

## **1.0 INTRODUCTION**

A Habitat Conservation Plan (HCP) is part of a process outlined by Section 10 of the federal Endangered Species Act (ESA) that involves cooperation between the federal government and a private landowner. The ESA prohibits landowners from taking a wildlife species that is listed as threatened or endangered. “Taking” includes directly killing an individual of a wildlife species or, in some circumstances, destroying its habitat. Under Section 10, the U.S. Fish and Wildlife Service (Service) can authorize the taking of listed species that is incidental to an otherwise lawful activity, if the landowner first prepares and agrees to implement an acceptable HCP. This authority is discussed in more detail in Section 1.2, below. The purpose of this HCP is to describe Stanford’s activities and identify measures that will minimize and mitigate the effects of these activities on species.

Stanford University owns more than 8,000 contiguous acres of land on the San Francisco Peninsula. Stanford’s activities, such as construction of new facilities and certain activities performed to keep the University functioning, have been ongoing for more than 100 years, and could result in the incidental taking of species presently listed as threatened or endangered under the federal ESA. As a result, Stanford desires to obtain incidental take authorization from the Service. Stanford also desires to conduct long-term land use and academic planning, and implement conservation actions on its land. All of these desires will be served by this HCP, which will result in a long-term (50-year) incidental take permit from the Service.

The particular species covered by this HCP are identified in Section 1.3 and described in Section 2.4, and the permitted activities are described in Section 3.0. Section 4.0 of this HCP describes the specific conservation commitments, which include take avoidance measures and specific habitat enhancement measures. The requirements for issuing an incidental take permit are discussed in more detail in Section 6.0. Other portions of this document provide additional information about the University and information about the various species and their habitat.

### **1.1 STANFORD UNIVERSITY - A UNIQUE LANDOWNER**

#### **1.1.1 History and the Founding Grant**

In 1876, former California Governor Leland Stanford purchased 650 acres of Rancho San Francisquito for a country home and began the development of his famous Palo Alto Stock Farm for trotting horses. He later bought adjoining properties and the farm grew to 6,400 acres. This land eventually became the main Stanford campus.

Upon the death of Leland Stanford Junior in 1884, Governor and Mrs. Stanford decided that founding a university would be a fitting memorial to their son. In November 1885, the Stanfords created a “Founding Grant” for the University. This document provides the original endowment for the University and, to this day, governs the University’s objectives, organization and responsibilities. Under the Founding Grant, the objectives of

the University are:

*“to qualify students for personal success and direct usefulness in life; and to promote the public welfare by exercising an influence on behalf of humanity and civilization, teaching the blessings of liberty regulated by law, and inculcating love and reverence for the great principles of government as derived from the inalienable rights of man to life, liberty, and the pursuit of happiness.”*

The Founding Grant forbids the sale of any of the lands the Stanfords donated to the University, and ensures the University will be a permanent academic institution. The original endowment of 6,400 acres was intended to provide for the University’s original and future academic objectives. In an address to the University’s first Board of Trustees, then Senator Stanford explained the reasons for prohibiting the sale of any land donated by the Stanfords:

*“The endowment of lands is made because they are, in themselves, of great value, and their proper management will insure to the University an income much greater than would be realized were their value to be invested in any reliable, interest-bearing security.”*

The land endowment was intended to support the University by providing land for academic uses and for other uses that would produce a steady stream of income and subsidize the costs of higher education. During their lifetimes, the Stanfords leased portions of the University lands so they could focus their attention on building the University. In addition to income from these leases, the University was relieved of the substantial burdens of routine maintenance on the 5,000 acres of leased property. The need to generate income in support of the University’s educational mission and to maintain the land reserve remains an important element of land use planning outside of the academic campus area.

The Stanfords consulted with many of the era’s leading academics and architects, and hired Frederick Law Olmsted (the landscape architect who designed New York’s Central Park) and Charles Allerton Coolidge to design the University. Olmsted originally suggested building the main campus in the foothills, but the Stanfords decided to construct the University on the relatively flat alluvial plain. On May 14, 1887 (Leland Jr.’s birthday), the cornerstone of the University was laid, and on October 1, 1891, Stanford University opened its doors to students.

### **1.1.2 Site Description**

Stanford University owns 8,180 acres of land in northern Santa Clara County and southern San Mateo County along the southeastern base of the San Francisco Peninsula (Figure 1-1). This HCP covers 4,372 acres of the 8,180 acres within Santa Clara County and Palo Alto (Figure 1-2).

### **1.1.3 Land Use at Stanford University**

The University is developed with various land uses (Figure 1-3), and all of the lands owned by Stanford are an integral part of the University's academic fabric. Most of the urban facilities, including academic buildings, student and faculty housing, roads, sidewalks, bicycle paths, and recreational facilities such as playing fields, equestrian facilities, a golf course, and a golf driving range, are located in the central part of the campus, roughly bounded by Junipero Serra Boulevard, El Camino Real, Stanford Avenue and Sand Hill Road. There is an Academic Reserve outside this core academic area that is generally undeveloped or vacant and used for low intensity academic uses, such as the radio astronomy program. Some of Stanford's lands are leased for interim non-academic purposes, which provide funds for University operations (Figure 1-3).

In addition to the need to maintain use of its land for future academic uses, the University's lands have always been used as outdoor laboratories for teaching and research in biology, archaeology, geology and engineering. The University's rich array of native biological communities, including redwood forest, riparian forest, chaparral, oak woodland-savanna, and serpentine grassland, has contributed to its academic success. These natural resources provide an essential link between laboratory activities, teaching, research, and field-based studies.

### **1.1.4 Operating Stanford University**

Stanford University supports a daily population of approximately 30,000 people on its academic campus. Therefore, operating the University is akin to operating a mid-sized city that has land uses ranging from cattle grazing to high tech research and development, and includes medical and other public service facilities. To accommodate the variety of land uses at Stanford, the University operates and maintains a number of utilities, roadways, flood control improvements, and other urban improvements.

Stanford has been operating many of its facilities since the University's inception nearly 120 years ago, and, as a permanent academic institution, it will continue to operate for the indefinite future. More than 100 years of hindsight in operating the University provides a sound basis for identifying its future operations and need for new improvements.

## **1.2 REGULATORY CONTEXT**

### **1.2.1 Federal Endangered Species Act**

The ESA creates a process for identifying species needing protection, provides a framework for determining the type of protective measures needed, and provides for enforcement measures. Two sections of the ESA are most relevant to Stanford:

- Section 9 (16 USC 1538) prohibits the taking of wildlife species listed as threatened or endangered; and

- Section 10 (16 USC 1539) provides for the issuance to non-federal entities of a permit authorizing the incidental take of listed wildlife species.

Section 9 of the ESA prohibits the take of wildlife species listed as endangered, and it prohibits the take of species listed as threatened unless otherwise specifically authorized by regulation. “Take” is broadly defined to mean “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.” “Harm” has been defined to mean an act which actually kills or injures wildlife, including those activities that cause significant habitat modification or degradation resulting in the killing or injuring of wildlife by significantly impairing essential behavioral patterns, including breeding, spawning, rearing, migrating, feeding or sheltering. (50 CFR 17.3; 50 CFR 222).

Section 10 of the ESA allows for the incidental take of endangered and threatened species by non-federal entities. The ESA defines “incidental take” as take that is “incidental to, and not the purpose of, the carrying out of an otherwise lawful activity.” Parties that are responsible for incidental take of listed species must do so under the authorization of an incidental take permit issued by the Service.

To obtain an incidental take permit under Section 10 of the ESA, an applicant must prepare a Habitat Conservation Plan that provides the following information:

- Impacts likely to result from the proposed taking of the species for which permit coverage is requested;
- Measures the applicant will undertake to monitor, minimize, and mitigate such impacts;
- Funding the applicant or other known sources will make available to undertake these measures and the procedures that will be followed in dealing with changed and unforeseen circumstances;
- Alternative actions the applicant considered that would not result in take, and the reasons why it is not proposing these alternatives; and
- Additional measures that the Service may require as necessary or appropriate for purposes of the plan.<sup>1</sup>

### **1.2.2 National Environmental Policy Act (NEPA)**

Congress enacted the National Environmental Policy Act (NEPA) in 1969 to ensure that federal agencies consider the environmental impacts of their actions and decisions.

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<sup>1</sup> The *Habitat Conservation Planning and Incidental Take Permit Processing Handbook*, published by the Service and the National Marine Fisheries Service in November 1996 provides additional guidance concerning the preparation and content of habitat conservation plans. A final addendum to the *HCP Handbook* was published on June 1, 2000 (65 FR 35242). This addendum, also known as the Five-Point Policy guidance, addresses: (1) biological goals, (2) adaptive management, (3) monitoring, (4) permit duration, and (5) public participation. These components are discussed in Section 1.2.3.

NEPA requires the federal government to use all practicable means and measures to protect environmental values and makes environmental protection a part of the mandate of every federal agency and department. NEPA requires analysis and a detailed statement of the environmental impact of any proposed federal action that significantly affects the quality of the human environment. In accordance with NEPA, the Service prepared an Environmental Impact Statement that addressed the direct, indirect, and cumulative effects of Stanford's requested incidental take permit and implementation of the HCP.

### **1.2.3 Five-Point Policy Guidance**

The five-point policy initiative clarifies elements of the HCP program as they relate to measurable biological goals, adaptive management, monitoring, permit duration, and public participation. The following summarizes these five points.

**Biological Goals and Objectives:** HCPs must include biological goals and objectives that set out specific measurable targets that the plan is intended to meet. These targets are based on the best scientific information available and are used to guide conservation strategies for species covered by the plan.

**Adaptive Management:** The five-point policy encourages the development of adaptive management plans as part of the HCP process under certain circumstances. Adaptive management provides a means to address biological uncertainty and to devise alternative strategies for meeting biological goals and objectives.

**Monitoring:** Monitoring is a mandatory element of all HCPs under the five-point policy. As such, an HCP must provide for monitoring programs to gauge the effectiveness of the plan in meeting the biological goals and objectives and to verify that the terms and conditions of the plan are being properly implemented.

**Permit Duration:** Under the five-point policy, several factors are used to determine the duration of an incidental take permit, including the duration of the applicant's proposed activities and the expected positive and negative effects on covered species associated with the proposed duration. The agencies also consider the level of scientific and commercial data underlying the proposed operating conservation program, the length of time necessary to implement and achieve the benefits of the operating conservation program, and the extent to which the program incorporates adaptive management strategies.

**Public Participation:** Under the five-point policy guidance, the agencies announced their intent to expand public participation in the HCP process to provide greater opportunity for the public to assess, review, and analyze HCPs and associated documentation (e.g., NEPA review). As part of this effort, the public review process for most HCPs was expanded from a 30-day comment period to a 60-day period.

## **1.3 COVERED SPECIES**

Covered Species are the species addressed by this HCP and covered by the resulting incidental take permit. Stanford's intent is to provide conservation and acquire incidental

take permit coverage for three species listed under the ESA. These species are discussed in detail in Section 2.4:

- California red-legged frog (*Rana aurora draytonii*)
- California tiger salamander (*Ambystoma californiense*)
- San Francisco garter snake (*Thamnophis sirtalis tetrataenia*)

Several of the Covered Species have the same general habitat requirements. However, the precise habitat needs for each of the species vary. For example, all three of the Covered Species use aquatic habitats. Red-legged frogs and tiger salamanders both need pools or slow-moving water for breeding and adjacent upland areas for foraging and dispersal. Garter snakes are found in a wide range of environments, but are typically associated with pond or creeks with surrounding vegetation. The general habitat needs of each of the Covered Species are summarized in Table 1-1, and they are described in detail in Section 2.4.

#### **1.4 COVERED ACTIVITIES**

Covered Activities are those activities for which incidental take is permitted under an incidental take permit. Stanford is an academic institution that engages in a variety of activities, some of which could present a risk to one or more of the Covered Species. The following categories of activities are addressed by this HCP and will be covered by the resulting incidental take permit:

- Ongoing operations of the University, including maintaining, renewing and necessary development of the campus (e.g., landscape; facility maintenance; civil, energy, and communications infrastructure; fire suppression),
- Academic activities as mandated by the Founding Grant of the University,
- Recreational activities, and
- Future development associated with the Santa Clara County 2000 General Use Permit and other development which may occur under future permits from Santa Clara County and the City of Palo Alto.

In addition, the incidental take permit will cover activities carried out by Stanford lessees under Certificates of Inclusion. These activities include:

- Equestrian facilities
- Agricultural activities
- Commercial and institutional activities

- Operation of civil, energy, and communications infrastructure

The HCP also does not cover biocide use, although it does provide minimization measures for biocide use.

## **1.5 HCP GOALS**

### **1.5.1 Stanford's Institutional Goals**

Stanford's primary mission is teaching and research. Proper stewardship of Stanford's lands has been, and will continue to be, essential to the success of the University. Since opening in 1891, Stanford has endeavored to provide a top-ranked academic experience for all eligible students, regardless of their financial resources. The academic curriculum, depth and kinds of research, and how students are taught have all progressed remarkably since the University opened. This continuous progress makes it difficult to predict the needs of future students and faculty members. For these reasons, and because of legal restrictions associated with the Founding Grant that established the University, retaining future land use flexibility is vital to the University's long-term academic success.

During the academic year, thousands of people live on campus, and hundreds more visit the University each day. The University's size and infrastructure, which includes laboratories, offices, hospitals, student centers, athletic facilities, housing, roads, landscape and other urban facilities, are similar to a city of 30,000 people. Currently, Stanford provides housing for 95 percent of the 6,500 undergraduate students that attend the University and approximately 60 percent of its 6,500 graduate students. The University also houses nearly 900 faculty members.

Stanford has developed a set of Institutional Goals that reflect the University's core academic mission and the realities of day-to-day operation of the University. These goals, in concert with Stanford's Biological Goals, will be used to evaluate future activities that are governed by this HCP and resulting incidental take permit.

In the context of this HCP, Stanford's Institutional Goals are as follows:

**Institutional Goal #1:** Maintain land use flexibility.

**Institutional Goal #2:** Maintain and enhance biological resources (i.e., native biodiversity) on University lands so that these resources can be utilized by future generations of students and faculty researchers.

**Institutional Goal #3:** Prepare a conservation program that incorporates sustainable land use planning policies and practices.

**Institutional Goal #4:** Implement cost effective conservation measures that efficiently invest the University's assets.

**Institutional Goal #5:** Define the University’s legal responsibilities toward biological resources so that the University can develop its lands and operate in an environmentally and fiscally responsible manner during the next 50 years.

### **1.5.2 Stanford’s Biological Goals and Objectives**

Stanford University, like most of the San Francisco Peninsula, has urbanized over the past several decades. This regional urbanization likely will continue and has placed considerable stress on the area’s natural resources. Stanford’s Institutional Goals recognize the need to utilize the University’s land and water resources, and the Biological Goals seek to protect and enhance Stanford’s natural resources.

The Biological Goals described below implement the Five Points Policy, which states, “the best HCPs clearly define the desired outcome for the covered species and their habitats in terms of biological goals and objectives.” Stanford has developed broad Biological Goals, as well as more specific “Biological Objectives” that provide measurable ways of determining whether a goal is being met. These goals and objectives provided the framework for developing an integrated conservation program that identifies specific management and minimization actions. These actions are intended to meet the Biological Goals and Objectives during the life of the HCP. The Biological Goals and Objectives also provide the Service with a benchmark for evaluating the likelihood the conservation program will be successful.

The Biological Goals of this HCP are:

**Biological Goal #1:** Maintain and enhance natural communities so that they benefit the Covered Species.

**Biological Goal #2:** Stabilize the local California tiger salamander population and increase its chance of long-term persistence at Stanford.

**Biological Goal #3:** Maintain ponds to promote California tiger salamander reproduction in the Foothills.

**Biological Goal #4:** Increase the local California red-legged frog population and increase its chance of long-term persistence at Stanford.

**Biological Goal #5:** Maintain or improve habitat that could support the San Francisco garter snake and continue to contribute to the body of information about garter snakes at Stanford.

The goals and objectives are provided in Table 1-2.

## **1.6 SUMMARY OF STANFORD HCP APPROACH**

Stanford’s land use policies recognize the University’s responsibility and commitment to respect the University’s lands. A key focus of the HCP will be on species protected by

the federal Endangered Species Act and their habitats that exist on Stanford lands. The incidental take of California red-legged frog, California tiger salamander, and San Francisco garter snake by ongoing and future Stanford University activities is projected to be small.

Stanford seeks a 50-year incidental take permit from the Service. The strategy employed by the HCP will begin benefiting the Covered Species as soon as the HCP is approved, and will continue to benefit the Covered Species throughout the life of the HCP. The HCP will establish a pay-up-front conservation program that rewards early conservation efforts. Many HCPs, such as one designed for a single development project, authorize incidental take early in the project period while spreading out mitigation throughout the project. In the Stanford HCP, Stanford has the opportunity to immediately contribute to the Covered Species through early preservation of existing habitat and creating new habitat. The pay-up-front approach means that early habitat conservation measures will compensate for or exceed any take associated with the HCP and ensure adequate species conservation throughout the life of the incidental take permit.

**Table 1-1. General Habitat Needs of the Covered Species**

<b>SPECIES</b>	<b>SUMMARY OF HABITAT NEEDS</b>
California red-legged frog (CRLF)	Permanent bodies of slow-moving or standing water, with sufficient vegetation to provide cover and support ample prey, and with areas that are at least 3 feet in depth; adjacent upland areas of suitable vegetation to allow for dispersal and to seasonally support non-breeding individuals.
California tiger salamander (CTS)	Seasonal ponds that fill in December or January and hold water until June, with sufficient levels of aquatic prey and cover to allow for larval development and metamorphosis; adjacent upland areas that provide sufficient densities of rodent burrows or debris for California tiger salamander to inhabit during the non-reproductive period, and vegetation appropriate for California tiger salamander residency and migration.
San Francisco garter snake (SFGS)	Permanent or nearly permanent bodies of water, usually with areas of shallow water and heavily vegetated shores; however, they are known to occur, at least temporarily, in grassland, riparian woodland, oak woodland, and coniferous forest.

**Table 1-2. Biological Goals and Objectives**

<b>Biological Goals and Objectives</b>
<p><b>Goal #1. Maintain and enhance natural communities so that they benefit the Covered Species.</b></p> <p><b>Objective 1.1.</b> Protect 3.5 contiguous miles of riparian vegetation and creek along Matadero Creek (2 miles), and Deer Creek (1.5 miles).</p> <p><b>Objective 1.2.</b> Protect no less than 90 acres along Matadero and Deer creeks within 1 year of issuance of an incidental take permit by the Service. Width of easement should range between 75 feet and 600 feet, averaging approximately 225 feet. Dedication of a conservation easement that permanently protect high-quality habitat from urban encroachment should allow the populations of red-legged frogs and garter snakes to increase naturally, and prevent mortalities associated with urban land uses.</p> <p><b>Objective 1.3.</b> Implement site-specific management and monitoring plans for the permanent riparian conservation easement area that would prohibit new structures, support revegetation and restoration activities, survey for Covered and non-native species, and control non-native species.</p> <p><b>Objective 1.4.</b> Protect 300 acres of grassland and seasonal ponds by establishing a no-build zone south of Junipero Serra Boulevard.</p> <p><b>Objective 1.5.</b> Implement a site-specific management and monitoring plan for the protected land to survey for Covered and non-native species, limit recreational activities, and provide vegetation management.</p> <p><b>Objective 1.6.</b> Move temporary structures and roads to areas more than 150 feet from the top of the creek bank, and revegetate vacated areas.</p> <p><b>Objective 1.7.</b> Restore 10 acres of riparian habitat and adjacent upland habitat.</p>
<p><b>Goal #2: California tiger salamander:</b> Stabilize the local California tiger salamander population and increase its chance of long-term persistence at Stanford.</p> <p><b>Objective 2.1.</b> Protect, enhance, and expand prime habitat for the California tiger salamander, including both upland and aquatic habitat, in areas relatively distant from existing population sinks, by setting aside and prohibiting development for 50 years on no less than 300 acres in the foothills south of Junipero Serra Boulevard within 1 year of issuance of an incidental take permit by the Service.</p> <p><b>Objective 2.2.</b> When California tiger salamander habitat in less desirable areas is permanently impacted, permanently protect habitat for California tiger salamander through the dedication of permanent conservation easements within the 300 acres.</p> <p><b>Objective 2.3.</b> Eliminate or reduce non-native plant and animal species that are impairing California tiger salamander reproduction or survival.</p> <p><b>Objective 2.4.</b> Facilitate California tiger salamander movement between developed areas that provide at least some marginal habitat and protected high-quality California tiger salamander habitat by maintaining at least three amphibian tunnels across Junipero Serra Boulevard.</p> <p><b>Objective 2.5.</b> Continue to supply water to Lagunita to allow metamorphosis of larval CTS.</p>
<p><b>Goal #3: California tiger salamander ponds:</b> Maintain ponds to promote California tiger salamander reproduction in the Foothills.</p> <p><b>Objective 3.1.</b> Reduce the California tiger salamanders' reliance on Lagunita by constructing and maintaining a complex of a minimum of 10 seasonal ponds in the foothills to provide additional breeding location opportunities, and achieve California tiger salamander reproductive success in no less than 75% of the ponds.</p> <p><b>Objective 3.2.</b> Provide an appropriate environment for CTS, including an appropriate pH, a minimum depth of 12 inches, and an adequate invertebrate food source while CTS and larvae are present.</p>

**Objective 3.3.** Within the first 3 years, construct five additional cover piles within 150 feet of the existing ponds to promote occupancy of the area by ground squirrels.

**Objective 3.4.** Any new ponds will have a minimum of three cover piles associated with them.

**Objective 3.5.** Manage grass height appropriate for ground squirrels and CTS around CTS ponds to an approximate distance of 500 feet from the ponds.

**Objective 3.6.** Modify or eliminate constructed ponds that the annual monitoring shows are not ponding during years of average or above average rainfall for a sufficient period of time to support California tiger salamander reproduction, or that are otherwise not adequately supporting tiger salamander reproduction.

**Goal #4: California red-legged frog:** Increase the local California red-legged frog population and increase its chance of long-term persistence at Stanford.

**Objective 4.1.** Protect riparian and adjacent upland areas for the benefit of California red-legged frog by dedicating a conservation easement along Matadero and Deer creeks that permanently protect no less than 90 acres of high-quality California red-legged frog habitat within 1 year of issuance of an incidental take permit by the Service.

**Objective 4.2.** Eliminate or reduce non-native species that are impairing California red-legged frog reproduction or survival.

**Objective 4.3.** Create additional areas suitable for California red-legged frog reproduction, including off-channel ponds and side channels, by designing and building a minimum of two new breeding sites located off any of the main creek channels.

**Goal #5: San Francisco garter snake:** Maintain or improve habitat that could support the San Francisco garter snake and continue to contribute to the body of information about garter snakes at Stanford.

**Objective 5.1.** Protect riparian and adjacent upland areas for the benefit of San Francisco garter snake by dedicating a conservation easement along Matadero and Deer creeks that permanently protect no less than 90 acres of potential high quality San Francisco garter snake habitat within 1 year of issuance of an incidental take permit by the Service.

**Objective 5.2.** Continue to supply water to Lagunita to promote a prey base for San Francisco garter snake.

**Objective 5.3.** Eliminate or reduce non-native species that could impair San Francisco garter snake reproduction or survival.