



United States Department of the Interior

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May 27, 2022

Memorandum

To: Field Supervisor, Sacramento Fish and Wildlife Office, Sacramento, California

From: Coast Bay Division Supervisor, Sacramento Fish and Wildlife Office, Sacramento, California

Subject: Formal Consultation on the Issuance of a Section 10(a)(1)(B) Incidental Take Permit for the Lehigh Southwest Cement Company's Permanente Site Operation and Maintenance Project Low-Effect Habitat Conservation Plan, Santa Clara County, California

This document transmits the biological opinion of the U.S. Fish and Wildlife Service (Service), Sacramento Fish and Wildlife Office (SFWO), regarding the issuance of an incidental take permit (ITP) to Lehigh Southwest Cement Company (Lehigh or Applicant) to conduct activities pursuant to section 10(a)(1)(B) and section 10(a)(2) of the Endangered Species Act of 1973, as amended (16 U.S.C. §§ 1531 et seq.) (Act), and in accordance with section 7 of the Act and associated implementing regulations (50 CFR § 402) at Lehigh's Permanente facility located at 24001 Stevens Creek Boulevard in Santa Clara County, California. The Service proposes to issue this ITP to Lehigh for the Permanente Site Operation and Maintenance Project (proposed project) for a period of 20 years (Permit Term), which will authorize incidental take of the federally listed as threatened California red-legged frog (*Rana draytonii*) while conducting specific activities described in the Covered Activities section of the Low-Effect Habitat Conservation Plan (HCP). Assurances provided under the "No Surprises" rule at 50 CFR §§ 17.22(b)(5) and 17.32(b)(5) would extend to the California red-legged frog. The proposed project permit area does not occur within designated critical habitat for the California red-legged frog.

Lehigh will conduct storm water capture/sedimentation basin operation and maintenance; erosion control; material transport and storage; vehicle traffic and equipment operation; road, berm, and vegetation maintenance; water quality monitoring; and California red-legged frog habitat monitoring and management and predator monitoring and removal activities at Pond 14 at Lehigh's Permanente facility. The *Final Low-Effect Habitat Conservation Plan Permanente Site Operation and Maintenance* (HCP) (GEI Consultants, Inc. [GEI] 2022) describes the Applicant's activities that would be covered by the proposed ITP (Covered Activities) and identifies certain obligations that must be fulfilled by the Applicant.

The Service has determined that the proposed project is not likely to result in the harassment, harm, capture, injury, or mortality of the Federal candidate monarch butterfly (*Danaus plexippus*) because (1) the majority of the permit area is highly-disturbed on an existing active quarry site with few monarch butterfly milkweed (*Asclepias* species) larval host plants or adult nectar plants, (2) pre-construction surveys for milkweed larval host plants and adult nectar plants will be conducted by a qualified biologist prior to Covered Activities that include vegetation maintenance (*i.e.*, removal, trimming, or mowing), (3) all milkweed larval host plants will be flagged and avoided, and (4) any nectar plants removed during Covered Activities will be replaced onsite by planting appropriate native, insecticide-free flowering plants that are available to monarch butterflies from January-April.

This biological opinion is based on the following:

- 1) The May 2022 *Final Low-Effect Habitat Conservation Plan Permanente Site Operation and Maintenance* (GEI 2022); and
- 2) Other information available to the Service.

The remainder of this document represents the Service's biological opinion on the effects of implementing the proposed HCP and ITP on the California red-legged frog.

Consultation History

September 25, 2018:	The Service received notification via phone and electronic mail from GEI about a California red-legged frog that had to be rescued by a biological monitor during maintenance activities in a storm water capture/sedimentation basins (Pond 31B) on Lehigh property and relocated to occupied breeding habitat on Lehigh property in Pond 14.
May 6, 2019:	The Service met with Lehigh, GEI, and Downey Brand to discuss the process for developing an HCP to cover operation and maintenance activities on Lehigh property.
June 11, 2019:	The Service received from GEI the draft project description for the HCP.
June-September 2019:	The Service met with Lehigh, GEI, and Downey Brand to discuss the HCP.
February 19, 2021:	The Service received from GEI the first administrative draft of the HCP.
February-September 2021:	The Service met with Lehigh, GEI, and Downey Brand to discuss the HCP. The Service provided comments on subsequent drafts of the HCP.
October 13, 2021:	The Service received from GEI the final version of the draft HCP.
December 28, 2021:	The Notice of Availability of the draft HCP was published in the Federal Register for a 30-day public comment period.

- March 9, 2022: The Service sent via electronic mail to Lehigh, GEI, and Downey Brand the Service's draft responses to the public comments received on the draft HCP.
- March 22, 2022: The Service received from Lehigh, GEI, and Downey Brand comments on the Service's draft responses to the public comments received on the draft HCP. Downey Brand requested a copy of the Service's draft biological opinion for the HCP.
- March 23, 2022: The Service sent via electronic mail to Lehigh, GEI, and Downey Brand comments on Lehigh's, GEI's, Downey Brand's edits to the Service's draft responses to public comments on the draft HCP.
- March 24, 2022: The Service met with Lehigh, GEI, and Downey Brand to discuss the draft responses to the public comments received on the draft HCP.
- March 29, 2022: The Service received from Lehigh the revisions to the conservation measures and changed circumstances in the draft HCP.
- May 10, 2022: The Service received from Downey Brand the revised final HCP.

BIOLOGICAL OPINION

Description of the Proposed Action

The proposed project involves ongoing routine operation and maintenance of existing facilities within the 10.2-acre permit area (Figure 1) at Lehigh's Permanente Quarry, a cement and limestone/aggregate mining operation west of the City of Cupertino in Santa Clara County, California. Covered Activities are associated with ongoing operation and maintenance of existing Permanente facilities near Permanente Creek and associated habitat, which largely includes areas near the entrance of the facility, the Cement Plant, the Rock Pile Area, the area downstream of in-stream Pond 13 (Reach 12 of Permanente Creek), and lower elevation storm water capture basins (Figure 1). The Covered Activities are summarized below.

Storm Water Capture/Sedimentation Basin Operation and Maintenance

Storm water capture/sedimentation basins (also known as "ponds" onsite) provide storm water detention and sediment control for the Permanente site. These ponds are maintained according to the Stormwater Pollution Prevention Plan (SWPPP) and National Pollutant Discharge Elimination System (NPDES) permits applicable to the site. Storm water runoff collects in a series of swales and is conveyed to the sedimentation basins, before being released either to the Cement Plant Reclaimed System for treatment (e.g., Pond 30) or to Permanente Creek (e.g., Pond 13B).

Storm water capture/sedimentation basins are located throughout the site. Several basins are parallel to and immediately adjacent to Permanente Creek. Storm water capture/sedimentation basins range in size from 8,000 to 40,000 square feet (0.184 to 0.918 acre).



Figure 1. Permit area (copied from Figure 2 in GEI (2021)).

The storm water capture/sedimentation basins are monitored before and after every storm event during the wet season and monthly during the dry months, by visual observation and field investigation. Conditions are inspected to evaluate the need for sediment removal and best management practices (BMPs) under the SWPPP. The conditions and any need for maintenance are recorded, and the appropriate maintenance activities and BMPs are identified and implemented.

Sediment removal and other maintenance activities have only been conducted at Ponds 13B, 17, 30, 31A, and 31B. These activities are required approximately every 1–2 years, depending on location. Maintenance at each location is typically completed within 3–4 days by two to four workers. Equipment typically includes an excavator, dozer, pumps, vactor, and haul truck. Excavated material is stored in existing on-site material storage areas, in accordance with BMPs in the site SWPPP, for later use during site reclamation. Sediment removal and other maintenance activities also will be conducted at the Yeager Yard catchment basin, which was constructed in 2020. Sediment removal and other maintenance activities have not previously been conducted at Pond 4A but may be required during the permit term. Both of these basins are lined.

In addition to conducting ongoing sediment removal, Covered Activities may include permanent lining of ponds (initially considered for Pond 30). Pond lining activities are anticipated to require equipment such as an excavator, a trencher, vactors, haul trucks, pumps, and other specialized equipment, as needed. If initiated, pond lining is expected to be completed in approximately one month.

Erosion Control

Erosion control measures (*e.g.*, silt fence, berms, water bars, check dams, etc.) are monitored before and after every storm event during the wet season and monthly during the dry months, by visual observation and field investigation. Soil and slope conditions are inspected to identify significant new erosion, including rills and soil loss. The conditions and any need for maintenance are recorded, and the appropriate maintenance activities are identified and implemented.

Erosion control activities are typically required before the start of the wet season and on an as-needed basis, depending on rainfall. Erosion control at a given location is typically completed within 1–3 days, by two to four workers. Equipment typically includes an excavator, grader, dozer, and haul truck. If material removal is necessary, excavated material is stored in existing material storage areas for later use during site reclamation; if material import is necessary, it is typically obtained from local outlets.

Material Transport and Storage

Material used for aggregate production is stored in the area known as the “Rock Pile Area,” near Pond 13B. Although Permanente Creek is culverted immediately adjacent to the Rock Pile, the areas upstream and downstream of this location support open water creek habitat. The Rock Pile is accessed to store and/or transport material; thus, vehicle and equipment operation occurs in this area.

Vehicle Travel, Equipment Operation, Road and Berm Maintenance

Activities on the Permanente site generate traffic associated with customer haul trucks, equipment movement, delivery trucks carrying materials and supplies, employee cars and light trucks, and contractor vehicles. Customer haul trucks travel to and from the Cement Plant, Rock Plant, and Rock Pile areas, and other onsite traffic travels to and from various areas of the site. Vehicle travel is limited to the existing road network and other established access routes. One of the primary access routes is parallel to Permanente Creek. In addition to regular traffic, Lehigh conducts road, check dam, and berm maintenance along this route.

Vegetation Maintenance

Vegetation maintenance activities on the site include trimming of trees, removal of dead vegetation and, where necessary, hydroseeding. These activities occur on an as-needed basis at least once per year, consistent with the site's SWPPP and approved Reclamation Plan. These activities require chain saws and excavation for dead tree removal, if needed. In addition, vegetation trimming and cutting is required along existing roadways to maintain safe visibility conditions for vehicle and equipment travel. Typically, these activities require two to four workers and take 5–7 days, depending on the location.

Water Quality Monitoring Activities

A variety of water quality monitoring activities occur at the facility pursuant to the 2012 Reclamation Plan amendment issued by Santa Clara County and operational plans prepared pursuant to permits issued by the San Francisco Regional Water Quality Control Board, including NPDES Permit No. CA0030210, Order No. R2-2019-0024, and Waste Discharge Requirements Order No. R2-2018-0028 (*e.g.*, Spill Prevention Control Plan, Operations & Maintenance Plan, and SWPPP). This monitoring can include, but is not limited to, visual observations, borings/soil sampling, and sampling of seeps, storm water, storm water capture/sedimentation basins, and Pond 14.

Pond 14 Monitoring and Habitat Management Activities

Habitat conditions at Pond 14 will be monitored annually as part of the HCP to confirm the pond continues to provide suitable breeding habitat for the California red-legged frog (*e.g.*, absence or low numbers of bullfrogs and other invasive predators; suitable hydroperiod; fully functional culverts and weir; sufficient open water habitat with emergent vegetation cover between approximately 20 and 50 percent; sufficient warm, sunny shallow water habitat for tadpole rearing) and to serve as a suitable release site for individuals that require removal from maintenance areas. Monitoring will include surveys for predators such as bullfrog, nonnative fish, and crayfish. If such nonnative predatory species are encountered, efforts will be implemented to remove as many individuals as practicable from the pond, via methods that are safe for the California red-legged frog. Breeding habitat conditions also will be monitored by a qualified California red-legged frog biologist, and obvious changes in the extent of emergent vegetation cover and/or reduction in open water will be noted. If habitat conditions degrade to the extent that suitability of Pond 14 as California red-legged frog breeding habitat becomes threatened, potential remedial measures will be evaluated and implemented, as part of the adaptive management process. Potential adaptive management actions at Pond 14 will be evaluated and appropriate measures identified and implemented, if necessary, based on the best available science. Potential adaptive management actions may include vegetation

management/restoration if emergent cover increases or decreases enough to substantially diminish breeding habitat quality, sediment removal or culvert repair if the pond becomes too shallow or flow to the pond becomes sufficiently impeded, and weir/gate repairs if adequate water is not being impounded. If a natural disaster destroys habitat for the California red-legged frog at Pond 14, Lehigh will consult with the Service to determine if the habitat can be feasibly restored, or alternative measures can be included as part of the Covered Activities.

Conservation Measures

The following BMPs and species-specific measures will be implemented to avoid and minimize effects on the California red-legged frog and its habitat to the maximum extent practicable. A bond covering these costs will be provided to the Service as a financial assurance mechanism for these components of the HCP conservation strategy.

1. Movement and parking of vehicles and equipment used for Covered Activities will be confined to existing roads, developed areas, and other previously disturbed areas. Vehicles and equipment will be subject to a speed limit of 20 miles per hour.
2. Erosion control, pollution prevention, and dust control measures will be implemented to minimize impacts from Covered Activities. These measures will include, at a minimum:
 - a. Existing erosion control measures in the permit area will be implemented with materials that do not entangle or block escape or dispersal routes of the California red-legged frog.
 - b. Vehicles and equipment used for Covered Activities will be regularly maintained to prevent leaks of fuels, lubricants, or other fluids, and fueling and maintenance will be conducted at least 100 feet from aquatic habitat, except at established vehicle fueling and maintenance facilities. Precautions will be taken to prevent discharge of pollutants from vehicle or equipment cleaning into any storm drains or aquatic habitat, and all existing Spill Prevention Control Plan and SWPPP requirements will be implemented. Spill containment kits will be maintained onsite at all times during Covered Activities, and personnel will be trained in their appropriate use.
 - c. Dust control measures will be implemented, if necessary, to control dust associated with permitted activities. Such measures will be implemented in accordance with the existing dust control plan.
 - d. Insecticide, rodenticide, and herbicide use will be prohibited where there is potential for these agents to enter suitable aquatic or upland habitat for the California red-legged frog.
3. Any material generated by Covered Activities that may be temporarily stored, or ultimately permanently placed, will be done so in accordance with protocols established by, or in accordance with, the facility Waste Discharge Requirements, San Francisco Regional Water Quality Control Board Order No. R2-2018-0028, or other General/Individual Order issued by the Regional Water Quality Control Board to govern the use of suitable soils, within previously disturbed areas that do not provide suitable habitat for the California red-legged frog and are a minimum of 150 feet from suitable

aquatic habitat for the species. Material generated by the Covered Activities will be evaluated in accordance with such protocols; if on-site storage or use is not determined to be appropriate, Lehigh will transport the material to a permitted disposal site.

4. Sediment removal and other Covered Activities in storm water capture/sedimentation basins that provide suitable aquatic habitat for the California red-legged frog will only occur when the basins are dry. Covered Activities in suitable breeding habitat for California red-legged frog (e.g., Pond 14) will be conducted between September 1 and October 31, with the exception of monitoring requirements required by a regulatory agency or applicable permits, to avoid potential impacts on California red-legged frog breeding activity, egg masses, and tadpoles.
5. To the maximum extent practicable, ground-disturbing Covered Activities in suitable upland habitat for the California red-legged frog will not occur between November 1 and March 31, and Covered Activities will not occur during rain events or within 24 hours following a rain event.
6. To the maximum extent practicable, ground-disturbing Covered Activities in suitable upland habitat for the California red-legged frog and all Covered Activities in suitable aquatic habitat for the species will be limited to the period from 30 minutes after sunrise to 30 minutes before sunset. Except when necessary for driver or pedestrian safety, artificial lighting will be prohibited during the hours of darkness.
7. Service-approved biologists and monitors adequately trained by a Service-approved biologist will be identified to implement California red-legged frog avoidance and minimization measures described below. Qualifications of the biologists and monitors will be submitted to the Service for review and written approval at least 14 calendar days before a biologist or monitor conducts activities under the HCP for the first time. Service-approved biologists and monitors will keep a copy of these measures in their possession when onsite.
8. No more than 24 hours before Covered Activities that require work in suitable aquatic habitat or ground disturbance in suitable upland habitat for the California red-legged frog (as identified in the HCP) begin, a preconstruction survey for the California red-legged frog will be conducted by a Service-approved biologist or monitor in the area where such activities will occur. The survey will consist of walking areas that will be subject to ground disturbance and adjacent to aquatic habitat that will be disturbed to investigate possible presence of the species. The Service-approved biologist or monitor will investigate all potential areas that could be used by the California red-legged frog for feeding, breeding, sheltering, movement, and other essential behaviors before work in aquatic habitat or ground-disturbing activities begin.
9. A Service-approved biologist or monitor will be present onsite during Covered Activities that require work in suitable aquatic habitat or ground disturbance in suitable upland habitat for the California red-legged frog, as identified in the HCP.
10. Service-approved biologists and monitors will have the authority to freely communicate at any time with personnel conducting Covered Activities, any other persons otherwise associated with Covered Activities, and the Service. Service-approved biologists and monitors will have oversight for implementing conservation measures in the HCP, and,

through Lehigh, will have the authority and responsibility to stop Covered Activities if any of the requirements are not being fulfilled.

11. A Service-approved biologist or monitor will provide training for personnel conducting Covered Activities in suitable aquatic habitat or ground-disturbing Covered Activities in suitable upland habitat for the California red-legged frog. The training presentation will describe California red-legged-frog identification and ecology, including habitat identification; applicable avoidance and minimization measures; legal protection of the species; and other relevant issues. All attendees will provide their signature, printed name, company, and email address or telephone number. The sign-in sheet will be included in an annual report to the Service. Training will be conducted annually to ensure all new employees are appropriately trained.
12. If a maintenance area is to be temporarily dewatered by pumping, intakes will be completely screened with wire mesh no larger than 5 millimeters to prevent California red-legged frogs from entering the pump system. Water will be released or pumped downstream at an appropriate rate to maintain downstream flows during Covered Activities. Upon completion of Covered Activities, any barriers to flow will be removed in a manner that allows flow to resume with the least disturbance to the substrate.
13. If Covered Activities require excavation of trenches or pits 1 foot deep or deeper that will be left unfilled for more than 48 hours, such trenches and pits will be securely covered with boards or other material. If this is not possible, wooden ramps or other structures of suitable surface that provide adequate footing for the California red-legged frog will be placed in the trench or pit to allow frogs to escape. Auger holes or fence post holes greater than 1.0 inch in diameter will be immediately filled or securely covered. A Service-approved biologist or monitor will inspect relevant trenches, pits, or holes before they are filled to ensure there are no California red-legged frogs in them. The trench, pit, or hole also will be examined by a Service-approved biologist or monitor at least 1 hour before beginning work and no more than 1 hour after work has ceased each day to determine if individuals have become trapped. If the escape ramps fail to allow the animal to escape, a Service-approved biologist will capture and relocate the individual(s) in accordance with the following measure.
14. If a California red-legged frog is encountered before or during Covered Activities: (1) the animal will not be disturbed if it is not in danger; or (2) the animal will be moved to a secure location if it is in any danger, in accordance with the following procedures:
 - a. When a California red-legged frog is encountered, all activities that have potential to result in disturbance, injury, or death of the individual will be immediately halted. A Service-approved biologist will then assess the situation in order to select a course of action that will avoid or minimize adverse effects to the animal. To the maximum extent possible, contact with the frog will be avoided, and it will be allowed to move out of the potentially hazardous situation to a safe area of suitable habitat on its own volition.
 - b. California red-legged frog adults, subadults, or juveniles that are in danger will be captured and released by a Service-approved biologist at Pond 14. If tadpoles or egg masses are found, activities will be delayed until egg masses and/or young have developed to at least the juvenile stage and can be more effectively and

safely relocated, if necessary. Only a Service-approved biologist will engage in capture, release, and relocation activities to ensure appropriate precautions are taken for California red-legged frog safety.

- c. The Service-approved biologist will limit the duration of the handling and captivity of the California red-legged frog to the minimum amount of time necessary to complete relocation. If an individual must be held in captivity, it will be kept in a cool, dark, moist, aerated environment, such as a clean and disinfected bucket or plastic container with a damp sponge. The container used for holding or transporting the individual will not contain any standing water.
 - d. California red-legged frog observations and capture and relocation details will be recorded and included in an annual report to the Service.
 - e. If a dead or injured California red-legged frog is found during Covered Activities, the Service-approved biologist will be notified immediately. If an injured California red-legged frog is found, the Service will be contacted immediately for guidance. If a dead California red-legged frog is found, it will be photographed and its location recorded, and the biologist will contact the Service to determine if the specimen must be transferred to the Service or another party for further evaluation and data development purposes.
15. Service-approved biologists and monitors will permanently remove any aquatic exotic wildlife species, such as bullfrogs, crayfish, and predatory fish from the permit area, including Pond 14, to the maximum extent practicable. To the maximum extent practicable, removal of such predators from California red-legged frog breeding habitat will occur outside the California red-legged frog breeding season.
16. Introduction and spread of amphibian diseases will be minimized by implementing the decontamination procedures in the “Declining Amphibian Populations Task Force Fieldwork Code of Practice” (<https://www.fws.gov/media/declining-amphibian-task-force-fieldwork-code-practice>).
17. Habitat conditions at Pond 14 will be monitored annually as part of the HCP to confirm the pond continues to provide suitable breeding habitat for the California red-legged frog (e.g., absence or low numbers of bullfrogs and other invasive predators; suitable hydroperiod; fully functional culverts and weir; sufficient open water habitat with emergent vegetation cover between approximately 20 and 50 percent; sufficient warm, sunny shallow water habitat for tadpole rearing) and to serve as a suitable release site for individuals that require removal from maintenance areas. An annual monitoring survey of the pond will be conducted to assess presence of invasive bullfrogs, predatory fish, and crayfish. Attempt will be made to remove as many predatory individuals as is practicable, based on site conditions. If current habitat conditions deteriorate to an extent that may threaten continued suitability of Pond 14 as breeding habitat for the California red-legged frog, appropriate habitat management activities will be conducted (e.g., excessive emergent vegetation and sediment removal, weir repairs, etc.).
18. If predator removal or habitat management activities (e.g., vegetation or sediment removal) are required at Pond 14, such activities will be conducted between September 1 and October 31 to minimize potential for impacts on California red-legged frog breeding

activity, egg masses, and tadpoles. All applicable avoidance and minimization measures described above also will be implemented at Pond 14 during predator removal and/or habitat management activities.

19. Lehigh will compensate for permanent loss and repeated temporary impacts to 2.2 acres of suitable aquatic and upland habitat for the California red-legged frog from ongoing routine operation and maintenance activities of existing facilities at a 3:1 ratio by purchasing 6.6 acres of California red-legged frog habitat credits at the Ohlone West Conservation Bank in Alameda County. Proof of the credit purchase will be provided to the Service after the ITP has been issued. Compensatory mitigation is not required for impacts at Pond 14 because monitoring and potential habitat management would be implemented for the sole purpose of maintaining the pond as California red-legged frog breeding habitat.
20. Pre-construction surveys for monarch butterfly milkweed host plants and adult nectar plants will be conducted by a qualified biologist prior to Covered Activities that include vegetation maintenance (i.e., removal, trimming, or mowing). All milkweed (*Asclepias* species) plants within vegetation maintenance areas will be flagged and avoided. Monarch butterfly nectar plants (Xerces Society 2019) removed during Covered Activities will be replaced by planting appropriate native, flowering plants that are available to monarchs from January-April, as appropriate for the project location at a suitable location on the Permanente property. Lehigh will make all practicable efforts to acquire and plant insecticide-free flowering plants at a 1:1 replacement ratio within 1 year of removal. If insecticide-free plants are not available for acquisition in the first year following removal, Lehigh will acquire and install insecticide-free flowering plants within 2 years of removal at a 2:1 ratio. Lehigh also may plant appropriate insecticide-free flowering plants on the Permanente property in advance of removal to ensure that no net loss of monarch nectar plants would result from the Covered Activities.
21. Pre-construction surveys for active migratory bird nests will be conducted, if Covered Activities occur during the nesting season. If preconstruction surveys determine that active nests are located close enough to work areas where Covered Activities are taking place to be disturbed by the Covered Activities, protective buffers will be established and implemented during Covered Activities until the nests are no longer active. A qualified biologist will determine the appropriate buffer for each nest; the buffer will depend on the type and intensity of Covered Activities, presence of visual buffers, and other variables that could affect susceptibility of the nest to disturbance. Behavior of the nesting birds will be monitored during Covered Activities to ensure the buffers are effective and to adjust buffers, as warranted. The buffers will be maintained until young have fledged or the nest is otherwise no longer active.
22. Water quality related monitoring of selenium in discharge and receiving waters will be carried out consistent with permits issued by the San Francisco Bay Regional Water Quality Control Board.
23. As described in the HCP, the permit area may experience discharges of selenium in excess of San Francisco Regional Water Quality Control Board issued NPDES Permit limits as a result of selenium control infrastructure failure. Where such infrastructure failure results in a discharge of selenium in excess of NPDES Permit limits resulting in an adverse effect on the California red-legged frog, the Service may consider this to be a

changed circumstance. The applicant has committed to implement additional BMPs identified by the Service and agreed to by the Applicant as part of the conservation strategy to avoid the likelihood of jeopardy to or take of the species.

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 project, the action area encompasses the 10.2-acre permit area (Figure 1) where Covered Activities would occur that could result in adverse effects to the California red-legged frog. The action area includes Pond 14 (also within the permit area) where California red-legged frogs found within the permit area and in imminent danger would be released, and breeding habitat would be monitored and restored, if necessary, for the benefit of the California red-legged frog. The action area also encompasses the 6.6 acres of habitat at the Ohlone West Conservation Bank in Alameda County that would be preserved and managed for the benefit of the California red-legged frog.

Analytical Framework for the Jeopardy Determination

Section 7(a)(2) of the Act requires that federal agencies ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of listed species. “Jeopardize the continued existence of” means to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species (50 CFR § 402.02).

The jeopardy analysis in this biological opinion considers the effects of the proposed federal action, and any cumulative effects, on the rangewide survival and recovery of the listed species. It relies on four components: (1) the *Status of the Species*, which describes the current rangewide condition of the species, the factors responsible for that condition, and its survival and recovery needs; (2) the *Environmental Baseline*, which analyzes the current condition of the species in the action area without the consequences to the listed species caused by the proposed action, the factors responsible for that condition, and the relationship of the action area to the survival and recovery of the species; (3) the *Effects of the Action*, which determines all consequences to listed species that are caused by the proposed federal action; and (4) the *Cumulative Effects*, which evaluates the effects of future, non-federal activities in the action area on the species. The *Effects of the Action* and *Cumulative Effects* are added to the *Environmental Baseline* and in light of the status of the species, the Service formulates its opinion as to whether the proposed action is likely to jeopardize the continued existence of the listed species.

Status of the Species

California Red-legged Frog

Listing Status: The California red-legged frog was listed as a threatened species on May 23, 1996 (Service 1996). Critical habitat was designated for this species on April 13, 2006 (Service 2006), with revisions to the critical habitat designation published on March 17, 2010 (Service 2010). At that time, the Service recognized the taxonomic change from *Rana aurora draytonii* to *Rana draytonii* (Shaffer et al. 2010). The Service’s *Recovery Plan for the California red-legged frog*

(*Rana aurora draytonii*) (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); dorsolateral folds are prominent on the back. The California red-legged frog is sexually dimorphic; the females are larger than the males (Dodd 2013a, b). California red-legged frog tadpoles range from 0.6 inch to 3.1 inches in length and the background color of the body is dark brown and yellow with darker spots (Storer 1925).

Current Status and Distribution: The historical range of the California red-legged frog extended from central Mendocino County and western Tehama County south in the California Coast Range to northern Baja California, Mexico, and in the Sierra Nevada/Cascade Ranges from Shasta County south to Madera County (Jennings and Hayes 1994). The species historically occurred from sea level to elevations of about 5,200 feet in 46 counties; however, currently the taxon is extant in 238 streams or drainages within only 22 counties, representing a loss of 70 percent of its former range (Service 2002). Isolated populations persist in several Sierra Nevada foothill locales and in Riverside County (Barry and Fellers 2013; Backlin et al. 2017; California Department of Fish and Wildlife (CDFW) 2021; Gordon, R. and J. Bennett, pers. comm., 2017). The species is no longer considered extant in California's Central Valley due to significant declines caused by habitat modifications and exotic species (Fisher and Shaffer 1996). Currently, the California red-legged frog is widespread in the San Francisco Bay nine-county area (CDFW 2021). They are still locally abundant within the California coastal counties from Mendocino County to Los Angeles County and presumed extirpated in Orange and San Diego counties (CDFW 2021; Yang, D. and J. Martin, pers. comm., 2017; Gordon, R. and J. Bennett, pers. comm., 2017). Baja California represents the southernmost edge of the species' current range (Peralta-García et al. 2016).

Barry and Fellers (2013) conducted a comprehensive study to determine the current range of the California red-legged frog in the Sierra Nevada, concluding that it differs little from its historical range; however, the current Sierra Nevada populations appear to be small and tend to fluctuate. Since 1991, eleven California red-legged frog populations have been discovered or confirmed, including eight probable breeding populations (Barry and Fellers 2013; Mabe, J., pers. comm., 2017). Microsatellite and mitochondrial DNA analysis by Richmond et al. (2014) confirmed the Sierra Nevada populations of the California red-legged frog are genetically distinct from each other, as well as from other populations throughout the range of this species. The research concluded that the Sierra Nevada populations are persisting at low levels of genetic diversity and no contemporary gene flow across populations exist. On a larger geographic scale, range contraction has left a substantial gap between Sierra Nevada and Coast Range populations, similar to the gap separating the Southern California and Baja California populations (Richmond et al. 2014).

Habitat and Life History:

Habitat

The California red-legged frog generally breeds in still or slow-moving water associated with emergent vegetation, such as cattails, tules (hardstem bulrush), or overhanging willows (Storer 1925; Fellers 2005). Aquatic breeding habitat predominantly includes permanent water sources such as streams, marshes, and natural and manmade ponds in valley bottoms and foothills (Jennings and Hayes 1994; Bulger et al. 2003; Stebbins 2003). Since the 1850's, manmade ponds may actually supplement stream pool breeding habitat and can be capable of supporting large populations of this species. Breeding sites may hold water only seasonally, but sufficient water must persist at the beginning of the breeding season and into late summer or early fall for tadpoles to successfully complete metamorphosis. Breeding habitat does not include deep lacustrine water habitat (e.g., deep lakes and reservoirs 50 acres or larger in size) (Service 2010). Within the coastal lagoon habitats, salinity is a significant factor on embryonic mortality or abnormalities (Jennings and Hayes 1990). Jennings and Hayes (1990) conducted laboratory studies and field observations concluding salinity levels above 4.5 parts per thousand detrimentally affected the California red-legged frog embryos. Aquatic breeding habitat does not need to be available every year, but it must be available at least once within the frog's lifespan for breeding to occur (Service 2010).

Non-breeding aquatic habitat consists of shallow (non-lacustrine) freshwater features not suitable as breeding habitat, such as seasonal streams, small seeps, springs, and ponds that dry too quickly to support breeding. Non-breeding aquatic and riparian habitat is essential for providing the space, food, and cover necessary to sustain the California red-legged frog. Riparian habitat consists of vegetation growing nearby, but not typically in, a body of water on which it depends, and usually extends from the bank of a pond or stream to the margins of the associated floodplain (Service 2010). Adult California red-legged frogs may avoid coastal habitat with salinity levels greater than 6.5 parts per thousand (Jennings and Hayes 1990).

Cover and refugia are important habitat characteristic preferences for the species (Halstead and Kleeman 2017). Refugia may include vegetation, organic debris, animal burrows, boulders, rocks, logjams, industrial debris, or any other object that provides cover. Agricultural features such as watering troughs, spring boxes, abandoned sheds, or haystacks may also be utilized by the species. Incised stream channels with portions narrower and depths greater than 18 inches may also provide important summer sheltering habitat. During periods of high water flow, California red-legged frogs are rarely observed; individuals may seek refuge from high flows in pockets or small mammal burrows beneath banks stabilized by shrubby riparian growth (Jennings and Hayes 1994). Accessibility to cover 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.

Breeding

In the Coast Range and at lower elevations, the California red-legged frog typically breeds between November and April (Storer 1925; Jennings and Hayes 1994; Fellers 2005). However, breeding phenology varies by location and across years, largely based on differences in climatic conditions (McHarry et al. 2019). At sites that routinely experience winter temperatures below freezing, the beginning of breeding is generally corresponded with the onset of spring's warmer air temperatures, such as in the Sierra Nevada where breeding typically occurs in late February

and March (McHarry et al. 2019). Dependent on weather conditions, breeding in the Sierra Nevada can occur into late April (Barry 2002).

Females deposit their egg masses on emergent vegetation, floating on or near the surface of the water. The California red-legged frog is often a prolific breeder, laying eggs during or shortly after large rainfall events. Egg masses containing 300-4,000 eggs hatch after six to fourteen days (Storer 1925; Jennings and Hayes 1994; Fellers 2005). Historically, the California red-legged frog in the Sierra Nevada likely bred within stream pools, which tend to be small with limited forage, constraining the size and number of populations (Barry and Fellers 2013).

California red-legged frog tadpoles undergo metamorphosis three to seven months following hatching. Most males reach sexual maturity in two years, while it takes approximately three years for females (Jennings and Hayes 1985; Fellers 2005). Under favorable conditions, California red-legged frogs may live eight to ten years (Jennings et al. 1992). Of the various life stages, tadpoles likely experience the highest mortality rates; only one percent of each egg mass completes metamorphosis (Jennings et al. 1992).

Diet

The California red-legged frog has a variable diet that changes with each of its life history stages. The feeding habits of the early stages are likely similar to other ranids, whose tadpoles feed on algae, diatoms, and detritus by grazing on the surface of rocks and vegetation (Fellers 2005). Hayes and Tennant (1985) found invertebrates to be the most common food items of adult California red-legged frogs collected in southern California; however, they speculated that this was opportunistic and varied based on prey availability. Vertebrates, such as Pacific tree frogs (*Pseudacris regilla*) and California mice (*Peromyscus californicus*), represented over half of the prey mass eaten by larger frogs, although invertebrates were the most numerous food items. Feeding typically occurs along the shoreline and on the surface of the water; juveniles appear to forage during both daytime and nighttime, whereas adults appear to feed at night (Hayes and Tennant 1985).

Movement

California red-legged frogs do not have a distinct breeding migration (Fellers 2005), rather they may move seasonally from non-breeding pools or refugia to breeding pools. Some individuals remain at breeding sites year-round while others disperse to neighboring water features or moist upland sites when breeding is complete and/or when breeding pools dry (Service 2002; Bulger et al. 2003; Fellers and Kleeman 2007; Tatarian and Tatarian 2008; Tatarian 2008). Studies in the several San Francisco Bay counties showed movements are typically along riparian corridors (Fellers and Kleeman 2007; Tatarian 2008). Although, some individuals, especially on rainy nights and in more mesic areas, travel without apparent regard to topography, vegetation type, or riparian corridors, and can move directly from one site to another through normally inhospitable habitats such as heavily grazed pastures or oak-grassland savannas (Bulger et al. 2003).

California red-legged frogs show high site fidelity (Tatarian and Tatarian 2008) and typically do not move significant distances from breeding sites (Bulger et al. 2003; Fellers and Kleeman 2007; Tatarian and Tatarian 2008; Tatarian 2008). When traveling between aquatic sites, California red-legged frogs typically travel less than 0.31 mile (Fellers and Kleeman 2007; Tatarian and Tatarian 2008), although they have been documented to move more than two miles in Santa Cruz County (Bulger et al. 2003). Various studies have found that the frogs typically do

not make terrestrial forays further than 200 feet from aquatic habitat (Bulger et al. 2003; Fellers and Kleeman 2007; Tatarian and Tatarian 2008; Tatarian 2008). Upland movements are typically associated with precipitation events and usually last for one to four days (Tatarian 2008).

Threats: Factors associated with declining populations of the California red-legged frog throughout its range include degradation and loss of habitat through agriculture, urbanization, mining, overgrazing, recreation, timber harvesting, non-native species, impoundments, water diversions, erosion and siltation altering upland and aquatic habitat, degraded water quality, use of pesticides, and introduced predators (Service 2002, 2010). Urbanization often leaves isolated habitat fragments and creates barriers to frog dispersal.

Non-native species pose a major threat to the recovery of California red-legged frogs. Several researchers 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 Shaffer 1996). The decline of the California red-legged frog due to these non-native species has been attributed to predation, competition, and reproduction interference (Twedt 1993; Bury and Whelan 1984; Storer 1933; Emlen 1977; Kruse and Francis 1977; Jennings and Hays 1990; Jennings 1993).

Chytridiomycosis, an infectious disease caused by the chytrid fungus, *Batrachochytrium dendrobatidis* (*Bd*), has been found to adversely affect amphibians globally (Davidson et al. 2003; Lips et al. 2006). While *Bd* prevalence in wild amphibian populations in California is unknown (Fellers et al. 2011), chytrid is expected to be widespread throughout much of the California red-legged frog's range. The chytrid fungus has been documented within the California red-legged frog populations at Point Reyes National Seashore, two properties in Santa Clara County, Yosemite National Park, Hughes Pond, Sailor Flat, Big Gun Diggings, and Spivey Pond (Padgett-Flohr and Hopkins 2010; Tatarian and Tatarian 2010; Fellers et al. 2011; Barry and Fellers 2013). However, no chytrid-related mortality has been reported in these populations, suggesting that California red-legged frogs are less vulnerable to the pathogenic effects of chytrid infection than other amphibian species (Tatarian and Tatarian 2010; Barry and Fellers 2013; Fellers et al. 2017). While chytrid infection may not directly lead to mortality in California red-legged frogs, Padgett-Flohr (2008) states that this infection may reduce overall fitness and could lead to long-term effects. Therefore, it is difficult to estimate the full extent and risk of chytridiomycosis to the California red-legged frog populations.

Recovery Plan: The Recovery Plan identifies eight recovery units (Service 2002). The goal of the Recovery Plan is to protect the long-term viability of all extant populations within each recovery unit. Within each recovery unit, delineated core areas, designed to protect metapopulations, represent contiguous areas of moderate to high California red-legged frog densities. The management strategy identified within this Recovery Plan will allow for the recolonization of habitats within and adjacent to core areas naturally subjected to periodic localized extinctions, thus assuring the long-term survival and recovery of California red-legged frogs.

Environmental Baseline

Environmental baseline refers to the condition of the listed species or its designated critical habitat in the action area, without the consequences to the listed species or designated critical habitat caused by the proposed action. The environmental baseline includes the past and present

impacts of all Federal, State, or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action area that have already undergone formal or early section 7 consultation, and the impact of State or private actions which are contemporaneous with the consultation in process. The consequences to listed species or designated critical habitat from ongoing agency activities or existing agency facilities that are not within the agency's discretion to modify are part of the environmental baseline.

Land Uses Surrounding the Action Area

The 10.2-acre permit area is located at the 636.8-acre Lehigh Permanente Quarry on Lehigh's 3,510-acre Permanente property adjacent to Permanente Creek on the eastern slope of the Santa Cruz Mountains (Figure 1). The Lehigh Permanente Quarry currently comprises approximately 614 acres of existing and planned operational areas, which consist of surface mining excavations, overburden stockpiling, crushing and processing facilities, access roads, administrative offices and equipment storage (WRA 2019). This includes approximately 19.5 acres of exploratory drilling roads and drill pads south of Permanente Creek (WRA 2019). An additional 49.2 acres of predominantly historic mining disturbance is located adjacent to Permanente Creek in an area known as the Permanente Creek Reclamation Area (WRA 2019). The Lehigh Permanente Quarry also includes other predominantly undisturbed areas, either held in reserve for future mining or which buffer operations from adjacent land uses (WRA 2019).

A total of 1,238.6 acres of the 3,510-acre Lehigh Permanente property are managed by Lehigh under the 2012 Reclamation Plan Amendment which consists of approximately 639.3 acres of existing or planned surface mining operation-related disturbance and approximately 599.3 acres of open space areas where no mining operations have occurred or would occur (Santa Clara County 2012). The primary areas to be reclaimed are the Quarry pit, two overburden disposal areas referred to as the West Materials Storage Area and the East Materials Storage Area, the crusher/Quarry office area, surge pile (also referred to as the Rock Pile herein), Rock Plant, approximately 284 acres located south of Permanente Creek that have been disturbed by prior exploratory activities, and approximately 25.9 acres adjacent to Permanente Creek (Permanente Creek Restoration Area) (Santa Clara County 2012).¹ The 2012 Reclamation Plan Amendment is designed to make the reclaimed lands suitable for future open space uses (Santa Clara County 2012).

The 2012 Reclamation Plan Amendment includes measures to minimize effects on the California red-legged frog during grading and construction activities conducted within the Permanente Creek Restoration Area subareas 4 through 7, including: (1) restricting grading activities to the dry season unless exclusion fencing is first utilized; (2) pre-construction surveys for California red-legged frogs prior to construction activities and relocating any California red-legged frogs from the work area by a Service-permitted biologist to nearby suitable aquatic habitat if frogs are observed in the construction area or access areas; and (3) avoiding restoration activities at night, within 30 minutes after dawn, within 30 minutes before dusk, and during rain events when California red-legged frogs are most actively foraging (Santa Clara County 2012).

The headwaters of Permanente Creek are located approximately 2 miles west of the action area. Approximately 4.2 miles of Permanente Creek traverse Lehigh's Permanente property, including

¹ The 2012 Reclamation Plan Amendment Environmental Impact Report ("EIR") does not consistently report the size of the Permanente Creek Restoration Area; for purposes of this document, we utilize the value set forth in the Final EIR (§ 1.2, p. 1-2).

portions of the creek that have been re-aligned into a straight channel or placed in underground culverts. Most portions of the action area are along Permanente Creek, which generally slopes gradually from west to east. Several components of the action area are located within the active mining and material storage areas north of and upslope from the creek. Elevations in the action area range from approximately 950 feet above mean sea level upslope of Permanente Creek at the upstream end to approximately 450 feet at the downstream end.

Much of the larger region surrounding Lehigh's Permanente property is undeveloped and includes natural areas such as the Midpeninsula Regional Open Space District's Rancho San Antonio Open Space to the north and Rancho San Antonio County Park to the northeast. Areas downstream of the permit area are highly urbanized. The Stevens Creek Quarry is located 0.3 mile to the south of the action area. Permanente Creek drains to the east, through the cities of Los Altos and Mountain View, before discharging to the San Francisco Bay at Shoreline Park. The downstream hydrology of the Permanente Creek watershed has been substantially altered for flood protection purposes.

The primary land use surrounding the action area is mining, and activities incidental thereto, associated with the developed quarry facility. This land use applies to all of the Permanente property. Activities incidental to mining, such as stormwater management, vegetation control, and materials storage, completely surround several of the permit area components and occur immediately adjacent to at least one side of the remaining components. Portions of the permit area that are along Permanente Creek are bordered by relatively undisturbed forest, woodland, and scrub habitats south of the quarry and creek. The habitats within the action area are described below.

Habitats within the Action Area

Active quarry (7.59 acres) is the dominant land cover in the action area. Areas identified as active quarry are currently disturbed (e.g., roadways and facility areas) or have in the past been disturbed by quarry activities or access roads. Generally, plant cover in these areas is absent or very sparse due to the lack of topsoil, but some locations support limited cover of weedy plants, such as yellow star thistle, slender wild oat, sweet fennel, and field mustard.

Storm water capture/sedimentation basins (0.77 acre) in the action area are basins that were excavated in uplands, receive storm water runoff from areas of quarry operation, are used to settle out suspended solids from runoff, and are actively managed as part of ongoing quarry operations. Storm water capture/sedimentation basins are referred to as "ponds" in the HCP. Seven storm water capture/sedimentation basins are present in the action area (Ponds 4A, 13B, 17, 30, 31A, and 31B and Yeager Yard catchment basin) (Figure 1).

Freshwater marsh (0.13 acre) and open water (0.08 acre) habitat occur within the action area at Pond 14 at the downstream end of the permit area (Figure 1). Pond 14 is not maintained as a storm water capture/sedimentation basin. This pond includes an area of open water surrounded by emergent freshwater marsh vegetation dominated by narrow-leaved cattail. During the April 2021 survey, the open water was approximately 3-5 feet deep, and emergent vegetation accounted for an estimated 45 percent of the total pond area.

Ruderal herbaceous grassland (0.81 acre) includes previously disturbed and/or reclaimed areas that have been inactive long enough to recruit a plant community dominated by herbaceous weeds and nonnative grasses. Within the action area, these grasslands occur adjacent to some

roadways and ponds. Species typical of this community on the Permanente property include Italian thistle, field mustard, lupine, Mediterranean barley, yellow star thistle, and slender wild oat.

Northern mixed chaparral (0.42 acre) forms dense, often impenetrable stands dominated by chamise, scrub oak, various manzanitas, and various species of ceanothus. Within the action area, this community is limited to two patches on the disturbed hillside above Pond 13B.

Willow riparian forest and scrub (0.26 acre) is dominated by various willow species, typically arroyo willow, red willow, and black willow. Associated understory species include stinging nettle, poison oak, and California blackberry. Willow riparian occurs adjacent to Pond 14 and in an isolated patch in the eastern portion of the action area that is surrounded by roadways and active quarry.

White alder riparian forest (0.10 acre) is the primary forest type along the portion of Permanente Creek in and adjacent to the action area. It is dominated by white alder, with abundant willow, poison oak, California wild rose, and snowberry in the understory.

Oak woodlands and forests (0.05 acre) in the action area are dominated by coast live oak and California bay. Secondary tree species include occasional big leaf maple and Pacific madrone, and shrubs such as poison oak, California blackberry, and creeping snowberry. One small area of oak woodland/forest occurs in the action area adjacent to Pond 17.

Mixed scrub (<0.01 acre) within and near the action area is characterized by dense to moderately open stands dominated by coyote brush, California sagebrush, and California buckwheat, with little to no understory vegetation. Within the action area, mixed scrub is limited to a very small area near Pond 17.

Contaminants in Permanente Creek and Pond 14

Historically, selenium present in the limestone mined and used for cement manufacture at the Lehigh Permanente Quarry contributed to high selenium levels in discharges to Permanente Creek (Robertson-Bryan, Inc. 2019). In 2006, Permanente Creek was added to the State's 303(d) list as impaired by selenium because water column concentrations in the creek were above the National Toxics Rule chronic criterion of 5 micrograms per liter (5 parts per billion [ppb], or 0.005 parts per million [ppm]) (expressed as total recoverable selenium) (Robertson-Bryan, Inc. 2019). The discharge of elevated levels of selenium and other metals into the creek can be toxic to aquatic species and the species that prey on them including frogs (Ohlendorf et al. 1988, NRC 1976, Olson 1986, Hopkins et al. 2006, Bergeron et al. 2010, Browne and Dumont 1979). Selenium bioaccumulates in carnivorous species like adult frogs (Ohlendorf et al. 1988). Dietary concentrations of selenium above 5 ppm (3 orders of magnitude higher than the level Lehigh is authorized to discharge into Permanente Creek) are considered toxic to animals, particularly when effects on reproduction are considered (Ohlendorf et al. 1988, NRC 1976, Olson 1986). Selenium in the form of sodium selenite was found to be acutely toxic to African clawed frog (*Xenopus laevis*) tadpoles continuously exposed to concentrations of 1 ppm in water and led to severe developmental abnormalities and increased mortality at concentrations above 2 ppm (Browne and Dumont 1979).

The San Francisco Bay Regional Water Quality Board issued a Cease and Desist Order (CDO No. R2-2014-0011) to Lehigh in 2014, requiring the construction of treatment facilities to

remove selenium because the discharge could not comply with effluent limitations for selenium in the 2014 NPDES permit (Order No. R2-2014-0010) (Robertson-Bryan, Inc. 2019). Lehigh conducted a selenium impact assessment in 2014 and 2015 including monitoring surface water samples in Permanente Creek for total selenium, dissolved selenium, and selenium speciation, as well as total selenium in sediment. Surface water selenium concentrations were generally highest near the Lehigh Permanente Quarry, ranging approximately 10–50 micrograms per liter (0.01–0.05 ppm) (prior to the water treatment facilities being online) (Robertson-Bryan, Inc. 2019). Similarly, selenium concentrations in sediment were also highest on Lehigh Permanente Quarry property, ranging approximately 2–20 milligrams per kilogram (2–20 ppm) in Ponds 13 and 14 (Robertson-Bryan, Inc. 2019). Since 2014, Lehigh has developed and constructed full-scale treatment systems that it now operates to treat stormwater, industrial process water, and quarry dewatering discharges (Robertson-Bryan, Inc. 2019). Treatment occurs at two Final Treatment Systems which remove selenium and other metals before water is discharged to Permanente Creek (Robertson-Bryan 2019). The upper location of the Final Treatment System started discharging to Permanente Creek in December 2017, while the lower location of the Final Treatment System began discharging in early 2019 (Robertson-Bryan, Inc. 2019). Significant improvements to water quality have occurred at Lehigh’s Permanente Quarry site over recent years (Robertson-Bryan 2019) and reduced threats to the California red-legged frog and other aquatic species from contaminants from site operation. Operation of state-of-the art treatment facilities, fully online since 2017, ensure that receiving waters (e.g., Permanente Creek) do not contain elevated levels of selenium. Routine maintenance of most storm water capture/sedimentation basins, including removal of accumulated sediment each year, performed in accordance with the site’s San Francisco Bay Regional Water Quality Control Board-approved Operations & Maintenance Plan, also reduces the risk of elevated selenium exposure to the species. In addition, Lehigh is required in a permit by the San Francisco Bay Regional Water Quality Control Board to conduct a study to determine the reasonable potential for selenium in Permanente Creek to exceed the U.S. Environmental Protection Agency (2018) proposed selenium water quality criterion for California; the ongoing study includes a selenium fish tissue monitoring study in Permanente Creek and Pond 14 where the California red-legged frog is known to occur (Robertson-Bryan, Inc. 2019 and 2021).

Although Lehigh has taken actions to reduce discharges of selenium and metals into Permanente Creek, heavy rainfall during the 2018-2019 wet season caused erosion of the Yeager Yard (area of the site used by Lehigh to store soil and rocks excavated from the nearby limestone quarry for future use as cover material) resulting in a landslide and wasterock falling into Permanente Creek (Winslow 2019, County of Santa Clara 2019a, San Francisco Bay Regional Water Quality Control Board. 2019). The County of Santa Clara issued a notice of violation on June 13, 2019, requiring that Lehigh (1) submit a plan for slope stabilization and stormwater control and erosion prevention to prevent further discharge of sediment into Permanente Creek, (2) test the sediment discharged into Permanente Creek and the water seeping from the slope for contaminants such as selenium, and (3) modify the Permanente Creek Restoration Plan to include the portion of Permanente Creek adjacent to the Yeager Yard (County of Santa Clara 2019a). Seeps from the slope contained elevated levels of selenium of 8.9 micrograms per liter (0.0089 ppm), which exceeds the 8.1 micrograms per liter (0.0081 ppm) allowed by the San Francisco Bay Regional Water Quality Control Board’s NPDES permit (Winslow 2019). The San Francisco Bay Regional Water Quality Control Board expressed concerns about the effects on aquatic species in Permanente Creek including the California red-legged frog due to the leaching of selenium and other metals from the wasterock into the creek (Winslow 2019, San Francisco Bay Regional Water Quality Control Board 2019). The concentrations of selenium detected in the seeps from

the slope (0.0089 ppm) are well below the levels determined to be acutely toxic to African clawed frog tadpoles (1 ppm) or lead to severe developmental abnormalities and increased mortality in African clawed frog tadpoles (2 ppm) (Browne and Dumont 1979). Earlier selenium concentrations in sampled sediments in Pond 14 were 2-20 ppm (Robertson-Bryan, Inc. 2019), above concentrations in sediment that can be toxic (United States Department of the Interior 1998). Therefore, the continued leaching of selenium from contaminated sediments in Pond 14 and Permanente Creek could expose California red-legged frogs and their embryos and tadpoles to harm. Although the concentrations of selenium detected in the water column may be below those found to be acutely toxic to African clawed frog tadpoles, the sensitivity of California red-legged frogs to high levels of selenium in the sediments in aquatic habitat where the frogs forage and breed is not known. Selenium may also have sublethal effects on California red-legged frogs. California red-legged frogs foraging in Pond 14 where the sediments may contain elevated levels of selenium could be harmed indirectly through impacts to their prey species or through the maternal transfer of selenium to their eggs resulting in reduced embryonic viability.

Hopkins et al. (2006) found that female narrow-mouth toads (*Gastrophryne carolinensis*) at a selenium-contaminated site near a coal-burning power plant in South Carolina maternally transferred high concentrations of selenium to their eggs resulting in a 19 percent reduction in the viability of their offspring, significantly higher developmental abnormalities, and smaller adult female narrow-mouth toads (Hopkins et al. 2006). The concentrations of selenium found in the water (0.00393 ppm) and soil (8.25 ppm) at the contaminated coal-burning power plant site in South Carolina (Hopkins et al. 2006, Table 1) were less than half of the selenium concentrations detected in the seep at the Yeager Yard (0.0089 ppm) (note, though, that the upstream location of the Yeager Yard seep would mix with other, lower concentration creek flows before entering Pond 14) and within the range of earlier selenium concentrations detected in the sediment in Pond 14 (2-20 ppm) (Robertson-Bryan, Inc. 2019, citing previous sampling conducted prior to treatment control infrastructure). Therefore, it is possible that adult female California red-legged frogs at the Lehigh Permanente site may have been exposed to selenium concentrations in water and sediment that have been found to significantly reduce offspring viability, increase the frequency of developmental abnormalities of hatchlings, and reduce adult female body size in another anuran species though this circumstance has not been observed in California red-legged frogs identified at the site.

During the dry season in 2019, following the landslide, Lehigh took measures to stabilize the Yeager Yard, including by installing drainage controls and using silt fencing and erosion control blankets (Winslow 2019). Lehigh constructed the Yeager Yard catchment basin in 2020 to prevent wasterock from falling into the creek (GEI 2021). The Permanente Creek Restoration Project proposes to excavate selenium-contaminated sediments from Permanente Creek adjacent to the Lehigh Permanente Quarry, which could remove a source of selenium in creek receiving waters (GEI and AECOM 2016). The effects of the Permanente Creek Restoration Project on the California red-legged frog will be analyzed and covered under the Section 7 consultation with the U.S. Army Corps of Engineers (Service 2017).

Despite the recent improvements in water quality with the new treatment facilities, Lehigh was fined by the San Francisco Bay Regional Water Quality Control Board for discharging 5.25 million gallons of chlorinated water into Permanente Creek in March 2020 and January 2021 when a water tank containing potable tap water leaked downstream of Pond 14 (Barton 2021). It is not known what concentration of chlorinated water California red-legged frogs may have been exposed to or the sensitivity of California red-legged frogs to chlorinated water (Lehigh sampled the creek and total residual chlorine was not detected, likely due to high flows from storm

events). However, a chlorine toxicity study of African clawed frog tadpoles found 1-day LC₅₀ values (the lethal concentration that kills 50 percent of test organisms) between 200 and 300 micrograms per liter (0.2-0.3 ppm) using chlorinated tap water and between 500 and 750 micrograms per liter (0.5-0.7 ppm) using chlorinated pond water (Theron et al. 1992). Chlorinated water may have sub-lethal effects on frogs (*e.g.*, cause frogs to flee the contaminated water, injure or kill the frog's prey species, or harm the frog's natural biome leaving them susceptible to infection), prevent the frog's eggs from hatching, or even injure or kill frogs depending on the dosage and duration of exposure (Jensen 2021, Theron et al. 1992).

California Red-legged Frog

Most of the action area provides poor- to marginal-quality upland dispersal habitat for the California red-legged frog due to ongoing disturbance from active quarry operations. However, Pond 14 at the downstream end of the permit area and at the edge of the facility (Figure 1) provides high quality aquatic breeding, foraging, and sheltering habitat for the California red-legged frog. The seven storm water capture/sedimentation basins within the action area provide low quality aquatic foraging and sheltering habitat for the California red-legged frog, with only two of the storm water capture/sedimentation basins (Pond 30 and Pond 31B) providing marginal quality aquatic breeding habitat during wet years and years with late-season rainfall. Ruderal herbaceous grassland, northern mixed chaparral, willow riparian forest and scrub, white alder riparian forest, oak woodlands and forests, and mixed scrub habitats within the action area provide suitable upland foraging, sheltering, and dispersal habitat for the California red-legged frog. California red-legged frogs may also aestivate within upland habitats in the action area where mammal burrows are present.

California red-legged frogs have been documented at several locations on the Lehigh Permanente property during habitat assessments, focused surveys, and monitoring conducted from 1997 through 2021; protocol-level surveys conducted in 2006 and 2007 (Jennings 2006, 2007); and incidental observations while conducting surveys unrelated to the species. California red-legged frogs were recently observed successfully breeding in Ponds 14 and 21 on the Lehigh Permanente property (WRA 2019). Pond 14 is located within the permit area while Pond 21 is located outside of the action area approximately 0.3 mile upstream of Pond 14. A sub-adult California red-legged frog was also observed on Lehigh Permanente property in uplands near Monte Bello Creek south of the Lehigh Permanente Quarry in 2009 (WRA 2019).

California red-legged frogs have only been detected in two active storm water capture/sedimentation basins in the action area, Pond 30 and Pond 31B, both of which may provide potentially suitable breeding habitat in years of high late-season rainfall. Maintenance work at Pond 30 within 300 feet of Permanente Creek had to be delayed due to the continued observation of a California red-legged frog within the basin in 2016 (G. Smick, WRA, Inc., pers. comm. 2017; WRA, Inc. 2017). In 2018, a California red-legged frog was found by a biological monitor during sediment removal from Pond 31B and was relocated to Pond 14. California red-legged frogs have also been observed in Ponds 9 and 14 and in the downstream portions of Permanente Creek (E. Guerra, Lehigh, pers. comm. 2018); no facility maintenance activities occur in these ponds. Breeding has been documented in Pond 14 (WRA, Inc. 2011); 11 California red-legged frog egg masses were observed in Pond 14 in 2009 (WRA 2019). Twenty-two California red-legged frogs were safely relocated to Pond 14 during emergency culvert cleanout activities conducted by Lehigh in 2017 in Permanente Creek adjacent to the Lehigh Permanente Quarry (A. King, GEI, pers. comm. 2017; E. Schickenberg, WRA, Inc., pers. comm. 2017; GEI 2019a; Service file number 08ESMF00-2017-FE-2327).

The Service issued a biological opinion in 2020 for Lehigh's culvert cleanout activities in Permanente Creek adjacent to the Lehigh Permanente Quarry over a 5-year period (Service 2020). Additional culvert cleanout activities could occur in Permanente Creek during the Permit Term; however, these activities would occur outside the permit area and would be covered under a separate Section 7 consultation with the U.S. Army Corps of Engineers.

Pond 14 is adjacent to but not within the Permanente Creek channel. Three culverts pass creek flow through a road embankment upstream of Pond 14; one culvert conveys/continues Permanente Creek flow and the other two culverts convey flow to the pond. A concrete weir with slide gate at the downstream end of Pond 14 serves to retain flow that enters the pond. At the time of the April 2021 survey, the culverts to Pond 14 and the weir/slide gate were in good condition. Upland vegetation surrounding Pond 14 is dominated by red willow and coyote brush. Previous hydrologic analysis indicated Pond 14 is expected to fill in an average rainfall year and retain approximately 3-4 feet of water at least into August (Chang 2010), sufficient to sustain California red-legged frog tadpoles through development.

Upstream of Pond 9, California red-legged frog breeding habitat is largely absent from Permanente Creek, because of the lack of deep pools. The creek may, however, provide aquatic habitat when seasonal flows are present. In addition, the Permanente Creek corridor supports riparian vegetation that may function as dispersal and foraging habitat and provide upland refugia. The Permanente Creek Restoration Project would overlap some areas in this upstream portion of the permit area and is expected to be implemented during the Permit Term (GEI and AECOM 2016). The stream restoration project would remove rock material (e.g., riprap, soil, debris) from within and adjacent to the creek, restore adjacent floodplain areas, and contour the stream to recreate meanders and match elevation controls created by bedrock (GEI and AECOM 2016). The Permanente Creek Restoration Project is the result of a Cleanup and Abatement Order issued by the San Francisco Bay Regional Water Quality Control Board and a settlement agreement between Lehigh and the Sierra Club. Santa Clara County is currently in the process of preparing a Supplemental Environmental Impact Report for the Permanente Creek Restoration Project pursuant to the California Environmental Quality Act. Once environmental review and permitting is complete, the Service expects that the Permanente Creek Restoration Project will be implemented. The effects of the Permanente Creek Restoration Project on the California red-legged frog will be covered under a separate Section 7 consultation with the U.S. Army Corps of Engineers, which is currently ongoing (Service 2017).

The abundance of aquatic breeding, sheltering, and foraging habitats for the California red-legged frog near the action area has increased recently as a result of the flood detention basin constructed by the Santa Clara Valley Water District's Permanente Creek Flood Control Project within 0.5 mile downstream of the action area (A. Hebert, Midpeninsula Regional Open Space District, *in litt.* 2022; Service 2016; A. Hunt, Santa Clara Valley Water District, *in litt.* 2019; J. Watson, Santa Clara Valley Water District, *in litt.* 2022). Santa Clara Valley Water District successfully relocated 660 California red-legged frogs (66 adults, 575 juveniles, 9 tadpoles, and 10 egg masses) to suitable habitat in Permanente Creek within Rancho San Antonio County Park near the downstream boundary of the Lehigh Permanente Quarry during construction of the Permanente Creek Flood Control Project (J. Watson, Santa Clara Valley Water District, *in litt.* 2022). The Santa Clara Valley Water District continues to monitor the hydrology of the detention basin, but it seems likely that the basin will hold ponded water in most years, with the hydroperiod depending on rainfall, groundwater, and outflows from the neighboring cemetery (J. Watson, Santa Clara Valley Water District, *in litt.* 2022). In 2020, California red-legged frog egg masses were observed in the detention basin from February through April; however, no

California red-legged frog egg masses were observed in 2021 (J. Watson, Santa Clara Valley Water District, *in litt.* 2022).

According to the California Natural Diversity Database (CNDDDB), there are four occurrences of the California red-legged frog within the frog's 2-mile dispersal distance of the action area (CDFW 2021): (1) 14 adult California red-legged frogs observed adjacent to the action area in a deep pool in Permanente Creek in 2017 during culvert clean-out work (CNDDDB occurrence number 1570); (2) five adult and two juvenile California red-legged frogs observed in Permanente Creek and adjacent impoundments within 160-2,000 feet downstream of the action area in 1994, one adult and one tadpole observed in 1997, and two adults observed in 2017 (CNDDDB occurrence number 123); (3) 30 adult and 30 tadpole California red-legged frogs observed in the Gate of Heaven cemetery pond within 0.3 mile northeast of the action area in 1997 (CNDDDB occurrence number 372); and (4) one adult California red-legged frog observed in a pond west of Stevens Creek Reservoir at the Pichetti Ranch Open Space in 2016 about 1.45 miles south of the action area (CNDDDB occurrence number 1550).

The action area is located at the boundary between the Recovery Plan's South and East San Francisco Bay recovery unit and the Central Coast recovery unit for the California red-legged frog (Service 2002). The nearest core area for the California red-legged frog is the South San Francisco Bay core area located approximately 2.7 miles to the west of the action area (Service 2002). The nearest critical habitat unit for the California red-legged frog is the SNM-2 unit located approximately 2.8 miles to the west of the action area (Service 2010).

The proposed 6.6-acre offsite mitigation area at the 640-acre Ohlone West Conservation Bank in Alameda County is located within the South and East San Francisco Bay recovery unit, which is the same recovery unit as the permit area for the proposed project (Service 2002). The mitigation area is also within the East San Francisco Bay core area and the ALA-2 critical habitat unit for the California red-legged frog (Service 2002 and 2010). California red-legged frog breeding assessments are conducted at Ohlone West Conservation Bank every five years while habitat monitoring is conducted annually. During the last California red-legged frog breeding assessment in 2017, California red-legged frog egg masses were detected in five of the eight ponds and California red-legged frog tadpoles in two ponds at the Ohlone West Conservation Bank (Fletcher Conservation Lands 2017). Visual detections of California red-legged frog egg masses at two additional ponds in 2017 were hampered by a dense growth of mosquito fern (*Azolla filiculoides*), a native aquatic plant covering the entire surface of the ponds (Fletcher Conservation Lands 2017); therefore, it could not be determined if California red-legged frogs were breeding in these two additional ponds. The 2021 habitat assessment at the Ohlone West Conservation Bank reported that the ongoing extreme drought of 2020-2021 and early drying of the ponds likely had a negative effect on the recruitment of California red-legged frog juveniles (Fletcher Conservation Lands 2021). A 2013-2019 study of 110 ponds in Contra Costa, Alameda, and Santa Clara counties found that although the number of ponds occupied by breeding California red-legged frogs declined by 36 percent during the megadrought of 2013-2015, California red-legged frogs were highly resilient with the number of occupied breeding ponds increasing by 50 percent as drought conditions eased the following year (McDevitt-Galles et al. 2020). Droughts may also be important for decreasing habitat availability for invasive predators (*e.g.*, bullfrogs and fish) that threaten the California red-legged frog through periodic drying of more permanent ponds that support invasive predators (McDevitt-Galles et al. 2020). The next California red-legged frog breeding assessment at Ohlone West Conservation Bank will be conducted in 2022.

The observation and relocation of hundreds of California red-legged frogs during work activities within and near the action area during recent years (J. Watson, Santa Clara Valley Water District, *in litt.* 2022; A. King, GEI, pers. comm. 2017; E. Schickenberg, WRA, Inc., pers. comm. 2017; GEI 2019a) suggests a relatively large population of California red-legged frogs occurs near the action area. Therefore, based on the known recent occurrences of hundreds of California red-legged frogs within and near the action area and the availability of suitable habitat within the action area, the Service believes that the California red-legged frog is likely to occur within the action area.

Effects of the Action

Effects of the action are all consequences to listed species or critical habitat that are caused by the proposed action, including the consequences of other activities that are caused by the proposed action. A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action.

Table 1 below summarizes the acres of each habitat type for the California red-legged frog that will be temporarily disturbed or permanently lost by the proposed project. The proposed project will result in the infrequent (approximately every 3-5 years) temporary disturbance of 0.21 acre of aquatic breeding habitat for the California red-legged frog at Pond 14 for habitat monitoring, maintenance, restoration activities, and annual predator monitoring activities conducted for the benefit of the California red-legged frog; these activities in Pond 14 would be conducted to ensure that the pond continues to function as suitable breeding habitat for the California red-legged frog and a suitable release site for California red-legged frogs observed within the permit area during Covered Activities. The proposed project will result in the ongoing (every 1-2 years depending on maintenance needs) temporary disturbance of 0.67 acre of non-breeding aquatic habitat within storm water capture/sedimentation basins and 1.64 acres of upland dispersal, foraging, and sheltering habitat for the California red-legged frog; 0.21 acre of the upland habitat that will temporarily disturbed is adjacent to Pond 14 and associated with access for habitat monitoring, maintenance, restoration, and predator management and monitoring activities within Pond 14 conducted for the benefit of the California red-legged frog. Habitat effects associated with the Covered Activities would primarily be temporary and would be limited to the time during which Covered Activities occur at a given location. These temporary effects would result from Covered Activities, such as periodically removing accumulated sediment from existing storm water capture/sedimentation basins, trimming riparian vegetation and cutting grassland vegetation adjacent to existing roadways, implementing erosion control measures in upland habitats, and monitoring and potential predator removal and habitat management at Pond 14.

Table 1. Acres of habitat disturbance.

Habitat Type	Temporary ¹ Disturbance (acres)	Permanent ² Loss (acres)
Aquatic breeding	0.21 ³	0.10
Aquatic non-breeding	0.67	0.00
Upland	1.64 ³	0.00
Total	2.52	0.10

¹ Temporary disturbance of aquatic non-breeding and upland habitat could recur approximately every 1-2 years, depending on maintenance needs; temporary effects on aquatic breeding habitat would be limited to potential infrequent (approximately every 3-5 years) habitat

management activities and annual predator monitoring activities at Pond 14 conducted for the benefit of the California red-legged frog.

² Includes 0.07 acre at Pond 30 that may be lined, permanently converted to non-breeding aquatic habitat, and then repeatedly cleared of sediment and vegetation, and 0.03 acre at Pond 31B that would be repeatedly cleared of sediment and vegetation.

³ Includes 0.21 acre of aquatic breeding habitat and 0.21 acre of adjacent upland habitat at Pond 14 that would be disturbed during habitat monitoring, management, restoration, and predator monitoring and removal activities conducted for the benefit of the California red-legged frog.

The proposed project may result in the permanent loss of 0.10 acre of low-quality aquatic breeding habitat for the California red-legged frog in two storm water capture/sedimentation basins: (1) 0.07 acre of breeding habitat at Pond 30 could be removed and converted to non-breeding aquatic habitat after lining the pond and then subjected to repeated disturbance (every 1-2 years depending on maintenance needs) during removal of accumulated sediment, and (2) 0.03 acre of breeding habitat at Pond 31B would be repeatedly disturbed (every 1-2 years depending on maintenance needs) during removal of vegetation and accumulated sediment.

California red-legged frogs found in maintenance areas throughout the 10.2-acre permit area and in danger from maintenance activities will be captured and relocated to Pond 14. If individuals remain in the work areas when Covered Activities occur, they could be displaced, injured, or killed by vehicle movement, equipment operation, sediment excavation, and other direct disturbances related to Covered Activities. There also is the potential for the California red-legged frog to be injured or killed by Covered Activities that do not affect suitable habitat, such as material transport and storage, vehicle travel, and equipment use on existing roadways adjacent to Permanente Creek. It is possible for California red-legged frogs to venture onto roadways and into material storage areas near aquatic habitat particularly during the wet season.

Because breeding has not been documented in any of the storm water capture/sedimentation basins in the permit area (including Ponds 30 and 31B where potentially suitable breeding habitat occurs), take of California red-legged frog egg masses or tadpoles is very unlikely to occur. Additionally, sediment removal within storm water capture/sedimentation basins would be conducted when the basins are dry and California red-legged frog egg masses and tadpoles would be absent. Habitat restoration, predator management, and pond maintenance work in occupied breeding habitat in Pond 14 would occur between September 1 and October 31 (unless required by a regulatory agency or applicable permit) after California red-legged frog tadpoles have completed their metamorphosis; therefore, no California red-legged frog egg masses or tadpoles will be injured or killed.

The potential for injuring and killing California red-legged frogs during Covered Activities will be minimized by: having a Service-approved biologist conduct surveys for and relocating California red-legged frogs before work begins in suitable aquatic habitat and before ground disturbance begins in suitable upland habitat; having a Service-approved biologist present onsite during Covered Activities that require work in suitable aquatic habitat or ground disturbance in suitable upland habitat; requiring all proposed project construction staff be trained in the identification of the California red-legged frog and its habitats and the implementation of the avoidance and minimization measures; limiting sediment removal from the storm water capture/sedimentation basins to when they are dry (or, if wet, after California red-legged frog tadpoles would have completed their metamorphosis); limiting pond maintenance work in Pond 14 to the period after California red-legged frog tadpoles have completed their metamorphosis (unless required by a regulatory agency or applicable permit); avoiding conducting Covered

Activities during rain events or within 24 hours following a rain event and at nighttime when California red-legged frogs are most likely to disperse through the permit area; in the event a California red-legged frog enters the work area, the Service-approved biological monitor will have the authority to stop activities if necessary; the Service-approved biologist will relocate any California red-legged frogs from the work area that are in danger of being injured or killed; and decontamination procedures will be implemented to prevent the introduction and spread of amphibian diseases within the action area. The California red-legged frog will also benefit from the removal of invasive bullfrogs and crayfish within the permit area that are predators and/or competitors of the California red-legged frog.

Aquatic habitat for the California red-legged frog could be degraded if the proposed project resulted in a spill of fuel or other hazardous materials or increased sedimentation in Permanente Creek, Pond 14, or the storm water capture/sedimentation basins in the permit area. Lehigh and its contractors will minimize the potential for the degradation of aquatic habitat from a spill or sedimentation by implementing water quality and erosion control BMPs, a SWPPP, fueling equipment away from all aquatic habitat, implementing a spill prevention plan, limiting work to the dry season to the maximum extent feasible, conducting sediment removal from the storm water capture/sedimentation basins only when the basins are dry, and avoiding work during rain events and within 24 hours after a rain event. In the unlikely event that the storm water capture/sedimentation basins still contain water during scheduled maintenance, dewatering and work in the storm water capture/sedimentation basins that could support breeding California red-legged frogs will be delayed to between September 1 and October 31 when California red-legged frog tadpoles and egg masses are unlikely to be present. The maintenance of the storm water capture/sedimentation basins and ongoing erosion and sedimentation control will benefit the California red-legged frog in the long-term by ensuring aquatic habitat is not degraded, water quality standards are maintained, and elevated levels of selenium are not discharged into Permanente Creek and Pond 14 consistent with the requirements of the Regional Water Quality Control Board-approved discharge permits and the Operations & Maintenance Plan. In addition, Covered Activities at Pond 14 will ensure the pond continues to provide suitable breeding habitat for the California red-legged frog.

As noted previously in the Description of the Proposed Project section, the project proponent has also proposed a set of conservation measures, including the commitment to provide compensatory habitat as a condition of the action. This compensatory habitat is intended to minimize the effect on the species of the proposed project's anticipated incidental take, resulting from the permanent loss and ongoing temporary disturbance of habitat described above. The compensatory habitat proposed will be in the form of the purchase of 6.6 acres of California red-legged frog credits from the Ohlone West Conservation Bank in Alameda County within the South and East San Francisco Bay recovery unit and the East San Francisco Bay core area for the California red-legged frog (Service 2002). This component of the action will have the effect of protecting and managing lands for the species' conservation in perpetuity. The compensatory lands will provide suitable habitat for breeding, feeding, or sheltering commensurate with or better than habitat lost as a result of the proposed project. Providing this compensatory habitat as part of a relatively large, contiguous block of conserved land may contribute to other recovery efforts for the species.

Cumulative Effects

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

actions 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 only reasonably foreseeable future activity that Lehigh proposes to implement but is not anticipated to require federal involvement is amending the 2012 Reclamation Plan and obtaining related entitlements for the Rock Plant Reserve (GEI 2021). The proposed expansion of activities into the Rock Plant Reserve area would include mining and reclamation of approximately 30 acres south of Permanente Creek and outside the permit area (GEI 2021, Lehigh Hanson 2019).

The Rock Plant Reserve area is dominated by oak woodland forest and poison oak scrub and includes three small ephemeral drainages on the steep, north-facing slope, and a small isolated seasonal wetland near the top of the ridge (GEI 2021). In years with very high rainfall, the isolated seasonal wetland may remain ponded long enough to support California red-legged frogs (GEI 2019b, GEI 2021, Lehigh Hanson 2019). Although this seasonal wetland is non-contiguous with areas known to support the California red-legged frog and provides lower quality aquatic habitat for the California red-legged frog compared to known and potential breeding ponds in the Permanente Creek canyon (GEI 2019b and 2021), it is within less than 0.5 mile of occupied habitat along Permanente Creek which is well within the up to 2-mile dispersal distance documented by some California red-legged frogs (Bulger et al. 2003). Therefore, California red-legged frogs could colonize the seasonal wetland at the Rock Plant Reserve area and breed there, if suitable breeding habitat is present during wet years. A sub-adult California red-legged frog was also observed in the southern part of the Lehigh Permanente property in the uplands next to Monte Bello Creek (WRA 2019). Thus it is possible that California red-legged frogs could disperse through the Rock Plant Reserve area from known populations along Permanente Creek to the north and Monte Bello Creek to the south. However, only a small proportion (approximately 10-20 percent) of the California-red legged frog population studied by Bulger et al. (2003) made overland movements of this distance, and most individuals were resident in areas with permanent aquatic habitat.

The steep ephemeral drainages in the Rock Plant Reserve area provide marginal quality non-breeding aquatic habitat for the California red-legged frog and only support ephemeral aquatic habitat for very brief periods during and immediately following heavy rainfall; however, the ephemeral drainages could be briefly used by California red-legged frogs during the limited periods when water is present (GEI 2019b, p. 16). Upland and ephemeral aquatic habitat in the Rock Plant Reserve area is approximately 500 feet from Permanente Creek at its closest point (GEI 2021). The California red-legged frog may disperse over 2 miles across a variety of terrain and habitats (Bulger et al. 2003). However, these documented long-distance movements were made by a small proportion of the adult population that made breeding and post-breeding migrations to and from breeding ponds or migrated away from breeding ponds that dried up. Approximately 78-89 percent of the population was resident in permanent aquatic habitat. These resident individuals moved up to approximately 425 feet outward into upland habitat, but 90 percent were always within 200 feet of water (Bulger et al. 2003). Therefore, although it is possible that the California red-legged frog could disperse the 500 feet from suitable aquatic habitat along Permanente Creek to the Rock Plant Reserve area, it is unlikely they make regular movements between Permanente Creek and upland habitat more than several hundred feet from the creek or between Permanente Creek and aquatic habitat farther afield, such as Monte Bello Creek approximately 0.5 mile to the south. In addition, the number of individuals that may make long-distance overland movements is low. However, if California red-legged frogs do occur in the Rock Plant Reserve area, they could be injured or killed during mining and reclamation activities at the Rock Plant Reserve area. Additionally, mining of the Rock Plant Reserve would harm the California red-legged frog through the permanent removal of 30 acres of potential

upland dispersal habitat. Any approved mining and reclamation activities would be implemented in accordance with applicable reclamation plan requirements, which are anticipated to include conducting grading in areas of potential aquatic habitat for the California red-legged frog during the dry season and conducting pre-construction surveys before activities in areas of suitable California red-legged frog habitat (GEI 2021).

The potential for mining and reclamation of the Rock Plant Reserve to result in adverse effects on the California red-legged frog from potential exposure to selenium or other metals would be reduced because groundwater seepage and storm water runoff would be managed and treated in the existing water treatment system (GEI 2021). This water would be returned to Permanente Creek only after being treated, thereby eliminating the potential for selenium-related water quality effects on aquatic organisms (GEI 2021). However, any storm water capture/sedimentation basins constructed at the Rock Plant Reserve could become an attractant for the California red-legged frog that may be present in the permit area (G. Smick, WRA, Inc., pers. comm. 2017; WRA, Inc. 2017; E. Guerra, Lehigh, pers. comm. 2018). Any California red-legged frogs attracted to the storm water capture/sedimentation basins could be injured or killed during maintenance of the storm water capture/sedimentation basins, if conducted when California red-legged frogs are present.

Although the water treatment system would reduce the potential for contamination of Permanente Creek by selenium and other metals, mining activities at the Rock Plant Reserve could further degrade Permanente Creek and its habitats through landslides as occurred at “the Yeager Yard slide” at the Lehigh Permanente Quarry during the 2018-2019 wet season in which wasterock containing selenium levels that exceeded water quality requirements fell into Permanente Creek (A. Hebert, Midpeninsula Regional Open Space District, *in litt.* 2022; Winslow 2019; County of Santa Clara 2019a; San Francisco Bay Regional Water Quality Control Board 2019). However, 2018 – 2019, was associated with well above normal precipitation levels, which likely contributed to the conditions that resulted in the landslide. California red-legged frogs and their offspring could be harmed by elevated levels of selenium as has been observed in other amphibian species (Hopkins et al. 2006; Bergeron et al. 2010; Browne and Dumont 1979).

Based on the history of violations by Lehigh², the Service believes that additional violations may occur within the action area that could potentially harm the California red-legged frog, if such additional violations result in degradation of its aquatic habitat and exposure to contaminants (e.g., selenium and chlorine). However, the maintenance of the Final Treatment Facilities and the storm water capture/sedimentation basins consistent with pertinent water quality permitting have and will continue to reduce the level of selenium discharge into Permanente Creek and Pond 14. Water quality related monitoring of selenium in discharge and receiving waters is and will

² Lehigh has received other notices of violation in the past for unauthorized activities at the Lehigh Permanente property. During the summer of 2018, Lehigh widened an existing Pacific Gas and Electric Company maintenance road that internally connects Lehigh Permanente Quarry and the Stevens Creek Quarry to the south without the County of Santa Clara’s knowledge and without the required permits (County of Santa Clara 2019b, <https://news.sccgov.org/news-release/county-santa-clara-issues-notice-violation-stevens-creek-quarry-0>; City of Cupertino 2021, <https://www.cupertino.org/home/showpublisheddocument/28936/637498693102830000>). It is not known if wildlife surveys were conducted or the proper erosion control measures implemented as required by the Lehigh Permanente Quarry’s Reclamation Plan during construction of the 40-foot wide unauthorized haul road (Anonymous resident of Santa Clara County 2022, <https://www.regulations.gov/comment/FWS-R8-ES-2021-0076-0006>).

continue to be carried out consistent with permits issued by the San Francisco Bay Regional Water Quality Control Board. The permit area may experience discharges of selenium in excess of San Francisco Bay Regional Water Quality Control Board issued NPDES Permit limits as a result of selenium control infrastructure failure. If the infrastructure fails to operate in accordance with the NPDES Permit and that failure results in a discharge of selenium in excess of NPDES Permit limits resulting in an adverse effect on the California red-legged frog, the Service may consider this to be a changed circumstance under the HCP. If the Service determines adverse effects on the California red-legged frog have occurred in this circumstance, Lehigh shall implement additional BMPs identified by the Service and agreed to by the Applicant as part of the conservation strategy to avoid the likelihood of jeopardy to or take of the species.

Conclusion

After reviewing the current status of the California red-legged frog, the environmental baseline for the action area, the effects of the proposed Permanente Site Operation and Maintenance Project, and the cumulative effects, it is the Service's biological opinion that the Permanente Site Operation and Maintenance Project, as proposed, is not likely to jeopardize the continued existence of the California red-legged frog. 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) successful implementation of the conservation measures described in this biological opinion will minimize adverse effects on individual California red-legged frogs; (2) implementation of the Covered Activities will ensure water quality standards are maintained within aquatic habitat within the permit area and in Permanente Creek consistent with the San Francisco Bay Regional Water Quality Control Board-approved Operations & Maintenance Plan; (3) the majority of the effects will be temporary and would be limited to the time during which Covered Activities occur at a given location; (4) only 0.10 acre of suitable habitat will be permanently removed; (5) suitable breeding habitat will be maintained, monitored, and restored onsite in Pond 14 and invasive predators and competitors removed during the Permit Term; and (6) 6.6 acres of suitable habitat will be preserved and managed in perpetuity offsite within the South and East San Francisco Bay recovery unit and the East San Francisco Bay core area for the California red-legged frog.

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 Service 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 Permanente Site Operation and Maintenance Project HCP and its associated documents identify anticipated effects on the California red-legged frog and the measures that will be taken to minimize those effects. The HCP's Conservation Strategy, including the monitoring and adaptive management plan (Chapter 5), the implementation plan (Chapter 6), and the section 10(a)(1)(B) permit issued with respect to the proposed HCP, are hereby incorporated by reference as reasonable and prudent measures within this Incidental Take Statement pursuant to 50 CFR §402.14(i). Such terms and conditions are non-discretionary and must be undertaken for the exemptions under section 10(a)(1)(B) and section 7(o)(2) of the Act to apply. If the Applicant fails to adhere to these terms and conditions, the protective coverage of the section 10(a)(1)(B) permit and section 7(o)(2) may lapse. The anticipated amount or extent of the incidental take and associated reporting requirements are described in the HCP and its accompanying section 10(a)(1)(B) permit.

Amount or Extent of Take

California Red-legged Frog

The Service anticipates incidental take of individual California red-legged frogs will be difficult to detect or quantify because of the variable, unknown size of any resident population over time, their elusive and cryptic behavior, and the difficulty of finding killed or injured animals. Due to the difficulty in quantifying the number of California red-legged frogs that will be taken as a result of the proposed project, the Service is quantifying take incidental to the proposed project as the following:

1. The harm of all adult, sub-adult, and juvenile California red-legged frogs within the 2.52 acres of suitable habitat temporarily disturbed and the 0.10 acre of suitable habitat permanently lost during implementation of Covered Activities during the 20-year Permit Term.
2. The capture of all adult, sub-adult, and juvenile California red-legged frogs within the 10.2-acre permit area during the 20-year Permit Term.
3. The injury or mortality of forty (40) adult, sub-adult, or juvenile California red-legged frogs during the 20-year Permit Term.

Upon implementation of the following reasonable and prudent measures, incidental take of the California red-legged frog associated with the Permanente Site Operation and Maintenance Project will become exempt from the prohibitions described in section 9 of the Act. No other forms of take are exempted under this opinion.

Effect of the Take

In the accompanying biological opinion, the Service determined that this level of anticipated take is not likely to result in jeopardy to the species.

Reasonable and Prudent Measures

The HCP identifies anticipated adverse effects to the California red-legged frog likely to result from the proposed project, and the specific measures that are necessary and appropriate to minimize those adverse effects.

All necessary and appropriate measures to avoid or minimize effects resulting from implementation of the HCP have been incorporated into the HCP's proposed conservation measures. Therefore, the Service believes the following reasonable and prudent measure is necessary and appropriate to minimize incidental take of the California red-legged frog.

- 1) All conservation measures, as described in the HCP chapters below, and restated here in the Description of the Proposed Action section of this biological opinion, shall be fully implemented and adhered to in order to minimize impacts of incidental take of the California red-legged frog:
 - Project Description (Chapter 2)
 - Conservation Strategy (Chapter 5)
 - Plan Implementation (Chapter 6)

Terms and Conditions

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

All the conservation measures in the HCP are hereby incorporated by reference as reasonable and prudent measures, and terms and conditions for the incidental take statement pursuant to 50 CFR 402.14(i). Such terms and conditions are non-discretionary and must be undertaken for the exemptions under section 10(a)(1)(B) and section 7(o)(2) of the Act to apply. If the Applicant fails to adhere to these terms and conditions, the protection of the ITP, and section 7(o)(2), may lapse. The anticipated amount or extent of the incidental take and associated reporting requirements are described in the HCP and its accompanying section 10(a)(1)(B) permit.

Salvage and Disposition of Individuals:

Injured listed species must be cared for by a licensed veterinarian or other qualified person(s), such as the Service-approved biologist. Dead individuals must be sealed in a resealable plastic bag containing a paper with the date and time when the animal was found, the location where it was found, and the name of the person who found it, and the bag containing the specimen frozen in a freezer located in a secure site, until instructions are received from the Service regarding the disposition of the dead specimen. The Service contact person is the Coast Bay Division Supervisor of the Endangered Species Program at the SFWO at (916) 414-6623.

REINITIATION—CLOSING STATEMENT

This concludes formal consultation on the proposed issuance of a section 10(a)(1)(B) permit to implement the Permanente Site Operation and Maintenance Project Low-Effect Habitat Conservation Plan. As provided in 50 CFR §402.16(a), reinitiation of consultation is required and shall be requested by the federal agency or by the Service where discretionary federal involvement or control over the action has been retained or is authorized by law, and:

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

- 2) 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;
- 3) 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 written concurrence, or
- 4) If a new species is listed or critical habitat designated that may be affected by the identified action.

In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation. A reinitiated consultation shall take into consideration the assurances that the Applicant will receive in accordance with “No Surprises” regulations [50 CFR §17.22(b)(5) and §17.32(b)(5)] as these are described in the HCP.

If you have any questions regarding this biological opinion, please contact Senior Fish and Wildlife Biologist, Joseph Terry, joseph_terry@fws.gov or (916) 943-6721 or myself, Coast Bay Division Supervisor, Ryan Olah, ryan_olah@fws.gov or (916) 414-6623, at the letterhead address.

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