateo (in part), Santa Clara, San Benito, Santa Cruz, Monterey, San Luis Obispo, Santa Barbara and Ventura counties; all watersheds in Marin and Sonoma counties that drain toward San Francisco Bay; and in coastal draining watersheds in Marin and Sonoma counties, including and south of the Walker Creek watershed. Drainages in the Central Valley and south of the Transverse Ranges are excluded because the extreme rarity of the California red-legged frog in these areas warrants individual consultation in any circumstance where the Corps determines a project may affect the species.

San Francisco garter snakes (*Thamnophis sirtalis tetrataenia*) and California red-legged frogs may co-occur in western San Mateo County. Due to the rarity of the San Francisco garter snake, actions that would occur in western San Mateo County are excluded from this biological opinion.

CONSULTATION HISTORY

Since listing of the California red-legged frog, the Service and the Corps have consulted, both formally and informally, on a variety of projects. In some cases, temporary disturbance of habitat and incidental take of individuals in the form of mortality or harassment occurred, but resulted in no long-term adverse impacts to California red-legged frogs in the affected areas. Staff from Fish and Wildlife Service offices determined that many of the same protective measures, including the Corps' proposed special conditions and the Service's terms and conditions, were very similar from project to project. Consequently, both of the Fish and Wildlife Offices within the range of the species collaborated in the preparation of this biological opinion.

ADMINISTRATION OF THE BIOLOGICAL OPINION

This programmatic consultation will be implemented in the following manner. The Corps will begin the consulting process by making a determination of whether the action under consideration may affect the California red-legged frog, as required by the implementing regulations for section 7 of the Act. If the Corps determines the project is not likely to adversely affect the California red-legged frog, it will seek the Service's concurrence in writing pursuant to 50 CFR 402.14(b)(1). If the Corps determines the proposed action is likely to adversely affect the California red-legged frog, the Corps will next consider whether the potential effects of the proposed action may be covered by this biological opinion.

If the Service or the Corps determines that the potential effects of the proposed action, including the indirect, interrelated and interdependent effects, are too great for the action to be covered by this biological opinion, the standard provisions for section 7 consultation apply throughout the remainder of the review process. If the Corps finds that the proposed action meets the criteria for consideration under this biological opinion, the Corps shall contact the Service, in writing, for Service concurrence, generally within 30 days, with the Corps' determination. At this time, the Corps shall provide to the Service the following information (prior to authorization):

1) a 7 ½ minute topographic map or a copy of the appropriate topographic map with the name of the map. Such maps shall indicate where the project site is located, restoration sites, and potential frog relocation sites; 2) a written description of the activity, including but not limited to, construction methods, time of year the work would occur, vegetation restoration and monitoring plans, and frog monitoring plan; and 3) one plan view and a minimum of one typical cross section indicating water bodies, vegetation types, work areas, roads, restoration sites, and refueling and staging areas.

Projects that do not meet the suitability criteria may be appended to this opinion, upon Service approval, if use of additional minimization measures sufficiently reduce the effects of the action to be consistent with the intent of this opinion. Projects that do not meet the suitability criteria, such as individual permit applications under section 404 of the Clean Water Act or section 10 of the Rivers and Harbors Act, may have effects on the frog similar in nature to those described under the Nationwide Permits below. The Service shall be available for consultation during all phases of project evaluation to assist the Corps with its effects determination.

Yearly, the Service shall evaluate the effects of actions that have occurred under this programmatic consultation to ensure that its continued implementation does not result in long-term adverse effects to the ecosystems upon which the California red-legged frog depends. This opinion may be modified to address problems with the programmatic process or excessive adverse effects on listed species.

BIOLOGICAL OPINION

Description of the Proposed Action

Suitability Criteria

Actions that fall under this consultation are projects that may adversely affect California red-legged frogs either by take of individuals, or through temporary disturbance or permanent loss of upland, riparian, or wetland red-legged frog habitat, or both, but which nonetheless do not contribute to a decline in California red-legged frogs in the affected area (see "Environmental Baseline" below). Actions that the Corps has permitted, and have undergone formal consultation with the Service, that meet these criteria include, but are not limited to: earthquake retrofitting, repair and widening of bridges, repair of bank protection, replacement of low-flow stream crossings with bridges, and small-scale stabilization of stream slopes.

Projects that meet the suitability criteria and may involve some or all of the preceding activities often occur under Nationwide Permits (NWP). To guide the Corps during project evaluation, the Service has reviewed the Nationwide Permits the Corps has issued under 33 CFR 330.3 (most recently described at 61 FR 65874) and has determined that projects typically authorized under the NWPs listed below (and amended herein) are likely to meet the suitability criteria described

above, provided that: 1) the additional minimization measures provided herein are implemented; 2) projects are single and complete projects and not part of larger actions, such as housing subdivision or golf course projects; 3) projects would not, in the Service's opinion, take place in areas where populations of California red-legged frogs are so isolated that even the small effects described below may have significant impacts. When the NWP program is reauthorized the Corps shall evaluate the new program and its consistency with this biological opinion. If it is determined that there are differences in the effects, amount or extent of incidental take, new permits that were not considered, or other information not considered then this biological opinion will be reinitiated and amended as necessary.

Nationwide Permit Activities:

(#3) Maintenance.
(#5) Scientific Measuring Devices.
(#6) Survey Activities.
(#7) Outfall Structures.
(#12) Utility Line Discharges.
(#13) Bank Stabilization, provided that activity is less than fifty (50) feet in length.
(#14) Road Crossings.
(#15) U.S. Coast Guard Approved Bridges.
(#17) Hydropower Projects.
(#18) Minor Discharges.
(#19) Minor Dredging.
(#23) Approved Categorical Exclusions
(#25) Structural Discharges.
(#27) Wetland and Riparian Restoration and Creation Activities.
(#31) Maintenance of Existing Flood Control Facilities.
(#32) Completed Enforcement Actions.
(#33) Temporary Construction, Access and Dewatering.
(#37) Emergency Watershed Protection and Rehabilitation.
(#38) Cleanup of Hazardous and Toxic Waste.

Minimization of Adverse Effects

To the maximum extent practicable, projects authorized under this biological opinion shall be designed and implemented in such a way as to minimize adverse effects to California red-legged frogs or their habitat. To achieve that purpose, the following measures shall be taken as a minimum:

1. At least 15 days prior to the onset of activities, the applicant or project proponent shall submit the name(s) and credentials of biologists who would conduct activities specified in the following measures. No project activities shall begin until proponents have

received written approval from the Service that the biologist(s) is qualified to conduct the work.

2. A Service-approved biologist shall survey the work site two weeks before the onset of activities. If California red-legged frogs, tadpoles, or eggs are found, the approved biologist shall contact the Service to determine if moving any of these life-stages is appropriate. In making this determination the Service shall consider if an appropriate relocation site exists. If the Service approves moving animals, the approved biologist shall be allowed sufficient time to move California red-legged frogs from the work site before work activities begin. Only Service-approved biologists shall participate in activities associated with the capture, handling, and monitoring of California red-legged frogs.

3. Before any construction activities begin on a project, a Service-approved biologist shall conduct a training session for all construction personnel. At a minimum, the training shall include a description of the California red-legged frog and its habitat, the importance of the California red-legged frog and its habitat, the general measures that are being implemented to conserve the California red-legged frog as they relate to the project, and the boundaries within which the project may be accomplished. Brochures, books and briefings may be used in the training session, provided that a qualified person is on hand to answer any questions.

4. A Service-approved biologist shall be present at the work site until such time as all removal of California red-legged frogs, instruction of workers, and habitat disturbance have been completed. After this time, the contractor or permittee shall designate a person to monitor on-site compliance with all minimization measures. The Service-approved biologist shall ensure that this individual receives training outlined above in measure 3 and in the identification of California red-legged frogs. The monitor and the Service-approved biologist shall have the authority to halt any action that might result in impacts that exceed the levels anticipated by the Corps and Service during review of the proposed action. If work is stopped, the Corps and Service shall be notified immediately by the Service-approved biologist or on-site biological monitor.

5. During project activities, all trash that may attract predators shall be properly contained, removed from the work site and disposed of regularly. Following construction, all trash and construction debris shall be removed from work areas.

6. All fueling and maintenance of vehicles and other equipment and staging areas shall occur at least 20 meters from any riparian habitat or water body. The Corps and permittee shall ensure contamination of habitat does not occur during such operations. Prior to the onset of work, the Corps shall ensure that the permittee has prepared a plan to allow a prompt and effective response to any accidental spills. All workers shall be informed of

the importance of preventing spills and of the appropriate measures to take should a spill occur.

7. A Service-approved biologist shall ensure that the spread or introduction of invasive exotic plant species shall be avoided to the maximum extent possible. When practicable, invasive exotic plants in the project areas shall be removed.

8. Project sites shall be revegetated with an appropriate assemblage of native riparian wetland and upland vegetation suitable for the area. A species list and restoration and monitoring plan shall be included with the project proposal for review and approval by the Service and the Corps. Such a plan must include, but not be limited to, location of the restoration, species to be used, restoration techniques, time of year the work will be done, identifiable success criteria for completion, and remedial actions if the success criteria are not achieved.

9. Stream contours shall be returned to their original condition at the end of project activities, unless consultation with the Service has determined that it is not beneficial to the species or feasible.

10. The number of access routes, number and size of staging areas, and the total area of the activity shall be limited to the minimum necessary to achieve the project goal. Routes and boundaries shall be clearly demarcated, and these areas shall be outside of riparian and wetland areas. Where impacts occur in these staging areas and access routes, restoration shall occur as identified in measures 8 and 9 above.

11. Work activities shall be completed between April 1 and November 1. Should the proponent or applicant demonstrate a need to conduct activities outside this period, the Corps may authorize such activities after obtaining the Service's approval.

12. To control erosion during and after project implementation, the applicant shall implement best management practices, as identified by the appropriate Regional Water Quality Control Board.

13. If a work site is to be temporarily dewatered by pumping, intakes shall be completely screened with wire mesh not larger than five millimeters (mm) to prevent California red-legged frogs from entering the pump system. Water shall be released or pumped downstream at an appropriate rate to maintain downstream flows during construction. Upon completion of construction activities, any barriers to flow shall be removed in a manner that would allow flow to resume with the least disturbance to the substrate.

14. A Service-approved biologist shall permanently remove, from within the project area, any individuals of exotic species, such as bullfrogs, crayfish, and centrarchid fishes, to the

maximum extent possible. The permittee shall have the responsibility to ensure that their activities are in compliance with the California Fish and Game Code.

Species Account

Description. The California red-legged frog is a relatively large aquatic frog ranging from 4 to 13 centimeters (1 1/2 to 5 inches) from the tip of the snout to the vent (Stebbins 1985). From above, the frog can appear brown, gray, olive, red or orange, often with a pattern of dark flecks or spots. The back of the frog is bordered on either side by an often prominent ridge (dorsolateral fold) running from the eye to the hip. The hind legs are well-developed with large, webbed feet. A cream, white, or orange stripe usually extends along the upper lip from beneath the eye to the rear of the jaw. The undersides of adult frogs are white, usually with patches of bright red or orange on the abdomen and hindlegs. The groin area sometimes exhibits bold black mottling with a white or yellow background.

Life History. California red-legged frogs breed from November through March; earlier breeding has been recorded in southern localities (Storer 1925). Males have paired vocal sacs and call in air (Hayes and Krempels 1986). Males appear at breeding sites from two to four weeks before females (Storer 1925). They typically call in small, mobile groups of three to seven individuals to attract females (Jennings and Hayes 1985). Females individually move toward a male or male calling group. Female California red-legged frogs deposit egg masses on emergent vegetation so that the masses float on the surface of the water (Hayes and Miyamoto 1984). Egg masses contain about 2,000 to 5,000 moderate-sized (2.0 to 2.8 mm in diameter; 0.08 to 0.11 inches), dark reddish-brown eggs (Storer 1925, Jennings and Hayes 1985). Eggs hatch in 6 to 14 days (Storer 1925). Larvae undergo metamorphosis 3.5 to 7 months after hatching (Storer 1925, Wright and Wright 1949, Jennings and Hayes 1990). Egg predation is infrequent; most mortality probably occurs during the tadpole stage (Licht 1974) although eggs are susceptible to being washed away from high stream flows. Schmeider and Nauman (1994) report that the California red-legged frog eggs have a defense against predation which is possibly related to the nature of the egg mass jelly. Schmieder and Nauman (1994) report that California red-legged frog larvae are highly vulnerable to fish predation; larvae appear to be most vulnerable to fish predation immediately after hatching when the nonfeeding larvae are relatively immobile. Sexual maturity can be attained at two years of age by males and three years of age by females (Jennings and Hayes 1985); adults may live 8 to 10 years (Jennings *et al.* 1992) although the average life span is considered to be much lower.

The diet of California red-legged frogs is highly variable. Tadpoles probably eat algae (Jennings *et al.* 1992). Hayes and Tennant (1985) found invertebrates to be the most common food item for adults. Vertebrates such as Pacific tree frogs and California mice (*Peromyscus californicus*), represented over half of the prey mass eaten by larger frogs (Hayes and Tennant 1985). Feeding activity probably occurs along the shoreline and on the surface of the water. Hayes and Tennant (1985) found juvenile frogs to be active diurnally and nocturnally, whereas adult frogs were largely nocturnal.

Habitat. California red-legged frogs have been found at elevations that range from sea level to about 1,500 meters (5,000 feet). The frog uses a variety of habitat types, which include various aquatic systems, riparian, and upland habitats. The following habitat descriptions are meant to describe the range of habitat types utilized by California red-legged frogs. However, there is much variation in how frogs use the environment and in many cases frogs may complete their entire life cycle in a particular area without using other components (*i.e.*, a pond is suitable for each life stage and use of upland habitat or a riparian corridor is not necessary). California red-legged frogs are adapted to survive in a variable Mediterranean climate and survive temporal and spatial changes in habitat quality; the frog's variable life history enables it to change habitat use according to the year to year conditions and in response to adverse conditions. Populations appear to persist where a mosaic of habitat elements exists, embedded within a matrix of dispersal habitat. Here, local extinctions may be counterbalanced by recolonizations of new or unoccupied areas of suitable habitat. This interpretation corresponds with the notion that California red-legged frogs persist in what ecologists refer to as metapopulation; a collection of sub-populations that exchange dispersers.

Breeding Habitat. Breeding sites of the California red-legged frog are in aquatic habitats; larvae, juveniles and adult frogs have been collected from streams, creeks, ponds, marshes, sag ponds, deep pools and backwaters within streams and creeks, dune ponds, lagoons and estuaries. California red-legged frogs frequently breed in artificial impoundments such as stock ponds given the proper management of hydro-period, pond structure, vegetative cover, and control of exotic predators. The importance of riparian vegetation for this species is not well understood. While frogs successfully breed in streams and riparian systems, high spring flows and cold temperatures in streams often make these sites risky egg and tadpole environments. When this vegetation type is present, frogs spend considerable time resting and feeding in it; it is believed the moisture and camouflage provided by the riparian plant community provide good foraging habitat and may facilitate dispersal in addition to providing pools and backwater aquatic areas for breeding. Radio telemetry studies showed that individual California red-legged frogs move within the riparian zone from vegetated areas to pools (G. Rathbun, pers. comm.).

Breeding adults are often associated with dense, shrubby riparian or emergent vegetation and areas with deep (>0.7 meter) still or slow-moving water (Hayes and Jennings 1988); the largest summer densities of California red-legged frogs are associated with deep-water pools with dense stands of overhanging willows (*Salix* spp.) and an intermixed fringe of cattails (*Typha latifolia*) (Jennings 1988). However, frogs often successfully breed in artificial ponds with little or no emergent vegetation and have been observed in stream reaches that are not cloaked in riparian vegetation. An important factor influencing the suitability of aquatic breeding sites is the general lack of introduced aquatic predators.

California red-legged frogs are sensitive to high salinity. When eggs are exposed to salinity levels greater than 4.5 parts per thousand, 100 percent mortality occurs and larvae die when exposed to salinities greater than 7.0 parts per thousand (Jennings and Hayes 1990). Nussbaum *et al.* (1983) state that early red-legged frog (*Rana a. aurora*) embryos are tolerant of

temperatures only between 9 and 21 degrees Centigrade (48 and 70 degrees Fahrenheit), and both the lower and upper lethals are the most extreme known for any North American ranid frog. Data specific to the California red-legged frog are not available.

Dispersal and Use of Uplands

At any time of the year, juvenile and adult California red-legged frogs may move from breeding sites. They can be encountered living within streams at distances exceeding three kilometers (1.8 miles) from the breeding site and have been found up to 30 meters (100 feet) from water in adjacent dense riparian vegetation for up to 77 days (Rathbun *et al.* 1993). During periods of wet weather, starting with the first rains of fall, some individuals may make overland excursions through upland habitats. Most of these overland movements occur at night. Evidence from marked frogs on the San Simeon coast of California suggests that frog movements via upland habitats of about one mile are possible over the course of a wet season and frogs have been observed to make long-distance movements that are straight-line, point to point migrations rather than using corridors for moving in between habitats (N. Scott, *pers. com.* 1998). Dispersing frogs in northern Santa Cruz County traveled distances from one-quarter mile to more than two miles without apparent regard to topography, vegetation type, or riparian corridors (J. Bulger, *in litt.* 1998). The manner in which California red-legged frogs use upland habitats is not well understood; how much time California red-legged frogs spend in upland habitats, patterns of use, and whether there is differential use of uplands by juveniles, subadults and adults are being studied. Dispersal distances are largely unknown and are considered to be dependent on habitat availability and environmental variability.

Summer Habitat. California red-legged frogs often disperse from their breeding habitat to forage and seek summer habitat. This could include boulders or rocks and organic debris such as downed trees or logs; industrial debris; and agricultural features, such as drains, watering troughs, spring boxes, abandoned sheds, or hay-ricks. California red-legged frogs use small mammal burrows and moist leaf litter (Jennings and Hayes 1994); incised stream channels with portions narrower and deeper than 46 centimeters (18 inches) may also provide habitat (61 FR 25813). This type of dispersal and habitat use, however, is not observed in all red-legged frogs and is most likely dependent on the year to year variations in climate and habitat suitability and varying requisites per life stage. For the California red-legged frog, this habitat is potentially all aquatic and riparian areas within the range of the species and includes any landscape features that provide cover and moisture (61 FR 25813); the distances that frogs will disperse to reach summer habitat is not fully understood and is currently a topic of study.

Distribution. The historical range of the California red-legged frog extended coastally from the vicinity of Point Reyes National Seashore, Marin County, California and inland from the vicinity of Redding, California southward to northwestern Baja California, Mexico (Jennings and Hayes 1985, Storer 1925, Hayes and Krempels 1986). The California red-legged frog has sustained a 70 percent reduction in its geographic range as a result of several factors acting singly or in combination (Jennings *et al.* 1992). Habitat loss and alteration, over-exploitation, and

introduction of exotic predators were significant factors in the species' decline in the early- to mid-1900s. Reservoir construction, expansion of introduced predators, grazing and prolonged drought fragmented and eliminated many of the Sierra Nevada foothill populations. Only a few drainages are currently known to support California red-legged frogs in the Sierra Nevada foothills, compared to more than 60 historical records. Several researchers in central California have noted the decline and eventual disappearance of California red-legged frog once bullfrogs (*Rana catesbiana*) become established at the same site (L. Hunt, *in litt.*, 1993; S. Barry, *in litt.*, 1992; S. Sweet, *in litt.*, 1993). Bullfrogs prey on California red-legged frogs (Twedt 1993; S. Sweet, *in litt.* 1993) and interfere with their reproduction (Jennings and Hayes 1990, Twedt 1993, M. Jennings, *in litt.*, 1993, R. Stebbins, *in litt.*, 1993). Because of these combined threats, the California red-legged frog was listed as threatened on May 23, 1996 (61 FR 25813).

Environmental Baseline

The mechanisms for decline of the California red-legged frog are poorly understood. Although presence of California red-legged frogs is correlated with stillwater pools deeper than about 0.5 meter, riparian shrubbery, and emergent vegetation (Jennings and Hayes 1985), there are numerous locations in the historical range of the frog where these elements are well represented yet California red-legged frogs appear to be absent. The cause of local extirpations therefore does not appear to be restricted to absolute loss of aquatic habitat (Shaffer and Fisher 1996). The most likely causes of local extirpation are thought to be changes in faunal composition of aquatic ecosystems, *i.e.*, the introduction of non-native predators and competitors; and landscape-scale disturbances that disrupt California red-legged frog population processes, such as dispersal and colonization. Subtle environmental changes, such as the introduction of contaminants or changes in water temperature, may also play a role in local extirpations. These changes may also promote the spread of predators, competitors, parasites and diseases.

The processes described above are known to be heightened by urbanization. For instance, an increase in certain native and nonnative predators and competitors accompanies an increase in the local human population; disruption of dispersal likely results from an increase in barriers and sinks; and changes in hydroperiod, water temperature, and chemical composition of water bodies are readily traced to irrigation, gray water disposal, and urban runoff.

Effects of the Proposed Action

Activities that would be covered under this biological opinion are those that would not cause ecosystem-scale changes and, therefore, would likely not contribute to the decline of the California red-legged frog. Direct impacts to adults, sub-adults, tadpoles, and eggs of the California red-legged frog in the footprint of projects covered by this biological opinion would include injury or mortality from being crushed by earth moving equipment, construction debris, and worker foot traffic. These impacts would be reduced by minimizing and clearly demarcating the boundaries of the project areas and equipment access routes and locating staging areas outside of riparian areas or other water bodies. Avoiding work activities during the breeding

season would reduce adverse impacts, particularly to eggs and tadpoles. In addition, relocating individual California red-legged frogs may further minimize injury or mortality.

The capture and handling of California red-legged frogs to move them from a work area involves harassment of individuals. Mortality may occur as a result of improper handling, containment, or transport of individuals or from releasing them into unsuitable habitat. Improper handling, containment, or transport of individuals would be reduced or prevented by use of a Service-approved biologist. Removal of exotic species from a project site may result in lower mortality to resident California red-legged frogs, therefore minimizing the overall effects of the action.

Work activities, including noise and vibration, may harass California red-legged frogs by causing them to leave the work area. This disturbance may increase the potential for predation and desiccation. Minimizing the area disturbed by project activities and constraining activities to seasonal limits would reduce the potential for dispersal resulting from the action.

Tadpoles may be entrained by pump intakes, if such devices are used to dry out work areas. Screening pump intakes with wire with no greater than five millimeter (mm) mesh diameter should reduce the potential that tadpoles greater than eight weeks old would be caught in the inflow.

Some potential also exists for disturbance of habitat to cause the spread or establishment of non-native invasive species, such as giant reed (*Arundo donax*) or salt cedar (*Tamarix* spp.). Measures to prevent the spread or introduction of these species, such as avoiding areas with established native vegetation, restoring disturbed areas with native species, and post-project monitoring and control of exotic species, could reduce or eliminate this effect.

California red-legged frogs may sustain harassment and mortality from predators. If water that is impounded during or after work activities creates favorable habitat for non-native predators, such as bullfrogs, crayfish, and centrarchid fishes, California red-legged frogs may suffer abnormally high rates of predation. Additionally, any time California red-legged frogs are concentrated in a small area at unusually high densities, native predators such as herons, egrets, opossums, and raccoons may feed on them opportunistically. This impact can be minimized by avoiding creation of ponded water as a result of project actions unless approved by the Service and/or predator control.

Trash left during or after project activities could attract predators to work sites, which could, in turn, harass or prey on the listed species. For example, raccoons are attracted to trash and also prey opportunistically on the California red-legged frog. This potential impact can be reduced or avoided by careful control of waste products at all work sites.

Accidental spills of hazardous materials or careless fueling or oiling of vehicles or equipment could degrade water quality or upland habitat to a degree where the California red-legged frog is adversely affected or killed. The potential for this impact to occur can be reduced by thoroughly

informing workers of the importance of preventing hazardous materials from entering the environment, locating staging and fueling areas a minimum of 20 meters from riparian areas or other water bodies, and by having an effective spill response plan in place.

Work in live streams or in floodplains could cause unusually high levels of siltation downstream. This siltation could smother eggs of the California red-legged frog and alter the quality of the habitat to the extent that use by individuals of the species is precluded. Implementing best management practices and reducing the area to be disturbed to the minimum necessary should assist in reducing the amount of sediment that is washed downstream as a result of project activities.

Under the provisions of this consultation, some features of the site may be permanently or temporarily altered. For example, a bridge retrofitted for earthquake safety may have slightly larger footings after work is complete, or a small culvert might create a pool. Minor alterations such as these likely do not constitute a consequential loss of habitat.

The potential exists for uninformed workers to intentionally or unintentionally harass, injure, harm, or kill California red-legged frogs. The potential for this impact could be greatly reduced by informing workers of the presence and protected status of this species and the measures that are being implemented to protect it during project activities.

The ongoing effects of this consultation on the California red-legged frog would be monitored through annual reports provided by the Corps to the Service. These reports would enable the agencies to determine how much habitat has been temporarily and permanently affected by the covered actions and how many California red-legged frogs have been killed or injured.

Based on analysis of data for habitats impacted by the Nationwide Permit Program, the Service has determined that upland, wetland and riparian habitats suitable for the California red-legged frog will be lost. The Service found that for Fiscal years 1993, 1994, and 1995, 59.37, 60.34, and 56.94 acres of wetlands respectively, including riparian habitat, were lost for reporting and non-reporting nationwide permits combined within the Corps' Sacramento and San Francisco Districts. The range for reporting nationwide permits was from 11.34 acres to 44.89 acres for fiscal years 1993 to 1997. Acres impacted for non-reporting nationwides was from 43.75 acres to 45.6 acres for fiscal years 1992 to 1995. These habitat impacts represent total acres impacted by the Nationwide Permit Program, and are not necessarily all California red-legged frog habitat. The Service does not have similar data for habitats impacted by the Nationwide Permit Program in the Los Angeles District.

Cumulative Effects

Cumulative effects include the effects of future State, Tribal, local or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future

Federal actions unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act.

Non-Federal activities expected to occur within the project area considered under this biological opinion include water treatment, potential release of toxic substances, water diversions, residential and commercial development activity, agricultural practices, intentional or unintentional release of native and non-native predators into water bodies, and grazing on private and municipal lands. The Service anticipates that the effects of these non-Federal activities would be addressed through section 10(a)(1)(B) permits. Habitat conservation plans that are required to obtain such permits would include measures that would minimize and mitigate the effects to the California red-legged frog resulting from the non-Federal activities. In addition, the persistence of the California red-legged frog in the affected area would not be diminished by the activities covered under this programmatic consultation. Therefore, the cumulative effects of the projects included in this biological opinion, considered together with other non-Federal actions, would not appreciably reduce the likelihood of survival and recovery of the California red-legged frog.

Conclusion

After reviewing the current status of the California red-legged frog, the environmental baseline for the area covered by this consultation, the effects of the proposed projects, and the cumulative effects, it is the Service's biological opinion that the proposed projects, as described in this consultation document, are not likely to jeopardize the continued existence of this species.

INCIDENTAL TAKE STATEMENT

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

The reasonable and prudent measures described below are nondiscretionary, and must be undertaken by the Corps so that they become binding conditions of any grant or permit issued to

the applicant, as appropriate, 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 require the applicant to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, and/or (2) fails to retain oversight to ensure compliance with these terms and conditions, the protective coverage of section 7(o)(2) may lapse.

Amount or Extent of Take

The Service anticipates the following forms of incidental take:

1. Based on historical data about habitat impacts from the Nationwide Permit Program, the Service anticipates that up to 60 acres of wetland and riparian habitat and up to 60 acres of upland habitat, suitable for the California red-legged frog, may be permanently or temporarily taken annually as a result of implementing the actions described in the project description. In addition, the Service anticipates that all adults, juveniles, tadpoles, and eggs of California red-legged frogs associated with the loss of 60 acres of wetland and riparian habitat and 60 acres of upland habitat may be taken through mortality, harm, or harassment resulting from project-related activities. The quantification of take by harassment, harm, and mortality is difficult to ascertain because of the species' small size and aquatic habitat. These factors make it difficult to detect where California red-legged frogs, particularly tadpoles, are and if any have been affected by an action. For actions covered by this consultation, some harassment and mortality could be directly observed from those captured during translocation efforts. However, mortality from other sources would be difficult to observe.

The observed take may be lower than the actual take. However, with the implementation of the reasonable and prudent measures, the effects of the unobserved take would not change our analysis of effects of the actions covered by the biological opinion.

Effect of the Take

It is the opinion of the Service that the effects of the actions included under the auspices of this formal consultation are not likely to jeopardize the continued existence of the California red-legged frog.

Reasonable and Prudent Measures

The following reasonable and prudent measure is necessary and appropriate to minimize the impact of take on the California red-legged frog:

Adverse effects to California red-legged frogs and their habitat shall be minimized to the extent possible.

Terms and Conditions

To be exempt from the prohibitions of section 9 of the Act, the Corps must ensure that the permittees comply with the following term and condition, which implements the reasonable and prudent measure described above.

> To implement the reasonable and prudent measure, the measures described in the "Minimization of Adverse Effects" section shall be fully implemented. These measures are hereby incorporated into this term and condition as requirements of proposed projects.

Disposition of Injured or Dead Specimens

Upon locating dead or injured California red-legged frogs, initial notification must be made in writing to the appropriate office of the Service's Division of Law Enforcement. Notification by both telephone and writing also must be made to the appropriate Fish and Wildlife Office:

U.S. Fish and Wildlife Service
Division of Law Enforcement
3310 El Camino Avenue, Suite 140
Sacramento, California 95821-6340

U.S. Fish and Wildlife Service
Sacramento Fish and Wildlife Office
3310 El Camino Avenue, Suite 130
Sacramento, California 95821-6340
(916) 979-2725

U.S. Fish and Wildlife Service
Division of Law Enforcement
1633 Bayshore Highway, Suite 248
Burlingame, California 94010

U.S. Fish and Wildlife Service
Division of Law Enforcement
370 Amapola Avenue, Suite 114
Torrance, California 90501

U.S. Fish and Wildlife Service
Ventura Fish and Wildlife Office
2493 Portola Road, Suite B
Ventura, California 93003
(805) 644-1766

Notification shall occur within three working days of finding the dead or injured animal. The report shall include the date, time, location of any carcass, a photograph, cause of death, if known, and any other pertinent information.

Care shall be taken in handling injured animals to prevent additional injury. Injured animals may be released to the wild after receipt of concurrence from the Service. Care shall be taken in handling dead specimens to preserve biological material in the best possible state for later analysis. Standard preservation methods shall be used. The remains of intact California red-legged frogs shall be placed with the California Academy of Sciences Herpetology Department [Contact: Jens Vindum, Collections Manager, California Academy of Sciences Herpetology Department, Golden Gate Park, San Francisco, California, 94118, (415) 750-7037].

REPORTING REQUIREMENTS

The Corps shall require each permittee who makes use of the provisions of this programmatic consultation to prepare a compliance certification to be filed with the Corps and the Service to certify, after completion of construction, that the action was completed in accordance with the permit conditions. The information contained in the compliance certification shall include:

1) the type(s) of action(s) that occurred;

2) the number of acres affected and habitat type (e.g., upland, riparian.);

3) the linear feet of work;

4) how the site(s) was restored and a description of the area after the completion of the action;

5) which measures were employed to protect California red-legged frogs;

6) how the site(s) was restored or, if no restoration occurred the justification for not conducting this work; and,

7) a description of the area after the completion of the action.

The Corps shall provide to the Service annually a listing of permits authorized under this biological opinion. Such a list shall provide the name of the permittee, Corps authorization number, and the location. This is information the Corps routinely tracks and can be provided either as a paper version or electronically. The Service and the Corps shall meet annually to review this information as well as information provided by permittees. The Corps may desire to develop a reporting format in coordination with the Service soon after issuance of this biological opinion, which can be provided to permittees.

Each compliance certification provided by the permittees shall contain maps as appropriate indicating the location of all actions. Each report shall have a table and photos keyed to the map as appropriate. The compliance certification shall also document the number of California red-legged frogs that were known to be taken, and the form of take (e.g., harassment by moving, mortality) during each project's activities. The Service recognizes that accurately quantifying the number of individuals that may have been taken may not be possible; in these cases, the reporting of all observations and relative numbers would provide useful information. The report shall also recommend modifications to future measures to enhance the protection of the California red-legged frog.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information. The recommendations provided here do not necessarily represent complete fulfillment of the agency's 7(a)(1) responsibilities for this species.

1. Coordinate with the Service to develop a conservation strategy for the California red-legged frog, including documenting past and present California red-legged frog localities, threats, and conservation opportunities.

2. Monitor the status of the California red-legged frog in areas of Corps jurisdiction to identify effects of urbanization on the resident California red-legged frog population.

3. The Corps should assist the Service in implementation of recovery actions identified by the Service during and after preparation of the recovery plan for the California red-legged frog.

4. The Corps, through its Federal projects, should develop and implement strategies for the conservation and recovery of the California red-legged frog.

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

REINITIATION - CLOSING STATEMENT

This concludes formal consultation on the project described in this biological opinion. As provided in 50 CFR §402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been maintained (or is authorized by law), and if (1) the amount or extent of incidental take is exceeded, (2) new information reveals effects of the agency action may affect listed species or critical habitat in a manner or to an extent not considered in this opinion, (3) the agency action is subsequently modified in a manner that causes an effect on listed species or critical habitat that was not considered in this opinion, or (4) a new species is listed or critical habitat is designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, the Corps shall not issue authorizations under this biological opinion. If you have any questions regarding this opinion, please contact the appropriate field office staff member as indicated in Enclosure A.

Sincerely,

Diane K. Noda
Field Supervisor
Ventura Fish and Wildlife Office

Wayne S. White
Field Supervisor
Sacramento Fish and Wildlife Office

Enclosure

cc: FWS:PARD(ES), Portland, OR
FWS:HC and ES, Washington, D.C.
FWS:CFO, Carlsbad, CA (Attn.: K. Berg)
FWS:LE, Sacramento, CA (Attn.: Senior Resident Agent S. Pearson)
FWS:LE, Burlingame, CA (Attn.: Special Agent K. McCloud)
FWS:LE, Chico, CA (Attn.: Special Agent J. Mendoza)
FWS:LE, Clovis, CA (Attn.: Special Agent F. Kuncir)
FWS:LE, Torrance, CA (Attn.: Senior Resident Agent L. Farrington)
DOI:SOL, San Francisco, CA (Attn.: Solicitor R. Kohn Glazer)
EPA:Wetlands, San Francisco, CA
CDFG, Regions 1, 2, and 3
ESRP, Fresno, CA

LITERATURE CITED

Bulger, J.B. 1998. Wet Season Dispersal and Habitat Use by Juvenile California red-legged frogs (*Rana aurora draytonii*) in forest and rangeland habitats of the Santa Cruz Mountains. A research proposal submitted to U.S. Fish and Wildlife Service. 6 pp.

Hayes, M.P. and D.M. Krempels. 1986. Vocal sac variation among frogs of the genus *Rana* from western North America. Copeia 1986(4):927-936.

Hayes, M.P. and M.M. Miyamoto. 1984. Biochemical, behavioral and body size differences between *Rana aurora aurora* and *R. a. draytonii*. Copeia 1984(4):1018-1022.

Hayes, M.P. and M.R. Tennant. 1985. Diet and feeding behavior of the California red-legged frog, *Rana aurora draytonii* (Ranidae). The Southwestern Naturalist 30(4):601-605.

Jennings, M.R. 1988. Natural history and decline of native ranids in California. Pages 61-72 *In*: H.F. DeLisle, P.R. Brown, B. Kaufman, and B.M. McGurty (editors). Proceedings of the conference on California herpetology. Southwestern Herpetologists Society, Special Publication (4):1-143.

Jennings, M.R. and M.P. Hayes. 1985. Pre-1900 over harvest of California red-legged frogs (*Rana aurora draytonii*): The inducement for bullfrog (*Rana catesbeiana*) introduction. Herpetologica 41(1):94-103.

Jennings, M.R. and M.P. Hayes. 1990. Status of the California red-legged frog *Rana aurora draytonii* in the Pescadero Marsh Natural Preserve. Report prepared for the California Department of Parks and Recreation, Sacramento, CA. 30 pp. + Tables and Figures.

Jennings, M.R., M.P. Hayes. 1994. Amphibian and reptile species of special concern in Cal. Report prepared fro the Calif. Dept. of Fish and Game, Inland Fisheries Division, Rancho Cordova, Cal. 255 pp.

Jennings, M.R., M.P. Hayes, and D.C. Holland. 1992. A petition to the U.S. Fish and Wildlife Service to place the California red-legged frog (*Rana aurora draytonii*) and the western pond turtle (*Clemmys marmorata*) on the list of endangered and threatened wildlife and plants. 21 pp.

Licht, L.E. 1969. Comparative breeding behavior of the red-egged frog (*Rana aurora aurora*) and the western spotted frog (*Rana pretiosa pretiosa*) in southwestern British Colombia. Canadian Journal of Zoology 47(6):1287-1299.

Rathbun, G.B., M.R. Jennings, T.G. Murphey, and N.R. Siepel. 1993. Status and ecology of sensitive aquatic vertebrates in lower San Simeon and Pico Creeks, San Luis Obispo County, California. U.S. Fish and Wildlife Service, National Ecology Research Center, San Simeon, CA. Prepared for the California Dept. of Parks and Recreation. 103 pp.

Schmieder, R.R. and R.S. Nauman. 1994. Effects of non-native aquatic predators on prematemorphic Cal red-legged frogs (*Rana aurora draytonii*). University of California, Santa Cruz. 12pp.

Stebbins, R.C. 1985. A field guide to western reptiles and amphibians. Houghton Mifflin Company, Boston, MA. xiv + 336 pp.

Storer, T.I. 1925. A synopsis of the amphibia of California. University of California Publications in Zoology 27:1-342.

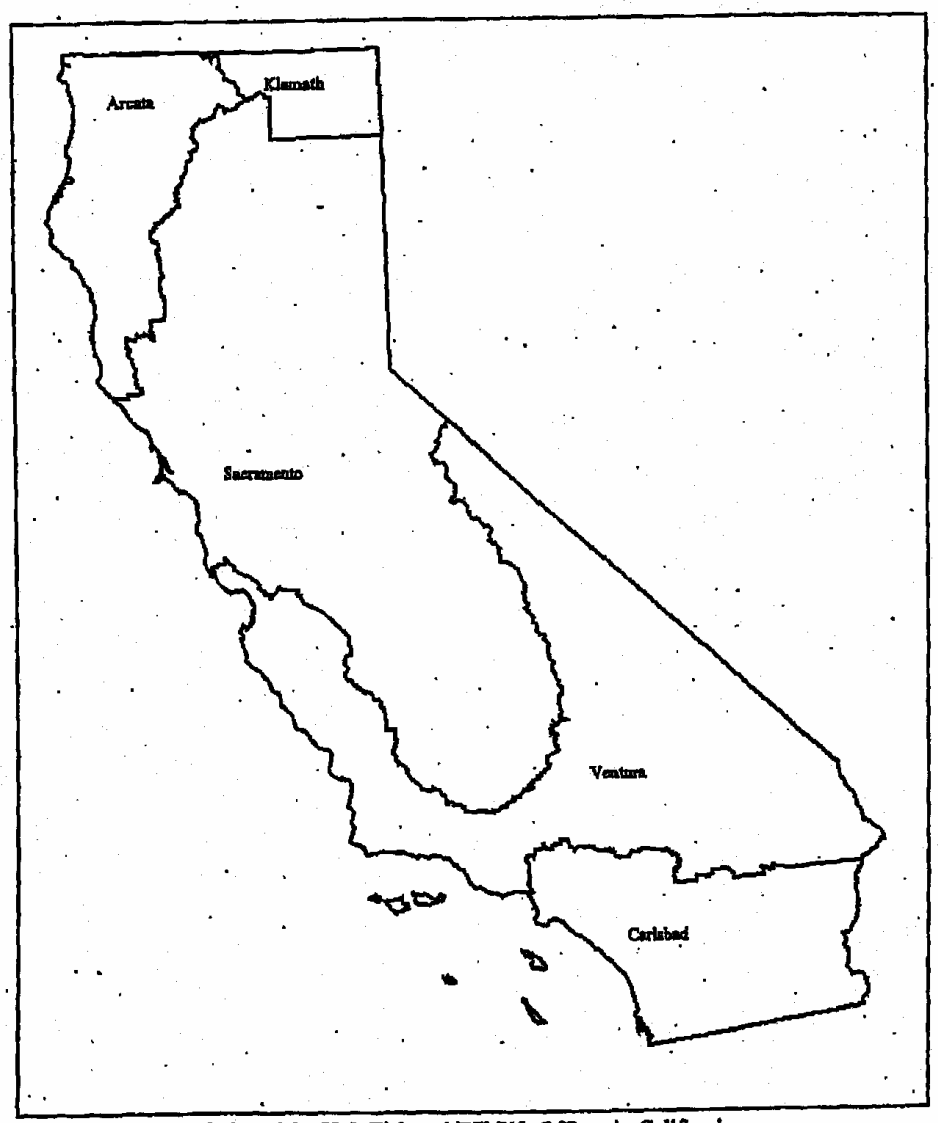
Twedt, B. 1993. A comparative ecology of *Rana aurora* (Baird and Girard) and *Rana catesbeiana* Shaw at Freshwater Lagoon, Humboldt County, California. Unpubl. MS, Humboldt State Univ. 53pp + appendix.

Wright, A.H. and A.A. Wright. 1949. Handbook of frogs and toads of the United States and Canada. Comstock Publishing Company, Inc., Ithaca, NY. xii + appendix.

Enclosure A: Jurisdictions of the Fish and Wildlife Service's California Field Offices, with staff contacts for each Field Office.

Field Office	Telephone	Fax	Contacts
Sacramento Fish and Wildlife Office 3310 El Camino Avenue, Suite 130 Sacramento, California 95821-6340	916-979-2752	916-979-2723	Ken Sanchez
Ventura Fish and Wildlife Office 2493 Portola Road, Suite B Ventura, California 93003	805-644-1766	805-644-3958	Ray Bransfield or Cathy McCalvin
Carlsbad Fish and Wildlife Office 2730 Loker Avenue West Carlsbad, California 92008	760-431-9440	760-431-9624	Art Davenport

Messrs. Art Champ, Calvin Fong, and Richard Schubel



Jusridictional Boundaries of the U.S. Fish and Wildlife Offices in California

STATE OF CALIFORNIA THE RESOURCES AGENCY ARNOLD SCHWARZENEGGER, GOVERNOR
DEPARTMENT OF FISH AND GAME
BAY DELTA REGION
(707) 944-5520
Mailing address:
POST OFFICE BOX 47
YOUNTVILLE CALIFORNIA 94599
Street address:
7329 SILVERADO TRAIL
NAPA CALIFORNIA 94558

April 30, 2007

Notification Number: 1600-2006-0673-3

Kallie Kull
Marin County Flood Control and Water Conservation District
3501 Civic Center Drive, Room 304
San Rafael, CA. 94903

1602 LAKE AND STREAMBED ALTERATION AGREEMENT

This agreement is issued by the Department of Fish and Game pursuant to Division 2, Chapter 6 of the California Fish and Game Code:

WHEREAS, the applicant, Kallie Kull / Marin County Flood Control and Water Conservation District, hereafter called the Operator, submitted a signed NOTIFICATION proposing to substantially divert or obstruct the natural flow of, or substantially change the bed, channel, or bank of, or use material from the streambed or lake of the following waters: Miller Creek, thence San Pablo Bay, Olema Creek, tributary Lagunitas Creek, thence Tomales Bay, Stemple Creek, tributary Estero San Antonio, thence the Pacific Ocean, in the County of Marin, State of California; and

WHEREAS, the Department has determined that such operations may substantially adversely affect existing fish and wildlife resources including water quality, hydrology, aquatic or terrestrial plant or animal species; and

WHEREAS, the project has undergone the appropriate review under the California Environmental Quality Act; and

WHEREAS, the Operator shall undertake the project as proposed in the signed PROJECT DESCRIPTION and PROJECT CONDITIONS (attached). If the Operator changes the project from that described in the PROJECT DESCRIPTION and does not include the PROJECT CONDITIONS, this agreement is no longer valid; and

WHEREAS, the agreement shall expire on December 31, 2009; and

WHEREAS, nothing in this agreement authorizes the Operator to trespass on any land or property, nor does it relieve the Operator of the responsibility for compliance with applicable Federal, State, or local laws or ordinances. Placement, or removal, of any material below the level of ordinary high water may come under the jurisdiction of the U. S. Army Corps of Engineers pursuant to Section 404 of the Clean Water Act;

THEREFORE, the Operator may proceed with the project as described in the PROJECT DESCRIPTION and PROJECT CONDITIONS. A copy of this agreement, with attached PROJECT DESCRIPTION and PROJECT CONDITIONS, shall be provided to contractors and subcontractors and shall be in their possession at the work site.

Failure to comply with all conditions of this agreement may result in legal action.

This agreement is approved by:

Charles Armor
Acting Regional Manager
Bay Delta Region

cc: Warden J. Nicholas
Warden S. Gehrt

EXHIBIT NO. 7
APPLICATION NO.
2-07-002 Marin Co. Public Works Dept.
CDFG 1602 Lake & Streambed Alteration Agreement (page 1 of 16)

STATE OF CALIFORNIA THE RESOURCES AGENCY
GOVERNOR
DEPARTMENT OF FISH AND GAME
BAY DELTA REGION
(707) 944-5520
Mailing address:
POST OFFICE BOX 47
YOUNTVILLE, CALIFORNIA 94599
Street address:
7329 SILVERADO TRAIL
NAPA, CALIFORNIA 94558

ARNOLD SCHWARZENEGGER,

Notification Number: 1600-2006-0673-3
Miller Creek, Thence San Pablo Bay,
Olema Creek, Tributary Lagunitas Creek, Thence Tomales Day,
Stemple Creek, Tributary Estero San Antonio, Thence the Pacific Ocean,
Marin County

Operator:
Kallie Kull
Marin County Flood Control and Water Conservation District
3501 Civic Center Drive, Room 304
San Rafael, CA. 94903

PROJECT DESCRIPTION and PROJECT CONDITIONS

The County of Marin Public Works Department (County) is proposing to perform various emergency maintenance and repair activities for four bridges within the County during the late summer 2007. The County has determined these four bridges, located throughout the county, are in immediate need of repair before the next large winter storm system. The majority of the emergency repair work will consist of placing scour protection along the abutments and around the support columns of the bridges, as several areas have been undercut due to water flow and sediment migration.

The four bridges are all located within and around the riparian and streambed and banks of Miller Creek, Olema Creek, and Stemple Creek in the following specific locations: Bridge No. 016 is located on Lucas Valley Road where it crosses Miller Creek, approximately 1.8 miles northwest of Highway 101, near the intersection of Lucas Valley Road and Mt. Lassen Drive, as depicted on the Novato USGS 7.5-minute topographic quadrangle, Bridge No. 104 is located on Sir Francis Drake Boulevard where it crosses Olema Creek, approximately 0.3 miles west of Highway 1 and the town of Point Reyes Station, of the Inverness USGS 7.5-minute topographic quadrangle, Bridge No. 121 is located on Alexander Road where it crosses over Stemple Creek in unincorporated Marin County, approximately 0.4 miles north of Tomales-Petaluma Road and 3.7 miles east of the community of Tomales, as depicted on the Two Rock USGS 7.5-minute topographic quadrangle, and Bridge No. 122 is located on Twin Bridge Road where it crosses over Stemple Creek in unincorporated Marin County, approximately 0.2 miles north of Tomales-

Petaluma Road and 2.6 miles east of the community of Tomales, as depicted on the Two Rock USGS 7.5-minute topographic quadrangle.

Resources at Risk

The Miller Creek watershed supports habitat for Central California Coast Steelhead *(Oncorhynchus mykiss)*, California newt (*Taricha torosa*), California roach (*Lavinia symmetricus*), and riffle sculpin (*Cottus gulosus*) as well as other aquatic species. Olema Creek, and its tributaries support habitat for Central California Coast Steelhead *(Oncorhynchus mykiss)*, Coho salmon (*Oncorhynchus kitsutch),* California red-legged frog (*Rana (aurora draytonii) draytonii*), Tomales roach (*Lavinia symmetricus ssp.*), Tide water goby (*Eucyclogobius newberryi)*, riffle sculpin (*Cottus gulosus*) as well as other aquatic species. The Stemple Creek watershed supports habitat for Central California Coast Steelhead *(Oncorhynchus mykiss)*, California roach (*Lavinia symmetricus*), California freshwater shrimp (*Syncaris pacifica*), California red-legged frog, western pond turtle (*Clemmys marmorata)* and other aquatic species. California Department of Fish & Game (CDFG) environmental scientist Jeremy Sarrow visited the project site to review regulatory requirements for the proposed project.

Terms and Conditions

Work Periods

1. Work within the riparian areas and stream banks shall be confined to the period July 15 to October 15th.

Work according to plans

2. All work shall be done according to the plans, prepared by the Operator and their agents, initially received and further modified by the Department with the project Notification. Specifically, at Bridge No. 122 – Twin Bridge, riprap will only extend 6 feet beyond the southern abutment so as to ensure than an open channel is maintained for fish passage and likewise rip rap placed at the eastern pier of Bridge No. 104 – Sir Francis Drake Bridge, shall also not be placed in a manor that precludes fish passage.

Vegetation planting and construction methods

3. Stream bank areas shall be re-planted with native riparian species such as arroyo willow (*Salix lasiolepis*), red willow (*S. laevigata*), California buckeye, California bay (*Umbellularia californica,* California blackberry (*Rubus ursinus*), or other appropriate native species following completing of each respective project.

California red-legged frog and Western pond turtle surveys

4. A DFG-approved biologist will survey the work site at Bridges 016, 104, 121, and 122, at least two weeks before the onset of activities. If red-legged frogs or pond turtles are found in the project area and these individuals are likely to be killed or injured by work activities, the DFG-approved biologist will allow sufficient time to move them from the site before work activities resume. Only DFG-approved biologists will participate in activities with the capture, handling, and monitoring of red-legged frogs.

Nesting bird surveys

5. If work in the riparian zone will occur between February 1 and September 1, a qualified biologist must conduct a survey for nesting birds within one week **prior to** the vegetation removal and/or construction activities, and ensure no nesting birds shall be impacted by the project. These surveys shall include the areas within 200 feet of the edge of the proposed impact area(s). If active nests are found, a minimum of a 50-feet (200 feet for raptors) fence barrier shall be erected around the nest site. No habitat removal or any other work shall occur within the fenced nest zone until the young have fledged, are no longer being fed by the parents, or have left the nest and will no longer be impacted by the project. Vegetation clearing may occur other than as described above if Department approved avoidance measures are in place to ensure no impacts to nesting birds may occur and the Operator receives confirmation from the Department that the vegetation removal at a specific site is allowed on a specified date.

Construction of diversion/de-watering structure and fish relocation

6. For minor actions, where the disturbance to construct a coffer dam or other type of diversion to isolate the work site would be greater than to complete the action (for example, placement of a single boulder cluster), measures will be put in place immediately downstream of the work site to capture suspended sediment. This may include installation of silt catchment fences across the stream, or placement of a filter berm of clean river gravel. Silt fences and other non-native materials will be removed from the stream following completion of the activity.

7. If the work site is temporarily dewatered by pumping, intakes shall be completely screened with wire mesh no larger than 0.2 inch to prevent fish from entering the pump system. Water shall be released or pumped downstream, at an appropriate rate, to maintain downstream flows during construction. Upon completion of construction activities, any barriers to flow shall be removed.

8. Measures shall be taken to minimize harm and mortality to listed salmonids resulting from fish relocation and dewatering activities:

   a) Marin County shall minimize the amount of wetted stream channel that is dewatered at each individual project site to the fullest extent possible.

   b) All electrofishing shall be performed by a qualified fisheries biologist and conducted according to the National Marine Fisheries Service *Guidelines for Electrofishing Waters Containing Salmonids Listed Under the Endangered Species Act*, June 2000.

   c) Any captured wildlife/fish shall be relocated immediately upstream or downstream the project area to suitable habitat for the particular species.

Disturbance, disposal and removal of materials

9. The disturbance or removal of sediment or vegetation shall not exceed the minimum

necessary to complete project. Precautions shall be taken to avoid other damage to vegetation by people or equipment. The disturbed portions of the stream bank within or above the normal high-water mark of the stream shall be restored to as near their original condition as possible.

Erosion control measures

10. Erosion control measures shall be utilized throughout all phases of operation where sediment runoff from exposed slopes threatens to enter waters of the State. At no time shall silt-laden runoff be allowed to enter the stream or directed to where it may enter the stream.

11. All exposed/disturbed areas within the project site shall be stabilized to the greatest extent possible. Erosion control measures such as straw wattles, straw mulch, and hydro-seeding (utilizing a native mix) shall be used where ever silt laden water has the potential to leave the work site and enter State waters. Erosion control measures shall be monitored during and after each storm event. Modifications, repairs and improvements to erosion control measures shall be made whenever it is needed.

12. All construction debris and associated materials shall be removed from the work site upon completion of this project. Any equipment or vehicles driven and/or operated within or adjacent to the site shall be cleaned of all external oil, grease, and materials that, if introduced to water, could be deleterious to aquatic life, wildlife or riparian habitat. Stationary equipment such as motors, pumps, generators, and welders, located within or adjacent to the creek shall be positioned over drip pans.

Operation of equipment

13. Equipment shall not be operated in wetted areas (including but not limited to ponded, flowing, or wetland areas) within the stream channel below the level of top-of-bank.

Refueling of equipment and Hazardous materials storage

14. Refueling of mobile and/or portable equipment will not occur within 100 feet of a drainage or water body. When circumstances do not permit this, refueling of sedentary equipment will use catch basins and absorbent pads while refueling within 100 feet of a drainage or water body.

15. Hazardous materials (fuels, lubricants, solvents, etc.) will not be stored within 100 feet of a drainage or water body.

General Conditions:

16. The RWQCB has permitting requirements for certain projects under Section 401 of the Federal Clean Water Act. The applicant shall contact the RWQCB before starting any work activities.

17. This agreement does not allow for the take, or incidental take of any State or Federal listed threatened or endangered listed species. The Operator is required, as prescribed in the state or federal endangered species acts, to consult with the appropriate agency prior to

commencement of the project. Any unauthorized take of such listed species may result in prosecution.

18. In the event that the project scope, nature, or environmental impact is altered by the imposition of subsequent permit conditions by any local, state or federal regulatory authority, the Operator shall notify DFG of any imposed project modifications that interfere with compliance to Department conditions.

19. A copy of this agreement must be provided to the contractor and all subcontractors who work within the stream zone and must be in their possession at the work site.

20. The Operator is liable for compliance with the terms of this Agreement, including violations committed by the contractors and/or subcontractors. DFG reserves the right to suspend construction activity described in this Agreement if DFG determines any of the following has occurred:
    A). Failure to comply with any of the conditions of this Agreement
    B). Information provided in support of the Agreement is determined by DFG to be inaccurate.
    C). Information becomes available to DFG that was not known when preparing the original conditions of this Agreement (including, but not limited to, the occurrence of State or federally listed species in the area or risk to resources not previously observed)
    D).The project as described in the Agreement has changed or conditions affecting fish and wildlife resources change.

Any violation of the terms of this Agreement may result in the project being stopped, a citation being issued, or charges being filed with the District Attorney. Contractors and subcontractors may also be liable for violating the conditions of this agreement.

Amendments and Renewals

The Operator shall notify the Department before any modifications are made in the project plans submitted to the Department. Project modifications may require an amendment or a new notification.

This Agreement is transferable to subsequent owners of the project property by requesting an amendment.

To renew the Agreement beyond the expiration date, a written request for a renewal must be submitted to the Department (1600 Program, Post Office Box 47, Yountville, California 94599) for consideration at least 30 days before the Agreement expiration date. A renewal requires a fee. The Fee Schedule can be obtained at www.dfg.ca.gov/1600 or by phone at (707) 944-5520. Renewals of the original Agreement are issued at the discretion of the Department.

To modify the project, a written request for an amendment must be submitted to the Department (1600 Program, Post Office Box 47, Yountville, California 94599). An amendment requires a fee. The Fee Schedule can be obtained at www.dfg.ca.gov/1600 or by

phone at (707) 944-5520. Amendments to the original Agreement are issued at the discretion of the Department.

Please note that you may not proceed with construction until your proposed project has undergone CEQA review and the Department signs the Agreement.

I, the undersigned, state that the above is the final description of the project I am submitting to the Department for CEQA review, leading to an Agreement, and agree to implement the conditions above required by the Department as part of that project. I will not proceed with this project until the Department signs the Agreement. I also understand that the CEQA review may result in the addition of measures to the project to avoid, minimize, or compensate for significant environmental impacts:

Operator's name (print): Kallie Kull

Operator's signature: Kallie Kull

Signed the Seventeenth **day of** April **, 2007**

NEW FORM REC'D

FOR DEPARTMENT USE ONLY				
Date Received	Amount Received	Amount Due	Date Complete	Notification No.
2/22/07	$3,000.00	$		1600-2006-0673-3

CHECK FOR $3,750 REC'D 9/13/06. #2164, SYCAMORE ASSOC. LLC ($750 TO BE APPLIED TO 2006-0748)

SARGOW

STATE OF CALIFORNIA
DEPARTMENT OF FISH AND GAME

NOTIFICATION OF LAKE OR STREAMBED ALTERATION

Complete EACH field, unless otherwise indicated, following the enclosed instructions and submit ALL required enclosures. Attach additional pages, if necessary.

Fish & Game
FEB 22 2007
Yountville

1. APPLICANT PROPOSING PROJECT

Name	Kallie Kull		
Business/Agency	Marin County Department of Public Works		
Street Address	3501 Civic Center Drive, Room 304, Administration Building/Civic Center		
City, State, Zip	San Rafael, CA 94903		
Telephone	(415) 499-6532	Fax	(415) 499-3799
Email	lizlewis@ca.marin.co.		

2. CONTACT PERSON *(Complete only if different from applicant)*

Name	Whitney Fiore, EDAW (Formerly Sycamore Associates LLC)		
Street Address	2099 Mt. Diablo Blvd., Ste. 204		
City, State, Zip	Walnut Creek, CA 94596		
Telephone	(925) 279-0580	Fax	(925) 279-0581
Email	whitneyfiore@syclic.com		

3. PROPERTY OWNER *(Complete only if different from applicant)*

Name			
Street Address			
City, State, Zip			
Telephone		Fax	
Email			

4. PROJECT NAME AND AGREEMENT TERM

A. Project Name	County of Marin Emergency Bridge Repair Project			
B. Agreement Term Requested	☑ Regular *(5 years or less)* ☐ Long-term *(greater than 5 years)*			
C. Project Term		D. Seasonal Work Period		E. Number of Work Days
Beginning *(year)*	Ending *(year)*	Start Date *(month/day)*	End Date *(month/day)*	
2007	2008	04/15	09/15	60.00

NOTIFICATION OF LAKE OR STREAMBED ALTERATION

5. AGREEMENT TYPE

Check the applicable box. If box B, C, D, or E is checked, complete the specified attachment.

A	☑ Standard *(Most construction projects, excluding the categories listed below)*	
B	☐ Gravel/Sand/Rock Extraction (*Attachment A*)	*Mine I.D. Number:* _____
C	☐ Timber Harvesting (*Attachment B*)	*THP Number:* _____
D	☐ Water Diversion/Extraction/Impoundment (*Attachment C*)	*SWRCB Number:* _____
E	☐ Routine Maintenance (*Attachment D*)	
F	☐ DFG Fisheries Restoration Grant Program (FRGP)	*FRGP Contract Number:* _____
G	☐ Master	
H	☐ Master Timber Harvesting	

6. FEES

Please see the current fee schedule to determine the appropriate notification fee. Itemize each project's estimated cost and corresponding fee. *Note: The Department may not process this notification until all required fees are received.*

	A. Project	B. Project Cost	C. Project Fee
1	Repair of Bridge No. 016	$40,000.00	$750.00
2	Repair of Bridge No. 104	$40,000.00	$750.00
3	Repair of Bridge No. 121	$40,000.00	$750.00
4	Repair of Bridge No. 122	$40,000.00	$750.00
5	Completion of Bridge 107 (started 2006 under SAA 07483 , to complete in 2007)		
		D. Base Fee (*If applicable*)	
		E. TOTAL FEE ENCLOSED	$3,000.00

7. PRIOR NOTIFICATION OR ORDER

A. Has a notification previously been submitted for a Lake or Streambed Alteration Agreement previously issued by the Department for the project described in this notification?

☐ Yes (*Provide the information below*) ☑ No

Applicant: _____ Notification Number: _____ Date: _____

B. Is this notification being submitted in response to an order, notice, or other directive (order) by a court or administrative agency (including the Department)?

☑ No ☐ Yes (*Enclose a copy of the order, notice, or other directive. If the directive is not in writing, identify the person who directed the applicant to submit this notification and the agency he or she represents, and describe the circumstances relating to the order.*)

☐ *Continued on additional page(s)*

NOTIFICATION OF LAKE OR STREAMBED ALTERATION

8. PROJECT LOCATION

A. Address or description of project location:
(Include a map that marks street location of the project with a reference to the nearest city or town, and provide driving directions from a major road or highway.)

Bridge No. 016 Lucas Valley Road bridge, is located on Lucas Valley Road where it crosses Miller Creek, approximately 1.8 miles northwest of Highway 101, near the intersection of Lucas Valley Road and Mt. Lassen Drive, Township 2 North, Range 7 West, as depicted on the Novato USGS 7.5-minute topographic quadrangle. Bridge No. 104 Sir Francis Drake Bridge, is located on Sir Francis Drake Boulevard where it crosses Olema Creek, approximately 0.3 miles west of Highway 1 and the town of Point Reyes Station, in an unsectioned portion of the Inverness USGS 7.5-minute topographic quadrangle. Bridge No. 121 Alexander Road Bridge, is located on Alexander Road where it crosses Stemple Creek in unincorporated Marin County, approximately 0.4 miles north of Tomales-Petaluma Road and 3.7 miles east of the community of Tomales, Township 5 North, Range 9 West, Section 22, as depicted on the Two Rock USGS 7.5-minute topographic quadrangle. Bridge No. 122 Twin Bridge, is located on Twin Bridge Road where it crosses Stemple Creek in unincorporated Marin County, approximately 0.2 miles north of Tomales-Petaluma Road and 2.6 miles east of the community of Tomales, Township 5 North, Range 9 West, Section 21, as depicted on the Two Rock USGS 7.5-minute topographic quadrangle.

☐ *Continued on additional page(s)*

B. River, stream or lake affected by the project: Miller, Olema, and Stemple Creeks

C. Watershed (the river, stream or lake tributary to): Pacific Ocean

D. Is the river or stream segment affected by the project listed in the State or Federal Wild and Scenic Rivers Act? ☐ Yes ☑ No ☐ Unknown

E. County: Marin County

F. USGS 7.5 Minute Quad Map Name	G. Township	H. Range	I. Section	J. ¼ Section
Novato	2 N	7 W	--	
Inverness	--	--	--	
Two-Rock	5 N	9 W	22	
Two-Rock	5 N	9 W	21	

☐ *Continued on additional page(s)*

K. Meridian *(check one)*: ☐ Humboldt ☑ Mt. Diablo ☐ San Bernardino

L. Assessor's Parcel Number(s):

No APN's as these areas are considered Marin County Right of Way.

☐ *Continued on additional page(s)*

M. Coordinates *(if available, provide at least latitude/longitude or UTM coordinates and check appropriate boxes.)*

Latitude/Longitude	*Latitude:*	*Longitude:*	
	☐ Degrees/Minutes/Seconds	☐ Decimal Degrees	☐ Decimal Minutes
UTM	*Easting:*	*Northing:*	☐ Zone 10 ☐ Zone 11
Datum used for Latitude/Longitude or UTM:	☐ NAD 27	☐ NAD 83 or WGS 84	

NOTIFICATION OF LAKE OR STREAMBED ALTERATION

9. PROJECT CATEGORY AND WORK TYPE *(Check each box that applies)*

PROJECT CATEGORY	NEW CONSTRUCTION	REPLACE EXISTING STRUCTURE	REPAIR/MAINTAIN EXISTING STRUCTURE
Bank stabilization – bioengineering/recontouring	☐	☐	☐
Bank stabilization – rip-rap/retaining wall/gabion	☐	☐	☑
Boat dock/pier	☐	☐	☐
Boat ramp	☐	☐	☐
Bridge	☐	☐	☑
Channel clearing/vegetation management	☐	☐	☐
Culvert	☐	☐	☐
Debris basin	☐	☐	☐
Dam	☐	☐	☐
Diversion structure – weir or pump intake	☐	☐	☐
Filling of wetland, river, stream, or lake	☐	☐	☐
Geotechnical survey	☐	☐	☐
Habitat enhancement – revegetation/mitigation	☐	☐	☐
Levee	☐	☐	☐
Low water crossing	☐	☐	☐
Road/trail	☐	☐	☐
Sediment removal – pond, stream, or marina	☐	☐	☐
Storm drain outfall structure	☐	☐	☐
Temporary stream crossing	☐	☐	☐
Utility crossing : Horizontal Directional Drilling	☐	☐	☐
Jack/bore	☐	☐	☐
Open trench	☐	☐	☐
Other *(specify)*:	☐	☐	☐

NOTIFICATION OF LAKE OR STREAMBED ALTERATION

10. PROJECT DESCRIPTION

A. Describe the project in detail. Photographs of the project location and immediate surrounding area should be included.
- Include any structures (e.g. riprap, culverts, or channel clearing) that will be placed, built, or completed in or near the stream, river or lake.
- Specify the type and volume of material(s) that will be used.
- If water will be diverted or drained, specify the purpose of use.
- Enclose diagrams, drawings, plans and/or maps that provide all of the following: site specific construction details, the dimensions of each structure and/or extent of each activity in the bed, channel, bank or floodplain, an overview of the entire project area (i.e., bird's eye view) showing the location of each structure and/or activity, significant area features, and where the equipment/machinery will enter and exit the project area.

The four bridge repairs are considered emergency repairs necessary to prevent the bridges from closure. The County of Marin has 64 bridges within their boundaries that are over 20 feet in length. These bridges are inspected every year by the California Department of Transportation Division of Structures (CalTrans). As a result of severe weather over the last twenty years, the most recent CalTrans inspection report detailed that a total of 21 bridges have damage to their substructure and 14 have damage to their superstructure. However, Marin County Public Works has determined that four bridges located throughout the County are in immediate need of repair, and should be completed before the 2007 winter storm season arrives. The majority of repair work will consist of placing scour protection (riprap) against the abutments and around the support columns of the bridges, as several areas have been undercut due to water flow and sediment migration. One of the four bridges (Bridge No. 104) will require that water be diverted away from the pier during construction activities. This will be achieved by using a cofferdam and dewatering 16 linear feet up stream and five linear feet downstream of the repair location. The total permanent impact to areas delineated as waters of the State is 1,986 square feet and 144 linear feet (0.04 acre). Of this total, 96 square feet (25 linear feet) of seasonal wetlands at the Bridge No. 122 location will be impacted. Twenty square feet of freshwater marsh will also be impacted at this location. For each bridge repair, a small area adjacent to the repair will be temporarily impacted, so as to allow for construction access and staging. The majority of the temporary impacts will occur above top of bank. Avoidance of sensitive habitats such as seasonal wetlands, will occur to the fullest extent possible. A complete description of all the proposed repair activities is in the Project Description sent September 12, 2006.

☐ *Continued on additional page(s)*

B. Specify the equipment and machinery that will be used to complete the project.

The proposed repair of the four Marin County Bridges will require the use of a small front loading excavator, a small backhoe, and a small crane.

☐ *Continued on additional page(s)*

C. Will water be present during the proposed work period (specified in box 4 D) in the stream, river or lake (specified in box 9 B)?	☑ Yes ☐ No (*Skip to box 11*)
D. Will the proposed project require work in the wetted portion of the channel?	☑ Yes (*Enclose a plan to divert water around work site*) ☐ No

NOTIFICATION OF LAKE OR STREAMBED ALTERATION

11. PROJECT IMPACTS

A. Describe all impacts to the bed, channel, and bank of the river, stream, or lake, and the associated riparian habitat.

a. Specify the dimensions of the modifications in length (linear feet) and area (square feet or acres), and the volume of material (cubic yards) that will be removed, displaced, or otherwise disturbed, if applicable.

Each bridge repair will require that a small area around the abutment or pier be impacted so as to place the erosion and scour protection (riprap). The placement of the riprap will not constrict the flow of water through the channel. The total area to be impacted below top of bank totals 1,986 square feet and 144 linear feet (0.04 acre). Complete details regarding project impacts resulting from the repair of the four bridges can be found in the Project Description.

☐ *Continued on additional page(s)*

B. Will the project affect any vegetation? ☑ Yes (*Complete the tables below*) ☐ No

Vegetation Type	Temporary Impact	Permanent Impact
Seasonal Wetland	Linear feet: 21 linear feet Total area: 97 square feet	Linear feet: 25 linear feet Total area: 96 square feet
Freshwater Marsh	Linear feet: _____ Total area: 51 square feet	Linear feet: _____ Total area: 20 square feet

Tree Species	Number of Trees to be Removed	Trunk Diameter (range)
No Trees Will Be Removed		

☐ *Continued on additional page(s)*

C. Are any special status animal or plant species, or habitat that could support such species, known to be present on or near the project site?

☑ Yes (*List each species and/or describe the habitat below*) ☐ No ☐ Unknown

California freshwater shrimp, California red-legged frog, western pond turtle, burrowing owl, nesting birds, and roosting bats. Please refer to the Project Description.

☐ *Continued on additional page(s)*

D. Identify the source(s) of information that supports a "yes" or "no" answer above in C, or "unknown."

Biological Assessment and Preliminary Jurisdictional Determination for Marin County Emergency Bridge Repairs, Sycamore Associates, August 31, 2006.

☐ *Continued on additional page(s)*

E. Has a biological study been completed for the project site?

☑ Yes (*Enclose the biological study*) ☐ No

Note: A biological assessment or study may be required to evaluate potential project impacts on biological resources.

F. Has a hydrological study been completed for the project or project site?

☑ Yes (*Enclose the hydrological study*) ☐ No

Note: A hydrological study or other information on site hydraulics (e.g., flows, channel characteristics, and/or flood recurrence intervals) may be required to evaluate potential project impacts on hydrology.

NOTIFICATION OF LAKE OR STREAMBED ALTERATION

12. MEASURES TO PROTECT FISH, WILDIFE, AND PLANT RESOURCES

A. Describe the techniques that will be used to prevent sediment from entering watercourses during and after construction.

Construction will occur during the summer months when stream flows are low. Construction related Best Management Practices (BMP's) will be implemented throughout all phases of project implementation. Please refer to Table 5 in the attached Project Description for a list of recommended surveys and minimization measures to be implemented at each bridge site.

☐ *Continued on additional page(s)*

B. Describe project avoidance and/or minimization measures to protect fish, wildlife, and plant resources.

Pre-construction surveys will be conducted for all special-status species that have a potential to occur within the area of each bridge repair. In addition, in order to protect the coho salmon and steelhead, a fish rescue plan has been developed. This plan outlines necessary guidelines to be followed during the dewatering and construction process, so as to protect these species against any potential impact.

☐ *Continued on additional page(s)*

C. Describe any proposed mitigation and/or compensation measures to protect fish, wildlife, and plant resources.

The proposed project will result in nominal impacts to each bridge location. The County of Marin will not be implementing any additional mitigation and/or compensation for the project aside from what is provided in the Project Description and the Mitigated Negative Declaration. These avoidance and minimization measures will adequately protect the sensitive resources present at each bridge location.

☐ *Continued on additional page(s)*

13. PERMITS

List any local, state, and federal permits required for the project and check the corresponding box(es). Enclose a copy of each permit that has been issued.

A.	401 Water Quality Certification (Via JARPA)	☑ Applied	☐ Issued
B.	404 Nationwide Permit No. 13 & 33 (Via JARPA)	☑ Applied	☐ Issued
C.	California Coastal Commission (Bridge No. 104)	☑ Applied	☐ Issued

D. Unknown whether ☐ local, ☐ state, or ☐ federal permit is needed for the project. *(Check each box that applies)*

☐ *Continued on additional page(s)*

NOTIFICATION OF LAKE OR STREAMBED ALTERATION

14. ENVIRONMENTAL REVIEW

A. Has a draft or final document been prepared for the project pursuant to the California Environmental Quality Act (CEQA), National Environmental Protection Act (NEPA), California Endangered Species Act (CESA) and/or Federal Endangered Species Act (ESA)?

☑ Yes *(Check the box for each CEQA, NEPA, CESA, and ESA document that has been prepared and enclose a copy of each)*

☐ No *(Check the box for each CEQA, NEPA, CESA, and ESA document listed below that will be or is being prepared)*

☐ Notice of Exemption	☑ Mitigated Negative Declaration	☐ NEPA document (*type*): _____
☐ Initial Study	☐ Environmental Impact Report	☐ CESA document (*type*): _____
☐ Negative Declaration	☐ Notice of Determination *(Enclose)*	☐ ESA document (*type*): _____
☐ THP/ NTMP	☐ Mitigation, Monitoring, Reporting Plan	

B. State Clearinghouse Number *(If applicable)*: 2006112147

C. Has a CEQA lead agency been determined? ☑ Yes *(Complete boxes D, E, and F)* ☐ No *(Skip to box 14.G)*

D. CEQA Lead Agency: Marin County Department of Public Works

E. Contact Person: Kallie Kull — F. Telephone Number: (415) 499-6532

G. If the project described in the notification is part of a larger project or plan, briefly describe that larger project or plan.

Upon completion of their yearly inspection, CalTrans notified the County of Marin that 21 of the 64 bridges within the County had damage to their substructure and 14 of these 21 had damage to their superstructure. As a result, the County has prepared a comprehensive Bridge Maintenance Program. The bridges currently being proposed for repair constitute those bridges that are in the most need of repair. The remaining bridges will be repaired at a future date yet to be determined.

☐ *Continued on additional page(s)*

H. Has an environmental filing fee (Fish and Game Code section 711.4) been paid?

☑ Yes *(Enclose proof of payment)* ☐ No *(Briefly explain below the reason a filing fee has not been paid)*

Note: If a filing fee is required, the Department may not finalize a Lake or Streambed Alteration Agreement until the filing fee is paid.

15. SITE INSPECTION

(Check one box only)

☐ In the event the Department determines that a site inspection is necessary, I hereby authorize a Department representative to enter the property where the project described in this notification will take place at any reasonable time, and hereby certify that I am authorized to grant the Department such entry.

☑ I request the Department to first contact (*insert name*) Whitney Fiore at (*insert telephone number*) (310) 387-7755 to schedule a date and time to enter the property where the project described in this notification will take place. I understand that this may delay the Department's determination as to whether a Lake or Streambed Alteration Agreement is required and/or the Department's issuance of a draft agreement pursuant to this notification.

NOTIFICATION OF LAKE OR STREAMBED ALTERATION

16. DIGITAL FORMAT

Is any of the information included as part of the notification available in digital format (i.e. CD, DVD, etc.)?

☐ Yes (Please enclose the information via digital media with the completed notification form)

☑ No

17. SIGNATURE

I hereby certify that to the best of my knowledge the information in this notification is true and correct and that I am authorized to sign this notification as, or on behalf of, the applicant. I understand that if any information in this notification is found to be untrue or incorrect, the Department may suspend processing this notification, suspend or revoke any draft or final Lake or Streambed Alteration Agreement issued pursuant to this notification. I understand also that if any information in this notification is found to be untrue or incorrect and the project described in this notification has already begun, and/or the applicant may be subject to civil or criminal prosecution. I understand that this notification applies only to the project(s) described herein and that I and/or the applicant may be subject to civil or criminal prosecution for undertaking any project not described herein unless the Department has been notified separately of that project in accordance with Fish and Game Code section 1602 or both.

Signature of Applicant or Applicant's Authorized Representative — Date: February 16, 2007

Kallie Kull
Print Name

Fish Rescue Protocol Associated with Bridge Abutment Repairs on Miller Creek, Olema Creek, Redwood Creek, and Stemple Creek, Marin County

Prepared by

Charles H. Hanson, Ph.D.
Hanson Environmental, Inc.
132 Cottage Lane
Walnut Creek, CA 94595

Prepared for

Sycamore Associates LLC
2099 Mount Diablo Blvd., Suite 204
Walnut Creek, CA 94596

September 2006

Erosion and scour has occurred adjacent to bridge abutments and piers at five stream locations located within Marin County. Sediment scour in the vicinity of these five bridges has the potential to damage their structural integrity and ability to withstand 100-year flood events. Repair to the five bridges will require selective placement of riprap along bridge abutments located within the stream channel. Bridge repair at three of the locations will require installation of temporary cofferdams and dewatering a portion of the stream channel. Bridges that require dewatering include:

Bridge 016 -- Lucas Valley Road Bridge (Miller Creek)

Bridge 104 -- Sir Francis Drake Bridge (Olema Creek)

Bridge 107 -- Muir Woods Road Bridge (Redwood Creek).

Two additional bridge crossings including Bridge 121 -- Alexander Road Bridge (Stemple Creek) and Bridge 122 -- Twin Bridge (Stemple Creek) are located within areas having little or no summer flow and therefore dewatering within Stemple Creek is not expected to be required. In the unlikely event that flows increase within Stemple Creek during the period of bridge repair and riprap placement a temporary cofferdam and dewatering would also be required at these two sites.

Bridge repairs would be performed during the low-flow late summer months and would require a period of approximately 3-4 days to complete at each bridge crossing. Bridge repairs would involve the placement of temporary cofferdams around bridge abutments extending a distance of approximately 16 linear feet upstream of the bridge and 5 linear feet downstream of the bridge. Temporary cofferdams may be constructed of sand bags or other suitable materials that will be removed from the stream after completion of each bridge repair. After placement of the temporary cofferdam around a bridge abutment or area where riprap is to be placed, temporary pumps would be used to dewater the isolated portion of the stream segment. After completion of bridge repairs the temporary cofferdams would be removed from the stream. At each location where stream dewatering is required only a portion of the stream cross-section will be obstructed allowing a continual free flow of bypass water around the construction area. All construction will be performed in accordance with best management practices (BMPs) to reduce the potential effects of construction activity on sediment erosion and scour, degradation of water quality including increased turbidity or suspended sediment concentrations, and will be stabilized following completion of bridge repairs.

Many of the streams located within Marin County that flow to the Pacific Ocean coast as well as those tributary to San Francisco Bay provide habitat for a variety of aquatic resources including, in many of the stream systems, anadromous steelhead and coho salmon. Both steelhead and coho salmon have been listed for protection under the California and/or Federal Endangered Species Act. Miller Creek, Olema Creek, and Redwood Creek have all been reported to support populations of steelhead and/or coho salmon. Stemple Creek, Redwood Creek, Olema Creek, and Miller Creek have also been

2-07-002
Marin Co. Public Works Dept.
Fish Rescue Protocol Associated with Bridge Abutment Repairs on Miller Creek
Exhibit No. 8 (Page 2 of 3)

identified as sites for environmental restoration activity designed to improve habitat quality and availability for anadromous salmonids.

The likelihood that a juvenile steelhead or coho salmon will be encountered within the area of the stream to be dewatered is expected to be extremely low. The bridge repairs will be completed during the late summer months when seasonal waters temperatures within many of the stream within the area of the repairs will be elevated and juvenile rearing is expected to occur further upstream. In addition, the creeks will not be completely obstructed by the cofferdam and a bypass flow will continue to pass water downstream within the channel around the construction area. The area of a creek to be dewatered will be small, extending approximately 16 feet upstream and 5 feet downstream of the bridge. Based on these considerations there is a very low probability that dewatering during construction will adversely affect either steelhead or coho salmon.

Although the potential occurrence of either coho salmon or steelhead vulnerable to stranding within the areas to be dewatered is anticipated to be extremely low, the fact that these streams support populations of coho salmon and/or steelhead warrants that a fish rescue and relocation be performed as part of dewatering associated with each of bridge repair. The protocol for the fish rescue and relocation is consistent with fish rescue operations approved by the National Marine Fisheries Service and California Department of Fish and Game for other projects involving dewatering a cofferdam during project construction (e.g., RD 108 Wilkins Slough fish screen, Sutter Mutual Water Company Tisdale Pumping Plant fish screen, Contra Costa Water District Alternative Intake Project, and others). The fish rescue operation would be coordinated with the construction contractors to install the cofferdam to isolate the area to be dewatered. The cofferdam will be installed in a manner that ensures enough water would continue to move through the area to provide adequate oxygen levels for any fish that may be contained within the area. The area to be dewatered would be sampled a number of times to ensure that any fish within the cofferdam are captured and removed. As water levels within the isolated cofferdam are reduced to a depth of approximately 1 foot, a team of 2-3 individuals under the direct supervision of a qualified fishery biologist would capture all fish from the area to be dewatered using a combination of beach seines, handheld dip nets, and electrofishing. A fishery biologist will remain at the site until dewatering is complete to ensure that no fish are stranded within the cofferdam. All fish removed from the cofferdam would be quickly identified and enumerated before being released into the stream immediately downstream of the cofferdam. Observations will be recorded on the size and condition of all fish captured and relocated. A brief technical report would be prepared documenting results of the fish capture and relocation associated with dewatering each cofferdam.

2-07-002
Marin Co. Public Works Dept.
Fish Rescue Protocol Associated with Bridge Abutment Repairs on Miller Creek
Exhibit No. 8 (Page 3 of 3)

County of Marin Sanitary Facilities & Storm Water Pollution Prevention Plan

The Contractor shall provide all necessary sanitary disposal (toilet) accommodations for the use of all workmen on the job site and shall maintain the same in a clean and sanitary condition. This facility should not be placed within 10' feet of a waterbody or storm drain.

STORM WATER POLLUTION PREVENTION

The intent of these provisions is to enforce federal, state, and other local agencies regulations designed to eliminate storm water pollution. Storm drains discharge directly to creeks and the Bay without treatment. Storm water pollution due to construction operations shall be controlled by keeping pollution out of storm drain systems, reducing the exposure and discharge of materials and wastes to storm water, and by reducing erosion and sedimentation.

The activities that apply to the Bridge 104 repair project on Olema Creek have appropriate BMPs highlighted in bold and referenced to BMP drawings in the Marin County Bridge Repair Project BMP Guidelines and Drawings for Bridge 104.

In this section, the term "storm drain system" shall refer to any storm water conduits, storm drain inlets and other storm drain structures, street gutters, channels, watercourses, creeks, lakes and the Tomales Bay.

1. **Material Storage.** The Contractor shall comply with the following practices for materials storage:

   The Contractor shall propose designated areas of the project site, for approval by the Engineer, suitable for material delivery, storage, and waste collection that, to the maximum extent practicable, are near construction entrances and at least 10' away from catch basins, gutters, drainage courses, and creeks.

   During wet weather or when rain is forecast within 72 hours, the Contractor shall store materials that can contaminate rainwater or be transported by storm water or other runoff to the storm drain system inside a building or cover them with a tarp or other waterproof material secured in a manner that would prevent any of the materials from contacting the rainwater.

   The storage and disposal of all hazardous materials such as paints, thinners, solvents, and fuels; and all hazardous wastes such as waste oil, must meet all federal, state, and local standards and requirements.

   (Marin County Bridge Repair Project BMP Guidelines and Drawings for Bridge 104, CalTrans WM-2 Material Use).

2. **Street Sweeping.** At the end of each working day or as directed by the Engineer, the Contractor shall clean and sweep roadways and on-site paved areas of all materials attributed to or invoiced in the work. The Contractor shall not use water to flush down streets in place of street sweeping.

3. **Hazardous/Waste Management.** The storage and disposal of all hazardous materials, such as pesticides, paints, thinners, solvents, and fuels; and all hazardous wastes, such as waste oil and antifreeze; shall comply with all federal, state, and local standards and requirements. When rain is forecast within 72 hours or during wet weather, the Engineer may prevent the Contractor from applying chemicals in the outside areas. **(Not Applicable to this project)**

4. **Spill Prevention and Control.** The Contractor shall take any and all precautions to prevent accidental spills during the work under this contract. The Contractor shall keep a stockpile of spill cleanup materials such as rags or absorbents, readily accessible on-site. In the event of a spill, the Contractor shall immediately contain and prevent leaks and spills from entering the storm drain system, and properly clean up and dispose of the waste and clean up materials. If the waste is hazardous, the Contractor shall comply with all federal, state and local hazardous waste requirements. The Contractor shall not wash any spilled material into the streets, gutters, storm drains, or creeks.

   Marin County Bridge Repair Project BMP Guidelines and Drawings for Bridge 104- BASMAA Section III-CU-4 Spill Prevention and Control and CalTrans Spill Prevention and Control WM-4

5. **De-watering Operations**. All groundwater removed from the trench must be de-silted prior to discharging it into the storm drain system through filtering materials methods meeting the Association of Bay Area Governments (ABAG) Standards For Erosion & Sediment Control Measures and/or through methods and procedures described in the California Storm Water Best Management Practice Handbook – Construction Activity (latest edition). The groundwater will then be discharged to heavily vegetated upland areas at a slow rate so that it can infiltrate into the soil and eliminate turbid runoff.

   Marin County Bridge Repair Project BMP Guidelines and Drawings for Bridge 104 - FishNet Guidelines 6.5, Dewatering and BASMAA Section III-WD-4 dewatering Nuisance Water

6. The Contractor shall reuse the water for other needs, such as dust control and irrigation, to the maximum extent practicable. The rinse water shall be permitted to infiltrate into the ground at a slow rate so that it can infiltrate into the soil and eliminate turbid runoff.

7. **Pavement Saw-cutting Operations.** The Contractor shall prevent any saw-cutting debris from entering the storm drain system. The Contractor, preferably, shall use dry cutting techniques and sweep up residue. If wet methods are used, the Contractor

shall vacuum slurry as cutting proceeds or collect all waste water by constructing a sandbag sediment barrier. The bermed area shall be of adequate size to collect all waste water and solids. The Contractor shall allow collected water to evaporate if the waste water volume is minimal and if maintaining the ponding area does not interfere with public use of the street area or create a safety hazard. If approved by the Engineer, the Contractor may direct or pump saw-cutting waste water to a dirt area and allow to infiltrate. The dirt area shall be adequate to contain all the waste water. After waste water has infiltrated, all remaining saw-cutting residue must be removed and disposed of properly. With the approval of the Engineer, de-silted water may be pumped to the sanitary sewer to assist in the evaporation or infiltration process. Remaining silt and debris from the ponding or bermed area shall be removed or vacuumed and disposed of properly. If a suitable dirt area is not available or discharge to the sanitary sewer is not feasible, with the approval of the Engineer, the Contractor shall filter the saw cutting waster water through filtering materials.
(Not Applicable to this project)

8. **Pavement Operations.** The Contractor shall prevent the discharge of pollutants from paving operations by using measures to prevent run-on and runoff pollution, properly disposing of wastes, and by implementing the following practices:

   No paving during wet weather.

   Proper Material Storage (refer to previous section one).

   Cover inlets and manholes when applying asphalt, seal coat, tack coat, slurry seal, or fog seal.

   Place drip pans or absorbent materials under paving equipment when not in use. During wet weather, store contaminated paving equipment indoors or cover with tarp or other waterproof covering.

   If paving involves Portland cement concrete, refer to (next section).
(Not Applicable to this project)

9. **Concrete Operations.** The Contractor shall prevent the discharge of pollutants from concrete operations by properly disposing of waste, and by implementing the following practices:

   Store all materials in waterproof containers or under cover away from drain inlets or drainage areas.

   Avoid mixing excess amounts of Portland cement material .

   Do not wash out concrete trucks into storm drains, open ditches, streets, streams, etc. Whenever possible, perform washout of concrete trucks off site where discharge is controlled and not permitted to discharge into the storm drain system.

For on site washout, locate washout area at least 50 feet from storm drains, open ditches or other water bodies, preferably in a dirt area. Control runoff from the area by constructing a temporary pit or bermed area large enough for the liquid and solid waste.

Wash out concrete wastes into the temporary pit where the concrete can set, be broken up and then disposed of properly. If the volume of water is greater than what will allow concrete to set, allow the water to infiltrate and/or evaporate, if possible. Otherwise, allow water to settle, filter it and then pump to the sanitary sewer with approval of the Engineer. Remove or vacuum the remaining silt and debris from the pond or bermed are and dispose of it properly.

Dispose of water from washing of exposed aggregate to dirt area. The dirt area shall be adequate to contain all the waste water and once the waste water has infiltrated, any remaining residue must be removed. If a suitable dirt area is not available, then the Contractor shall filter the wash water through straw bales or other filtering materials meeting ABAG Standards for Erosion and Sediment Control Measures before discharging to the sanitary sewer with approval from the Engineer.

Collect and return sweepings from exposed aggregate concrete to a stockpile or dispose of the waste in trash containers.

(Not Applicable to this project)

10. **Grading and Excavation Operations.** The Contractor shall implement sedimentation and erosion control measures to prevent sediments or excavated material from entering the storm drain system.

    The erosion and sedimentation control materials and methods shall be in accordance with ABAG Standards for Erosion and Sediment Control Measures and/or the procedures and methods described in the California Storm Water Best Management Practice Handbook – Construction Activity (latest edition).

    Marin County Bridge Repair Project BMP Guidelines and Drawings for Bridge 104 FishNet Guidelines pg A-135 BMP Storm Drain Inlet and Protection

11. **Vehicle/Equipment Cleaning.** The Contractor shall not perform vehicle or equipment cleaning on site or in the street using soaps, solvents, degreasers, steam cleaning equipment, or equivalent methods. The Contractor shall perform vehicle or equipment cleaning, with water only, in a designated, bermed area that will not allow rinse water to run off-site or into the storm drain system.

    The Contractor shall dispose of wash water from the cleaning of water base paint equipment and tools to the sanitary sewer.

If using oil based paint, to the maximum extent practicable, the Contractor shall filter the paint thinner and solvents for reuse and dispose of the waste thinner and solvent, and sludge from cleaning of equipment and tools as hazardous waste.
Marin County Bridge Repair Project BMP Guidelines and Drawings for Bridge 104 BMP CalTrans NS-9&10 Vehicle Equipment Fueling and Maintenance

12. **Vehicle/Equipment Maintenance and Fueling.** The Contractor shall perform maintenance and fueling of vehicles or equipment in a designated, bermed area or over a drip pan that will not allow run-on of storm water or runoff of spills. The Contractor shall use secondary containment, such as a drip pan, to catch leaks or spills any time that vehicle or equipment fluids are dispensed, changed, or poured. The Contractor shall clean up leaks and spills of vehicle or equipment fluids immediately and dispose of the waste and cleanup materials as hazardous waste.

    The Contractor shall inspect vehicles and equipment arriving on-site for leaking fluids and shall promptly repair leaking vehicles and equipment. Drip pans shall be used to catch leaks until repairs are made. The Contractor shall recycle waste oil and antifreeze, to the maximum extent practicable. The Contractor shall comply with Federal, State and other local agencies for aboveground storage tanks.

    Marin County Bridge Repair Project BMP Guidelines and Drawings for Bridge 104BMP CalTrans NS-9&10 Vehicle Equipment Fueling and Maintenance

13. **Contractor Training and Awareness.** The contractor shall train employees/subcontractors on the water pollution prevention requirements contained in these provisions. The Contractor shall inform all subcontractors of the water pollution prevention contract requirements and include appropriate subcontract provisions to ensure that these requirements are met.

    The Contractor shall paint new catch basins, constructed as part of the project, with "No Dumping Drains To The Bay".

The Contractor shall conform to the requirements of Chapter 23.18of the Municipal Code which regulates urban run-off pollution.

Full compensation for conforming to the provisions herein specified shall be considered as included in the prices paid for the contract items or work involved in compliance with said provisions and no additional compensation will be allowed therefore unless specified as part of a contract item for implementation of a Storm Water Pollution Prevention Plan (SWPPP).