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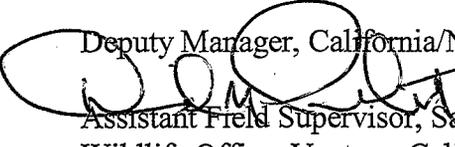
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IN REPLY REFER TO:
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September 22, 2005

Memorandum

To: Deputy Manager, California/Nevada Operations Office, Sacramento, California

From:  Assistant Field Supervisor, Santa Cruz/San Benito/Monterey, Ventura Fish and Wildlife Office, Ventura, California

Subject: Biological Opinion for the Issuance of an Incidental Take Permit (TE-089916-0) for the UCSC Ranch View Terrace Project, Santa Cruz Campus, Santa Cruz County, California (1-8-04-FW-41)

This document transmits our biological opinion based on our review of an application for an incidental take permit and habitat conservation plan (HCP) for the Ranch View Terrace Project at the University of California, Santa Cruz (UCSC). At issue are the effects of the proposed issuance of an incidental take permit by the U.S. Fish and Wildlife Service (Service) on the federally endangered Ohlone tiger beetle (*Cicindela ohlone*) and the threatened California red-legged frog (*Rana aurora draytonii*). This document was prepared in accordance with section 7(a)(2) of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.) (Act).

This biological opinion was prepared using information from the following documents and sources: (1) the HCP and appendices (Jones and Stokes 2004), (2) the environmental assessment (Service 2004), (3) the implementing agreement, and (4) various literature and information in the Service's files. The complete administrative record for this consultation is on file at the Service's Ventura Fish and Wildlife Office.

BIOLOGICAL OPINION

DESCRIPTION OF THE PROPOSED ACTION

The Service is considering issuance of an incidental take permit, pursuant to section 10(a)(1)(B) of the Act, to the University of California Regents (UC Regents). The UC Regents propose to develop 13 acres of the property. Eighty-four living units, two roads, two utility alignments, and a storm water drainage system would be constructed on approximately 6.4 acres in three phases. Phase 1 would involve the construction of 45 homes, grading followed by hydroseeding of the

remaining 39 plots, road construction, utility alignments, and construction of a storm water drainage system. Phase 2 and 3 would involve construction of the remaining homes. The remaining 6.6 acres of the project site would be landscaped open space. In addition, an equipment storage building would be constructed on 0.2 acre, a 12.5-acre preserve would be managed for 60 years (referred to as the IAD Preserve and located within Inclusion Area D), and a 13-acre preserve would be managed in perpetuity (referred to as the IAA Preserve and located within Inclusion Area A). Chapter 2 of the HCP describes the actions proposed by the UC Regents in full detail; the description of the proposed project from the HCP is hereby incorporated into this biological opinion by reference.

To minimize the effects of the proposed project on the Ohlone tiger beetle and California red-legged frog (Plan Species), the UC Regents have proposed numerous measures to avoid killing and injuring individuals of these species. These measures include educating construction and maintenance workers, marking work and out-of-bounds areas, controlling trash accumulation and accessibility to predators, hydroseeding graded home plots, pre-construction surveys, and limiting the use of pesticides. The UC Regents will minimize the possible impacts from domestic animals on the Plan Species by restricting their presence on Inclusion Area D. All cats must remain strictly indoors and dogs must be leashed at all times when outside. The UC Regents have made a commitment to inform every new homeowner and renter of the sensitivity of surrounding habitat, the presence of federally listed species, and the restrictions on pets on the property. The UC Regents are implementing measures to prevent illegal activities, such as mountain biking, on Inclusion Area A by posting signs and installing temporary fencing, and implementing regular patrols by enforcement personnel. In addition, pedestrian access will be prohibited during the Ohlone tiger beetle adult activity period. Patrols will be done at least every sunny weekend during the Ohlone tiger beetle adult activity period when recreational use is highest. Chapter 5 of the HCP describes the minimization measures proposed by the UC Regents in full detail.

To mitigate the effects of the proposal on the Ohlone tiger beetle and California red-legged frog, the UC Regents have proposed to establish a 13-acre preserve that will be managed in perpetuity and a 12.5-acre preserve that will be managed for 60 years to support recovery of these species. Chapter 5 of the HCP describes the mitigation measures proposed by UC Regents in full detail.

An important component of the HCP is the proposed monitoring plan that will track compliance, the effects of the proposed project, and the effectiveness of the mitigation and minimization measures provided. The UC Regents have agreed, as part of their project description, to stop construction activity and contact the Service if more than three California red-legged frogs are taken in any one year during the construction period; or coordinate with the Service and adjust avoidance and minimization measures if more than three Ohlone tiger beetles are taken in any one year during the construction period. A detailed description of the monitoring plan is found in chapter 6 of the HCP.

STATUS OF THE SPECIES

Ohlone tiger beetle

The Ohlone tiger beetle was listed as endangered on October 3, 2001 (66 Federal Register (FR) 50340). Critical habitat has not been designated, but a recovery plan was published in 1998. The Ohlone tiger beetle is a member of the tiger beetle family, Cicindelidae. The adult Ohlone tiger beetle measures approximately 0.37 – 0.49 inch long, has prominent eyes, metallic green leathery forewings with small light spots, and long, slender, and coppery-green legs (Freitag et al. 1993).

The Ohlone tiger beetle is active from late January to early April (Freitag et al. 1993). During the adult activity period, Ohlone tiger beetles thermoregulate, forage, mate, and lay eggs on open patches of coastal terrace prairie that receive ample amounts of sunlight. This species is diurnal and preys on small arthropods.

After mating, the female tiger beetle excavates a hole in the soil and oviposits (lays) a single egg (Pearson 1988; Kaulbars and Freitag 1993; Grey Hayes, pers. comm. 1998). Females of many species of *Cicindela* are extremely specific in choice of soil type for oviposition (egg laying) (Pearson 1988). Other species of *Cicindela* lay between 1 and 126 eggs per female (Knisley, in litt. 2000), however, this information is not available for the Ohlone tiger beetle. After the larva emerges from the egg and becomes hardened, it enlarges the chamber that contained the egg into a tunnel (Pearson 1988). Tiger beetle larvae undergo three instars (larval development stages). This period can take 1 to 4 years, but a 2-year period is the most common (Pearson 1988). Before pupation (transformation process from larva to adult), the third instar larva will plug the burrow entrance and dig a chamber. After pupation in this chamber, the adult tiger beetle will dig out of the soil and emerge. Reproduction may either begin soon after emergence or be delayed (Pearson 1988).

Ohlone tiger beetle larvae, either white, yellowish, or dusky in coloration, are grub-like and fossorial (subterranean), with a hook-like appendage on the fifth abdominal segment that anchors the larvae inside their burrows (66 FR 50340). Tiger beetle larvae are predatory and live in small vertical or slanting burrows (0.16 to 0.23 inch in diameter) from which they lunge at and seize passing invertebrate prey (Essig 1926; Essig 1942; Pearson 1988). The surface openings of larval burrows are circular and flat with no dirt piles or mounds surrounding the circumference. The larva grasps prey with its strong mandibles (mouthparts) and pulls it into the burrow; once inside the burrow, the larva will feed on the captured prey (Essig 1942; Pearson 1988).

Individual species of tiger beetle are generally highly habitat-specific because of oviposition and larval sensitivity to soil moisture, composition, and temperature (Pearson 1988; Pearson and Cassola 1992; Kaulbars and Freitag 1993). Ohlone tiger beetle habitat is associated with specific soil types (i.e., Watsonville loam and Bonnydoon soil types). The ground surface consists of

shallow, pale, and poorly drained clay or sandy clay soil that bakes to a hard crust by summer following winter and spring rains (Freitag et al. 1993).

The Ohlone tiger beetle is endemic to Santa Cruz County, California, where it is known only from coastal terraces supporting remnant patches of native grassland habitat often characterized by the presence of California oatgrass (*Danthonia californica*) and purple needlegrass (*Nassella pulchra*). Ohlone tiger beetles have the most southern distribution of its genus and are geographically separate from similar species (Freitag et al. 1993). Adult Ohlone tiger beetles prefer barren or lightly vegetated areas within coastal terrace prairies and are often found on level or nearly level slopes along trails (e.g., foot paths, dirt roads, and bicycle paths) and use bare areas among low or sparse vegetation within the grassland. The density of larval burrows decreases with increasing vegetation cover (Hayes, in litt. 1997). However, adults will fly to more densely vegetated areas when disturbed (Freitag et al. 1993; Richard Arnold, pers. comm. 1995). Ohlone tiger beetles require these open areas for construction of larval burrows, thermoregulation, and foraging (Knisley, in litt. 2000). Egg laying and subsequent larval development also occur in this coastal prairie habitat (i.e., open areas among native vegetation) (Freitag et al. 1993).

Three researchers conducted surveys that assessed the distribution and status of the Ohlone tiger beetle between 1990 and 2000. The available data indicate that Ohlone tiger beetles have a restricted range and limited distribution within their range. In total, 60 sites were surveyed for the Ohlone tiger beetle in Santa Cruz, San Mateo, and Monterey Counties during that time period and the species was found at 5 of those sites.

Entomological Consulting Services, Ltd. conducted Ohlone tiger beetle surveys in 2003 and found occupied habitat in 15 locations in Santa Cruz County (see figure 3-7 of the HCP). The 15 locations are grouped into 6 general areas, including: 1) one location in Wilder Ranch State Park, northwest of the city of Santa Cruz; 2) the second area contains 7 locations that encompass UCSC lower campus Inclusion Area A, Moore Creek open space, and 5 private properties to the south and west of the campus; 3) one location within Pogonip Park in the city of Santa Cruz; 4) four locations at Marshall Fields in the UCSC upper campus; 5) one location in the city of Soquel; and 6) one location in the city of Scotts Valley. The six areas do not appear to be contiguous with each other. However, we are uncertain if gene flow occurs between Ohlone tiger beetles on these different parcels. These 15 locations may comprise one large population or multiple smaller populations (Richard Arnold pers. comm. 2004).

Most of the areas where Ohlone tiger beetles occur are threatened by habitat fragmentation, degradation, and destruction due to residential development and recreational activities (e.g., ballfields, parks, mountain bikes, human traffic, dirt road vehicle use, etc.). Ohlone tiger beetle habitat is also threatened by invasions of non-native vegetation (e.g., French broom (*Cytisus monspessulanus*), velvet grass (*Holcus* sp.), filaree (*Erodium* sp.), and various species of Eucalyptus). In addition, the Ohlone tiger beetle is vulnerable to local extirpations from random natural events.

California red-legged frog

The California red-legged frog was federally listed as threatened on May 23, 1996 (61 FR

25813). A recovery plan has been published (Service 2002). Critical habitat for the California red-legged frog was designated on March 13, 2001 (66 FR 14625). On November 6, 2002, the United States District Court for the District of Columbia set aside the designation and ordered the Service to publish a new final rule with respect to the designation of critical habitat for the California red-legged frog (*Home Builders Association of Northern California, et al. versus Gale A. Norton, Secretary of the Department of the Interior, et al.* Civil Action No. 01-1291 (RJL) U.S. District Court, District of Columbia). The Service published a new proposed rule to designate critical habitat for the California red-legged frog on April 13, 2004 (69 FR 19620). The Ranch View Terrace Project is not within a proposed critical habitat unit.

California red-legged frogs are members of the Ranidae family. This species is the largest native frog in the western United States, ranging from 1.5 to 5.1 inches in length. The abdomen and hind legs of adults are largely red; 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, and dorsolateral folds are prominent on the back. Tadpoles range from 0.6 to 3.1 inches in length and are dark brown and yellow with dark spots. Detailed information on the biology of California red-legged frogs can be found in Storer (1925), Stebbins (2003), and Jennings et al. (1992).

California red-legged frogs breed from November through March with earlier breeding records occurring in southern localities. California red-legged frogs are often prolific breeders, typically laying their eggs during or shortly after large rainfall events in late winter and early spring. Female California red-legged frogs deposit egg masses on emergent vegetation so that the masses float on the surface of the water. Egg masses contain approximately 2,000 to 5,000 moderate-sized (0.08 to 0.11 inch in diameter), dark reddish brown eggs. Embryos hatch 6 to 14 days after fertilization and larvae require 3.5 to 7 months to attain metamorphosis. Tadpoles probably experience the highest mortality rates of all life stages, with less than 1 percent of eggs laid reaching metamorphosis. Sexual maturity is normally reached at 3 to 4 years of age; California red-legged frogs may live 8 to 10 years. Juveniles have been observed to be active diurnally and nocturnally, whereas adults are mainly nocturnal.

The diet of California red-legged frogs is highly variable. Invertebrates are the most common food items for adults, although vertebrates such as Pacific tree frogs (*Hyla regilla*) and California mice (*Peromyscus californicus*) can constitute over half of the prey mass eaten by larger frogs (Hayes and Tennant 1985). Larvae likely eat algae.

California red-legged frogs usually disperse during the rainy season. Some California red-legged frogs have moved long distances over land between water sources during winter rains.

Adult

California red-legged frogs have been documented to move more than 2 miles in northern Santa Cruz County “without apparent regard to topography, vegetation type, or riparian corridors” (Bulger et al. 2003). Most of these overland movements occur at night.

California red-legged frogs spend most of their lives in and near sheltered backwaters of ponds, marshes, springs, streams, and reservoirs. Deep pools with dense stands of overhanging willows (*Salix* sp.) and an intermixed fringe of cattails (*Typha* sp.) are considered optimal habitat. Eggs, larvae, transformed juveniles, and adults also have been found in ephemeral creeks and drainages and in ponds that do not have riparian vegetation. Accessibility to sheltering habitat is essential for the survival of California red-legged frogs within a watershed, and can be a factor limiting population numbers and distribution.

The California red-legged frog has been extirpated or nearly extirpated from 70 percent of its former range. Historically, this species was found throughout the Central Valley and Sierra Nevada foothills. At present, California red-legged frogs are known to occur in 243 streams or drainages from 22 counties, primarily in central coastal California. The most secure aggregations of California red-legged frogs are found in aquatic sites that support substantial riparian and aquatic vegetation and lack non-native predators. Over-harvesting, habitat loss, non-native species introduction, and urban encroachment are the primary factors that have negatively affected the California red-legged frog throughout its range (Jennings and Hayes 1985, Hayes and Jennings 1988). Ongoing causes of decline include direct habitat loss due to stream alteration and disturbance to wetland areas, indirect effects of expanding urbanization, and competition or predation from non-native species.

ENVIRONMENTAL BASELINE

Description of the action area and habitat

The action area for the proposed HCP spans approximately 38.8 acres of degraded habitat, including a few buildings and a 2-lane road. The action area is the same as the permit area because direct and indirect impacts of the proposed activities on the Plan Species are not expected to go beyond this boundary. The action area is divided in three sections (see figures 1-3, 2-1, and 3-4 of the HCP). Chapter 3 and appendices A and B of the HCP provide a detailed description of the action area and surrounding border lands.

The first section, referred to as Inclusion Area D, totals 25.5 acres. It includes the construction site and the 12.5-acre IAD Preserve. Inclusion Area D contains 20 acres of disturbed grassland, 3 acres of retired farm plots, and 2.5 acres of disturbed ground. No permanent aquatic areas occur on Inclusion Area D; however, two small seeps provide potential habitat for California red-legged frogs. The soils on Inclusion Area D are Elkhorn sandy loam (development site) and Tierra-Watsonville complex and Watsonville loam (IAD Preserve).

The second section is a 0.2-acre site where the Emergency Response Center (ERC) equipment storage site will be constructed. A 100 by 200 feet concrete pad surrounded by a gated chain-link fence is proposed for construction there. The proposed ERC site is located on Tierra-

Watsonville complex soils. Equipment and debris are currently stored on this site.

The third section consists of the 13-acre IAA Preserve (found within Inclusion Area A), managed for the benefit of the Plan Species. The IAA preserve is in the southwest corner of a 69-acre open grassland area referred as Inclusion Area A. The IAA Preserve contains Watsonville loam, Elkhorn sandy loam, Ben Lomond Felton complex, and Ben Lomond Catelli-Sur complex soils. The IAA Preserve is bordered by open grassland in Inclusion Area A to the north and east, Wilder Creek to the west, and private property to the south consisting of a mixture of open grassland and a vineyard. The grassland on the IAA Preserve and Inclusion Area A is actively grazed by cattle. It is separated from Inclusion Area D by physical open space and a two-lane road (see figure 3-4 in the HCP). Two main trails exist on the IAA Preserve. The first connects the southwest corner with the northeast corner, and the second borders the edge of the grassland area following Wilder Creek in a north-south orientation. The two trails are used regularly by pedestrians. Although mountain bikes are not allowed on this trail, they use the trail regularly.

Ohlone tiger beetle

Inclusion Area D and the ERC are not occupied by the Ohlone tiger beetle. Suitable, unoccupied habitat for Ohlone tiger beetles is found along the eastern edge of Inclusion Area D on a dirt road that is used for maintenance. This road contains approximately 0.2-acre of sparsely vegetated and bare patches of Tierra-Watsonville complex soil that may be suitable for Ohlone tiger beetles. The southern portion of the IAD Preserve contains suitable Watsonville loam soil for Ohlone tiger beetles, but the vegetation is too dense at the current time. The ERC site does not provide suitable habitat for the Ohlone tiger beetle.

Ohlone tiger beetles occur within the action area on the IAA Preserve. The most recent survey of Ohlone tiger beetles completed at UCSC was conducted on 10 days between January 31 and April 17, 2003, by Dr. Richard Arnold. Both Inclusion Area A and Inclusion Area D were surveyed. On Inclusion Area A, surveys were done specifically along six trail segments within the IAA Preserve. Dr. Arnold found a total of 75 beetles and 15 burrows during his survey (Entomological Consulting Services 2003). The burrows in the IAA Preserve were rechecked monthly from May to October 2003. Fifteen active burrows were identified and monitored from July 2003 to October 2003. All sightings of adults and burrows occurred on bare trails in the IAA Preserve characterized by Watsonville loam and Elkhorn sandy loam. Dr. Arnold's data suggests that Ohlone tiger beetle adults are immigrating to the IAA Preserve from other nearby areas, because adults were found to be five times more abundant than mature third instar larvae (Entomological Consulting Services 2003). Trail users on Inclusion Area A help maintain the open and bare ground character of these trails that is important for the Ohlone tiger beetle. No adult Ohlone tiger beetles or burrows were found in Inclusion Area D.

On the UCSC campus, the biggest threats to the Ohlone tiger beetle are habitat loss and degradation from construction activities, paving and graveling roads, trail use by bikers and pedestrians during the adult activity period, and invasive plants.

California red-legged frog

All confirmed occurrences of California red-legged frogs at UCSC are associated with the Moore Creek drainage. These occurrences are outside, but proximate to, the action area. Populations of California red-legged frogs are known to occur in Wilder Creek along the western portion of the Moore Creek watershed, which runs adjacent to the west side of the IAA Preserve. No surveys have been conducted in Inclusion Areas A or D. Although California red-legged frogs have not been documented in the action area, surveys indicate that the principle sources of California red-legged frogs that are presumed to occur within the action area originate at the Arboretum pond, which lies 1,500 feet northwest of Inclusion Area D, and in Wilder Creek along the IAA Preserve border. The Arboretum pond is a known California red-legged frog breeding site. The use of the action area by California red-legged frogs for dispersal and sheltering is inferred by habitat conditions, proximity to known breeding sites, surrounding land use, and location of potential dispersal corridors. The action area does not contain any breeding ponds, only marginal upland habitat and a few seep areas that do not hold water permanently. Inclusion Area D is not considered an important dispersal corridor because it does not link temporary or permanent water bodies, nor does it provide suitable foraging habitat. However, Inclusion Area D provides low quality upland sheltering habitat for California red-legged frogs due to the presence of scattered small mammal burrows throughout the site. Detailed information on surveys conducted for the California red-legged frog near the action area can be found in chapter 3 and appendix A of the HCP.

We have not issued any biological opinions covering this action area in the past.

EFFECTS OF THE ACTION

Project impacts on Ohlone tiger beetles in the action area

Impacts to Ohlone tiger beetles within Inclusion Area D are expected to be very low because Ohlone tiger beetles have not been observed there and we do not know if, or how often, the area is used by the species. Approximately 0.20 acre of suitable, unoccupied Ohlone tiger beetle habitat will be removed due to the construction of a new utility road along the eastern edge of Inclusion Area D. This could affect the species' ability to colonize this site. However, dirt will be exposed during the grading process that may create favorable habitat conditions for the species. Ohlone tiger beetles have been observed to colonize areas cleared of vegetation within a few feet from a known population.

If construction occurs during the adult activity period of the Ohlone tiger beetle (January to May), Ohlone tiger beetles from the IAA Preserve or other nearby locations may be attracted to areas of bare ground produced during and following grading in Inclusion Area D. Ohlone tiger beetles may be accidentally killed, injured, or disturbed by the operation of construction equipment, vegetation clearing, grading, landscaping, or by human activity if they disperse through, or colonize the site. Colonization of the graded areas by Ohlone tiger beetles and

erosion that could result from grading will be minimized by the growth of native and noninvasive exotic grasses and herbs from the hydroseeding activities. The hydroseed mix consists of California brome (*Bromus carinatus*), meadow barley (*Hordeum brachyantherum*), and blue wild rye (*Elymus glaucus*). Due to the small size of the Ohlone tiger beetle, it may not be possible to detect mortality if it occurs. However, the UC Regents will conduct thorough monitoring for the species during construction and within occupied habitat in the IAA Preserve to determine if individuals are present and whether any are killed or injured by project activities.

Based on the resources of the area and survey data, we expect that injury or mortality of Ohlone tiger beetles during construction will be extremely low. To ensure this, the UC Regents have agreed to coordinate with the Service to adjust avoidance and minimization measures if more than three Ohlone tiger beetles are found injured or killed in the construction area.

Following construction, 5.7 acres of Inclusion Area D will be available for Ohlone tiger beetles to colonize. Should Inclusion Area D become occupied or used by Ohlone tiger beetles, disturbance, injury, or mortality is possible from on-going use of the new housing facility. Disturbance, injury or mortality may result from human activity (e.g., crushing by pedestrians or bicycles), outdoor pets (e.g., injury, disturbance, or mortality from trampling, or animals directly killing Ohlone tiger beetles), or vegetation management. Restrictions on dogs and cats in the housing area, the distribution of informational flyers to homeowners and renters regarding the restrictions described in the HCP, and conditions on landscaping and other vegetation management activities will minimize these effects.

In addition, Ranch View Terrace may create a partial barrier to the dispersal and gene flow of Ohlone tiger beetles within their known range. In particular, the development may cause a barrier between the IAA preserve and documented occurrences to the north and east of the HCP boundaries.

The ERC equipment and storage site does not support suitable habitat for the Ohlone tiger beetle. Therefore, construction and use of the ERC equipment storage building is not expected to affect Ohlone tiger beetles.

Habitat management and monitoring activities on the IAA Preserve may adversely affect an undetermined number of Ohlone tiger beetle larvae. Specifically, cattle grazing on the IAA Preserve may crush burrows during the early larval stage when eggs are positioned close to the soil surface, causing some larvae to be injured or killed. Larvae that have advanced to the second or third instar have a lower risk of injury or death because they burrow deeper in the soil and may not be affected by trampling. Ohlone tiger beetles may also be accidentally injured or killed by land management staff during monitoring activities on the IAA Preserve detailed in the HCP.

The chances of Ohlone tiger beetles being disturbed, injured, or killed by cattle grazing are reduced by establishing the grazing period after the Ohlone tiger beetle activity period.

Ohlone tiger beetle adults and larvae may be disturbed or injured and, along with eggs and

burrows, may be crushed by unauthorized use of Inclusion Area A. Mountain bikers may continue to ignore signs and fencing which could result in death or injury of Ohlone tiger beetles and degradation of their habitat.

Project impacts on California red-legged frogs in the action area

Project impacts on California red-legged frogs within Inclusion Area D are expected to be focused in the 5.2-acre construction site, the roads surrounding the project site, areas receiving vegetation management, and the ERC site. Dispersing California red-legged frogs may be killed or injured by construction activities; this risk increases if these activities occur during or for sometime after rain events. Development of the Ranch View Terrace faculty housing will result in the loss of approximately 7.5 acres of marginal upland habitat for California red-legged frogs. Standing water may collect in the construction site after a heavy rain and attract California red-legged frogs to the work area. The on-site biologist will inspect all areas of standing water more than 4 inches deep that has been standing for more than 1 week and relocate California red-legged frogs out of harm's way. Direct handling in these instances may disturb California red-legged frogs, but that effect will be reduced or prevented by having Service-approved biologists conduct all capture and translocation activities. Excavation of the gas pipeline trench in the eucalyptus grove south of Ranch View Terrace will temporarily disturb approximately 500 square feet (0.01 acre) of low quality upland habitat that may occasionally be used by dispersing California red-legged frogs. Excavation of the trench may injure or kill California red-legged frogs if they occur there during those activities. Having a qualified biologist conduct a preconstruction survey and relocate any California red-legged frogs found near work areas will minimize that effect.

California red-legged frogs attempting to cross the roads surrounding the project site may be injured or killed by vehicles. This impact would likely occur for the life of the project. The likelihood of California red-legged frogs being struck by vehicles would be greater at night during wet or humid conditions. UCSC management staff will conduct visual inspections of paved and unpaved roads on mornings after rain events to document any mortality of California red-legged frogs. If mortality occurs on these roads, the UC Regents will work with the Service to develop feasible minimization measures to reduce future impacts.

California red-legged frogs may be crushed or injured by grazing animals and electric mowers during habitat management activities on the IAD Preserve. These impacts will be minimized by allowing grazing to occur only during the dry season when California red-legged frogs are less likely to occupy the preserve.

Although the construction of the ERC equipment storage building will not remove natural habitat for the California red-legged frog, individuals have been known to use debris piles as temporary refuge during dispersal. As a result, the removal of the debris pile may kill or injure California red-legged frogs seeking refuge in the piles. It is unknown how many California red-legged frogs will seek shelter in debris piles, therefore the number of frogs affected by the

repetition of establishing and removing the debris pile during the life of the permit cannot be estimated. However, the impacts to California red-legged frogs are expected to be small due to the poor quality of habitat and temporary use of it by the taxa during dispersal.

Artificial lighting will increase along roads and among housing clusters adjacent to remaining upland habitat and may reduce habitat quality for California red-legged frogs. California red-legged frogs may avoid areas with artificial light or reduce their use of those areas. The UC Regents will select low-intensity, focused, directional lights to reduce light pollution into adjacent undeveloped areas.

Based on the resources of the area and survey data, we expect that injury or mortality of California red-legged frogs during construction will be low. The level of effects to California red-legged frogs will be reduced by adapting management actions based on information from monitoring for the California red-legged frog during construction in Inclusion Area D, post construction monitoring after rain events on the roads within the proposed development area, and reevaluating effects to the taxa and the effectiveness of minimization and mitigation measures if the threshold identified in the HCP is reached (see table 6-2 of the HCP).

Effects of restoration and enhancement measures on Plan Species

California red-legged frogs and Ohlone tiger beetles may be affected by restoration and enhancement activities, but the expected benefits should offset the short-term impacts to the species that may result from such activities. Preserving and managing 25.5 total acres as the IAD and IAA Preserves for the benefit of California red-legged frogs and Ohlone tiger beetles is expected to be sufficient to maintain and protect viable populations of these species within the lower campus of UCSC.

Potential Impacts to California red-legged frogs and Ohlone tiger beetles throughout the action area

Dogs, cats, and other native and non-native predators could disturb, injure, or kill Ohlone tiger beetles and California red-legged frogs within the action area. The UC Regents have committed to conduct regular patrols of Inclusion Area D. Pet restrictions will be strictly enforced by an Animal Control officer. Wildlife such as raccoons (*Procyon lotor*) and Virginia opossums (*Didelphis virginiana*) may be attracted to the action area by garbage and unauthorized feral cat and wildlife feeding stations.

An increase in impermeable surfaces may increase surface storm water flow, and collect urban pollutants containing heavy metals, hydrocarbons, and fertilizers. Degradation of California red-legged frog upland habitat and suitable Ohlone tiger beetle habitat may result from erosion and accumulation of chemicals over time. These impacts will be reduced by the UC Regents' commitment to install storm water drainages, a detention basin, or recharge system (see chapter 2 of the HCP) to maintain the hydrologic conditions south of the project area and within the IAD

Preserve.

Implementation of restoration, enhancement, and protection measures described in the HCP and implementing agreement is expected to improve the quality of habitat for the California red-legged frog and Ohlone tiger beetle within 12.5 acres in the IAD Preserve. Planting native grasses, removing invasive exotic species, and maintaining the amount and diversity of vegetative cover throughout the IAD Preserve should restore and enhance habitat. Fencing, animal control patrols, and education and outreach should provide protection to the Plan Species from pedestrians, bicyclists, and domestic and feral animals. Chapter 5 of the HCP provides a detailed description of these conservation measures.

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.

To the best of our knowledge, the UC Regents have included all activities that are reasonably certain to occur in the action area as part of the HCP; therefore, we do not anticipate any cumulative effects.

CONCLUSION

After reviewing the current status of the Ohlone tiger beetle and the California red-legged frog, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the Service's biological opinion that our issuance of an incidental take permit to the UC Regents is not likely to jeopardize the continued existence of the Ohlone tiger beetle and the California red-legged frog. Critical habitat has not been designated for the Ohlone tiger beetle; therefore, none will be affected. Critical habitat has been proposed for the California red-legged frog; however, the UC Regents' proposed project is not within any of the proposed critical habitat units so none will be affected.

We reached this conclusion regarding the Ohlone tiger beetle because the project site in Inclusion Area D is on unoccupied habitat. The chance of disturbance, injury, or mortality from construction activities is unlikely. The proposed project will provide a net benefit to the Ohlone tiger beetle because occupied habitat within the IAA Preserve will be preserved in perpetuity and managed for the benefit of the species.

We have reached this conclusion for the California red-legged frog because the project would affect a very small percentage of the habitat within the range of the species. The project would affect marginal upland dispersal habitat, but breeding and feeding habitat would not be affected. We expect few California red-legged frogs will be killed or injured because of the lack of

suitable habitat for, and records of, the species within the project area. In addition, preservation and management of upland dispersal habitat for the California red-legged frog on 25.5 acres on the IAD and IAA Preserves will ultimately benefit the species by buffering occupied habitat from further development and maintaining the vegetation at an adequate height and density to provide sufficient cover.

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. 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 essential behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by the Service as intentional or negligent actions that create the likelihood of injury to listed species by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering. 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 a prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this incidental take statement.

The measures described below are non-discretionary and must be undertaken by the Service so that they become binding conditions of any permit issued to UC Regents for the exemption in section 7(o)(2) to apply. The Service has a continuing duty to regulate the activity covered by this incidental take statement. If the Service fails to require the UC Regents to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit, the protective coverage of section 7(o)(2) may lapse. To monitor the impact of incidental take, the UC Regents must report the progress of the action and its impact on the species to the Service as specified in the incidental take statement [50 CFR 402.14(i)(3)].

The Service anticipates incidental take of Ohlone tiger beetles will be difficult to detect due to the small size of the individuals and their brief and variable activity period. Take of larvae will be difficult to quantify because they occur beneath the soil surface. Because of the difficulty

associated with quantifying the take of Ohlone tiger beetles, we anticipate that any individuals occurring within the 38.5-acre action area may be taken. On the IAA Preserve, Ohlone tiger beetles may be killed, injured, or harassed by pedestrians or grazing cattle, goats, or sheep. Larvae may be injured or killed if burrows are damaged or destroyed by pedestrians or grazing cattle, goats, or sheep. If Ohlone tiger beetles colonize or disperse through the project site in Inclusion Area D during construction, they may be killed, injured, or harassed. If Ohlone tiger beetles colonize or disperse through Inclusion Area D after construction is complete, they may be killed, injured, or harassed by residents, guests, stray dogs, and cats that reside in the new

facility.

If one or more live Ohlone tiger beetle(s) are found during construction, the UC Regents have agreed to stop construction in the immediate vicinity until the individuals are moved to a Service approved location by an authorized biologist. They have also committed to contact the Service if take occurs during construction. The UC Regents will coordinate with the Service to adjust construction avoidance and minimization measures if take of more than three adults occurs in a single construction season. However, due to their small size, it will be impossible to detect every individual that is disturbed, injured, or killed by the covered activities.

We anticipate that few California red-legged frogs will be killed or injured as a result of actions that are evaluated in this biological opinion. Take may occur in the form of death or injury from crushing by equipment or foot traffic, exposure to predation, accidental spills or leaks of hazardous materials, siltation, and capturing and handling of California red-legged frogs for relocation purposes. Incidental take of the California red-legged frog will be difficult to detect because of their small body size; this species also spend large amounts of time concealed in vegetation or debris. Because of the difficulty associated with quantifying the take of California red-legged frogs, we anticipate that any individuals occurring within the 38.5-acre action area may be taken.

The UC Regents have agreed to contact the Service if more than one California red-legged frog is taken during construction, and stop construction activities and coordinate with the Service to adjust avoidance and minimization measures if more than three California red-legged frogs are found injured or killed. If the species is taken during the permit term following construction, the UC Regents have agreed to contact the Service and develop feasible minimization measures to reduce impacts on the California red-legged frog. However, due to the small size of the individual California red-legged frogs, it is impossible to detect every California red-legged frog that is disturbed, injured or killed by the covered activities.

This biological opinion does not exempt from the prohibitions against take contained in section 9 of the Act any form of take that is not incidental to the completion of the UC Regents' projects within the proposed project areas. Note that the exemption to the prohibition against take applies only to activities that are conducted within the action area as described in the biological opinion.

REASONABLE AND PRUDENT MEASURES

We believe the following reasonable and prudent measures are necessary and appropriate to minimize incidental take of the California red-legged frog and Ohlone tiger beetle.

1. The Service must ensure that only biologists experienced in handling California red-legged frogs and Ohlone tiger beetles will be authorized to conduct the activities described in this HCP.
2. The Service must require UC Regents to follow specific procedures to reduce the likelihood of spreading disease among California red-legged frogs.

TERMS AND CONDITIONS

To be exempt from the prohibitions of section 9 of the Act, the Service must comply with the following terms and conditions, which implement the reasonable and prudent measures described above, and outline reporting and monitoring requirements. These terms and conditions are non-discretionary.

1. The following term and condition implements reasonable and prudent measure 1:

The Service must include the following term and condition in any section 10(a)(1)(B) permit that it issues to the UC Regents. Only qualified biologists authorized by the Service under the auspices of this biological opinion may survey for, capture, and move California red-legged frogs and Ohlone tiger beetles from work areas. Dr. Richard Arnold is hereby authorized to conduct Ohlone tiger beetle surveys, monitoring, and handling that is necessary and consistent with the terms described in the HCP and incidental take permit. Mr. Derek Jansen is hereby authorized to conduct California red-legged frog surveys, monitoring, and handling that is necessary and consistent with the terms described in the HCP and incidental take permit. Authorization of Patrick Stone to survey for, capture, and move the Ohlone tiger beetle pursuant to the HCP and incidental take permit is contingent upon the Service's receipt of a letter from Dr. Arnold certifying Mr. Stone's successful completion of training and the ability to work independently. Such training may be more or less than one Ohlone tiger beetle activity period's time. The Service must send a response to UC Regents within 30 days of the receipt of Dr. Arnold's letter. If other personnel are required to survey for, capture, and relocate California red-legged frogs and Ohlone tiger beetles, the UC Regents must submit their credentials for our review and approval at least 30 days prior to the onset of the activities that they seek authorization to conduct. The UC Regents must not begin project activities until the Service has provided written approval that the biologist(s) is authorized to conduct the work.

2. The following term and condition implements reasonable and prudent measure 2:

The Service must include the following term and condition in any section 10(a)(1)(B) permit that it issues to the UC Regents. The UC Regents must ensure that any person authorized to

handle California red-legged frogs strictly adheres to the attached fieldwork code of practice to reduce the likelihood of spreading chytrid fungus and other diseases.

REPORTING REQUIREMENTS

The Service must ensure that the UC Regents prepare a report for the Service by December 15 of each year beginning in the year the permit is issued. The report must document the effectiveness of the terms and conditions, the number of California red-legged frogs and Ohlone tiger beetles moved and released, the number killed or injured, and the date(s) of capture. The authorized biologist must provide a record of California red-legged frogs and Ohlone tiger beetles encountered during project activities in the report. In addition, the report must contain a brief discussion of the approximate acreage of habitat affected, recommendations for modifying the stipulations to enhance the conservation of the California red-legged frog and Ohlone tiger beetle, results of biological surveys and sighting records, summary of vegetation management activities on the IAA and IAD Preserves; circumstances that triggered adaptive management and how the adaptive management was handled; description of all occurrences of changed circumstances and how they were addressed; description of any unforeseen circumstances; progress made in achieving biological goals and objectives; any problems that occurred and how they were handled; description of cost expenditures and other information related to funding assurances; and any other pertinent information. This document will assist the Service and UC Regents in tracking compliance with the terms and conditions described in the HCP, implementing agreement, biological opinion, and incidental take permit for the project.

Disposition of Dead or Injured Specimens

Upon locating dead or injured California red-legged frogs or Ohlone tiger beetles, initial notification must be made by telephone and writing to the Ventura Fish and Wildlife Office (2493 Portola Road, Suite B, Ventura, California 93003, (805) 644-1766) within 3 working days of its finding. The report must include the date, time, and location of the carcass, a photograph, cause of death, if known, and any other pertinent information. Care must be taken in handling injured animals to prevent additional injury. Injured animals may be released to the wild after receipt of concurrence from the Service. Care must be taken in handling dead specimens to preserve biological material in the best possible state for later analysis.

The remains of California red-legged frogs and Ohlone tiger beetles must be placed with the Museum of Natural History, University of California, Santa Cruz, California (Tanya Haff, Curator).

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to use their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid

adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information. The Service does not have any conservation recommendations at this time.

REINITIATION NOTICE

This concludes formal consultation on the Service's proposed issuance of a section 10(a)(1)(B) permit to UC Regents for the incidental take of California red-legged frogs and Ohlone tiger beetles during construction, operations and management of the Ranch View Terrace project. As provided in 50 CFR 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained or is authorized by law and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

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The Declining Amphibian Populations Task Force Fieldwork Code of Practice

1. Remove mud, snails, algae, and other debris from nets, traps, boots, vehicle tires, and all other surfaces. Rinse cleaned items with sterilized (e.g., boiled or treated) water before leaving each work site.
2. Boots, nets, traps, and other types of equipment used in the aquatic environment should then be scrubbed with 70 percent ethanol solution and rinsed clean with sterilized water between study sites. Avoid cleaning equipment in the immediate vicinity of a pond, wetland, or riparian area.
3. In remote locations, clean all equipment with 70 percent ethanol or a bleach solution, and rinse with sterile water upon return to the lab or "base camp." Elsewhere, when washing-machine facilities are available, remove nets from poles and wash in a protective mesh laundry bag with bleach on the "delicates" cycle.
4. When working at sites with known or suspected disease problems, or when sampling populations of rare or isolated species, wear disposable gloves and change them between handling each animal. Dedicate sets of nets, boots, traps, and other equipment to each site being visited. Clean them as directed above and store separately at the end of each field day.
5. When amphibians are collected, ensure that animals from different sites are kept separately and take great care to avoid indirect contact (e.g., via handling, reuse of containers) between them or with other captive animals. Isolation from unsterilized plants or soils which have been taken from other sites is also essential. Always use disinfected and disposable husbandry equipment.
6. Examine collected amphibians for the presence of diseases and parasites soon after capture. Prior to their release or the release of any progeny, amphibians should be quarantined for a period and thoroughly screened for the presence of any potential disease agents.
7. Used cleaning materials and fluids should be disposed of safely and, if necessary, taken back to the lab for proper disposal. Used disposable gloves should be retained for safe disposal in sealed bags.

The Fieldwork Code of Practice has been produced by the Declining Amphibian Populations Task Force with valuable assistance from Begona Arano, Andrew Cunningham, Tom Langton, Jamie Reaser, and Stan Sessions.

For further information on this Code, or on the Declining Amphibian Populations Task Force, contact John Wilkinson, Biology Department, The Open University, Walton Hall, Milton Keynes, MK7 6AA, UK.

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