

## EXECUTIVE SUMMARY

### Introduction

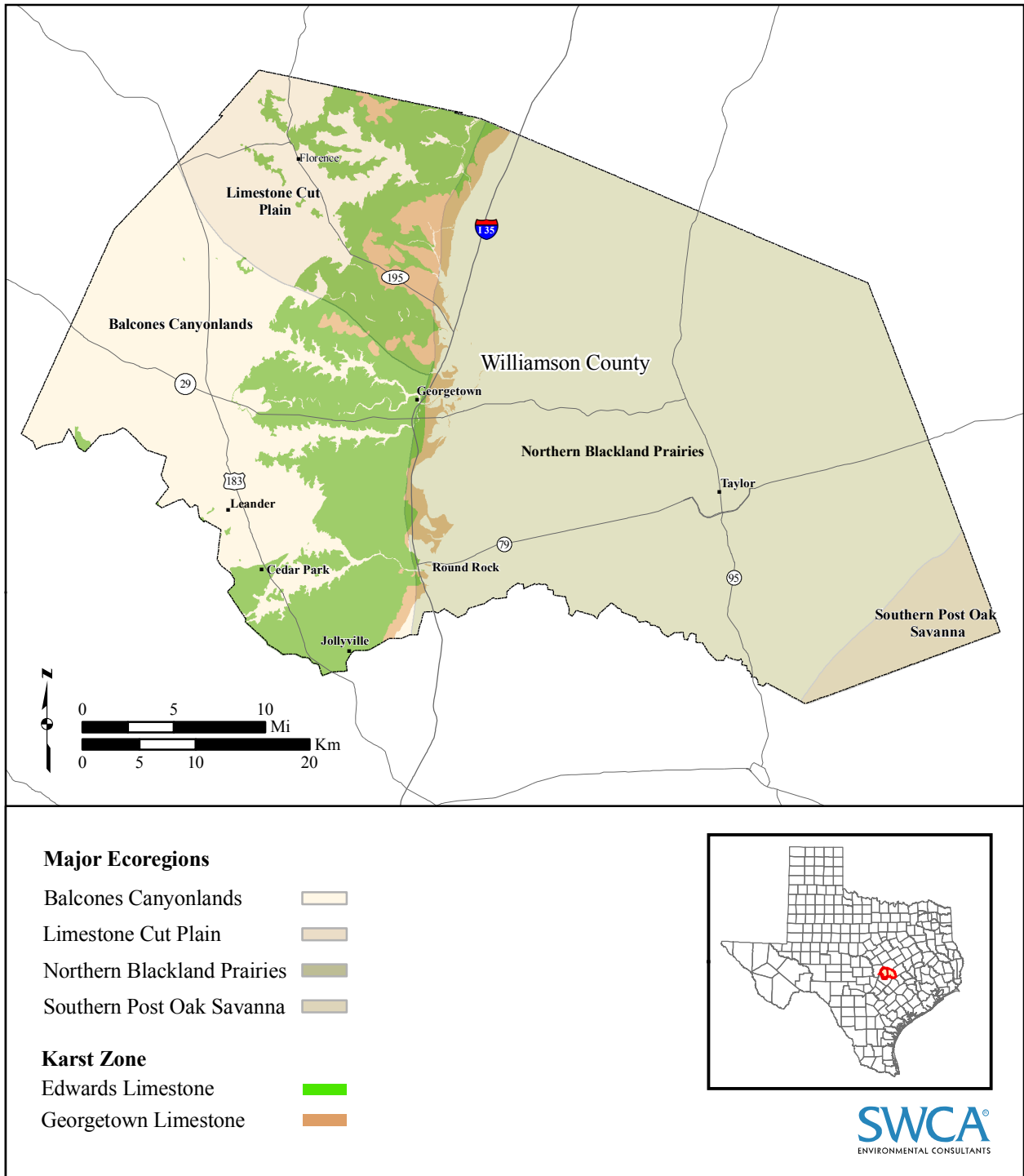
Williamson County, Texas, contains habitat occupied by three karst invertebrates and two bird species that the U.S. Fish and Wildlife Service (Service) has listed as endangered under the Endangered Species Act of 1973, as amended. The County also contains habitat for other rare species, including at least four species of salamanders and close to 20 karst invertebrate species that may be in need of conservation efforts to preclude the need for listing in the future. The presence of endangered species habitat has significantly affected both public and private development activities within Williamson County. As the County continues to grow, conflicts with the requirements of the Endangered Species Act will likely increase, and important open space and habitat may be lost. Williamson County has determined that it is in the best interest of the County's natural resources and long-term economic growth to prepare a regional habitat conservation plan (RHCP) that will support an incidental take permit (the permit) allowing limited impacts to four of the listed species, provided certain conservation and management conditions are satisfied.

The RHCP will facilitate a regional-scale approach to Endangered Species Act permitting that leads to conservation of less fragmented tracts of habitat that are better for the species and a participatory process that requires less time and money for applicants compared to individual permits. The RHCP is needed to ensure that development goes forward in an orderly, efficient manner consistent with the protection of rare species. Without a regional conservation and mitigation strategy, it is likely that rare species in the County would be negatively impacted by future development projects. The urgency for addressing habitat and species protection in an organized and predictable manner is underscored by the high rate of growth projected for Williamson County. From 2007 to 2037, population in the County is expected to grow from 369,953 to 1,504,810, an increase of over 300 percent. An estimated 69 percent of this growth will occur in the Karst Zone,<sup>1</sup> where most of the endangered and rare species and their habitat are found.

The permit area for this RHCP is Williamson County in central Texas, and the County will hold the proposed permit. The administrative entity that will manage the permit will be the Williamson County Conservation Foundation (Foundation). While the entire County will be covered by the permit, potential habitat for the listed and other rare/endemic species in the County occurs primarily on the Edwards Plateau, particularly the Karst Zone, west of Interstate Highway 35 (Figure ES-1). Thus, all anticipated incidental take and most of the specified mitigation will also occur in that portion of the County.

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<sup>1</sup> Veni and Associates (1992) defined four karst zones in Williamson County based on lithology, geologic controls on cave development, and distributions of known caves and cave fauna. In 1992, Zones 3 and 4 were judged to have little or no potential to provide habitat for troglobitic invertebrates, and that remains the case today. Zone 1 was known to contain listed invertebrates, and Zone 2 was thought to have a high potential to do so. Since 1992, listed karst invertebrates have been collected from both Zones 1 and 2; therefore, these two zones have been combined in this RHCP and are collectively referred to as the "Karst Zone."



**Figure ES-1. The Williamson County permit area including the major ecoregions and Karst Zone, the primary focus of the RHCP**

Two categories of species are addressed in this RHCP: permitted species and additional species. “Permitted species” are the federally listed species included on the permit. The permitted species in the Williamson County RHCP include two of the three federally listed karst invertebrates: the Bone Cave harvestman (*Texella reyesi*) and Coffin Cave mold beetle (*Batrisodes texanus*). Two federally listed bird species are permitted as well: the golden-cheeked warbler (*Dendroica chrysoparia*) and black-capped vireo (*Vireo atricapilla*). Twenty-four “additional species” addressed in the RHCP, including the Tooth Cave ground beetle (*Rhadine persephone*), which is currently listed as endangered, are not covered by the permit. Should any of the additional species be listed in the future, the Foundation would evaluate the degree to which the RHCP, as it is being implemented, is providing conservation benefits to the species and what additional measures, if any, the Foundation could implement through the RHCP to provide conservation benefits for the species. If it is determined that coverage would benefit both the landowners of Williamson County and the species in question, the County would apply for any appropriate amendments to the RHCP and the permit.

In addition to providing the affected landowners of Williamson County with an improved process for complying with the Endangered Species Act, the primary purposes of this RHCP are to 1) contribute to and facilitate the recovery of the federally listed endangered Bone Cave harvestman, Coffin Cave mold beetle, golden-cheeked warbler, and black-capped vireo (the permitted species); and 2) assist the Service in precluding the need to list the 19 rare, currently unlisted karst species and four rare salamander species (all additional species). The conservation actions, as detailed in the RHCP, will facilitate compliance with the Endangered Species Act by implementing a comprehensive, coordinated strategy for future species conservation throughout the County.

The incidental take of permitted species associated with the following otherwise lawful activities would be authorized under and in accordance with this RHCP: road construction, maintenance, and improvement projects; utility installation and maintenance, including but not limited to power and cable lines; water, sewer, and natural gas pipelines; construction of plants and other facilities; school development or improvement projects; public or private construction and development; and land clearing. The activities authorized under this RHCP are expected to impact the permitted species in the County. Direct impacts to permitted species may occur if development and construction results in the disturbance, alteration, or removal of occupied and potentially occupied habitat. Species may also be indirectly impacted by negative changes in habitat quality, which may occur due to removal of existing vegetation, alteration of drainage patterns, increased habitat fragmentation, increased populations of predatory or competitive species, and other indirect effects of proximity to development activities.

### **Anticipated Impacts (Take) and Mitigation**

An objective of the RHCP is to promote the conservation of endangered and rare species in Williamson County by helping plan participants avoid and minimize impacts to suitable habitat for these species. The plan also is designed to help participants minimize disturbance during the nesting season for the endangered golden-cheeked warbler and black-capped vireo. These measures will benefit the species addressed in this RHCP, but incidental take of the permitted species will occur nonetheless. A summary of RHCP anticipated take and mitigation/

conservation measures for the permitted and additional species is presented in Table ES-1. Allowable take is considered in the context of the entire life of the plan rather than in any plan year. Annual take is likely to vary from year to year; however, an amendment to the incidental take permit will be required only if the 30-year estimate for take is expected to be exceeded.

***Anticipated Impacts, Participation Fees, and Mitigation for Karst Species.*** In this RHCP, estimates of relative impact to listed species-occupied karst habitat are based on the limited, but best available scientific information on development-related and quantifiable changes in moisture and nutrient supply to the cave systems. For calculating levels of take, this RHCP provides estimates of 1) the number of acres of potential habitat within the Karst Zone of Williamson County that may be altered or removed and 2) the number of occupied caves and associated surface habitat that may be irrevocably affected or moderately affected with implementation of the permitted actions (see Table ES-1).

Approximately 15.5 percent (112,000 acres; 45,325 hectares) of the County is underlain by geology that is likely to contain caves with endangered karst invertebrates. At the present time, approximately 28.6 percent, or 32,000 acres (12,950 hectares), of the Karst Zone have already been developed or somewhat disturbed. This leaves approximately 80,000 acres (32,375 hectares) of currently undeveloped potential karst habitat in the County. At least 590 caves have been identified in Williamson County, many known to contain permitted or additional species. The RHCP estimates that participation levels under this incidental take permit will range from 10 to 20 percent. To avoid underestimating take and overestimating income from participation, the RHCP assumes 20 percent participation for take estimates and 10 percent participation for income estimates. Thus, of the 80,000 acres of currently undeveloped potential karst habitat, approximately 16,000 (6,475 hectares) acres of development in potential karst invertebrate habitat may be subject to incidental take over the life of the RHCP and will be covered by the RHCP permit (calculation based on 80,000 acres  $\times$  20% = 16,000 acres). Within this 16,000 acres, caves both with and without surface expressions and with and without listed species will be encountered. The participation fee for any development in the Karst Zone as depicted in Figure ES-1 will be **[\$100/acre]**.<sup>2</sup>

Based on historic development patterns and related cave discoveries, it is estimated that a total of 60 species-occupied caves will be irrevocably impacted over the 30-year life of the RHCP. “Irrevocable impact” is defined as habitat modification within an area 50 feet (15 meters) of the cave footprint and includes previously unknown caves (unanticipated voids) damaged during construction activities. The participation fee for irrevocable impacts to a known species-occupied cave will be **[\$400,000/cave]**. Impacts to unanticipated voids occupied by permitted karst species are covered by the Karst Zone fee.

An additional 150 species-occupied caves are anticipated to be moderately impacted. “Moderate impact” is defined as habitat modification within an area between 50 feet and 333 feet (100 meters) from the cave footprint. The participation fee for moderate impacts to a known species-occupied cave will be **[\$10,000/acre]**.

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<sup>2</sup> All participation fees identified in the RHCP are subject to reassessment and adjustments over the life of plan. For planning purposes, all fees related to impacts to karst habitat are estimated to increase by 10 percent every five years.

**Table ES-1.** Summary of the Williamson County RHCP anticipated take and mitigation for the permitted species and conservation measures for the Georgetown salamander and other additional species.

Species	How Level of take Determined	Take Over Life of RHCP	Participation Fee Structure	Mitigation or Conservation Measures
<b>Bone Cave Harvestman and Coffin Cave Mold Beetle</b>	<p>Impacts to species-occupied caves based on effects to cave moisture regime (surface recharge area) and nutrient input (primarily cave cricket foraging area) measured in distance from cave.</p> <p>Number of species-occupied caves in two zones:</p> <p>Irrevocable Impact Zone B (within 50 ft of cave footprint).</p> <p>Moderate Impact Zone A (50–333 ft from cave footprint).</p>	<p>Species-occupied caves:</p> <p><u>Irrevocably Impacted Caves:</u> 60 caves (including one unanticipated species-occupied void per year discovered and destroyed during construction).</p> <p><u>Moderately Impacted Caves:</u> 150 caves.</p>	<p>Karst Zone (includes irrevocable impacts to unanticipated species-occupied voids): \$100/acre</p> <p>Species-occupied caves:</p> <p><u>Moderate Impact Zone A:</u> \$10,000/acre</p> <p><u>Irrevocable Impact Zone B (does not include impacts to unanticipated species-occupied voids):</u> \$400,000 flat fee.</p>	<p>By Year 10 acquire and manage 9 to 18, 40- to 90-acre karst fauna areas (KFAs) totaling approximately 700 acres (a minimum of three KFAs in each of the three karst fauna regions occupied by the permitted karst species). The KFAs may be newly established or may be existing karst conservation areas enlarged to qualify as Service-approved long-term, viable KFAs.</p> <p>To enhance RHCP efforts towards recovery of listed invertebrates preserve up to six additional KFAs acquired with Endangered Species Act section 6 funds or other sources.</p> <p>Assume management/ monitoring of 10 of the 22 existing karst conservation areas.</p>
<b>Golden-cheeked Warbler</b>	Acres of impact to known and potential habitat patches mapped on aerial photographs or verified with habitat assessments or breeding bird surveys.	6,000 acres.	\$7,000/acre for impacted habitat in Year 2, increasing by \$500/year for 10 years.	Purchase 500 Hickory Pass Ranch mitigation credits each in Years 1 and 4 (1,000 total). If or when additional mitigation is required, explore opportunities for either establishing a preserve/ conservation bank in the County or purchasing additional mitigation credits outside the County.
<b>Black-capped Vireo</b>	Same as for golden-cheeked warbler	900 acres.	\$5,000/acre for impacted potential or occupied habitat, with fees increases evaluated on an annual basis.	As accumulated participation fees allow, restore and/or enhance protected vireo habitat on a rolling basis.
<b>Georgetown Salamander</b>	N.A.	N.A.	N.A.	Conduct research and monitoring in Years 1–5, develop a conservation strategy for the species, and explore feasibility of a CCAA.
<b>Additional Species</b>	N.A.	N.A.	N.A.	Mitigation measures for permitted species likely to benefit some or all additional species. Fund and manage research and public awareness programs. Periodically evaluate effect of beneficial actions.

Full mitigation for anticipated impacts to karst species is expected to be realized in the fulfillment of the biological goals of the RHCP, which are focused on ensuring Recovery Plan goals for the karst permitted species in Williamson County are reached as quickly as possible by the following actions: 1) contributing to and/or facilitating the establishment and perpetual adaptive management/monitoring of 9 to 18 Service-approved karst fauna areas (KFAs) on 500 acres (202 hectares) of newly acquired deeded land and 200 acres (81 hectares) of conservation easement land; 2) implementing perpetual adaptive management/monitoring plans<sup>3</sup> for 10 existing karst conservation areas that are already established, but not provided with guaranteed long-term funding; 3) implementing and providing funding for a 30-year research and public awareness program on Williamson County endangered and rare species; and 4) while not required as mitigation, establishing an additional six KFAs as a non-mandatory recovery enhancement activity with Endangered Species Act section 6 or alternate sources of funding.

***Anticipated Impacts, Participation Fees, and Mitigation for Bird Species.*** This RHCP evaluates acres of potential habitat removed as an indicator of take levels for the two endangered permitted bird species. An estimated 34,465 acres (13,947 hectares) of woodland habitat that could potentially support golden-cheeked warbler and 4,265 acres (1,726 hectares) of potential scrubland habitat that could potentially support the black-capped vireo have been mapped within Williamson County. Most of this potential vireo habitat is in the far northern portion of the County, where development is not currently focused, and given the few records of the species within the County, much of the potential habitat is likely unoccupied or occupied at very low densities.

Take of occupied or potential golden-cheeked warbler habitat is estimated to be 6,000 acres (2,428 hectares) over the 30-year plan period. Mitigation for anticipated impacts to the golden-cheeked warbler is expected to be realized in the fulfillment of the biological goals of the RHCP, which include using up to 1,000 acres (405 hectares) of Hickory Pass Ranch mitigation credits in adjacent Burnet County for 1,000 acres of occupied or potentially occupied woodland within Williamson County. After the Hickory Pass Ranch credits are fully used (approximately 11 years), additional take of golden-cheeked warbler will not be authorized under the RHCP until a preserve/conservation bank is established in the County or additional mitigation credits are available outside the County. If and when there is demand for more than 1,000 acres of take, the Foundation will explore these additional mitigation options. The participation fee for golden-cheeked warbler will start at **[\$7,000/credit]** for Hickory Pass Ranch credits. Take for occupied or potential vireo habitat is estimated to be 900 acres over the life of the plan. Mitigation for this take will start at **[\$5,000/acre]** of impact, and the accumulated fees will be expended on the restoration, enhancement, or management of vireo habitat on protected lands within or outside the County. Both the warbler and the vireo will also benefit from the implementing and funding of a 30-year prioritized research effort and public awareness program on Williamson County endangered and rare species.

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<sup>3</sup> The Foundation would prepare and implement the adaptive management/monitoring plans following Service guidance procedures.

**Anticipated Impacts and Mitigation for Additional Species.** Actions authorized under this RHCP may impact additional species, including the Georgetown salamander, a candidate for listing, which is relatively common within Williamson County where adequate spring discharge occurs. The three other salamander species included as additional species are either very rare within the permit area or occur in drainages that may be marginally affected by RHCP permitted actions. The other 20 species of karst invertebrates included as additional species could be affected by the permitted actions as well as benefit from RHCP karst mitigation.

The Georgetown salamander may be impacted by permitted actions through the potential degradation of water quality and quantity in springs and streams in the watersheds where the species occurs. However, sufficient data on the relationship between development and spring water quality/quantity are not available to quantitatively predict levels of impact of the RHCP permitted actions on the salamander.

The RHCP does not anticipate any *direct* mortality of the Georgetown salamanders or measurable impacts to their habitat at the present time; however, it is possible that the permitted actions will cause some unquantifiable amount of *indirect* impact to salamander habitat. Primarily as a means of gathering sufficient scientific information on the Georgetown salamander to determine the species status and conservation strategy and actions needed to preclude listing, the RHCP includes implementing and funding a five-year species-specific research and monitoring effort. Additional mitigation measures include preparing a conservation strategy for the species within two years of plan implementation, and investigating the feasibility of developing a Candidate Conservation Agreement with Assurances.

### **Participation Process**

Any party within Williamson County desiring to undertake activities covered by this RHCP within an area that contains potential habitat for the permitted endangered karst invertebrates, golden-cheeked warblers, or black-capped vireos may be eligible for participation. The County will, however, reserve the right to decline to allow a participation in the plan where that participation would not be consistent with the biological goals and objectives of the plan or might cause there to be insufficient mitigation available for anticipated County infrastructure needs.

For the Bone Cave harvestman and Coffin Cave mold beetle, the RHCP and proposed permit will authorize incidental take by plan participants for any covered project occurring within the following three karst fauna regions: North Williamson County, Georgetown, and McNeil/Round Rock. No incidental take coverage will be authorized for karst invertebrates through this RHCP within the Cedar Park KFR. During the Foundation's review of a participant's conceptual development plan, Service-permitted biologists and/or geologists employed or contracted by the Foundation will conduct habitat assessments and presence/absence surveys for the four permitted species as needed, and the Foundation will determine the appropriate participation fees based on a published fee schedule (see preceding section for proposed starting participation fees). Costs for the Foundation review will be born by the participant.

## RHCP Costs and Funding Mechanisms<sup>4</sup>

The anticipated costs and income for the 30-year period of the RHCP are presented in Table ES-2. According to the financial plan developed for the RHCP, the plan will operate with positive annual cash flow beginning in Year 1, and at Year 30 a foundation endowment will have been funded with a contribution of **[\$20,025,000]** from RHCP operating funds, and a surplus of approximately **[\$21,144,270]** will be available for Williamson County General Funds.

**Table ES-2.** RHCP annual income and expenses for Years 1, 10, 20, and 30, and cumulative costs and income over 30-year life of the plan.<sup>1</sup>

	Costs <sup>2</sup>	Income
Annual Year 1	\$6,639,250	\$7,446,864
Annual Year 10	\$2,736,378	\$2,782,938
Annual Year 20	\$2,120,587	\$3,172,781
Annual Year 30	\$21,067,420 <sup>3</sup>	\$6,547,936
30-Year Cumulative	<b>\$80,832,669</b>	<b>\$101,976,939</b>

<sup>1</sup> All projections for costs and income are estimates and serve to demonstrate the financial feasibility of the plan.

<sup>2</sup> Costs include administrative expenses, land acquisition and management for preserves, and research and public awareness programs.

<sup>3</sup> Year 30 costs include a **[\$20,025,000]** contribution to the endowment to ensure Foundation operation and preserve management in perpetuity after the 30-year plan period.

Funding for this RHCP will be generated from three primary sources: 1) participation fees collected from participants, 2) land acquisition funds for parks and open space, and 3) a Tax Benefit Financing program. RHCP initiation costs are expected to be covered with road improvement mitigation funds in the early years of the plan before participation fees and Tax Benefit Financing provide sufficient revenues to cover expenses.

The RHCP proposes to accrue funds through Tax Benefit Financing (TBF) covering parcels participating in the plan. Under the Tax Benefit Financing mechanism, a small portion of the tax on the value of improvements made after plan participation is directed back into the plan. Revenues from the TBF fund are then used to pay for RHCP costs.

Assuming a **[15 percent]** tax revenue diversion to the RHCP, in Year 1 **[\$50,764]** will be available from the Tax Benefit Financing plan, and at Years 10 and 20 this amount will be **[\$764,729 and \$2,277,761]**, respectively. The total 30-year benefit to the RHCP under the Tax Benefit Financing plan will be **[\$56,990,033]**.

<sup>4</sup> All financial projections provided in this document or authorized under the plan are merely estimates intended to demonstrate that the plan is financially feasible. The funding plan is not substantially prescriptive of the timing, size, or nature of actions that may be taken or authorized under the plan. While specific elements of the overall financing plan may change over the 30-year plan period, the permitted take and the mitigation to accommodate that take will not change. Every year during the 30-year life of the RHCP the County will re-evaluate the financial plan to ensure adequate funding and appropriate disposition of excess revenues to meet plan goals.