United States Department of the Interior

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

In Reply Refer To:
08ESMF00-2012-F-0082-2

OCT 02 2012

Ms. Jane M. Hicks
Chief, Regulatory Division
U. S. Army Corps of Engineers
San Francisco District
1455 Market Street
San Francisco, California 94103-1398

Subject: Formal Endangered Species Consultation on the Sharp Park Safety, Infrastructure Improvement, and Habitat Enhancement Project in San Mateo County, California

Dear Ms. Hicks:

This letter is in response to the U.S. Army Corps of Engineers' (Corps) October 25, 2011, request for the initiation of formal consultation with the U.S. Fish and Wildlife Service (Service) for the San Francisco Recreation and Parks Department (SFRPD) proposed Sharp Park Safety, Infrastructure Improvement, and Habitat Enhancement Project in San Mateo County, California. Your request for formal consultation was received by this office on October 28, 2011, and was subsequently modified through discussions between the Corps, SFRPD and the Service, culminating in submission of a final Biological Assessment on August 16, 2012, which constitutes the Project description relied upon for this consultation. At issue are effects to the federally threatened California red-legged frog (*Rana draytonii*), the endangered San Francisco garter snake (*Thamnophis sirtalis tetrataenia*), and the endangered mission blue butterfly (*Icaricia icarioides missionensis*).

The Service has determined that the proposed action is not likely to adversely affect the mission blue butterfly. There are no project activities proposed on or near the mission blue butterfly habitat. Project activities will all occur at least 0.5 mile away from mission blue butterfly habitat and the mission blue butterfly is not expected to occur in the intervening areas. Based on habitat conditions in the action area and the distance to mission blue butterfly habitat from the action area, the Service has determined that the proposed action is not likely to adversely affect the mission blue butterfly because effects will be insignificant and discountable. Therefore, we will not address the mission blue butterfly further in this biological opinion.

This document represents the Service's biological opinion on the effects of the proposed action on the San Francisco garter snake and on the California red-legged frog. This document is issued under the authority of the Endangered Species Act, as amended (16 U.S.C. 1531 *et seq.*) (Act). Because the Project will not occur within designated critical habitat for the California red-legged frog, no adverse effects to the primary constituent elements

13. After completion of the project, the access routes in the wetland will be revegetated with appropriate native plants and erosion control measures, as described in conservation measure 12, will be installed on exposed soils with slopes of 3:1 or greater.

14. All construction activities will occur in uplands and on the golf course. Stockpiling and staging areas will be located in the uplands and in areas cleared for species and the golf course. Construction materials (bricks, boards, shoring, concrete forms, etc.) shall be elevated approximately four to six inches above ground to minimize the potential for species to take cover under these items. If feasible materials will be staged on a trailer/truck bed to avoid contact with the ground. Construction materials will be brought to on-site staging areas as close to the time they are needed as possible.

Conservation measures for golf course maintenance and operations

15. During the 10 year duration of the Project, the water pumps will be operated pursuant to the following criteria:

    a. SFRPD staff will operate the pumps to ensure, to the maximum extent practicable, that California red-legged frog egg masses at Horse Stable Pond, Laguna Salada and the connecting channel are protected from desiccation as a result of pump operation by monitoring and adjusting pump levels to keep egg masses hydrated.
    b. A biological monitor from the SFRPD Natural Areas Program with appropriate experience, knowledge and permit authority from the Service, will monitor closely California red-legged frog egg masses and water levels.
    c. Appropriate water levels will be determined by conducting visual surveys of California red-legged frog egg masses in potential habitat areas around Horse Stable Pond, Laguna Salada and the connecting channel.
    d. Visual surveys will commence following the first rains in November or thereafter and continue throughout the California red-legged frog breeding season after each major rain event but not less than once every three weeks until all the tadpoles have hatched. If, for example during drought years, rains do not commence in November or December, surveys should begin in the first week of January.
    e. During the visual surveys, data on the California red-legged frog egg masses including attachment type, water depth, size of egg mass, and Gosner stage will be taken, and a determination of potential stranding will also be made.
    f. If California red-legged frog egg masses are observed at Horse Stable Pond, Laguna Salada, or the connecting channel and there is sufficient water surrounding the mass, no adjustments to the water level will be made. But if one or more egg masses in any of these three areas are observed to not possess sufficient water around it to prevent stranding, the water level that triggers operation of the pumps will be adjusted upwards, even at the risk of flooding the golf course. This minimization measure would not apply to egg masses observed outside of Horse Stable Pond, Laguna Salada, or the connecting channel.
    g. Pump levels will be set relative to the California red-legged frog egg mass in Horse Stable Pond, Laguna Salada, or the connecting channel with the least

amount of water around it; in other words, the pumps will be set to a level to protect the most vulnerable egg masses in Horse Stable Pond, Laguna Salada and the connection channel.

h. Following pump adjustments, the site will be resurveyed to ensure that the new pump levels have been achieved and the vulnerable egg masses are safe from desiccation.

i. Once all California red-legged frog eggs have hatched and the tadpoles are no longer aggregating about the egg mass, the water level may be lowered incrementally and the lowering of water levels in Horse Stable Pond, Laguna Salada and the connecting channel will be monitored to ensure that California red-legged frog tadpoles are not stranded by receding waters. The water level at the pump house will not be lowered below a level that provides the open water adjacent to the emergent vegetation is at least 6 inches deep on the inboard margin of the vegetation[2].

j. When no egg masses are present, the water levels may be lowered to reduce flooding on the Property or in advance of the rainy season (typically in November) in order to increase flood storage capacity. The SFRPD will ensure that sufficient non-breeding habitat remains at Horse Stable Pond if water levels are to be lowered. Water level will be determined to be sufficient if the open water adjacent to the emergent vegetation is at least 6 inches deep on the inboard margin of the vegetation[3]. Prior to the rainy season, water levels in Horse Stable Pond may be lowered no more than five days prior to the first projected large rain event of the season.

16. During the 10 year duration of the Project, if California red-legged frog egg masses on the fairways, greens, or roughs are determined to be at risk of stranding and desiccation, an SFRPD biological monitor with the Natural Areas Program will apprise Service of the situation and propose a relocation plan to the Service for review and approval. Such a relocation plan will describe the habitat, location and number of the at-risk egg masses as well as the remainder of the egg masses in the Project area that are not at risk. The relocation plan also will include protective measures above and beyond pump adjustments, such as bending vegetation to adjust the egg mass to the water level or relocating egg masses to more sustainable habitats. Relocation of egg masses will not be performed without approval of the Service.

17. During the 10 year duration of the Project, mowing will occur pursuant to the following criteria:

    a. The area to be mowed will be the minimum required to maintain the golf course. A no-mow zone area, which includes the roughs adjacent to the wetlands, will be

[2] In 2011, SFRPD in consultation with a biological expert, determined that if water levels remain above 1.0 on the gage board that sufficient water existed in Horse Stable Pond to support wildlife species. This level may change over time as the distribution of emergent vegetation of Horse Stable Pond changes.

[3] In 2011, SFRPD in consultation with a biological expert, determined that if water levels remain above 1.0 on the gage board that sufficient water existed in Horse Stable Pond to support wildlife species. This level may change over time as the distribution of emergent vegetation of Horse Stable Pond changes.

identified with stakes or other markers on the ground (see Figure 2-5 in biological assessment for boundaries of no-mow zone). Golf staff will be instructed not to mow in these areas. The land between Mori Point and Laguna Salada is an important movement corridor for the California red-legged frog and San Francisco garter snake. This area will be further evaluated by SFRPD biologists, in consultation with Service, to identify additional opportunities for movement and increases in the no-mow area. Based on this assessment, the extent of the no-mow zones may be increased as long as the restrictions on mowing do not affect the playability of the golf course.

b. To the extent feasible, mowing of fairways and greens adjacent to Laguna Salada would occur in the early morning hours before 9:00 a.m.
c. If mowing occurs prior to dawn, for example in the winter, the SFRPD will ensure that the mowers are equipped with lights so that drivers can see the turf in front of them. Golf course staff trained in the identification of California red-legged frogs and San Francisco garter snakes will walk the edge of Horse Stable Pond, Laguna Salada, and the connecting channel prior to mowing to ensure that neither species is present on the greens or fairways.
d. All mower operators will be trained to identify the California red-legged frog and San Francisco garter snake and instructed to stop any activities if they observe any frog or any snake on the course.
e. If any frog or any snake is encountered in the pathway of a mower, the operator will cease the mowing activity and wait for the animal to remove itself from harm's way or discontinue the mowing activity in that area for the day. If the animal does not move out of harm's way, the SFRPD biological monitor with the Natural Areas Program will be contacted. Work may not recommence in the area until the area has been determined to be clear of California red-legged frog or San Francisco garter snake.

18. During the 10 year duration of the Project, only organic fertilizers, such as pro-biotics, blood meal, lime, and compost tea, will be used at Sharp Park, and they will only be applied to the greens, tees and surrounds. No fertilizers will be applied to fairways.

19. During the 10 year duration of the Project, the City will not use any chemical pesticides on the golf course or associated landscaped areas at Sharp Park. Golf course pests and weeds will be controlled either by hand weeding or promoting healthy soil ecosystems. Organic materials such as compost tea, ferrous sulphate (iron), chelated iron, liquid humate, liquid guano, yucca extract and EM1 (effective microbes) will be applied to golf course to promote healthy soils. In the event of a major fungal outbreak on the golf course, the City will consult with the San Francisco Department of the Environment's Integrated Pest Management Program to identify the least toxic material to use to control the outbreak and would comply with labeling and other restrictions imposed by the U. S. Environmental Protection Agency. This biological opinion does not analyze any of the potential effects of pesticide application and does not authorize the use of any pesticides at Sharp Park.

20. During the 10 year duration of the Project, vehicle use on the golf course will be reduced. The City will reduce golf cart use on turf areas by establishing, posting, and enforcing 90-degree rules (golfers may drive to their ball by entering the golf course from the cart path at 90 degrees to their ball and returning to the golf cart along the same route after completing the swing) in areas adjacent to sensitive habitats (i.e., Holes 9 through 17 west of the Pacific Coast Highway and adjacent to Laguna Salada, Horse Stable Pond, Sanchez Creek and the connecting channel). In order to implement these rules, the City will post signs throughout the course and in the golf carts stating where golf carts must stay on paths and where the 90-degree rule applies. The Golf Course lessee, marshals and golf course maintenance staff will be instructed to enforce these rules throughout the course. In the rest of the course, there would be no restrictions on golf cart use.

    If non-mowing vehicles associated with golf course maintenance must be taken off path on the golf course, the area must be visually surveyed in advance for California red-legged frog and San Francisco garter snake. If a California red-legged frog or San Francisco garter snake is sited in the maintenance work area and the animal does not relocate itself to adjacent habitat and out of harm's way, the SFRPD biological monitor with the Natural Areas Program will be notified of the location and condition of the animal. If the animal is at risk due to other conditions (e.g., if it is located in the parking lot or maintenance area), the SFRPD biological monitor will relocate the animal to suitable nearby habitat and/or contact the Service and/or CDFG for guidance. If the animal is at risk, work must be suspended until the California red-legged frog or San Francisco garter snake removes itself from harm's way.

21. The SFRPD will continue to conduct regular staff training. SFRPD staff will be taught how to identify species of concern, conduct activities incorporating the required minimization measures in project areas, and determine what conditions require cessation of work and what situations require notification of a biological monitor. Upon completion of additional training, staff will be able to perform routine maintenance tasks within the golf course footprint (excluding the no-mow zone) such as changing pin placements; removing ball marks from surfaces; roping off, repairing, and reporting damage to sensitive areas to the SFRPD Natural Areas Manager; filling divots with seed mixes; removing foreign objects; replenishing and raking sand in bunkers; removing debris and litter; conducting landscaping activities; mowing fairways and greens; hand or mechanized trimming of vegetation that cannot be mowed; applying organic fertilizers, compost tea and other soil health products with machinery, aerating, dethatching and irrigating play surfaces; controlling gophers; and maintaining plumbing, drainage and electrical systems. Landscaping activities within the golf course footprint include tree removal, pruning and stump grinding throughout; hand weeding and edging around areas of play, and groundcover, tree and shrub installation, pruning and weeding at the clubhouse and other ornamentally landscaped areas. SFRPD staff will also be able to perform minor maintenance activities such as hand litter and trash removal, inspections and clearing of irrigation valves, and hand removal of debris from culverts in the no-mow areas.

22. All major golf course related activities occurring in the no-mow zones adjacent to Laguna Salada, Horse Stable Pond, Sanchez Creek and adjacent wetlands must be overseen by the SFRPD biological monitor with the Natural Areas Program. Tree removal, tree pruning and stump grinding are the only major maintenance activities anticipated to occur in portions of the no-mow zone. These activities will only occur in the isolated no-mow zones located between the golf course fairways (i.e., not the no mow zones adjacent to Horse Stable Pond and Laguna Salada). Prior to the commencement of any work in these areas, the biological monitor with the Natural Areas Program must be contacted. The biological monitor will evaluate whether the activity requires that measures such as exclusion barriers, burrow collapsing or incremental vegetation removal be implemented in order to protect the species. The Natural Areas Program biological monitor will oversee the implementation of these measures. If unanticipated activities (activities not listed in conservation measures 21 and 22 above) are required in the no-mow zone and the Natural Areas Program manager determines that the activities may result in take, the Service will be consulted to determine whether additional measures are required.

23. The SFRPD will distribute educational materials developed in cooperation with Service to staff, Park users, and golf patrons. These materials will include means to identify California red-legged frog and San Francisco garter snake, a synopsis of their natural history, including habitat requirements, information on their distribution and abundance at the facility, and procedures for avoidance and who to contact in case of a question.

24. The SFRPD will distribute or install educational materials (brochures, or interpretive or regulatory signs) where appropriate around Laguna Salada and Horse Stable Pond, the golf course entrances, and in the clubhouse stating that golfers and park users and their pets are prohibited from entering Laguna Salada and Horse Stable Pond, dogs are to remain on leash, and that leaving food for cats is prohibited. The signs will also state that releasing animals in the park is prohibited. If a feral cat feeding station is discovered at Sharp Park, it will be removed as soon as practicable. The SFRPD will cooperate with GGNRA on their regional effort to address free-roaming cats at Mori Point and Sharp Park. The SFRPD will work with Service staff and other local agencies (the City of Pacifica, San Mateo County, Golden Gate National Recreation Area) to develop and implement an enforcement plan to control unauthorized access to the western side of Laguna Salada. Among the items to be considered in this plan are closing holes in the fence at the seawall, placing additional signs, and on-site enforcement. A draft enforcement plan will be provided to the Service within 18 months of the date of the Biological Opinion. The implementation of the plan will begin within 6 months of the Service approval of the final plan.

25. The SFRPD will install and maintain a 3 foot wood fence around Horse Stable Pond and a 3 foot wire-mesh fence along the eastern edge of the seawall, to keep dog walkers and other park users from entering Horse Stable Pond and Laguna Salada from the seawall. "No Access" signs will be installed on the fence.

26. The SFRPD will restrict the use of vehicles on Mori Point Road, from Moose Lodge to Horse Stable Pond, over which the City has an easement.

27. The SFRPD will prepare and implement, with Service approval, an Invasive Species Management Plan that includes monitoring and control of bullfrogs and other introduced species that potentially reduce California red-legged frog populations and habitat quality. Routine annual surveys for potentially detrimental non-native invasive animal species, particularly bullfrogs, predatory fish and non-native turtles, will be scheduled and supervised by the Natural Areas Program biological monitor. Monitoring surveys for bullfrogs would be conducted in the spring and could consist of searches for egg masses, calling surveys and visual surveys. If individuals of potentially destructive animal species are encountered, control methods will be developed and, with Service approval, implemented. Among the methods that could be employed include draining of the water body (Arrowhead Reservoir), hand removal of egg masses, dipnetting for tadpoles and culling of adults. These control activities would be conducted by a Service-approved biologist.

28. The SFRPD will undertake actions to restore and enhance California red-legged frog habitat in Arrowhead Reservoir by eliminating known predators. Presently, Arrowhead Reservoir is the only area in the Project site where any invasive animals (bass) are known to occur. The SFRPD will drain the reservoir to eliminate the bass population and post signs prohibiting release of animals in order to reduce the potential for future introductions. Arrowhead Reservoir will be monitored to detect potentially detrimental animals (see Measure 27 above)

29. The SFRPD will restore 0.5 acre of upland habitat around Horse Stable Pond and Laguna Salada. This restoration would occur in three locations 1) south of Horse Stable Pond in an area with significant radish, mustard and Cape ivy cover, 2) immediately north of Horse Stable Pond in an area dominated by iceplant, and 3) in the area west of Laguna Salada in an area dominated by iceplant. The restoration in this latter area would be coordinated with initiatives described in Measure 24 to reduce unauthorized access to sensitive areas. Within 9 months of the date of the Biological Opinion, the SFRPD will provide to the Service for review, a detailed draft restoration plan that includes a map of the restoration areas and a description of the proposed restoration, monitoring and maintenance actions. Surveys for infestations of invasive non-native and particularly aggressive native plant species that reduce habitat value for desired wildlife will also be conducted annually. Where feasible, additional hand removal of these aggressive species would be conducted in the no mow areas around Horse Stable Pond, Laguna Salada and the connecting channel. Invasive plant removal will occur incrementally and will be followed by re-vegetation by locally collected and habitat appropriate native plants. All habitat restoration work will be conducted or overseen by the Natural Areas Program staff and overseen by the Service-approved biological monitor. Large-scale mechanical control or eradication efforts will be initiated as part of the long-term restoration plan of the site.

30. Golf course staff engaged in activities and who detect any California red-legged frog or San Francisco garter snake on the course that does not move of its own accord and would otherwise be in harm's way, must immediately report their finding to the biological monitor with the Natural Areas Program and attempt to prevent harm to the individual(s).

31. During and following completion of the Project, the SFRPD shall maintain and keep in good repair the sea wall road, which provides the only vehicle access for maintenance activities as described above. Maintenance of the roadway on the sea wall is expected to include filling ruts in the surface with aggregate or comparable materials and repairing drainage issues by outsloping the roadbed. The SFRPD does not anticipate hardening or further armoring of the sides of the sea wall.

32. The SFRPD will construct a perennial California red-legged frog pond approximately 150 square meters in size and similar in scope and design to the breeding pond constructed by the GGNRA. The design and site selection will be provided to the Service for review and approval nine months from the date of issuance of the biological opinion. Construction of the California red-legged frog pond will occur within two years and nine months of issuance of the biological opinion. San Francisco Parks Department will monitor the pond for breeding success by surveying for egg masses on an annual basis and documenting habitat conditions for a period of five years following pond construction and this information will be provided to the Service and the GGNRA.

Action Area

The action area is defined in 50 CFR § 402.02, as "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action." For the proposed action, the action area includes all lands at Sharp Park associated with the footprint of the construction action and all lands associated with operation and maintenance of Sharp Park. Sharp Park is approximately 417 acres characterized by upland ruderal habitat, freshwater wetlands, open water, and an upland golf course including tees, greens, and fairways.

Analytical Framework for the Jeopardy Analysis

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 the species. 50 Code of Federal Regulations (C.F.R.) §402.02.

In accordance with policy and regulation, the jeopardy analysis in this biological opinion relies on three components: (1) the *Status of the Species*, which evaluates the California red-legged frog and San Francisco garter snake's range-wide conditions, the factors responsible for that condition, and their survival and recovery needs; (2) the *Environmental Baseline*, which evaluates the condition of these listed species in the action area, the factors responsible for that

condition, and the relationship of the action area to the survival and recovery of these listed species; (3) the *Effects of the Action*, which determines the direct and indirect effects of the proposed Federal action and the effects of any interrelated or interdependent activities on these species; and (4) *Cumulative Effects*, which evaluates the effects of future, non-Federal activities in the action area on them.

In accordance with policy and regulation, the jeopardy determination is made by evaluating the effects of the proposed Federal action in the context of the California red-legged frog and San Francisco garter snake's current status, taking into account any cumulative effects, to determine if implementation of the proposed action is likely to cause an appreciable reduction in the likelihood of both the survival and recovery of these listed species in the wild.

The jeopardy analysis in this biological opinion places an emphasis on consideration of the range-wide survival and recovery needs of these listed species, and the role of the action area in the survival and recovery of these listed species as the context for evaluating the significance of the effects of the proposed Federal action, taken together with cumulative effects, for purposes of making the jeopardy determination.

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 (61 FR 25813) (Service 1996). Critical habitat was designated for this species on April 13, 2006 (71 FR 19244) (Service 2006c) and revisions to the critical habitat designation were published on March 17, 2010 (75 FR 12816) (Service 2010). At this time, the Service recognized the taxonomic change from *Rana aurora draytonii* to *Rana draytonii*. A Recovery Plan was published for the California red-legged frog on September 12, 2002 (Service 2002).

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

Distribution: The historic range of the California red-legged frog extended from the vicinity of Elk Creek in Mendocino County, California, along the coast inland to the vicinity of Redding in Shasta County, California, and southward to northwestern Baja California, Mexico (Fellers 2005; Jennings and Hayes 1985; Hayes and Krempels 1986). The species was historically documented in 46 counties but the taxa now remains in 238 streams or drainages within 23 counties, representing a loss of 70 percent of its former range (Service 2002). California red-legged frogs are still locally abundant within portions of the San Francisco Bay Area and the Central

As described in the biological assessment, California red-legged frog egg masses have been observed at Sharp Park Golf Course in each year from 2004 through 2011 with numbers ranging from 16 egg masses in 2005 to 189 in 2011. The biological assessment also provides data for egg masses observed at Mori Point during the same period with annual numbers ranging from zero in 2004 to 120 in 2008. CNDDB also reports known occurrences of California red-legged frogs within Sharp Park Golf Course and at Mori Point (CNDDB 2012). Based on the available data showing a trend of increasing number of egg masses and adults, California red-legged frog numbers may be increasing in the project area. This increase is likely due to the continued breeding success at Laguna Salada and at the newer ponds at Mori Point (GGNRA data, as cited in SFRPD 2012, Swaim 2009). Since California red-legged frogs are the primary food source for the San Francisco garter snake, this increase in frogs would increase the food source for the San Francisco garter snake and may help the snake population numbers increase.

California red-legged frog and San Francisco garter snake are affected by ongoing operation and maintenance of Sharp Park Golf Course. Activities at Sharp Park Golf Course that affect these species include pumping of water from Horse Stable Pond to the Pacific Ocean to control winter flood waters. Pumping may cause frog egg masses to become stranded and desiccated; cause entrainment of egg masses and juvenile frogs; and over time reduce habitat quality in Horse Stable Pond and Laguna Salada by encouraging encroachment of cattails and tules, altering the salinity levels in both water bodies, and potentially increasing the pH of the water; mowing of golf course tees, greens, and fairways; use of golf carts on cart paths, tees, greens, and fairways; removal of upland refuge habitat during gopher control activities on the tees, greens, and fairways; application of nitrogen-based fertilizers to golf course tees and greens; and off-trail recreational use on the west side of Laguna Salada. A San Francisco garter snake was killed, most likely by a lawnmower in 2005. Ongoing pumping is known to strand over one-hundred egg masses in wet years; however, it is unknown how these numbers relate to the proportion of egg masses present on site because no comprehensive surveys for egg masses have been attempted.

The Service has consulted on three previous projects in the vicinity of Sharp Park Golf Course. The Mori Point Restoration and Trail Plan in the Golden Gate National Recreation Area (GGNRA) Biological Opinion analyzed the effects of habitat restoration at Mori Point for the benefit of the California red-legged frog and San Francisco garter snake, including reducing the impact of existing trails on these species, restoration of native plant communities, improvement of wetland habitat connectivity at Mori Point, and creation of five ponds for San Francisco garter snake foraging habitat (Service 2006b). Together, these activities provided long-term benefit the San Francisco garter snake at Mori Point (Service 2006b)

The Sharp Park Golf Course Storm Drain Repair Biological Opinion analyzed the effects of an emergency repair to a storm drain from the golf course through the seawall covering 0.023 acres (Service 2008). The Sharp Park Golf Course Storm Drain Repair Biological Opinion contains reasonable and prudent measures and terms and conditions that ensured that take of California red-legged frogs and San Francisco garter snakes would be minimized.

wetland and upland habitat and to individual California red-legged frogs and San Francisco garter snakes will be throughout the 0.624 acre construction footprint.

Injury, exposure disorientation, and disruption of normal behaviors will likely result from 1) the removal and/or disturbance of vegetation, sediments, and cover sites in Horse Stable Pond and the connecting channel, 2) construction of a concrete walkway in front of the pumphouse at Horse Stable Pond, 3) soil disturbance and fill associated with replacement of the wooden retaining wall with a concrete retaining wall at Horse Stable Pond, and 4) excavation of sediments and vegetation as part of cart path repairs. Construction noise, vibration, and increased human activity during the construction may interfere with normal behaviors such as feeding, sheltering, movement between refugia and foraging grounds, and other essential behaviors. This can result in avoidance of areas that have suitable habitat and can cause disturbance to the species.

Direct effects may include injury or mortality from being crushed by earth moving equipment, construction debris, and worker foot traffic. These impacts will be reduced through implementation of the Conservation Measures described above, including: (1) clearly demarcating the boundaries of the project areas and equipment access routes and locating staging areas outside of wetland areas or other water bodies; (2) use of appropriate erosion control practices to minimize effects to water quality and prevent entanglement of San Francisco garter snakes; (3) elevating construction materials above ground level, checking beneath tires of parked construction vehicles, and limiting the speed of vehicles at the construction site to minimize the risk of California red-legged frogs and San Francisco garter snakes being crushed; (4) avoiding work activities during the breeding season will reduce adverse impacts, particularly to eggs and tadpoles; (5) suspending work when species are observed and relocating individual California red-legged frogs and San Francisco garter snakes to further minimize injury or mortality; and (6) revegetation with native species following construction will help to reduce the effects of construction activities on site.

Work activities, including noise and vibration, may result in adverse effects to California red-legged frogs and San Francisco garter snakes by causing them to leave the work area. This disturbance may increase the potential for predation and desiccation. As described in the Conservation Measures, limiting the area disturbed by construction activities to June 1 through October 31 would reduce the potential for adversely affecting dispersal of the species. The City proposes to further minimize adverse effects by locating stockpiling and staging areas in the uplands and in areas cleared for species and the golf course.

The sediment layer in Horse Stable Pond could be anoxic and contain hydrogen sulfide (Baye 2012). Resuspension of anoxic hydrogen sulfide sediments may result in pulses of low oxygen conditions in Horse Stable Pond which could cause mortality of California red-legged frog larvae and juveniles. By limiting the construction period to June 1 through October 31, the City's Conservation Measures minimize the likelihood that adult or juvenile California red-legged frogs will be present and reduces this potential effect.

The potential exists for uninformed workers to intentionally or unintentionally injure or kill California red-legged frogs and San Francisco garter snakes. The potential for this impact will be

greatly reduced by implementing an education program (Conservation Measure 2) that informs workers of the presence and protected status of this species and the measures that are being implemented to protect it during project activities.

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

The capture and handling of California red-legged frogs and San Francisco garter snakes to move them from a work area may have adverse effects to individuals. Mortality may occur as a result of improper handling, containment, or transport of individuals or from releasing them into unsuitable habitat. Improper handling, containment, or transport of individuals will be reduced or prevented by use of a Service-approved biologist as proposed in the above Conservation Measures.

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

Golf course maintenance and operations

The proposed golf course maintenance and operations activities described above have the potential to result in direct and indirect effects to the California red-legged frog and San Francisco garter snake. As detailed below, over a period of ten years (the time of proposed operations and maintenance activities at Sharp Park Golf Course), adverse effects to the California red-legged frog and San Francisco garter snake could occur at Sharp Park Golf Course as a result of pumping water from the site; mowing tees, greens, and fairways; operation of golf carts; gopher control; application of nitrogen-based fertilizers; and trampling by off-leash dogs.

The ongoing and continuing golf course maintenance and operations activities have the potential to cause adverse effects to the California red-legged frog and San Francisco garter snake. The City proposes to minimize these ongoing effects by implementing the Conservation Measures included in the project description section of this biological opinion. Proposed Conservation Measures include: operating pumps to reduce the likelihood of stranding egg masses in Horse Stable Pond, Laguna Salada, and the connecting channel; developing relocation plans for egg masses stranded on the fairways and greens; implementation of a no-mow zone; providing training to mower operators; implementation of a 90 degree rule for golf cart use; development of educational materials; limiting access to Laguna Salada; development of an invasive species eradication plan; restoration activities; and construction of a perennial California red-legged frog pond. Effective implementation of the Conservation Measures will likely minimize effects to the California red-legged frog and San Francisco garter snake during golf course maintenance and operations activities but incidental take is still likely to occur.

Pumping water from Horse Stable Pond could result in direct mortality of California red-legged frogs through two primary mechanisms. The first source of potential mortality is through stranding and subsequent desiccation of frog egg masses. California red-legged frog breeding and deposition of egg masses coincide with winter storm events (Storer 1925, Service 2002) which cause water levels to rise in Horse Stable Pond, Laguna Salada, and surrounding wetlands (SFRPD 2012). Although water levels may be lowered in advance of winter storms to provide additional water storage capacity, the pumps are not able to instantaneously lower water levels throughout the site as storm water runoff accumulates from the surrounding watershed (Geomatrix 1987; Kamman Hydrology and Engineering, Inc. 2009; Hayes 2012). Because water levels may rise during storm events, California red-legged frogs may lay eggs in areas that will be drained or become isolated from other wetland features as the pumps lower water levels (Swaim Biological Inc. 2008; Kamman Hydrology and Engineering, Inc. 2009, Kamman 2012).

As described in the biological assessment, egg masses located in drained and/or isolated areas may not contain enough water to allow individual frogs to develop and metamorphose. As these isolated areas continue to dry, egg masses may become exposed to air resulting in desiccation and mortality of eggs (Service 2002; Service 2005; Hayes 2012). This process has the potential to adversely affect egg masses in wet years. During the wet season of 2011 – 2012 189 egg masses were detected at Sharp Park (SFRPD 2012). Of these 132 were determined by SFRPD staff to be at risk of stranding and subsequent desiccation (SFRPD 2012) and additional egg masses were determined to be at risk of stranding and desiccation during February of 2012 (Bowie 2012). The basis for the Service not to move these eggs masses are the following: 1) the stranding of eggs masses is a natural process; 2) that moving the eggs masses has risks and can result in mortality of the egg masses after they are moved; and 3) that there can be risk and uncertainty to where to place the egg masses. As described in Baseline, GGNRA have created some breeding ponds which have shown a yearly increase in production. Conservation Measure 32, will create an additional pond similar in design to these ponds which should increase available breeding habitat and the animals will be able to successfully breed in most rainy seasons, even during low rainfall years. In addition, the removal of predators such as bull frogs and fish, will also improve successful breeding for the California red-legged frog.

The actions described in Conservation Measure 15 will minimize that likelihood of egg masses in Horse Stable Pond, Laguna Salada, and the connecting channel from becoming stranded and desiccated. However, visual searches for stranded egg masses are not likely to locate all egg masses present throughout Horse Stable Pond, Laguna Salada, and the connecting channel. Egg masses are often in dense vegetation and it is not reasonable to expect that all egg masses will be detected. Therefore, some egg masses in these water bodies may become stranded and desiccated. Of the stranded egg masses that are detected outside of the areas where pumping activities will allow for adjustment of the water level to accommodate egg development, translocation to suitable areas is not likely to be appropriate and/or successful in all cases and mortality of individual eggs and egg masses may still occur (Hayes 2012).

A second source of potential California red-legged frog mortality in response to pump operation is through entrainment (individuals being pulled along with water into and through the screen and pipes as a result of the pumping action) of egg masses and individual larvae at the pumps.

Egg masses are incapable of self-movement and larvae are poor swimmers making these life stages particularly vulnerable to entrainment (Mitchell 2008, Hayes 2012). Surveys at Horse Stable Pond in 2008 and 2012 identified a number of California red-legged frog egg masses in Horse Stable Pond near the pump house (Swaim 2008, Bowie 2012). If any egg masses were to become detached from the surrounding vegetation during pump operations they could become entrained resulting in egg masses being crushed against the screen at the pump house or being carried through the pump apparatus and deposited on the sandy beach on the ocean-side of the seawall; either situation could result in mortality of affected egg masses.

As described in the biological assessment, water levels at Sharp Park Golf Course are drawn down during the summer resulting in shallow water conditions at the margins of Laguna Salada (6 inches deep on the inboard margin of the vegetation). Shallow water promotes the growth of cattails and tules causing the gradual encroachment of vegetation and loss of open water habitat used by California red-legged frogs (ESA-PWA 2011; Hayes 2012). Aerial imagery, taken between 1946 and 2000, shows a decrease in the extent of both open water and wetland vegetation at Laguna Salada (Arup North America Ltd. 2009). The Sharp Park Working Group, convened by SFRPD during 2010, concluded that "the most valuable habitat and breeding opportunities of San Francisco Garter Snake and California Red-legged Frog are concentrated around Laguna Salada and Horse Stable Pond. Habitat for the California Red-legged Frog continues to rapidly degrade at Laguna Salada and Horse Stable Pond where cattails and tules are replacing the open water habitat the frog depends upon for breeding" (Sharp Park Working Group 2010). Based on the pattern of encroachment seen in the aerial images, encroachment of cattails may continue over the next 10 years, resulting in loss of breeding habitat for the California red-legged frog and loss of foraging opportunities for the San Francisco garter snake. The tule and cattail removal proposed as part of the project will likely improve breeding habitat for California red-legged frog by creating additional open water habitat.

Lowered water levels due to pumping activity may increase the likelihood of salinity intrusion to Laguna Salada and Horse Stable Pond. If water levels in Laguna Salada and Horse Stable Pond fall below sea level and beach groundwater levels, then saline ground water may flow into the lagoon from the beach (ESA-PWA 2011). Observational data of saline seeps on the landward side of the seawall indicate that some degree of saline intrusion may already be occurring (ESA-PWA 2011), although the relative contributions of pumping and natural variation in groundwater and wave action to saline intrusion are not fully understood (Kamman 2009). California red-legged frogs are sensitive to salinity levels and cannot survive in water that exceeds particular salinity thresholds (McGinnis 1986; ESA-PWA 2011). If the amount of saline intrusion and overall salinity of Laguna Salada and Horse Stable Pond increase beyond the tolerance of California red-legged frogs then frog mortality may occur and neither water body would continue to function as habitat for the frog (as was seen in 1983 when the seawall failed allowing intrusion of salt water into Laguna Salada increasing salinity and eliminating frogs from Laguna Salada; Service 2006a; ESA-PWA 2011).

Pumping may also alter the pH of Laguna Salada and thereby degrade California red-legged frog habitat. Observations of black mud below the lagoon surface are indicative of anoxic iron sulfide (ESA-PWA 2011). When iron sulfide containing sediments are exposed to air they can form acid

sulfates which may result in a decrease in the pH (increased acidity) of Laguna Salada and degrade the frog's habitat. Lower water levels in Laguna Salada may intensify this process as more sediment becomes exposed to air. The extent to which pumping activities contribute to exposure of anoxic sediments has not been established and pH data have not yet been collected for Laguna Salada.

Sharp Park staff members entering drainage sumps along the culvert from Francisco Boulevard to Laguna Salada and removing debris that may provide cover for snakes and frogs may have unintentional adverse effects to the California red-legged frogs and San Francisco garter snakes by causing the species to leave cover habitat or by injuring the species as heavy pieces of debris are moved. The potential for this impact will be greatly reduced, as proposed in the Conservation Measures, by informing workers of the presence and protected status of these species and the measures that should be implemented to protect it during project activities.

Application of nitrogen fertilizers at Sharp Park Golf Course to greens adjacent to wetlands has the potential to adversely affect the California red-legged frog and San Francisco garter snake. Nitrate, nitrite, and ammonia are known to have toxic effects on amphibians, including California red-legged frogs (Schuytema and Nebeker 1999a, 1999b; Marco et al. 1999; Service 2002; Service 2006b). Because nitrogen fertilizers are applied near wetland features, it is likely that nitrogen will enter aqueous systems at Sharp Park Golf Course, where it will be transformed into nitrates, nitrites, and ammonia. Past measurements of nitrate and ammonia from Laguna Salada have shown levels toxic to California red-legged frogs (ESA-PWA 2011). Because various life stages of frogs are known to occupy Laguna Salada, it is possible that the increased nitrate and ammonia levels have resulted in mortality to the California red-legged frog. By potentially reducing numbers of California red-legged frogs in Laguna Salada application of nitrogen fertilizers has the potential to adversely affect the San Francisco garter snake by reducing the numbers of a primary prey item of San Francisco garter snakes (Service 2006b).

Mortalities caused by lawn mowers have been previously documented in a telemetry-monitored population of snakes (Durbian 2006). Mowing of fairways and greens at Sharp Park Golf Course has the potential to cause direct mortality to California red-legged frogs and San Francisco garter snakes (Service 2006a; Salisbury 2011). California red-legged frogs and San Francisco garter snakes are known to occur in the wetlands at Sharp Park Golf Course (Fox 1951; Service 1985; Service 2002; Service 2006a; CNDDB 2012; SFRPD 2012) and the adjacent uplands at Mori Point (Barry 1978; Service 2002; Service 2006a, 2006b; CNDDB 2012; SFRPD 2012). The mosaic of wetlands and uplands is interspersed with fairways and greens that both species may use as corridors between different wetlands and between wetlands and uplands. As proposed in the Conservation Measures, the effect of mowing on California red-legged frogs and San Francisco garter snakes will be reduced by educating and training mower operators about the presence of these species at the golf course. However, even with training, detection by mower operators of all snakes and frogs that may be on fairways and greens is unlikely, particularly when mowing occurs in the early morning before full daylight. The Conservation Measures will reduce adverse effects by requiring predawn lawn mower use to include lighting and a biological monitor. However, mowing has the potential to result in mortality of both species (Service 2006a, 2006b).

Puglis and Boone 2012 found that maintenance of an adequate buffer zone at a golf course is important for resident frog populations. Because the Project will only mow existing tees, greens, and fairways and the proposed Conservation Measures includes provision for possible expansion of the no-mow zone the adverse effects from this aspect of mowing activities will be reduced.

Direct mortality of San Francisco garter snakes may result from the operation of golf carts on cart paths and fairways as described in the biological assessment. Direct mortality of snakes resulting from vehicle strikes on roads has been well documented (Rosen and Lowe 1994, Ashley and Robinson 1996, Rudolph *et al.* 1999, Enge and Wood 2002, Row *et al.* 2007), including 186 killed by golf carts in a five month period at a golf course in North Carolina (DeGregorio et al. 2010). Snakes are particularly vulnerable to vehicle strikes because of their long bodies that provide a large target area, their relatively slow speed, and their habit of lying on warm roadways during the day to raise their body temperatures (Rosen and Lowe 1994). Evidence suggests that San Francisco garter snakes may also be susceptible to road mortality. This source of mortality will be reduced by implementation of Conservation Measures 20, 21, 23, and 24.

California red-legged frogs are also susceptible to direct mortality as a result of operation of golf carts. A "road effect" has been investigated in amphibian species and has been associated with direct mortality (Forman and Deblinger 1998). Additionally, species such as red-legged frogs that regularly move between upland and wetland habitats may be particularly vulnerable to road effects (Service 2002). Road mortalities of California red-legged frogs have been documented at a similar habitat in Marin County along Bunker Road where the road separates upland terrestrial breeding habitat from aquatic breeding habitat in Rodeo Lagoon.

At Sharp Park Golf Course, the cart paths most likely to attract California red-legged frogs and San Francisco garter snakes are those occurring between the wetlands at Laguna Salada and Horse Stable Pond and the upland habitat at Mori Point (this includes portions of cart paths associated with holes 9, 11, 12, and 13). The biological assessment and Fields 2011 indicate that 30-40 percent of the roughly 50,000 annual golf course users at Sharp Park Golf Course rent carts. For golf carts carrying two golfers, this results in about 7,500 golf cart trips annually on the cart paths, greens, and fairways at Sharp Park Golf Course. The usage of golf carts combined with the orientation of several cart paths between upland and wetland habitats indicate that direct mortality of California red-legged frogs and San Francisco garter snakes on cart paths is possible. The adverse effects associated with golf cart use will be reduced through enforcement of a 90-degree rule as described in the Conservation Measures.

Upland terrestrial landscapes are an important component of both California red-legged frog and San Francisco garter snake habitat. Gopher burrows in upland zones provide refugia for both frogs and snakes and provide foraging opportunities for the San Francisco garter snake. The gopher control activities have the potential to result in direct mortality to both the California red-legged frog and the San Francisco garter snake. The project description proposes to set gopher traps at the entrance to burrows found on the fairways and greens and to fill burrows with turf. Direct mortality may occur to both species through trap mortality (because gopher traps may cause mortality to non-target species such as frogs and snakes) and through entombment

INCIDENTAL TAKE STATEMENT

Section 9(a)(1) of the Act and Federal regulations pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species without special exemption. Take is defined as harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or attempt to engage in any such conduct. Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by the Service as actions that create the likelihood of injury to a listed species 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. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with this Incidental Take Statement.

The measures described below are non-discretionary, and must be implemented by the Corps of Engineers and the City so that they become binding conditions of any grant or permit issued to the City, as appropriate, in order for the exemption in section 7(o)(2) to apply. The Corps and City have a continuing duty to regulate the activity covered by this incidental take statement. If the Corps or City (1) fail to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, and/or (2) fail to retain oversight to ensure compliance with these terms and conditions, the protective coverage of section 7(o)(2) may lapse. To monitor the impact of incidental take, the Corps and the City must report the progress of the subject action and resulting impact on the California red-legged frog and San Francisco garter snake to the Service as specified in the incidental take statement. 50 C.F.R. §402.14(i)(3).

Amount or Extent of Take

Construction activities

The Service anticipates that incidental take of the California red-legged frog will be difficult to detect because when this amphibian is not located at breeding ponds, it inhabits the burrows of ground squirrels or other rodents, or may be difficult to locate due to its cryptic appearance and behavior; the sub-adult and adult animals may be located a distance from the breeding ponds; dispersal occurs during rainy nights in the fall, winter, or spring; and the finding of an injured or dead individual is unlikely because of their relatively small body size. For these reasons, the Service anticipates that all California red-legged frogs in the 0.624 acre within the Horse Stable Pond construction site will be subject to incidental take in the form of harassment and capture. The Service also anticipates that, in total, one (1) California red-legged frog adult will be subject to incidental take in the form of death or injury as a result of construction activities.

The Service anticipates that all San Francisco garter snakes in the 0.624 acre within construction area will potentially be harassed as a result of ground disturbing activities. Because additional Conservation Measures, including presence of biological monitors, cessation of construction

work between October 31 and June 1, and hand removal of terrestrial vegetation, will be implemented at the Horse Stable Pond construction site, take of this species is expected to be in the form of harassment and no San Francisco garter snakes are expected to be killed or injured as a result of construction activities.

Operations and Maintenance Activities
Because of the large area potentially affected by golf course operations and maintenance (Sharp Park) and because of the difficulty in accessing some wetland areas such as Laguna Salada, the Service anticipates that incidental take of California red-legged frogs associated with golf course operations and maintenance will be difficult to detect. For these reasons the Service anticipates that all adult and juvenile California red-legged frogs in the action area will be subject to incidental take in the form of harassment. The Service also anticipates that over the ten year life of the operations and maintenance project 130 egg masses per year will be subject to incidental take in the form of harm, harassment, capture, death, or injury due to operation of pumps. The Service futher anticipates that the majority of these egg mass mortalities will occur in areas outside of Laguna Salada, Horse Stable Pond, and the connecting channel; however, even though Conservation Measure 15 minimizes the effect of pumping, some of the 130 egg masses may be stranded at Laguna Salada, Horse Stable Pond, and the connecting channel. As per Conservation Measure 16, egg masses will only be moved subject to Service approval. In addition, the Service anticipates that one (1) California red-legged frog adult will be subject to incidental take in the form of death or injury as a result of construction activities.

Due to the same difficulties in detecting take as described above, the Service anticipates that all San Francisco garter snakes in the action area will be subject to incidental take in the form of harassment as a result of the direct effects of operations and maintenance activities and the indirect effect of loss of prey. Because of previous incidents of road mortality and mowing mortality of San Francisco garter snakes in the vicinity of Sharp Park and other locations in San Mateo County, the Service anticipates that over the ten year life of the operations and maintenance project a total of one (1) San Francisco garter snake will be subject to incidental take in the form of death or injury.

Restoration Activities
Provided that the City implements the proposed restoration activities following the scope and design of the existing GGNRA ponds at Mori Point, the Service anticipates that all San Francisco garter snakes and California red-legged frogs in the restoration area footprint will be subject to incidental take in the form of harassment as a result of the direct effects of removal of invasive plants, revegetation activities, and the construction activities associated with pond construction.

Effect of the Take

In the accompanying biological opinion, the Service has determined that this level of anticipated take is not likely to result in jeopardy to the San Francisco garter snake or California red-legged frog.

Reasonable and Prudent Measure

Our evaluation of the proposed action includes consideration of the Conservation Measures described in the Project Description section of this biological opinion. Consequently, any changes in those measures, or any failure to implement those measures, may constitute a modification of the proposed action that causes an effect to the California red-legged frog and San Francisco garter snake that was not considered in the biological opinion and require reinitiation of consultation, pursuant to the implementing regulations of section 7(a)(2) of the Act (50 C.F.R. § 402.16).

The Service believes the following reasonable and prudent measure is necessary and appropriate to minimize the effects of the Sharp Park Safety, Infrastructure Improvement and Habitat Enhancement Project on San Francisco garter snakes and California red-legged frogs:

> The Corps and City will minimize the effect of take to the California red-legged frog and San Francisco garter snake.

Terms and Conditions

To be exempt from the prohibitions of Section 9 of the Act, the Corps and the City shall ensure compliance with the following terms and conditions, which implements the reasonable and prudent measure described above and are intended to minimize the impact of incidental take on the California red-legged frog and San Francisco garter snake. These terms and conditions are nondiscretionary.

The following terms and conditions will implement the Reasonable and Prudent Measure described above:

1. The Corps and the City will minimize the potential for harm, harassment, injury, and death of federally listed wildlife species resulting from project related activities including implementation of the Conservation Measures in this biological opinion.

2. If requested, during or upon completion of construction activities, the City will ensure the Service, CDFG, or their authorized agents have immediate access to the project area. The on-site biologist and/or a representative from the Corps/City shall accompany Service personnel on an on-site inspection of the project area(s) to review project effects to California red-legged frogs and San Francisco garter snake and their habitats.

3. The Corps and/or City will ensure compliance with the *Reporting Requirements* of this biological opinion.

4. The City will contact the Service for review and approval of plans to lower the water level in Horse Stable Pond at the end of the wet season.

5. Within three months of issuance of the biological opinion, the City will develop, for Service review and approval, a California red-legged frog and San Francisco garter snake training program for all golf staff involved with the operations of lawn mowers and/or maintenance and cleaning of Sharp Park drainage sumps. This plan will detail the qualifications of the person(s) delivering the training as well as the number of hours of training and how often golf course staff will take the training. Within six months of issuance of the biological opinion, the City will begin implementation of the training program.

6. The Corps will ensure that all project monitors associated with the construction aspects of the project will possess a valid 10(a)1(A) permit for the California red-legged frog and San Francisco garter snake.

7. During the course of construction activities, biological monitors may determine that relocation of a California red-legged frog or San Francisco garter snake is necessary for the safety of individual animals. If it is determined that a San Francisco garter snake needs to be moved, the Service will be contacted for further guidance. Individuals will be relocated to appropriate sites away from disturbance on Sharp Park property.

8. In order to minimize the effects of golf course operations and maintenance activities, the restoration activities described in Conservation Measure 29 will include a detailed plan for enhancing the movement corridor between the upland habitat at Mori Point and the wetlands of Horse Stable Pond, the connecting channel, and Laguna Salada. As described in Conservation Measure 17(a), enhancement of connectivity will include a plan subject to Service review and approval for expansion of the no-mow zone for the benefit of the California red-legged frog and San Francisco garter snake.

9. The Corps will ensure that implementation of restoration activities described in Conservation Measure 29 will begin 18 months following issuance of the biological opinion. As indicated in the project description the restoration activities will follow the scope and design of the restoration actions previously implemented by the GGNRA on Mori Point. The GGNRA scope and design included the following measures which will be implemented by the City during restoration activities:

    a. No earthmoving or soil disturbing work shall occur in the vicinity of existing ponds or wetlands between November15 and April 15, the breeding season for California red-legged frog and the season when San Francisco garter snake are inactive in their winter burrows.

    b. Vegetation in all construction areas will be progressively cleared by hand equipment to a height of 4 inches and checked for presence of snakes prior to ground-disturbance and construction equipment or vehicles entering the sites.

Once vegetation is cleared, a pre-construction survey for the San Francisco garter snake will be conducted in the impact area.

c. Prior to construction near wetlands or ponds, exclusion fencing will be constructed and all rodent burrows in the construction area will be hand excavated until the burrows terminates or until a maximum depth of 30 centimeters in areas where soil or fill will be removed or placed.

d. Exclusion fencing gates will be closely monitored throughout construction to ensure no snakes or frogs enter the area.

e. Speed limits of 10 miles per hour will be posted on all access roads.

f. A Biological Monitor will inspect for snakes and frogs underneath any vehicle that is parked for 30 minutes or more, immediately prior to moving the vehicle.

g. Personnel who detect any suspected San Francisco garter snake or California red-legged frog on-site will immediately report their finding to a Biological Monitor for positive identification. Non-permitted personnel will not attempt to capture or move any snake or frog detected. If the Biological Monitor determines that the animal is not a San Francisco garter snake or California red-legged frog, the Biological Monitor may hand capture and move the animal to suitable habitat outside the construction area. If the Biological Monitor determines that the detected animal is a San Francisco garter snake or a California red-legged frog, or is unable to positively identify the animal, then the Biological Monitor will notify the permitted biologist for appropriate action. If it is determined that a San Francisco garter snake needs to be moved, the Service will be contacted for further guidance.

h. A biologist holding a valid 10(a)(1)(A) permit from the Service will be on call or on-site to handle any San Francisco garter snakes or California red-legged frogs encountered during pre-construction and construction activities. Only a holder of a valid 10(a)(1)(A) permit from the Service will handle San Francisco garter snakes. California red-legged frogs will only be handled by a holder of a valid 10(a)(1)(A) permit from the Service or a Service-approved Monitor.

i. Invasive non-native plant removal would be conducted as follows so that any San Francisco garter snakes or California red-legged frogs that may be hiding in vegetation can escape unharmed. First, search each clump or patch thoroughly for snakes. If a San Francisco garter snake or California red-legged frog is found, disturbing it is likely to make it hide more deeply in the vegetation; therefore, leave the clump or patch alone and check it again on a later day. If no San Francisco garter snake or California red-legged frog is found, vegetation will be

progressively cut and searched to 1 to 2 feet above ground level. If no San Francisco garter snake is found, the remainder of the clump or patch can be removed. Prior to removal of vegetation, the site will be surveyed for underground burrows. In those areas where no burrows are found, the plant will be removed by hand using a weed-wrench or other digging tool. Non-native vegetation with large root balls that could cause ground disturbance would be cut instead of pulled.

j. Current sterilization protocols will be followed for all wetland sampling and monitoring, to protect against chytrid and trematode infestation.

k. Wetlands will be monitored for invasive aquatic species and removal will be conducted if found.

l. An education program for field personnel involved with the restoration activities will be conducted prior to initiation of field activities. The program will consist of a brief presentation by person(s) knowledgeable in the California red-legged frog and San Francisco garter snake. The program shall include the following: a description of these species, their ecology, and habitat needs; an explanation of their legal status and their protection under the Act; and an explanation of the measures being taken to avoid or reduce effects to these species during implementation of the proposed project. The education may be conducted in the field.

m. To minimize the potential for mortality of San Francisco garter snakes, the areas near wetlands and ponds shall be fenced to the maximum extent possible when heavy equipment is used. Future contracts for San Francisco garter snake surveys, including biological monitoring, shall only be awarded to persons who have a valid 10(a)(1)(A) permit. All snake marking and holding shall be in conformance with the monitor's existing permit, as well as additional protective measures described in this opinion.

n. All captured San Francisco garter snakes and California red-legged frogs shall be released promptly outside of the exclosure areas, unless release would cause the individual to be injured or killed, in which cases the individual shall be released as close to the point of capture as possible, but away from the construction area.

o. Trained personnel shall walk the route to and from each restoration area ahead of heavy-equipment and trucks, to be sure that the area is clear of San Francisco garter snakes prior to heavy equipment on site. City staff shall be trained on the identification and avoidance of both the San Francisco garter snake and the California red-legged frog.

10. In order to minimize the effect of gopher control activities, the City will develop for Service review and approval and implement a plan to place woody debris around Laguna Salada to provide refuge habitat for California red-legged frogs and San Francisco garter snakes. No gopher control will occur within the roughs or natural areas of the site. Implementation of the plan will begin 18 months following issuance of the biological opinion.

11. Within six months of issuance of the biological opinion, the City will develop, for Service review and approval, a water quality monitoring plan for Horse Stable Pond and Laguna Salada. This plan will include monitoring of nitrate, nitrite, ammonia, pH, and salinity in both water bodies and set threshold levels for each that will trigger defined conservation actions, such as changes to fertilization and pumping practices, or other measures for the protection of the California red-legged frog and San Francisco garter snake.

12. The City will ensure that implementation of the water quality monitoring plan will begin 1 year following issuance of the biological opinion.

13. Within nine months of issuance of the biological opinion, the City will develop, for Service review and approval, a monitoring plan for the new perennial pond described in Conservation Measure 33. The plan will include monitoring of 1) the use of the pond by all life stages of the California red-legged frog and San Francisco garter snake, 2) the amount of emergent vegetation and open water available, and 3) how effective barriers are preventing entry by people and off-leash dogs. If predators become established in the pond they will be immediately removed and the Service will be notified.

14. Implementation of the pond monitoring plan will begin immediately following the construction of the new pond.

15. In order to reduce the effects of gopher control on California red-legged frogs and San Francisco garter snakes, the City will not remove gopher burrows or set traps for gophers in any areas outside of greens, tees, and fairways. Burrows in roughs will not be removed and no traps will be set.

16. In order to reduce mortalities associated with golf carts and lawn mowers, the City will enforce a 5 mile per hour speed limit for all golf carts at holes 12 and 13 and a speed limit of 8 miles per hour for all lawn mowers. Additionally, golf carts will be required to stay on cart paths at holes 12 and 13.

Reporting Requirements

Within 60 days of the completion of construction of the proposed action, the Corps and City must provide a report to the Service that provides details on the effects of the action on the

California red-legged frog and San Francisco garter snake and the City must provide an annual report on operations and maintenance by December 31 of each year. Specifically, these reports must include information on any instances when California red-legged frogs and San Francisco garter snakes were killed, injured, or handled; the circumstances of such incidents; and actions undertaken to prevent similar incidents from reoccurring.

The City will notify the Service must be notified within 24 hours of any operation of pumps (e.g., in advance of winter storms, following storms, and at the end of the wet season). The Corps and/or City as appropriate will notify the Service upon finding of any injured or dead California red-legged frog or San Francisco garter snake, or any unanticipated damage to their habitats associated with the proposed action. Injured frogs or snakes must be cared for by a licensed veterinarian or other qualified person such as the Service-approved biologist. Notification should include the date, time, and precise location of the individual/incident clearly indicated on a USGS 7.5 minute quadrangle and other maps at a finer scale, as requested by the Service, and any other pertinent information. Dead individuals must be sealed in a zip-lock® 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. The bag containing the specimen must be frozen in a freezer located in a secure area. The Service contact persons are the Division Chief, Endangered Species Program at the Sacramento Fish and Wildlife Office (916) 414-6600, and the Resident Agent-in-Charge of the Service's Law Enforcement Division, 2800 Cottage Way, Room W-2928, Sacramento, California 95825, at (916) 414-6660.

CONSERVATION RECOMMENDATIONS

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

1. Report any sightings of California red-legged frog and San Francisco garter snake to the California Natural Diversity Database maintained by CDFG.

2. The City and Corps should develop a plan for the long-term restoration and enhancement of the wetlands at Sharp Park Golf Course for the benefit of the California red-legged frog and San Francisco garter snake.

3. The City and Corps should develop and implement scientific studies to refine the understanding of California red-legged frog and San Francisco garter snake ecology in the Sharp Park / Mori Point vicinity.