United States Department of the Interior

FISH AND WILDLIFE SERVICE
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In Reply Refer to:
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2016-F-1972

AUG 0 9 2016

Holly Costa
Acting Chief, Regulatory Division
Attn: Justin Yee
U.S. Army Corps of Engineers
1455 Market Street
San Francisco, California 94103-1398

Subject: Appending the 2016 California Department of Fish and Wildlife Fisheries Restoration Grand Program Projects to the to the July 7, 2016 *Programmatic Formal Endangered Species Consultation on the Regional General Permit for California Department of Fish and Wildlife Anadromous Fisheries Restoration Grant Program (Corps Regional General Permit 12; File no. 2003-279220)*

Dear Mr. Yee:

This is in response to the U.S. Army Corps of Engineers' (Corps) August 3, 2016, request for the initiation of formal consultation with the U.S. Fish and Wildlife Service (Service) to append the California Department of Fish and Wildlife (CDFW) Fisheries Restoration Grand Program (FRGP) 2016 Proposed Projects to the Programmatic Biological Opinion (PBO) on the FRGP as amended (Service file number 2016-F-0874). Your request was received by the Service on August 3, 2016 by email. At issue are the potential effects of the proposed 2016 Projects Plan on federally endangered and threatened species and their critical habitat (Table 1). This document is issued under the authority of the Endangered Species Act, as amended (16 U.S.C. § 1531 *et seq.*) (Act).

Table 1

Species	Listed Status
Amphibians	
California red-legged frog (*Rana draytonii*)	Federally Threatened
California red-legged frog Critical Habitat	
Birds	
Marbled Murrelet (*Brachyramphus marmoratus*)	Federally Threatened
Marbled Murrelet Critical Habitat	
Northern Spotted Owl (*Strix occidentalis caurina*)	Federally Threatened
Northern Spotted Owl Critical Habitat	
Invertebrates	
California freshwater shrimp (*Syncaris pacifica*)	Federally Endangered

We concur with your determination that the proposed authorization may affect, but is not likely to adversely affect, proposed critical habitat for the California red-legged frog. Our concurrence is based on the following factors:

1. Projects implemented under the proposed authorization will not damage or deteriorate any of the The Physical or Biological Features (essential aquatic habitat, associated upland habitat, and dispersal habitat) of the proposed critical habitat as defined in the proposed designation (69 FR 19620);

2. Restoration projects implemented under the proposed authorization within proposed critical habitat units will likely improve the quality of California red-legged frog habitat in these areas. This will improve the function and productivity of the proposed critical habitat units for red-legged frogs; and

3. Restoration projects implemented under the proposed authorization will revitalize degraded or impaired aquatic and riparian habitats. This will provide a long-term benefit to California red-legged frog, and result in higher quality habitat in dispersal corridors and core areas.

We concur with your determination that the proposed authorization may affect, but is not likely to adversely affect, the marbled murrelet and northern spotted owl or their critical habitat. Our concurrence is based on the following factors:

1. Qualified biologists will conduct protocol surveys for northern spotted owls and marbled murrelets at proposed project sites which contain potential habitat;

2. Work will not be conducted within 0.25 mile of any site with known or potential marbled northern murrelet habitat between November 1 and September 15, or known or potential northern spotted owl habitat between November 1 and July 31. If protocol surveys determine that nesting northern spotted owls or marbled murrelets do not occur within 0.25 mile of a specific project site, project activities at that site may commence prior to September 15; and

3. Project activities will not remove or degrade suitable northern spotted owl or marbled murrelet habitat or their critical habitat. The Physical or Biological Features for northern spotted owls (nesting and roosting habitat and foraging habitat) will not be affected by project activities due to the small project sizes and limited roosting habitat present. The Physical or Biological Features for marbled murrelet (Space for individual and population growth and for normal behavior; (2) Food, water, air, light, minerals, or other nutritional or physiological requirements; (3) Cover or shelter; (4) Sites for breeding, reproduction, or rearing (or development) of offspring; and (5) Habitats that are protected from disturbance or are representative of the historical, geographical, and ecological distributions of a species) will not be affected by project activities due to the small project size and short duration.

We base this evaluation on: (1) the July 7, 2016 Programmatic Biological Opinion; (2) the 2016 project Biological Assessments; and (3) other information available to the Service.

Consultation History

July 7, 2016: The Service received the consultation request from Corps for 2016 Projects.

August 3, 2016: CDFW provided project information and biological assessments for three projects to be appended.

BIOLOGICAL OPINION

Description of the Proposed Action

Upper Green Valley Creek Fish Passage Implementation Project

With the Upper Green Valley Fish Passage Implementation Project, the Gold Ridge Resource Conservation District seeks to address a significant instream fish passage barrier in upper Green Valley Creek and stabilize the grade through the 600 foot reach.

The project will remove the existing culvert and concrete debris, along with the abandoned upstream check dam, installation of a 15 foot wide by 7.75 foot high multi-plate arch culvert with an open bottom, construction of a 157ft long step pool roughened channel through the crossing, and construction of two series of boulder weirs on the upstream and downstream ends of the roughened channel.

The reach will be dewatered in stages as needed for culvert replacement and boulder weir construction. The entire reach will also be revegetated with native riparian species, enhancing approximately an acre of riparian habitat. Planting will be conducted in coordination with Point Blue Conservation Science's environmental education program, Students and Teachers Restoring a Watershed (STRAW), who will maintain the plantings for three years after installation.

Felta Creek Stream Habitat Enhancement Project

The Felta Creek Stream Habitat Enhancement Project will provide habitat complexity in Felta Creek to enhance cover, shelter, spawning and rearing conditions for coho salmon and steelhead along a 4,345 foot reach of Felta Creek through the installation of 31 pieces of Large Woody Material (LWD) at 11 sites. Eleven pools will be created through (LWD) placement. 0.82 miles of total stream length and overall stream length will be treated for channel structure placement.

Lagunitas Creek Winter Habitat Enhancement Project

The Lagunitas Creek Winter Habitat Enhancement Project will improve winter habitat and refuge for coho salmon, and increase the winter habitat carrying capacity for salmonids in Lagunitas Creek, by constructing habitat enhancement work at five sites.

Site #1 – Big Bend Log Deflector Vanes

Winter habitat enhancement work at this site will include construction of four log deflector vanes (log diversion vanes). This work will require creek diversion and there will be site revegetation. Deflector vanes are based on a "bendway weir" design that consists of a core two log pinned by two smaller logs structure. The structure is designed to invoke channel migration. A total of four deflector vanes will installed from either bank, depending on how the channel is to be directed. The

deflector vaynes will be spaced at 80 foot intervals, equal to approximately 5-times the channel width to mimic natural riffle-pool spacing. As a secondary benefit, where possible, deflector vane installations will be strategically placed just upstream and on the opposite bank from existing large trees in order to direct flow and increase scour and pool depth at the base of the trees.

Creek diversion will be needed because flow in Lagunitas Creek is perennial with expected flow of approximately 8.0 cfs during the summer construction season. A significant consideration during construction will be minimizing impacts on creek water quality and aquatic habitat when disturbing channel bed and banks. Diverting water around construction areas is the best approach to minimizing impacts. Cofferdams constructed of sand bags, gravel bags, or similar and secured with visqueen will be constructed and keyed in at creek channel upstream of the work area. Water will be pumped or flow by gravity from the upstream side of the cofferdam through one or more flexible hose or PVC pipe that will run the work area then back into the creek at an outfall located downstream from the work area. Alternative clear water diversions may include installing sheet piling to segregate and dewater only a portion of the creek channel.

Site #2 – Big Bend Bar Apex Jam

Winter habitat enhancement work at this site will include construction of one Bar Apex Jam and High Flow Channel improvements. This work will require creek diversion and construction dewatering and there will be site revegetation. The creek diversion will be as described for Site #1, above.

The design of the Log Bar Apex Jams (BAJ) is based on natural log jams in large rivers. For purposes of this project, BAJs will be used to rejuvenate and increase the magnitude, frequency and duration of flow through existing high flow channels on the Lagunitas Creek floodplain. This is achieved by constructing an appropriately located large wood structure that will reduce channel conveyance area and raise (backwater) levels to more easily split and deflect high flows between the mainstem channel and floodplain side channel.

High flow channel enhancement entails wood debris removal and excavation. During construction, some large wood and vegetation debris removal will be completed along the alignments of targeted high flow side channels to enhance the initial flow of water and energy through them. This material will also serve as rack for BAJ construction. Typically, short alluvial levees have formed across the mouth of side channel inlets. Very limited excavation and lowering of these features will enhance the exchange of water from mainstem to side channel, only if excavated material can be reused in construction of log structures.

Site #7 – Fern Rock Log Debris Retention Jams

Winter habitat enhancement work at this site includes construction of four log retention jams and high flow channel improvements. This work requires creek diversion and construction dewatering and there will be site revegetation. The log retention jams are described below, the creek diversion will be as described for Site #1, and the high flow channel improvements are as described for Site #2.

Log Debris Retention Jam (LDRJ) are designed to be channel spanning array/line of logs driven vertically into the bed that will act as a sieve to capture and retain woody debris and ultimately sediment. These structures have been termed "trashracks" and "flood fencing". For this project, the Grantee will preinstall large wood cross-pieces (horizontal) to accelerate their performance. The

desired function of these structures is to ultimately raise local channel bed grades and raise water elevations in the channel and along banks to backwater overbank flows into existing side-channels. Log Debris Retention Jams (LDRJs) are more passive than the BAJs and are selected in channel reaches that are narrower and more entrenched relative to the adjacent floodplain surface.

Site #8 – 449 Creek Log Debris Retention Jam and Bar Apex Jam

Winter habitat enhancement work at this site will include construction of a log debris retention jam, a bar apex jam and high flow channel improvements. This work will require creek diversion and construction dewatering and there will be site revegetation; these elements will be as described for Sites #1 and #2.

Site #9 – Olema Creek Log Cross-Vane and Creek Log Debris Retention Jams

Winter habitat enhancement work at this site will include construction of a log cross-vane as described below, and six creek log debris retention jams, as described for Sites #7 and #8. This work will require creek diversion and construction dewatering and there will be site revegetation; these elements will be as described for Sites #1 and #2.

A single log cross-vane will be installed at the upstream end of the Olema Creek reach to act as a bed grade control structure upstream of an existing knick-point. This structure is intended to provide a hardpoint to resist erosion. It will be used in combination with a LDRJ installed downstream of the knickpoint as a grade control structure that will act as a hydraulic control, creating backwater conditions to reduce energy gradients, reduce erosion and act to trap debris and sediment. Construction oversight and inspections will be performed daily during any construction activities. The

Monitoring

Construction Inspector will ensure that the construction is following the project plans and specification. As part of the inspections, project site photographs will be taken from established photo points.

Conservation Measures

The 2016 FRGP will implement the Conservation Measures specified in the July 7, 2016 Programmatic Biological Opinion.

Action Area

Upper Green Valley Creek Fish Passage Implementation Project

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 project, the action area encompasses 600 feet of Upper Green Valley Creek; and extending associated uplands and adjacent wetlands utilized for staging and access.

Felta Creek Stream Habitat Enhancement Project

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 project, the action area encompasses a 4,345 foot reach of Felta Creek, beginning 500 feet downstream of its confluence with Salt Creek and continuing upstream for approximately 3,845 along Felta Creek; and extending associated uplands and adjacent wetlands utilized for staging and access.

Lagunitas Creek Winter Habitat Enhancement Project

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 project, the action area encompasses the Lagunitas Creek watershed as the project will alter flooding regimes in areas beyond the work areas; and extending associated uplands and adjacent wetlands utilized for staging and access.

Status of the Species and Environmental Baseline

Refer to page 19 of the Programmatic Biological Opinion.

Effects of the Action

California freshwater shrimp

The shrimp adjacent to project sites may be incidentally taken in the form of harm, harassment injury, or mortality as a result of temporary disturbances from project activities. With implementation of the conservation measures, only low levels of injury or mortality of shrimp are anticipated. Injury or mortality to shrimp was not incurred or documented in any of the salmonid or shrimp surveys conducted in the Russian River basin. While the identification of habitat, net capture and release that will be conducted under this Program will result in the low likelihood of injury or mortality to shrimp, it is unreasonable to assume that injury or mortality will never occur. The potential for take in the form of harassment of individuals depending upon restoration technique in a project area is higher. In addition, injury to or mortality of shrimp during a dewatering rescue and relocation is more likely due to their fragile size and requirement for an aquatic environment.

Work in live streams or in floodplains could cause unusually high levels of siltation downstream. Although shrimp are usually able to survive in poor water quality conditions, this siltation could alter the quality of the habitat to the extent that use by individuals of the species is precluded. Siltation also could fill slow-moving pools, reducing the extent or quality of shrimp habitat near the project area. Implementing best management practices for erosion control and reducing the area to be disturbed to the minimum necessary should decrease the amount of sediment that is washed downstream as a result of project activities. The Corps' proposed authorization of the Program may result in the loss of shrimp habitat. Installation of check dams, rock weirs, log weirs and wing deflectors may prevent shrimp from dispersing along streambanks. The potential for this effect may be reduced by ensuring that project proponents are thoroughly briefed by CDFW on the locations of shrimp streams, by designing projects to match the historical stream ecosystem as closely as possible, and by ensuring that check dams and weirs do not span any creek known to support shrimp.

Removal of nonnative invasive vegetation such as Himalayan blackberry may reduce the extent and quality of shrimp habitat. The restoration projects will provide more stable stream banks, better water quality through decreased erosion and sediment loading, and shelter along stream banks for shrimp.

Many activities in this Program will benefit the shrimp. Riparian plantings and cattle exclusion fences will improve habitat quality in shrimp streams and their tributaries. Increased riparian cover will increase habitat complexity and root density on streambanks. Riparian vegetation will allow shrimp to disperse more easily and will stabilize water temperatures in the creeks. Exclusionary fencing will reduce cattle impacts to the creek such as overgrazing, streambank trampling, and soil compaction. Objectives in the shrimp's recovery plan includes protection of existing populations, removal of threats to these populations, and enhancement of habitat for native aquatic species within the shrimp's historic range. Projects performed under the Restoration Program will aid in the implementation of these recovery objectives.

General Effects

Direct effects to adult and juvenile shrimp and to red-legged frog adults, sub-adults, tadpoles, and eggs in the footprint of projects utilizing the proposed authorization would include injury or mortality from being crushed by earth-moving equipment, construction debris, and worker foot traffic. These effects would be reduced by minimizing and clearly demarcating the boundaries of the project areas.

Shrimp and red-legged frog tadpoles may be entrained by pump or water diversion intakes. Screening pump intakes with wire with not greater than 0.2-inch diameter mesh may reduce the potential that shrimp and tadpoles would be caught in the inflow.

Shrimp and red-legged frogs may be killed by predators. If water that is impounded during or after work activities creates favorable habitat for non-native predators, such as bullfrogs, crayfish, and centrarchid fishes, shrimp and red-legged frogs may incur abnormally high rates of predation. Additionally, any time red-legged frogs are concentrated in a small area at unusually high densities, native predators may feed on them opportunistically. This impact can be minimized by avoiding creation of ponded water as a result of project actions such as dewatering the work area.

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

Accidental spills of hazardous materials or careless fueling or oiling of vehicles or equipment could degrade water quality to a degree where shrimp or red-legged frogs are injured or killed. The potential for this effect to occur can be reduced by thoroughly informing workers of the importance of preventing hazardous materials from entering the environment, locating staging and fueling areas a minimum of 65 feet from riparian areas or other water bodies, and by having an effective spill response plan in place.

Uninformed workers could disturb, injure, or kill shrimp or red-legged frogs. The potential for this effect to occur may be greatly reduced by informing workers of the presence and protected status of this species and the measures that are being implemented to protect it during project activities.

The restoration projects that would utilize the proposed authorization are intended to provide additional habitat for, and increased populations of, steelhead and salmon in the respective project areas. These fish prey on the shrimp and the red-legged frog. The effects of potentially increasing predator populations on the shrimp and red-legged frog cannot be accurately predicted at this time. Shrimp, salmon and steelhead occurred in coastal watersheds prior to the onset of human disturbance. Although we anticipate some predation of shrimp and red-legged frogs by salmonid fishes, this level of predation is not expected to appreciably alter the population structure within the project areas.

The Corps' proposed authorization would affect a small number of shrimp and red-legged frogs, if any occur in the areas that would be temporarily disturbed by project activities. Due to the small size of the work areas, the temporal nature of the projects, the implementation of the projects in the dry season, and the proposed protective measures, we anticipate that few California red-legged frog, San Francisco garter snake or California freshwater shrimp to be killed or injured during project activities. The areas disturbed by Program projects constitute a small portion of the available shrimp and red-legged frog habitat throughout the Corps' San Francisco District's jurisdiction; additionally, disturbed areas will be restored and planted with native plants. Restoration and enhancement of riparian vegetation, and stream complexity in project sites is likely to increase the number and quality of cover sites and the diversity and abundance of prey species for California red-legged frogs, San Francisco garter snake and California freshwater shrimp. The proposed authorization is generally likely to improve the quality of habitat for the red-legged frog in areas affected by projects implemented under the Program.

California red-legged frog

Work activities, including noise and vibration, may cause red-legged frogs to leave the work area. This disturbance may increase the potential for predation and desiccation. Minimizing the area disturbed by project activities may reduce the potential for dispersal resulting from the action. Red-legged frogs are more likely to disperse overland in mesic conditions. Because the CDFW would primarily be executing the proposed projects during the dry season, these impacts are less likely. As long as no substantial rainfall (substantial rainfall = greater than 0.5 inch of rain in a 24-hour period) occurs, red-legged frogs are unlikely to be at risk.

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

The Program will not result in the temporary loss of red-legged frog habitat. The restoration projects will provide more stable stream banks, better water quality through decreased erosion and sediment loading, and shelter along stream banks for red-legged frogs. Additionally, many of the projects will improve red-legged frog habitat by creating additional pools and providing a more natural water flow regime by eliminating or altering fish passage barriers. The restoration projects will contribute to the local recovery of the red-legged frog by removing non-native predators such as bullfrogs, which out-compete and ultimately displace red-legged frogs from suitable habitat, and by improving the riparian buffer which will reduce the movement of pesticides into the aquatic environment.

Conclusion

After reviewing the current status of California red-legged frog, San Francisco garter snake, and California freshwater shrimp, the environmental baseline for the action area, the effects of the proposed California Department of Fish and Wildlife Fisheries Restoration Grant Program, and the cumulative effects, it is the Service's biological opinion that the California Department of Fish and Wildlife Fisheries Restoration Grant Program, as proposed, is not likely to jeopardize the continued existence of the California red-legged frog, and California freshwater shrimp. The Service reached this conclusion because the project-related effects to the species, when added to the environmental baseline and analyzed in consideration of all potential cumulative effects, will not rise to the level of precluding recovery or reducing the likelihood of survival of the species based on the following:

1. The Corps and the CDFW have proposed measures to minimize the potential adverse effects of project activities on the California red-legged frog, and California freshwater shrimp;

2. The persistence of the shrimp and red-legged frog in the affected area would not be diminished by the activities covered under this programmatic consultation;

3. Few, if any, California red-legged frog, and California freshwater shrimp are likely to be killed or injured during project activities; and

4. The overall quality of California red-legged frog, and California freshwater shrimp breeding, foraging, and dispersal habitat would be improved as a result of improved water quality, reduced sedimentation, and habitat enhancement associated with Program projects. This improvement would offset any injury or mortality that might result from implementation of Program activities.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harass is defined by regulations at 50 CFR 17.3 as an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering. Harm is defined by the same regulations as an act which actually kills or injures wildlife. Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavior 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 the terms and conditions of this Incidental Take Statement.

The measures described below are non-discretionary, and must be undertaken by the Corps so that they become binding conditions of any grant or permit issued to the applicant, as appropriate, for the exemption in section 7(o)(2) to apply. The Corps has a continuing duty to regulate the activity covered by this incidental take statement. If the Corps (1) fails to assume and implement the terms and conditions or (2) fails to require the applicant to adhere to the terms and conditions of the

incidental take statement through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, the Corps must report the progress of the action and its impact on the species to the Service as specified in the incidental take statement [50 CFR §402.14(i)(3)].

Amount or Extent of Take

Upper Green Valley Creek Fish Passage Implementation Project

California Red-legged Frog

The Service anticipates that incidental take of the California red-legged frog will be difficult to detect due to its life history and ecology. Specifically, when California red-legged frogs are not in their breeding ponds, they may be difficult to locate due to their cryptic appearance, and finding a dead or injured individual is unlikely due to their relatively small size. Losses of California red-legged frog may also be difficult to quantify due to seasonal fluctuations in their numbers, random environmental events, changes in water regime at their breeding ponds, or additional environmental disturbances. Therefore the Service anticipates that all California red-legged frogs within the action area will be subject to incidental take in the form of non-lethal harm and harassment. The Service anticipates that no more than one (1) California red-legged frog would be killed or injured as a result of project-related activities and would be detected by biological monitors.

Upon implementation of the following *Reasonable and Prudent Measures*, incidental take of California red-legged frog associated with the Upper Green Valley Creek Fish Passage Implementation Project in the amount outlined above will become exempt from the prohibitions described in section 9 of the Act. No other forms of take are exempted under this opinion.

California Freshwater Shrimp

The Service expects that incidental take of the California freshwater shrimp in Upper Green Valley Creek will be difficult to detect or quantify. The aquatic nature, cryptic coloration, secretive habits, and small body size of the species make the finding of a dead specimen unlikely; losses may be masked by seasonal fluctuations in numbers or other causes; and the species occurs in habitat that makes them difficult to detect. Therefore the Service anticipates that all California freshwater shrimp within the action area will be subject to incidental take in the form of non-lethal harm and harassment. The Service anticipates lethal take of 5% of all captured and stranded California freshwater shrimp during dewatering activities as a result of this Project.

Upon implementation of the following *Reasonable and Prudent Measures*, incidental take of shrimp associated with the proposed replacement of the Upper Green Valley Creek Fish Passage Implementation Project in the form of harm, harassment, pursuit, capture, injury, or mortality will become exempt from the prohibitions described under section 9 of the Act for direct effects.

Felta Creek Stream Habitat Enhancement Project

California Red-legged Frog

The Service anticipates that incidental take of the California red-legged frog will be difficult to detect due to its life history and ecology. Specifically, when California red-legged frogs are not in their breeding ponds, they may be difficult to locate due to their cryptic appearance, and finding a dead or

injured individual is unlikely due to their relatively small size. Losses of California red-legged frog may also be difficult to quantify due to seasonal fluctuations in their numbers, random environmental events, changes in water regime at their breeding ponds, or additional environmental disturbances. Therefore the Service anticipates that all California red-legged frogs within the action area will be subject to incidental take in the form of non-lethal harm and harassment. The Service anticipates that no more than one (1) California red-legged frog would be killed or injured as a result of project-related activities and would be detected by biological monitors.

Upon implementation of the following *Reasonable and Prudent Measures*, incidental take of California red-legged frog associated with the Felta Creek Stream Habitat Enhancement Project in the amount outlined above will become exempt from the prohibitions described in section 9 of the Act. No other forms of take are exempted under this opinion.

California Freshwater Shrimp

The Service expects that incidental take of California freshwater shrimp in Felta Creek will be difficult to detect or quantify. The aquatic nature, cryptic coloration, secretive habits, and small body size of the species make the finding of a dead specimen unlikely; losses may be masked by seasonal fluctuations in numbers or other causes; and the species occurs in habitat that makes them difficult to detect. Therefore the Service anticipates that all California freshwater shrimp within the action area will be subject to incidental take in the form of non-lethal harm and harassment. The Service anticipates lethal take of 5% of all captured and stranded California freshwater shrimp during dewatering activities as a result of this Project.

Upon implementation of the following *Reasonable and Prudent Measures*, incidental take of shrimp associated with the proposed replacement of the Upper Green Valley Creek Fish Passage Implementation Project in the form of harm, harassment, pursuit, capture, injury, or mortality will become exempt from the prohibitions described under section 9 of the Act for direct effects.

Lagunitas Creek Winter Habitat Enhancement Project

California Red-legged Frog

The Service anticipates that incidental take of the California red-legged frog will be difficult to detect due to its life history and ecology. Specifically, when California red-legged frogs are not in their breeding ponds, they may be difficult to locate due to their cryptic appearance, and finding a dead or injured individual is unlikely due to their relatively small size. Losses of California red-legged frog may also be difficult to quantify due to seasonal fluctuations in their numbers, random environmental events, changes in water regime at their breeding ponds, or additional environmental disturbances. Therefore the Service anticipates that all California red-legged frogs within the action area will be subject to incidental take in the form of non-lethal harm and harassment. The Service anticipates that no more than three (3) California red-legged frogs would be killed or injured as a result of project-related activities and would be detected by biological monitors.
Upon implementation of the following *Reasonable and Prudent Measures*, incidental take of California red-legged frog associated with the Lagunitas Creek Winter Habitat Enhancement Project in the amount outlined above will become exempt from the prohibitions described in section 9 of the Act. No other forms of take are exempted under this opinion.

California Freshwater Shrimp

The Service expects that incidental take of California freshwater shrimp in the Lagunitas Creek and associated watershed will be difficult to detect or quantify. The aquatic nature, cryptic coloration, secretive habits, and small body size of the species make the finding of a dead specimen unlikely; losses may be masked by seasonal fluctuations in numbers or other causes; and the species occurs in habitat that makes them difficult to detect. Therefore the Service anticipates that all California freshwater shrimp within the action area will be subject to incidental take in the form of non-lethal harm and harassment. The Service anticipates lethal take of 5% of all captured and stranded California freshwater shrimp during dewatering activities as a result of this Project.

Upon implementation of the following *Reasonable and Prudent Measures*, incidental take of shrimp associated with the proposed replacement of the Upper Green Valley Creek Fish Passage Implementation Project in the form of harm, harassment, pursuit, capture, injury, or mortality will become exempt from the prohibitions described under section 9 of the Act for direct effects.

Effect of the Take

In the accompanying biological opinion appending to the Programmatic Biological Opinion, the Service determined that this level of anticipated take is not likely to result in jeopardy to these species or destruction or adverse modification of critical habitat.

Reasonable and Prudent Measures

All necessary and appropriate measures to avoid or minimize effects on the California red-legged frog and its critical habitat, Central California tiger salamander, and Alameda whipsnake resulting from implementation of this project have been incorporated into the project's proposed conservation measures. Therefore, the Service believes the following Reasonable and Prudent Measure is necessary and appropriate to minimize incidental take of these species:

1. All conservation measures, as described in the Programmatic Biological Opinion, shall be fully implemented and adhered to. Further, this Reasonable and Prudent Measure shall be supplemented by the Terms and Conditions below.

2. No off-channel California red-legged frog breeding ponds will be impacted by projects.

Terms and Conditions

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

The following Terms and Conditions implement the Reasonable and Prudent Measure:

1. The Corps shall require that all personnel associated with the proposed project are made aware of the conservation measures and the responsibility to implement them fully.

2. Floodplain restoration projects will ensure that no California red-legged frog breeding ponds are allowed to have fish introduced into them by increased flooding regimes and hydrologic changes.

REINITIATION- CLOSING STATEMENT

This concludes formal consultation on the 2016 California Department of Fish and Wildlife Fisheries Restoration Grand Program. As provided in 50 CFR §402.16, reinitiation of formal consultation is required and shall be requested by the Federal agency or by the Service where discretionary Federal agency involvement or control over the action has been retained or is authorized by law and:

(a) If the amount or extent of taking specified in the incidental take statement is exceeded;

(b) If new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered;

(c) If the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the biological opinion; or

(d) If a new species is listed or critical habitat designated that may be affected by the identified action.

If you have any questions regarding this biological opinion, please contact Leif Goude, Biologist (leif_goude@fws.gov) or Ryan Olah, Coast Bay Division Chief (ryan_olah@fws.gov) at the letterhead address or telephone (916) 414-6659).

Sincerely,

Jennifer M. Norris
Field Supervisor

cc:
Karen Carpio, California Department of Fish and Wildlife, Sacramento California