

**INFORMATION HANDOUT (IH) COVER sheet: Use for IH cover.**

# **INFORMATION HANDOUT**

**Contract number ending in phase number 4. Road includes District–County–Route–Post Mile. Project ID phase number 1.**

**For Contract No. 04-4S4504  
At 04-Mrn-1-31.2**

**Identified by  
Project ID 0400001238**

**IH Cover Sheet: Use for IH cover. Delete, replace, or add text to match the titles of the Information Handout contents. Use if supplemental project information includes an IH. Include cover if changes are made to IH due to an addendum.**

## **MATERIALS INFORMATION**

California Department of Fish and Game, Streambed Alteration Agreement Notification No. 1600-2012-0253-R3

U.S. Fish and Wildlife Service, Biological Opinion No. 08ESMF00-2012-F-0065-3

FLEAT Assembly Midwest Guardrail System

SRT-350 Terminal System

**CALIFORNIA DEPARTMENT OF FISH AND GAME**  
BAY DELTA REGION  
7329 SILVERADO TRAIL  
NAPA, CALIFORNIA 94558  
(707) 944-5520  
[WWW.DFG.CA.GOV](http://WWW.DFG.CA.GOV)



**STREAMBED ALTERATION AGREEMENT**  
NOTIFICATION NO. 1600-2012-0253-R3  
Grand Canyon Gulch Creek

CALIFORNIA DEPARTMENT OF TRANSPORTATION  
GRAND CANYON GULCH STABILIZATION PROJECT EA (4S450)

This Streambed Alteration Agreement (Agreement) is entered into between the California Department of Fish and Game (DFG) and California Department of Transportation (Permittee) or as represented Jeffrey G. Jensen.

#### **RECITALS**

WHEREAS, pursuant to Fish and Game Code (FGC) section 1602, Permittee notified DFG on May 12, 2012 that Permittee intends to complete the project described herein.

WHEREAS, pursuant to FGC section 1603, DFG has determined that the project could substantially adversely affect existing fish or wildlife resources and has included measures in the Agreement necessary to protect those resources.

WHEREAS, Permittee has reviewed the Agreement and accepts its terms and conditions, including the measures to protect fish and wildlife resources.

NOW THEREFORE, Permittee agrees to complete the project in accordance with the Agreement

#### **PROJECT LOCATION**

The project is located along State Route, at Post Mile 31.25, in the County of Marin, State of California.

#### **PROJECT DESCRIPTION**

Caltrans proposes to stabilize the roadway embankment on two small segments of State Route 1 at Grand Canyon Gulch Creek, to prevent further erosion during high flow events. A Column Supported Embankment will be buried 1.33 feet from the edge of pavement at the two locations on the southbound lane side. The 24-inch diameter

columns will be backfilled with concrete to approximately 3 feet below existing ground level. H-beams will be fastened to precast concrete beams that will be joined together beneath the roadway by a concrete slab. All staging will occur within the southbound lane of State Route 1. Equipment will include an excavator, tractor, loader, crane or boom truck, paver, roller and semi-truck. A temporary containment system will be used during construction to prevent excavated materials, concrete, and other associated debris from accidentally falling into the adjacent creek. No trees will be removed, and approximately 125 linear feet of ruderal roadside vegetation will be temporarily disturbed.

## **PROJECT IMPACTS**

Existing fish or wildlife resources the project could substantially adversely affect include:

- California red-legged frog upland habitat
- Nesting birds
- Riparian habitat

The adverse effects the project could have on the fish or wildlife resources identified above include:

- Disruption of bird nesting
- Temporary loss of California red-legged frog upland habitat
- Water quality degradation
- Short-term release of contaminants

## **MEASURES TO PROTECT FISH AND WILDLIFE RESOURCES**

### **1. Administrative Measures**

Permittee shall meet each administrative requirement described below.

- 1.1 Documentation at Project Site. Permittee shall make the Agreement, any extensions and amendments to the Agreement, and all related notification materials and California Environmental Quality Act (CEQA) documents, readily available at the project site at all times and shall be presented to DFG personnel, or personnel from another state, federal, or local agency upon request.
- 1.2 Providing Agreement to Persons at Project Site. Permittee shall maintain onsite at all times, a copy of the Agreement and any extensions and amendments to the Agreement.
- 1.3 Notification of Conflicting Provisions. Permittee shall notify DFG if Permittee determines or learns that a provision in the Agreement might conflict with a provision imposed on the project by another

local, state, or federal agency. In that event, DFG shall contact Permittee to resolve any conflict.

- 1.4 Project Site Entry. Permittee agrees that DFG personnel may, with notification of the Resident Engineer, enter the project site at any time to verify compliance with the Agreement.

## **2. Avoidance and Minimization Measures**

To avoid or minimize adverse impacts to fish and wildlife resources identified above, Permittee shall implement each measure listed below. These conditions apply to DFG jurisdiction as described in the Project Description above.

2.1 To minimize adverse impacts to fish and wildlife all work within the bed, bank, channel, and associated riparian habitat shall be confined to the period of June 15 to October 15. Revegetation work is not confined to this time period.

2.2 All staging and access shall be located on the southbound lane and shoulder of State Route 1.

2.3 If trimming of vegetation hanging over the Project site is necessary, it shall be accomplished with hand tools only.

2.4 At least 30-days prior to commencing project activities covered by this Agreement, the Permittee shall submit to DFG, for review and approval, the qualifications for a number of biologists (Qualified Biologist) that shall oversee the implementation of the conditions in this Agreement. At a minimum, the Qualified Biologists shall have a combination of academic training and professional experience in biological sciences and related resource management activities. The Qualified Biologists shall communicate to the Resident Engineer when any activity is not in compliance with this Agreement and the Resident Engineer shall immediately stop the activity that is not in compliance with this Agreement.

2.5 If Project activities will occur between February 15 and September 1, a Qualified Biologist shall conduct pre-construction surveys for nesting birds no more than one week prior to construction. Surveys shall consist of multiple days of observations. If nesting birds are found, a 50-foot radius buffer shall be established around the nest, a 300-foot- foot radius buffer in the case of raptors, e.g. hawks, owls, and eagles. The area shall be avoided. A buffer of less than 300 feet, but no less than 100 feet, may be used if a Qualified Biologist, experienced in raptor behavior, is assigned to monitor the behavior of any raptor nesting within 300 feet of Project activities. The Qualified Biologist shall have authority, through the Resident Engineer, to order the cessation of all Project activities within 300 feet of any raptor nest if the birds exhibit abnormal nesting behavior which may cause reproductive failure (nest abandonment and loss of eggs and/or young). Abnormal nesting behaviors which may cause reproductive harm include, but are not limited to: defensive flights/vocalizations directed towards Project

personnel, standing up from a brooding position, and flying away from the nest. Project activities within 300 feet of the nest shall not resume until the Qualified Biologist has consulted with CDFW and both the Qualified Biologist and CDFW confirm that the bird's behavior has normalized or the young have left the nest.

2.6 All construction personnel shall attend a mandatory environmental education program delivered by a Qualified Biologist prior to working on the Project site. The program shall focus on how to best avoid take of the California red-legged frog (CRLF). Distributed materials shall include wallet-sized cards with a distinctive photograph of the CRLF, compliance reminders, and relevant contact information.

2.7 A Qualified Biologist shall conduct Pre-construction surveys immediately prior to the initiation of any ground disturbing activities within or adjacent to suitable CRLF habitat. These surveys will comprise walking transects while conducting visual encounter surveys within areas that will be subject to staging, vegetation clearing, grubbing, grading, cut and fill, or other ground disturbing activities. All mammal burrows shall be inspected for signs of CRLF usage to the maximum extent practicable.

2.8 A Qualified Biologist shall be present onsite to monitor for CRLF during construction activities located within suitable CRLF habitat. Through communication with the Resident Engineer, a Qualified Biologist may stop work if deemed necessary for any reason to protect CRLF and will advise the Resident Engineer on how to proceed accordingly. A Qualified Biologist shall conduct clearance surveys at the beginning of each day, within or adjacent to suitable CRLF and habitat, and regularly throughout the workday when construction is occurring within or adjacent to suitable CRLF. If CRLF are encountered in the action area, work within 50 feet of the animal shall cease immediately and the Resident Engineer and a United State Fish and Wildlife Service (USFWS)/DFG-approved Qualified Biologist shall be notified. The USFWS shall be contacted immediately for specific guidance regarding the CRLF encounter and relocation effort.

2.9 To prevent inadvertent entrapment of CRLF, or other animals during construction, all excavated, steep-walled holes or trenches more than 1 foot deep will be covered with plywood or similar materials at the end of each workday or the holes or trenches will contain one or more escape ramps constructed of earth fill or wooden planks. Before such holes or trenches are filled, they will be thoroughly inspected for trapped animals.

2.10 All pipes, culverts, construction equipment and constructions debris left overnight within the Project area shall be inspected by a Qualified Biologist prior to the beginning of each day's activities.

2.11 Permittee shall comply with all applicable state and federal laws, including the California and Federal Endangered Species Act. This Agreement does not authorize the take of any state or federally endangered listed species. Liability for any take or

incidental take of such species remains the responsibility of the Permittee for the duration of the project. Any unauthorized take of listed species may result in prosecution and nullification of the Agreement.

2.12 Night work shall be minimized to the maximum extent practicable.

2.13 If any wildlife is encountered during the course of project activities, said wildlife shall be allowed to leave the area unharmed and on their own volition.

2.14 The perimeter of the work site shall delineated using high visibility Environmentally Sensitive Area (ESA) fencing and/or flagging to prevent damage to adjacent riparian habitat. No construction activities, within the riparian zone, will be allowed within the habitat protected by the ESA fencing or flagging.

2.15 Permittee shall conduct work defined in the above project description, and within the project area, during periods of dry weather. The project area is defined as the bed, bank, channel, and associated riparian habitat. The Permittee shall monitor forecasted precipitation. When  $\frac{1}{4}$  inch or more of precipitation is forecasted to occur, the Permittee shall stop work before precipitation commences. No activity of the project may be started if its associated erosion control measures cannot be completed prior to the onset of precipitation. After any storm event, the Permittee shall inspect all sites currently under construction and all sites scheduled to begin construction within the next 72 hours for erosion and sediment problems and take corrective action as needed. Seventy-two hour weather forecasts from National Weather Service shall be consulted and work shall not start back up until runoff ceases and there is less than a 30% forecast for precipitation for the following 24-hour period.

2.16 Permittee shall utilize erosion control measures throughout all phases of operation where sediment runoff from exposed slopes threatens to enter waterways. At no time shall silt laden runoff be allowed to enter the stream or directed to where it may enter the stream. Erosion control installations shall be monitored for effectiveness and shall be repaired or replaced as recommended by a Water Quality Monitor to the Resident Engineer or designated representative. As needed to prevent sediment transport, Permittee shall deploy soil stabilizer such as hydroseeding, netting, erosion control mats, mulch, fiber rolls, silt fences, check dams, and flow velocity dissipation devices. Permittee shall stabilize and equip construction site entrances and exits with tire washing capability. Materials containing monofilament or plastic shall not be used. Erosion and sediment control measures shall be installed prior to unseasonable rain storms.

2.17 Hydroseed mixes shall not contain exotic plant species. Prohibited exotic plant species include those identified in the California Exotic Pest Plant Council's database, which is accessible at: <http://www.cal-ipc.org/ip/inventory/weedlist.php>.

2.18 To the extent practicable, Permittee shall leave the root masses of removed trees and shrubs in place. Disturbance or removal of vegetation shall not exceed the minimum necessary to complete operations.

2.19 If the gradient of the streambed is altered during project operations, Permittee shall return its contours as close as possible to pre-project conditions. Pre-project condition shall be defined by engineered plans dated prior to the commencement of the project.

2.20 Concrete shall be excluded from surface water for a period of 30-days after it is poured/sprayed. During that time the concrete shall be kept moist and runoff from the concrete shall not be allowed to enter any water body. Commercial sealants may be applied to the concrete surface where difficulty in excluding flow for a long period may occur. If sealant is used, water shall be excluded from the site until the sealant is cured. If groundwater comes into contact with fresh concrete, it shall be prevented from flowing towards surface water.

2.21 Staging and storage areas for equipment, materials, fuels, lubricants and solvents, shall be located outside of the creek channel and banks. Stationary equipment such as motors, pumps, generators, compressors and welders, located within or adjacent to the creek shall be positioned over drip pans. Any equipment or vehicles driven and/or operated above or adjacent to the stream must be checked and maintained daily, to prevent leaks of materials that if introduced to water could be deleterious to aquatic life.

2.22 Refueling of mobile construction equipment and vehicles shall not occur within 50 feet of any water body, or anywhere that spilled fuel could drain to a water body. Refueling of stationary equipment requiring breakdown and setup to move will remain in place. All equipment shall be refueled with appropriate drip pans, absorbent pads, and water quality Best Management Practices. Equipment and vehicles operating in the project area shall be checked and maintained daily to prevent leaks of fuels, lubricants, or other liquids.

## **CONTACT INFORMATION**

Any communication that Permittee or DFG submits to the other shall be in writing and any communication or documentation shall be delivered to the address below by U.S. mail, fax, or email, or to such other address as Permittee or DFG specifies by written notice to the other.

### To Permittee:

California Department of Transportation  
Jeffrey G. Jensen  
111 Grand Ave.

(510) 622-8729  
Jeffrey\_jensen@dot.ca.gov

To DFG:

Department of Fish and Game  
Bay Delta Region  
7329 Silverado Trail  
Napa, CA 94558  
Attn: Lake and Streambed Alteration Program – Melissa Escaron  
Notification #1600-2012-0253-R3  
mescaron@dfg.ca.gov

## **LIABILITY**

Permittee shall be solely liable for any violations of the Agreement, whether committed by Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents or contractors and subcontractors, to complete the project or any activity related to it that the Agreement authorizes.

This Agreement does not constitute DFG's endorsement of, or require Permittee to proceed with the project. The decision to proceed with the project is Permittee's alone.

## **SUSPENSION AND REVOCATION**

DFG may suspend or revoke in its entirety the Agreement if it determines that Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents, or contractors and subcontractors, is not in compliance with the Agreement.

Before DFG suspends or revokes the Agreement, it shall provide Permittee written notice by certified or registered mail that it intends to suspend or revoke. The notice shall state the reason(s) for the proposed suspension or revocation, provide Permittee an opportunity to correct any deficiency before DFG suspends or revokes the Agreement, and include instructions to Permittee, if necessary, including but not limited to a directive to immediately cease the specific activity or activities that caused DFG to issue the notice.

## **ENFORCEMENT**

Nothing in the Agreement precludes DFG from pursuing an enforcement action against Permittee instead of, or in addition to, suspending or revoking the Agreement.

Nothing in the Agreement limits or otherwise affects DFG's enforcement authority or that of its enforcement personnel.

## **OTHER LEGAL OBLIGATIONS**

This Agreement does not relieve Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents, or contractors and subcontractors, from obtaining any other permits or authorizations that might be required under other federal, state, or local laws or regulations before beginning the project or an activity related to it.

This Agreement does not relieve Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents, or contractors and subcontractors, from complying with other applicable statutes in the FGC including, but not limited to, FGC sections 2050 et seq. (threatened and endangered species), 3503 (bird nests and eggs), 3503.5 (birds of prey), 5650 (water pollution), 5652 (refuse disposal into water), 5901 (fish passage), 5937 (sufficient water for fish), and 5948 (obstruction of stream).

Nothing in the Agreement authorizes Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents, or contractors and subcontractors, to trespass.

## **AMENDMENT**

DFG may amend the Agreement at any time during its term if DFG determines the amendment is necessary to protect an existing fish or wildlife resource.

Permittee may amend the Agreement at any time during its term, provided the amendment is mutually agreed to in writing by DFG and Permittee. To request an amendment, Permittee shall submit to DFG a completed DFG "Request to Amend Lake or Streambed Alteration" form and include with the completed form payment of the corresponding amendment fee identified in DFG's current fee schedule (see Cal. Code Regs., tit. 14, § 699.5).

## **TRANSFER AND ASSIGNMENT**

This Agreement may not be transferred or assigned to another entity, and any purported transfer or assignment of the Agreement to another entity shall not be valid or effective, unless the transfer or assignment is requested by Permittee in writing, as specified below, and thereafter DFG approves the transfer or assignment in writing.

The transfer or assignment of the Agreement to another entity shall constitute a minor amendment, and therefore to request a transfer or assignment, Permittee shall submit to DFG a completed DFG "Request to Amend Lake or Streambed Alteration" form and

include with the completed form payment of the minor amendment fee identified in DFG's current fee schedule (see Cal. Code Regs., tit. 14, § 699.5).

## **EXTENSIONS**

In accordance with FGC section 1605(b), Permittee may request one extension of the Agreement, provided the request is made prior to the expiration of the Agreement's term. To request an extension, Permittee shall submit to DFG a completed DFG "Request to Extend Lake or Streambed Alteration" form and include with the completed form payment of the extension fee identified in DFG's current fee schedule (see Cal. Code Regs., tit. 14, § 699.5). DFG shall process the extension request in accordance with FGC 1605(b) through (e).

If Permittee fails to submit a request to extend the Agreement prior to its expiration, Permittee must submit a new notification and notification fee before beginning or continuing the project the Agreement covers (Fish & G. Code, § 1605, subd. (f)).

## **EFFECTIVE DATE**

The Agreement becomes effective on the date of DFG's signature, which shall be: 1) after Permittee's signature; 2) after DFG complies with all applicable requirements under the California Environmental Quality Act (CEQA); and 3) after payment of the applicable FGC section 711.4 filing fee listed at [http://www.dfg.ca.gov/habcon/ceqa/ceqa\\_changes.html](http://www.dfg.ca.gov/habcon/ceqa/ceqa_changes.html).

## **TERM**

This Agreement shall expire on December 31, 2017, unless it is terminated or extended before then. All provisions in the Agreement shall remain in force throughout its term. Permittee shall remain responsible for implementing any provisions specified herein to protect fish and wildlife resources after the Agreement expires or is terminated, as FGC section 1605(a)(2) requires.

## **AUTHORITY**

If the person signing the Agreement (signatory) is doing so as a representative of Permittee, the signatory hereby acknowledges that he or she is doing so on Permittee's behalf and represents and warrants that he or she has the authority to legally bind Permittee to the provisions herein.

## **AUTHORIZATION**

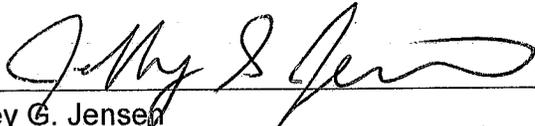
This Agreement authorizes only the project described herein. If Permittee begins or completes a project different from the project the Agreement authorizes, Permittee may

be subject to civil or criminal prosecution for failing to notify DFG in accordance with FGC section 1602.

**CONCURRENCE**

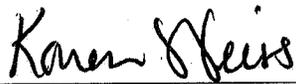
The undersigned accepts and agrees to comply with all provisions contained herein.

**FOR CALIFORNIA DEPARTMENT OF  
TRANSPORTATION**

  
\_\_\_\_\_  
Jeffrey G. Jensen  
Office Chief Biological Sciences and Permits

4/9/2013  
Date

**FOR DEPARTMENT OF FISH AND GAME**

  
\_\_\_\_\_  
Scott Wilson  
Acting Regional Manager

4/12/13  
Date

Prepared by: Melissa Escaron  
Staff Environmental Scientist

Date Sent: October 22, 2012  
Revision Sent: April 2, 2013



# United States Department of the Interior



## FISH AND WILDLIFE SERVICE

Sacramento Fish and Wildlife Office  
2800 Cottage Way, Room W-2605  
Sacramento, California 95825-1846

In Reply Refer To:  
08ESMF00-2012-F-0065-3

MAY 10 2012

Ms. Moujan Mostaghimi  
California Department Transportation  
Attn: John Yeakel  
Environmental Division, MS 8E  
111 Grand Avenue  
Oakland, California 94612

Subject: Biological Opinion for the Proposed State Route 1 Grand Canyon Gulch Creek Slope Stabilization Project, Marin County, California (Caltrans EA 4S4500)

Dear Ms. Mostaghimi:

This is in response to your October 17, 2011, request for formal consultation with the U.S. Fish and Wildlife Service (Service) on the proposed State Route 1 Grand Canyon Gulch Creek Slope Stabilization Project, in Marin County, California. Your request for formal consultation on the threatened California red-legged frog (*Rana draytonii*) was received in our office on October 18, 2011. This document represents the Service's biological opinion on the effects of the proposed action on the California red-legged frog. This document has been prepared in accordance with section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. § 1531 *et seq.*)(Act).

The Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users legislation (23 U.S.C. 327) allows the Secretary of the U.S. Department of Transportation acting through the Federal Highway Administration (FHWA) to establish a Surface Transportation Project Delivery Pilot Program, whereby a State may assume the FHWA responsibilities under the National Environmental Policy Act for environmental review, agency consultation and other actions pertaining to the review or approval of a specific project. The California Department of Transportation (Caltrans) assumed these responsibilities for the FHWA on July 1, 2007, through a Memorandum of Understanding within the State of California ([http://www.dot.ca.gov/ser/downloads/MOUs/nepa\\_delegation/sec6005mou.pdf](http://www.dot.ca.gov/ser/downloads/MOUs/nepa_delegation/sec6005mou.pdf)) and are exercising this authority as the federal nexus for section 7 consultation on this project.

This biological opinion is based on: (1) the October 2011, Biological Assessment (BA); (2) a February 8, 2012 field trip; (3) additional information provided by Caltrans in the

January 23, 2011, response to our December 13, 2011, 30-Day Letter and in various correspondence; and (4) other information available to the Service.

### **Consultation History**

- October 18, 2011 The Service received an October 2011 BA from Caltrans for the project along with a request for formal consultation on the California red-legged frog.
- December 13, 2011 The Service issued Caltrans a 30-day letter (Service File #08ESMF00-2012-F-0065-1) requesting additional information needed to complete the consultation.
- January 25, 2012 The Service received Caltrans' January 23, 2012 response to the December 13, 2012 30-day letter. Caltrans adopted one recommended conservation measure revision and stated that the Service should term and condition other conservation measures that Caltrans did not propose to minimize adverse effects to the California red-legged frog.
- January 25, 2012 The California Department of Fish and Game (CDFG) informed the Service that CDFG and the U.S. Army Corps of Engineers notified Caltrans on March 23, 2011 that the proposed project did not address the root of the bank instability issue, the insufficient capacity of the Grand Canyon Gulch Creek box culvert.
- January 26, 2012 Caltrans informed the Service that the proposed project was an emergency repair and the existing Grand Canyon Gulch Creek box culvert under State Route 1 will eventually be replaced with a larger culvert as part of a future, yet to be scheduled project.
- February 8, 2012 The Service visited the proposed project site with Caltrans and CDFG.
- February 10, 2012 The Service received additional project information from Caltrans via an electronic-mail (e-mail) message. Caltrans provided clarification on site clean-up and restoration.
- February 15, 2012 Caltrans informed the Service by phone that the total action area was 0.9 acre (0.52 acre existing hardscape + 0.038 acre landscape).
- March 21, 2012 The Service issued the draft biological opinion (Service File #08ESMF00-2012-F-0065-2).

April 9, 2012

The Service received Caltrans response to their review of the March 21, 2012 draft Biological Opinion with a request to finalize the biological opinion with provided edits.

## **BIOLOGICAL OPINION**

### **Description of the Proposed Action**

The following project description was provided by Caltrans with minor modifications for reasons of clarity and accuracy provided by the Service.

#### *General Scope of Work*

Caltrans proposes to install a retaining wall to protect the existing roadway embankment along the southbound lane of State Route 1 from further erosion associated with Grand Canyon Gulch Creek. The proposed project is located in Marin County at State Route 1 Post Mile 31.25, approximately 0.75 mile north of Point Reyes Station, California.

The proposed project includes the installation of a continuous segmented cast-in drilled hole (CIDH) pile wall with steel H-beams. The approximately 270-foot-long retaining wall will be buried under the fog line and pavement structural section on the southbound lane. The CIDH piles will be backfilled with lean concrete base for attaining strength. A reinforced concrete barrier slab will be installed directly over the top of the embedded CIDH pile wall. This continuous barrier slab will provide the anchoring needed for installing and securing steel railing at the edge of the travel way. The proposed work will include:

1. Removing existing metal beam guardrail on southbound lane at Post Mile 31.2;
2. Drilling holes spaced 4 feet on center to a depth of approximately 35 feet for a total length of 280 feet, installing steel H beams into the drilled holes, and backfilling the holes with concrete;
3. Excavating the existing southbound lane down to grade, and installing approximately 350 feet of continuous concrete barrier slab;
4. Installing approximately 350 feet of steel railing with approved end treatment;
5. Repairing a damaged section of pipe culvert at the pipe culvert outlet to the creek (from a drainage ditch along the northbound side of State Route 1), and installing rock slope protection (RSP) backing around the pipe outlet; and
6. Leaving all existing RSP located between the existing State Route 1 retaining wall and Grand Gulch Canyon Creek in place.

### *Construction Schedule*

Construction of the proposed project is expected to occur between June 15 and October 15, 2012. Caltrans does not anticipate a need for nighttime work because contractors will have adequate space to conduct their work behind K-rail barriers. Potential effects associated with nighttime work are not included in the effects analysis of this biological opinion.

### *Access and Staging*

All project access will be gained directly off of State Route 1.

Staging will include portions of State Route 1 and the road shoulder. Although the staging location has not yet been identified by the contractor, it will be limited to the existing paved surfaces. During construction, the southbound lane will be temporarily closed to traffic. All equipment and materials will be placed within this closed section of roadway behind temporary concrete railing (K-rail). A one-way traffic control system will be installed using a temporary traffic signal. Traffic will be reopened after construction is completed.

### *Equipment*

According to Caltrans, the construction contractor is likely to use various types of equipment to complete the project. Typical equipment used in a bank stabilization and culvert replacement project may include an excavator, tractor, loader, crane or boom truck, saw, paver, roller, and semi truck.

### *Site Preparation*

Prior to construction, site preparation activities will include establishing staging areas and installing environmentally sensitive area fencing.

Environmentally sensitive area fencing will be used to delineate the extent of the construction area described in Caltrans' effects analysis. The location of the environmentally sensitive area fencing will be established in the field by the biological monitor. The project's special provisions package will provide clear language regarding fencing installation procedure; acceptable fencing material; and prohibited construction-related activities, vehicle operation, material and equipment storage, and other surface-disturbing activities within sensitive areas.

Caltrans does not anticipate need for dewatering, therefore the dewatering is not included in the effects analysis of this biological opinion.

### *Site Clean-Up and Restoration*

All construction-related materials will be removed after construction activities have been completed. Staging and access will be provided on the existing paved surface. The southbound lane of SR 1 will receive new pavement, and the end treatment of the culvert extension will include RSP. Other than planting willows within the new RSP, the project will not include revegetation.

*Proposed Conservation Measures*

Caltrans proposes to avoid and minimize effects to the California red-legged frog by implementing the following measures:

1. **Biological Monitoring.** Caltrans will submit the names and qualifications of the biological monitor(s) for Service-approval at least thirty (30) calendar days prior to initiating construction activities for the proposed project. Only Service-approved biological monitors will implement the monitoring duties outlined in the project description including delivery of the Worker Environmental Awareness Training Program. The Service-approved biologist(s) will be onsite during any ground-disturbing activities. The biologist(s) has authority to contact the Resident Engineer or their designee if any work may result in take of a listed species. The Resident Engineer may act on this information by stopping the work. If the biologist(s) exercises this authority, the Service will be notified by telephone and email message within one working day. The Service contact is the Coast Bay/Forest Foothills Division Chief in the Sacramento Fish and Wildlife Office at (916) 414-6600. During construction, a biological monitor will conduct surveys for California red-legged frog twice per week.
2. **Preconstruction Surveys.** Preconstruction surveys will be conducted by a Service-approved biologist. Visual encounter surveys will be conducted immediately prior to ground-disturbing activities. All suitable aquatic and upland habitat within the action area, including refugia habitat such as under shrubs, downed logs, small woody debris, and burrows, will be thoroughly inspected. If a California red-legged frog is observed, the individual(s) will be evaluated and relocated in accordance with the observation and handling protocol outlined below. All fossorial mammal burrows will be inspected for signs of frog usage to the maximum extent practicable. If it is determined that a burrow may be occupied by a California red-legged frog, the burrow will be excavated by hand, if possible, and the individual(s) relocated in accordance with the observation and handling protocol promulgated by the Service.
3. **Protocol for Species Observation and Handling.** If California red-legged frogs are encountered in the project area, work within 50 feet of the animal will cease immediately and the Resident Engineer and Service-approved biologist will be notified. Based on the professional judgment of the approved biologist, if project activities can be conducted without harming or injuring the animal(s), they may be left at the location of discovery and monitored by the approved biologist. All project personnel will be notified of the finding, and at no time shall work occur within 50 feet of the animal without a biological monitor present. If it is determined by the approved biologist that relocating the California red-legged frog is necessary, the following steps will be taken:
  - a. Prior to handling and relocation, the Service-approved biologist will take precautions to prevent introduction of amphibian diseases in accordance with the *Revised Guidance on Site Assessments and Field Surveys for the California Red-legged Frog* (Service 2005). Disinfecting equipment and clothing is especially important when

biologists are coming to the action area to handle amphibians after working in other aquatic habitats.

- b. California red-legged frogs will be captured by hand, dip net, or other Service-approved methodology; transported by hand, dip net, or temporary holding container; and released as soon as practicable the same day of capture. Handling of California red-legged frogs will be minimized to the maximum extent practicable. Holding/transporting containers and dip nets will be thoroughly cleaned and disinfected prior to transporting to the action area and will be rinsed with freshwater onsite immediately prior to usage, unless doing so will result in the injury or death of the animal(s) due to the time delay.
4. **Excavated Steep-Walled Holes or Trenches.** The Service-approved biological monitor(s) will check all excavated steep-walled holes or trenches greater than 1-foot deep for the California red-legged frog. To prevent inadvertent entrapment of the California red-legged frog during construction, steep-walled holes or trenches more than 1-foot deep will be covered at the close of each working day by plywood or similar materials. Alternatively, an additional 4-foot-high vertical barrier, independent of exclusionary fences, will be used to further prevent the inadvertent entrapment of California red-legged frogs. If it is not feasible to cover an excavation or provide an additional 4-foot-high vertical barrier, independent of exclusionary fences, one or more escape ramps constructed of earth fill or wooden planks will be installed. Before such holes or trenches are filled, they will be thoroughly inspected for trapped animals. If at any time a trapped listed animal is discovered, the onsite biologist will immediately place escape ramps or other appropriate structures to allow the animal to escape, and Service will be contacted by telephone.
5. **Construction Pipes, Culverts, or Similar Structures, Construction Equipment, and Construction-Related Debris.** All construction pipes, culverts, or similar structures, construction equipment and construction debris left overnight within the action area will be inspected by the Service-approved biological monitor prior to the beginning of each day's activities. Materials left onsite overnight will be inspected because California red-legged frogs are attracted to cavity-like structures such as pipes and may seek refuge under construction equipment or debris. California red-legged frogs may become trapped or injured if such materials are moved without first inspecting them.
6. **Worker Training.** All construction personnel will attend a mandatory environmental-education program delivered by the Service-approved biologist prior to working on the project site. The program will focus on the conservation measures that are relevant to employee's personal responsibility and will include an explanation as how to best avoid take of the California red-legged frog. The program will include an explanation of federal laws protecting the California red-legged frog, as well as the importance of compliance with this biological opinion. Distributed materials will include wallet-sized cards with a distinctive photograph of the California red-legged frog, compliance

reminders, and relevant contact information. Documentation of the training, including attendee sign-in sheets, will be submitted to the Service with the annual compliance report described in the *Reporting Requirements* of the biological opinion. The report will be kept on file and will be made available on request. An outline of the program will be submitted to the Coast Bay/Forest Foothills Division Chief in the Sacramento Fish and Wildlife Office within twenty (20) working days prior to the initial onset of construction activities. As needed, training will be conducted in Spanish for Spanish language speakers. Documentation of the training, including sign-in sheets, will be kept on file and available on request.

7. **Work Window.** Project activities will only occur from June 15 to October 15. If necessary, activities may occur through October 31, but only until the first 0.25 inch of rain falls, to avoid impacts on water quality and the California red-legged frog.
8. **Exclusionary Fencing.** The limits of the construction zones will be delineated with high-visibility temporary environmentally sensitive area fencing at least 4 feet high, flagging, or other barriers to prevent encroachment of construction personnel and equipment outside the construction footprint described in this biological opinion. The fencing will be removed only when all construction equipment is removed from the site. Activities within the action area will be limited to vehicle and equipment operation on existing roads. No project activities will occur outside the delineated project construction area.
9. **Vegetation Removal.** Removal of vegetation will be accomplished by a progressive cutting of vegetation from the over-story level to the ground level to allow California red-legged frogs an opportunity to move out of the work area naturally. Caltrans will not remove vegetation from the bank opposite the roadway. However, trimming may be necessary for vegetation hanging into the project area (trimming of any large woody vegetation will be performed with hand tools only). This will minimize the amount of vegetative cover removed in the stream.
10. **Resident Engineer.** The Resident Engineer will halt work and immediately contact the Service-approved project biologist(s) and the Service in the event that a California red-legged frog gains access to a construction zone. The Resident Engineer will suspend construction activities that could reasonably result in a take of a California red-legged frog within a 50-foot radius of the frog until the animal leaves the site voluntarily.
11. **Dust Control.** If dust control measures are needed, standard dust control Best Management Practices (BMPs) will be used. Any material stockpiles will be watered, sprayed with tackifier or covered to minimize dust production and wind erosion.
12. **General Housekeeping.** To prevent attraction of California red-legged frog predators, all food-related trash items, such as wrappers, cans, bottles, and food scraps, will be disposed of in closed containers and removed at least once a day from the action area.

13. **Pets.** To prevent harassment, injury or mortality of a California red-legged frog or destruction of its refuge areas, no pets will be permitted in the action area.
  
14. **Construction Site BMPs.** Dedicated fueling and refueling practices will be outlined as part of the approved Water Pollution Control Program. Dedicated fueling areas will be protected from storm water run-on and run-off and will be located at least 50 feet from downslope drainage facilities and water courses. Fueling must be performed on level-grade areas. Onsite fueling will only be used where it is impractical to send vehicles and equipment offsite for fueling. When fueling must occur onsite, the contractor will designate an area to be used subject to the approval of the Caltrans Resident Engineer. Drip pans or absorbent pads will be used during onsite vehicle and equipment fueling. Additional construction site BMPs are listed below.
  - a. The potential for adverse effects to water quality will be avoided by implementing the temporary and permanent BMPs outlined in the Caltrans' Standard Specifications. Caltrans' erosion control BMPs will be used to minimize any wind or water-related erosion. Caltrans requires that a Water Pollution Control Program addressing control measures be prepared and implemented by the construction contractor for projects resulting in soil disturbance of less than 1 acre.
  
  - b. The Caltrans Construction Site BMPs Manual is comprehensive and includes many other protective measures and guidance to prevent and minimize pollutant discharges and can be found at the following Web site location:  
<http://www.dot.ca.gov/hq/construc/stormwater/manuals.htm>. Protective measures will be included in the contract, including, at a minimum:
    - i. No discharge of pollutants from vehicle and equipment cleaning are allowed into the storm drain or water courses.
  
    - ii. Vehicle and equipment fueling and maintenance operations must be at least 50 feet away from water courses.
  
    - iii. Concrete wastes are collected in washouts and water from curing operations is collected and disposed of and not allowed into water courses.
  
15. **Erosion Control.** Coir rolls will be installed along or at the base of slopes during construction to capture sediment, and temporary organic hydro-mulching will be applied to all unfinished disturbed and graded areas. Additional erosion control BMPs are listed below.
  - a. Work areas where temporary disturbance has removed the pre-existing vegetation will be restored and re-seeded with a native seed mix.

- b. Graded areas will be protected from erosion using a combination of silt fences, fiber rolls along toe of slopes or along edges of designated staging areas, and erosion-control netting (such as jute or coir), as appropriate, on sloped areas.
- c. Plastic mono-filament netting (erosion control matting, fiber rolls) or similar material will not be used at the project site because California red-legged frogs may become entangled or trapped in it. Acceptable substitutes include coconut coir matting or tackified hydroseeding compounds.

### **Analytical Framework for the Jeopardy Determination**

The following analysis relies on four components to support the jeopardy determination for the California red-legged frog: (1) the *Status of the Species*, which evaluates the species' range-wide condition, the factors responsible for that condition, and its survival and recovery needs; (2) the *Environmental Baseline*, which evaluates the condition of the species in the action area, the factors responsible for that condition, and the role of the action area in the species' survival and recovery; (3) the *Effects of the Proposed Action*, which determines the direct and indirect effects of the proposed Federal action and the effects of any interrelated or interdependent activities on the species; and (4) *Cumulative Effects*, which evaluates the effects of future, non-Federal activities in the action area on the species.

In accordance with the implementing regulations for section 7 and Service policy, the jeopardy determination is made in the following manner: the effects of the proposed Federal action are evaluated in the context of the aggregate effects of all factors that have contributed to the species' current status and, for non-Federal activities in the action area, those actions likely to affect the species in the future, to determine if implementation of the proposed action is likely to cause an appreciable reduction in the likelihood of both the survival and recovery of the species in the wild.

The following analysis places an emphasis on using the range-wide survival and recovery needs of the species and the role of the action area in providing for those needs as the context for evaluating the significance of the effects of the proposed Federal action, taken together with cumulative effects, for purposes of making the jeopardy determination.

### **Action Area**

The action area is defined in 50 CFR § 402.02, as "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action." For the proposed action, the action area includes the direct effects associated with approximately 0.9 acre (0.52 acre existing hardscape + 0.038 acre landscape) and the areas within the Grand Canyon Gulch Watershed and other habitat within at least 0.5 miles of the construction footprint affected by potential downstream water quality issues.

## Status of the Species

### *Listing Status*

The California red-legged frog was listed as a threatened species on May 23, 1996 (61 FR 25813). Critical habitat was designated for this species on April 13, 2006 (71 FR 19244) and revisions to the critical habitat designation were published on March 17, 2010 (75 FR 12816). At this time, the Service recognized the taxonomic change from *Rana aurora draytonii* to *Rana draytonii* (Shaffer *et al.* 2010). A recovery plan was published for the California red-legged frog on September 12, 2002 (Service 2002).

### *Description*

The California red-legged frog is the largest native frog in the western United States (Wright and Wright 1949), ranging from 1.5 to 5.1 inches in length (Stebbins 2003). The abdomen and hind legs of adults are largely red, while the back is characterized by small black flecks and larger irregular dark blotches with indistinct outlines on a brown, gray, olive, or reddish background color. Dorsal spots usually have light centers (Stebbins 2003), and dorsolateral folds are prominent on the back. Larvae (tadpoles) range from 0.6 to 3.1 inches in length, and the background color of the body is dark brown and yellow with darker spots (Storer 1925).

### *Distribution*

The historic range of the California red-legged frog extended from the vicinity of Elk Creek in Mendocino County, California, along the coast inland to the vicinity of Redding in Shasta County, California, and southward to northwestern Baja California, Mexico (Fellers 2005; Jennings and Hayes 1985; Hayes and Krempels 1986). The species was historically documented in 46 counties but the taxa now remains in 238 streams or drainages within 23 counties, representing a loss of 70 percent of its former range (Service 2002). California red-legged frogs are still locally abundant within portions of the San Francisco Bay area and the Central California Coast. Isolated populations have been documented in the Sierra Nevada, northern Coast, and northern Transverse Ranges. The species is believed to be extirpated from the southern Transverse and Peninsular ranges, but is still present in Baja California, Mexico (CDFG 2011a).

### *Status and Natural History*

California red-legged frogs predominately inhabit permanent water sources such as streams, lakes, marshes, natural and manmade ponds, and ephemeral drainages in valley bottoms and foothills up to 4,921 feet in elevation (Jennings and Hayes 1994, Bulger *et al.* 2003, Stebbins 2003). However, California red-legged frogs also have been found in ephemeral creeks and drainages and in ponds that may or may not have riparian vegetation. California red-legged frogs also can be found in disturbed areas such as channelized creeks and drainage ditches in urban and agricultural areas. For example, an adult California red-legged frog was observed in a shallow isolated pool on North Slough Creek in the American Canyon area of Napa County (Christine Gaber/PG&E personal communication with Chris Nagano/Service on October 22, 2008). This frog location was surrounded by vineyard development. Another adult California red-legged frog was observed under debris in an unpaved parking lot in a heavily

industrial area of Burlingame (Patrick Kobernus/Coast Ridge Ecology communication with Michelle Havens/Service on October 16, 2008). This Burlingame frog was likely utilizing a nearby drainage ditch. Caltrans also has discovered California red-legged frog adults, tadpoles, and egg masses within a storm drainage system within a major cloverleaf intersection of Millbrae Avenue and State Route 101 in a heavily developed area of San Mateo County (Caltrans 2007). California red-legged frog has the potential to persist in disturbed areas as long as those locations provide at least one or more of their life history requirements.

California red-legged frogs breed from November to April, although earlier breeding records have been reported in southern localities. Breeding generally occurs in still or slow-moving water often associated with emergent vegetation, such as cattails, tules or overhanging willows (Storer 1925, Hayes and Jennings 1988). Female frogs deposit egg masses on emergent vegetation so that the egg mass floats on or near the surface of the water (Hayes and Miyamoto 1984).

Habitat includes nearly any area within 1 to 2 miles of a breeding site that stays moist and cool through the summer including vegetated areas with coyote brush, California blackberry thickets, and root masses associated with willow and California bay trees (Fellers 2005). Sheltering habitat for California red-legged frogs potentially includes all aquatic, riparian, and upland areas within the range of the species and includes any landscape feature that provides cover, such as animal burrows, boulders or rocks, organic debris such as downed trees or logs, and industrial debris. Agricultural features such as drains, watering troughs, spring boxes, abandoned sheds, or hay stacks may also be used. Incised stream channels with portions narrower and depths greater than 18 inches also may provide important summer sheltering habitat. Accessibility to sheltering habitat is essential for the survival of California red-legged frogs within a watershed, and can be a factor limiting frog population numbers and survival.

California red-legged frogs do not have a distinct breeding migration (Fellers 2005). Adults are often associated with permanent bodies of water. Some individuals remain at breeding sites year-round, while others disperse to neighboring water features. Dispersal distances are typically less than 0.5-mile, with a few individuals moving up to 1 to 2 miles (Fellers 2005). Movements are typically along riparian corridors, but some individuals, especially on rainy nights, move directly from one site to another through normally inhospitable habitats, such as heavily grazed pastures or oak-grassland savannas (Fellers 2005).

In a study of California red-legged frog terrestrial activity in a mesic area of the Santa Cruz Mountains, Bulger *et al.* (2003) categorized terrestrial use as migratory and non-migratory. The latter occurred from one to several days and was associated with precipitation events. Migratory movements were characterized as the movement between aquatic sites and were most often associated with breeding activities. Bulger *et al.* (2003) reported that non-migrating frogs typically stayed within 200 feet of aquatic habitat 90 percent of the time and were most often associated with dense vegetative cover, i.e., California blackberry, poison oak and coyote brush. Dispersing frogs in northern Santa Cruz County traveled distances from 0.25-mile to more than

2 miles without apparent regard to topography, vegetation type, or riparian corridors (Bulger *et al.* 2003).

In a study of California red-legged frog terrestrial activity in a xeric environment in eastern Contra Costa County, Tatarian (2008) noted that a 57 percent majority of frogs fitted with radio transmitters in the Round Valley study area stayed at their breeding pools, whereas 43 percent moved into adjacent upland habitat or to other aquatic sites. Her study reported a peak seasonal terrestrial movement occurring in the fall months associated with the first 0.2-inch of precipitation and tapering off into spring. Upland movement activities ranged from 3 to 233 feet, averaging 80 feet, and were associated with a variety of refugia including grass thatch, crevices, cow hoof prints, ground squirrel burrows at the base of trees or rocks, logs, and under man-made structures; others were associated with upland sites lacking refugia (Tatarian 2008). The majority of terrestrial movements lasted from 1 to 4 days; however, one adult female was reported to remain in upland habitat for 50 days (Tatarian 2008). Upland refugia closer to aquatic sites were used more often and were more commonly associated with areas exhibiting higher object cover, e.g., woody debris, rocks, and vegetative cover. Subterranean cover was not significantly different between occupied upland habitat and non-occupied upland habitat.

California red-legged frogs are often prolific breeders, laying their eggs during or shortly after large rainfall events in late winter and early spring (Hayes and Miyamoto 1984). Egg masses containing 2,000 to 5,000 eggs are attached to vegetation below the surface and hatch after six to 14 days (Storer 1925, Jennings and Hayes 1994). In coastal lagoons, the most significant mortality factor in the pre-hatching stage is water salinity (Jennings *et al.* 1992). Eggs exposed to salinity levels greater than 4.5 parts per thousand resulted in 100 percent mortality (Jennings and Hayes 1990). Increased siltation during the breeding season can cause asphyxiation of eggs and small larvae. Larvae undergo metamorphosis 3½ to seven months following hatching and reach sexual maturity two to three years of age (Storer 1925; Wright and Wright 1949; Jennings and Hayes 1985, 1990, 1994). Of the various life stages, larvae probably experience the highest mortality rates, with less than one percent of eggs laid reaching metamorphosis (Jennings *et al.* 1992). California red-legged frogs may live eight to ten years (Jennings *et al.* 1992). Populations can fluctuate from year to year; favorable conditions allow the species to have extremely high rates of reproduction and thus produce large numbers of dispersing young and a concomitant increase in the number of occupied sites. In contrast, the animal may temporarily disappear from an area when conditions are stressful (e.g., during periods of drought, disease, etc.).

The diet of California red-legged frogs is highly variable and changes with the life history stage. The diet of the larvae is not well studied, but is likely similar to that of other ranid frogs, which feed on algae, diatoms, and detritus by grazing on the surface of rocks and vegetation (Fellers 2005; Kupferberg 1996a, 1996b, 1997). Hayes and Tennant (1985) analyzed the diets of California red-legged frogs from Cañada de la Gaviota in Santa Barbara County during the winter of 1981 and found invertebrates (comprising 42 taxa) to be the most common prey item consumed; however, they speculated that this was opportunistic and varied based on prey availability. They ascertained that larger frogs consumed larger prey and were recorded to have

preyed on Pacific chorus frog, three-spined stickleback and, to a limited extent, California mice, which were abundant at the study site (Hayes and Tennant 1985, Fellers 2005). Although larger vertebrate prey was consumed less frequently, it represented over half of the prey mass eaten by larger frogs suggesting that such prey may play an energetically important role in their diets (Hayes and Tennant 1985). Juvenile and subadult/adult frogs varied in their feeding activity periods; juveniles fed for longer periods throughout the day and night, while subadult/adults fed nocturnally (Hayes and Tennant 1985). Juveniles were significantly less successful at capturing prey and all life history stages exhibited poor prey discrimination, feeding on several inanimate objects that moved through their field of view (Hayes and Tennant 1985).

#### *Metapopulation and Patch Dynamics*

The direction and type of habitat used by dispersing animals is especially important in fragmented environments (Forys and Humphrey 1996). Models of habitat patch geometry predict that individual animals will exit patches at more “permeable” areas (Buechner 1987; Stamps *et al.* 1987). A landscape corridor may increase the patch-edge permeability by extending patch habitat (La Polla and Barrett 1993), and allow individuals to move from one patch to another. The geometric and habitat features that constitute a “corridor” must be determined from the perspective of the animal (Forys and Humphrey 1996).

Because their habitats have been fragmented, many endangered and threatened species exist as metapopulations (Verboom and Apeldom 1990; Verboom *et al.* 1991). A metapopulation is a collection of spatially discrete subpopulations that are connected by the dispersal movements of the individuals (Levins 1970; Hanski 1991). For metapopulations of listed species, a prerequisite to recovery is determining if unoccupied habitat patches are vacant due to the attributes of the habitat patch (food, cover, and patch area) or due to patch context (distance of the patch to other patches and distance of the patch to other features). Subpopulations on patches with higher quality food and cover are more likely to persist because they can support more individuals. Large populations have less of a chance of extinction due to stochastic events (Gilpin and Soule 1986). Similarly, small patches will support fewer individuals, increasing the rate of extinction. Patches that are near occupied patches are more likely to be recolonized when local extinction occurs and may benefit from emigration of individuals via the “rescue” effect (Hanski 1982; Gotelli 1991; Holt 1993; Fahrig and Merriam 1985). For the metapopulation to persist, the rate of patches being colonized must exceed the rate of patches going extinct (Levins 1970). If some subpopulations go extinct regardless of patch context, recovery actions should be placed on patch attributes. Patches could be managed to increase the availability of food and/or cover.

Movements and dispersal corridors likely are critical to California red-legged frog population dynamics, particularly because the animals likely currently persist as metapopulations with disjunct population centers. Movement and dispersal corridors are important for alleviating over-crowding and intraspecific competition, and also they are important for facilitating the recolonization of areas where the animal has been extirpated. Movement between population centers maintains gene flow and reduced genetic isolation. Genetically isolated populations are at greater risk of deleterious genetic effects such as inbreeding, genetic drift, and founder effects. The survival of wildlife species in fragmented habitats may ultimately depend on their ability to

move among patches to access necessary resources, retain genetic diversity, and maintain reproductive capacity within populations (Hilty and Merenlender 2004; Petit *et al.* 1995; Buza *et al.* 2000).

Most metapopulation or meta-population-like models of patchy populations do not directly include the effects of dispersal mortality on population dynamics (Hanski 1994; With and Crist 1995; Lindenmayer and Possingham 1996). Based on these models, it has become a widely held notion that more vagile species have a higher tolerance to habitat loss and fragmentation than less vagile species. But models that include dispersal mortality predict exactly the opposite: more vagile species should be more vulnerable to habitat loss and fragmentation because they are more susceptible to dispersal mortality (Fahrig 1998; Casagrandi and Gatto 1999). This prediction is supported by Gibbs (1998), who examined the presence-absence of five amphibian species across a gradient of habitat loss. He found that species with low dispersal rates are better able than more vagile species to persist in landscapes with low habitat cover. Gibbs (1998) postulated that the land between habitats serves as a demographic "drain" for many amphibians. Furthermore, Bonnet *et al.* (1999) found that snake species that frequently make long-distance movements have higher mortality rates than do sedentary species.

### *Threats*

Habitat loss, non-native species introduction, and urban encroachment are the primary factors that have adversely affected the California red-legged frog throughout its range. Several researchers in central California have noted the decline and eventual local disappearance of California and northern red-legged frogs in systems supporting bullfrogs (Jennings and Hayes 1990; Twedt 1993), red swamp crayfish, signal crayfish, and several species of warm water fish including sunfish, goldfish, common carp, and mosquitofish (Moyle 1976; Barry 1992; Hunt 1993; Fisher and Schaffer 1996). This has been attributed to predation, competition, and reproduction interference. Twedt (1993) documented bullfrog predation of juvenile northern red-legged frogs (*Rana aurora*), and suggested that bullfrogs could prey on subadult California red-legged frogs as well. Bullfrogs may also have a competitive advantage over California red-legged frogs. For instance, bullfrogs are larger and possess more generalized food habits (Bury and Whelan 1984). In addition, bullfrogs have an extended breeding season (Storer 1933) during which an individual female can produce as many as 20,000 eggs (Emlen 1977). Furthermore, bullfrog larvae are unpalatable to predatory fish (Kruse and Francis 1977). Bullfrogs also interfere with California red-legged frog reproduction by eating adult male California red-legged frogs. Both California and northern red-legged frogs have been observed in amplexus (mounted on) with both male and female bullfrogs (Jennings and Hayes 1990; Twedt 1993; Jennings 1993). Thus bullfrogs are able to prey upon and out-compete California red-legged frogs, especially in sub-optimal habitat.

The urbanization of land within and adjacent to California red-legged frog habitat has also affected the threatened amphibian. These declines are attributed to channelization of riparian areas, enclosure of the channels by urban development that blocks dispersal, and the introduction of predatory fishes and bullfrogs. Diseases may also pose a significant threat, although the specific effects of disease on the California red-legged frog are not known. Pathogens are

suspected of causing global amphibian declines (Davidson *et al.* 2003). Chytridiomycosis and ranaviruses are a potential threat because these diseases have been found to adversely affect other amphibians, including the listed species (Davidson *et al.* 2003; Lips *et al.* 2006). Mao *et al.* (1999 cited in Fellers 2005) reported northern red-legged frogs infected with an iridovirus, which was also presented in sympatric threespine sticklebacks in northwestern California. Non-native species, such as bullfrogs and non-native tiger salamanders that live within the range of the California red-legged frog have been identified as potential carriers of these diseases (Garner *et al.* 2005). Humans can facilitate the spread of disease by encouraging the further introduction of non-native carriers and by acting as carriers themselves (i.e., contaminated boots, waders or fishing equipment). Human activities can also introduce stress by other means, such as habitat fragmentation, that results in the listed species being more susceptible to the effects of disease.

Negative effects to wildlife populations from roads and pavement may extend some distance from the actual road. The phenomenon can result from vehicle-related mortality, habitat degradation, noise and light pollution, and invasive exotic species. Forman and Deblinger (1998) described the area affected as the “road effect” zone. One study along a four-lane road in Massachusetts determined that this zone extended for an average of 980 feet to either side of the road for an average total zone width of approximately 1,970 feet. However, in places they detected an effect greater than 0.6-mile from the road. The road effect zone can also be subtle. Van der Zandt *et al.* (1980) reported that lapwings and black-tailed godwits feeding at 1,575 to 6,560 feet from roads were disturbed by passing vehicles. The heart rate, metabolic rate and energy expenditure of female bighorn sheep increases near roads (MacArthur *et al.* 1979). Trombulak and Frissell (2000) described another type of “road-zone” effect due to contaminants. Heavy metal concentrations from vehicle exhaust were greatest within 66 feet of roads and elevated levels of metals in soil and plants were detected at 660 feet of roads. The “road-zone” varies with habitat type and traffic volume. Based on responses by birds, Forman (2000) estimated the road-zone along primary roads of 1,000 feet in woodlands, 1,197 feet in grasslands, and 2,657 feet in natural lands near urban areas. Along secondary roads with lower traffic volumes, the effect zone was 656 feet. The road-zone with regard to California red-legged frogs has not been adequately investigated.

The necessity of moving between multiple habitats and breeding ponds means that many amphibian species, such as the California red-legged frog are especially vulnerable to roads and well-used large paved areas in the landscape. Van Gelder (1973) and Cooke (1995) have examined the effect of roads on amphibians and found that because of their activity patterns, population structure, and preferred habitats, aquatic breeding amphibians are more vulnerable to traffic mortality than some other species. High-volume highways pose a barrier to amphibians and result in mortality to individual animals as well as significantly fragmenting habitat. Hels and Buchwald (2001) found that mortality rates for anurans on high traffic roads are higher than on low traffic roads. Vos and Chardon (1998) found a significant negative effect of road density on the occupation probability of ponds by the moor frog (*Rana arvalis*) in the Netherlands. In addition, incidences of very large numbers of road-killed frogs are well documented (Asley and Robinson 1996), and studies have shown strong population level effects of traffic density (Carr and Fahrig 2001) and high traffic roads on these amphibians (Van Gelder 1973; Vos and

Chardon 1998). Most studies regularly count road mortalities from slow moving vehicles (Hansen 1982; Rosen and Lowe 1994; Drews 1995; Mallick *et al.* 1998) or by foot (Munguira and Thomas 1992). These studies assume that every victim is observed, which may be true for large conspicuous mammals, but may be an incorrect assumption for small animals, such as the California red-legged frog. Amphibians appear especially vulnerable to traffic mortality because they readily attempt to cross roads, are small and slow-moving, and thus are not easily avoided by drivers (Carr and Fahrig 2001).

### **Environmental Baseline**

The proposed action area is located near the southern end of Tomales Bay, north-northwest of the Town of Point Reyes Station. The local area is characterized by a diverse variety of habitat types and wildlife species and is of particular conservation interest. The proposed project area is adjacent to CDFG's Tomales Bay Ecological Reserve and approximately 2,000 feet north of National Park Service's (NPS) Giacomini Wetland Restoration Project.

The surrounding land is primarily managed by private land owners that graze livestock or operate small vineyards, and various agencies including the Point Reyes National Seashore, CDFG, California Department of Parks and Recreation, and the Marin County Parks and Open Space District.

This diverse biological area includes rolling grasslands, oak woodlands, coastal scrub, ephemeral and perennial drainages with little to dense riparian cover, constructed stockponds, tidal flats, and freshwater, brackish, and saltwater marsh.

Within the project vicinity, the northern side of State Route 1 is primarily under private ownership and is populated by scattered cattle ranches and small vineyards. The steep rolling grasslands are broken up by dense riparian corridors and patches of scrub, perennial and ephemeral creeks as well as constructed stockponds and basins associated with agricultural use.

This area of Marin County supports some of the largest remaining populations of the California red-legged frog and most of the confirmed breeding sites in the area are constructed stock ponds (Fellers and Guscio 2002). The NPS has determined that California red-legged frogs, tadpoles, and eggs are persisting in aquatic habitats with moderate salinities within the Point Reyes National Seashore (NPS 2007).

Many of the local confirmed records of the California red-legged frog are from within Federal and state lands that have been subject to restoration and conservation management actions. Based on the proximity and features within adjacent private lands, it is likely that much of the surrounding area is occupied by the frog. Local red-legged frog records date back to the 1920's and monitoring continues associated with recent projects such as the Giacomini wetlands restoration (NPS 2007).

The California Natural Diversity Database (CNDDB) includes two California red-legged frog observations within 0.45 mile south of the project footprint (CDFG 2012a; 2012b, CNDDB occurrence #1159). Red-legged frogs can breed in a variety of freshwater situations, including freshwater marshes, backwater pools, ditches, agricultural basins, and stockponds. The Service was not provided with results of protocol surveys or a California red-legged frog habitat assessment for this proposed project that may have included field investigation of nearby potential breeding habitat. Based on our review of aerial photography, there are at least five stock ponds less than 0.5 mile from the project footprint. There are more potential breeding ponds less than 0.5 mile from the Grand Canyon Gulch Creek riparian corridor, increasing the likelihood that California red-legged frogs occupy the Grand Canyon Gulch Creek watershed and the action area.

Due to limited access and survey data, the Service used aerial photography and field observations from available access locations to independently identify available upland habitat for refugia and dispersal as well as potential riparian and aquatic habitat throughout the action area vicinity. Grand Canyon Gulch Creek is a perennial stream with a confluence with lower Tomales Bay, approximately 0.3 mile from the construction footprint. Given the proximity to the bay, the lower reaches of Grand Canyon Gulch are influenced by tidal action. As observed on February 8, 2012, the creek's outflow backs up within the construction footprint during high tide events. Saltgrass was observed along the creek bank near the confluence with the bay but the vegetation within the construction footprint does not indicate that salinity levels are unfavorable to frog occupation. Within the project footprint, the creek is narrow and is surrounded by dense willow riparian vegetation. The creek likely provides year-round refugia and foraging habitat for adult and juvenile red-legged frogs. An unidentified frog was heard leaping into the creek during the February 8, 2012, site visit but it was unclear if the frog was a California red-legged frog.

Adult California red-legged frogs are highly mobile and have been documented to move more than 2 miles over upland habitat. The frog habitat within the action area has direct connectivity with suitable habitat up and downstream of the project site and is well within the feasible movement distance to potential breeding locations.

The Service believes that the California red-legged frog is reasonably certain to occur within the action area due to: (1) the project being located within the species' range and current distribution; (2) suitable aquatic and upland habitat for foraging and cover are located within the action area; (3) the project footprint is within 0.5 miles of confirmed and potential breeding ponds; (4) all the elements needed to support the species' life history are located within 0.5-mile of the action area; and (5) the biology and ecology of the animal.

### **Effects of the Proposed Action**

Caltrans proposes to minimize construction related effects by implementing the *Conservation Measures* included in the project description section of this biological opinion. Effective implementation of *Conservation Measures* will likely minimize effects to the California red-

legged frog during construction but incidental take is still likely to occur. Therefore, the proposed State Route 1 Grand Canyon Gulch Creek Slope Stabilization Project has the potential to result in a variety of adverse effects that would result in take of the California red-legged frog.

Construction activities could result in the killing, harming and/or harassment of juvenile and adult frogs in the action area. Caltrans determined that the effects to habitat would be limited to approximately 0.038 acre of California red-legged frog habitat but frogs could be encountered throughout the 0.09-acre construction footprint. The Service believes that the temporary degradation of California red-legged frog habitat will result in the take of all frogs within these areas due to harm or harassment.

The California red-legged frog is most likely to be affected during the construction phase of the project. Injury, exposure, disorientation, and disruption of normal behaviors will likely result from the removal and/or disturbance of vegetation and cover sites, culvert extension, and RSP placement. Construction noise, vibration, and increased human activity during the construction phase may interfere with normal behaviors such as feeding, sheltering, movement between refugia and foraging grounds, and other frog essential behaviors. This can result in avoidance of areas that have suitable habitat but intolerable levels of disturbance.

Unless identified by the biological monitor or site personnel, and rescued by the biological monitor, individual California red-legged frogs exposed during earthwork likely will be crushed and killed or injured by construction-related activities. Even with biological monitoring, overall awareness, and proper escape ramps, California red-legged frogs could fall into the trenches, pits, or other excavations, and then risk being directly killed or be unable to escape and be killed due to desiccation, entombment, or starvation. Proper trash disposal is often difficult to enforce on a large construction site. Improperly disposed edible trash could attract predators, such as raccoons, crows, and ravens, to the sites, which could subsequently prey on California red-legged frogs. Caltrans commitment to use erosion control devices other than mono-filament should be effective in avoiding the associated risk of entrapment that can result in death by predation, starvation, or desiccation (Stuart *et al.* 2001). Limiting work between June 15 and October 15, primarily avoids the wettest time of year and the onset of the breeding season when frogs are more likely to be involved in dispersal. Caltrans will further minimize adverse effects by locating construction staging, storage, and parking areas within the existing paved areas of State Route 1, clearly marking construction work boundaries with high-visibility fencing, and conducting preconstruction surveys and environmental monitoring. The amount of take resulting from construction activities and the removal of habitat will be partially minimized by educating workers, and requiring a Service-approved biologist to be present to monitor construction activities.

If unrestricted, the proposed construction activities could result in the introduction of chemical contaminants to frog habitat. Exposure pathways could include inhalation, dermal contact, direct ingestion, or secondary ingestion of contaminated soil, plants or prey species. Exposure to contaminants could cause short- or long-term morbidity, possibly resulting in reduced

productivity or mortality. However, Caltrans proposes to minimize these risks by implementing their standard BMPs.

Preconstruction surveys and the relocation of individual California red-legged frogs may avoid injury or mortality; however, capturing and handling frogs may result in stress and/or inadvertent injury during handling, containment, and transport. Caltrans proposes to minimize these effects by using Service-approved biologists, limiting the duration of handling, and relocating amphibians to suitable nearby habitat in accordance with Service guidance.

If unrestricted, biologists and construction workers traveling to the action area from other project sites may transmit diseases by introducing contaminated equipment. The chance of a disease being introduced into a new area is greater today than in the past due to the increasing occurrences of disease throughout amphibian populations in California and the United States. It is possible that chytridiomycosis, caused by chytrid fungus, may exacerbate the effects of other diseases on amphibians or increase the sensitivity of the amphibian to environmental changes (water pH) that reduce normal immune response capabilities (Bosch *et al.* 2001, Weldon *et al.* 2004). Caltrans will minimize these risks by implementing proper decontamination procedures prior to and following aquatic surveys and handling amphibians. These will minimize the risk of transferring diseases through contaminated equipment or clothing. Proper handling and relocation of frogs out of construction areas increases the likelihood of their survival.

The completed project will not increase the travel speed or capacity on State Route 1 and therefore is unlikely to increase the local risk of California red-legged frog mortality from vehicle collision. The retaining wall and overhanging concrete slab is likely to deter frogs from exiting the riparian corridor and entering the action area section of the roadway.

The proposed retaining wall is likely to decrease erosion of the streambank that has likely resulted in increased downstream sedimentation of California red-legged frog aquatic habitat. Placement of RSP is not typically considered a habitat enhancement measure but it is likely to be an improvement to the baseline condition. RSP will stabilize the creek; provide cover and basking sites for frogs and their prey; and the willows planted within the RSP may provide cover for the frog. The Grand Canyon Gulch Creek bed from the existing Grand Canyon Gulch Creek box culvert to the western end of the proposed project would be enhanced for the frog if Caltrans incorporated willow plantings in the existing approximately 250 linear feet of RSP along the northern edge of the creek.

### **Cumulative Effects within the Action Area**

Cumulative effects include the effects of future State, Tribal, local or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act.

The Service is not aware of any cumulative effects to the California red-legged frog that are reasonably certain to occur within the action area.

### **Conclusion**

After reviewing the current status, the environmental baseline for the action area; the effects of the proposed project, and the cumulative effects of the proposed State Route 1 Grand Canyon Gulch Creek Slope Stabilization Project it is the Service's biological opinion that the project, as proposed, is not likely to jeopardize the continued existence of the California red-legged frog.

### **INCIDENTAL TAKE STATEMENT**

Section 9(a)(1) of the Act and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened fish and wildlife species 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 measures described below are non-discretionary, and must be implemented by Caltrans so that they become binding conditions of any grant or permit issued to Caltrans as appropriate, in order for the exemption in section 7(o)(2) to apply. Caltrans has a continuing duty to regulate the activity covered by this Incidental Take Statement. If Caltrans (1) fails 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 that incidental take of the California red-legged frog will be difficult to detect due to their wariness, cryptic nature, and the abundance of potential cover sites within the action area. Finding an injured or dead California red-legged frog is unlikely due to their relatively small body size, rapid carcass deterioration, and likelihood that the remains will be removed by a scavenger. Losses of the California red-legged frog may also be difficult to quantify due to a lack of baseline survey data and seasonal and annual fluctuations in their numbers due to environmental or human-caused disturbances. There is a risk of harm, harassment, injury and mortality as a result of the proposed construction activities, the permanent

and temporary loss and degradation of suitable habitat, and capture and relocation efforts; therefore, the Service is authorizing take incidental to the proposed action as: (1) the injury and mortality of no more than one California red-legged frog and (2) the capture, harm and harassment of all California red-legged frogs within the 0.9-acre construction footprint. Upon implementation of the following *Reasonable and Prudent Measures*, California red-legged frogs within the action area in proportion to the amount and type of take outlined above will become exempt from the prohibitions described under section 9 of the Act. No other forms of take are exempted.

This biological opinion does not authorize take for non-Federal actions associated with use, operation, and maintenance of State Route 1. Routine Caltrans' maintenance activities such as the removal and displacement of sand, silt, sediment, debris, rubbish, vegetation, and other obstruction flow; the control of weeds, grasses and emergent vegetation, minor repair of existing facilities, rip rap replacement, and culvert replacement have the potential to result in take of the California red-legged frog.

### **Effect of the Take**

The Service has determined that this level of anticipated take for the California red-legged frog is not likely to jeopardize the continued existence of the species.

### **Reasonable and Prudent Measures**

The following reasonable and prudent measures are necessary and appropriate to minimize the effect of the proposed action on the California red-legged frog. Caltrans will be responsible for the implementation and compliance with this measure:

1. Caltrans shall minimize the effect of take to the California red-legged frog.

### **Terms and Conditions**

In order to be exempt from the prohibitions of section 9 of the Act, Caltrans shall ensure compliance with the following terms and conditions, which implement the reasonable and prudent measures described above. These terms and conditions are nondiscretionary.

1. The following Terms and Conditions implement Reasonable and Prudent Measure one (1):
  - a. Caltrans shall minimize the potential for harm, harassment, or killing of the California red-legged frog resulting from project related activities by implementing the conservation measures as described in the *Description of the Proposed Action* of this biological opinion.

- b. Caltrans shall require all contractors to comply with the Act in the performance of the action and shall perform the action as outlined in the *Description of the Proposed Action* of this biological opinion as provided by Caltrans in the July 2011, BA and all other supporting documentation submitted to the Service.
- c. Caltrans shall include language in their contracts that expressly requires contractors and subcontractors to work within the boundaries of the project footprints identified in this biological opinion, including vehicle parking, staging, laydown areas, and access roads.
- d. The Resident Engineer or their designee shall be responsible for implementing the conservation measures and Terms and Conditions of this biological opinion and shall be the point of contact for the project. The Resident Engineer or their designee shall maintain a copy of this biological opinion onsite whenever construction is taking place. Their name and telephone number shall be provided to the Service at least 30 (thirty) calendar days prior to initiating construction activities for the proposed project.
- e. Through the Resident Engineer or their designee, the Service-approved biological monitor(s) shall be given the authority to communicate either verbally, by telephone, e-mail message, or hardcopy with Caltrans personnel, construction personnel or any other person(s) at the project site or otherwise associated with the project to ensure that the Terms and Conditions of this biological opinion are met. If situations arise where the Terms and Conditions may not be met or are not being met, the biological monitor will inform the Resident Engineer, who has the authority to stop work. If the Resident Engineer exercises this authority, the Service will be notified by telephone and e-mail message within one working day. The Service contact is the Coast-Bay/Forest Foothill Division Chief in the Sacramento Fish and Wildlife Office at (916) 414-6600. Discussions with the Resident Engineer, biological monitor, Caltrans staff and Service staff, will take place to identify and inform actions to resolve the issue and to document decisions.
- f. Thirty (30) calendar days prior to groundbreaking, the Resident Engineer and Service-approved biological monitors must submit a letter to the Service verifying that they possess a copy of this biological opinion and have read and understand the Terms and Conditions.
- g. During construction activities outside the existing hardscape, the Service-approved biologist shall conduct clearance surveys at the beginning of each day within or adjacent to suitable listed species habitat and regularly throughout the workday when construction is occurring within or adjacent to suitable habitat.
- h. Each California red-legged frog encounter shall be treated on a case-by-case basis in coordination with the Service but general guidance is as follows: (1) leave the non-

injured frog if it is not in danger or (2) move the frog to a nearby location if it is in danger. These two options are further described as follows.

- 1) When a California red-legged frog is encountered in the action area the first priority is to stop all activities in the surrounding area that have the potential to result in the harm, harassment, injury, or death of the individual. Then the monitor needs to assess the situation in order to select a course of action that will minimize adverse effects to the individual. Contact the Service once the site is secure. The contacts for this situation are Ryan Olah ([ryan\\_olah@fws.gov](mailto:ryan_olah@fws.gov)) or John Cleckler ([john\\_cleckler@fws.gov](mailto:john_cleckler@fws.gov)). They can be reached at (916) 414-6600. If you get voicemail message for these contacts then contact John Cleckler on his cell phone at (916) 712-6784.

The first priority is to avoid contact with the frog and allow it to move out of the action area and hazardous situation on its own to a safe location. The animal shall not be picked up and moved because it is not moving fast enough or it is inconvenient for the construction schedule. This guidance only applies to situations where a California red-legged frog is encountered on the move during conditions that make their upland travel feasible. This does not apply to California red-legged frogs that are uncovered or otherwise exposed or in areas where there is not sufficient adjacent habitat to provide escape cover and safe access to breeding, feeding, and sheltering habitat should they move outside the construction footprint.

Avoidance is the preferred option if a frog is not moving and is using aquatic habitat or if the frog is within some sort of burrow or other refugia. The area shall be well-marked for avoidance by construction and a Service-approved biological monitor shall be assigned to the area when work is taking place nearby.

- 2) The animal shall be captured and moved when it is the only option to prevent its death or injury.

If appropriate habitat is located immediately adjacent to the capture location then the preferred option is short distance relocation to that habitat. This must be coordinated with the Service but the general guidance is the frog shall not be moved outside of the area it would have traveled on its own. Under no circumstances should a California red-legged frog be relocated to another property without the owner's written permission. It is Caltrans' responsibility to arrange for that permission.

The release must be coordinated with the Service and will depend on where the individual was found and the opportunities for nearby release. In most situations the release location is likely to be into the mouth of a small burrow

or other suitable refugia and in certain circumstances pools without non-native predators may be suitable for frogs.

Only Service-approved biologists for the project can capture California red-legged frogs. Nets or bare hands may be used to capture California red-legged frogs. Soaps, oils, creams, lotions, repellents, or solvents of any sort cannot be used on hands within two hours before and during periods when they are capturing and relocating California red-legged frogs. To avoid transferring disease or pathogens between sites during the course of surveys or handling of the frogs, Service-approved biologists must use the following guidance for disinfecting equipment and clothing. These recommendations are adapted from the *Declining Amphibian Population Task Force's Code* which can be found in their entirety at: <http://www.open.ac.uk/daptf/>.

- i. All dirt and debris, including mud, snails, plant material (including fruits and seeds), and algae, shall be removed from nets, traps, boots, vehicle tires and all other surfaces that have come into contact with water and/or an amphibian. Cleaned items shall be rinsed with clean water before leaving each site.
  - ii. Boots, nets, traps, and other equipment, shall then be scrubbed with either a 70 percent ethanol solution, a bleach solution (0.5 to 1.0 cup of bleach to 1.0 gallon of water), QUAT 128 (quaternary ammonium, use 1:60 dilution), or a 6 percent sodium hypochlorite 3 solution and rinsed clean with water between sites. Avoid cleaning equipment in the immediate vicinity of a pond or wetland. All traces of the disinfectant shall be removed before entering the next aquatic habitat.
  - iii. Used cleaning materials (liquids, etc.) shall be disposed of safely, and if necessary, taken back to the lab for proper disposal.
  - iv. Service-approved biologists shall limit the duration of handling and captivity. While in captivity, individual California red-legged frogs shall be kept in a cool, dark, moist, aerated environment, such as a clean and disinfected bucket or plastic container with a damp sponge. Containers used for holding or transporting shall not contain any standing water.
- i. No firearms shall be allowed in the work site except for those carried by authorized security personnel, or local, State, or Federal law enforcement officials.
  - j. Caltrans shall ensure that the Service and/or its designated agents can, immediately and without delay, access and inspect the project site for compliance with the proposed project description, conservation measures, and *Terms and Conditions* of

this biological opinion, and to evaluate project effects on listed species and their habitat.

- k. Construction access, staging, storage, and parking areas shall be located within the project right-of-way or temporary easements and outside of designated environmentally sensitive areas. Access routes and the number and size of staging and work areas shall be limited to the minimum necessary to construct the proposed project. Routes and boundaries of roadwork shall be clearly marked prior to initiating construction or grading.
- l. All imported fill material shall be certified to be non-toxic and weed free.
- m. A Spill Response Plan shall be prepared and implemented.
- n. Vehicle and equipment refueling and lubrication shall only be permitted in designated disturbed or developed areas where accidental spills can be immediately contained.
- o. A SWPPP shall be implemented to ensure the proper installation and maintenance of sediment control measures.
- p. The Service-approved biologist(s) shall permanently remove, from the project site, any exotic wildlife species, such as bullfrogs and crayfish, to the extent possible.

### **Reporting Requirements**

Caltrans shall report to the Service any information about take or suspected take of listed-species not authorized by this biological opinion. Injured California red-legged frogs shall be cared for by a licensed veterinarian or other qualified person such as the onsite biologist; dead individuals of any listed species shall be preserved according to standard museum techniques and held in a secure location. The Service shall be notified within one working day of the discovery of death or injury to a listed species that results from project related activities or is observed at the project site. Notification shall include the date, time, and location of the incident or of the finding of a dead or injured animal clearly indicated on a U.S. Geological Survey 7.5-minute quadrangle and other maps at a finer scale, as requested by the Service, and any other pertinent information. Dead individual animals shall be placed in a sealed plastic bag with a piece of paper containing information on where and when the animal was found along with the name of the person who found it, the bag shall be frozen in a freezer located in a secure location until instructions are received from the Service regarding the disposition of the specimen or the Service takes custody of the specimen. The Service contacts are the Coast-Bay/Forest Foothill Division Chief of the Endangered Species Program in the Sacramento Fish and Wildlife Office at (916) 414-6600 and the Resident Agent-in-Charge of Service's Law Enforcement Division at (916) 414-6660.

Caltrans shall submit a post-construction compliance report prepared by the on-site biologist to the Sacramento Fish and Wildlife Office within sixty (60) calendar days of the date of the completion of construction activity. This report shall detail (i) dates that construction occurred;

(ii) pertinent information concerning the success of the project in meeting compensation and other conservation measures; (iii) an explanation of failure to meet such measures, if any; (iv) known project effects on the California red-legged frog, if any; (v) occurrences of incidental take to listed species, if any; and (vi) other pertinent information.

### CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities that can be implemented to further the purposes of the Act, such as preservation of endangered species habitat, implementation of recovery actions, or development of information and data bases.

The Service requests notification of the implementation of any conservation recommendations in order to be kept informed of actions minimizing or avoiding adverse effects or benefiting listed species or their habitats. We propose the following conservation recommendations:

1. Enhancing habitat connectivity and wildlife passage across roads as well as reducing road effects should be included in the *Purpose and Needs* section of environmental documents. FHWA agreed to coordinate with the Service on wildlife movement issues in a June 2, 2010, letter addressed to Mr. Greg Costello of the Western Environmental Law Center. As their NEPA delegate, Caltrans should adopt the commitments made by FHWA to consider wildlife movement in transportation planning and project development.
2. Caltrans should include a wildlife passage section in their biological assessments that include an analysis of the existing passage and how the project will affect passage. The analysis should include identification of the species' resources on both sides of the project boundaries, an appropriately timed road mortality survey to identify "hot spots," and strategic locations where the species could benefit from the enhancement of an existing crossing or the installation of a new crossing. Caltrans should coordinate with their headquarters office and the University of California at Davis Road Ecology Center to develop a passage and road effects approach. Further guidance is provided by FHWA's *Wildlife Vehicle Collision Reduction Study* available at: <http://www.fhwa.dot.gov/environment/hconnect/wvc/index.htm> (FHWA 2008).
3. Roadways can constitute a major impediment or barrier to wildlife movement. Therefore, Caltrans should incorporate culverts, tunnels, or bridges on highways and other roadways that allow safe passage for the California red-legged frog. Include photographs, plans, and other information in BAs if "wildlife friendly" crossings are incorporated into projects. Efforts should be made to establish upland culverts designed specifically for wildlife movement. Transportation agencies should also acknowledge the value of enhancing human safety by providing safe passage for wildlife in their early project design.

4. Caltrans should reference information from the internal system they have developed to keep track of road mortality records and the University of California at Davis, Road Ecology Center's California Roadkill Observation System (<http://www.wildlifecrossing.net/california/>) in their BAs.
5. Following through with the December 21, 2010, Memorandum of Understanding agreement regarding advanced mitigation, Caltrans should consider establishing functioning preservation and creation conservation banking systems to further the conservation of the California red-legged frog and other listed species. Such banking systems have potential to be used for other required mitigation (i.e., seasonal wetlands, riparian habitats, etc.) where appropriate. Efforts should be made to preserve habitat along roadways in association with wildlife crossings.

#### REINITIATION--CLOSING STATEMENT

This concludes formal consultation on the proposed State Route 1 Grand Canyon Gulch Creek Slope Stabilization Project 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 maintained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion, including work outside of the project footprint analyzed in this opinion and including vehicle parking, staging, lay down areas, and access roads; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this opinion including use of rodenticides or herbicides; relocation of utilities; and use of vehicle parking, staging, lay down areas, and access roads; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any additional take will not be exempt from the prohibitions of section 9 until consultation has been completed on a reinitiation.

If you have questions concerning this opinion on the proposed State Route 1 Grand Canyon Gulch Creek Slope Stabilization Project, please contact John Cleckler or Ryan Olah at the letterhead address or at (916) 414-6600.

Sincerely,

  
for Susan K. Moore  
Field Supervisor

Ms. Moujan Mostaghimi

28

cc:

Greg Martinelli and Melissa Escaron, California Department of Fish and Game, Yountville,  
California

Joe Heublein, National Marine Fisheries Service, Santa Rosa, California

Brendan Thompson, California Regional Water Quality Control Board, Oakland, California

Paula Gill, Army Corps of Engineers, San Francisco, California

Tami Grove and Mark Johnson, California Coastal Commission, San Francisco, California

Steven Harris and Jeffrey Jensen, California Department of Transportation, Oakland, California

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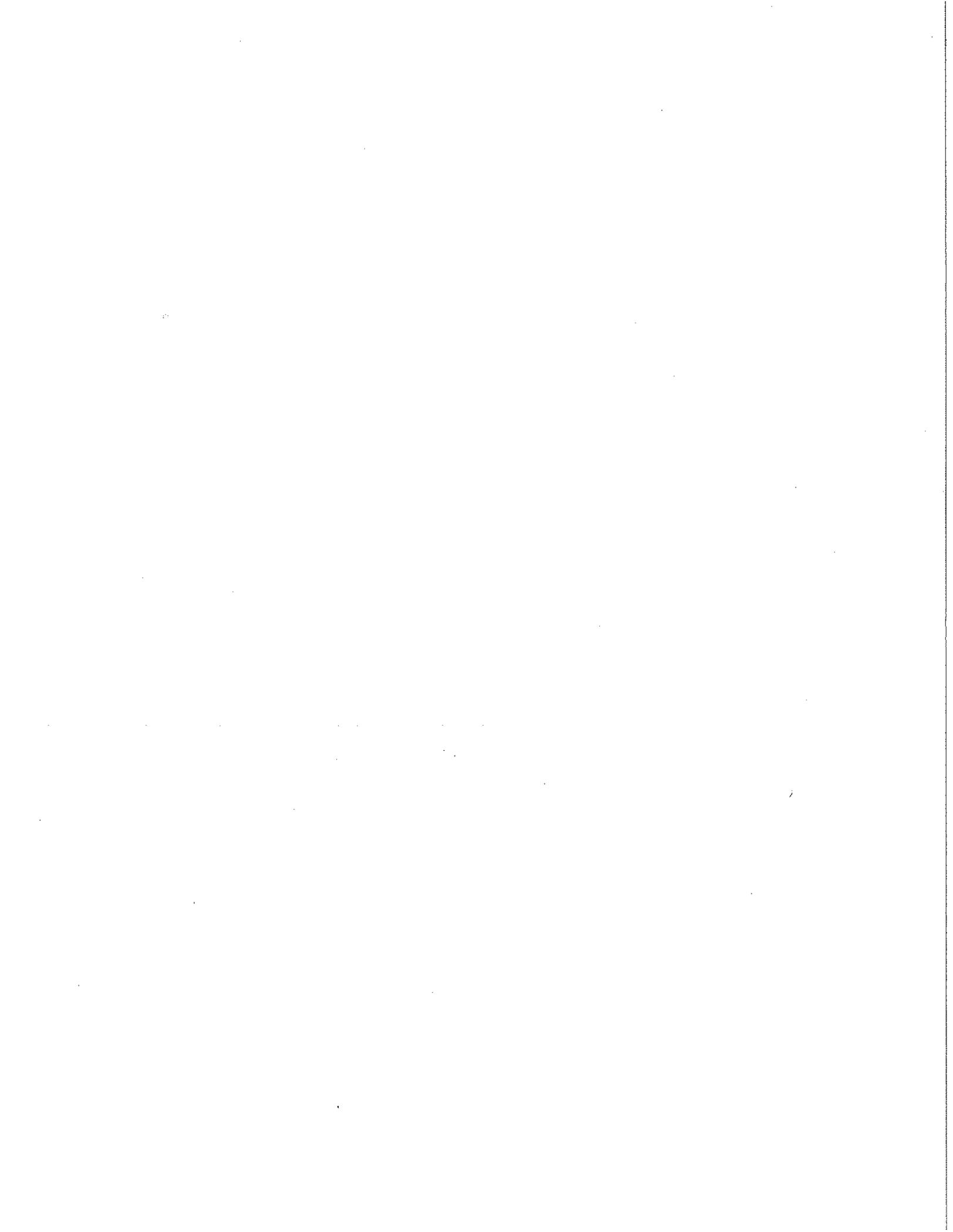
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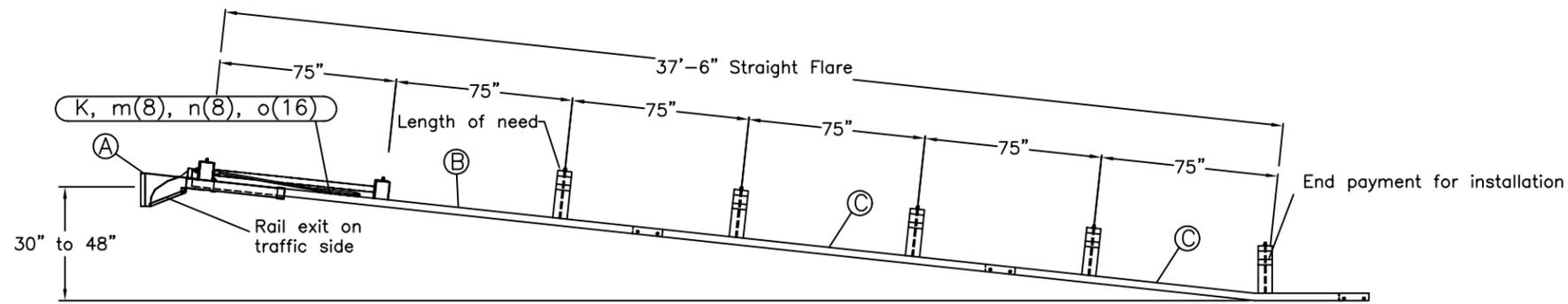
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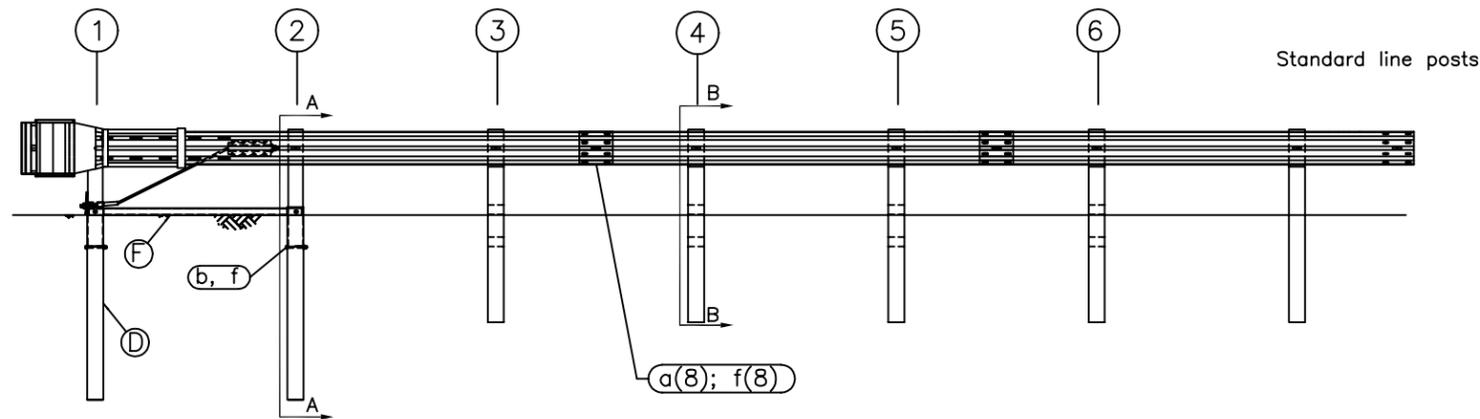
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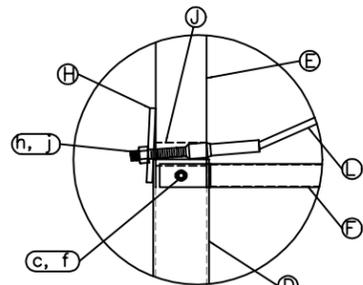


TRAFFIC →

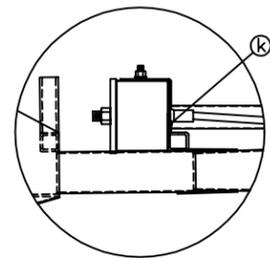
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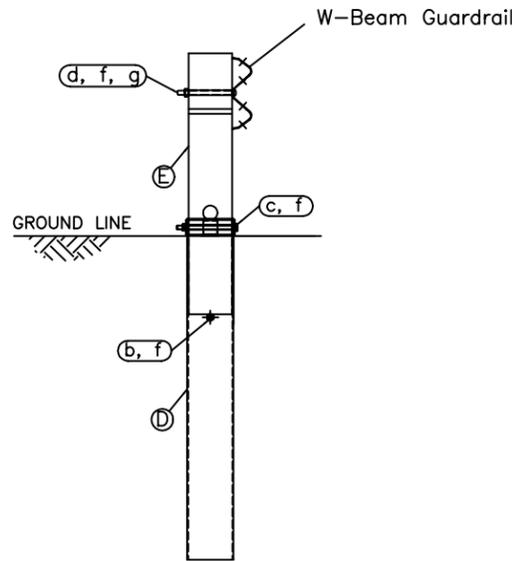
ELEVATION



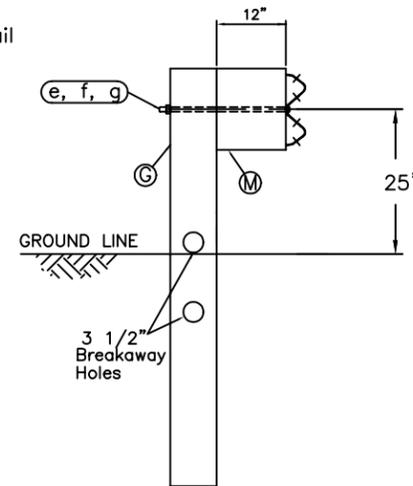
POST #1 CONNECTION DETAILS



IMPACT HEAD CONNECTION DETAIL



SECTION A-A  
Post #2



SECTION B-B  
Posts 3 thru 6

ITEM	QTY	BILL OF MATERIALS	ITEM NO.
A	1	IMPACT HEAD	F3000
B	1	W-BEAM GUARDRAIL END SECTION, 12 Ga.	F1303 MGS
C	2	W-BEAM GUARDRAIL, 12 Ga.	G1203 MGS
D	2	FOUNDATION TUBE	E731
E	2	BCT WOOD POST	P650 MGS
F	1	GROUND STRUT	E780
G	4	CRT WOOD POST	P671 MGS
H	1	BEARING PLATE	E750
J	1	PIPE SLEEVE	E740
K	1	CABLE ANCHOR BOX	S760
L	1	BCT CABLE ANCHOR ASSEMBLY	E770
M	4	MGS TIMBER BLOCKOUT OR RECYC. EQUIV.	P618
HARDWARE (ALL DIMENSIONS IN INCHES)			
a	16	5/8 $\phi$ x 1 1/4 SPLICE BOLT	B580122
b	2	5/8 $\phi$ x 7 1/2 HEX BOLT	B580754
c	2	5/8 $\phi$ x 10 HEX BOLT	B581004
d	1	5/8 $\phi$ x 10 H.G.R. BOLT	B581002
e	4	5/8 $\phi$ x 22 H.G.R. BOLT	B582202
f	25	5/8 $\phi$ H.G.R. NUT	N050
g	5	H.G.R. WASHER	W050
h	1	ANCHOR CABLE HEX NUT	N100
j	2	ANCHOR CABLE WASHER	W100
k	2	3/8 x 3 LAG SCREW	E350
m	8	CABLE ANCHOR BOX SHOULDER BOLT	SB58A
n	8	1/2 A325 STRUCTURAL NUT	N055A
o	16	1 1/16 OD x 9/16 ID A325 STR. WASHER	W050A

GENERAL NOTES:

- Breakaway posts are required with the FLEAT.
- All bolts, nuts, cable assemblies, cable anchors and bearing plates shall be galvanized.
- The foundation tubes shall not protrude more than 4 in above the ground (measured along a 5' cord). Site grading may be necessary to meet this requirement.
- When rock is encountered, a 12"  $\phi$  post hole, 20 in into the rock surface may be used if approved by the engineer. Granular material will be placed in the bottom of the hole, approximately 2.5" deep to provide drainage. The first two posts can be field cut to length, placed in the hole and backfilled with adequately compacted material excavated from the hole.
- The breakaway cable assembly must be taut. A locking device (vice grips or channel lock pliers) should be used to prevent the cable from twisting when tightening nuts.
- The soil tubes may be driven with an approved driving head. They shall not be driven with the post in the tube.
- The wood blockouts should be "toe-nailed" to the rectangular wood posts to prevent them from turning when the wood shrinks.



**Road Systems, Inc.**

Big Spring, TX  
Phone: 432-263-2435  
or Phone: 330-346-0721

Flared Energy Absorbing  
Terminal - FLEAT Assembly  
Midwest Guardrail System

Wood Post System

Drawing Name:  
FLT-MGS-W-US

Scale:  
None

Sheet:  
A1  
Date:  
12/01/2004  
By:  
JRR  
Rev:  
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