

SANTA ROSA PLAIN CONSERVATION STRATEGY

FINAL



Sonoma
sunshine

Many-flowered navarretia



California tiger salamander



Burke's goldfields



Sebastopol meadowfoam

December 1, 2005

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EXECUTIVE SUMMARY

The purpose of the Santa Rosa Plain Conservation Strategy (Conservation Strategy) is to create a long-term conservation program sufficient to mitigate potential adverse effects on listed species due to future development on the Santa Rosa Plain (Plain). The program will contribute to the recovery of the Sonoma County distinct population segment of the California tiger salamander (CTS), Burke's goldfield, Sonoma sunshine, Sebastopol meadowfoam and the many-flowered navarretia (listed plants), and to the conservation of their sensitive habitat. The Conservation Strategy accomplishes the above in a manner that protects stakeholders' (both public and private) land use interests, and supports issuance of an authorization for incidental take of CTS and listed plants that may occur in the course of carrying out project activities on the Plain.

The listing of CTS caused uncertainty for local jurisdictions, landowners and developers about how the listing would affect their activities. Private and local public interests met with US Fish and Wildlife Service (FWS) to discuss possible cooperative approaches to protecting the species, while allowing planned land uses to occur within the range of CTS. These discussions led to the formation of the Santa Rosa Plain Conservation Strategy Team (Team), consisting of representatives of the appropriate government agencies and interested parties.

The original goals of the Team were to:

- Develop a habitat conservation strategy that contributes to the recovery of CTS and listed plant species
- Identify proposed areas for conservation
- Develop an implementation framework for the conservation strategy which identifies short- and long-term actions and milestones as needed
- Establish development process predictability

Before developing a Draft Conservation Strategy, the Team held a public meeting to answer questions about the Team process and to ask for input into what should be included in the Conservation Strategy. The Team submitted an administrative draft of the Conservation Strategy to five independent scientists for peer review prior to preparation of the Draft Conservation Strategy that was made available to the public. Prior to finalizing the document, the Team received public comments. These comments were considered, and numerous modifications were made to the document in response to that input.

Biological Goals and Objectives, and Assumptions

The Conservation Strategy is based on biological goals and objectives to achieve conservation of CTS and the listed plants. The goals and objectives are based on available information on the distribution, ecology and genetics of CTS and listed plants. They are also based on existing and planned land use patterns and assumptions about expected development in a ten-year time frame, the effect of that development on the species, how the preserves would offset those impacts, and

the compatibility of existing land uses with CTS and listed species conservation. In addition, there are various other biological factors that were used in developing the conservation areas.

Conservation Areas

The Conservation Strategy identifies eight conservation areas for CTS and listed plants, one CTS and listed plant preserve system, and one listed plant conservation area. The designation of these areas is based on current available information on the occurrence and habitat needs of the listed species. The conservation areas were designated to conserve the species throughout their distribution range. These conservation areas identify lands where mitigation for project-related impacts to listed species will be directed. Designation of an individual property as being within a conservation area does not change that property's land use designation or zoning, or otherwise restrict the use of that property.

Preserve Establishment

Preserves may be established within the conservation areas by acquiring land in fee title or through conservation easements, and may include wetland restoration/creation and habitat enhancement. Some mitigation may occur outside of conservation areas if the land is contiguous to a conservation area and meets the other provisions of the preserve selection criteria.

Translocation

Translocation of listed species is allowed through collection and relocation to suitable habitat within the Plain. The Conservation Strategy outlines the conditions under which this can take place and when it may be required.

Habitat Improvement

Three types of habitat improvement may occur as a part of the Conservation Strategy. They include wetland creation, wetland restoration, and enhancement of wetland and upland habitat. Criteria for lands proposed for habitat improvement are detailed in the Conservation Strategy.

Preserve Management

Preserve management plans will be required and must detail activities that are necessary to maintain and enhance the wildlife, plant communities and wetland habitats, including management of water, vegetation and predators. Annual work plans will be required and will be submitted to the appropriate authorities. Criteria used for designing management plans are detailed in the Conservation Strategy, along with the funding mechanisms to assure that the preserves can be adequately managed. The preserves also must be monitored to ensure their success; the criteria for this monitoring must be included in the management plan.

An Adaptive Management Team (AMT) will ensure that preserve management is occurring consistent with the Conservation Strategy. Composition of the AMT and its role in long-term preserve management is detailed in the Conservation Strategy.

Mitigation

The goal of mitigation is to reduce, or compensate for, the negative impact an action may have on a listed species or sensitive habitat. The Conservation Strategy addresses the mitigation requirements for CTS, the listed plant species and seasonal wetlands, including vernal pools. Both interim and long-term mitigation ratios for CTS, wetlands and listed plants are detailed. Once the Conservation Strategy is implemented, projects within 1.3 miles of a breeding site, as shown on Figure 3, will be required to provide two acres of conservation to each one acre of impact as CTS mitigation. In the interim period, until the Conservation Strategy is implemented, CTS mitigation will range from one acre to three acres of conservation for each one acre of impact. Mitigation for impacts to wetlands will be determined through State and Federal permitting processes. Mitigation for listed plants will be applied pursuant to the programmatic biological opinion.

The Conservation Strategy provides projects outside of 1.3 miles from a known breeding site, but with potential for presence of CTS, as shown on Figure 3, the option to mitigate by contributing to a species fund. The species fund will provide conservation benefits to the CTS. This will preclude the need to conduct two years of protocol level surveys in areas not known to be occupied, but within the potential range of the CTS.

Implementation

In January 2005, a group referred to as the Implementation Committee was formed to develop a plan to implement the Conservation Strategy. This group is currently comprised of representatives of local jurisdictions, FWS, CA Department of Fish and Game (DFG), and the agricultural, environmental and private landowner communities. The Implementation Committee is preparing a plan that, when adopted by the various agencies, will provide the basis for implementation of the Conservation Strategy.

Potential Funding

There are a variety of potential funding sources to assist in implementation of the Conservation Strategy. Direct mitigation is the most likely and certain source. Other potential sources include land acquisition grants, Habitat Conservation Plan (HCP) land acquisition grants, private foundation grants, State revolving funds, Sonoma County Agriculture and Open Space Protection District funds, Legislative and Congressional appropriations, and private stewardship programs.

Glossary/Acronyms & Abbreviations

In Section 11, a glossary is provided to define terms used in the Conservation Strategy that may not be common to all readers; a list of acronyms and abbreviations is available for quick

reference in Section 12. Also, a list of references used by members of the Team in developing the Conservation Strategy is provided in Section 13.

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SANTA ROSA PLAIN CONSERVATION STRATEGY

SECTION 1 – INTRODUCTION

1.1 Setting

The Santa Rosa Plain (Plain) is located in central Sonoma County, bordered on the south and west by the Laguna de Santa Rosa, on the east by the foothills, and on the north by the Russian River. The Plain and adjacent areas are characterized by vernal pools, seasonal wetlands, and associated grassland habitat, which support – among other flora and fauna – the threatened California tiger salamander (CTS) and four endangered plant species: Burke’s goldfields, Sonoma sunshine, Sebastopol meadowfoam, and many-flowered navarretia (listed plants). (See Appendix A for species accounts.) These listed plants grow only in seasonal wetlands; the CTS uses seasonal wetlands for breeding, and the surrounding uplands for dispersal, feeding, growth, maturation and maintenance of the juvenile and adult population (upland habitat). The potential range of the CTS in Sonoma County is shown in Figure 1. The distribution of Burke’s goldfields, Sonoma sunshine, and Sebastopol meadowfoam is confined almost entirely to the Plain. Many-flowered navarretia occurs mostly outside the Plain, but its only Sonoma County population is present on the Plain.

Urban and rural growth on the Plain has taken place for over one hundred years, and for the past twenty years urban growth has encroached into areas inhabited by the CTS and the listed plants discussed above. The loss of seasonal wetlands caused by development on the Plain has led to declines in the populations of the listed plants and the CTS. Voters in the cities of Cotati, Rohnert Park, Santa Rosa, and Sebastopol, and the Town of Windsor have established urban growth boundaries (UGBs) for their communities (see Figure 1). This is intended to accomplish the goal of city-centered growth, resulting in rural and agricultural land uses being maintained between the urbanized areas. Therefore, it can be reasonably expected that rural land uses will continue into the foreseeable future. There are also acreages of publicly owned property and preserves located in the Plain, which will further protect against development. Some of the areas within these UGBs, however, include lands inhabited by CTS and the listed plant species. Agricultural practices have also disturbed seasonal wetlands, CTS and listed plant habitat on the Plain. Some agricultural practices, such as irrigated or grazed pasture, have protected habitat from intensive development.

1.2 Regulatory Framework

Congress enacted the Endangered Species Act (ESA) in 1973 to provide a means whereby the ecosystems upon which endangered and threatened species depend may be conserved and to provide programs for their conservation, thus preventing their extinction. The US Fish and

Wildlife Service (FWS) and the National Oceanic and Atmospheric Administration (NOAA) are the two principle Federal agencies responsible for conserving, protecting and enhancing fish, wildlife, plants and their habitats. These two agencies enforce Federal wildlife laws, and administer the ESA.

In 1970, the State of California enacted the California Endangered Species Act (CESA). The California Department of Fish and Game (DFG) is charged with enforcing the provisions of the CESA, which are found in Section 2050 of the Fish and Game Code.

In 1972, the Congress enacted the Federal Clean Water Act (CWA). Section 404 regulates the discharge of dredged or fill material to waters of the United States, including wetlands. The US Army Corps of Engineers (USACE) and US Environmental Protection Agency (USEPA) co-administer the Section 404 regulatory program. Section 401 establishes a program to ensure that projects licensed or permitted by the Federal government do not degrade water quality. In California, the State Water Resources Control Board and regional water quality control boards issue water quality certifications.

In 1969, the State of California adopted the Porter-Cologne Water Quality Control Act (Porter-Cologne Act). This act regulates the discharge of waste to the waters of the State. On the Plain, the North Coast Regional Water Quality Control Board (NCRWQCB) administers this act in addition to Section 401 of the CWA.

In 1972, the State of California adopted the California Environmental Quality Act (CEQA). Pursuant to CEQA, state and local agencies approving projects are required to evaluate potential environmental impacts and impose mitigation measures where appropriate.

1.3 Origin of the Santa Rosa Plain Conservation Strategy

On July 22, 2002, FWS listed the Sonoma County distinct population segment of the CTS as endangered under an emergency basis. The final rule was issued on March 19, 2003. FWS listed the species as threatened throughout its range on August 4, 2004, including the former Sonoma County distinct population segment (Federal Register 69:47211-47248). The Sonoma County distinct population segment was reinstated and re-designated as endangered by court order on August 19, 2005.

The CTS is not listed under the CESA at this time; it is a State species of special concern. Burke's goldfields, Sonoma sunshine, and Sebastopol meadowfoam were federally listed as endangered on December 2, 1991. The many-flowered navarretia was listed on June 18, 1997. These plants are also listed as endangered by the State. Prior to the listing of the CTS, projects were required to mitigate for wetland and endangered plant impacts pursuant to State and Federal law, and based on a programmatic biological opinion for the four endangered plant species on the Plain (see Appendix B). Proposed Critical Habitat was published for the Sonoma County CTS on August 2, 2005.

Following the initial listing, FWS issued a map delineating the potential range of the CTS on the Plain (see Figure 1). The range encompasses a significant area on the Plain, much of which is planned for development within the ultimate urban growth boundaries of the cities of Cotati, Rohnert Park, and Santa Rosa. Outside of the UGBs, the range includes existing and planned rural residential, agricultural, and some urban development in the unincorporated portion of Sonoma County.

The protections given to the CTS resulted in the review of projects on the Plain to determine if they may have an impact to the species. Specific actions by FWS and DFG are necessary to allow take of the species, with mitigation required, or to determine that the project will not have an effect on the species. This often necessitates two years of field surveys to determine if the species is present on a project site (see Appendix C). In addition, listed plants also require two years of survey (see Appendix D). These survey requirements, and lack of a delineated process on how to mitigate for impacts to CTS habitat, created a complex regulatory environment, which has seriously constrained planned development.

The listing of CTS has caused a level of uncertainty for local jurisdictions, landowners, and developers about how the listing would affect their activities. Private and local public interests met with FWS to discuss possible cooperative approaches to protecting the species, while allowing planned land uses to occur within the range of the animal.

The result of these discussions was the formation of the Santa Rosa Plain Conservation Strategy Team (Team). It was agreed that the Team would consist of representatives of the appropriate government agencies and interested parties to develop a conservation strategy for the Plain that conserves and enhances the habitat for the CTS and the listed plants, while considering the need for development pursuant to the general plans of the local jurisdictions. The Team held its first meeting on March 30, 2004, and continued to meet through August 2005 to prepare a Draft Santa Rosa Plain Conservation Strategy. The Team held a public meeting on September 12, 2005 and received numerous comments on the draft through September 16, 2005. The Team reviewed and considered all comments received, made modifications to the Draft Santa Rosa Plain Conservation Strategy where appropriate, and produced the Final Santa Rosa Plain Conservation Strategy (Conservation Strategy).

1.4 Purpose of the Santa Rosa Plain Conservation Strategy

The purpose of the Conservation Strategy is threefold: (1) to establish a long-term conservation program sufficient to mitigate potential adverse effects of future development on the Plain, and to conserve and contribute to the recovery of the listed species and the conservation of their sensitive habitat; (2) to accomplish the preceding in a fashion that protects stakeholders' (both public and private) land use interests, and (3) to support issuance of an authorization for incidental take of CTS and listed plants that may occur in the course of carrying out a broad range of activities on the Plain.

The Conservation Strategy is the biological framework upon which future regulatory actions will be based; the Strategy will not preserve the species unless implemented by the appropriate agencies. The Conservation Strategy provides the biological basis for a permitting process for projects that are in the potential range of listed species on the Plain. This is intended to provide consistency, timeliness and certainty for permitted activities. The Conservation Strategy study area (Figure 1) is comprised of the potential CTS range and the listed plant range within the Plain. The Conservation Strategy establishes interim and long-term mitigation requirements and designates conservation areas where mitigation will occur. It describes how preserves will be established and managed. It also includes guidelines for translocation, management plans, adaptive management and funding. Finally, the document describes the implementation planning process.

FWS will prepare a programmatic biological opinion for CTS and listed plants based on the Conservation Strategy, and potentially a future implementation plan. FWS will also prepare a recovery plan for the Sonoma County distinct population segment of the CTS and listed plants as required by the ESA. The Conservation Strategy will be the foundation of the recovery plan; however, it does not preclude the obligation of FWS to develop a recovery plan. Other future actions that may occur include the preparation of a Habitat Conservation Plan or Plans.

SECTION 2 – CONSERVATION STRATEGY TEAM

2.1 Conservation Strategy Team Goals

The original goals of the Team were to:

- Develop a habitat conservation strategy that contributes to the recovery of CTS and listed plant species
- Identify proposed areas for conservation
- Develop an implementation framework for the Conservation Strategy, which identifies short and long-term actions and milestones, as needed
- Establish development process predictability

2.2 Role of the Conservation Strategy Team

The role of the Team is to develop a conservation strategy that considers and coordinates input from a variety of interests, which are sometimes common and sometimes competing, that will result in conservation of habitat and ultimately be a component of the recovery of the CTS and listed plant species. The Team has no independent authority; rather, authority lies with each

regulating agency. In accomplishing the goals of the Conservation Strategy Team, all Federal, State, regional and local permitting requirements need to be followed and the Conservation Strategy must be consistent with these requirements.

There are various regulatory and legal requirements for which individual agencies are responsible on the Plain. As stated previously, FWS is responsible for administration of the ESA, and DFG is responsible for administration of the CESA. The USACE and the USEPA have regulatory responsibility for administering Section 404 of the Clean Water Act. The NCRWQCB has responsibility for administering the Clean Water Act, Section 401 Water Quality Certification, and the State Porter-Cologne Act. The various local jurisdictions are responsible for compliance with the CEQA.

SECTION 3 – BIOLOGICAL GOALS, OBJECTIVES AND ASSUMPTIONS

3.1 Biological Goals and Objectives

The Conservation Strategy is based on the following biological goals and objectives to achieve conservation of CTS and the listed plants. The goals and objectives are based on available information on the distribution, ecology, and genetics of CTS and listed plants. They are also based on existing and planned land use patterns. It is expected that additional information on the species will become available, which will be considered in the adaptive management process.

- (1) Establish and manage, in perpetuity, preserves within the eight CTS conservation areas distributed throughout the range of the Sonoma County population of the CTS:
 - Develop preserves to be contiguous with each other to the maximum extent practicable
 - Establish 3450 to 4250 total acres of preserves consisting of 350 to 900 acres within each conservation area
 - Establish at least one preserve consisting of a minimum of 150 contiguous acres within each conservation area
 - Establish a satellite preserve in Stony Point Conservation Area of a minimum of 100 contiguous acres
 - Maintain compatible land uses between preserves to allow movement of CTS between preserves to maintain genetic diversity

- (2) Establish listed plant preserves to maintain genetic diversity of listed plants throughout their known range on the Plain:
- Establish 75 to 150 acres of plant preserves of 25 to 100 acres each in the Windsor Plant Conservation Area,
 - Maintain at least 10 occurrences of both Sonoma sunshine and Burke's goldfields throughout their known range on the Plain
 - Preserve the one known population of many-flowered navarretia on the Plain
- (3) Expand the number of secure occurrences of each of the listed plant species:
- Protect at least 5 extant plant occurrences in each of the conservation areas where plants are known to occur
 - Establish 10 new self-sustaining plant populations of each of the listed plants within their known range on the Plain
- (4) Preserve interconnected CTS and listed plant habitat within the Southwest Santa Rosa Preserve System:
- Establish three CTS and listed plant preserves totaling 153 acres
 - Establish corridors between the preserves and adjacent conservation areas
 - Establish one new breeding site in each of the corridors
 - Maintain Sebastopol meadowfoam populations of 500 plants in at least 10 pools within the Preserve System
- (5) Secure and expand CTS breeding habitat within the conservation areas, with an emphasis on preserving existing breeding sites (not including ditches):
- Assure that each preserve has at least one created or existing breeding site or is adjacent to a preserve with a breeding site
 - Assure that there is one breeding site for every 50 acres of preserved upland habitat
 - Develop design criteria for created breeding sites to ensure proper hydrology in years of normal rainfall; monitor for success

(6) Assure adequate management of preserves:

- Establish preserve management plans with adequate funding in perpetuity
- Assure adequate endowments for all preserves based on site specific management needs
- Provide secure management funding for all public lands that contribute to the preserve objectives

(7) Assure that preservation occurs in proportion to the effect of CTS and listed plant habitat loss:

- Apply interim mitigation requirements until the Conservation Strategy is implemented
- Apply long-term mitigation requirements once the Conservation Strategy is implemented
- Implement habitat preservation requirements of the Conservation Strategy

(8) Establish an effective adaptive management process:

- Monitor establishment of preserves for consistency with the Conservation Strategy
- Assess the effectiveness of preserve management
- Propose research to inform future implementation of the Conservation Strategy
- Monitor viability of CTS and listed plants

3.2 Assumptions

Development of the Conservation Strategy is based on the following assumptions about expected development in a ten-year time frame, the effect of that development on the species, how the preserves would offset those impacts, and the compatibility of existing land uses with CTS and listed species conservation.

- Either existing agricultural and rural land uses outside the UGBs will not change appreciably, or impacts of any changes will be adequately analyzed and mitigated
- Urban development within the UGBs may occur based on general plans of the municipalities

- Limited urban development may occur outside of the UGBs based on the Sonoma County General Plan
- Voter-approved UGBs will remain in place for at least 10 years and will likely continue into the foreseeable future
- Based on aerial photography and site visits, potential habitat for CTS and listed plants exists in locations where surveys have not been conducted
- Urban development will eliminate some CTS and listed plant habitat
- Small preserves in an urban environment are difficult to manage, and will not likely sustain viable CTS populations

In addition, there are other biological factors that were used in developing the conservation areas.

SECTION 4 – CONSERVATION AREAS

4.1 Introduction

Many individuals and organizations have collected data on CTS breeding sites, migration corridors, upland habitat areas, and the locations of listed plants on the Plain. These data, including records from the California Natural Diversity Data Base (CNDDDB), have been compiled into a GIS system for the Plain in a cooperative effort by the FWS and DFG, resulting in a powerful mapping capability. The Conservation Strategy Team used this capability to show existing, known CTS and plant localities, land uses, jurisdictional boundaries, urban growth areas, and other geographic features. The mapping criteria used are shown in Appendix E. Based on known listed species distribution, nine conservation areas were mapped throughout the Plain (see Figure 2). In addition, based on peer review comments, GIS information described above, and scientific studies, preserve goals were established for each of the conservation areas. Some locations currently occupied by CTS have been compromised by urban development. Those populations are not likely to be sustainable over time. Conservation areas are not proposed in these locations because, in the long-term, off-site mitigation will provide better protection for the species than avoidance of these small isolated populations.

Conservation goals for CTS and listed plants, while generally congruent, do not apply to the same geographic areas. While the northern extent of the CTS potential range extends to the southern boundary of the Town of Windsor, the range of listed plants extends north of Windsor. In the south, the potential range of CTS extends beyond the range of the plants. The overall preservation objective is proportional to the impacts of expected development on the listed species and their habitat over the next 10 years.

Conservation areas are integral to the conservation and recovery of the listed species by directing preservation efforts into the most important areas, as well as to ensure well-distributed populations. The Preserve Evaluation Criteria described in Section 4.4.1 explains the process to be used in selecting preserve sites.

4.2 Effects on Properties Included in Conservation Areas

Designation of an individual property as being within a conservation area does not change that property's land use designation or zoning, or otherwise restrict the use of that property. However, compliance with the ESA and other State and Federal laws is still required. Acquisition of property for preserves is expected to be from willing landowners.

4.3 Conservation Area Descriptions

The purpose of the conservation areas is to insure that preservation occurs throughout the distribution of the species. The designation of conservation areas is based upon the following factors: 1) known distribution of CTS, 2) the presence of suitable CTS habitat, 3) presence of large blocks of natural or restorable land, 4) adjacency to existing preserves, and 5) known location of the listed plants. The designation of conservation areas also generally attempted to avoid future development areas established by UGBs and city general plans. For example, the Llano and Stony Point conservation areas have some of the most important remaining large contiguous blocks of CTS habitat and the majority of documented breeding sites. Areas which are in the Laguna de Santa Rosa floodplain, are above 300 feet in elevation and characterized by oak woodland, or are adjacent to or surrounded by significant urban areas, generally have been excluded from the boundaries of the conservation areas. Generally, conservation areas were not designated within existing city limits due to the difficulty of sustaining long-term habitat viability.

The conservation area boundaries identify areas where mitigation for project-related impacts to the listed species and vernal pools should be directed. It is also a focus of the Conservation Strategy that emphasis be placed on mitigating the effects of near-term development in Southwest Santa Rosa in close proximity to where the impacts occur. The programmatic biological opinion for the listed plant species and the Santa Rosa Plain Vernal Pool Ecosystem Preservation Plan recognized that listed plant distribution is fragmented throughout the Plain. The listed plants occur in the identified conservation areas, with the exception of the SW Cotati and SE Cotati Conservation Areas.

The Conservation Strategy identifies areas important for protection of CTS and listed plants on the Plain as described on Figure 2 and listed below. Figures 3 through 12 describe each conservation area, general land use designations, and urban growth boundaries. Some lands within the conservation areas are excluded based on existing development. A critical component of the Conservation Strategy is that 350-900 acres of actual preserve land ultimately will be

established within each CTS conservation area, except the Southwest Santa Rosa Preserve System. The range in acreage reflects the fact that the various conservation areas greatly differ in size and CTS distribution. For example, the Alton Conservation Area identifies only 905 acres potentially available for preservation, while the Llano Conservation Area has 1,705 acres potentially available. This objective assumes that the preserves would be located in areas of rural residential and agricultural land use similar to what currently exists, and that the current land use designations in the Sonoma County General Plan would not change substantially over time. Table 1 shows the acreage goal for preservation in each conservation area. The rationale for the preserve acreage goals is described in Section 4.3, following the conservation area descriptions.

Alton Conservation Area

The Alton Conservation Area consists of 905 acres (see Figure 4). The preserved habitat in this conservation area is the Alton Lane mitigation site (41 acres) and the pending Woodbridge mitigation site (15 acres). The existing land use in the Alton Conservation Area consists of vineyards and rural development on the northern, southern and western boundaries and intense urban development on the eastern boundary. There has been successful restoration of CTS/plant habitat from converted vineyard lands in addition to preservation of existing high quality habitat in this conservation area. This method could be employed in the future. The Alton Lane mitigation site has CTS present. The conservation area and adjacent Northwest Santa Rosa Specific Plan area also includes populations of Burke's goldfields and Sonoma sunshine which are the primary focus of conservation efforts in this area. Therefore, the minimum preserve goal is smaller for this conservation area than the other conservation areas due to its primary focus on listed plants, and secondary focus on CTS. The minimum preserve goal for this area is 350 acres (contiguous or non-contiguous).

Wright Conservation Area

The Wright Conservation Area consists of 668 acres of which 212 acres have been conserved, as part of the Wright Preservation Bank, and 39 acres are in a pending preserve (see Figure 5). The boundaries of this conservation area were derived from known CTS and plant occurrence data. The existing preservation bank, which supports both CTS and the listed plants, is the focal point of conservation. The existing land use at the Wright Conservation Area consists of vineyards, some irrigated lands, and rural residential areas. If vineyard or irrigated lands were to be used for conservation, they would require restoration of the habitat and removal of irrigation. This would be true for any of the Conservation Areas. There is an objective to have at least 350 contiguous acres preserved. As previously defined, this would consist of the core area for preservation. Therefore, if the conservation of 350 contiguous acres were achieved, the minimum preserve goal would be 350 acres. Until this objective is achieved, the conservation goal is 450 non-contiguous acres.

Kelly Conservation Area

The Kelly Conservation Area consists of 662 acres (see Figure 6). No land is currently preserved as habitat for plants or CTS. CTS, Sebastopol meadowfoam, Burke's goldfields, and intact vernal pool complexes exist in this Area. This conservation area is constrained by the Laguna de Santa Rosa to the west. The existing land use within this Conservation Area consists of lands

irrigated with recycled water owned by the City and other landowners, rural residential lands, vineyards, and dairies. There is potential for restoration of lands that are currently cultivated and irrigated with recycled water. Restoration would include removal or alteration of irrigation and restoration of the vernal pool topography to the site. If the conservation of 350 contiguous acres were achieved, the minimum preserve goal would be 350 acres. Until the core areas are achieved, the minimum preserve goal is 450 non-contiguous acres.

Llano Conservation Area

The Llano Conservation Area consists of 1705 acres, of which 210 acres are currently preserved for CTS and plants, and 108 acres are in pending preserves (see Figure 7). Additional habitat is currently proposed for preservation in this area. There are Sonoma sunshine and Sebastopol meadowfoam populations and CTS breeding localities within this area. Historic records of Burke's goldfields also exist for this area. This is the largest of the conservation areas, and contains two significant clusters of CTS breeding sites. There may be additional breeding sites based on observations of adult CTS. The Llano conservation area has rural residential areas, some larger parcels and dairies. The minimum acreage for the core areas would be at least two contiguous preserves of 350 acres (a total of 700 acres). However, until the core areas are preserved, the minimum preserve goal is 900 non-contiguous acres.

Stony Point Conservation Area

The Stony Point Conservation Area consists of 1684 acres, of which 73 acres are currently protected in preserves and 248 acres are in pending preserves (see Figure 8). There are Sonoma sunshine and Sebastopol meadowfoam populations and numerous CTS breeding localities in the eastern and central portion of the conservation area, where surveys have occurred. Based on land uses in the western portion of the conservation area, it is expected that more breeding localities would be found if additional surveys are conducted. The Stony Point Conservation area has a few large parcels but predominately consists of smaller rural residential parcels, with an average size of 10 acres. Due to the small size of the parcels and the numerous breeding locations that are highly scattered and somewhat fragmented, this area should have one large core area of 350 contiguous acres or 450 non-contiguous acres. In addition, this area should have 3 satellite preserves of 100 acres or greater. However, until the core areas are preserved, the minimum preserve goal is 750 acres.

Northwest Cotati Conservation Area

The Northwest Cotati area poses serious conflicts between conservation of known occurrences of CTS and the City's UGB. The majority of the Northwest Cotati Conservation Area does not have documented CTS occurrences; however, there are records of breeding in roadside ditches within the Cotati UGB. Based on current information, no viable breeding sites are known to occur in the area. Prior to recently approved development in this area, two breeding sites were known to exist. Project impacts to these pools were mitigated outside the Cotati area as a part of the approval of development of the property that supported the breeding sites. Another breeding site was eliminated just prior to the emergency listing of CTS. The Conservation Area consists of 1309 acres, with no lands currently protected for CTS or listed plants (see Figure 9). The Sonoma County Agricultural Preservation and Open Space District holds an easement over a

279-acre parcel. The degree of protection provided by this easement is not known. The parcel does have potential for enhancement. Land use in this conservation area consists of rural residential and agricultural uses. Portions of the conservation area above 300 feet are not considered suitable for CTS habitat and have been excluded from the conservation area. The portion of the conservation area that is within the Cotati UGB, pursuant to the Cotati general plan, is planned for rural and low-density residential, commercial, and industrial development. There is sufficient acreage in this conservation area outside the UGB for the preserve goals to be met entirely outside the UGB.

Long-term protection of the CTS population in this area would ideally occur in a large area of preserves that are either contiguous or interspersed with compatible rural land uses. A less optimal situation would be small preserves interspersed with dense urban development as could occur within the Cotati UGB. This conservation area includes 263 acres of land within the Cotati UGB that is designated as a “Potential Exclusion Area” (See Figure 9). If a 250 acre contiguous preserve with three years of demonstrated viable breeding is established in this conservation area, then the “Potential Exclusion Area” would be removed from the conservation area and designated as an area within 1.3 miles of CTS breeding where projects are likely to impact CTS.

Based on a review of aerial photographs, the conservation area includes potential habitat for CTS and listed plants. Due to an apparent lack of breeding habitat, the highest conservation priority for this area is the preservation of a large contiguous preserve and the preservation of known breeding habitat or establishment of new breeding sites within the preserve. Additional surveys may result in the identification of breeding sites or locations where additional breeding sites could be created. Survey information for this area is limited but suggests that CTS may be abundant in suitable habitat. Only a few occurrences of Sebastopol meadowfoam are known in the area. The minimum acreage for a core area would be one contiguous preserve of 350 acres. However, until the core area is achieved, the minimum preserve goal for this area is 450 non-contiguous acres.

Southeast Cotati Conservation Area

The Southeast Cotati Conservation Area consists of 1114 acres, with no areas currently protected for CTS or plants (see Figure 10). Land use in this conservation area consists of rural residential and agricultural uses. A portion of this conservation area is within the Cotati urban growth boundary and, pursuant to the Cotati general plan, is planned for low to medium density and low density residential, and a park site. There is an overall lack of survey information for listed plants and CTS within this area; however, several adult CTS findings have been reported and entered into the CNDDDB. It is anticipated that additional surveys may find additional CTS within this conservation area. No listed plant populations have been reported within this conservation area. Portions of the conservation area above 300 feet are not considered suitable for CTS habitat and have been excluded from the conservation area. The minimum acreage for a core area would be one contiguous preserve of 350 acres. However, until the core area is achieved, the minimum preserve goal for this area is 450 non-contiguous acres.

Southwest Cotati Conservation Area

The Southwest Cotati Conservation Area consists of 1647 acres, with no areas currently protected for CTS or plants (see Figure 11). Land use in this conservation area consists of rural residential, vineyard, a dairy, and grazing. There is a lack of survey information within this area and it is anticipated that with additional surveys new localities of CTS may be found. Several adult CTS findings have been reported, but no plant occurrences are known in this area. Portions of the conservation area above 300 feet are not considered suitable for CTS habitat and have been excluded from the conservation area. The minimum acreage for a core area would be one contiguous preserve of 350 acres. However, until the core area is achieved, the minimum preserve goal for this area is 450 non-contiguous acres.

Southwest Santa Rosa Preserve System

The Southwest Santa Rosa Preserve System is within the urban growth boundary of the City of Santa Rosa, and most of the area is already within the Santa Rosa city limits (see Figure 12). This is an area of significant existing and planned development. This area also contains an abandoned military air center with some of the runways still present. There are currently 101 acres of preserves and 52 acres of pending preserves in this preserve system. This area is subject to development under the City's General Plan. The area contains numerous CTS breeding sites, wetlands and listed plant occurrences. The Southwest Santa Rosa Preserve System contains several existing and pending preserves which support both CTS and plant occurrences. The focus of this preserve system is to interconnect these preserves and insure their viability. The main actions needed to implement this preserve system are to provide blocks of land that include CTS breeding and upland habitat between the existing and pending preserves. These blocks of habitat would interconnect these preserves with the Llano Conservation Area as future development occurs in southwest Santa Rosa. Until there are adequate viable preserves throughout the conservation areas, this population of CTS is significant to the persistence of the species on the Plain.

Windsor Plant Conservation Area

The Windsor Plant Conservation Area is focused on listed plants and wetlands, but is located within the potential range of CTS (see Figure 13). This plant conservation area is unique in the Strategy in that it identifies preferred, as well as general, areas for potential preserves. A requirement for a defined preserve size is not specified because contiguity for listed plants is not essential. However, preserves should be of adequate size to maintain the hydrology of the wetlands/swale complexes. There are numerous occurrences of listed plants and wetlands in this area; however, no CTS occurrences have been documented. The general land use of this region is a mixture of rural residential, airport lands, vineyards and intense urban development. Because of the scattered locations of the listed plant species, at least three different satellite plant preserves should be established, each ranging in size from 25 to 100 acres, in the general locations in Figure 12. Ideally these preserves would be distributed throughout the area in relation to the occurrence of the plants. The specified plant preserve sizes are based on the goal of creating preserves that are large enough to capture entire pool watersheds, are internally buffered from surrounding properties, and can be feasibly managed. The preserve goal for this conservation area is 75 to 300 acres.

4.4 Preserves

A number of existing preserves contribute to the preserve goals shown in Table 1 and Figures 3 through 12. The acreage of preserves in the conservation areas includes two categories: 1) existing preserves, and 2) pending preserves. Existing preserves were established primarily to mitigate impacts to listed plants and wetlands. Pending preserves are defined as preserves that are proposed as mitigation in CEQA documents currently being processed, preserves in pending Section 7 consultations or in Corps of Engineers applications, or proposed mitigation banks that have a Banking Enabling Instrument in review. The acreage of existing and pending preserves is shown in Table 1.

4.4.1 Existing Preserves

Existing preserves are lands that are managed for the purpose of protecting natural habitat on the Plain or protected as mitigation for development activities that adversely affect listed species and wetlands. There are currently 633 acres protected as preserves within the Conservation Strategy Study Area (see Figure 1). Public preserves consist of lands or easements purchased primarily by the Sonoma County Agricultural Preservation and Open Space District and DFG. Lands owned in fee by those agencies may or may not have management plans and adequate funding for long-term management. Management of these lands is supported by agency budgets and varies depending upon annual appropriations. Examples of these preserves are the Todd Road Ecological Reserve and Haratunian Preserve. Lands protected by conservation easements do not have specific management plans and are the responsibility of the landowner to maintain.

Preserves established pursuant to mitigation requirements are protected by dedication of conservation easements and or fee title transfer to public agencies or appropriate nonprofit organizations. These lands have been protected for the specific purpose of mitigating for the loss of wetlands and or listed species' habitat. These preserves consist of mitigation and or conservation banks and individual mitigation sites. Mitigation banks are discussed in Section 4.5.2. Banks and individual mitigation sites must be protected in perpetuity, have a long-term management plan and an endowment for its implementation, and security for the performance of any required remediation. Examples of preserves established for mitigation are Wright Preservation Bank, Wikiup Mitigation Bank, Alton Lane Mitigation Site, and the Southwest Santa Rosa Preservation Bank.

4.4.2 Pending Preserves

Pending preserves are sites that have been proposed as mitigation and/or conservation banks or as project-specific mitigation for development projects. To be approved, these sites must be protected in perpetuity, have a long-term management plan and an endowment for its implementation, and security for the performance of any required remediation.

4.5 Preserve Acreage Goals

In determining the appropriate size for preserves for the CTS in the Plain, several studies were reviewed and analyzed. CTS in Monterey County can travel at least 2200 feet from their breeding pond to sites in upland habitat (Trenham *et al.* 2001), and it is estimated that as many as 10 percent of migrants travel even further (P. Trenham pers. comm.). Additionally, Sweet (1998) found, in Santa Barbara County, that CTS travel as far as 1.3 miles from breeding sites. Another study conducted in Solano County (Trenham and Shaffer, in press) concluded that in order to protect 95% of both adults and sub-adults at a breeding site with a 10-meter radius, it would require a 2200 ft band of upland habitat around the pool. Preserves for the Sonoma County CTS should accommodate these travel distances. A circular band of protected upland habitat 2200 feet around a 0.5-acre breeding site would encompass 350 acres. A protected area of that shape and size would be the minimum area needed to protect a single breeding site or a contiguous group of breeding sites. As an example, applying these criteria and GIS data to the Wright Preservation Bank in Sonoma County, a 2200-foot buffer around a cluster of breeding sites was drawn. In this case, total area (including pools) within the 2200-foot buffer consists of 450 acres.

Where land use patterns make it impossible to protect all habitat within a 2200-foot radius of a viable breeding site or sites, protecting some habitat that is more than 2200 feet from the breeding site will compensate for this problem. It is desirable to have multiple breeding sites within each conservation area. In locations that have multiple breeding site clusters, such as the Llano Conservation Area, the same methodology is used in order to encompass 95% of the population. Therefore, drawing a 2200-foot band around the breeding site clusters yields a minimum of 900 acres for the Llano Conservation Area.

It is also expected that many of the preserves will not be contiguous, and will have roads and other development surrounding or between them. Although these are not ideal conditions for protecting habitat, this vision represents the best recovery approach available on the Plain, which has few large blocks of contiguous natural habitat. The degree to which natural habitat on the Plain is interrupted by roads, homes and other man-made structures, supports the need for non-contiguous protected areas to be at least 450 acres in size.

In the Stony Point Conservation area, existing parcelization and roads limit the opportunity to create multiple large contiguous preserves. This area is known to support breeding populations and numerous adult CTS observations have been reported. In this area it is desirable to create preserves to assure that dispersed breeding sites are protected even though the minimum preserve criteria cannot be met. Therefore, the goal in this conservation area is one preserve of 350 contiguous acres or 450 non-contiguous acres and three satellite preserves with multiple breeding sites and 100 acres of contiguous area. These satellite areas are proposed due to the spatial separation of existing preserves, wide distribution of CTS, and rural nature of surrounding land uses that provide upland habitat. A satellite preserve of 100 acres would support approximately 80% of adults and 40% of sub-adults surrounding the breeding sites based on recent work in Solano County (Trenham and Shaffer, in press). The rural land uses surrounding the satellite preserves are expected to support the remaining portion of the CTS population. Landowners

adjacent to preserves would not be subject to any new regulation beyond that which is currently required. These satellite preserve areas are outside of the voter approved urban growth boundary and the land uses are not expected to change as the urban areas of Santa Rosa and Rohnert Park are developed. If major land use changes are proposed within 2200 feet of breeding sites in satellite preserves, or if voters elect to change the urban growth boundary, the viability of any established satellites would need to be assessed and these areas could need to be buffered from new development, enlarged (to 350 acres of contiguous or 450 acres of non-contiguous area) or relocated.

Plant preserves should be a minimum of ten acres. Smaller plant preserves may be established to protect extant populations of Sonoma sunshine and Burke's goldfield, where the site characteristics would assure long-term viability. Preserves on the plain currently range in size from 8 to 170 acres. From a management perspective, preserves should include the entire watershed of the pool(s) and swale(s) being protected, and the ratio of perimeter to area should be minimized. Given the limited number of known occurrences for Sonoma sunshine and Burke's goldfields, small preserves (10 acres or less) have been approved to meet mitigation requirements for habitat preservation. Although this is not optimal, it has been important in achieving the goal of maintaining the existing plant populations throughout the range of the listed plants.

Table 1 – Conservation Area and CTS Preserve Goals

Conservation Areas	Acreage of Habitat Minus Developed Land	Preserve Acreage Goal for CTS	Preserve Acreage Goal if Core Areas are Achieved	Acreage of Existing Preserved Land	Acreage of Pending Preserved Land	Acreage Goal to be Preserved	Acreage Goal if all Core Areas are Achieved
Alton	905.1	350	350	41	15	294	294
Wright	667.5	450	350	173	39	238	138
Kelly	661.7	450	350	0	0	450	350
Llano	1705.1	900	700	210	108	582	382
Stony Point	1684.4	750	650	73	248	429	329
NW Cotati	1309.1	450	350	0	0	450	350
SE Cotati	1114.4	450	350	0	0	450	350
SW Cotati	1647	450	350	0	0	450	350
Sub-total	9694.3	4250	3450	497	410	3343	2543
SWSR	0	0	0	101	52	0	0
Total	9694.3	4250	3450	598	462	3343	2543

The Conservation Strategy recognizes the need for core preserves ranging in size from 350 to 450 acres that are contiguous blocks of habitat for the eight CTS conservation areas. Contiguous is defined as not separated by a major road (such as Highway 101, Highway 116, Stony Point Road, and Highway 12), urban development, or the floodplain. If these core preserve acreages are achieved within a particular Conservation Area then the minimum conservation goal will be reduced as described above in each conservation area description. However, until these goals are achieved the habitat protection goal for each conservation area is as shown in Table 1 above.

4.6 Preserve Establishment

Establishment of preserves can be accomplished by acquiring – by fee title or conservation easement – an appropriate site and undertaking any wetland restoration/creation and habitat enhancement that would be required. Any preserve site will require an endowment or other mechanism for providing for long-term management and monitoring. Preserves can be established either through individual mitigation sites, mitigation banks, or dedication of public or private lands, and must be approved by the appropriate agencies.

Proposed preserves shall meet the following minimum requirements:

- Land which satisfies the preserve evaluation criteria, of adequate size and location to assure long-term viability
- The site must be preserved in perpetuity for the benefit of the affected species through dedication of fee title or a conservation easement to an appropriate resource management agency or organization. Any retained activities will be compatible with this purpose and will be described in the deed or easement. FWS/DFG will assist in defining these retained activities.
- The site must have a wetlands plan, if wetlands are to be created or restored on the site.
- The site must have a habitat enhancement plan, if CTS and/or listed plant habitat is to be created or restored on the site. (See Section 4.7)
- The site must have a management and monitoring plan including management actions necessary to manage, enhance, and protect the resources protected and created on the site, and monitoring actions to determine the success of created or restored wetlands and the status of the protected resources and effectiveness of specified management actions. (See Section 4.8)
- The site must have a funding mechanism to assure long-term management and monitoring. (See Section 4.9.2)

Preservation lands identified as mitigation for a specific project during formal consultation are included as part of the project description. However, in some instances FWS and DFG do not receive adequate biological information on the proposed mitigation sites or the project may not

have been completely described which can create a delay. Following the Conservation Strategy, including meeting the preserve evaluation criteria discussed below, will assist applicants in identifying appropriate mitigation lands and will expedite the process.

4.6.1 Preserve Evaluation Criteria

Pursuant to the Conservation Strategy, parcels proposed for preservation must provide suitable habitat for the CTS and/or listed plants. This section describes the process for evaluating, and approving individual properties or parcels for preservation.

The preserve evaluation criteria will be used by DFG and FWS in guiding both mitigation and mitigation bank development. These criteria are to aid and help expedite the selection of preserves. It is important to understand that there are numerous other components that are required to address mitigation requirements, including management plans, long-term endowments, and other necessary requirements, all of which must be complete.

Preserve evaluation criteria assist in determining whether a particular property or parcel supports suitable habitat for CTS and/or listed plants and will contribute to the preserve goals for a specific conservation area.

To be considered acceptable as a preserve, a proposed property or properties must meet all the following criteria:

- (1) Be within the boundary of one of the Conservation Areas designated by the conservation strategy.
- (2) Contain known, occupied CTS breeding, upland, or dispersal habitat and/or a known population or populations of listed plants; or represent potential CTS or plant habitat. With respect to potential CTS or plant habitat, the site must exhibit, in the judgment of the FWS and DFG, reasonable potential for habitat restoration or enhancement.
- (3) Be free of excessive land surface features such as roads, parking lots, other hardened surfaces, buildings or other structures, or extensive hardscape that cause a significant portion of the site to be unsuitable as CTS or plant habitat. Generally, for purposes of this criterion, no more than 15% of the land surface of any potential preserve site may include or be covered by such features unless it is to be restored as part of the preservation action.
- (4) Not isolated from other nearby CTS habitats (preserve or non-preserve) by incompatible land uses (e.g., hardscape) or other significant barriers to CTS movement and dispersal, such as Highway 101.
- (5) Not inhabited by fish and bullfrogs or other non-native predatory species, unless, in the judgment of FWS and DFG, such species can be effectively removed or eradicated.
- (6) Not within the Laguna de Santa Rosa 100-year floodplain.

- (7) Exhibit no history or evidence of the presence (storage or use) of hazardous materials on the surface of the site unless proof of removal or remediation can be provided. (This is included to avoid adverse impacts to CTS due to contaminants.)

Establishment of preserves outside the conservation areas will be allowed for the protection and enhancement of CTS and/or listed plant habitat, if such preserves would contribute to the preserve goals and enhance the preserve value of a specific conservation area. Habitat beyond 2200 feet and within 1.3 miles of known breeding sites is considered occupied habitat. However, certain areas which have major barriers, such as Highway 101 or are surrounded by existing development and will not support CTS, are not considered occupied habitat even though they are within 1.3 miles of breeding sites (see Figure 3). These areas are considered potentially suitable for preserve establishment based on the preserve establishment criteria. In many cases sites known to support extant or historic occurrences of listed plant populations occur in this area. Conservation areas have been developed, as described in Section 4.2, to focus habitat conservation, primarily for CTS, within close proximity to known breeding sites and to foster the development of a contiguous system of preserves. Preserve acreage occurring outside the current conservation area boundaries must meet the following requirements:

- (1) It meets the preserve evaluation criteria (except for criterion 1)
- (2) The area is immediately adjacent to a conservation area
- (3) It is within 1.3 miles of a CTS breeding site
- (4) It is within the potential range of the Sonoma County CTS
- (5) If a listed plant is impacted, mitigation will occur within its range on the Plain
- (6) These additional lands would become a part of the conservation areas

Establishment of preserves outside conservation areas would be reviewed and tracked by the adaptive management team.

FWS and DFG may elect to waive one or more of the above criteria and/or requirements for any particular proposed parcel or parcels. The proposed preserve site may be deemed suitable by providing some specific unique conservation value not identified in the above list, but that contributes to the recovery of one or more listed species. FWS and DFG must provide biologically based justification for the waiver and provide a copy of the files to that agency.

4.6.2 Mitigation Banks

A mitigation bank is a pre-approved site that preserves habitat for sensitive species and/or creates appropriate habitat. The appropriate amount and type of credits may be purchased from an approved conservation/wetland bank(s). The benefit of banks is that the habitat preservation or creation is in place in advance of the impact, and the management, endowment, and monitoring responsibilities of the individual seeking mitigation are assumed by the bank operator. Another benefit is that conservation/wetland banks are generally larger in size than individual mitigation

sites because the banks are established for mitigation of multiple projects.

On the Plain, there are two types of mitigation banks: wetlands mitigation banks and preservation banks. Banks are expected to be an important method of satisfying mitigation requirements under the Conservation Strategy. Preservation banks are established to preserve existing occupied habitat of sensitive species to offset losses of habitat elsewhere. Each mitigation bank may be established for a specific purpose, depending on the resources present and/or proposed to be created on the bank site. On the Plain, these would be for wetland creation and/or the protection of the four listed plants and the CTS, or some combination of these species. Banks are pre-approved sites that sell mitigation credits, which can be used to satisfy the mitigation obligations of a development project. The interagency Mitigation Bank Review Team (MBRT), which includes the USACE, FWS, DFG, NCRWCQB, and USEPA, will conduct approval of mitigation banks (see Appendix F).

In gaining approval of a preservation bank, the bank operator demonstrates that the bank will meet the Preserve Evaluation Criteria (see Section 4.5.1), and develops a management, endowment, and monitoring plan to assure long-term protection and maintenance of the site. In establishing a bank, a property owner or banker enters into a contractual agreement with the regulatory and resource agencies to provide for the development, preservation, and long-term management of the bank site. In doing so, the banker is authorized to sell mitigation credits based on the resources the bank supports. The focus of the management plan is to assure the species and their habitat will be preserved and maintained on the site.

Wetland mitigation banks are sites on which wetland habitat is created, restored, and/or enhanced. Credits are based on the number of acres of wetlands created, restored, and/or enhanced at the bank. Credits can be authorized for creation or restoration of new wetlands and enhancement of degraded wetlands if appropriate. The total acreage of wetlands, existing and created on a site, is limited to assure that an appropriate balance of wetlands to uplands is maintained for proper ecological function.

On the Plain, many vernal pool areas have been degraded by past land use, particularly cultivation of grain crops and orchards. Where enhancement is involved, only partial credit is granted so that the number of credits is less than the number of wetland acres enhanced. The reason this is a generally acceptable practice in the Plain is that many of the wetlands have been impacted or altered by previous land use practices, which has changed their topographic complexity and hydrologic characteristics, and their ability to function as habitat for sensitive plants and CTS. Restoration and enhancement focuses on restoring the historic configuration and hydrologic function of the wetlands and their surrounding uplands. Wetland credits are sold on an acre-for-acre basis and are used to meet no-net-loss requirements under Sections 401 and 404 of the Federal CWA and State Porter-Cologne Act.

CTS preservation banks are established to protect and manage known occupied and potential habitat for the species as described in the Preserve Evaluation Criteria. Credits authorized for sale are based on the number of acres of habitat present on the site. No distinction is made between upland habitat and breeding habitat in the allocation of credits; although, the bank must

have a breeding site onsite or be contiguous with an already protected property containing a breeding site. In cases where breeding habitat is not present, a breeding site will be created if deemed appropriate by the resource agencies. Credits are sold to meet mitigation requirements under the Federal ESA. Plant preservation credits are sold to compensate for the loss of occupied or potential habitat under the Federal and State endangered species acts, CEQA, and Section 404 of the CWA.

In establishing a mitigation bank the following actions must be completed:

- (1) The site must be preserved in perpetuity through dedication of fee title or a conservation easement to an appropriate resource management agency or organization.
- (2) A Bank Enabling Instrument or a Conservation Bank Agreement, and a management plan must be prepared by the applicant, and approved by the authorizing agencies. The management plan describes the actions that will be taken to maintain and enhance the site for the benefit of the species and habitat for which the bank is created. A monitoring plan must be prepared to document the success of the management actions in achieving the objectives of the bank.
- (3) In the case of wetlands banks, a bank development plan must be prepared and approved, and the wetlands must be created and demonstrated to function properly. Monitoring reports must be prepared to document the success of creation/restoration efforts in achieving the objectives of the bank.
- (4) An endowment or other funding mechanism must be established for management of the bank site in perpetuity.

This list of actions is general in nature, and more detailed information is shown in Appendix F.

Table 2 illustrates how credits at banks are allocated and sold. As noted above, each mitigation bank is established for a specific purpose, such as CTS, plants, wetlands, or a combination thereof. Compensation for impacts at the project site will be determined as outlined in Section 5 and shown on Figure 3 of the Conservation Strategy. The amount of compensation required for impacts at the project site is determined independently through the appropriate permitting process. All mitigation banks are granted a specific number of credits that may be sold. The number of credits allocated to a bank is generally related to the number of acres of habitat present on the bank site, with the exception of plants as described above. If a bank is authorized to sell a combination of creation and preservation credits, it may be authorized more credits than the total area of the bank, but it can only sell in combination a total that corresponds to the total area of the bank.

The following example describes a combination bank that includes created wetlands, and plant and CTS preserved habitat. The bank site is 100 acres, all of which is considered CTS habitat, it also supports 5 acres of existing wetland, which support populations of endangered plants, and 10 acres of wetlands have been created on the site. Based on the resources present it is allocated

a total of 115 credits. Based on the size of the bank the total number of credits that can be sold is limited to 100 credits. This example assumes the mitigation bank calculates 1 acre = 1 credit. The following table shows an accounting for banks only. Section 5 describes the mitigation requirements for the Conservation Strategy. The projects listed are hypothetical in nature and are provided only as an illustration.

Table 2 – Hypothetical Wetlands/Listed Species Mitigation Bank Example

Mitigation Bank	Project Name/Number	Hypothetical Compensation Requirements For Project Site Impacts	Credits Purchased from Mitigation Bank	Mitigation Bank Balance
Name of Bank Here Total Acreage of Bank equals 100 acres				100 CTS credits available 5 ac plant credits available 10 wetland credits available
	Project One	40 ac CTS 2 ac plants 2 ac wetlands	36 ac CTS 2 ac plants 2 ac wetlands	60 CTS credits 3 plant credits 8 wetland credits
	Project Two	1 ac plants 3 ac wetlands	1 ac plants 3 ac wetlands	56 CTS credits 2 plant credits 5 wetland credits
	Project Three	50 ac CTS 3 ac plants 5 ac wetlands	43 ac CTS 2 ac plants--- 1 ac plant credit must be purchased elsewhere. 5 ac wetlands	6 CTS credits 0 plants credits 0 wetland credits
	Project Four	7 ac CTS 1 ac wetlands	6 ac CTS--1 ac CTS credit must be purchased elsewhere 1 ac wetland credit must be purchased elsewhere	0 CTS credits 0 plants credits 0 wetland credits

Explanation of project 1 transaction: An applicant must secure 40 CTS, 2 wetlands, and 2 plant acres of habitat for compensation of their project impacts. This hypothetical mitigation bank supports 100 acres of habitat for CTS, 5 acres of plants, and 10 acres of wetlands. Because this bank supports habitats for all of the species impacted, the applicant can do “one-stop-shopping.” The applicant purchases 36 CTS, 2 plant, and 2 wetland credits. The wetland and plant habitats at the mitigation bank are also considered habitat for CTS. Therefore, purchasing 2 plant and 2 wetland credits also satisfies 4 acres of the required 40 CTS acres. In order to reach 40 CTS acres, the applicant purchases 36 CTS specific credits. This is an example only and does not address the specific impacts (see Section 5 of the Conservation Strategy for discussion regarding mitigation).

4.7 Translocation

Translocation is generally not the most desirable method of protecting the listed species; rather, it is desirable to conserve the species where they currently exist if that location is viable in the long-term. However, translocation is a method of conserving the species when protecting the species in place is not viable. Translocation, as it applies to the listed species of the Plain, involves the collection and relocation of animals (CTS larvae or adults) or plant materials (seeds or seed bank) to suitable unoccupied habitat on the Plain. However, it should be recognized that translocation of these species is still experimental. Long-term monitoring and adaptive management for all translocations will be necessary to determine their effectiveness and to establish standardized translocation techniques that have demonstrated the most reliable success.

There are recognized potential benefits of translocating CTS and listed plants in the Plain. Translocation of larvae and adult CTS can provide for the reintroduction of the species into areas from which they have been extirpated if suitable habitat is present. It can also be a mechanism for minimizing project impacts by limiting direct take and loss of individuals. Based on limited genetic information from the Plain, it appears that translocation could be a way of conserving genetic diversity within populations of CTS and listed plants.

To date, several translocations of CTS have occurred on the Plain but have not been adequately monitored or documented to determine if they were successful. These were primarily for the purpose of salvaging individuals to minimize take. Listed plants have also been translocated on the Plain. The success of this has been documented for plants at several sites on the Plain; various restoration techniques have been used. Examples of sites where self-sustaining populations of listed plants have been established as a result of translocation are the Sonoma County Airport mitigation site, the Alton Lane mitigation site, and the Gobbi mitigation site. For listed plants, protection of existing populations – especially Sonoma sunshine and Burke’s goldfields – remains important for the conservation of the listed species.

CTS translocation is achieved through the capture by appropriate means (e.g., drift nets and pitfall traps) of adult CTS returning to breeding sites, and/or the capture by appropriate means of adult or juvenile CTS in known breeding sites present within an area planned for development.

Listed plant translocation is achieved by the collection of seed and/or soils containing seeds, and relocation of those materials to suitable sites.

Translocation would be undertaken for the following reasons:

- 1) Where salvage of species is required as a permit condition by FWS/DFG when the removal of occupied habitat will occur (with performance criteria required for the salvage and translocation) and/or;
- 2) To collect an approved number of individuals or seeds in order to establish a new population on an unoccupied preserve site where all the conditions are present (including a management and monitoring program) to achieve success of the new population. Such collections would be accomplished in a manner as to not endanger an existing population.

In all cases where translocation occurs, authorization must be given by FWS/DFG.

4.7.1 General Translocation Guidelines

Translocation of listed plants will be required in cases where listed plants are taken and no land occupied by the particular listed species can be secured. Monitoring and management to insure continued viability of the translocated plants over time will be required. In addition, the monitoring and management plan will include mechanisms for remediation if translocation has failed. Where translocation is not a mitigation requirement and is deemed appropriate by FWS/DFG, monitoring will be the responsibility of the organization managing the lands to which the CTS or plants are translocated (receptor site); however, monitoring in such cases may or may not be conducted, at the discretion of that organization. Where the purpose of translocation is the establishment of new populations, monitoring will be required. Also, resources must be available for an appropriate length of time to monitor the translocation and determine its success or failure, based on established performance standards and success criteria. In all translocation cases, the receptor site must be protected from future development via dedication of fee title or conservation easement held by an appropriate land management organization. Translocation of CTS or listed plants will occur only where it will not result in adverse effects to the species being relocated, for example, dilution of the genetic distinctness between populations of CTS or plants located in different areas of the Plain.

4.7.2 CTS Translocation

The following guidelines apply to required CTS translocations, and translocations for the purpose of salvage.

- CTS translocation will only be to receptor sites that do not already support a CTS breeding population, unless, in the judgment of DFG and FWS, such translocation will not result in genetic or biological harm to any CTS population already inhabiting a receptor site.

- Where possible, CTS will be translocated to receptor sites that are within the same conservation area as the donor site or, where this is not possible, to the nearest conservation area.
- CTS will be translocated only to sites that contain seasonal wetlands, natural or created, that represent suitable CTS breeding habitat (i.e., pools that contain standing water continuously for at least twelve weeks, extending into April).
- In addition, CTS should only be relocated to wetlands that a) are sufficient in size; b) contain shallow margins but also areas of sufficient depth to permit escape by CTS larvae from avian predators; c) are free of fish or bullfrogs; d) contain an adequate food base; and e) contain sufficient aquatic and emergent vegetation to serve as egg attachment sites and escape cover for larvae. Generally, CTS larvae should not be translocated where resulting larval densities would exceed one per square meter.
- CTS translocation will be required only for projects containing occupied breeding sites, unless this requirement is waived by FWS and DFG. The costs of translocation will be the responsibility of the project proponent. The costs of monitoring the success of the translocation will be the responsibility of the manager of the receptor site. Where translocation is a requirement of the project or will form the basis of CTS preservation credits at a mitigation bank, the costs of monitoring the success of the translocation will be the responsibility of the permittee or the bank operator.
- Capture and translocation of CTS will generally be carried out from October 15 through March 15 prior to any development of a parcel or property planned in the following construction season.
- Translocation will occur only to conservation areas and will not create any new mitigation obligations beyond what already exists.

4.7.3 Plant Translocation

Currently, there is no genetic information available about the listed plants on the Plain. Phenotypically, there are morphological differences in various portions of the range for the plants. This variation can generally be conserved by translocations to receptor sites that are near the impact (or donor) site.

Translocation of plants has been successful in some parts of the Plain. Future success of translocation of plants on the Plain will depend on proper site selection, planning, management and monitoring. Site preparation and conditions of the site are some of the primary factors affecting successful translocation. If a site is being restored or enhanced, it should mimic natural topography, soil conditions, and hydrology. Long-term monitoring and adaptive management is needed to track success and determine needed management or remedial actions if success is not achieved. The programmatic biological opinion for listed plants (Appendix B) gives further guidance on this issue. It may take over 10 years to determine the success of habitat creation or restoration involving the translocation of sensitive plants. In some years, due to climatic factors

or vegetative competition, they may not germinate and survive to seed set; in other years they may be quite abundant. This is why long-term monitoring (e.g. 10 years) is important.

For projects resulting in the loss of pools and known populations of listed plants, the project proponent will be responsible for translocation of the plants. Monitoring of such translocated plants will be required to assure the success of the translocation.

Seed collection and banking is a priority to guard against extinction of the listed plants. Seed collection and banking safeguards against loss or decline of the species due to catastrophic events, and is an important measure until existing populations are adequately protected and managed and additional populations are found or established. Seed banking also provides material that may be used in future enhancement, repatriation, or introduction of populations. Seed banking is not in lieu of appropriate mitigation measures.

4.8 Habitat Improvement

There are three types of habitat improvements that will be occurring as part of the Conservation Strategy: 1) wetland creation, 2) wetland restoration, and 3) enhancement of wetland and upland habitat. Often wetland creation/restoration/enhancement can serve as mitigation for wetland losses and for impacts to listed plants and CTS breeding habitat. In addition, creation/restoration of a breeding site for CTS can be used towards wetland mitigation. Some wetlands within the area covered by the Conservation Strategy are not habitat for listed plants or CTS but still will require mitigation under Sections 401 and 404 of the CWA, and the Porter-Cologne Act.

Wetland creation/restoration for listed plants includes the establishment of natural topography, based upon historic photographs, and of appropriate hydrology at a site. The creation/restoration site must have the appropriate soils to establish wetland hydrology. The creation/restoration of vernal pool habitat for the listed plants should attempt to mimic the natural topography that historically existed or, if appropriate historic evidence is not available, be based on other vernal pool complexes on the Plain. Creation/restoration must not disrupt the hydrology of the existing properly functioning wetlands. Creation/restoration of wetlands for listed plants has been occurring since the mid 1980's on the Plain; many of these efforts have been successful in establishing self-sustaining populations of listed plants. The listed plants tolerate different habitat conditions. Burke's goldfields, for example, appear to do best in vernal pools with a more exposed hardpan and limited competition, while Sonoma sunshine and Sebastopol meadowfoam do well in created/restored wetlands with deeper un-compacted, unconsolidated soils and greater diversity and density of native vernal pool plants. Therefore, future restoration efforts should employ various techniques to encourage a range of conditions to support the full array of native flora.

When wetlands are being created or restored on a site, it is important that enough suitable upland habitat be retained for CTS. The observed percent of wetlands to uplands on unaltered sites on

the Plain generally ranges from 20 to 40 percent. Therefore, in planning wetland creation/restoration it is important to maintain a ratio of wetlands to uplands within this range.

Breeding sites are one of the limiting factors for CTS on the Plain. It is important to have a series of these pools well distributed throughout the conservation areas to assist in recovery of CTS. Breeding sites will be restored in any future preserves where biologically appropriate. In addition, breeding sites must be of sufficient depth and size to allow successful completion of CTS life-cycle development. Restoration of upland habitat for CTS can be as simple as removing structures and hardscape, and undesirable plants species. The adjoining land uses must be taken into account in planning and implementing the restoration efforts.

4.9 Management Plans

Management plans for preserves must assure maintenance of habitat for CTS, listed plants and wetlands. These plans must detail the activities that are necessary to maintain and enhance the plant communities and wetland habitats of the preserves. They must also include monitoring. Activities that should be addressed are public access, vegetation management, fire management, mosquito abatement, monitoring, and reporting, including recommendations for changes in management as it pertains to the individual preserve. Annual work plans are required and will be provided to the Adaptive Management Team (AMT) (see Section 7) and/or the appropriate agencies by December 1 of each year. Appendix G provides a template for use in development of management plans.

Sufficient hydrology of the seasonal wetlands is necessary to support breeding for CTS. The depth, duration, and timing of the inundation of the pools are crucial for successful breeding to occur. Additionally, grassland habitats of sufficient quality, quantity, and juxtaposition must be available, preserved, managed, and maintained for upland habitat. Various techniques may be used to maintain, enhance, or restore these upland areas.

Management of the vegetation on the site may require numerous techniques to reduce or eliminate exotic, competing, or undesirable plant species. These techniques should be compatible with listed plants. These techniques will include an appropriate grazing regime or mowing. The preserve manager may also need to use various control techniques to reduce or eliminate populations of undesirable animals such as fish and crayfish.

Qualified biologists will conduct monitoring pursuant to established protocols to assess the condition of created and existing habitat, and viability of listed species.

Management and monitoring tasks may be modified based on site conditions, new information, and changes in the surrounding environment. Appendix G provides the standardized management and monitoring reporting forms.

4.9.1 Preserve Management Funding

Preserves must be actively managed and have sufficient endowments. Management is needed to maintain the preserves in a condition that optimizes habitat for the listed species and to ensure that preserves do not become a nuisance to adjacent properties. To assure long-term management, an ongoing funding mechanism must be provided. The amount of funding is based upon the annual and recurring capital expenses required to maintain, manage, and monitor the site as described in the management plan. Endowments are the most common funding mechanism for preserves established as mitigation. These are secure non-wasting accounts that provide a constant funding source for routine and non-routine management and monitoring.

To manage preserves over the long-term, research will also be needed to test management strategies and increase understanding of the biology of the listed species and habitats being conserved. Normal management funding mechanisms are not designed to address these types of investigations, even though they may be crucial to effective long-term management. For these types of activities it is anticipated that grant funding or other funding sources will need to be used. A process for obtaining this type of funding is briefly outlined in Section 9.

4.9.2 Monitoring

Monitoring is required to determine the overall success of mitigation and management actions. For the Conservation Strategy, the following are the general actions that will be monitored: 1) wetland creation, 2) wetland restoration, 3) wetland and upland habitat enhancement, 4) preserve management, and 5) baseline for species and general trends of species populations and CTS breeding.

Monitoring of wetland establishment is normally required following construction and would include at a minimum the following: 1) vegetation establishment including percent cover and species composition, 2) hydrology, water depth and period of inundation and/or soil saturation of the wetlands, and 3) progress toward achieving success criteria established for the restoration efforts. Annual Reports are required which document the results of monitoring and identify management needs or any needed remediation efforts required to meet the success criteria. Reference sites within the vicinity of the restoration site will be monitored to evaluate the success of wetland being established. Monitoring of wetland and upland enhancement for CTS at a minimum includes a determination that any created/restored breeding sites have sufficient hydrology to support CTS and ultimately successful breeding occurs. Monitoring reports will include not only the level of success or failure but identify any needed remediation requirements.

Long-term monitoring of preserves will be required to assure that the goals and objectives of the preserve are being achieved. Long-term monitoring will be the responsibility of the agency or organization responsible for management of the site and will be funded by an endowment established as a part of the required mitigation. This type of monitoring is necessary to determine the effectiveness of long-term management actions specified in the Management Plan for the

preserve in maintaining the biological values for which the preserve was established. The following types of information would be collected for each preserve: 1) status and trends of sensitive species on the preserve, 2) presence and status of invasive species, 3) effects of management actions, i.e. vegetation management, on the condition, function, and health of vegetation on the preserve, and 4) conflicts between preserve objectives and other allowed uses of the preserve site.

4.9.3 Preserve Management Structure

The success of the conservation strategy will depend upon effective management and monitoring of preserves, and further research. This will require a variety of expertise to accomplish. As the Conservation Strategy is implemented, it is likely that there will be multiple agencies and organizations involved in preserve management, monitoring and research including: the Laguna de Santa Rosa Foundation, Sotoyome and Southern Sonoma Resource Conservation Districts, the City of Santa Rosa, DFG, the Sonoma Agricultural Preservation and Open Space District and Sonoma State University. It will be necessary that preserve management be coordinated to assure consistent management and information gathering to ensure the long-term success of the strategy and recovery of the species.

Given the need for coordinated ongoing management, monitoring, and research, as well as the need that these functions be carried out locally, it is recommended that an established local conservation agency be engaged to undertake this coordinating function. The primary role would be to coordinate efforts with the AMT, described in Section 7, as well as numerous preserve managers, to assure that preserve management is occurring consistent with the Conservation Strategy. This would not change the roles and responsibilities of local jurisdictions or State or Federal agencies.

The AMT would, as its first task, precisely define the full range of activities and responsibilities of the preserve managers and establish a coordinated management program to be housed under said entity's organizational umbrella. This range of activities would include, but not be limited to, the following functions:

- Evaluation of existing management plans and development of conservation area and/or species-specific management prescriptions if necessary
- Development of individual preserve management plans for existing preserves which do not have one
- Implementation of management plans
- Coordination of monitoring of all preserves and compilation of results in an annual report
- Compilation and assessment of existing research data
- Identification of data gaps

- Development of research projects for filling in identified data gaps
- Development of grant-funding proposals to augment preserve management funds (i.e. mitigation endowments) for implementation of management plans and research projects
- Development of partnerships with appropriate agencies, municipalities, institutions, universities, etc. for implementation of management plans and research projects
- Provision of staff support to the AMT, if appropriate
- Identification of preserve-expansion land acquisition opportunities and development of relationships leading to implementation
- Development, organization and deployment of volunteer work force for preserve management and monitoring, as appropriate and needed

A unified preserve management and monitoring program could supplant the need for each individual mitigation preserve project independently developing its own management plan. In this way, consistency across the entire Plain can be achieved with more effectiveness and efficiency in accomplishing collective management plan objectives (i.e. species recovery).

SECTION 5 – MITIGATION

5.1 Regulatory Requirements

A variety of existing laws and regulations require mitigation for unavoidable impacts to wetlands and associated listed species. Discretionary development projects permitted or undertaken by local and State government agencies must be reviewed under CEQA. CEQA requires that all significant environmental impacts (including impacts to endangered species and wetlands) be mitigated to the extent feasible. If these projects would result in the fill of wetlands they must be authorized under the Federal CWA (sections 404 and 401) and/or the State Porter-Cologne Act. In obtaining these permits, appropriate mitigation must be provided to assure that there is no net loss of wetland function and/or acreage. These projects must also comply with the State and Federal endangered species acts as appropriate. The State and Federal endangered species acts provide broad protection for species of fish, wildlife and plants that are listed as threatened or endangered. (See Section 1.2)

FWS and DFG are the responsible agencies for the administration and management of endangered species acts. FWS consults on projects in the Plain through Section 7 of the ESA. Under Section 7, a lead Federal-permitting agency consults with FWS on the effects of their permitting action on federally listed species. For projects on the Plain, consultation is usually with the USACE for authorization for filling of wetlands. The FWS has 135 days to conclude a formal consultation assuming that adequate information is received. Within 30 days, FWS can

inform the consulting agency if there is inadequate information and therefore the time period would not begin for consultation. Upon completion of formal consultation, FWS responds to the appropriate Federal agency with a biological opinion that provides take authorization.

FWS will replace the existing programmatic biological opinion for plants with a new programmatic biological opinion that will include listed plants and CTS and which will be based on the Conservation Strategy. Due to the high density and broad distribution of wetlands, it is estimated that 95 percent of the projects on the Plain that may result in take of CTS also impact wetlands. The programmatic biological opinion will apply to these projects. FWS will append individual projects to the programmatic biological opinion and track these actions. Additionally, FWS will continue to maintain a database of any ESA Section 7 activities that occur on the Plain, including not likely determinations. For projects that do not have wetlands or another Federal nexus, the FWS as part of the planning process may develop a template HCP for small projects and a programmatic HCP for larger projects.

Utilizing the new programmatic biological opinion, and based on the Conservation Strategy, USACE and NCRWQCB will continue to issue permits pursuant to the CWA and the Porter-Cologne Act. USACE and NCRWQCB will also evaluate the use of a regional general permit consistent with the Conservation Strategy. USEPA will continue to co-administer the Section 404 regulatory program with the USACE.

DFG will issue permits to allow incidental take as provided for in Fish and Game Code section 2081 or make a consistency determination with a Federal biological opinion and Template and/or Programmatic HCP as provided for in FGC 2080.1 as part of the planning process. DFG will track all pertinent information through its GIS, such as mitigation, project impacts, updated information on listed species and new preserves. DFG will continue in its role as manager of its preserves in the Plain.

Projects adversely affecting the listed species are subject to several levels of review. Chart 1a in Appendix H provides a schematic of the current approval process for projects affecting listed species. Charts 1b and 2 in Appendix H depict more streamlined project approval processes based on the Conservation Strategy. The specifics of this process await the completion of the implementation planning process.

Prior to the commencement of preliminary environmental review, a project proponent may agree to mitigation measures or project modifications consistent with the Conservation Strategy; this would avoid any significant effect on the environment, or would mitigate the significant effects to a point where no significant effect on the environment would occur. Pursuant to CEQA, this could allow the lead agency to avoid preparation of an environmental impact report to solely address impacts to the endangered species.

In the context of CEQA, mitigation measures must be considered for impacts that even by themselves would not be considered "significant," but when considered in totality, the

cumulative effects may be “significant.” Mitigation measures delineated and imbedded in this Conservation Strategy allow for some future development on the Plain. These measures are required to decrease project-by-project impacts as well as cumulative impacts to a level less than “significant” to the listed species.

5.2 Minimization Measures

Projects and other activities will generally be required to adopt measures to minimize their potential direct and indirect effects on CTS and listed plants. Minimization measures may vary based on environmental factors and site location as determined by FWS. Minimization measures for plants are described in the programmatic biological opinion for listed plants, and will ultimately be integrated into a new biological opinion and/or a habitat conservation plan for CTS and listed plants. Section 5.3.3.4, Linear Projects, also includes design-related minimization measures for those projects.

Generally, three types of activities would require measures to minimize take for CTS. These include the following:

(1) An activity that impacts a CTS breeding site:

Prior to construction, returning salamanders will be trapped and translocated to an appropriate breeding site. Alternatively, CTS larvae may be collected and translocated to an appropriate site. Translocation will follow the guidelines presented in the Section 4.7 of the Conservation Strategy.

(2) An activity that impacts CTS upland habitat:

Prior to construction, fencing will be installed to exclude CTS from entering the project site. Fences with ramps may be required to allow any CTS onsite to move into an adjacent habitat offsite. In these instances translocation may occur and would be determined on a case-by-case basis.

(3) An activity where wetlands are being restored or created for either listed plants, CTS breeding or for wetland mitigation:

Prior to construction, fencing will be installed to exclude CTS from entering the restoration site.

Generally, the following minimization measures will be implemented, as appropriate, depending on the specific site situation:

- a.) A FWS approved biological monitor will be on site each day during wetland restoration and construction, and during initial site grading of development sites where CTS have been found.
- b.) The biological monitor will conduct a training session for all construction workers before work is started on the project.

- c.) Before the start of work each morning, the biological monitor will check for animals under any equipment such as vehicles and stored pipes. The biological monitor will check all excavated steep-walled holes or trenches greater than one foot deep for any CTS. CTS will be removed by the biological monitor and translocated as described in Section 4.7.2.
- d.) An erosion and sediment control plan will be implemented to prevent impacts of wetland restoration and construction on habitat outside the work areas.
- e.) Access routes and number and size of staging and work areas will be limited to the minimum necessary to achieve the project goals. Routes and boundaries of the roadwork will be clearly marked prior to initiating construction/grading.
- f.) All foods and food-related trash items will be enclosed in sealed trash containers at the end of each day, and removed completely from the site once every three days.
- g.) No pets will be allowed anywhere in the project site during construction.
- h.) A speed limit of 15 mph on dirt roads will be maintained.
- i.) All equipment will be maintained such that there will be no leaks of automotive fluids such as gasoline, oils, or solvents.
- j.) Hazardous materials such as fuels, oils, solvents, etc., will be stored in sealable containers in a designated location that is at least 200 feet from aquatic habitats. All fueling and maintenance of vehicles and other equipment and staging areas will occur at least 200 feet from any aquatic habitat.
- k.) Grading and clearing will typically be conducted between April 15 and October 15, of any given year, depending on the level of rainfall and/or site conditions.
- l.) Project areas temporarily disturbed by construction activities will be re-vegetated with native plants approved by FWS/DFG.

5.3 Conservation Strategy Mitigation

The Conservation Strategy identifies the mitigation requirements for CTS, listed plant, and seasonal wetlands. The mitigation requirements included in the Conservation Strategy will contribute to conservation and recovery of the listed species and their sensitive habitat when implemented. If any land is to be developed in a conservation area, the impacts generally must be mitigated within that same conservation area. In the Southwest Santa Rosa Preserve System, there is extensive existing urban development that has caused fragmentation of CTS and listed plant habitat. Because of this, mitigation can occur outside the preserve system if the overall biological goals and objectives of the Southwest Santa Rosa Preserve System have been achieved. However, through the AMT process (described in Section 7) if there is a disproportionate level of conservation occurring in any conservation area then mitigation or conservation can be directed to deficient conservation areas.

5.3.1 Mitigation for Wetlands

Mitigation is required to compensate for the functions of the wetlands proposed to be filled. The minimum wetlands replacement ratio is 1:1. Higher replacement ratios are required for high quality wetlands, or as specified by the programmatic biological opinion for the listed plants (see Appendix B), or as determined on a case-by-case basis.

5.3.2 Mitigation for Listed Plants

Based on the programmatic biological opinion for the Plain issued by FWS on July 17, 1998, projects filling potential endangered plant habitat must mitigate by preservation of an equal acreage of existing occupied habitat on a 1:1 ratio. For sites that have documented extant population(s) of an endangered plant, projects are required to preserve existing occupied habitat on a 2:1 basis. Generally, mitigation under the programmatic biological opinion must occur within the same conservation unit in which the impacts occur.

Under the existing programmatic biological opinion there are three plant units. The northern unit extends from the Town of Windsor to Airport Boulevard. The central unit extends from Airport Boulevard to Highway 12 and the southern unit extends from Highway 12 to Highway 116 (see Figure 1 in Appendix B). Meeting the preservation requirement for plant mitigation is problematic due to the scarcity of potential mitigation sites for Sonoma sunshine and Burke's goldfields in the northern unit. Consequently, mitigation in the Windsor area has occurred in the central unit.

A revised programmatic biological opinion will address current conditions on the Plain and reflect research on the listed plants and CTS. In addition, the revised programmatic biological opinion will focus on restoration and/or creation of habitat for Sonoma sunshine and Burke's goldfield. These plants have very limited distribution on the Plain; therefore, remaining occupied habitat is very important for the long-term survival of these species.

5.3.3 Mitigation for CTS

The agencies have commenced a process to develop a plan for the implementation of the Conservation Strategy. The mitigation outlined in Section 5.3 will not be applied until this planning process is complete. These mitigation requirements are based on local agencies applying them as part of their project approval processes.

Proposed projects within the potential CTS range will fall into one of three categories:

- a.) Projects within 1.3 miles of a known CTS breeding site, and likely to impact CTS breeding and/or upland habitat; or

- b.) Projects beyond 1.3 miles from a known CTS breeding site, but within the “Potential for Presence of CTS” or “Potential for Presence of CTS and Plants” (see Figure 3); or
- c.) Projects where “Presence of CTS is Not Likely” (see Figure 3).

All properties within conservation areas are included in category a), above.

The goal of the Conservation Strategy is to preserve a large enough area of suitable habitat to ensure the conservation of the CTS and listed plants and contribute to their recovery. Mitigation ratios were developed based upon the assumption that mitigation would be provided by development anticipated over the next 10 years within the spheres of influence of the cities of Santa Rosa, Rohnert Park, and Cotati, and by residential or commercial development within the unincorporated area of Sonoma County consistent with the County's adopted General Plan. Property owners are required to comply with the ESA and all other local, State, and Federal laws, regulations, and ordinances. Application of these mitigation requirements to small ministerial projects and agricultural activities will be addressed in the implementation planning process. Some small projects, which may otherwise be ministerial, but have discretionary components, will also be addressed in the implementation planning process. The Conservation Strategy does not address the biological impacts of ministerial projects or small discretionary projects.

The same mitigation and survey requirements apply to both private and public projects. Mitigation requirements for projects that are linear in nature (roads, pipelines, etc.) are described in Section 5.3.3.4.

5.3.3.1 Projects Likely to Impact CTS

Mitigation ratios for CTS are determined based on likely impact to the species and its habitat. Adult CTS have been observed up to 1.3 miles from breeding sites (S. Sweet, 1998). A ratio of two acres of mitigation to every one acre of impact (2:1) was developed based on an estimate of the amount of habitat needed to meet the required conservation goal and the expected impacts of development projected to occur on the Plain within the next 10 years. The expected impact areas and conservation areas were mapped by using existing land use plans, aerial photography, expert knowledge of the areas, and data on CTS and listed plants from the CNDDB (see Appendix F for mapping criteria). Therefore, a 2:1 mitigation ratio will apply to projects within 1.3 miles of existing or extirpated breeding sites or within 500 feet of an adult occurrence, except as otherwise shown on Figure 3.

When applied to the areas expected to develop on the Plain, the 2:1 mitigation ratio accomplishes similar total conservation acreage as the interim graduated mitigation ratios. While existing breeding sites need protection in the short-term, long-term application of the graduated mitigation ratios would likely result in further isolation of breeding sites from upland habitat. This is because project proponents are likely to develop in areas subject to 1:1 and 2:1 mitigation

requirements under the interim graduated mitigation ratios, and leave the areas subject to 3:1 mitigation in close proximity to breeding sites undeveloped. Application of a uniform 2:1 ratio will result in improved conservation of the species over time because CTS require breeding sites surrounded by unfragmented upland habitat.

Mitigation requirements will apply to the entire project area; however, the mitigation requirement for projects on parcels with existing hardscape (see Glossary) can be reduced by the amount of hardscape present. This assumes that the hardscape does not provide some recognizable benefit to the species. In cases where the hardscape currently functions as a movement corridor between existing and/or proposed preserve habitat, measures must be included in future development to maintain this function.

It is important to note that the mitigation ratios and the conservation strategy are dependent on current information on both CTS distribution and development that is currently proposed. If the land use designation of areas within existing CTS habitat changes, or if new information is discovered regarding the current range of CTS, such changes may be addressed in the adaptive management process discussed in Section 7.

5.3.3.2 Projects Beyond 1.3 Miles from CTS Breeding Sites

Projects will be proposed in areas beyond 1.3 miles from a known CTS breeding site, but within the “Potential for Presence of CTS” or “Potential for Presence of CTS and Listed Plants” areas shown on Figure 3, where CTS information is lacking. Currently, some areas have not been surveyed for CTS. Although these areas are beyond 1.3 miles from known breeding sites or adult occurrences, there may be CTS present. Future development or land conversion on potential or historic habitat adds to the negative cumulative effect on listed species, particularly the CTS.

For projects in areas shown on Figure 3 as “Potential for Presence of CTS” or “Potential for Presence of CTS and Listed Plants,” mitigation may be provided by a monetary contribution to a species fund overseen by FWS and/or DFG. This monetary contribution will be equivalent to the value of the 0.2:1 mitigation ratio.

The species fund will be used for the following purposes: land or easement acquisition; restoration on public lands; and habitat management, monitoring and improvement on preserved lands that do not have other funding for management and/or enhancement. In the latter case, the funds could be used to establish a management endowment for these lands. Expenditure of these funds will be reviewed annually by the AMT (see Section 7).

The project proponent may choose to survey for CTS instead of paying the fee. If no CTS are found, no mitigation or fee would be required for CTS. If CTS are found, 2:1 mitigation would be required. As surveys are conducted, additional CTS breeding sites may be identified within areas beyond 1.3 miles from known breeding sites. If additional breeding sites are found, Figure

3 will be updated using the mapping criteria (see Appendix E). Projects that impact CTS habitat within a 1.3-mile radius of that site will be subject to the 2:1 mitigation ratio (see Section 5.3.3.1 above). Appendix C shows the survey protocols for projects in these areas.

5.3.3.3 Projects Where Presence of CTS is Not Likely

Impact to CTS is not likely on some lands beyond 1.3 miles from breeding sites, or on lands within 1.3 miles from breeding sites that are surrounded by significant barriers or are otherwise unsuitable CTS habitat (see Figure 3). Neither surveys nor mitigation would be required for projects on these properties. No CTS mitigation or surveys will be required for projects outside of the potential CTS range.

FWS has issued letters to particular project proponents stating their determination that the projects are unlikely to affect CTS; therefore, no mitigation would be required. The terms in any letters issued by FWS prior to completion of the Conservation Strategy will apply to these projects.

5.3.3.4 Mitigation for Linear Projects

Linear projects are defined as construction of roads, pipelines, trails, fences, utility lines, pedestrian pathways, roadside ditches and other similar facilities, or expansion or maintenance of these facilities. These projects may have different impacts and minimization measures than a development proposal. Such projects may have permanent direct or indirect effects or may only have temporary effects. Amphibian road mortality risk ranges from 34-61% for a road with 3,200 vehicles per day to 89-98% for a road with 15,000 vehicles per day (Mazerolla, 2004). CTS mortality on roads occurs throughout each rainy season on the Plain due to cars running over salamanders that are moving to and from breeding sites. If a road crosses an important CTS conservation area it could have a major impact by isolating the upland habitat from occupied breeding sites. In this example, the direct impact for the road construction may be minimal; however, the long-term impacts of the road could be significant due to ongoing mortality. Pipeline construction, on the other hand, may have temporary effects associated with construction. But once work is complete, the affected area can once again function as habitat, provided that the area is properly restored.

Certain projects are not expected to impact CTS and would not be required to mitigate, as long as the direct and indirect activities do not impact CTS. Examples of these projects could include repaving and other in-kind replacement of hardscape, paving of existing compacted road shoulders for pedestrian use, and installation or replacement of underground utilities where those utilities are under existing hardscape. These projects will not include construction of curbs or other barriers to CTS dispersal. Any expansions into unpaved or un-compacted areas would be required to mitigate as described below.

Minimization measures would be employed in design and construction of projects in or adjacent to conservation areas to reduce impacts to CTS, listed plants, wetlands, and hydrology of the surrounding areas. Design-related minimization measures could include construction during the dry season, passageways/under-crossings for CTS, curbing to exclude CTS from harmful areas, lighting designed to minimize off-road ground illumination, retaining the hydrologic characteristics of the surrounding area and avoiding breeding habitat. Construction-related minimization measures are shown in Section 5.2.

Where mitigation is required for linear projects, the impact area consists of the land disturbed by the construction operation. This may be significantly wider than the area occupied by the facility after construction is complete.

5.3.3.4.1 Roads (Including On-Road Pathways)

In this section, “road” applies to construction of a new road or expansion of an existing road. Existing and proposed roads within the planning area have the potential to adversely affect CTS. Expansion of existing roads and construction of new roads have the potential to impact wetlands and/or listed plants. Construction of new major roads should be discouraged within conservation areas. Core preserves, as described in Section 4.3, must not be divided by new road construction. For staging areas, see Section 5.3.3.4.2

Road projects that would not impact existing CTS or listed plant habitat (i.e., signage, signalization without widening, vertical and horizontal curve adjustments without widening or disturbance to the hydrology of the surrounding area) would not be required to mitigate. Where mitigation is required, mitigation sites that are located near the impact area are preferred.

a.) Roads in Conservation Areas

Roads within conservation areas, or along conservation area boundaries, are of particular concern. If not properly designed, roads in these locations could divide conservation areas and prevent CTS dispersal from breeding sites to upland habitat areas. Reaches of roads that are considered significant for future success of the conservation areas and the proposed measures for these roads are designated on Figures 3 through 12. As preserves are established, these figures will be updated regularly through the adaptive management process. Road reaches designated on Figures 3 through 12 should be designed or retrofitted to allow for CTS dispersal by constructing exclusionary curbing along both sides of the road and providing adequate passages underneath the roadway. CTS passages underneath roadways should be based on current research results for effective passage design, and located no more than 200 feet apart in areas where CTS are expected to be present on both sides of the road (Jackson and Tynning, 1989; Jackson, 2003). Studies have shown that lighting can negatively impact CTS, so roads within conservation areas or along conservation area boundaries that include lighting systems should be designed to direct the lighting to the roadway with minimal illumination of the surrounding area (Longcore and Rich, 2004). Where roads are constructed or widened, it is encouraged that they be properly designed;

therefore, a reduced CTS mitigation ratio of 1:1 will be allowed for road projects in reaches designated on Figures 3 through 12 that meet the following criteria:

- Constructed with exclusionary curbing along both sides of road for the total length of roadway, and passageways/under-crossings for CTS located no more than 200 feet apart
- Include lighting designed to minimize off-road ground illumination
- Retain hydrologic characteristics of the surrounding area
- Avoid breeding sites

Specific project designs will be submitted to FWS and DFG to obtain approval of reduced mitigation ratio. For road projects that meet the above criteria and are within the range of the listed plants, the mitigation ratio would be 1:1.

If a proposed road splits a conservation area, having the potential of isolating breeding sites from upland habitat, and reducing the ability for CTS dispersal, then the road must be designed using the above criteria. Roads along a conservation area boundary that do not meet the above criteria would be required to mitigate at a 2:1 ratio as described below.

b.) Roads in Areas Planned for Development

Roads in areas planned for development have similar impacts as development projects. Since these areas are not intended for long-term CTS habitat, special design features are not needed for roads in potential development areas. Road projects would be required to mitigate just for the impact on potential upland habitat and any effects to listed plant species. The mitigation ratio would be 2:1.

As an alternative to the 2:1 CTS mitigation ratio, road construction projects in an area planned for development may propose to retrofit an existing off-site road shown on Figures 3 through 12. The existing road would be retrofitted to meet the criteria described in a) above. The area of the existing road that is retrofitted could be used as up to half of the mitigation area required. For example, if a new road will be 44 feet wide and 1,000 feet long it would have an impact area of 44,000 square feet or about 1 acre. At a 2:1 mitigation ratio, 2 acres of mitigation would be required. An existing road through a conservation area, 22 feet wide and 2,000 feet long, could be retrofitted per the above criteria to provide 1 acre of mitigation; in addition, 1 acre of mitigation lands would need to be provided.

c.) Road Projects Beyond 1.3 Miles from CTS Breeding Sites

Road projects in areas beyond 1.3 miles from a known CTS breeding site, but within the “Potential for Presence of CTS” or “Potential for Presence of CTS and Plants” areas shown on Figure 2 will have a limited potential to impact CTS. Currently, some areas have not been

surveyed for CTS. Although these areas are beyond 1.3 miles from known breeding sites or adult occurrences, there may be CTS present. Roads on potential or historic habitat add to the negative cumulative effect on listed species, particularly the CTS.

For proposed road projects in areas shown on Figure 3 as “Potential for Presence of CTS” or “Potential for Presence of CTS and Listed Plants,” mitigation may be provided by a monetary contribution to a species fund overseen by FWS and/or DFG. This monetary contribution will be equivalent to the value of the 0.2:1 mitigation ratio.

The project proponent may choose to survey for CTS pursuant to FWS survey protocol instead of paying the fee. If no CTS are found, no mitigation would be required. If CTS are found, 2:1 mitigation would be required, or as described in a) or b) above. As surveys are conducted, additional CTS breeding sites may be identified within areas beyond 1.3 miles from known breeding sites. If additional breeding sites are found, Figure 3 will be updated using the mapping criteria (see Appendix E). Projects that impact CTS habitat within a 1.3-mile radius of that site will be subject to the 2:1 mitigation ratio (see Section 5.3.3.1 above). Appendix C shows the survey protocols for projects in the areas described in this section.

d.) Roads Not Likely to Affect CTS

Roads in areas that have been determined to be already developed, or isolated to an extent that projects are unlikely to affect CTS (see Figure 3), are not required to mitigate for CTS.

5.3.3.4.2 Pipelines/Utility Lines/Pedestrian Pathways/Trails/Fences/Ditches/Staging Areas

These types of projects have temporary impacts and, sometimes, limited permanent impacts to CTS. The following mitigation requirements apply to such projects proposed in conservation areas, in areas planned for development, and in areas beyond 1.3 miles from a known CTS breeding site, but within the “Potential for CTS” or “Potential for CTS and Plants” areas shown on Figure 3. These mitigation requirements encourage projects to be designed and implemented in ways that minimize impacts. Portions of a specific project may be subject to different mitigation requirements.

(1) If the project:

- is temporary (disturbance would take place within one year, and habitat would be re-established over the entire area of disturbance within 1 year),
- does not impact breeding sites,
- does not include lighting,
- retains the hydrologic characteristics of the surrounding area,
- does not impact listed plants or their habitat,

- meets minimization measures as appropriate (see Section 5.2), and
- does not create an additional and/or ongoing hazard to CTS,

no compensatory mitigation would be required.

2) If the project:

- impacts are temporary (habitat would be restored after 1 year but before 3 years),
- does not impact breeding sites,
- does not include lighting,
- retains the hydrologic characteristics of the surrounding area,
- does not impact listed plants or their habitat
- meets minimization measures as appropriate (see Section 5.2), and
- does not create an additional and/or ongoing hazard to CTS

then the mitigation ratio would be 1:1 or as outlined above for road projects, at the option of the project proponent.

3) If the project is not consistent with 1) or 2) above, the mitigation ratios for road projects would apply.

5.3.3.4.3 Maintenance of Linear Facilities

Maintenance of linear facilities may include street patching, sealing, or overlaying; pipeline cleaning; excavation to repair underground lines; and removing deposited sediment from roadside ditches. Most of these maintenance activities are not likely to impact CTS, wetlands or plants and would require no mitigation. No mitigation will be required for maintenance activities confined to existing hardscape areas. Mitigation for maintenance of linear facilities that affect areas beyond existing hardscape will follow the requirements for new projects as described above. If mitigation is required it will only be necessary once for each segment of each facility. Additional maintenance activities for that segment would not require further mitigation. Examples:

- a.) New roadside ditches are constructed as part of a road widening project and mitigation is provided for the area impacted by the road and ditch construction. Mitigation will not be required for future maintenance of these ditches because the mitigation has already occurred.
- b.) For flood control purposes, an existing roadside ditch is re-graded to such an extent that a known breeding site is eliminated. Wetlands and listed plants are also affected. Mitigation for the re-grading project is provided. Mitigation will not be required for future maintenance of this ditch because mitigation has already occurred.

5.4 Interim CTS Mitigation

Prior to implementation of the Conservation Strategy, FWS and DFG will continue to apply the following interim mitigation guidelines as described in the letter dated June 29, 2005 from FWS and DFG to the local agencies, and as may be modified in the future. Such interim mitigation shall apply to all projects, including linear projects. Where appropriate, the USACE, USEPA, and NCRWQCB will also apply these guidelines. Unless otherwise shown on Figure 3, mitigation for CTS will be required for all projects within 1.3 miles of known breeding sites. Generally, distance from breeding sites is the determining factor for establishing mitigation ratios, as most CTS remain in the vicinity of their birth sites and return as adults to breed (see Section 4.3). Utilization of interim mitigation guidelines delineated in Section 5.3.2.1 offers project proponents protection from significant effect on the listed species. Pursuant to CEQA, in this case the lead agency would not be required to prepare an environmental impact report to solely address the listed species.

Other elements of the Conservation Strategy that will be applied during this interim period include the following:

- Preserve evaluation criteria
- Mitigation banking
- Management and enhancement of habitat
- Translocation of listed species
- Minimization measures

The existing programmatic biological opinion for listed plants will also be applied.

During this interim period, the following mitigation ratios will be applied:

Mitigation of 3:1 – For projects that are within 500 feet of a known breeding site

Mitigation of 2:1 – For projects that are greater than 500 feet, and within 2,200 feet of a known breeding site, and for projects beyond 2200 feet from a known breeding site, but within 500 feet of an adult occurrence

Mitigation of 1:1 – For projects that are greater than 2200 feet, and within 1.3 miles of a known breeding site

Mitigation of 0.2:1 – For projects in areas shown on Figure 3 as “Potential for Presence of CTS” or “Potential for Presence of CTS and Listed Plants.” In this case, mitigation may be provided by a monetary contribution to a species fund overseen by FWS and/or DFG. This monetary contribution will be equivalent to the value of the 0.2:1 mitigation

ratio. A project proponent may choose to survey to determine CTS presence rather than mitigate. In the event CTS is found, CTS mitigation shall be as outlined above. If no CTS is found, no CTS mitigation will be required.

5.5 Potential Future CTS Mitigation Requirements for Agricultural Activities

Agricultural activities have the potential to affect CTS and their habitat. Mitigation and best management practices can reduce these impacts. One of the primary agricultural activities on the Plain is the development of vineyards. The following mitigation proposal for viticultural activities was considered by the Team, but not analyzed sufficiently to include as specific mitigation requirements. This proposal will require further analysis and review by the Implementation Committee. Mitigation and/or best management practices for other agricultural activities may be developed through the implementation planning process.

Proposed Mitigation Requirements for Viticultural Activities

For lands within 1.3 miles of a known CTS breeding site, as shown on Figure 3, the conversion of previously uncultivated land to vineyards will require mitigation. This mitigation will include payment of \$1,000 to a species fund for each acre converted. Viticultural activities must also be conducted pursuant to best management practices specified below. No other CTS mitigation for viticultural activities will be required. This does not include conversion of breeding sites or potential breeding sites with provisions for adequate buffers. This mitigation will not apply to further conversion to non-agricultural activities, in which case, the graduated mitigation ratios discussed above will apply.

For lands beyond 1.3 miles from a known breeding site and with potential for presence of CTS, as shown on Figure 3, where previously uncultivated land is converted to vineyards, viticultural activities must be conducted pursuant to best management practices.

The following best management practices apply when uncultivated lands are converted to vineyards:

- Permanent cover crops will be maintained on a minimum of half of all vine rows.
Center-row cover crops in vineyards are planted and maintained for a number of reasons. Among other things, they reduce erosion, maintain favorable soil conditions, and provide habitat for beneficial insects. They also increase or attract rodent activity. The burrows created by these rodents serve as valuable upland habitat for CTS.
- Cover crops will be maintained by mowing during daylight hours.
Management of these cover crops is accomplished by mowing. The mowing of cover crops will potentially benefit the CTS, providing migratory corridors for the CTS. The

mowing will be minimized during the rainy season and only during daylight hours to avoid potential harm to CTS.

- Nighttime equipment operation will be minimized from November 1 to April 15.

When fall or winter rains begin, CTS emerge from these underground retreats to feed and migrate to their breeding ponds. Typically, migration to breeding habitat occurs on rainy nights early in the winter. Male CTS migrate before females and occupy breeding ponds for an average of 6 to 8 weeks, while females occupy the ponds for only about 1 to 2 weeks. Nighttime equipment operation will be minimized from November 1 to April 15 to avoid potential harm to CTS.

- Trapping or raptors will be used for rodent control.

Generally, vineyard managers strive whenever possible to employ Integrated Pest Management practices and utilize minimally toxic pest control methods. Trapping or raptors will be used for rodent control to avoid potential harm to CTS.

- Weed control will be limited to strips under the vine row.

Sustainable Farming Practices ensures that use of herbicides toxic to amphibians will be minimized. To further limit potential impacts to CTS and the listed plants, weed control application will be limited to strips under the vine row.

SECTION 6 – SURVEYS

Currently projects within the range of the CTS can conduct two years of surveys pursuant to FWS survey protocols (see Appendix C) to determine presence or absence of the species. Where a project proponent can demonstrate that CTS is not likely to be present (no suitable habitat is present, site is small and isolated from other habitat), the requirement to survey may be waived at the discretion of FWS. However, project proponents can elect to assume presence and mitigate. For listed plants, the same process as above can occur pursuant to FWS plant survey protocols (see Appendix D). With implementation of the Conservation Strategy, projects with known impacts to CTS as described in the strategy will be required to mitigate at ratios described in Section 5.3.3 and will not need to, or be permitted to, do protocol level surveys.

In cases where project proponents received approval to commence drift fence surveys from FWS prior to October 15, 2005, they have the option of completing the surveys or complying with the mitigation requirements of the Conservation Strategy. In cases where project proponents have received approval to commence aquatic larval sampling by February 1, 2006, they have the option of conducting the surveys or complying with the mitigation requirements of the Conservation Strategy.

SECTION 7 – ADAPTIVE MANAGEMENT

7.1 Introduction

Given the complexity of the ecological system the Conservation Strategy is addressing, and the limited available information, there is a need for flexibility to achieve the Conservation Strategy goals. Adaptive management is an approach to address this need (Cylinder, Bogdan, and Zippin, 2004). In addition, with most large-scale conservation planning efforts, land use may also change over time, which can lead to the need for changes in conservation efforts. Adaptive management will be used to assure a well distributed population of CTS and listed plants throughout the conservation areas. It is preferred that mitigation occurs in conservation areas in close proximity to the area of impacts.

There are many aspects and levels of adaptive management that will occur with implementation of the Conservation Strategy. To successfully implement the Conservation Strategy, the adaptive management actions must be interwoven into implementation. This section outlines the basic measures for adaptive management.

The following are the components of adaptive management for the Conservation Strategy: 1) Overall studies and scientific review of action that might improve or guide the Strategy, 2) Monitoring information on an individual and collective basis in regards to preserve management, which would include lessons learned etc., and, 3) Monitoring of preserve locations, intervening land uses and overall issues to ensure that the Conservation Strategy is being successfully implemented. It is imperative that all of these actions occur to ensure the overall success of the strategy.

7.2 Adaptive Management Team

Effective adaptive management requires a monitoring and assessment component that provides for the collection and integration of new information into the Conservation Strategy. The Adaptive Management Team (AMT), or the Mitigation Bank Review Team (MBRT) for mitigation banks, will be technical advisors to the implementing agencies. The purpose of the AMT will be to review and propose research in the plain to increase knowledge that would benefit the strategy, review monitoring of individual preserves, monitor the linkage of preserves, review other pertinent technical information, and other appropriate activities. The AMT will, as needed, recommend modifications and report issues or discrepancies to the implementing agencies. The AMT will have no independent authority to change the Conservation Strategy.

DFG, FWS, USEPA, NCRWCB, USACE, and the local jurisdictions that choose to participate will each have a biologist, land use planner, or other technical expert on the AMT. The aforementioned AMT members will select at least three technical experts to serve as members of the AMT. These members will be selected based on expertise in biology, zoology, botany or ecology, with subspecialties in amphibians, vernal pool associated rare plants, conservation

planning or wildlife population dynamics. Knowledge and experience in the Plain is also desired. There will also be at least one representative of each of the following serving on the AMT: environmental community, private landowner community, agricultural community, and preserve managers. In addition, the AMT may create one or more specialty sub-teams as needed.

At least quarterly, FWS will convene the AMT meetings to review new information and progress in implementing the Conservation Strategy. Any team member may request meetings of the AMT at other times. The AMT meetings will be open to the public and allow for input from the public. The team will prepare an annual report describing the status of implementation and make recommendations to the implementing agencies on actions necessary to assure that the objectives of the Conservation Strategy are being achieved. The recommendations could include needed research and potential modifications in monitoring or management. The report will also provide information and recommendations regarding distribution of preserves, land use conversion, and other pertinent information regarding progress toward achieving the conservation objectives. The report will be presented to the implementing agencies and will be made available to the public.

The AMT will serve as technical advisors to the implementing agencies. The responsibilities of the AMT will be as follows:

- Evaluate and make recommendations to the implementing agencies concerning the effectiveness of the Conservation Strategy and its implementation
- Review and propose research on the Plain that would increase knowledge needed to improve implementation of the Conservation Strategy
- Review the results of monitoring of individual preserves
- Evaluate the effectiveness of preserve management actions
- Evaluate the progress of preserve establishment in meeting the Conservation Strategy objectives
- Monitor the linkage of preserves
- Review other pertinent technical information
- Undertake other activities as requested by the implementing agencies

To monitor the progress of implementation, DFG will maintain a geographic-based tracking system. This system will be used to compile data on land use changes, project approvals, mitigation requirements (including amount of take, species fund contributions, preserve establishment, and progress toward achieving the conservation objectives within each conservation area). FWS, USACE, NCRWCQB, and local agencies will provide information to DFG. Information from the tracking system will be shared with the AMT and made available to the public.

SECTION 8 – IMPLEMENTATION

8.1 Implementing Roles and Responsibilities

The local, State, and Federal agencies each have statutory authorities and permitting responsibilities in the implementation of the Conservation Strategy. The development of agreements among these agencies would facilitate effective coordination of their activities to implement the Conservation Strategy. The State and Federal agencies should be parties to an agreement with the local agencies regarding their specific roles in implementing the Conservation Strategy. State and federal agencies that are not party to this agreement should have a separate agreement among themselves regarding their individual and/or collective participation in the implementation process. The intent of the agreement or agreements would be to ensure that all the jurisdictions and agencies coordinate their authorities and permitting responsibilities to implement the various conservation and mitigation measures and the overall Conservation Strategy through their independent processes. The specific actions and agreements may be modified by the various agencies pursuant to the authority vested in those agencies by the laws and regulations governing each.

The local jurisdictions are in the process of defining their specific roles and responsibilities in implementing the Conservation Strategy. To ensure optimal conservation of the listed species, all local agencies should participate in the implementation of the Conservation Strategy. The Federal and State agency roles and responsibilities are described below.

All local, state, and federal agencies should work to identify and protect potential lands that may be suitable as preserves. This may be accomplished by identifying and securing grants or other funding mechanisms. Any public lands that are protected to meet the conservation objectives of the Conservation Strategy would be tracked.

8.2 Local Agencies Implementation Planning Process

The Conservation Strategy sets forth the biological goals, objectives and methodology necessary to conserve the CTS and listed plants. The County of Sonoma, the Cities of Santa Rosa, Cotati, Rohnert Park, the Town of Windsor, FWS, and DFG, have commenced a process to develop a plan for implementing the Conservation Strategy. An implementation committee has been formed that is comprised of elected and staff representatives of the local jurisdictions, staff representatives of FWS and DFG, and representatives of the agricultural, development, and environmental communities. The implementation planning process must provide for thorough public review and comment. The implementation plan is expected to provide a mechanism for applying the Conservation Strategy to cover public and private projects, agricultural activities, and residential and commercial development. The implementation planning process is proposed

to be complete and in-place within approximately two years, after which the local agencies and participating State and Federal agencies will take action regarding implementation of the Conservation Strategy

8.2.1 Issues to be addressed in the Implementation Plan

The following must be accomplished in the implementation plan to ensure that the biological goals and objectives of the Conservation Strategy are met:

- Require mitigation for impacts to listed species consistent with the provisions of the Conservation Strategy detailed in Sections 4 and 5 and as shown on Figure 3
- Track acreage and location of impact to listed species habitat in relationship to acreage and location of preserve establishment
- Document that land use zoning within the unincorporated areas of the planning area remains essentially in rural residential and agriculture based on the baseline analysis developed in 2005
- Recognize the need for and encourage coordination of wetlands and endangered species permitting through involvement of the FWS, DFG, USACE, USEPA, and NCRWQCB
- Maintain communication among local, State, and Federal agencies and interested stakeholders to ensure consistent application of the Conservation Strategy
- Establish, in a timely manner, the AMT as described in Section 7.2, and consider and respond to its recommendations
- At a minimum, prepare annual reports and conduct annual meetings to assess progress toward meeting biological goals and objectives as described in Section 3.1

The implementation plan may need to address a number of additional issues as well as those listed above.

8.3 Roles and Responsibilities of the Federal and State Agencies

US Army Corps of Engineers

USACE will continue to process and monitor wetland permit approvals and mitigation. USACE should ensure that the mitigation meets the requirements set forth in the Conservation Strategy and the programmatic biological opinion. USACE will continue to be the lead for the MBRT. USACE with other agencies will continue to develop template mitigation banking documents. USACE should attend the meetings of the implementing agencies and participate on the AMT when needed. USACE should also evaluate the use of a Regional General Permit for authorizing wetland fill projects which are consistent with the Conservation Strategy.

US Environmental Protection Agency

EPA will continue to participate as a member of the Mitigation Bank Review Team. EPA should also participate on the AMT when needed. EPA should attend the meetings of the implementing agencies.

US Fish & Wildlife Service

FWS will develop a programmatic biological opinion with USACE that has as the project description the Conservation Strategy. FWS will append individual projects to the programmatic biological opinion and track these actions. In addition, FWS will continue to maintain a log of any other section 7 activities that occur in the Plain, including not likely determinations. These actions will continue to be provided to DFG to be tracked on the GIS system. FWS may develop a template HCP which can be used for projects that would impact CTS/listed plants and do not have a federal nexus. The template would allow someone to fill in the mitigation amounts, describe their project and other pertinent information which would allow for timely processing of non-federal actions. A programmatic HCP could also be developed which addresses take of listed species within the overall Conservation Strategy area. FWS will work with the implementing agencies to identify and secure grants or other funding mechanisms which further the goals of the Conservation Strategy. FWS, with other agencies, will continue to develop template mitigation banking documents. FWS will continue to be a member of the MBRT, will be a member of the AMT, and will attend the meetings of the implementing agencies.

North Coast Regional Water Quality Control Board

NCRWQCB will process and monitor wetland permit approvals and mitigation. NCRWQCB will ensure that the mitigation meets the requirements set forth in the Conservation Strategy. NCRWQCB will continue to participate in the MBRT. NCRWQCB, with other agencies, will develop template mitigation banking documents. NCRWQCB should attend the meetings of the implementing agencies and participate on the AMT as appropriate. NCRWQCB will consider the certification of a Regional General Permit using the CEQA document(s) prepared by the local agencies in implementing the Conservation Strategy.

California Department of Fish & Game

DFG will issue permits to allow incidental take as provided for in Fish and Game Code section 2081 or make a consistency determination with a Federal biological opinion or HCP, as provided in FCG 2080.1. DFG will work with the implementing agencies to identify and secure grants or other funding mechanisms which further the goals of the Conservation Strategy. DFG, with other agencies, will continue to develop template mitigation banking documents. DFG will be a member of the AMT, MBRT and attend the meetings of the implementing agencies. DFG will track all pertinent information through their GIS system, such as mitigation, project impacts, updated information on listed species and new preserves. DFG will continue in its role as a manager of preserves within the Plain.

SECTION 9 – POTENTIAL FUNDING SOURCES

This section describes a variety of potential funding sources to assist in implementation of the Conservation Strategy. The most likely and certain source is through direct mitigation of projects that are proposed within the range of the CTS. This is discussed in more detail in the mitigation section above. There are, however, other potential sources of funding. Some of these are as follows:

9.1 Section 6 Recovery Land Acquisition Grants

These are highly competitive, and generally grant proposals are for \$500,000 or less. The ranking criteria are weighted toward benefits to multiple species with final or draft recovery plans, and high recovery priority. The acquisition is to be of size to protect all habitat needed for recovery/species requirements through its entire life cycle (i.e. both breeding ponds and upland habitat for CTS), and have sizable cost share by non-Federal contributors (need minimum 25% cost share, and more points are given for a higher cost share). DFG would have a say in whether Wildlife Conservation Board money is used for non-Federal contributors. The cycle is annual, and the pre-proposal call is expected to come out in the fall and be due around December. If the pre-proposal ranks high enough (decided by FWS and DFG), the applicant is allowed to submit a full proposal. The full proposal needs to identify parcels for acquisition, and must have willing sellers. Full proposals are due in the spring, and decisions will be made by FWS/DFG, then forwarded to the Washington DC office of the FWS, who makes the final decision. Awards are announced at the end of that fiscal year. Federal funds cannot be used for mitigation, but can be used on portions of parcels beyond that needed for mitigation (e.g., if 15 acres is needed for mitigation, but a 20 acre parcel is what is for sale, Federal money can be used to go toward the extra 5 acres of that parcel, which is not for mitigation).

9.2 HCP Land Acquisition Grants

This is a more sizable source of funding, but not applicable at this time since no HCP is permitted. If and when an HCP is permitted, this is a potential source of funding.

9.3 Private Foundations

Funding may be available through private foundations, such as Packard Foundation, Hewlett Foundation, etc., for projects that achieve habitat conservation.

9.4 State Revolving Fund

This is a State loan program that provides low interest loans to public agencies for water related projects. The State Water Resources Control Board administers the program. A specific source of funding for repayment of the loan would be needed.

9.5 Sonoma County Agriculture and Open Space Protection District

The District has local funding for the preservation of agricultural lands and open space and has, in the past, participated in acquisitions that contribute to the Conservation Strategy. The District could also participate in future funding that would support implementation of the Conservation Strategy; however, District funds may not be used to mitigate for the impacts of development projects.

9.6 Direct Legislative and Congressional Appropriations

The Legislature at the state level and/or the Congress at the Federal level could make funding available through direct appropriations.

9.7 The Private Stewardship Program

The Private Stewardship program provides grants and other assistance on a competitive basis to individuals and groups engaged in local, private, and voluntary conservation efforts that benefit federally listed, proposed, or candidate species, or other at-risk species.

SECTION 10 – PUBLIC OUTREACH AND PEER REVIEW

10.1 Public Outreach

The Conservation Strategy Team recognized the need for public input in the process of developing the Conservation Strategy. Prior to developing the draft Conservation Strategy, the Conservation Strategy Team held a public meeting on May 24, 2004 to gain public input into the development of the Conservation Strategy. At that meeting, the Conservation Strategy Team stated that a second public meeting would be held when the draft Conservation Strategy was complete and before the Conservation Strategy was finalized. The meetings of the Conservation Strategy Team were not open to the public.

To further inform the public about the Conservation Strategy Team efforts, notes of each meeting were drafted and posted on the City of Santa Rosa Web site for public review, as were the notes of two joint meetings of the Conservation Strategy Team and the Implementation Committee. Other information such as questions and answers regarding the team process and draft conservation area maps were also posted on this Web site for public review (<http://ci.santa-rosa.ca.us/default.aspx?PageId=1111>).

The public review Draft Conservation Strategy was released on August 17, 2005. Review and comment from all elements of the community were encouraged. The Draft Conservation Strategy was made available on the FWS Web site and a link was provided through the Conservation Strategy Team page on the City of Santa Rosa Web site. Reading copies were available in the Sonoma County Administration Office, the city halls of Santa Rosa, Rohnert Park, Cotati and Windsor, and in local libraries. Printed copies were available for purchase from a local print shop. The Team held a public meeting on September 12, 2005 and received numerous comments on the draft through September 16, 2005. The public meeting and comment period on the Draft Conservation Strategy received coverage in the local media. The Conservation Strategy Team reviewed and considered all comments received, and made modifications to the Draft Conservation Strategy where appropriate (see Appendix N). Implementation Committee members participated in the September 12, 2005 public meeting and were available to answer questions. All comments received during the public comment period were provided to the Implementation Committee.

The final Santa Rosa Plain Conservation Strategy will be posted on the FWS Web site. (www.fws.gov/sacramento)

10.2 Peer Review

While several of the members of the Conservation Strategy Team are biologists and/or have specific knowledge of the CTS and listed plants, the Team determined that it was important to have its work reviewed by independent scientists who were not involved in the development of the Conservation Strategy. The Team also determined that this independent review would utilize a blind peer review process; whereby, the individuals conducting the peer review would be known only to the Team members representing FWS, DFG, and the facilitator. The full Team developed a set of criteria to be utilized by the three individuals listed above in selecting the peer reviewers. The peer reviewers were selected from a list of potential peer reviewers that was submitted by individual members of the Team.

The peer reviewer selection criteria developed by the Team and used to select the peer reviewers are shown in Appendix I. The Team also developed a set of scientific questions that were posed to the peer reviewers in their review of the Conservation Strategy. These are detailed in Appendix J.

An Administrative Draft for Peer Review of the Conservation Strategy dated November 16, 2004 was provided to five peer reviewers. Comments from the peer reviewers were provided to the Team in early December 2004, and as appropriate, these comments have been addressed in the draft Conservation Strategy. Appendix K includes this administrative draft, the peer review comments, and the Conservation Strategy Team response to those comments.

SECTION 11 – GLOSSARY OF TERMS

Adult occurrences – Instances where adult CTS are identified by scientists qualified to recognize the species

Breeding sites – Seasonal or perennial pools, ponds, wetlands, and ditches where CTS successfully breed and develop

Buffers – Lands that might not have high habitat values alone but act to buffer preserves from adverse effect of adjoining lands. They also may act as wildlife corridors and may be used for upland habitat in some instances.

Conservation area – An area designated for conservation and or mitigation for CTS or listed plant species

Conservation bank agreement – The document that authorizes the conservation bank, and is ultimately signed by DFG and FWS

Conservation Strategy – The strategy developed by the Santa Rosa Plain Conservation Strategy Team for the conservation of habitat for the CTS and listed plant species

Core preserves – Contiguous preserve lands of at least 350 acres

County islands – Unincorporated county areas that are surrounded by incorporated municipalities

Development – Any project or change in land use that would have an effect on CTS and/or listed plants

Discretionary project – A project that requires the exercise or judgment when the agency decides to approve or disapprove a project

General Plan – A compendium of city or county policies regarding its long-term development, in the form of maps and accompanying text

Hardscape – Roads, parking lots, compacted gravel surfaces, buildings, or other structures

Impact area – Area where it has been determined that projects would impact CTS or listed plants

Implementation Committee – The group formed to develop a plan to implement the Conservation Strategy

Known CTS breeding sites – Sites identified either through scientific recovery permits or CNDDDB, whether existing or extirpated

Land use designation – A system used by local government agencies for classifying and designating the appropriate use of properties

Listed plants – The plants located in the Plain listed under the Endangered Species Act, more specifically, Sonoma sunshine (*Blennosperma bakeri*), Burke's goldfields (*Lasthenia burkei*), and Sebastopol meadowfoam (*Limnanthes vinculans*), and many-flowered navarretia

Management plan – A specific, long-term plan developed for a bank to ensure that the bank is managed and maintained, in perpetuity, consistent with the conservation purposes of the bank. The management plan is the document approved by the MBRT that governs the maintenance, management, monitoring, and reporting of the wetlands and special status species habitats in perpetuity after bank closure, and is funded through the management endowment fund. For special status species, there will be an adaptive management component.

Ministerial project – A project where the public agency or body merely has to determine whether there has been conformity with applicable statutes, ordinances, or regulations

Mitigation bank development plan – A plan detailing the restoration, enhancement, or creation of wetlands and/or other habitats at a mitigation bank site

Mitigation bank enabling instrument – The document that authorizes the mitigation bank, and is ultimately signed by the Mitigation Bank Review Team Agencies

Mitigation Bank Review Team – An interagency team that reviews and approves wetland mitigation or conservation banks

Non-native predatory species – Species not native to the Plain that may prey on the CTS

Plain – Santa Rosa Plain, located in central Sonoma County, bordered on the south and west by the Laguna de Santa Rosa, on the east by the foothills, and on the north by the Russian River

Preserve site – A site set aside for habitat conservation and/or preservation

Satellite preserves – Smaller preserves that provide habitat for CTS and/or listed plants throughout rural residential areas, defined in the Conservation Strategy as approximately 100 acres for CTS or smaller for listed plants

Species fund – A fund held by a public agency or agencies or a non-profit organization approved by FWS/DFG to be used for purposes described in Section 5.5

Team – Santa Rosa Plain Conservation Strategy Team

Translocation – The artificial movement of CTS or listed plant species for relocation to another area

Uncultivated land – land that is in a somewhat natural state, such as pasture land, grasslands, or oak savanna

Upland habitat – Areas for CTS feeding, growth, maturation, and maintenance of the juvenile and adult population

Wetland creation – The manipulation of the physical, chemical, or biological characteristics present to develop a wetland on an upland or deepwater site, where a wetland did not previously exist. Establishment results in a gain in wetland acres.

Wetland enhancement – The manipulation of the physical, chemical, or biological characteristics of a wetland (undisturbed or degraded) site to heighten, intensify, or improve specific function(s) or to change the growth stage or composition of the vegetation present. Enhancement is undertaken for specified purposes such as water quality improvement, flood water retention, or wildlife habitat. Enhancement results in a change in wetland function(s) and can lead to a decline in other wetland functions, but does not result in a gain in wetland acres. This term includes activities commonly associated with enhancement, management, manipulation, and directed alteration.

Wetland restoration – The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural or historic functions to a former or degraded wetland. For the purpose of tracking net gains in wetland acres, restoration is divided into:

- a) **Re-establishment:** The manipulation of the physical, chemical or biological characteristics of a site with the goal of returning natural or historic functions to a former wetland. Re-establishment results in rebuilding a former wetland and results in a gain in wetland acres.
- b) **Rehabilitation:** The manipulation of the physical, chemical, or biological characteristics of a site with the goal of repairing natural or historic functions of a

degraded wetland. Rehabilitation results in a gain in wetland function but does not result in a gain in wetland acres.

Wetlands Plan – A plan developed for wetlands creation, enhancement, or restoration. The plan generally describes the site-specific designs for the wetland establishment on site.

SECTION 12 – ACRONYMS & ABREVIATIONS

AMT – Adaptive Management Team

CEQA – California Environmental Quality Act

CESA – California Endangered Species Act

CTS – California tiger salamander (*Ambystoma californiense*)

EA – Environmental Assessment

ESA – Endangered Species Act

DFG – California Department of Fish and Game

FEMA – Federal Emergency Management Agency

FWS – U. S. Fish and Wildlife Service

HCP – Habitat Conservation Plan

MBRT – Mitigation Bank Review Team

NCRWQCB – North Coast Regional Water Quality Control Board

NEPA – National Environmental Policy Act

Team – Santa Rosa Plain Conservation Strategy Team

UGB – Urban Growth Boundaries

USACE – U. S. Army Corps of Engineers

USEPA – U. S. Environmental Protection Agency

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