CPS Energy System-wide Habitat Conservation Plan

Final

JUNE 2021

PREPARED FOR

CPS Energy

PREPARED BY

SWCA Environmental Consultants

CPS ENERGY SYSTEM-WIDE HABITAT CONSERVATION PLAN

Prepared for

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GLOSSARY

Abbreviation	Description
ANSL	All Night Security Lights
Approved KFA	Approved Karst Fauna Area; an area approved by USFWS as contributing to the recovery of one or more of the Covered Karst Invertebrates
BAT	Biological Advisory Team
BMPs	Best Management Practices
CAC	Citizen's Advisory Committee
CCN	Certificate of Convenience and Necessity
CFR	Code of Federal Regulations
CHU	Critical Habitat Unit
Colocation Zone	Pertaining to Covered Karst Invertebrates; areas within or immediately adjacent to prior soil or subsurface disturbances; "immediately adjacent" means within 25 feet of the edge of the prior disturbance
Covered Activities	A specific instance of one or more CPS Energy Activities performed within a specific geographic area during a specific time, and for which CPS Energy desires to use the HCP and ITP to authorize incidental take of one or more Covered Species
Covered Karst Invertebrates	The nine species of federally endangered Bexar County karst invertebrates that are Covered Species
Covered Species	Wildlife species that may be taken by CPS Energy Activities and for which CPS Energy seeks incidental take authorization
CPS Energy Activities	CPS Energy's electric and gas operations, excluding generation, that under certain circumstances may cause incidental take of Covered Species
CPS Energy Network	Infrastructure facilities owned, operated, or maintained by CPS Energy
Critical Habitat	As defined in Section 3(5)(A) of the ESA
Direct Effects	Effects caused by Covered Activities and that occur at the same time as the Covered Activities
Direct Habitat Modifications	Habitat areas within the footprints of certain surface or subsurface disturbances associated with the Covered Activities that are directly physically altered by the Covered Activities
EA	Environmental Assessment
Emergency Response	Class of CPS Energy Activities that are needed to ensure that human health and safety and property are protected and that essential utility services are quickly restored when disrupted
Environmental Checklist	A process for evaluating the potential environmental impacts of CPS Energy Activities
ESA	Endangered Species Act
ETJ	Extra-territorial Jurisdiction
Evaluation Species	Species of potential conservation concern having a range that includes some or all of the Plan Area
Existing Impacts (GCWA)	Land uses present at the time Covered Activities are evaluated under this HCP that decrease the suitability or quality of Suitable or Occupied Habitat for the GCWA; generally applies to any land use or prior disturbance that USFWS typically considers as generating an indirect impact on habitat for the GCWA
Existing ROWs	ROWs that CPS Energy currently controls
FERC	Federal Energy Regulatory Commission
FM	Farm-to-Market Road
FONSI	Finding of No Significant Impact
Future ROWs	ROWs that CPS Energy does not currently control, but expects to add to the CPS Energy Network over time
GCWA	Golden-cheeked Warbler

Abbreviation	Description
GCWA Breeding Season	Golden-cheeked warbler breeding season begins March 1 and ends July 31
GPS	Global Positioning System
Habitat Surrogate	Acres of potential habitat directly or indirectly modified by the Covered Activities
HCP	Habitat Conservation Plan
HCP Handbook	Habitat Conservation Planning and Incidental Take Permit Processing Handbook
IH	Interstate Highway
Indirect Effects	Effects caused by Covered Activities, but that occur at some time after the conduct of the Covered Activities
Indirect Habitat Modification	Habitats outside of and adjacent to the footprints of Direct Habitat Modification, where effects are not caused by the direct physical alteration of the habitat
ITP	Incidental Take Permit
ITP Term	30 years from ITP issuance
KFA	Karst Fauna Area
KFR	Karst Fauna Region
kV	Kilovolts
mm	Millimeter
NEPA	National Environmental Policy Act
NERC	National American Electric Reliability Corporation
New Construction	A class of CPS Energy Activities that creates new facilities within the CPS Energy Network
NLCD	National Land Cover Database
NMFS	National Marine Fisheries Service
O&M	Operation and Maintenance
Occupied Karst Feature	Karst feature in which one or more Covered Karst Invertebrate species has been detected through presence/absence surveys.
Operation and Maintenance	A class of CPS Energy Activities involving essential functions for CPS Energy that guarantee the reliability of its public utility services.
Plan Area	The area within which Covered Activities; authorized incidental take; and related monitoring, minimization, and mitigation measures will occur. The Plan Area for the HCP and the Permit Area for the ITP includes the Service Area, a corridor along CPS Energy's other transmission lines, and the area within 15 miles of the current boundary of the City of San Antonio's ETJ; encompasses approximately 4,488 square miles spanning some or all of 20 Texas counties
Potential KFA	An Occupied Karst Feature lacking development within 345 feet of entrance or footprint (if known) and having at least 100 acres or 40 acres of undeveloped land contiguous with the undeveloped core. Acreage threshold depends on the current conservation baseline status of the species involved. Limits of the Potential KFA only include the undeveloped lands needed to achieve the applicable acreage threshold, prioritizing acres closest to the feature.
PUC	Public Utility Commission of Texas
PWC	Texas Parks and Wildlife Code
RHCP	Regional Habitat Conservation Plan
RIFA	Red Imported Fire Ants
Rights-of-Way	Lands associated with any portion of the CPS Energy Network
ROW	Right-of-Way
Service Area	The area within which CPS Energy provides utility services, spanning approximately 1,514 square miles across seven Texas counties, including the City of San Antonio

Abbreviation	Description
SH	State Highway
Significant Upgrades	A class of CPS Energy Activities involving major reconstruction, replacement, or improvement of facilities within the CPS Energy Network
SWCA	SWCA Environmental Consultants
TAC	Texas Administrative Code
TCMA	Texas Cave Management Association
TFS	Texas A&M Forest Service
TPWD	Texas Parks and Wildlife Department
TWDB	Texas Water Development Board
TxDOT	Texas Department of Transportation
USC	United States Code
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey

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1 INTRODUCTION AND BACKGROUND

Just as we are committed to providing affordable and reliable services to our customers, CPS Energy is committed to be environmental stewards in all aspects of our operations that involve our people, water, land, plants, animals including endangered species and air quality. We understand the importance of balancing growth and protecting the environment as we serve our community.

CPS Energy

CPS Energy is the nation's largest municipally owned energy utility supplying both natural gas and electrical services. CPS Energy provides utility services to an area spanning approximately 1,514 square miles across seven Texas counties, including the City of San Antonio (Service Area) (Figure 1). CPS Energy also operates and maintains electric and gas transmission lines that extend outside of the Service Area (see Figure 1). Furthermore, CPS Energy anticipates that the Service Area will expand over the next 30 years as CPS Energy responds to regional population growth. An additional estimated 1.5 million individuals are expected to reside in San Antonio by the year 2040. The area that CPS Energy currently serves or may expand into in the coming decades contains habitat for several species listed as threatened or endangered under the federal Endangered Species Act (ESA).

CPS Energy implements an internal environmental review and survey process that includes, but is not limited to, endangered species, cultural resources, storm water pollution prevention, tree ordinances and Edwards Aquifer protection. CPS Energy follows this process when undertaking any of its projects, regardless of whether it entails replacement of one overhead pole or construction of a multi-mile transmission line. CPS Energy has made its first goal and matter of practice a commitment to avoid environmentally sensitive areas and minimize the impact of our operations on the environment whenever possible and practical. To further this practice throughout CPS Energy's utility activities, it ensures that all involved team members receive environmental training so that they become knowledgeable about the potential environmental impact of our projects in the community.

CPS Energy prepared this Habitat Conservation Plan (HCP) in accordance with ESA Section 10(a)(2)(A−B) to support an application for an Incidental Take Permit (ITP) from the U.S. Fish and Wildlife Service (USFWS) pursuant to Section 10(a)(1)(B) of the ESA. The Plan Area for this HCP is the area containing existing CPS Energy infrastructure, which includes the Service Area, certain lands outside of the Service Area that contain existing CPS Energy facilities, and the area into which CPS Energy may expand its services over the next 30 years (see Figure 1). This HCP addresses CPS Energy activities that involve its electric and gas operations, excluding generation (the CPS Energy Activities). Some of the CPS Energy Activities have the potential to impact some federally listed species in ways that may require authorization from the USFWS to stay in compliance with the ESA. This HCP describes a programmatic approach over a 30-year period from the date of ITP issuance (ITP Term) for achieving ESA compliance for nine federally endangered species that occur in the Plan Area (Covered Species) related to certain CPS Energy Activities that CPS Energy elects to enroll in the HCP (Covered Activities).

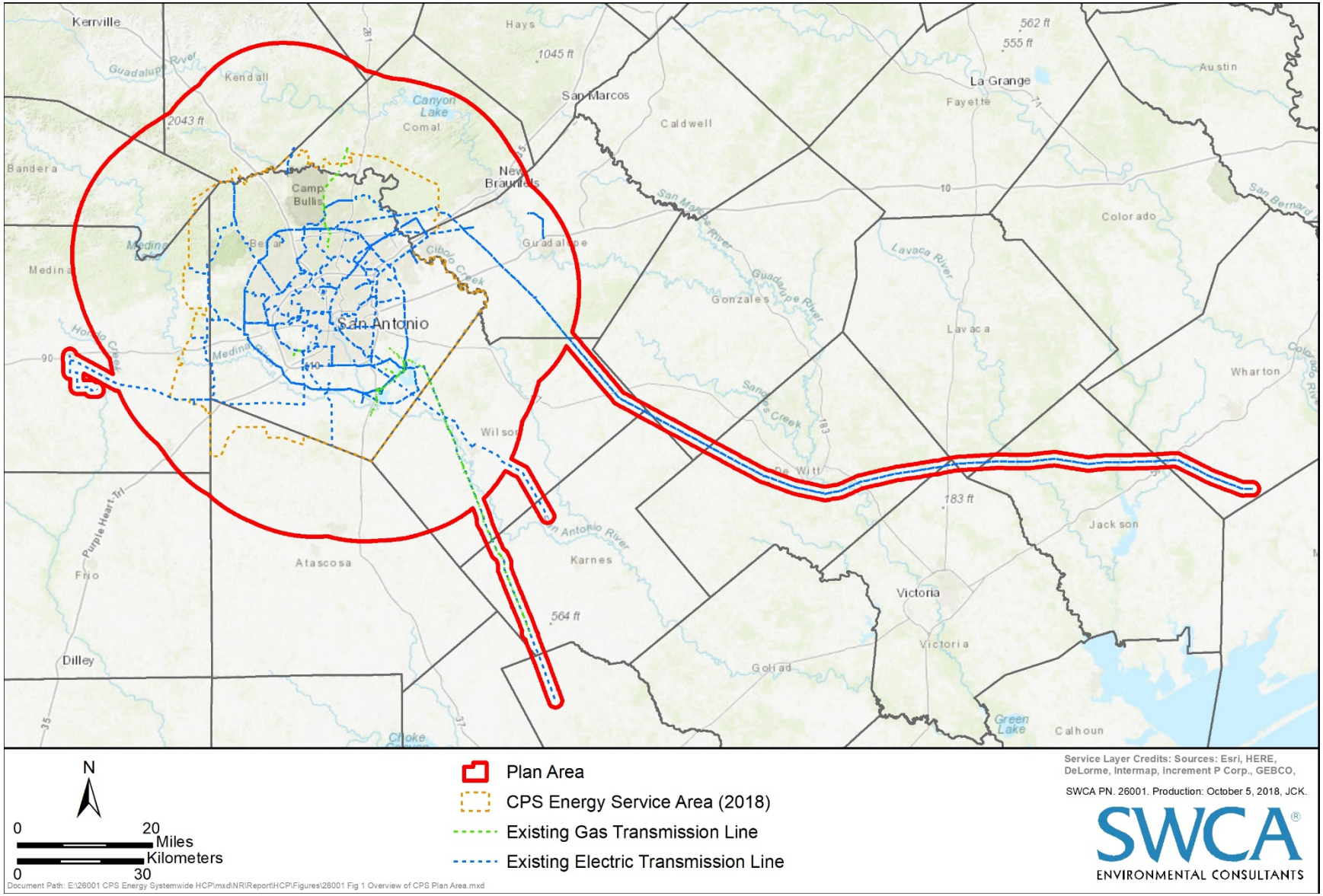

Figure 1. Plan Area for the CPS Energy HCP.

1.1 Endangered Species Act

Section 9 of the ESA prohibits "take" of species of fish or wildlife that are listed as endangered (16 United States Code [USC] §1538[a]). The USFWS extended this take prohibition to most threatened fish or wildlife species by regulation (50 Code of Federal Regulations [CFR] §17.31).[1] *Take* is defined in Section 3 of the ESA as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct" (16 USC §1532[19]). *Harm* is defined by USFWS regulation as an "an act which actually kills or injures wildlife. Such act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering" (50 CFR §17.3). The USFWS defines the term *harass* as "an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering" (50 CFR §17.3).

The USFWS issued a guidance memorandum to its Regional Directors on April 26, 2018, further clarifying the regulatory definitions of *harm* and *harass* (USFWS 2018a). In this guidance memorandum, the USFWS clarified that *harass* is a term that applies to "intentional or negligent actions" and that actions that cause take via harassment should not be covered under an ITP. USFWS (2018a) also clarified that habitat modification results in harm only if all three components of the regulatory definition of this term are met, as illustrated by this three-part test:

1. Is the modification of habitat significant?
2. If so, does that modification also significantly impair an essential behavior pattern of a listed species?
3. And, is the significant modification of the habitat, with a significant impairment of an essential behavior pattern, likely to result in the actual killing or injury of wildlife?

Under Section 10(a)(2)(B) of the ESA, the USFWS is required to issue an ITP where the applicant has met certain statutory issuance criteria. Specifically, the USFWS must issue an ITP when it finds, after an opportunity for public comment, that an application and conservation plan (commonly referred to as an HCP) demonstrate that:

1. the taking will be incidental;
2. the applicant will, to the maximum extent practicable, minimize and mitigate the impacts of such taking;
3. the applicant will ensure that adequate funding for the HCP will be provided;
4. the taking will not appreciably reduce the likelihood of survival and recovery of the species in the wild;
5. the applicant will ensure that other measures that the USFWS may require as being necessary or appropriate will be provided; and

[1] The ESA does not prohibit "take" of listed plant species. Rather, with respect to listed plants, Section 9(a)(2) of the ESA prohibits, among other things: removing and reducing to possession any such species from areas under federal jurisdiction; maliciously damaging or destroying any such species on any such area; or removing, cutting, digging up, damaging, or destroying any such species from any other area in knowing violation of state law or in the course of any violation of state criminal trespass law (16 USC §1538[a]). On August 27, 2019, USFWS amended its ESA implementing regulations to remove the blanket prohibition on take of threatened species of wildlife. Take prohibitions for species listed as threatened on or after the effective date of that regulation must be adopted by a species-specific rule under section 4(d) of the ESA. 16 USC § 1533(d).

6. the USFWS has received such other assurances as may be required that the HCP will be implemented (16 USC §1539[a][2][B]).

Regulations promulgated by the USFWS require that, in addition to the criteria above, an applicant must include in its HCP "procedures to deal with unforeseen circumstances" (50 CFR §17.22[b][2][i][C]). ESA implementing regulations also give ITP permittees "No Surprises" assurances that provide certainty as to their future obligations under an ITP (50 CFR §17.22, §17.32, §222.2).

The *Habitat Conservation Planning and Incidental Take Permit Processing Handbook* (HCP Handbook) (USFWS and National Marine Fisheries Service [NMFS] 2016) provides guidance to ITP applicants and the USFWS regarding the preparation of HCPs and the process for obtaining an ITP.[2] The USFWS acknowledges that seeking an ITP is a voluntary action by an applicant (USFWS and NMFS 2016:3-2) and that "ultimately, landowners or project proponents need to assess whether take is reasonably certain to occur as a result of their activities to inform their decision whether to seek incidental take coverage" (USFWS and NMFS 2016:3-3).

Section 7(a)(2) of the ESA requires that federal agencies ensure that actions that the agencies authorize, fund, or carry out are not likely to jeopardize the continued existence of listed species in the wild or result in the destruction or adverse modification of "Critical Habitat" (16 USC §1536[a][2]). Critical Habitat is defined by Section 3(5)(A) of the ESA. Where an agency action "may affect" one or more listed species or may destroy or adversely modify habitat designated as critical under ESA Section 4, the action agency consults with the USFWS to ensure against jeopardy to the relevant species or destruction or adverse modification of any designated Critical Habitat. "Jeopardize the continued existence of" is defined by regulation as "to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, number, or distribution of that species" (50 CFR §402.02). In 2016, the USFWS published a Final Rule revising the regulatory definition of "destruction or adverse modification of critical habitat" to mean "a direct or indirect alteration that appreciably diminishes the value of critical habitat for the conservation of a listed species. Such alterations may include, but are not limited to, those that alter the physical or biological features essential to the conservation of a species or that preclude or significantly delay development of such features" (81 *Federal Register* 7214–7226). On August 27, 2019, USFWS and NMFS published a Final Rule further updating the regulatory definition of "destruction or adverse modification of critical habitat" to mean "a direct or indirect alteration that appreciably diminishes the value of critical habitat as a whole for the conservation of a listed species." (84 *Federal Register* 44976, 45016).[3]

[2] The guidance provided in the HCP Handbook (USFWS and NMFS 2016) is based in part on policies of the U.S. Department of Interior and the USFWS that have since been withdrawn. On July 30, 2018, the USFWS withdrew its agency-wide "Mitigation Policy" and the more focused "Endangered Species Act Compensatory Mitigation Policy," stating that "…it is no longer appropriate to retain the 'net conservation gain' standard throughout various Service-related activities and is inconsistent with current Executive branch policy" (83 *Federal Register* 36472; 83 *Federal Register* 36469). The notices of withdrawal also state that all policies or guidance that were superseded by the now-withdrawn policies are reinstated (83 *Federal Register* 36472; 83 *Federal Register* 36469). The December 21, 2016, HCP Handbook was intended, in part to ensure consistency with "the most recent policies, such as the revised [US]FWS Mitigation Policy, which was announced via a *Federal Register* notice on November 21, 2016" (81 *Federal Register* :93703). Therefore, guidance in the HCP Handbook related to or arising from the withdrawn policies of the USFWS is subject to reconsideration in light of the now-reinstated prior policies.

[3] As of the date this HCP was published in the Federal Register for notice and comment, USFWS and NMFS' Final Rule regarding consultation under ESA section 7, including the revised definition of "destruction or adverse modification," has been challenged in at least three separate lawsuits in federal district court.

USFWS considers its issuance of an ITP a federal action to which the consultation requirement of ESA Section 7(a)(2) applies (USFWS and NMFS 2016). With respect to the issuance of ITPs, the USFWS functions as both the "action" agency and the "resource" agency, such that the USFWS consults with itself concerning the effects of its issuance of the ITP. According to the HCP Handbook, the consultation must include, among other things, an assessment of the impacts and likelihood of jeopardy and any adverse modification of Critical Habitat for all listed species (USFWS and NMFS 2016). In accordance with applicable guidance, this HCP also provides detailed information that may be useful to the USFWS in completing its intra-agency Section 7 consultation, concerning whether the issuance of the requested ITP is likely to jeopardize the continued existence of listed species and other species covered by the ITP or is likely to result in the destruction or adverse modification of any designated Critical Habitat (USFWS and NMFS 2016:7–5 and 7–17).

1.2 Texas Parks and Wildlife Code – Chapter 83

CPS Energy is a public utility of the City of San Antonio and subject to the provisions of Chapter 83 of the Texas Parks and Wildlife Code (PWC). PWC Chapter 83 establishes the "requirements for and authority of a governmental entity to regulate wildlife through the development, financing, and implementation of a regional habitat conservation plan or a habitat conservation plan" (5 PWC §83.012). PWC Chapter 83 provides its own definitions for "habitat conservation plans" and "regional habitat conservation plans" that are used to establish requirements under the PWC (5 PWC §83.011):

- *Habitat Conservation Plan*: A plan or program to protect endangered species by habitat preserved or other protection strategies developed in order to obtain a federal permit:
    - that does not require the regulation of non-habitat preserve land; and
    - for which the land to be used as habitat preserves, at the time of application for a federal permit:
        - is owned by the plan participant; or
        - is subject to a contract agreed to by each owner of land in the habitat preserve or proposed habitat preserve providing that all or part of the owner's land be used or managed as habitat preserve.
- *Regional Habitat Conservation Plan*: A plan or program to protect endangered species by habitat preserves or other protection strategies developed in order to obtain a federal permit that requires the acquisition or regulation of land or interests in land not owned by a plan participant at the time of application for a federal permit.

PWC Chapter 83 defines a "plan participant" as a governmental entity that develops, attempts to develop, adopts, approves, or participates in a habitat conservation plan or regional habitat conservation plan (5 PWC §83.011). CPS Energy meets the PWC Chapter 83 definition of a plan participant and, therefore, developed this HCP in compliance with relevant provisions of PWC Chapter 83. As described later in this HCP, CPS Energy may acquire preserve land that it does not currently own. Therefore, this HCP constitutes a regional habitat conservation plan under Chapter 83.

1.2.1 Chapter 83 Landowner Provisions

PWC Chapter 83 includes provisions pertaining to preserve acquisitions by a plan participant that are designed to protect Texas landowners. These provisions place restrictions on the amount of time that can lapse between the initial identification of a potential habitat preserve and its acquisition, require all preserve acquisitions be based on current fair market land values, and require formal notification for affected landowners. Generally, plan participants in a Chapter 83 regional habitat conservation plan must

make offers to acquire any land identified as a proposed habitat preserve no later than 6 years after permit issuance date (5 PWC §83.018[c]). In cases where land acquisitions are not identified during development of the regional habitat conservation plan, but are rather identified during implementation (for example, where a programmatic mitigation approach is proposed), plan participants must make an offer based on fair market values to the landowner within 4 years of identifying a specific tract of land (5 PWC §83.018[d]) and must complete the land acquisition within 5 years of identification (5 PWC §83.018[e]).

Governmental entities that develop, attempt to develop, adopt, approve, or participate in a habitat conservation plan or regional habitat conservation plan must abide by the following measures:

- A governmental entity may not impose a regulation, rule, or ordinance related to endangered species unless the regulation, rule or ordinance is necessary to implement a habitat conservation plan or regional habitat conservation plan for which the governmental entity was issued a federal permit (5 PWC §83.014(a)).
- A governmental entity may not discriminate against a permit application, permit approval, or the provision of utility service for land that: (1) is or has been designated as habitat preserve or potential habitat preserve in a regional habitat conservation plan; (2) is designated as Critical Habitat under the federal act [ESA]; or (3) has endangered species or endangered species habitat (5 PWC §83.014(b)).
- A governmental entity may not deny or limit available water or wastewater service to land in the service area of the governmental entity that has been designated as habitat preserve or potential habitat preserve in a regional habitat conservation plan or in a habitat conservation plan (5 PWC §83.014(d)).
- A governmental entity may not, as a condition for the issuance of a permit, approval, or service, require a person to (1) pay a mitigation fee to a plan participant; (2) set aside, lease, or convey land as a habitat preserve; or (3) pay a mitigation fee for land set aside or restricted from development under local, state, or federal law or regulation (5 PWC §83.014(d)).

1.2.2 Advisory Committees

1.2.2.1 CITIZENS ADVISORY COMMITTEE

Section 83.016 of the PWC provides for the establishment of a citizens advisory committee (CAC)[4] to assist in preparing the regional habitat conservation plan as follows (5 PWC §83.016):

1. The plan participants shall appoint a citizens advisory committee to assist in preparing the regional habitat conservation plan and the application for a federal permit.

2. At least four members or 33 percent of the citizens advisory committee, whichever is greater in number, must own undeveloped land or land in agricultural use in the regional habitat conservation plan area. A landowner may not be an employee or elected official of a plan participant or any other local, state, or federal governmental entity.

[4] CPS Energy has a CAC convened for the purposes of maintaining communication between CPS Energy and the community. This 15-member committee is not the same as the Chapter 83 CAC created for this HCP, although two members (Ram Khatti and Klaus Weiswurm) serve on both committees. For the purpose of this HCP, CAC refers to the Chapter 83 CAC and not the previously convened CPS Energy CAC.

3. Not later than the 90th day after the initial identification of the proposed preserve system for the regional habitat conservation plan, the plan participants shall appoint one additional landowner, who owns land within the proposed habitat preserve system, to the citizens advisory committee.

4. The [Texas Parks and Wildlife] commission shall appoint one representative to the citizens advisory committee. The commission's representative is a voting member of the committee.

Pursuant to Section 83.020 of the PWC, "an individual appointed to a citizens advisory committee under Section 83.016(b) may file a grievance with the [Texas Parks and Wildlife] commission regarding the development of a regional habitat conservation plan under this subchapter if the individual believes that the plan is being developed in violation of this subchapter. The individual filing the grievance must have been a member of the citizens advisory committee for the plan named in their grievance" (5 PWC §83.020).

CPS Energy convened its CAC in the spring of 2015. The CAC included seven individuals, four of whom were landowner representatives. The Texas Parks and Wildlife Commission appointed Chris Holm to serve on the CAC on November 5, 2014 (Commission Agenda Item No. 7; presented by Michael Warriner), and CPS Energy appointed the remaining members (Table 1).

Table 1. Chapter 83 Citizens Advisory Committee Membership

Name	Affiliation	Land Owner
Michael Moore*	Ironstone Development	Yes
Charles "Frosty" Forster	Forster Engineering	Yes
Klaus Weiswurm	Instrument Technology Machinery (ITM)	Yes
Chester Rackley	MARC III	Yes
Ian Cude	DR Horton	No
Ram Khatti	NuStar Energy	No
Chris Holm ‡	Texas Parks and Wildlife Department	No

* Committee Chair

‡ Texas Parks and Wildlife Commission Appointee

CPS Energy provided drafts of the HCP to the CAC for their review and comment. The CAC was invited to discuss their comments in public meetings and to submit written comments to CPS Energy for consideration following each meeting. CPS Energy considered CAC comments when drafting this HCP.

All CAC meetings complied with the Texas Open Meetings Act (Chapter 551 Government Code) and Public Information Act (Chapter 552 Government Code). In advance of the first CAC meeting, the CAC members completed Open Meetings Act and Public Information Act training provided by the Texas Attorney General's office. CAC meeting agendas and minutes are included as Appendix A of this HCP.

1.2.2.2 BIOLOGICAL ADVISORY TEAM

Section 83.015 of the PWC provides for the establishment of a biological advisory team (BAT), comprising three or more professional biologists (5 PWC §83.011[1]) to assist in preparing a regional habitat conservation plan (5 PWC §83.015[c]):

> …the plan participants, together with the commission and the landowner members of the citizen advisory committee, shall appoint a biological advisory team. At least one member shall be appointed by the commission and one member by the landowner

members of the citizens advisory committee. The member appointed by the commission serves as the presiding officer of the team. The team shall assist in:

a. the calculation of harm to the endangered species, and

b. the sizing and configuration of the habitat preserves.

On November 7, 2014, the Texas Parks and Wildlife Commission appointed Meredith Longoria to serve as the BAT chair (Commission Agenda Item No. 7; presented by Michael Warriner). On March 17, 2015, the CAC landowner members appointed Richard Kostecke to the BAT. CPS Energy and Texas Parks and Wildlife Department (TPWD) staff collaboratively identified the remaining three BAT members (Table 2).

Table 2. Chapter 83 Biological Advisory Team Membership

Name	Affiliation	Scientific Expertise
Meredith Longoria*	Texas Parks and Wildlife Department	Biology and conservation planning
Kelly G. Lyons	Trinity University, Associate Professor, Department of Biology	Plant ecological physiology and ecology
Ben Hutchins	Texas Parks and Wildlife Department	Invertebrate biology
Richard M. Kostecke ‡	The Nature Conservancy	Endangered songbirds and migratory birds (golden-cheeked warblers [*Setophaga chrysoparia*], black-capped vireos [*Vireo atricapilla*], and Sprague's pipits [*Anthus spragueii*])
Mike Duran	The Nature Conservancy	Vertebrate zoology and spot-tailed earless lizard *(Holbrookia lacerata)* habitat modeling

* Committee Chair; Texas Parks and Wildlife Commission Appointee

‡ CAC Appointee

CPS Energy provided drafts of this HCP to the BAT for their review and comment. The BAT discussed their comments in public meetings and submitted formal comments for CPS Energy consideration. CPS Energy considered BAT comments when drafting the HCP.

All BAT meetings complied with the requirements of the Texas Open Meetings Act (Chapter 551 Government Code) and Public Information Act (Chapter 552 Government Code). In advance of the first BAT meeting, all BAT members completed Open Meetings Act and Public Information Act training provided by the Texas Attorney General's office. BAT meeting agendas and minutes are included as Appendix B of this HCP.

1.3 National Environmental Policy Act

The USFWS considers its issuance of an ITP a federal action subject to compliance with the National Environmental Policy Act (NEPA) (42 USC §4321–4327) (USFWS and NMFS 2016:1–10). NEPA requires federal agencies to describe "1) the environmental impact of the proposed action; 2) any adverse environmental effects which cannot be avoided should the proposal be implemented; 3) alternatives to the proposed action; 4) the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity; and 5) any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented" (42 USC §4332[c]). Council on Environmental Quality regulations implementing NEPA require all federal agencies to analyze the effects of their proposed actions and to include other agencies and the public in the process (40 CFR §1500–1508).

The HCP Handbook explains that, to properly determine the scope of impacts that must be considered in a NEPA analysis, one must first define the proposed federal action (USFWS and NMFS 2016:13–3). In the context of an ITP, the federal action is the proposed issuance of an ITP based on the implementation of conservation measures set forth in the HCP (USFWS and NMFS 2016:13–3). As described in the HCP Handbook, the USFWS's "ability to exercise discretion over an ESA permit applicant's non-Federal activities is limited to ensuring the non-Federal entity's permit application meets the statutory and regulatory criteria in Section 10(a)(2)(B) of the ESA and 50 CFR §17.22(b)(1) and §17.32(b)(1)" (USFWS and NMFS 2016). According to the HCP Handbook, which cites to NEPA implementing regulations, the USFWS will identify the following for possible analysis: 1) the direct effects caused by the federal action at the immediate time and place (40 CFR §1508.8); 2) the indirect effects caused by the federal action later in time, or at a distance, that are reasonably foreseeable (40 CFR §1508.8); and 3) the cumulative effects due to the incremental impact of the federal action when added to past, present, and reasonably foreseeable future actions (whether federal or non-federal) (USFWS and NMFS 2016) (40 CFR §1508.7).[5]

NEPA compliance is a federal agency obligation, and the USFWS is responsible for preparing the environmental review document and coordinating with other agencies and the public. The USFWS aims to employ the lowest level of environmental review that meets the requirements of NEPA for the issuance of ITPs (USFWS and NMFS 2016). At this time, the USFWS has determined that an Environmental Assessment (EA) is appropriate for satisfying the NEPA review associated with issuance of the ITP to CPS Energy. The purpose of the EA is to briefly analyze the effects of the proposed action and alternative actions. The culmination of the NEPA process at the level of an EA is a Finding of No Significant Impact (FONSI) or a decision to prepare a more detailed Environmental Impact Statement. Recent NEPA regulatory guidance issued by the Department of the Interior (Secretarial Order 3355) and actions announced by the Council on Environmental Quality (82 *Federal Register* 43226) encourage efforts to streamline environmental reviews and decisions for environmental impact statements and infrastructure projects to comply with Executive Order 13807, issued on August 15, 2017. The Department of the Interior released "Additional Direction for Implementing Secretary's Order 3355 Regarding Environmental Assessment" in a guidance memorandum on August 6, 2018 (Department of the Interior 2018).

1.4 Other Relevant Laws and Regulations

CPS Energy will comply with all other applicable federal, state, and local laws pertaining to its activities. Compliance with other applicable federal laws, such as Section 404 of the Clean Water Act administered by the U.S. Army Corps of Engineers, may trigger the need for additional interagency consultation under Section 7(a)(2) of the ESA between the federal action agency and the USFWS. However, issuance of the ITP will substantially streamline the federal agency's obligations for interagency consultation related to Covered Activities, because effects to listed species and Critical Habitats will already have been evaluated and addressed in this HCP and the USFWS's related Biological Opinion and NEPA environmental review document (see, for example, streamlining language in General Condition 18 of the U.S. Army Corps of Engineers 2017 Nationwide Permit Program). If the terms and conditions of the ITP

[5] On July 16, 2020, the Council on Environmental Quality published a Final Rule amending its NEPA implementing regulations. The rule, among other things, removes the distinction between direct, indirect, and cumulative effects and requires an agency to analyze those effects that are "reasonably foreseeable and have a reasonably close causal relationship to the proposed action or alternatives, including those effects that occur at the same time and place as the proposed action or alternatives and may include effects that are later in time or farther removed in distance from the proposed action or alternatives." 85 *Federal Register* 43304, 43375 (July 16, 2020). The 2020 NEPA regulations are subject to multiple lawsuits in federal court.

are fully implemented, additional voluntary conservation measures or mandatory reasonable and prudent measures for the Covered Species should not be necessary to meet the regulatory obligations of Section 7(a)(2) of the ESA, as impacts to and potential take of the Covered Species within the Plan Area would already have been considered under the HCP and ITP. Other federal regulations that may be relevant to certain Covered Activities include, but are not necessarily limited to, the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act, both administered by the USFWS; the National Historic Preservation Act (NHPA) (summarized in Appendix C) and the Executive Order 12989 on Environmental Justice in Minority Populations and Low-income Populations (59 Federal Register 7629).

1.4.1 Public Utility Commission of Texas

CPS Energy is currently exempt from compliance with the project review and approval process of the Public Utility Commission (PUC) of Texas. The PUC regulates the construction of electric transmission lines in Texas under Title 16 Texas Administrative Code (TAC) Part II, Chapter 25. The PUC typically grants such approval only if the proponent adequately demonstrates the need for the line and that routing for the line complied with PUC Substantive Rules (PUC §25.101) and factors outlined in the Public Utility Regulatory Act. With forthcoming changes to the PUC rules, effective in 2021, CPS Energy will no longer be exempt from complying with PUC requirements for infrastructure projects outside of the San Antonio city limits. For projects that will comply with PUC requirements, an additional layer of environmental review beyond that anticipated in this HCP will be necessary under state law.

2 PLAN AREA

The Plan Area for this HCP and Permit Area for the ITP includes CPS Energy's Service Area, a corridor along CPS Energy's other transmission lines, and the area within 15 miles of the current boundary of the City of San Antonio's Extra-Territorial Jurisdiction (ETJ). The Plan Area encompasses approximately 4,488 square miles (2,872,494 acres) spanning some or all of 20 Texas counties (Atascosa, Bandera, Bee, Bexar, Blanco, Comal, De Witt, Frio, Gonzales, Guadalupe, Jackson, Karnes, Kendall, Kerr, Lavaca, Live Oak, Medina, Victoria, Wharton, and Wilson; see Figure 1). CPS Energy's Covered Activities, the authorized incidental take, and related monitoring, minimization, and mitigation measures will occur within the Plan Area.

2.1 Location and Extent

The Service Area currently includes approximately 1,514 square miles across all or part of seven Texas counties (see Figure 1). Certificate of Convenience and Necessity (CCN) No. 30031, issued by the PUC, defines the Service Area. The CCN obligates CPS Energy to provide electrical services to customers within the Service Area. The current Service Area is the "core" of the HCP Plan Area.

According to the City of San Antonio's *SA Tomorrow* initiative, the population of the City of San Antonio is expected to increase by over one million people by 2040 (City of San Antonio 2016). Between July 2014 and July 2015, Bexar County had the fifth largest numeric population increase of all counties nationwide and the San Antonio metropolitan area (including Atascosa, Bandera, Bexar, Comal, Guadalupe, Kendall, Medina, and Wilson counties) had the sixth-fastest growth rate in the United States for metropolitan areas in excess of one million people (Davila 2016). Bexar County's 2015–2016 growth rate of 2% exceeded the expectations of the *SA Tomorrow* initiative, which assumed a 1.8% annual population increase (City of San Antonio 2016; Davila 2016).

Given the projected population growth in and around the City of San Antonio, it is possible that amendments to CPS Energy's CCN could occur during the ITP Term, thereby expanding the boundary of the Service Area. For this reason, the Plan Area includes not only the Service Area, but also the area within 15 miles of the current boundary of the City of San Antonio ETJ. CPS Energy believes that this additional area is sufficient to capture any potential future expansions of its Service Area during the ITP Term. The additional area also includes undeveloped lands that might provide opportunities for off-site compensatory mitigation for incidental take of Covered Species.

CPS Energy will also continue to conduct activities involving its existing electric and natural gas transmission lines that extend outside of the Service Area. These transmission line extensions to the Plan Area add approximately 345 square miles and portions of nine Texas counties to the Plan Area.

The Plan Area includes approximately 4,488 square miles and likely overestimates the extent of CPS Energy's future expansion because it encompasses some areas that are now or may in the future be served by other utilities or cooperatives. However, CPS Energy believes that its Plan Area is sufficient to capture the potential growth of its Service Area and other operations, including implementation of this HCP, over the ITP Term.

2.2 Ecoregions

The Plan Area includes parts of five "national scale" ecoregions (Table 3; Figure 2) (Griffith et al. 2007). Ecoregions are geographic areas with continuity of natural resource availability, vegetation communities, and other factors (Griffith et al. 2007). The characteristics associated with ecoregions influence the type and distribution of animal and plant species.

Table 3. National-scale Ecoregions within Plan Area

Ecoregion Name*	Acres within Plan Area	Percentage of Plan Area
Edwards Plateau	965,807	34%
Texas Blackland Prairies	817,008	28%
East Central Texas Plains	815,289	28%
Southern Texas Plains	224,003	8%
Western Gulf Coastal Plain	50,387	2%
TOTAL	**2,872,494**	**100%**

* From Griffith et al. (2007)

2.2.1 Edwards Plateau Ecoregion

The Edwards Plateau ecoregion is a limestone plateau underlain by extensive karst formations resulting from limestone dissolution. Highly dissected limestone hills create extensive regions of rapid elevation changes and a network of perennial, intermittent, and ephemeral streams. The generally porous karst topography in this region results in abundant spring outlets. The oak (*Quercus* spp.) and Ashe juniper (*Juniperus ashei*)-dominated vegetation communities in this region create a mosaic of forests, woods, and savannas (Griffith et al. 2007). Plant species common to wooded areas of the Edwards Plateau include Ashe juniper, plateau live oak (*Quercus fusiformis*), Spanish oak (*Quercus buckleyi*), Texas persimmon (*Diospyros texana*), cedar elm (*Ulmus crassifolia*), and sugar hackberry (*Celtis laevigata*). Common herbaceous species include little bluestem (*Schizachyrium scoparium*), yellow Indiangrass (*Sorghastrum*

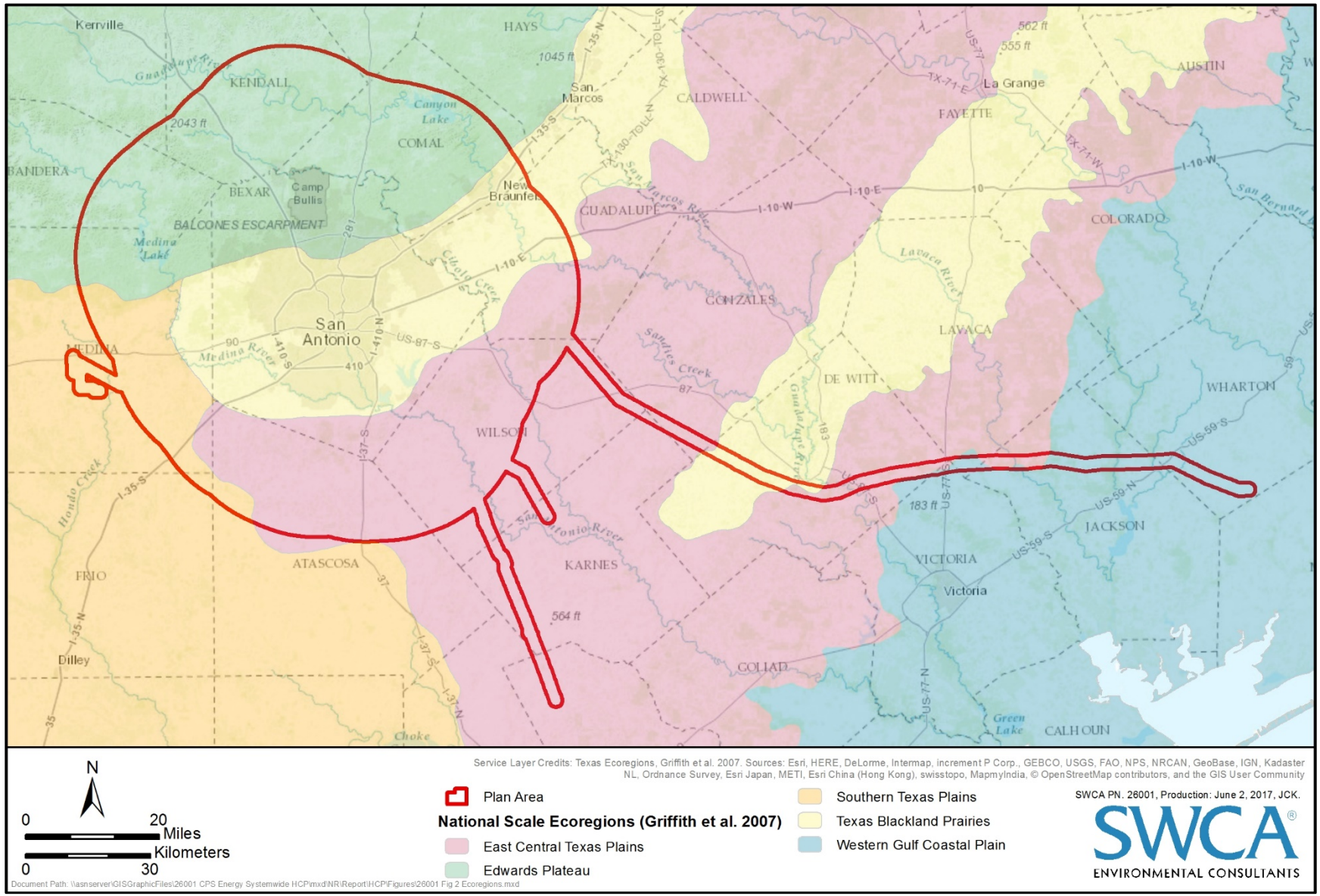

Figure 2. Ecoregions within the Plan Area.

nutans), and sideoats grama (*Bouteloua curtipendula*) (Griffith et al. 2007). Non-native plant species, such as King Ranch bluestem (*Bothriochloa ischaemum* var. *songarica*), are also locally common.

2.2.2 South Texas Plains Ecoregion

Rolling plains with grassland and savanna vegetation historically characterize the Southern Texas Plains ecoregion; however, a long history of grazing and fire suppression has led to dominance of predominately thorny brush vegetation types (Griffith et al. 2007). Mesquite-live oak parks interspersed with grasslands are common in this ecoregion and the region is generally known as "brush country" (Griffith et al. 2007). Common tree species within the Southern Texas Plains include honey mesquite (*Prosopis glandulosa*), spiny hackberry (*Celtis pallida*), blackbrush acacia (*Acacia rigidula*), guajillo (*Acacia berlandieri*), and live oak (*Quercus virginiana*). Common grasses from this area include little bluestem, sideoats grama, plains bristlegrass (*Setaria vulpiseta*), multiflower false Rhodes grass (*Trichloris pluriflora*), and lovegrass tridens (*Tridens eragrostoides*) (Griffith et al. 2007).

2.2.3 Texas Blackland Prairies Ecoregion

The Texas Blackland Prairies ecoregion occurs in two north-to-south bands across the state and is distinguished by fine, clay-like soils that were historically covered by prairie vegetation. Landforms here are gently rolling to nearly flat. Extremely fertile, clayey soils that shrink and swell with precipitation conditions are prominent in this area. Today, most natural prairie has been replaced by agricultural cropland or urban and industrial development, though some pockets of natural prairie still exist (Griffith et al. 2007). Dominant native plants of the Texas Blackland Prairies include little bluestem, big bluestem (*Andropogon gerardii*), and yellow Indiangrass. Introduced plant species are common, such as bermudagrass (*Cynodon dactylon*), King Ranch bluestem, and Johnsongrass (*Sorghum halepense*) (Elliot 2014).

2.2.4 Eastern Central Texas Plains Ecoregion

The Eastern Central Texas Plains ecoregion has irregular plains that originally were covered with post oak savanna vegetation that contrasted with the more open prairie to the north, south, and west, and the pine forests to the east. Soils are variable among the ridges and valleys of this ecoregion, but are usually sandy or sandy loams on the uplands and clay-to-clay loams in the lowlands. Clay pans that restrict water movement and plant growth are relatively common here. Today, the region contains extensive areas of agricultural pasture and rangeland (Griffith et al. 2007). Common woody species of this ecoregion include yaupon holly (*Ilex vomitoria*), post oak (*Quercus stellata*), blackjack oak (*Quercus marilandica*), black hickory (*Carya texana*), and eastern red cedar (*Juniperus virginiana*). Common herbaceous species include little bluestem, yellow Indiangrass, and big bluestem (Griffith et al. 2007).

2.2.5 Western Gulf Coastal Plain Ecoregion

The Western Gulf Coastal Plain is relatively flat and was historically prairie vegetation. The region includes barrier islands, marshes, and other coastal features. Today, the land is used predominantly for cropland, oil and gas production, and urban and industrial development (Griffith et al. 2007). The coastal prairies within this ecoregion are similar to those found in the Texas Blackland Prairies ecoregion (Griffith et al. 2007). Little bluestem, yellow Indiangrass, brownseed paspalum *(Paspalum plicatulum*), gulf muhly (*Muhlenbergia capillaris*), and switchgrass (*Panicum virgatum*) dominate the grasslands.

Vegetation within riparian areas contain pecan (*Carya illinoensis*), sugar hackberry, ash (*Fraxinus* sp.), live oak, and cedar elm (Griffith et al. 2007).

2.3 Land Use and Land Cover

The 2011 National Land Cover Database (NLCD) provides a standardized, nation-wide classification of land cover and land use types based on remote sensing data at a spatial resolution of 30 meters (Homer et al. 2015). The 2011 NLCD classifies approximately 39% of the Plan Area as developed or agricultural lands, with the remaining 61% of the Plan Area exhibiting relatively natural land cover types, such as forest, shrubland, or grassland. Table 4 and Figure 3 summarize land use and land cover in the Plan Area.

Table 4. Land Use and Land Cover Types within the Plan Area

2011 NLCD Cover Type	Description*	Percentage of Plan Area
Developed or Agricultural Cover Types		
Pasture/Hay	>20% of vegetation planted grass and/or legumes	14%
Cultivated Crops	>20% of vegetation cultivated crops	8%
Developed, Open Space	Mix of structures and developed vegetation (e.g., lawns, golf courses), <20% impervious surfaces	9%
Developed, Low Intensity	Mix of structures and developed vegetation with 20%–49% impervious surfaces	4%
Developed, Medium Intensity	Mix of structures and developed vegetation with 50%–79% impervious surfaces	3%
Developed, High Intensity	Mix of structures and developed vegetation with 80%–100% impervious surfaces	1%
SUBTOTAL		**39%**
Natural Land Cover Types		
Shrub/Scrub	>20% of vegetation is shrubs and/or small trees less than 5 meters tall	25%
Evergreen Forest	>20% cover by trees of 5 meters or taller, >75% of trees maintain leaves all year	15%
Grassland/Herbaceous	>80% of vegetation graminoids or herbaceous	9%
Deciduous Forest	>20% cover by trees of 5 meters or taller with >75% of trees lose leaves simultaneously with seasonal change	8%
Woody Wetlands	>20% of vegetation forest or shrubland, periodically saturated or covered by water	2%
Barren Land	Earthen material with <15% vegetative cover	1%
Open Water	Water with <25% vegetation or soil cover	1%
Mixed Forest	>20% cover by trees of 5 meters or taller, neither evergreen or deciduous trees >75% of tree cover	<1%
Emergent Herbaceous Wetlands	>80% of vegetation perennial herbaceous, periodically saturated or covered by water	<1%
SUBTOTAL		**61%**

* From Homer et al. (2015)

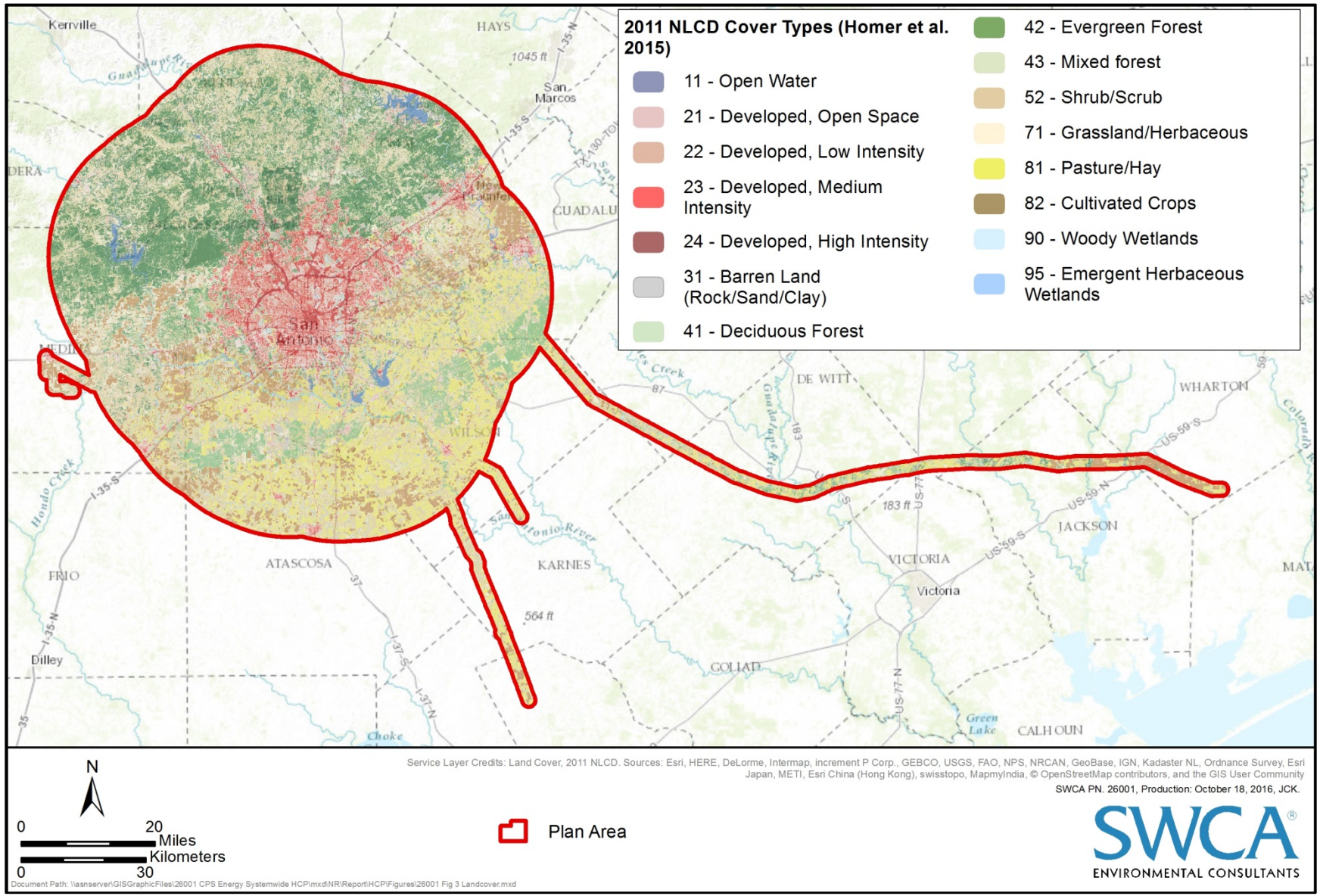

Figure 3. Land Cover within the Plan Area.

2.4 Geology

Table 5 and Figure 4 identify the geologic formations underlying the Plan Area. Major geologic units outcropping in the Plan Area, as mapped by the Bureau of Economic Geology, include Cretaceous age limestones, Tertiary age sands, and Quaternary age alluvial deposits (Barnes 1974, 1983). Limestone formations that are conducive to karst and cave development are primarily of the Edwards Group, upper member of the Glen Rose Formation, Pecan Gap Chalk, and Austin Chalk (Veni 1988).

Table 5. Geologic Units within the Plan Area

Geologic Period	Geology Unit	Description of Unit	Percentage of Plan Area
Quaternary	Terrace deposits	Gravel, sand, silt, and clay deposited in low terraces by streams (Barnes 1983)	8%
	Beaumont Formation	Clay, silt, and sand; concretions of calcium carbonate, iron oxide, and iron-manganese oxides common in zone of weathering (Barnes 1974)	1%
	Lissie Formation	Sand, silt, clay and minor amount of gravel (Barnes 1974)	1%
	Leona Formation	Fine calcareous silt grading down into coarse gravel (Barnes 1983)	8%
Quaternary and Tertiary	Uvalde Gravel	Caliche-cemented gravel; some boulders up to 1 foot in diameter; well-rounded cobbles of chert, quartz, limestone, and igneous rock (Barnes 1983)	2%
Tertiary	Catahoula Formation	Clay and sandstone (Barnes 1974)	1%
	Yegua Formation	Sandstone and clay (Barnes 1983)	1%
	Cook Mountain Formation	Clay and sandstone (Barnes 1983)	1%
	Sparta Sand	Quartz sand, very fine to fine grained, well sorted, micaceous, some silty clay partings and interbedded siltstone (Barnes 1983)	1%
	Weches Formation	greensand, sand, and clay (Barnes 1983)	1%
	Queen City Sand	sandstone and siltstone (Barnes 1983)	6%
	Reklaw Formation	Siltsone, sandstone, and clay (Barnes 1983)	2%
	Carizzo Sand	Sandstone, medium to very coarse grained up to size of rice, finer grained toward top, poorly sorted, friable to locally indurated, noncalcareous, thick bedded (Barnes 1983)	7%
	Wilcox Group; undivided	Mostly mudstone with varying amounts of sandstone and lignite (Barnes 1983)	9%
	Midway Group; undivided	Clay and sand (Barnes 1983)	2%

Geologic Period	Geology Unit	Description of Unit	Percentage of Plan Area
Cretaceous	Navarro Group and Marlbrook Marl; undivided	Upper part is marl, clay, sandstone, and siltstone. Lower part is clay, dominantly montmorillonitic, unctuous (Barnes 1983)	3%
	Escondido Formation	Shale, siltstone, and sandstone (Barnes 1983)	1%
	Pecan Gap Chalk	Chalk and chalky marl, more calcareous westward (Barnes 1983)	4%
	Austin Chalk	Chalk and marl (Barnes 1983)	2%
	Buda Limestone and Del Rio Clay; undivided	Buda Limestone is fine grained, bioclastic, commonly glauconitice pyritiferous, hard, massive, poorly bedded to nodular, thinner bedded and argillaceous near upper contact. Del Rio Clay is calcareous and gypsiferous becoming less calcareous and more gypsiferous upward, pyrite common, blocky (Barnes 1983).	1%
	Edwards Limestone	Includes Georgetown Formation at top; fine to coarse grained, abundant chert, medium gray to grayish brown; fossils are rudistids as reefs and individuals, miliolids, and shell fragments; solution zones and collapse breccia common; thickness 300-500 feet (Barnes 1983).	9%
	Devils River Limestone	Limestone and dolomite; hard, miliolids, pellet, rudistids, shell fragment biosparite and lime mudstone; locally dolomitized, brecciated, and chert-bearing; rudistids mounds more common in upper part; nodular limestone in basal part; thickness about 700 feet (Barnes 1983).	1%
	Glen Rose Limestone	Limestone, dolomite, and marl as alternating resistant and recessive beds forming stair step topography (Barnes 1983).	22%
Other geologic units each representing 1% or less of the Plan Area or areas mapped as Water			6%

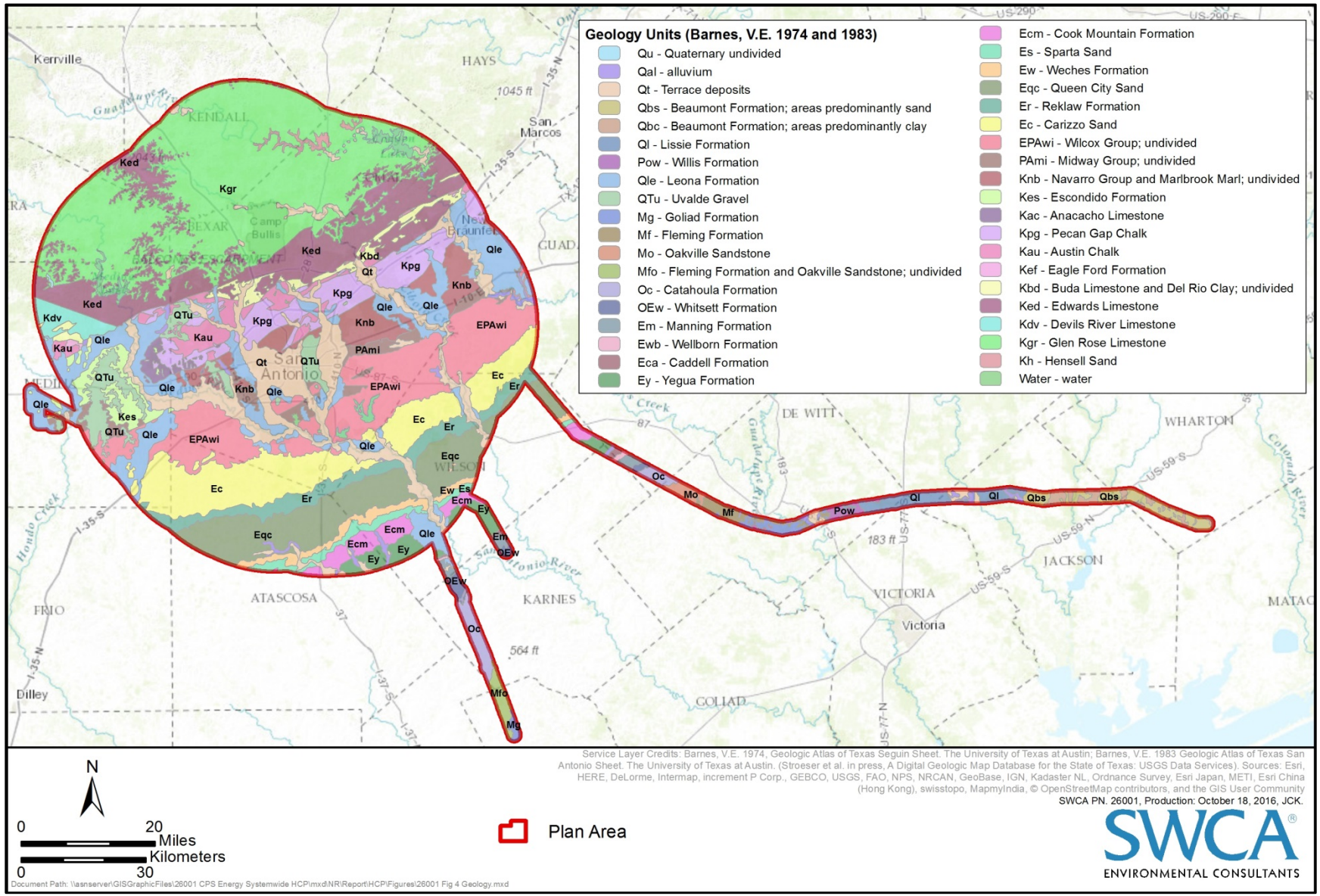

Figure 4. Geology within the Plan Area.

2.5 Karst Zones and Karst Fauna Regions

Veni (2003) delineated five "Karst Zones" to help assess the probability of rare or endangered karst invertebrate species occurring across Bexar County, Texas (Figure 5) (Veni 2003). Veni (2003) mapped boundaries for the Karst Zones based on lithology, the distribution of known caves and cave fauna at the time, and presumed geologic controls on cave development, with a focus on cavern development in the Edwards Group, Upper Glen Rose, Pecan Gap Chalk, and Austin Chalk geologic formations. The Karst Zones include:

- Karst Zone 1: Areas known to contain listed karst invertebrate species.
- Karst Zone 2: Areas having a high probability of containing habitat suitable for listed karst invertebrate species.
- Karst Zone 3: Areas that probably do not contain listed karst invertebrate species.
- Karst Zone 4: Areas that require further research but are generally equivalent to Zone 3, although they may include sections that could be classified as Zone 2 or Zone 5 as more information becomes available.
- Karst Zone 5: Areas that do not contain listed karst invertebrate species.

Veni (1994) hypothesized that certain geologic and geographic features such as stream valleys and faults form barriers to karst invertebrate dispersal and distribution. On the basis of this hypothesis, Veni (1994) delineated six Karst Fauna Regions (KFRs) within Bexar County: Stone Oak KFR, UTSA KFR, Helotes KFR, Government Canyon KFR, Culebra Anticline KFR, and Alamo Heights KFR (see Figure 5). The Bexar County Karst Invertebrates Recovery Plan created recovery units for the listed karst invertebrate species in Bexar County based on these KFRs (USFWS 2011). However, the geographic extents of the mapped KFR do not fully contain all areas of potential karst invertebrate habitat, as approximated by the Karst Zones. Approximately 9,313 acres of Karst Zone 2 and 185,026 acres of Karst Zones 3 or 4 occur outside of a delineated KFR (Table 6).

Table 6 summarizes the distribution of Karst Zones and KFRs within the Plan Area.

Table 6. Distribution of Karst Zones and Karst Fauna Regions within the Plan Area

Karst Zone	Alamo Heights KFR (acres)	Culebra Anticline KFR (acres)	Government Canyon KFR (acres)	Helotes KFR (acres)	Stone Oak KFR (acres)	UTSA KFR (acres)	Area outside of KFRs (acres)	TOTAL (acres)	% of the Plan Area
Zone 1	246	3,857	9,141	1,174	18,814	10,240	0	**43,472**	2%
Zone 2	2,441	13,016	25,842	908	39,495	4,155	9,313	**95,170**	3%
Zone 3	<1	1	547	1,450	455	1,500	171,632	**175,585**	6%
Zone 4	-	-	<1	<1	N/A	<1	13,394	**13,394**	<1%
Zone 5	-	-	89	-	75	22	293,703	**293,889**	10%
TOTAL	**2,687**	**16,874**	**35,620**	**3,532**	**58,840**	**15,918**	**488,042**	**621,510**	**22%**

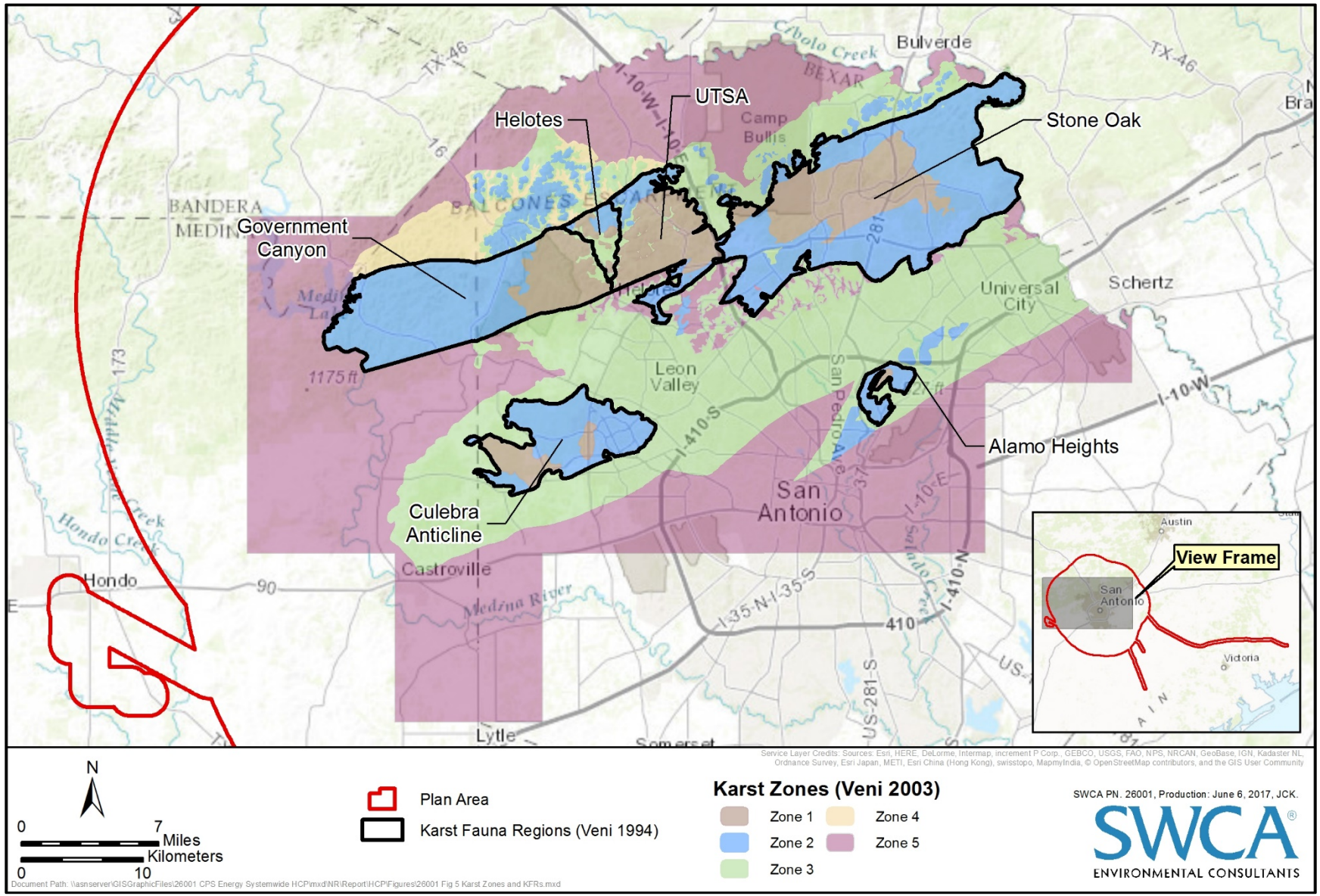

Figure 5. Karst Zones and Karst Fauna Regions within the Plan Area.

2.6 Water Resources

2.6.1 Surface Water

Many rivers and streams cross the Plan Area. The core of the Plan Area occurs within portions of three Texas river basins. The northern parts of the core Plan Area contribute to the Guadalupe River Basin, the central portions of the core Plan Area contribute to the San Antonio River Basin, and the southern portions of the core Plan Area contribute to the Nueces River Basin (Figure 6). The transmission line extensions of the Plan Area cross the Lavaca-Guadalupe River Basin, the Colorado-Lavaca River Basin, and several local watersheds that feed directly into the Gulf of Mexico (U.S. Geological Survey [USGS] 2015). Major rivers that cross the Plan Area include the Guadalupe River, San Antonio River, Medina River, and Lavaca River (see Figure 6).

Six large reservoirs occur within the Plan Area: Canyon Lake, Calaveras Lake, Victor Braunig Lake, Mitchell Lake, Lake McQueeney, and Medina Lake. Numerous ponds and impoundments of varying size also occur within the Plan Area. Surface water provides habitat for aquatic species, as well as plant and animal species found in littoral and riparian habitats.

2.6.2 Groundwater

The Plan Area extends over portions of four major Texas aquifers: Edwards (Balcones Fault Zone) Aquifer, Trinity Aquifer, Carrizo-Wilcox Aquifer, and Gulf Coast Aquifer (Texas Water Development Board [TWDB] 2006) (Table 7). The boundaries of these major aquifers overlap in places (Figure 7). A small portion of the Plan Area does not overlay any of the major Texas aquifers (see Figure 7 and Table 7). Several animal and plant species in Texas are aquifer dwelling or aquifer dependent with the potential to occur within subsurface aquifers or associated spring systems.

The Edwards (Balcones Fault Zone) Aquifer is a karst aquifer underlying much of the northern part of the Plan Area. The Edwards Aquifer includes three zones: Contributing Zone, Recharge Zone, and Artesian Zone. The Contributing Zone is the area where precipitation runoff flows overland into streams that flow into the Recharge Zone. The Recharge Zone has relatively porous Edwards Limestone exposed at the surface that allows surface water to percolate into the aquifer. Water collects in confined underground conduits within the aquifer in the Artesian Zone, where it discharges with pressure through natural springs or human-made wells (Hovorka et al. 1998). The Edwards Aquifer is highly permeable and water levels in the aquifer may change quickly in response to rainfall, drought, or pumping from wells (George et al. 2011). The Edwards Aquifer is home to several federally listed species and species petitioned for listing.

The Trinity Aquifer is composed of several smaller aquifers. These aquifers are composed of limestones, sands, clays, gravels, and conglomerates. The Trinity Aquifer extends over much of the northwestern portion of the Plan Area. The Edwards Aquifer overlies the Trinity Aquifer in the central portion of the Plan Area (TWDB 2006).

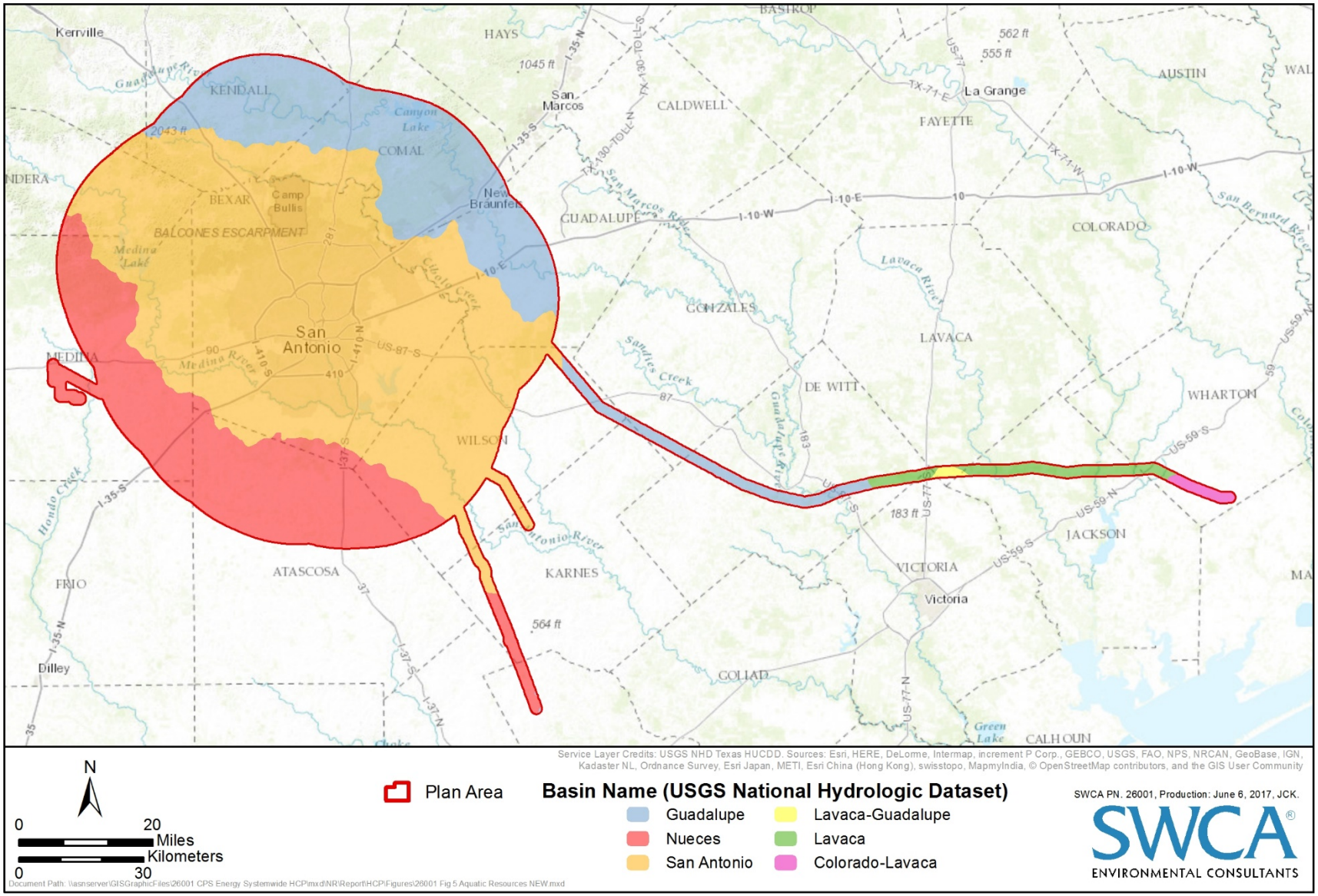

Figure 6. Surface Water Resources within the Plan Area.

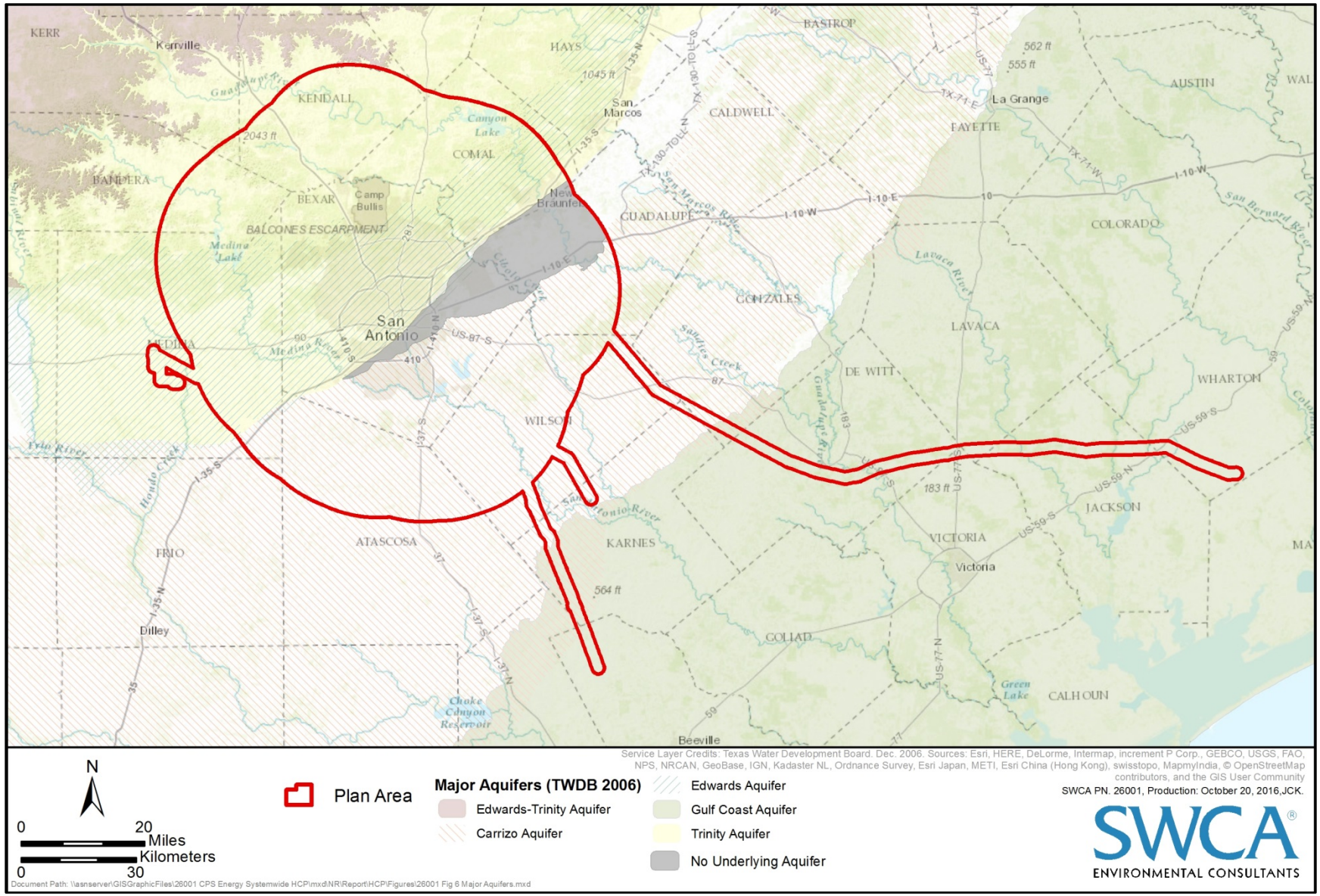

Figure 7. Groundwater Resources within the Plan Area.

Table 7. Major Texas Aquifers within the Plan Area

Major Aquifer*	Percent of Plan Area**
Edwards	28%
Trinity	53%
Carrizo-Wilcox	36%
Gulf Coast	5%
No Major Aquifer	1%

* From Texas Water Development Board (2006)
** Percentages sum to greater than 100% because of overlapping aquifers.

The Carrizo-Wilcox Aquifer extends across the southeastern portions of the Plan Area and consists of the Wilcox Group and overlying Carrizo Formation of the Claiborne Group geologic unit. This aquifer is primarily composed of sand interbedded with layers of gravel, silt, clay, and lignite (Ashworth 1983).

The Gulf Coast Aquifer is composed of several smaller aquifers, including the Jasper, Evangeline, and Chicot Aquifers, which contain discontinuous sand, silt, clay, and gravel beds. Water productivity generally declines across the Gulf Coast Aquifer towards the south, where the levels of total dissolved solids are much higher than in the northern portion (George et al. 2011).

3 CPS ENERGY ACTIVITIES AND COVERED ACTIVITIES

CPS Energy Activities involve the components of the CPS Energy Network of electric and natural gas infrastructure that are described in Chapter 3.1. CPS Energy Activities are described in Chapter 3.2, including estimates of the amount or extent of disturbances associated with CPS Energy Activities over the ITP Term. CPS Energy Activities may cause incidental take of a Covered Species when CPS Energy Activities overlap with the habitat of one or more of the Covered Species. CPS Energy Activities that are reasonably certain to cause incidental take of a Covered Species may become enrolled in the HCP and become Covered Activities. The decision to enroll specific instances of CPS Energy Activities in the HCP rests with CPS Energy, as described in Chapter 6.3. Only CPS Energy Activities that CPS Energy enrolls in the HCP become Covered Activities subject to the provisions of this HCP. Therefore, Covered Activities are a subset of the CPS Energy Activities described in the following subchapters.

3.1 CPS Energy Network

CPS Energy generates or produces, transmits, and ultimately distributes electricity and natural gas to customers within the Service Area. It is also responsible for installing lighting on public roadways. Collectively, this HCP refers to the infrastructure owned, operated, or maintained by CPS Energy as the *CPS Energy Network* (conceptual diagram included as Figure 8). The CPS Energy Network includes different facility types, including:

- electric transmission and distribution lines;
- natural gas transmission and distribution lines;
- electric or natural gas substations, switching stations, metering stations, and similar site-based facilities; and
- lighting on public roadways.

CPS Energy has the right, through land ownership, easements, access agreements, cooperative agreements with other agencies, or other means, to construct and maintain the CPS Energy Network within linear corridors (e.g., for transmission and distribution lines and public roadway lighting) or on specific tracts of land (e.g., for switching stations and substations). This HCP refers to all lands used for any portion of the CPS Energy Network as *Rights-of-Way* (*ROWs*). Throughout this HCP, ROWs currently controlled by CPS Energy are *Existing ROWs*. Those ROWs that CPS Energy does not currently control but expects to add to the CPS Energy Network over time, are *Future ROWs*.

3.1.1 Electrical Facilities

CPS Energy receives electricity from power plants, wind farms, solar arrays, and other generation facilities. CPS Energy's electric transmission lines convey the energy in bulk at either 138 kilovolts (kV) or 345 kV from generation facilities to the Service Area. As of 2015, the CPS Energy Network included approximately 1,500 miles of overhead electric transmission lines strung among 6,600 transmission structures that carry electricity to substations and switching stations. Substations use transformers to step the transmission line voltage down to 34.5 kV or 13.2 kV for transfer to smaller electric distribution lines. Switching stations serve as termination points for multiple transmission lines and can isolate faults on the system to protect the remaining equipment from damage. CPS Energy currently operates more than 100 electric substations and switching stations. After leaving substations, electricity travels across 34.5-kV or 13.2-kV distribution lines that route it to users. CPS Energy may install electric transmission and distribution lines aboveground on poles or towers (overhead lines) or in trenches below ground (underground lines). As of 2015, CPS Energy maintained approximately 13,151 miles of electric distribution lines, including 7,826 miles of overhead electric distribution lines and 5,325 miles of underground electric distribution lines.

3.1.2 Natural Gas Facilities

CPS Energy receives natural gas from production areas to the west and southeast of San Antonio and conveys that natural gas through gas transmission lines to its gas distribution network. Metering and pressure-regulating stations control the quantity and pressure of natural gas as it transfers from the transmission lines to the distribution network. Nearly all of CPS Energy's gas transmission and distribution lines are underground, but, rarely, gas lines are located aboveground. As of 2015, the CPS Energy Network included approximately 89 miles of gas transmission lines and approximately 5,337 miles of gas distribution lines. CPS Energy also operates and maintains at least 283 regulator and metering stations within the Service Area. Natural gas is not currently available to CPS Energy customers across the entire Service Area. Natural gas is available within Loop 410, within Loop 1604 between U.S. Highway (US) 90 West and Interstate Highway (IH) 35 North, and some additional areas outside of Loop 1604 along major developed corridors (e.g., IH 10 West and US 281 North).

3.1.3 Public Roadway Lighting

CPS Energy services that include installation of security lighting (i.e., All Night Security Lights [ANSL]), expressway lights, and commercial and residential street lighting.

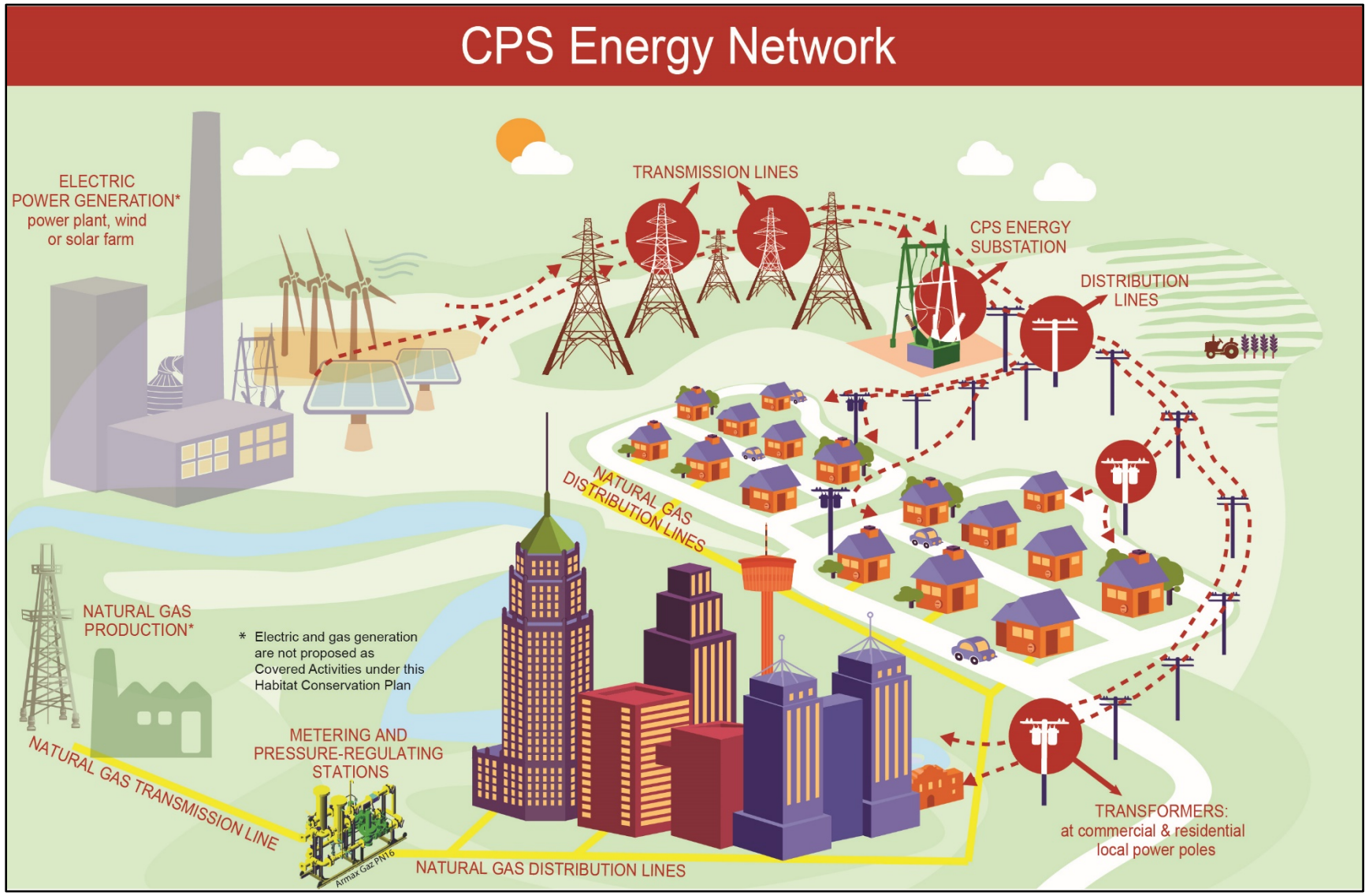

Figure 8. Conceptual Diagram of the CPS Energy Network.

3.2 CPS Energy Activities

For the purposes of this HCP, CPS Energy identifies the following classes of CPS Energy Activities: 1) New Construction; 2) Significant Upgrades; 3) Operations and Maintenance; and 4) Emergency Responses. These classes of CPS Energy Activities differ with respect to the involvement of previously modified or unmodified lands, and with respect to how CPS Energy plans for or implements the activity. For example, New Construction typically involves the construction of new structures, the acquisition of new ROWs, and disturbance of previously unmodified lands; whereas the other classes of CPS Energy Activities typically involve existing structures and ROWs and previously modified lands. Also, CPS Energy typically plans for New Construction and Significant Upgrades well in advance, whereas Operations and Maintenance and Emergency Responses may occur on a routine or an "as-needed" basis.

The following subchapters describe each class of CPS Energy Activities, including the types of equipment used to perform the CPS Energy Activities, and the duration and frequency of the CPS Energy Activities.

3.2.1 Typical Dimensions and Quantities

Typically, the individual components of the CPS Energy Network have surface and subsurface footprints as described in Table 8. For example, an electric transmission line is associated with a ROW of a certain width that may contain aboveground transmission towers, where each tower includes a base anchored into the subsurface with a concrete pad or footing. CPS Energy Activities related to electric transmission lines, therefore, may involve actions that disturb both the surface environment and the subsurface environment. Although some variation from the typical values outlined in Table 8 may be expected, this HCP uses these typical values to estimate the amount and extent of disturbances associated with the CPS Energy Activities over the ITP Term.

Table 8. Typical Dimensions and Quantities for CPS Energy Facilities

Facility Type	Typical Dimensions and Quantities	Values Used for Disturbance Estimates
Overhead Electric Transmission Lines		
Right-of-Way Width:	100 feet (138kV) or 150 feet (345kV); may be as wide as 400 feet in some circumstances	100 feet (138kV) 150 feet (345kV)
Tower or Pole Distribution:	6 to 8 per mile; 800 to 900 feet spacing (138kV) 4 to 5 per mile; 1,200 to 1,500 feet spacing (345kV)	7 per mile (138kV) 4.5 per mile (345kV)
Tower or Pole Pad Site:	8 to 15 feet in diameter (average of 12 feet in diameter); 20 to 60 feet deep	113 square feet 40 feet deep
Underground Electric Transmission Lines		
Right-of-Way Width:	16 to 50 feet	33 feet
Trenches:	2.5 feet wide; 4 feet to 5 feet deep	2.5 feet wide 4.5 feet deep
Overhead Electric Distribution Lines		
Right-of-Way Width:	16 to 28 feet	22 feet
Pole Distribution:	21 to 53 per mile – 100 to 250 feet spacing	30 per mile

Facility Type	Typical Dimensions and Quantities	Values Used for Disturbance Estimates
Pole Foundations:	4 square feet; 8 feet deep	4 square feet 8 feet deep
Underground Electric Distribution Lines		
Right-of-Way Width:	20 feet	20 feet
Trenches:	0.7 feet wide; 2 feet deep	0.7 feet wide 2 feet deep
Manhole Distribution:	6 to 10 per mile	8 per mile
Manhole Dimensions:	10 × 10 feet; 10 feet deep	100 square feet 10 feet deep
Electric Substations and Switching Stations		
Substations:	3 to 6 acres	6 acres
Switching Stations:	5 to 50 acres	30 acres
Trenching and Drilling:	Approximately 10% of area; 1 to 30 feet deep	0.6 acre (substation) 3 acres (switching) 10 feet deep
Gas Transmission and Distribution Lines		
Right-of-Way Width (Distribution):	10 to 50 feet wide	14 feet
Distribution Trench:	1.2 to 1.5 feet wide; 8 feet deep	1.3 feet wide 8 feet deep
Right-of-Way Width (Transmission)	50 to 100 feet wide	75 feet
Transmission Trench	4 feet wide; 5 to 7 feet deep	4 feet wide 6 feet deep
Gas Regulation and Metering Stations		
Station Size:	20 × 20 feet (400 square feet) to 300 × 300 feet (90,000 square feet)	0.6 acre
Station Trenching and Drilling:	Approximately 10% of station size; 1 to 30 feet deep	2,614 square feet 10 feet deep
Public Roadway Lighting		
Lighting Poles:	1,500 poles installed per year	
Pole Foundations:	1.5 feet diameter (2 square feet); 8 feet deep	15 square feet 8 feet deep
Access Roads*		
Substations and Switching Stations Right-of-Way:	25 feet wide × 500 feet long per facility; grading may cause subsurface disturbance	0.3 acre
Electric and Gas Transmission Right-of-Way:	25 feet wide × 100 feet long per mile of transmission line; grading may cause subsurface disturbance	0.1 acre

*For other activity types, access roads are included within the area of ROW disturbance.

Also relevant to this HCP is whether the surface or subsurface disturbances associated with CPS Energy Activities affect lands that were previously unmodified (i.e., construction of a new transmission line that crosses undeveloped woodlands or native pasture) or lands that were previously modified by

development, intensive agriculture, or other infrastructure facilities. It is possible for CPS Energy Activities to involve disturbances that affect both previously modified and previously unmodified lands (i.e., a new distribution line is partially co-located within an existing road ROW, but requires the acquisition of some lands on an adjacent, undeveloped property to complete the project).

For the purpose of estimating the amount and magnitude of disturbances associated with the CPS Energy Activities over the ITP Term, which is necessary to inform the request for a specific amount of incidental take, CPS Energy makes the following general assumptions based on historical construction trends and CPS Energy's assumptions for future activities:

- Existing ROWs have a surface environment that is 100% previously modified, since these areas already contain portions of the CPS Energy Network that CPS Energy regularly manages. All surface disturbances from CPS Energy Activities within Existing ROWs affect previously modified areas.
- Existing ROWs have a subsurface extent that is previously modified only within the limits of the subsurface footprint of the facility type; the remainder of the subsurface extent is considered previously unmodified. For example, an Existing ROW containing an underground gas distribution line has a previously modified subsurface area associated with the excavation and backfill for the gas distribution line, but the remainder of the subsurface area within the limits of the ROW is not previously modified. Therefore, O&M activities requiring access to the existing line would excavate previously modified subsurface areas. However, Significant Upgrades of such a line could require at least some excavation of previously unmodified subsurface areas.
- Future ROWs have a surface and subsurface extent that may or may not be previously modified by existing non-CPS Energy facilities and land uses. For example, Future ROWs may be co-located along Existing ROWs associated with other utility and/or infrastructure corridors (such as along roadways) that were not previously part of the CPS Energy Network. Alternatively, Future ROWs may cross previously undisturbed lands where the pre-activity condition is the natural landscape. Most often, Future ROWs will include some previously modified lands and some previously unmodified lands.

CPS Energy acknowledges that some CPS Energy Activities may involve amounts and forms of disturbance that differ from the planning assumptions listed above. CPS Energy will address the specific circumstances of individual projects or activities that become Covered Activities during implementation of the HCP, as described in Chapter 6.

The following subchapters provide estimates of the extent of disturbances associated with each type of CPS Energy Activity over the ITP Term. These estimates rely on CPS Energy's projections of the amount and distribution of each class of CPS Energy Activity that it expects over the ITP Term (i.e., surface vs. subsurface disturbance, and previously modified vs. previously unmodified ROWs), considering its current short- and long-term projections and previous experience. It is important to note that not all CPS Energy Activities will affect Covered Species or become Covered Activities.

3.2.2 New Construction

New Construction activities expand the CPS Energy Network as new facilities are constructed, and typically involve disturbances to the surface and subsurface of Future ROWs. New Construction activities may include, but are not limited to:

- **Site Preparation:** construction of access roads; installation of fencing and gates; use of vehicles, machinery, and equipment; stabilization of material yards and staging areas; vegetation removal or trimming; land surveying and staking; geotechnical investigations and soil borings; installation

of construction-phase stormwater protection measures; bank stabilization at stream crossings; temporary construction matting; surface grading and stabilization; stockpiling top soils or other salvaged materials

- **Access Road Construction:** grading, surfacing, installation of culvert crossing, vegetation clearing or trimming on or along new and pre-existing access roads
- **Underground Construction:** excavating for pole, tower, or building foundations; open-cut trenching to install lines, wiring, and conduits; excavating for bore pits or other underground equipment access points; drilling of bores or tunnels; installation of pipes, valves, and other structures; placement of sand or gravel pipe bedding and subgrade fill, filter fabrics, flowable fill, mortar, and/or grout
- **Aboveground Construction:** assembly and installation of aboveground structures (poles, towers, buildings, and similar); stringing conductors; maintenance of construction-phase stormwater protection measures; and application of water during construction to control dust
- **Post-Construction Activities:** restoration of disturbed areas to original or better conditions; replacement of top soil; seeding with native plants; replanting trees; pipeline cleaning and pressure/leak testing

New Construction activities require the presence of work crews and use of vehicles and heavy equipment. Completion of a typical New Construction project can require anywhere from a few hours to a few months. However, since much of the CPS Energy Network consists of linear facilities that may span many miles, New Construction activities often affect only small segments of a linear facility at any particular time as the work moves along the linear corridor. In this respect, many New Construction activities last no more than a few hours or days at any particular location, but could last up to several months in rare cases. Substation construction requires the longest continuous activity in one location, and can last several months.

Table 9 contains CPS Energy's estimate of the amount of disturbance associated with New Construction over the ITP Term. Table 9 also includes estimates of the distribution of these disturbances among surface and subsurface areas using the typical dimensions and quantities from Table 8, and within previously modified or unmodified lands using the general assumptions listed in Chapter 3.2.1. CPS Energy assumes that New Construction activities will occur mostly within Future ROWs, and in some cases, new transmission or distribution lines may be constructed adjacent to facilities within Existing ROWs. CPS Energy assumes that New Construction will predominantly occur within landscapes previously modified by non-CPS Energy activities, as it seeks to collocate new facilities along existing utility corridors (such as roadways) and/or existing development where practicable.

Table 9. Estimated Extent of Disturbances from New Construction Activities

Facility Type	Estimated Amount of New Construction	Estimated Surface Disturbance (acres)		Estimated Subsurface Disturbance (acres)	
		Previously Modified	*Previously Unmodified*	*Previously Modified*	*Previously Unmodified*
Electric Services					
Overhead Electric Transmission – 138 kV Lines	410 miles	2,484.8	2,484.8	0	7.4
Overhead Electric Transmission – 345 kV Lines	137 miles	1,245.5	1,245.5	0	1.6
Underground Electric Transmission Lines	20 miles	40.0	40.0	0	6.1
Access Roads to Electric Transmission Lines	3 miles	4.5	4.5	0	9
Overhead Electric Distribution Lines	4,861 miles	6,481.3	6,481.3	0	13.4
Underground Electric Distribution Lines and Manholes	49 miles	59.4	59.4	0	5.1
Electric Substations	60 stations	0	43.6	0	360
Electric Switching Stations	5 stations	0	18.2	0	150
Access Roads to Substations and Switching Stations	6 miles	0	18.7	0	18.7
Natural Gas Services					
Gas Distribution Lines	1,489 miles	1,263.4	1,263.4	0	234.6
Gas Transmission Lines	86 miles	390.9	390.9	0	41.7
Access Roads to Gas Transmission Lines (Outside of CPS Energy ROWs)	30 miles	0	90.4	0	90.4
Gas Regulatory or Metering Stations	135 stations	0	9.8	0	81
Public Roadway Lighting					
Lighting	22,500 poles	0.5	0.5	0	7.7
TOTAL over ITP Term		**11,970.3**	**12,151.0**	**0**	**1,026.7**

3.2.3 Significant Upgrades

Significant Upgrades involve the major reconstruction, replacement, or improvement of existing facilities within the CPS Energy Network. Significant Upgrades generally require the same level of effort as New Construction activities, but occur within ROWs where the surface environment has previously been modified; the subsurface environment, however, is not likely to have been previously modified. For example, replacement of an electric distribution pole is a Significant Upgrade that may require the excavation of a new hole within an Existing ROW with a previously modified surface environment, but for which the subsurface environment is previously unmodified.

CPS Energy Activities related to Significant Upgrades may include, but are not limited to, the same suite of on-the-ground activities as described for New Construction (see Chapter 3.2.1).

Similar to New Construction activities, Significant Upgrades commonly involve linear facilities that may span many miles, where active construction affects only small segments of the facility at any particular

time, as the activity moves along the corridor. In this respect, Significant Upgrades generally last no more than a few hours or days at any particular location. Significant Upgrades generally affect isolated portions of existing facilities. For example, CPS Energy may replace individual poles along an existing distribution line, and not replace poles that remain in good working condition.

Table 10 contains CPS Energy's estimate of the amount of disturbance associated with Significant Upgrades over the ITP Term. Table 10 also includes estimates of the distribution of these disturbances among surface and subsurface areas using the typical dimensions and quantities from Table 8, and within previously modified or unmodified lands using the general assumptions listed in Chapter 3.2.1. CPS Energy assumes that Significant Upgrades will occur only within Existing ROWs. Significant Upgrades pertain only to linear infrastructure; site-based facilities such as substations and switching stations will be maintained and upgraded within the existing footprint of the station and are therefore included as O&M for the purposes of this HCP.

Table 10. Estimated Extent of Disturbance from Significant Upgrades

Facility Type	Estimated Amount of Significant Upgrades	Estimated Surface Disturbance (acres)		Estimated Subsurface Disturbance (acres)	
		Previously Modified	***Previously Unmodified***	***Previously Modified***	***Previously Unmodified***
Electric Services					
Overhead Electric Transmission – 138 kV Lines	120 miles	1,454.5	0	0	2.2
Overhead Electric Transmission – 345 kV Lines	13 miles	236.4	0	0	0.2
Underground Electric Transmission Lines	0 miles	0	0	0	0
Access Roads to Electric Transmission Lines	0 miles	0	0	0	0
Overhead Electric Distribution Lines	3,089 miles	8,237.3	0	0	8.5
Underground Electric Distribution Lines and Manholes	31 miles	75.2	0	0	3.2
Electric Substations	0 stations	0	0	0	0
Electric Switching Stations	0 stations	0	0	0	0
Access Roads to Substations and Switching Stations	0 miles	0	0	0	0
Natural Gas Services					
Gas Distribution Lines	911 miles	1,545.9	0	0	143.6
Gas Transmission Lines	4 miles	36.4	0	0	1.9
Access Roads to Gas Transmission Lines (Outside of CPS Energy ROWs)	0 miles	0	0	0	0
Gas Regulatory or Metering Stations	0 stations	0	0	0	0
Public Roadway Lighting					
Lighting	22,500 poles	0.9	0	0	7.7
TOTAL over ITP Term		**11,586.6**	**0.0**	**0.0**	**167.3**

3.2.4 Operations and Maintenance

CPS Energy is responsible for the Operation and Maintenance (O&M) of the CPS Energy Network. O&M activities are essential functions for CPS Energy that guarantee the reliability of its public utility services. CPS Energy performs O&M activities on a routine and generally pre-planned schedule. O&M activities occur across the entire CPS Energy Network and any new facilities incorporated into the CPS Energy Network in the future. In general, O&M activities occur on a recurring basis.

CPS Energy Activities related to O&M of the CPS Energy Network may include, but are not limited to:

- **Vegetation Maintenance:** maintaining ROWs pursuant to National American Electric Reliability Corporation (NERC) national reliability standards[6] (e.g., tree trimming, mowing)
- **Access Road Maintenance:** re-surfacing, vegetation trimming on or along pre-existing access roads to maintain passable conditions
- **Equipment Maintenance:** routine replacement or repair of minor components of facilities, such as circuits, wiring, isolated portions of underground electrical lines within existing trenches, small segments of gas transmission or distribution lines within existing trenches, and substation improvements; replacement of old wiring between existing transmission and distribution poles
- **Use and Storage of Chemicals:** storage and use of electrical equipment with insulating mineral oil, breakers with sulfur hexafluoride, lead-acid batteries, and pesticides and herbicides for vegetation management
- **Facilities Management:** maintenance of fencing and lighting; stocking and use of equipment and materials associated with the general upkeep and operation of the CPS Energy Network

O&M activities require the occasional presence and activity of work crews, vehicles, and (in some cases) heavy equipment. Unlike New Construction and Significant Upgrades, O&M activities typically involve less intensive activity by humans and machinery but may involve a more consistent presence. The timing and duration of O&M activities varies greatly with the activity type. Some O&M activities, such as facility lighting and the operation of facilities (having on-site machines running), are continuous.

CPS Energy Activities related to O&M occur repeatedly on an "as needed" basis for all components of the CPS Energy Network to ensure that facilities operate as intended. Therefore, estimates of disturbance related to O&M activities are provided both in terms of average annual amounts and cumulative amounts over the ITP Term. However, it is important to note that all surface and subsurface disturbances associated with O&M activities involve previously modified lands (surface and subsurface). For example, managing vegetation within CPS Energy ROWs typically affects only surface areas originally modified during construction and repeatedly modified thereafter. Subsurface O&M activities might involve the replacement of an old or failing valve or circuit, where accessing the repair only requires the disturbance of previously excavated and backfilled soil.

To estimate the approximate area within which CPS Energy may implement O&M activities, CPS Energy estimated the total size of the CPS Energy Network and associated ROWs at the end of the ITP Term (Table 11).

[6] In the United States, NERC petitions the Federal Energy Regulatory Commission (FERC) for approval of standards. FERC standards are subject to change and are available on their website: http://www.ferc.gov/industries/electric/indus-act/reliability/standards.asp.

Table 11. Estimated Extent of the CPS Energy Network at 30 Years

Facility Type	Approximate Current Network	Projected Additions to Network During ITP Term (Table 9)	Typical CPS Energy ROW Width or Site Area	Total ROW Extent at 30 Years
Electric Transmission Lines (Overhead and Underground)	1,500 miles	567 miles	150 feet	37,582 acres
Electric Distribution Lines (Overhead and Underground)	13,151 miles	4,910 miles	22 feet	48,163 acres
Electric Substations and Switching Stations	100 stations	65 stations	30 acres	4,950 acres
Gas Distribution Lines	5,337 miles	1,489 miles	14 feet	11,584 acres
Gas Transmission Lines	89 miles	86 miles	75 feet	1,591 acres
Gas Regulatory or Metering Stations	283 stations	135 stations	0.6 acres	251 acres
Light Poles	22,500 poles	22500 poles	15 square feet	15 acres
TOTAL				**104,136 acres**

For the purposes of the HCP, CPS Energy generously estimates that O&M activities will occur across the equivalent of approximately 25% of the CPS Energy Network annually, based on the estimated size of the CPS Energy Network at the end of the ITP Term (Table 12). To estimate the amount of subsurface disturbance, CPS Energy assumes that the extent of subsurface O&M activities may be approximated by the ratio of surface to subsurface disturbance associated with new construction (see Table 12).

Table 12. Estimated Extent of Disturbance from O&M Activities

Facility Type	Total Network Extent at 30 Years (acres)	Estimated Annual Surface Disturbance of Previously Modified Lands (acres; 25% of Total Network)	Ratio of Surface to Subsurface Disturbance from Construction	Estimated Annual Subsurface Disturbance of Previously Modified Lands (acres)
Electric Transmission Lines (Overhead and Underground)	37,582	9,395.5	499 : 1	18.8
Electric Distribution Lines (Overhead and Underground)	48,163	12,040.8	711 : 1	16.9
Electric Substations and Switching Stations	4,950	1,237.5	10 : 1	123.8
Gas Distribution Lines	11,584	2,896.0	11 : 1	263.3
Gas Transmission Lines	1,591	397.8	3 : 1	132.6
Gas Regulatory or Metering Stations	251	62.8	10 : 1	6.3
Light Poles	15	3.8	1 : 1	3.8
TOTAL Annual Disturbance (25% of CPS Energy Network Each Year)		**26,034.2**	**46 : 1**	**565.5**
TOTAL Cumulative Disturbance over ITP Term		**781,026.0**		**16,965.0**

3.2.5 Emergency Responses

Given the nature of the CPS Energy Network, emergencies may arise that could have extremely detrimental and potentially life-threatening consequences. CPS Energy responds promptly to all emergencies and takes every action necessary to protect human health and safety and, when disrupted, quickly restore essential utility services (referred to herein as *Emergency Responses*). Emergency Responses, regardless of cause, may require the replacement of structures, reconductoring, vegetation clearing for new access routes or laydown/set-up areas, and similar activities. Therefore, Emergency Responses involve aspects of the three other classes of CPS Energy Activities.

However, depending on the nature and magnitude of the Emergency Response, standard practices associated with planned or routine CPS Energy Activities may not be practical or prudent for responding swiftly and effectively to an emergency. Where practicable, CPS Energy conducts Emergency Responses within Existing ROWs. However, in some instances, Emergency Responses may require actions outside of these areas.

CPS Energy retains final judgment on whether a given situation qualifies for an Emergency Response. The first priority of CPS Energy will be to safely resolve the emergency as soon as practicable. However, CPS Energy will notify the USFWS of the existence of Emergency Responses that become Covered Activities within 5 business days of the event, as described in Chapter 6.3.3.

The extent to which CPS Energy may need to engage in Emergency Responses is uncertain, but based on its operational history, such activities are infrequent and affect only a small portion of the CPS Energy Network. For the purposes of this HCP, CPS Energy assumes that Emergency Responses would involve surface disturbances to no more than 0.1% of the anticipated 104,136 acres of the CPS Energy Network by the end of the ITP Term (see Table 11), or approximately 104.1 acres. As with estimates of subsurface disturbance for O&M activities, CPS Energy estimates the amount of subsurface disturbance associated with Emergency Responses will occur in proportion to the ratio of surface to subsurface disturbance for New Construction—overall, a ratio of 46:1 (see Table 12). Given this assumption, CPS Energy estimates approximately 2.3 acres of subsurface disturbance will be associated with Emergency Response activities during the ITP Term.

Furthermore, CPS Energy assumes that the distribution of these surface and subsurface disturbances will mostly affect previously modified lands, but acknowledges that some disturbance of previously unmodified lands may occur. Therefore, CPS Energy assumes that 75% of the estimated 104.1 acres of surface disturbance and 2.3 acres of subsurface disturbance will affect previously modified lands (78.1 acres and 1.7 acres, respectively). CPS Energy assumes that the remaining 25% of disturbances from Emergency Response activities will affect previously unmodified lands (26 acres of surface disturbance and 0.6 acre of subsurface disturbance).

3.2.6 Summary of the Geographic Extent of CPS Energy Activities

In summary, CPS Energy anticipates conducting CPS Energy Activities within a CPS Energy Network that contains approximately 104,136 acres of ROW by the end of the ITP Term. Table 13 identifies the distribution of anticipated surface and subsurface disturbances involving previously modified and previously unmodified lands caused by the CPS Energy Activities over the ITP Term. Disturbances associated with O&M activities affect the same acres repeatedly over the ITP Term (assumed to occur at a frequency of once every 4 years); therefore, the totals for this class of CPS Energy Activities are limited to a single round of O&M activities across the entire estimated extent of the CPS Energy Network at the end of the ITP Term (i.e., 4 times the annual disturbance estimates).

Table 13. Summary of the Geographic Extent of CPS Energy Activities over the ITP Term

CPS Energy Activity	Estimated Surface Disturbance (acres)		Estimated Subsurface Disturbance (acres)	
	Previously Modified	***Previously Unmodified***	***Previously Modified***	***Previously Unmodified***
New Construction	11,970.3	12,151.0	0	1,026.7
Significant Upgrades	11,586.6	0	0	167.3
O&M*	104,136.8	0	2,262.0	0
Emergency Responses	78.1	26.0	1.7	0.6
TOTAL Disturbance Over ITP Term	**127,771.8**	**12,177.0**	**2,263.7**	**1,194.6**

* Total disturbance estimates for O&M activities are limited to 4 times the annual estimate (i.e., a single round of O&M activities across the estimated acreage of the CPS Energy Network at the end of the ITP Term).

3.2.7 Estimated Geographic Distribution of CPS Energy Activities

The Plan Area includes the highly urbanized downtown area of San Antonio, large expanses of suburban development, and largely undeveloped agricultural or natural areas. The services that CPS Energy provides vary in terms of type and extent with the density of its customer base. Considering the distribution of key employment centers and trends in new housing construction in and around the City of San Antonio, Dugan (2014) projects that future growth in the San Antonio area generally occurs as follows:

- 22% of new housing construction will occur within Loop 410 within San Antonio's urban core;
- 20% of new housing construction will occur south of the urban core, outside of Loop 410 and south of IH 10 to the east and Farm-to-Market Road (FM) 1957 and FM 2676 to the west;
- 23% of new housing construction will occur just north of the urban core between Loop 410 and Loop 1604, and to the north of IH 10 and FM 1957/FM 2676; and
- 35% of new housing construction will occur further north of the urban core, outside of Loop 1604 and to the north of IH 10 and FM 1957/FM 2676.

Based on the projected distribution of new housing construction by Dugan (2014), CPS Energy delineated four Planning Sectors to help assess the distribution of its CPS Energy Activities over the ITP Term (Figure 9). Table 14 lists the acreage of each Planning Sector and its percentage representation of the Plan Area.

Table 14. Planning Sectors

Planning Sector	Acres	% of Plan Area
Urban Core	115,517	4%
North-Central	116,274	4%
Northern	1,229,940	43%
Southern	1,409,511	49%
TOTAL Plan Area	**2,871,243**	

CPS Energy assumes for the purposes of this HCP that the CPS Energy Activities will occur across the four Planning Sectors in rough proportion to the distribution of new housing construction projected by Dugan (2014). However, the nature of some CPS Energy Activities warrants special consideration in how the activity is distributed across the Plan Area. Principally, CPS Energy believes that more New Construction activities will occur in areas that are currently less developed (i.e., primarily those lands within the Northern and Southern Planning Sectors) and will generally be rare in the Urban Core or North-Central Planning Sectors. For New Construction, CPS Energy estimates that disturbances will be distributed between the Northern and Southern Planning Sectors as follows: 64% within the Northern Planning Sector and 36% within the Southern Planning Sector. Table 15 provides CPS Energy's assumed geographic distributions of disturbances for each of the CPS Energy Activities, as a percentage of the total Plan Area. Table 16 applies these distributions to the total estimates of surface and subsurface disturbances over the ITP Term (see Table 13).

Table 15. Assumed Geographic Percent Distribution of Disturbances from CPS Energy Activities

CPS Energy Activity	Urban Core	North-Central	Northern	Southern
New Construction	0%	0%	64%	36%
Significant Upgrades	22%	23%	35%	20%
O&M	22%	23%	35%	20%
Emergency Responses	22%	23%	35%	20%

Table 16. CPS Energy Activities Disturbances by Planning Sector

Planning Sector	Estimated Surface Disturbance (acres)		Estimated Subsurface Disturbance (acres)	
	Previously Modified	Previously Unmodified	Previously Modified	Previously Unmodified
Urban Core	25,476.3	5.7	498.0	36.9
North-Central	26,634.3	6.0	520.7	38.6
Northern	48,191.5	7,785.7	792.3	715.9
Southern	27,469.6	4,379.6	452.7	403.2
TOTAL Plan Area	**127,771.8**	**12,177.0**	**2,263.7**	**1,194.6**

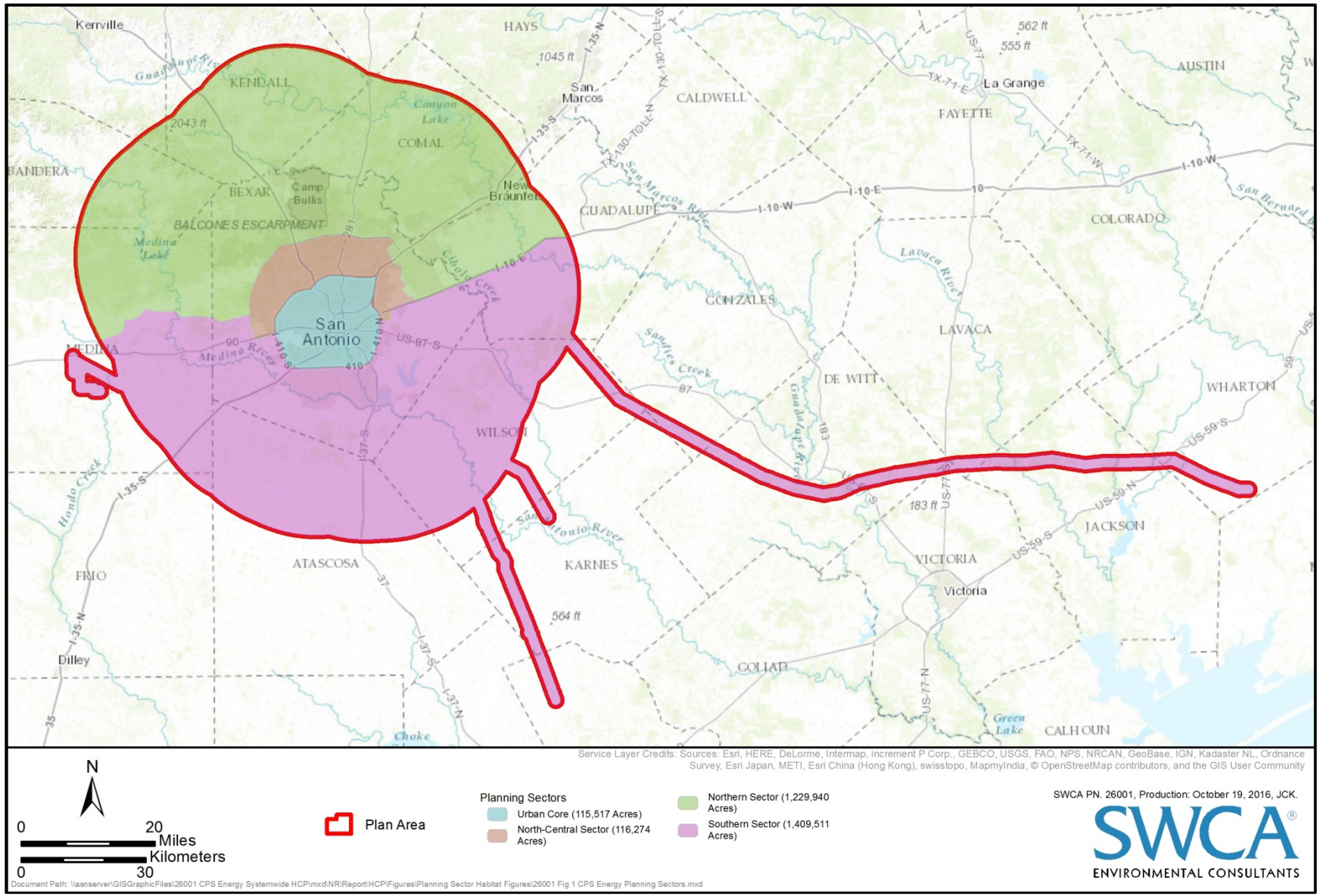

Figure 9. Planning Sectors of the CPS Energy Plan Area.

4 EVALUATION SPECIES AND COVERED SPECIES

CPS Energy evaluated a list of 77 species of potential conservation concern, each having a range that includes some or all of the Plan Area (Evaluation Species). CPS Energy assessed the likelihood of the CPS Energy Activities causing incidental take of each Evaluation Species. On the basis of this assessment, CPS Energy identified nine endangered species, including one bird and eight karst invertebrates, for which it seeks incidental take authorization (Covered Species). All of the Covered Species are currently listed as endangered under the ESA.

4.1 Evaluation Species

4.1.1 Species List

CPS Energy identified the Evaluation Species (Appendix D) from a review of the following information sources:

- Current list of federally threatened and endangered species (USFWS 2018b)
- Current list of species proposed for federal listing (USFWS 2018b)
- Current list of species with active petitions for listing consideration (USFWS 2018b)
- Current list of federal candidate species (i.e., those with "warranted, but precluded" findings) (USFWS 2018b)
- Species included on the USFWS's 7-year Work Plan for action on high priority listing and Critical Habitat decisions (USFWS 2016a)
- Species currently listed as threatened or endangered by the State of Texas (31 TAC §65.175 and §65.176)

4.1.2 Assessment Criteria

The Evaluation Species are: 1) currently listed as federally threatened or endangered, 2) being considered for federal listing, 3) listed by the State of Texas, or 4) a combination thereof. For each Evaluation Species, CPS Energy reviewed its current listing status, its occurrence within the Plan Area, and the likelihood that it would be affected by the CPS Energy Activities to a degree that would rise to the level of take (see Appendix D). Specific considerations for each review criteria included:

- **Federal Listing Status:** *Is the species currently listed under the ESA, or has it been proposed for future listing, identified as a candidate for future listing, or petitioned for listing?*
- **Occurrence within the Plan Area:** *Is the species reasonably expected to occur within the Plan Area?* Some of the Evaluation Species were not included as Covered Species despite county-level information indicating they may occur within the Plan Area. In these cases, the species are either locally extirpated or occupy a habitat niche not represented in the portions of the relevant county or counties included in the Plan Area. For example, a species occurring exclusively in western Bandera County would not be affected either directly or indirectly by the CPS Energy Activities to a degree that is likely to rise to the level of take, since the Plan Area only includes eastern Bandera County.
- **Affected by the CPS Energy Activities:** *For Evaluation Species that may occur within the Plan Area, is the species likely to be affected either directly or indirectly by the CPS Energy Activities*

to a degree that is likely to rise to the level of take? CPS Energy elected not to cover some Evaluation Species despite their occurrence in the Plan Area, because take is not reasonably certain to occur.

- **Prohibitions on Incidental Take:** *Is the species protected by the ESA from effects caused by the Covered Activities?* Species not listed as threatened or endangered under the ESA are not subject to the prohibitions on take specified by the ESA and related USFWS regulations. Incidental take authorization for species that are not federally listed is not necessary unless an ITP applicant desires regulatory certainty in the event that the species becomes federally listed in the future. Also, the ESA does not prohibit "take" of listed plant species. Rather, with respect to listed plants, Section 9(a)(2) of the ESA prohibits, among other things: removing and reducing to possession any such species from areas under federal jurisdiction; maliciously damaging or destroying any such species on any such area; or removing, cutting, digging up, damaging, or destroying any such species from any other area in knowing violation of state law or in the course of any violation of state criminal trespass law (16 USC §1538[a]).

4.1.3 Findings and Rationale for No Coverage

Appendix D provides CPS Energy's findings and rationale whether to add an Evaluation Species in the list of Covered Species.

Species not included in the list of Covered Species are not likely to be taken by CPS Energy Activities because: 1) they occur in habitats or locations where CPS Energy Activities are unlikely to occur; 2) take may be avoided with the application of practicable, voluntary conservation measures; and/or 3) they are not federally listed and federal listing is not anticipated in the immediate future. General rationale for not including certain categories of Evaluation Species is provided below.

- **Edwards Aquifer Species:** Landscape changes over the Edwards Aquifer and its contributing zone may affect seven federally listed aquifer-dependent species. Three of these species are included in the Evaluation Species because they are known to occur in Comal County: the fountain darter (*Etheostoma fonticola*), the Comal Springs dryopid beetle (*Stygoparnus comalensis*), and the Peck's Cave amphipod (*Stygobromus pecki*). Four other Edwards Aquifer-dependent species (the San Marcos salamander [*Eurycea nana*], the San Marcos gambusia [*Gambusia georgei*], the Texas blind salamander [*Eurycea rathbuni*], and Texas wildrice [*Zizania texana*]) are only known to occur in the San Marcos spring system in Hays County, Texas. CPS Energy will not conduct CPS Energy Activities within the cities of San Marcos or New Braunfels, where spring outlets known to contain these species occur. The majority of the CPS Energy Activities are linear; therefore, CPS Energy does not expect the CPS Energy Activities to change the recharge potential of the Edwards Aquifer or degrade local water quality. The Plan Area is also generally downstream of the known surface aquatic habitat for the Edwards Aquifer species (i.e., the Comal and San Marcos Rivers), further reducing the likelihood of impacts from changes to surface water conditions reaching these species. Similarly, as the CPS Energy Activities do not include in-stream work, it is unlikely that any of the CPS Energy Activities conducted some distance from waterways would affect these species.
- **Deep Aquifer Species:** Several fully aquatic species (such as blind salamanders and blindcats, among others) utilize the deep passages of the Edwards Aquifer and are largely disconnected from activities that occur on the surface. The CPS Energy Activities do not involve a substantial amount of deep subsurface excavation, extensive additions of impervious cover to the surface, or require withdrawal of groundwater. Therefore, the deep aquifer species are unlikely to be exposed to the effects of the CPS Energy Activities to an extent that is reasonably certain to cause take.

- **Marine Species:** CPS Energy is not expected to conduct CPS Energy Activities in marine habitats. Therefore, marine species (including sea turtles and the West Indian manatee [*Trichechus manatus*], among others) are not likely to be exposed to the CPS Energy Activities.
- **Freshwater Surface Species:** CPS Energy can, in most cases, plan CPS Energy Activities to avoid direct modification of freshwater surface habitats, such as rivers, streams, lakes, ponds, and wetlands. Fully aquatic species (such as fish, mollusks, and aquatic insects) and marshland species are unlikely to be directly affected by the CPS Energy Activities. This HCP includes minimization measures that minimizes the risk of Indirect Effects to aquatic habitats (i.e., erosion and sedimentation control measures; see Chapter 6.4). CPS Energy does not anticipate causing incidental take of aquatic species.
- **Remote and/or Extremely Range-restricted Species:** Some species (such as Attwater's greater prairie-chicken [*Tympanuchus cupido attwateri*]) have ranges or distributions that are very small, located in remote or extremely rugged parts of Texas, and/or limited to protected lands like national wildlife refuges or state parks. In such cases, the species are unlikely to be exposed to the CPS Energy Activities.
- **Extinct or Extirpated from Texas:** Species that are thought to be extinct or extirpated from Texas (such as the Eskimo curlew [*Numenius borealis*], red wolf [*Canis rufus*], gray wolf [*Canis lupus*], Louisiana black bear [*Ursus americanus luteolus*], and smalltooth sawfish [*Pristis pectinata*], among others) are not likely to be exposed to the CPS Energy Activities.
- **Federal Listing Not Anticipated:** Most Evaluation Species are not federally listed and are not likely to become considered for federal listing in the immediate future (i.e., the next 5 to 10 years). Given the uncertainty regarding future listing status and the often limited body of available science with which to **evaluate** impacts, estimate take, and propose conservation measures, CPS Energy has decided to not include unlisted Evaluation Species on the list of Covered Species for the HCP. Instead, the HCP includes a Changed Circumstance that addresses new listings (see Chapter 9.1).

4.2 Covered Species

Based on the review of Evaluation Species in the preceding section, CPS Energy requests incidental take authorization for nine species (the Covered Species) (Table 17). The Covered Species includes the golden-cheeked warbler (GCWA) and eight karst invertebrates (together, the Covered Karst Invertebrates). Each Covered Species is federally protected by the ESA, occurs within the Plan Area, and may be incidentally taken by the CPS Energy Activities.

Table 17. Covered Species

Common Name	Scientific Name	Federal Listing Status
COVERED BIRD SPECIES		
Golden-cheeked warbler	*Setophaga chrysoparia*	Endangered
COVERED KARST INVERTEBRATES		
Madla's Cave meshweaver	*Cicurina madla*	Endangered
Robber Baron Cave meshweaver	*Cicurina baronia*	Endangered
Government Canyon Bat Cave meshweaver	*Cicurina vespera*	Endangered

Common Name	Scientific Name	Federal Listing Status
A ground beetle	*Rhadine exilis*	Endangered
A ground beetle	*Rhadine infernalis*	Endangered
Government Canyon Bat Cave spider	*Neoleptoneta microps*	Endangered
Cokendolpher Cave harvestman	*Texella cokendolpheri*	Endangered
Helotes mold beetle	*Batrisodes venyivi*	Endangered

5 EFFECTS, TAKE ESTIMATES, AND IMPACTS

5.1 Analysis Approach

CPS Energy approaches the estimation of incidental take from Covered Activities and the assessment of the impacts of such incidental take on each Covered Species by:

1. describing the effects of the Covered Activities on individuals of the Covered Species;

2. estimating the amount of incidental take for each Covered Species that is reasonably certain to occur because of the Covered Activities, using a Habitat Surrogate to quantify the amount of incidental take; and

3. assessing the impact of estimated incidental take on the status of each Covered Species based on the proportion of potential habitat for that Covered Species that may be affected.

This three-part analysis establishes the amount of incidental take for each Covered Species that CPS Energy requests from the USFWS and provides the biological basis for the level of conservation that minimizes and mitigates the impacts of the taking to the maximum extent practicable. CPS Energy applies this approach to the GCWA (Chapter 5.2) and the Covered Karst Invertebrates (Chapter 5.3).

5.1.1 Direct and Indirect Effects

The Covered Activities may have Direct or Indirect Effects, or both, on individuals of the Covered Species. The effects of the Covered Activities will vary with respect to the type, location, land use context, timing, and duration of the Covered Activities and with respect to the distribution, presence, habitat, and behavior of each Covered Species. CPS Energy anticipates that its Covered Activities will take some individuals of each of the Covered Species by killing, wounding, or harming—or a combination thereof—over the ITP Term. These potential effects are further described in Chapters 5.2.3 and 5.3.3. CPS Energy does not anticipate that its Covered Activities will take Covered Species by any other form of take (i.e., harass, pursue, hunt, shoot, trap, capture, or collect).[7]

[7] To implement the conservation measures described in Chapter 6 of this HCP, CPS Energy may need to perform project-specific studies to document the presence or absence of a Covered Species at a project site, monitor populations of a Covered Species within a preserve, or conduct other beneficial conservation actions that could take a Covered Species (e.g., harass, pursue, capture, collect). However, CPS Energy will rely on the take authorizations of ESA Section 10(a)(1)(A) permits for these beneficial activities. Section 10(a)(1)(A) permits are held by biologists qualified to work with the Covered Species and authorize take that is associated with scientific research on a listed species or to aid in the recovery of a listed species. Most Section

5.1.2 Estimating Take

5.1.2.1 HABITAT MODIFICATION AS A SURROGATE METRIC FOR TAKE

HCPs ideally quantify incidental take in terms of the number of individuals of a listed species taken by a proposed activity. The USFWS's "Surrogate Rule" (50 CFR §402.14) allows (at least in the context of an ESA Section 7 consultation) the use of surrogate measures for quantifying the amount and extent of incidental take in cases where the incidental take statement or biological opinion:

1. describes the causal link between the surrogate and take of the listed species;

2. explains why it is not practical to express the amount or extent of anticipated take or to monitor take-related impacts in terms of individuals of the listed species; and

3. sets a clear standard for determining when the level of anticipated take has been exceeded.

For this HCP, CPS Energy proposes to measure incidental take in terms of the acres of potential habitat for each Covered Species that is directly or indirectly modified by the Covered Activities (Habitat Surrogate). As described in the Chapters 5.2.4.1 and 5.3.4.1, use of the Habitat Surrogate for measuring incidental take of the Covered Species meets the three conditions established in the USFWS surrogate rule. The Habitat Surrogate provides a clear and consistent method for tracking the amount and extent of incidental take arising from the Direct and Indirect effects of the Covered Activities on the Covered Species. The Habitat Surrogate is not a representation of incidental take itself, but merely a scientific and useful method for accounting for take that is reasonably certain to occur. There is significant USFWS precedent for the Habitat Surrogates used herein.

CPS Energy can link each of the potential effects of the Covered Activities, and any resulting incidental take, to aspects of the Covered Activities that directly or indirectly modify habitat used by a Covered Species. Some effects of the Covered Activities are limited to habitats within specific areas of physical activity, such as the footprints of surface or subsurface disturbances associated with the Covered Activities (Direct Habitat Modification). See Chapter 3.2.1 for a description of the typical disturbance footprints of the CPS Energy Activities. Other effects may extend beyond these disturbance footprints (Indirect Habitat Modification). In some cases, Indirect Habitat Modification can extend beyond the limits of CPS Energy ROWs. For example, habitat removal is generally limited to the disturbance footprints of the Covered Activities, whereas noise and activity disruptions may affect Covered Species in habitats occurring adjacent to ROWs.

5.1.2.2 CONCEPTUAL MODEL FOR ESTIMATING INCIDENTAL TAKE LIMITS

Since CPS Energy does not know the precise locations of the Covered Activities at this time and this HCP addresses activities that may occur over a 30-year period, CPS Energy determined the total amount of requested incidental take authorization over the ITP Term based on the following assumptions:

1. **Estimated Area of Surface and Subsurface Disturbance:** CPS Energy estimated the extent of surface and subsurface disturbances expected from the CPS Energy Activities to provide an overall estimate of the extent of CPS Energy Activities within the Plan Area over the ITP Term (Chapter 3.3).

10(a)(1)(A) permits require that permittees follow USFWS-approved protocols for surveys and other beneficial conservation actions and report results of these activities to the USFWS.

2. **Geographic Distribution of the CPS Energy Activities and Covered Species Habitats:** CPS Energy approximated the geographic distribution of its CPS Energy Activities across the Planning Sectors to describe the anticipated distribution of CPS Energy Activities within the Plan Area (Chapter 3.2.7).

3. **Proportional Overlap of CPS Energy Activities and Covered Species Habitats:** CPS Energy estimated the proportion of CPS Energy Activities that might overlap with potential habitats for the Covered Species (Chapters 5.2 and 5.3). This overlap approximates the extent of Covered Activities over the ITP Term.

4. **Geographic Extent of Take-causing Effects of Covered Activities on Covered Species:** Applying the Habitat Surrogate, CPS Energy estimated the typical footprint of the Direct and Indirect Habitat Modifications of the Covered Activities that are likely to rise to the level of incidental take for a Covered Species.

5. **Considerations for Alternate Means of ESA Compliance:** CPS Energy has committed to use the Southern Edwards Plateau HCP to obtain incidental take authorization for listed karst invertebrates when enrollment in that plan is available. With respect to the Covered Karst Invertebrates, CPS Energy expects that most enrollments in this HCP will pertain to CPS Energy Activities that occur within Critical Habitat Units, within 750 feet of an Occupied Karst Feature, or within the Alamo Heights Karst Fauna Region.

These assumptions are the components of CPS Energy's conceptual model for estimating incidental take of the Covered Species arising from the Covered Activities over the ITP Term, and the basis for its overall take request to the USFWS. This conceptual model provides a rational basis for estimating the amount of incidental take for each Covered Species that CPS Energy may need over the ITP Term. The incidental take estimate for each Covered Species produced by the conceptual model is not, however, a statement that the Covered Activities will actually cause that amount of incidental take. Rather, CPS Energy will determine the actual amount of incidental take caused by the Covered Activities as part of the operating Conservation Program of this HCP (see Chapter 6). CPS Energy will debit actual incidental take from its overall allocation of incidental take authorization, with the overall allocation for each Covered Species based on the output of the conceptual model. If CPS Energy uses all its allocated incidental take authorization for a particular Covered Species before the end of the ITP Term, it may avoid future incidental take of that Covered Species, use other means for obtaining incidental take authorization, or request additional incidental take authorization from the USFWS through the amendment process described in Chapter 8.5. In cases where CPS Energy has not fully used the incidental take allocation for a Covered Species by the end of the ITP Term, CPS Energy will not be obligated to minimize or mitigate the impacts of authorized, but unutilized incidental take.

CPS Energy provides species-specific estimates of incidental take in Chapters 5.2.4.2 and 5.3.4.2; summarized in Chapter 5.4.

5.1.3 Impact of the Taking

For each Covered Species, CPS Energy describes the impact of its requested maximum potential incidental take for each Covered Species in terms of the proportion of potential habitat that is associated with the requested take. CPS Energy notes that not all incidental take equates to complete habitat loss or the death of an individual of a Covered Species—ensuring that this assessment, which treats habitat degradation and sub-lethal effects to individuals the same as habitat loss or death, is conservative.

CPS Energy notes that a more precise assessment of impact of its requested incidental take on the status of the Covered Species is not possible at this time given the programmatic nature of this HCP. However, CPS Energy will prepare more precise assessments of incidental take for Covered Activities as it implements the Conservation Program of this HCP (see Chapter 6). As is apparent in this HCP, CPS Energy is avoiding incidental take that would jeopardize the continued existence of a listed species or that would destroy or adversely modify Critical Habitat. For example, CPS Energy commits to avoid performing, to the extent possible, Covered Activities within 50 feet of a karst feature known to be occupied by one or more of the Covered Karst Invertebrates and to coordinate with the USFWS to identify and implement other practicable minimization measures within a certain distance of such features (see Chapter 6.4).

5.2 Golden-Cheeked Warbler

5.2.1 Biology, Life History, and Habitat

The GCWA is a migratory songbird that uses relatively mature and closed-canopy, juniper-oak woodlands in central Texas as breeding habitat during the spring and early summer months. The USFWS listed the GCWA as federally endangered on May 4, 1990, citing habitat loss and fragmentation as the primary threats to the species (USFWS 1992). The USFWS has not designated Critical Habitat for the GCWA.

Generally, the GCWA uses old growth or mature regrowth juniper-oak woodlands within the Edwards Plateau, Lampasas Cut-Plain, and Llano Uplift regions of central Texas (Pulich 1976; USFWS 1992; Wahl et al. 1990). Regrowth woodlands suitable for GCWAs typically require 20 to 50 years to mature under favorable conditions, depending partially on soil condition and the retention of oaks after clearing (Groce et al. 2010; Ladd and Gass 1999; USFWS 1992). GCWAs typically occur in areas of steep slopes, canyon heads, draws, and adjacent ridgetops (Pulich 1976). However, the species is also known to utilize flat, upland terrain, and Ladd and Gass (1999) note that "habitat is not restricted to or excluded from any particular landscape position, but may develop wherever suitable conditions and land-use practices exist for growth of mature juniper oak woodlands, though varying in habitat quality."

Woodlands composed of Ashe juniper and oak trees represent typical GCWA habitat. Campbell (2003) reports that the range of juniper representation in suitable GCWA habitat is between 10% and 90% of the total number of trees. Campbell (2003) indicates that canopy closure in GCWA habitat usually ranges from 50% to 100%, but can be as low as 35%, with a tree canopy that is usually at least 20 feet tall. Ladd and Gass (1999) state that prime GCWA habitat occurs in patches of at least 250 acres, but GCWAs also utilize smaller habitat patches (Groce et al. 2010; USFWS 1992). Arnold et al. (1996) reports that GCWAs have been observed consistently occupying and successfully reproducing in patches of at least 57 acres. Similarly, Butcher (2008) found evidence to suggest that the minimum patch size needed for GCWA reproduction was between approximately 37 and 50 acres. However, larger patches are more likely to result in higher probabilities of occupancy and better pairing and reproductive success than smaller patches (Coldren 1998; DeBoer and Diamond 2006; Morrison et al. 2010).

Male GCWAs are territorial and often occupy the same territory for multiple breeding seasons (Campbell 2003). Estimates of typical GCWA territory size range from 4 to 10 acres (Ladd and Gass 1999), but territory sizes of between 1 acre and 57 acres have been reported (Groce et al. 2010). Campbell (2003) states that GCWAs forage and nest in areas of habitat encompassing 5 to 20 acres per pair. Territory size may relate to habitat quality, such that large territories may be an indicator of poor habitat quality (most likely due to reduced food availability and foraging opportunities). Coldren (1998) found that territory size relates inversely to reproductive success.

SWCA Environmental Consultants (SWCA) reports that for 20 protected properties in Comal, Bexar, Medina, Blanco, and Kendall Counties, the average density of the known GCWA population was approximately 1.1 pairs per 100 acres of suitable habitat (SWCA 2012). Estimates of GCWA territory density from other properties in the Plan Area included 2.9 territories per 100 acres (Loomis Partners 2010), 6.9 territories per 100 acres (Loomis Austin 2008), and 10.2 singing males (analogous to territories) per 100 acres (Cooksey and Edwards 2008). The mean of these density estimates is 5.3 territories per 100 acres.

Most GCWAs arrive on their Texas breeding grounds in the first half of March, with the earliest males arriving in late February, at least in some years (Lockwood and Freeman 2014; Peak and Thompson 2014). Females arrive a few days to a week later than the males (USFWS 1992). Nest building by GCWAs begins in late March or early April. Most GCWAs nest once per season, unless the initial nesting attempt fails (Pulich 1976), although at least a small percentage of pairs will double-brood (City of Austin et al. 2012). Some GCWAs may make up to five nesting attempts (Peak and Thompson 2014). Most successful GCWA nests are fledging young in early May. If initial nesting attempts are unsuccessful, GCWAs could be laying eggs later in April, or even in May or June. Peak and Thompson (2014) reported June 22 as latest date of completion of nesting. Fledged young quickly become mobile and attempt to forage within about 8 days after fledging and are able to forage by hovering after about 2 weeks of fledging (Ladd and Gass 1999). Independence by the young generally occurs 28 to 45 days after fledging (Pulich 1976).

Golden-cheeked warblers are early fall migrants, with some juveniles migrating south shortly after gaining independence (Pulich 1976). The majority of the GCWA population has left Texas by the end of July (Groce et al. 2010; Ladd and Gass 1999). The latest date of a GCWA sighting in the Texas breeding range is August 20 (Groce et al. 2010, citing to data by the City of Austin in 2009).

For the purposes of this HCP, CPS Energy defines the GCWA Breeding Season as March 1 through July 31 (GCWA Breeding Season) (USFWS 2013b).

5.2.2 Habitat Availability and Population within the Plan Area

Morrison et al. (2010) identified approximately 4,148,138 acres of potential GCWA habitat across the range of the species. The researchers then performed field surveys to determine levels of GCWA occupancy in the mapped potential habitat. Morrison et al. (2010) found that rates of GCWA occupancy increased as patch size increased, and that density of GCWA occupation generally increased across the breeding range from north to south. Morrison et al. (2010) estimated that approximately 2,778,219 acres of potential GCWA habitat has a probability of species occupancy of at least 50%. Building on the work of Magness et al. (2006) that found a relationship between the probability of GCWA occupancy and the amount of woodland present in the broader landscape, Mathewson et al. (2012) modeled the relationship between patch-specific density of males and woodland patch characteristics (size and landscape composition) and predicted patch occupancy. Based on their modeling and using a Monte Carlo simulation, Mathewson et al. (2012) published a range-wide male GCWA population estimate of 263,339.

Within the Plan Area, the Morrison et al. (2010) GCWA habitat model identifies approximately 353,735 acres of potential GCWA habitat having a probability of occupancy of at least 50%. This potential habitat for the GCWA covers approximately 29% of the Northern Planning Sector and does not occur in any other Planning Sector (Figure 10).

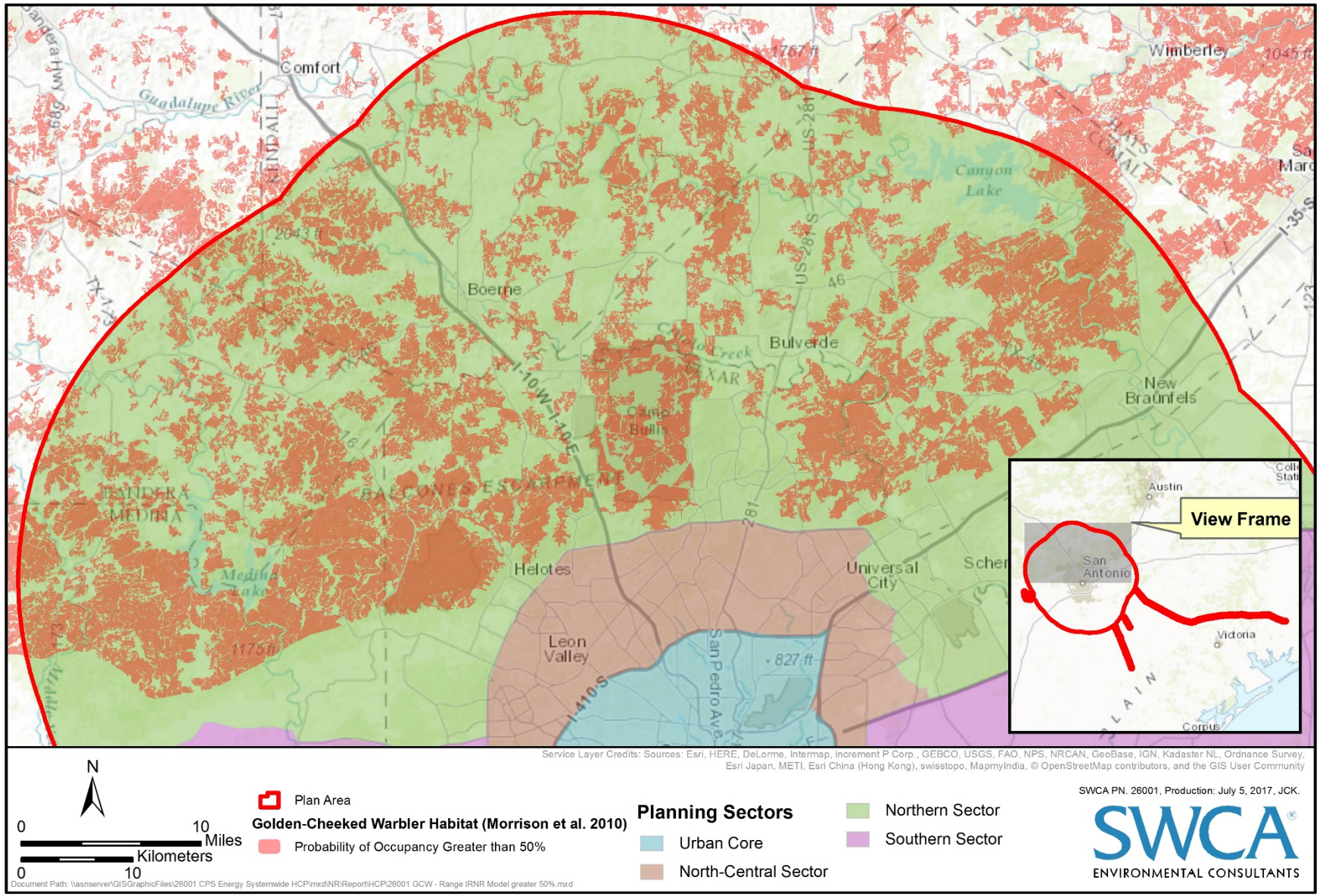

Figure 10. GCWA Habitat Model Probability of Occupancy greater than 50%.

A published population estimate for the Plan Area is not available at this time. However, the Southern Edwards Plateau HCP estimated the size of the GCWA population in its seven-county planning area by applying a range of GCWA territory densities (2.0 to 4.1 territories per 100 acres of potential habitat) to the modeled extent of potential habitat within the Southern Edwards Plateau HCP planning area (Bowman Consulting Group, LTD., et al. 2015). Applying these territory density estimates to the estimated amount of potential GCWA habitat in the Plan Area (i.e., 353,735 acres) provides an estimate of between 7,075 and 14,503 GCWA territories within the Plan Area.

5.2.3 Effects of the Covered Activities

CPS Energy anticipates that some of its Covered Activities may have effects on the GCWA that rise to the level of take because of:

1. **Habitat Removal:** Vegetation clearing, trenching, or other aspects of the Covered Activities can directly remove habitat used by the GCWA. USFWS (2014a) identifies habitat loss as the greatest threat to the species. Where habitat removal actually kills or injures an individual GCWA by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering, then take via ***harm***, as defined in 50 CFR §17.3, occurs. Habitat removal by clearing during the GCWA Breeding Season could also directly ***kill or wound*** non-mobile GCWA individuals (i.e., live eggs, nestlings, or recent fledglings) that may not be able to move out of the path of active clearing.

2. **Habitat Degradation:** Covered Activities can reduce the quality or carrying capacity of habitats for the GCWA without completely removing the habitat. At the time of listing, USFWS identified habitat degradation, along with habitat loss, as a primary threat to the GCWA (55 *Federal Register* 53154). Groce et al. (2010) summarizes studies that explored the variation in GCWA abundance, reproduction, and population demographics relative to differences in habitat characteristics. Where habitat degradation actually kills or injures an individual GCWA by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering, then take via ***harm***, as defined in 50 CFR §17.3, occurs.

3. **Habitat Fragmentation and Edge Effects:** A form of habitat degradation, fragmentation can exacerbate the effects of habitat removal by altering the configuration of remaining habitats. Habitat fragmentation can increase the exposure of GCWA individuals to potential edge effects and, in some cases, decrease the ability of individual GCWAs to disperse or move across the landscape. USFWS (2014a) summarizes the effects of habitat fragmentation on the GCWA. Where habitat fragmentation or edge effects, or both, actually kills or injures an individual GCWA by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering, then take via ***harm***, as defined in 50 CFR §17.3, occurs.

4. **Collision:** The activities of people, vehicles, equipment, and machinery when conducting the Covered Activities can create opportunities to physically encounter individuals of Covered Species. Where such collisions foreseeably ***kill or wound*** an individual of a Covered Species, take occurs. Collisions can occur under two types of circumstances: 1) when an individual of a Covered Species collides with structures, such as electric lines or buildings; or 2) when people, vehicles, equipment, or machinery collide with an individual of a Covered Species during the conduct of Covered Activities.

Overhead electric transmission and distribution lines pose a risk of collision that could result in the death or wounding of individual GCWAs. Based on SWCA observations of GCWAs, the birds typically fly below or only slightly above the tops of trees when moving from tree to tree through their territories. Trees in habitats used by GCWAs average 18 to 22 feet tall and are usually less than 30 feet tall; although, deciduous trees (e.g., cedar elm), if present along creeks, can sometimes reach heights of 50 to 60 feet on the eastern edge of their breeding range (Ladd and Gass 1999; Paul Sunby, SWCA, personal observation). CPS Energy electric transmission lines are typically 100 to 120 feet high and electric distribution lines are typically 38 feet high. Thus, for the most part, the conducting wires will generally be above the height at which GCWAs typically fly when in their habitat.

GCWAs are diurnal, do not perform aerial displays, and are not expected to fly well above tree height at times when visibility conditions are extremely poor (Ladd and Gass 1999). Rather, given the response of migrating songbirds to fog, if heavy fog or some other event creates extremely poor visibility conditions, theoretically increasing the collision risk with wires, it is expected the birds would stay low and fly through the trees to maintain points of reference (Shackelford et al. 2005). CPS Energy expects that GCWAs would fly through trees to escape any predator that might actively pursue them (e.g., a sharp-shinned hawk [*Accipiter striatus*]) rather than fly up and away from trees (Ladd and Gass 1999). Consequently, the conducting wires associated with CPS Energy facilities should be visible to GCWAs when they are flying above canopy height, and GCWAs should not be flying in the general vicinity of wires when under duress and perhaps more susceptible to being distracted and vulnerable to collision. CPS Energy anticipates that other infrastructure, such as fencing and light poles, will be visible to and avoided by flying GCWAs.

Neither Groce et al. (2010) nor USFWS (2014a) identify collision as a threat to the GCWA. Therefore, and in consideration of the analysis above, CPS Energy does not expect collisions of GCWA with CPS Energy structures, vehicles, or equipment, to be reasonably certain to occur.

5. **Noise and Activity Disruptions:** Noise and visual activity created by people, vehicles, equipment, and machinery during conduct of the Covered Activities can modify the habitats used by individual GCWAs by introducing disturbances that can cause such individuals to modify their behavior. Where noise and activity disruptions significantly modify habitats to the extent that the disruptions actually kills or injures an individual GCWA by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering, take via ***harm***, as defined in 50 CFR §17.3, may occur. However, USFWS (2014a) does not identify the noise and activity associated with construction activities to be, on its own, a threat to the GCWA, a position reiterated in USFWS (2016c). Therefore, CPS Energy does not expect that noise and activity disruptions, on their own, will be reasonably certain to rise to the level of take via harm for the GCWA.

6. **Predator/Prey Community Changes:** The conduct of Covered Activities and the addition of structures to the landscape can promote the occurrence or abundance of some wildlife species and demote others, changing the composition of the local wildlife community and, potentially, the dynamics of the predator, competitor, and prey relationships for the GCWA. USFWS (2014a) summarizes the impacts of predation and nest parasitism, and identifies these factors as significant threats to the GCWA. Where changes to the wildlife community proximately and foreseeably caused by a Covered Activity actually kills or injures an individual GCWA by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering, then take via ***harm***, as defined in 50 CFR §17.3, occurs.

Direct Habitat Modifications are most likely to originate from Covered Activities that involve surface disturbances of previously unmodified lands. Once removed, these canopy habitats are not likely to regrow within CPS Energy ROWs due to CPS Energy's regular O&M activities. For the GCWA, the USFWS has consistently used a distance of 300 feet from the edge of a Direct Habitat Modification to approximate the extent of potential Indirect Habitat Modification related to edge effects (see, for example, the Southern Edwards Plateau HCP).

5.2.4 Estimated Take

5.2.4.1 SURROGATE METRIC

To address the uncertainty regarding when the effects of the Covered Activities may rise to the level of take—and to simplify the estimation and quantification of take—CPS Energy proposes to use the acres of Direct Habitat Modification (i.e., potential GCWA habitat that is directly modified by clearing, trimming, or thinning) and acres of Indirect Habitat Modification (i.e., potential GCWA habitat subject to habitat fragmentation and edge effects) by the Covered Activities as a surrogate for the number of individual GCWAs that might be taken. This Habitat Surrogate captures the full extent of the geographic areas in which incidental take of the GCWA may occur, even if take is not certain to occur or even likely to occur in every circumstance.

CPS Energy can delineate potential GCWA habitat occurring within and adjacent to CPS Energy ROWs with relative ease and reliability. Further, CPS Energy can precisely measure the amount of potential GCWA habitat modified by the Covered Activities upon completion of the activity through desktop use of ArcGIS software and digital aerial photography, Global Positioning System (GPS) survey data, and field verification. The ITP would express the authorized level of take using this Habitat Surrogate, and the HCP documents a precise method for determining when CPS Energy utilizes its authorized take allocation.

In this section, CPS Energy addresses each of the conditions needed to establish the use of a surrogate metric for take of the GCWA.

Condition 1: *There is a causal link between the surrogate and take of the listed species.*

There is a causal link between habitat modification and effects to GCWAs that may rise to the level of take. Direct and Indirect Habitat Modification associated with the Covered Activities is the triggering action for any resulting effects to GCWAs. For example, occupied habitat removed during the GCWA Breeding Season could cause the death of non-mobile young or the destruction of eggs, or injure mobile individuals by removing or degrading the habitat resources within their territory, possibly causing such individuals to adjust territory boundaries or find a new territory elsewhere. Similarly, take may occur via the Indirect Effects of habitat modification performed outside of the GCWA Breeding Season that reduces the amount or quality of available habitat for returning individuals. The Covered Activities only have the potential to incidentally take GCWAs that use habitats affected directly or indirectly by the Covered Activities.

Thus, if there is no habitat modification (i.e., CPS Energy completely avoids occupied habitat or does not conduct any Covered Activities), incidental take cannot occur because of the Covered Activities. Hence a clear causal link between habitat modification and effects to GCWAs. The USFWS has accepted this application of a surrogate metric in every ITP for the GCWA to date.

Condition 2: *It is not practical to express the amount or extent of anticipated take or to monitor take-related impacts in terms of individuals of the listed species.*

Although GCWA occur in some parts of the Plan Area, comprehensive and recent survey data identifying the precise number and distribution of GCWA individuals within the Plan Area are not available; nor would such data be practical to obtain. Even if detailed survey data were available, the number of individuals present will fluctuate naturally on an annual basis, as demonstrated from long-term monitoring (City of Austin et al. 2014, 2015, 2016). In some years, a survey could document an unusually low or high number of individuals, either of which would result in a quantification of incidental take not representative of the average condition. The effectiveness of bird surveys in counting the number of birds in an area (i.e., an absolute census of a population) can be somewhat limited because, due to their frequent vocalizations, male GCWAs are more easily observed than females or fledglings during surveys (USFWS 2014a). These factors together make it impractical to express the amount or extent of anticipated take or to monitor take-related impacts in terms of individual GCWAs. Moreover, acquisition of survey data sufficient to establish the average number of GCWA individuals present in affected areas would require several years, and waiting for the completion of such studies for each Covered Activity is not practical and could significantly interfere with CPS Energy's duty to provide reliable utility services. Beyond the difficulties of accurately determining the number of individuals exposed to the effects of the Covered Activities, it is also not possible to accurately predict or measure the number of individual GCWAs that have actually been or are likely to be incidentally taken as a result of the Indirect Effects of the Covered Activities, particularly when the mechanism for take occurs via sub-lethal changes in behavior due to habitat modification (harm).

For these reasons, it is impractical to establish the number of GCWAs that would be taken by the Covered Activities.

Condition 3: *The surrogate provides a clear standard for determining when the level of anticipated take has been exceeded.*

Although the total number of individual GCWAs in a given area is variable and subject to environmental and survey condition factors, the number of potential habitat acres is generally stable and easy to define. CPS Energy and their consultants can easily delineate potential habitat using current USFWS protocols/permit requirements, models, and experience-based field delineations. With current mapping technologies and available aerial imagery, CPS Energy can develop detailed maps showing areas of potential habitat essentially to the scale of individual trees. Similarly, CPS Energy clearly defines the boundaries of its Covered Activities as part of the planning phase with equal accuracy. As a result, calculating incidental take using the Habitat Surrogate requires overlaying the habitat layer and the project footprint in ArcGIS and determining the area of overlap. Once CPS Energy confirms the area of overlap, tracking the exhausted and remaining amounts of authorized incidental take is a simple accounting exercise, providing a clear standard for identifying when CPS Energy exceeds the level of anticipated take as represented by the Habitat Surrogate.

Based on the above, and in consideration of the precedent set by other issued ITPs for the GCWA, the use of acres of habitat directly or indirectly modified by the Covered Activities as a surrogate for the number of GCWAs taken meets the conditions set forth by the USFWS (80 *Federal Register* 26832–26845).

5.2.4.2 REQUESTED TAKE

For the purposes of estimating the total amount of take of the GCWA that may occur as a result of the Covered Activities over the ITP Term (a calculation that is necessarily general due to the programmatic nature of this HCP), CPS Energy makes the following assumptions:

1. Potential GCWA habitats with a probability of occupancy that is 50% or greater, as predicted by Morrison et al. (2010), are assumed to be seasonally occupied by the GCWA. CPS Energy assumes that GCWA are not reasonably certain to occupy potential habitats with a probability of occupancy that is less than 50%, as predicted by Morrison et al. (2010).

2. Covered Activities causing surface disturbances to previously unmodified lands may directly or indirectly modify occupied GCWA habitat and result in incidental take of the species. CPS Energy does not expect Covered Activities causing surface disturbances to previously modified lands to cause take of the GCWA.

3. Direct Habitat Modification for the GCWA has the potential to occur within potential GCWA habitat subject to surface disturbances on previously unmodified lands within the limits of CPS Energy ROWs.

4. Indirect Habitat Modification for the GCWA may affect potential GCWA habitat located as far as 300 feet outside of the limits of CPS Energy ROWs. For linear corridors, approximately 73 acres of land occur within 300 feet of each mile of corridor length. The overall average ROW width for linear corridors in the CPS Energy Network at the end of the ITP Term, based on the widths and totals in Table 8, is 68 feet. Each mile of "average ROW" contains 8 acres. Therefore, each acre of Direct Habitat Modification within a ROW is associated with approximately 9 acres of Indirect Habitat Modification.

5. The amount of Direct and Indirect Habitat Modification associated with the Covered Activities in each Planning Sector is proportional to the distribution of potential GCWA habitat (as defined by the areas identified by Morrison et al. [2010] having greater than 50% likelihood of occupancy by the GCWA) within that Planning Sector. For example, potential GCWA habitat occurs across 29% of the Northern Planning Sector. Therefore, CPS Energy assumes that 29% of its anticipated surface disturbances to previously unmodified lands within the Northern Planning Sector will result in Direct Habitat Modification for the GCWA. The same proportional calculations apply to the area within 300 feet of CPS Energy ROWs.

6. CPS Energy assumes that 10% of its total direct and indirect impacts to GCWA habitat as estimated through the calculations and assumptions outlined above will be authorized through the Southern Edwards Plateau HCP (see Chapter 6.3.2.1 for additional discussion). This 10% is therefore excluded from the take requested in this HCP and excluded from impact assessments since these possible losses were addressed in the impact analysis for the Southern Edwards Plateau HCP.

It is important to note that CPS Energy relies on these assumptions only for estimating the total amount of incidental take that may be associated with this HCP over the ITP Term. CPS Energy will assess take for Covered Activities through the HCP's Conservation Program (see Chapter 6) based on project- and site-specific data. If, over time, CPS Energy anticipates that its requested incidental take authorization may be insufficient to address its need to perform Covered Activities, CPS Energy may seek to amend the HCP and ITP to receive additional take authorization from the USFWS. Table 18 summarizes the anticipated amount of GCWA habitat that would be directly or indirectly modified as a result of the Covered Activities over the ITP Term.

Table 18. Estimated Golden-cheeked Warbler Direct and Indirect Habitat Modification over ITP Term

Planning Sector	Surface Disturbance on Previously Unmodified lands	Related Indirect Disturbances within 300 feet of CPS Energy ROWs	Percent of Planning Sector with Potential GCWA Habitat	Direct Habitat Modification (acres)	Indirect Habitat Modification (acres)
Urban Core	5.7	51.3	0%	0.0	0.0
North-Central	6.0	54.0	0%	0.0	0.0
Northern	7,785.7	70,071.3	29%	2,257.9	20,320.7
Southern	4,379.6	39,416.4	0%	0.0	0.0
TOTAL	**12,177.0**	**109,593.0**		**2,257.9**	**20,320.7**
TOTAL Minus 10% Adjustment for Participation in the Southern Edwards Plateau HCP				**2,032.1**	**18,288.6**

CPS Energy requests incidental take authorization for the GCWA associated with 2,032.1 acres of Direct Habitat Modification and 18,288.6 acres of Indirect Habitat Modification over the ITP Term. CPS Energy's total incidental take request, articulated in terms of the Habitat Surrogate, is 20,320.7 acres.

5.2.5 Impact of the Taking

CPS Energy concludes that the expected impact of the taking is relatively minor with respect to the status of the species in a local (i.e., Plan Area) or range-wide context. This conclusion is the basis for the proposed conservation program and relies on:

1. the relatively small area of potential GCWA habitat subject to Direct and Indirect Habitat Modification compared to the amount of potential habitat available for the species;

2. the Covered Activities will primarily involve impacts distributed along narrow linear corridors rather than impacts focused on particular habitat patches; and

3. the anticipated effects of the Covered Activities on GCWA will mostly be sub-lethal, causing displacement of individuals or reconfiguration of territory boundaries (with possible decreases in reproductive output), but only rarely causing actual death of an individual.

The total amount of potential GCWA habitat in the Plan Area and across the range of the species, based on the Morrison et al. (2010) model, is summarized in Chapter 5.2.2. CPS Energy's requested amount of take represents 5.7% of the approximately 353,735 acres of potential GCWA habitat in the local Plan Area and approximately 0.7% of the habitat available across the range of the species. Most of this habitat modification is indirect and involves effects related to habitat fragmentation and edge effects. Only 0.6% of the potential GCWA habitat in the Plan Area and only 0.07% of the potential habitat across the range would be subject to Direct Habitat Modification (i.e., loss). CPS Energy will continue to seek, when practical and in-line with its business needs, to colocate its Future ROWs with existing infrastructure corridors (see Chapter 3.2.2), a practice encouraged by the mitigation ratios established in the Conservation Program (see Chapter 6); therefore, the inherently low impact of the requested taking is further minimized by discouraging the fragmentation of previously unfragmented patches of GCWA habitat (i.e., colocation with existing infrastructure focuses new habitat modifications on habitats that are already exposed to edge effects).

5.3 Covered Karst Invertebrates

5.3.1 Biology, Life History, and Habitat

On December 26, 2000, the USFWS listed the Covered Karst Invertebrates as endangered under the ESA (65 *Federal Register* 81419–81433). In 2012, the USFWS designated Critical Habitat for the Covered Karst Invertebrates including 30 Critical Habitat Units (CHUs) covering 4,216 acres in Bexar County (77 *Federal Register* 8450–8523). The USFWS identifies the following as potential threats to these species: destruction and/or deterioration of habitat by commercial, residential, and road construction; filling of caves; loss of permeable cover; potential contamination from such sources as septic effluent, sewer leaks, runoff, and pesticides; predation by and competition with non-native fire ants; and vandalism (65 *Federal Register* 81419–81433).

The Covered Karst Invertebrates may occur in the Glen Rose Limestone, Edwards Limestone, and Austin Chalk regions of Bexar County. Karst invertebrates occur within subsurface void spaces that vary in size from those accessible to humans (caves) to small interconnected mesocavernous void spaces as small as 0.5 inch or less in diameter and therefore inaccessible by humans. Due to this variation and the cryptic nature of the species, the total extent of occupied habitat cannot be practicably determined for any given area. Instead, biologists rely upon the USFWS-protocol presence/absence surveys to evaluate potential occupancy. Once discovered, it is impossible to determine the taxonomic identify of some of these species in the field, and laboratory taxonomic identification of karst invertebrates has been inconsistent in the past (Gertsch 1992; Paquin and Hedin 2004; Paquin and Dupérré 2009).

CPS Energy requests incidental take coverage for the following Covered Karst Invertebrates:

- **Madla's Cave Meshweaver (*Cicurina madla*):** Biologists first collected *Cicurina madla* in 1963 from a cave in the Helotes KFR (Gertsch 1992). Researchers have identified *Cicurina madla* in at least 22 caves in the four Bexar County KFRs associated with the Edwards Limestone formation, e.g., Government Canyon KFR, Stone Oak KFR, Helotes KFR, and the UTSA KFR (USFWS 2011). However, based on the findings of Paquin and Ledford (2012), *Cicurina madla* could also occur in the Culebra Anticline KFR at the TxDOT SH 151 project site. The species may also occupy a cave in Uvalde County at least 60 miles west of the Plan Area (USFWS 2011), indicating that *Cicurina madla* may have a much wider range than described for most of the Covered Karst Invertebrates.
- **Robber Baron Cave Meshweaver (*Cicurina baronia*):** The first collection of *Cicurina baronia* was from the Robber Baron Cave in Bexar County in 1969 (Paquin and Dupérré 2009). Gertsch first described the species in 1992 (Cokendolpher 2004). Today, only two known caves in the Alamo Heights KFR contain *Cicurina baronia* (USFWS 2011). The Robber Baron Cave is on private property in a heavily developed area, which may affect the habitat and species occupying the cave. The Texas Cave Management Association (TCMA) owns and manages a small (0.37-acre) preserve around the cave entrance (TCMA 2008). The other known locality (cave #OB3; also known as "Oblate Pit-Sexton") is on an approximately 9-acre property owned by Trinity University, with taxonomy recently confirmed by Hedin et al. (2018).
- **Government Canyon Bat Cave Meshweaver (*Cicurina vespera*):** *Cicurina vespera* is an eyeless spider with reduced coloration. Gertsch first described the species in 1992 after collecting it in 1965. The species occurs in the Government Canyon KFR in Government Canyon Bat Cave (USFWS 2011). Hedin et al. (2018) synonymized *Cicurina loftini*, an unlisted species found in the Culebra Anticline KFR, with *Cicurina vespera*, which extended the range of *Cicurina vespera* into the Culebra Anticline and added between 10 and 15 new localities to the

known distribution of *Cicurina vespera* (Christina Williams, USFWS, personal communication to Amanda Aurora, SWCA, via email on August 20, 2018).

- **A Ground Beetle (*Rhadine exilis*):** Barr and Lawrence described the species in 1960 after its discovery in 1959. Taxonomists originally assigned this species to the genus *Agonum*. Barr reassigned the species to the *Rhadine* genus in 1974. *Rhadine exilis* has a mean length of 0.29 inch (7.4 millimeter [mm]) with a very slender body that distinguishes it from *Rhadine infernalis* (USFWS 2014b). *Rhadine exilis* is known to occupy at least 51 caves across the Government Canyon, Helotes, Stone Oak, Culebra Anticline, and UTSA KFRs (USFWS 2011; James Reddell, University of Texas at Austin, personal communication to Cyndee Watson, USFWS Austin Ecological Services Field Office, via email on May 29, 2015[8]).
- **A Ground Beetle (*Rhadine infernalis*):** Barr and Lawrence first described *Rhadine infernalis* as *Agonum infernalis* in 1960 after its collection in 1959. Barr reassigned the species to *Rhadine* in 1974. *Rhadine infernalis* is a ground beetle similar to *Rhadine exilis* but with a more robust body and a slightly smaller mean length of 0.28 inch (7.2 mm) (USFWS 2014b). The species occupies 39 caves in the Culebra anticline, Government Canyon, Helotes, Stone Oak and UTSA KFRs (USFWS 2011).
- **Government Canyon Bat Cave Spider (*Neoleptoneta microps*):** Gertsch first described the species as *Leptoneta microps* in 1974 after its collection in 1965. Ledford et al. (2011) reassigned it to the genus *Tayashaneta* based upon classifications by Brignoli (1977) and Platnick (1986). However, the USFWS has not officially recognized this taxonomic revision (USFWS 2014b) and, for convenience, this HCP uses the name *Neoleptoneta microps*. The *Neoleptoneta microps* is a small, yellowish, essentially eyeless spider (USFWS 2014b). Collection of *Neoleptoneta microps* has only occurred from the Government Canyon Bat Cave in the Government Canyon KFR (USFWS 2011).
- **Cokendolpher Cave Harvestman (*Texella cokendolpheri*):** Ubick and Briggs (1992) initially described *Texella cokendolpheri*. *Texella cokendolpheri* occurs only in the Alamo Heights KFR in the Robber Baron Cave (USFWS 2011). The *Texella cokendolpheri* is a small, pale orange harvestman (USFWS 2014b) discovered in 1982. The TCMA manages the 0.37-acre preserve area around the main cave entrance. However, the cave and the area around the cave is subject to cave visitation and urbanization of the areas around the cave (TCMA 2008).
- **Helotes Mold Beetle (*Batrisodes venyivi*):** Chandler (1992) described *Batrisodes venyivi* in 1984. This mold beetle is a small, reddish-brown beetle that resembles an ant (USFWS 2014b). *Batrisodes venyivi* occurs in eight caves in three KFRs. In the Government Canyon KFR, the beetle occurs in San Antonio Ranch Pit, Scenic Overlook Cave, and Tight Cave. The species also occupies Christmas Cave, Helotes Hilltop Cave and two unnamed caves in the Helotes KFR. Biologists have also collected the species from an unnamed cave 5 miles northeast of Helotes in the UTSA KFR (USFWS 2011).

5.3.2 Habitat Availability and Population within the Plan Area

The Covered Karst Invertebrates do not occur evenly across potential habitats. The USFWS defines the ranges of these species by the KFRs from which they occur. Table 19 summarizes the distributions of the Covered Karst Invertebrates across KFRs for the purposes of this HCP. The distributions in Table 19 are consistent with those currently recognized by the USFWS (Cokendolpher 2012; Hedin et al. 2018;

[8] Email from James Reddell to Cyndee Watson on May 29, 2015, stating "Rattlesnake Pit is the only locality for R. exilis(?) [sic] in the Culebra Anticline."

USFWS 2011; James Reddell, University of Texas at Austin, personal communication to Cyndee Watson, USFWS Austin Ecological Services Field Office, via email on May 29, 2015; Christina Williams, USFWS, personal communication with Amanda Aurora, SWCA, via email on August 29, 2018).

Table 19. Known or Assumed Distribution of Covered Karst Invertebrates by Karst Fauna Region

Covered Karst Invertebrate Species	Government Canyon KFR	Helotes KFR	UTSA KFR	Stone Oak KFR	Culebra Anticline KFR	Alamo Heights KFR
Madla's Cave Meshweaver (*Cicurina madla*)	X	X	X	X	X	
Robber Baron Cave Meshweaver (*Cicurina baronia*)						X
Government Canyon Bat Cave Meshweaver (*Cicurina vespera*)	X				X	
Rhadine exilis (an elongate ground beetle)	X	X	X	X	X	
Rhadine infernalis (a robust ground beetle)	X	X	X	X	X	
Government Canyon Bat Cave Spider (*Neoleptoneta microps*)	X					
Cokendolpher Cave Harvestman (*Texella cokendolpheri*)						X
Helotes Mold Beetle (*Batrisodes venyivi*)	X	X	X			

Veni (1994) delineated KFR boundaries nearly a decade before he delineated the extent of potential karst invertebrate habitat with the Karst Zones (Veni 2003). Veni's 2003 Karst Zone mapping was more extensive than the 1994 KFR boundary delineations; consequently, the KFR boundaries do not encompass the entire extent of potential habitat available to the Covered Karst Invertebrates (see Figure 5). Therefore, similar to the approach taken for the Southern Edwards Plateau HCP, CPS Energy expanded the boundaries of the 1994 KFRs to be inclusive of all areas mapped as Karst Zones 1, 2, 3, or 4 (Veni 2003). These expanded KFRs (Super KFRs) help estimate the distribution of potential karst invertebrate habitat by species (Figure 11). See Appendix D for additional discussion about the delineation of Super KFRs. Table 20 summarizes the distribution of Karst Zones within the Super KFRs.

Table 20. Karst Zones within Super KFRs and Planning Sectors

Super Karst Fauna Region	Urban Core Planning Sector (acres)	North-Central Planning Sector (acres)	Northern Planning Sector (acres)	Southern Planning Sector (acres)
Government Canyon Super KFR	**0**	**0**	**60,851**	**0**
Karst Zones 1 & 2	*0*	*0*	*39,549*	*0*
Karst Zones 3 & 4	*0*	*0*	*21,302*	*0*
Helotes and UTSA Super KFR	**0**	**1,667**	**23,497**	**0**

Super Karst Fauna Region	Urban Core Planning Sector (acres)	North-Central Planning Sector (acres)	Northern Planning Sector (acres)	Southern Planning Sector (acres)
Karst Zones 1 & 2	*0*	*1,667*	*15,099*	*0*
Karst Zones 3 & 4	*0*	*<1*	*8,398*	*0*
Stone Oak Super KFR	**0**	**10,735**	**67,318**	**0**
Karst Zones 1 & 2	*0*	*10,384*	*49,736*	*0*
Karst Zones 3 & 4	*0*	*351*	*17,582*	*0*
Culebra Anticline Super KFR	**192**	**27,586**	**34,286**	**19,782**
Karst Zones 1 & 2	*0*	*5,081*	*11,843*	*215*
Karst Zones 3 & 4	*192*	*22,505*	*22,443*	*19,567*
Alamo Heights Super KFR	**23,258**	**47,097**	**11,519**	**0**
Karst Zones 1 & 2	*4,028*	*1,111*	*<1*	*0*
Karst Zones 3 & 4	*19,230*	*45,986*	*11,519*	*0*

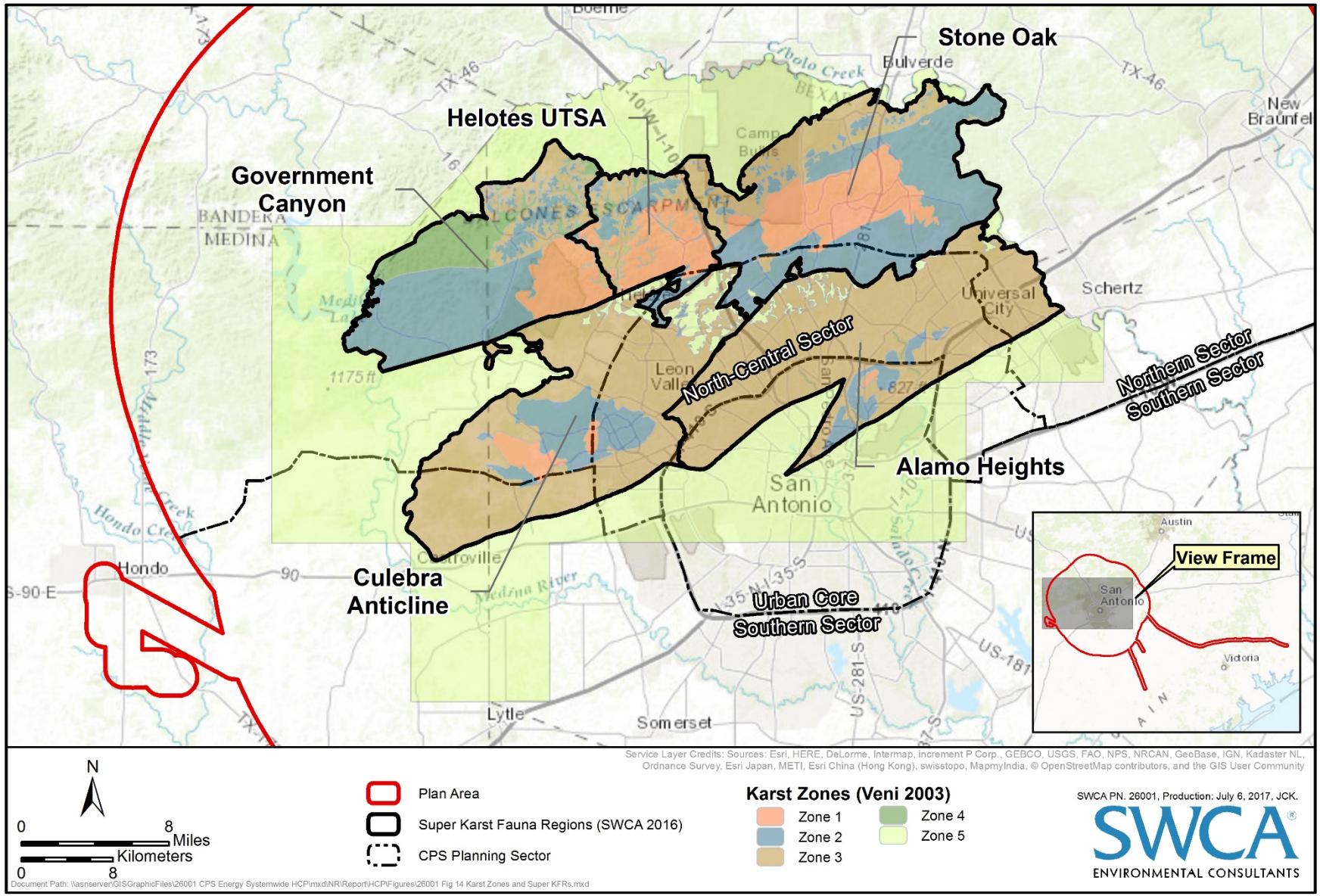

Figure 11. Super Karst Fauna Regions and Karst Zones in the Plan Area.

For the purposes of calculating the incidental take request, CPS Energy assumes that Karst Zones 1 through 4 approximate the area of potential habitat for the Covered Karst Invertebrates. Table 21 estimates the acres of potential habitat within each Planning Sector for each of the Covered Karst Invertebrates by summing the acres of potential habitat for each Super KFR where the species is known or assumed to occur.

Table 21. Estimated Extent of Potential Habitat for Each Covered Karst Invertebrate by Planning Sector

Covered Species Potential Habitat	Urban Core Planning Sector (acres, % of Sector)	North-Central Planning Sector (acres, % of Sector)	Northern Planning Sector (acres, % of Sector)	Southern Planning Sector (acres, % of Sector)
Madla's Cave Meshweaver (*Cicurina madla*)	**192 acres (0.2%)**	**39,988 acres (34.4%)**	**185,952 acres (15.1%)**	**19,782 acres (1.4%)**
Karst Zones 1 & 2	*0 acres (0%)*	*17,132 acres (14.7%)*	*116,227 acres (9.4%)*	*215 acres (<1%)*
Karst Zones 3 & 4	*192 acres (0.2%)*	*22,857 acres (19.7%)*	*69,725 acres (5.7%)*	*19,567 acres (1.4%)*
Robber Baron Cave Meshweaver (*Cicurina baronia*)	**23,258 acres (20.1%)**	**47,097 acres (40.5%)**	**11,519 acres (0.9%)**	**0 acres (0%)**
Karst Zones 1 & 2	*4,028 acres (3.5%)*	*1,111 acres (1%)*	*0.8 acres (<1%)*	*0 acres (0%)*
Karst Zones 3 & 4	*19,230 acres (16.6%)*	*45,986 acres (39.5%)*	*11,519 acres (0.9%)*	*0 acres (0%)*
Government Canyon Bat Cave Meshweaver (*Cicurina vespera*)	**192 acres (0.2%)**	**27,586 acres (23.7%)**	**95,137 acres (7.7%)**	**19,782 acres (1.4%)**
Karst Zones 1 & 2	*0 acres (0%)*	*5,081 acres (4.4%)*	*51,392 acres (4.2%)*	*215 acres (<1%)*
Karst Zones 3 & 4	*192 acres (0.2%)*	*22,505 acres (19.4%)*	*43,745 acres (3.6%)*	*19,567 acres (1.4%)*
Rhadine exilis (an elongate ground beetle)	**192 acres (0.2%)**	**39,988 acres (34.4%)**	**185,952 acres (15.1%)**	**19,782 acres (1.4%)**
Karst Zones 1 & 2	*0 acres (0%)*	*17,132 acres (14.7%)*	*116,227 acres (9.4%)*	*215 acres (<1%)*
Karst Zones 3 & 4	*192 acres (0.2%)*	*22,857 acres (19.7%)*	*69,725 acres (5.7%)*	*19,567 acres (1.4%)*
Rhadine infernalis (a robust ground beetle)	**192 acres (0.2%)**	**39,988 acres (34.4%)**	**185,952 acres (15.1%)**	**19,782 acres (1.4%)**
Karst Zones 1 & 2	*0 acres (0%)*	*17,132 acres (14.7%)*	*116,227 acres (9.4%)*	*215 acres (<1 %)*
Karst Zones 3 & 4	*192 acres (0.2%)*	*22,857 acres (19.7%)*	*69,725 acres (5.7%)*	*19,567 acres (1.4%)*
Government Canyon Bat Cave Spider (*Neoleptoneta microps*)	**0 acres (0%)**	**0 acres (0%)**	**60,851 acres (4.9%)**	**0 acres (0%)**
Karst Zones 1 & 2	*0 acres (0%)*	*0 acres (0%)*	*39,549 acres (3.2%)*	*0 acres (0%)*
Karst Zones 3 & 4	*0 acres (0%)*	*0 acres (0%)*	*21,302 acres (1.7%)*	*0 acres (0%)*
Cokendolpher Cave Harvestman (*Texella cokendolpheri*)	**23,258 acres (20.1%)**	**47,097 acres (40.5%)**	**11,519 acres (0.9%)**	**0 acres (0%)**
Karst Zones 1 & 2	*4,028 acres (3.5%)*	*1,111 acres (1%)*	*0.8 acres (<1%)*	*0 acres (0%)*
Karst Zones 3 & 4	*19,230 acres (16.6%)*	*45,986 acres (39.5%)*	*11,519 acres (0.9%)*	*0 acres (0%)*

Covered Species Potential Habitat	Urban Core Planning Sector (acres, % of Sector)	North-Central Planning Sector (acres, % of Sector)	Northern Planning Sector (acres, % of Sector)	Southern Planning Sector (acres, % of Sector)
Helotes Mold Beetle (*Batrisodes venyivi*)	**0 acres (0%)**	**1,667 acres (1.4%)**	**84,348 acres (6.9%)**	**0 acres (0%)**
Karst Zones 1 & 2	*0 acres (0%)*	*1,667 acres (1.4%)*	*54,648 acres (4.4%)*	*0 acres (0%)*
Karst Zones 3 & 4	*0 acres (0%)*	*0.8 acres (<1%)*	*29,700 acres (2.4%)*	*0 acres (0%)*

5.3.3 Effects of the Covered Activities

5.3.3.1 EFFECTS OF SUBSURFACE DISTURBANCES

When CPS Energy performs Covered Activities within areas mapped as Karst Zone 1 through 4, it is possible for Covered Activities involving excavation, tunneling, boring, or grading to modify occupied subsurface habitat. Subsurface activities could result in Direct Effects (i.e., death or injury) to an individual of a Covered Karst Invertebrate if such individual is present at the same time and location as subsurface activities, if the individual physically encounters equipment, rubble, or materials. However, the likelihood of such Direct Effects to individual Covered Karst Invertebrates from subsurface Covered Activities performed over Karst Zones 1 through 4 is not certain and CPS Energy crews are trained to immediately stop work when they encounter any caves when working in Karst Zones 1 through 4 (Juan Sandoval, CPS Energy, personal communication to Amanda Aurora, SWCA, on September 24, 2018). The distribution of occupied habitat in areas mapped as Karst Zone 1 through 4 is not uniform.

The USFWS's guidance for conducting presence/absence surveys for the Covered Karst Invertebrates (USFWS 2015) includes initial steps intended to identify potentially habitable space for these species. Step 1 in this process involves determining if the survey area occurs within an area of Karst Zones 1 through 4 (i.e., "areas that may contain suitable habitat for endangered karst invertebrate habitat"). Step 2 involves performing an initial karst feature survey and Steps 3 and 4 involve assessing whether an identified karst feature has the characteristics of suitable habitat. If during Steps 2, 3, or 4, no karst features with the characteristics of suitable habitat are detected, then the USFWS advises that no suitable habitat exists and no additional surveys are needed. In essence, with such negative survey results, the USFWS acknowledges Covered Karst Invertebrates are probably absent from the surveyed area and that activities may proceed without the need for take authorization. This protocol acknowledges that the distribution of habitable void spaces, even within areas mapped as Karst Zone 1, is inconsistent and that activities may occur within areas of mapped as Karst Zone 1 through 4 without actually encountering occupied habitat.

Similarly, the Covered Karst Invertebrates do not necessarily occupy all potential habitat. Again, the USFWS's guidance for presence/absence surveys (USFWS 2015) recommends a level of survey effort needed to support a conclusion of probable absence from a karst feature, providing implicit acknowledgement that the distribution of individuals of these species within potentially habitable spaces is uneven. In its presence/absence survey guidance, the USFWS also provides examples of long-term survey efforts of a single feature that returned detections of the Covered Karst Invertebrates in some years, but not in others (USFWS 2015)—indicating that the distribution of individual karst invertebrates within areas of potential habitat changes over time, not just space.

As another example of this inconsistent distribution of occurrence within potential habitat, Zara Environmental LLC (Zara 2011) reports surveying 25 karst features on the TxDOT SH 151/Loop 1604 project site prior to construction, finding only one occupied feature with an undescribed species of

Cicurina. During construction, Zara (2013) reported identifying another 25 karst features in the area, with 20 of those determined to be potential karst invertebrate habitat, and after extensive monitoring only two of these caves were found to be occupied by a listed species. Of the 50 karst features discovered during the investigations for the TxDOT SH 151/Loop 1604 project, less than half provided potential habitat for karst invertebrates and only two (approximately 4%) were found to harbor a listed species.

In general, presence/absence survey data indicate that the likelihood of actually encountering an individual Covered Karst Invertebrate at the same time and place as active excavation work is very low. For instance, the karst fauna surveys conducted by TxDOT at the SH 151/Loop 1604 project site required 247 survey days with baited traps to collect 13 eyeless *Cicurina* individuals (Zara 2013)—on average, 19 survey days per collected spider. Over most of the survey days, Zara did not collect any *Cicurina* individuals; although, it is not known (or even knowable) if there were truly no *Cicurina* present in the void or if they were simply not collected by the baited traps. Even with traditional survey techniques (i.e., visual searches of the interior of caves and karst voids), it is possible to observe no individuals in a feature with previously demonstrated occupancy (USFWS 2011). Research by Krejca and Weckerly (2007) suggests that karst invertebrate species have low detection probabilities that may require between 10 to 22 surveys (depending on the species) to confidently determine the absence of a species from a karst feature. There are no reliable estimates of karst invertebrate population sizes or the density of individuals across a given area of habitat (USFWS 2011). Therefore, it is not certain, even in "occupied" habitat, that excavation activities that occur over a short duration in a limited area would directly encounter an individual of a Covered Karst Invertebrate.

Excavation activities could also indirectly affect individuals of the Covered Karst Invertebrates that might be present in habitat adjacent to excavated areas. USFWS (2011) identifies ways in which excavation may threaten the Covered Karst Invertebrates by altering the stable physical environment of the cave ecosystem by increasing the number of cave entrances, which could have a drying effect, increasing sedimentation, and changing water drainage patterns to the system. Furthermore, USFWS notes that destruction of caves is possible through this type of activity (USFWS 2011).

The Covered Activities could remove void spaces, if present, rendering them unavailable for use by the Covered Karst Invertebrates. In this way, it is possible that the Covered Activities could remove habitable void spaces or fragment previously connected void spaces, or both. It is not known if or to what degree this potential habitat loss or fragmentation would alter the behavior of the Covered Karst Invertebrates, since 1) the actual presence of occupied habitat in the excavation areas may not be known; 2) the form or extent of any connectivity among habitable void spaces that may intersect the excavation areas are not known; and 3) how individuals of the Covered Karst Invertebrates move within and among areas of potential habitat, and how much time they spend there, is not known (USFWS 2011).

Areas adjacent to excavation could also be indirectly subject to surface climate conditions in ways that alter the stable physical environment of typical karst invertebrate habitat by drying, temperature increases and fluctuations, sedimentation, and access that is more direct to surface fauna. The reach of any such effects into adjacent habitats is unknown and likely dependent on the particular size, shape, preexisting climate, and other characteristics of the feature. It is reasonable to assume that the duration of the exposure effect would be temporary since excavated areas will be backfilled following installation of infrastructure.

While excavated areas remain unfilled, displaced Covered Karst Invertebrates could use adjacent habitats where stable conditions are still present. Alternatively, individuals unable to move away from or adjust to the new conditions could die. However, how individuals actually respond to these types of abrupt short-term changes to habitat conditions is unknown. Anecdotally, there is evidence suggesting that temporary openings of karst voids (over days or even weeks) might not significantly disrupt the essential behaviors

of karst invertebrates to an extent that results in actual death or injury. For instance, karst fauna surveys conducted according to USFWS (2015) protocols commonly return observations of karst invertebrates from features with excavated entrances. For example, collections of *Cicurina* spiders from the karst voids at the TxDOT SH 151/Loop 1604 project site occurred as few as 4 days after initial discovery of the feature by excavation and as many as 53 days after initial excavation (Zara 2013).

5.3.3.2 EFFECTS OF SURFACE DISTURBANCES

The Covered Activities include a variety of activities that will result in surface disturbances, including vegetation clearing, soil disturbance, temporary placement of excavated material or fill, dust control, bank stabilization, and soil/vegetation restoration. The USFWS (2011) recognizes a variety of potential effects resulting from activities conducted on the surface over karst invertebrate habitat that may cause impacts to the Covered Karst Invertebrates, including:

- Entrances to caves can be filled-in or collapse during development activities or activities for agricultural purposes. Covering cave entrances can alter the physical cave environment, as well as impede or eliminate nutrient input.
- Chemical contamination from ground water and/or surface drainage, including pesticides, fertilizers, sewage, hazardous material spills, various pipeline leaks, storage tanker leaks, landfills, and urban run-off, could adversely affect karst invertebrates. Trash dumping may also be a source of chemical contamination.
- Altering surface drainage via alterations in topography, impervious cover, etc., could lead to drying of karst features and changes in nutrient inputs.
- Loss or alteration of surface biological communities can adversely affect karst invertebrates by altering nutrient inputs, altering the stable physical environment of the cave, and introducing potentially harmful organisms. When changes in surface plant composition occur, there is the potential to alter the type and quality of nutrient input into the cave system from the alteration of vegetation. Moreover, changes in surface plant composition can in turn alter the surface animal species composition. Alterations in animal species composition may lead to less nutrient input into caves via a decrease of troglophiles and trogloxenes.
- Denudation of the surface plant community (replaced with impervious cover, left as bare ground, etc.) could lead to fluctuations in cave temperatures and moisture regimes that are outside the normal range of variability for the system.
- Soil disturbance may lead to an increased density of red imported fire ants (*Solenopsis invicta*; RIFA) and alter the physical environment of the cave through increased sedimentation.

As described for the potential effects of subsurface disturbances, uncertainty regarding the location of the Covered Karst Invertebrates over both time and space influences the likelihood of Covered Activities conducted at the surface having Direct or Indirect Effects on Covered Karst Invertebrates.

Cave Collapse and Altered Drainage Patterns

Most Covered Activities have a relatively narrow linear footprint that CPS Energy can strategically route to reduce the likelihood of covering or collapsing cave entrances. Foundations for power poles or towers are small and sited to avoid caves. The construction of new electric substations and switching stations involve more extensive surface grading and the addition of impervious cover and could cover a cave entrance, collapse a feature, or alter natural drainage to a cave. However, state and local regulations protecting the Edwards Aquifer reduce the likelihood of these events occurring. For instance, the Texas Commission on Environmental Quality requires compliance with the Edwards Rules for lands that occur

within the Edwards Aquifer Recharge Zone. Furthermore, CPS Energy uses geophysical investigations in areas with a high probability of encountering karst features to help provide information to guide such routing and siting (Juan Sandoval, CPS Energy, personal communication to Amanda Aurora, SWCA, on September 23, 2018).

Nevertheless, it is possible in some circumstances for the Covered Activities to cover a cave entrance, collapse a cave, or alter the surface drainage patterns occupied habitat, whether the occupied feature exhibits surface presence in advance of the activity.

Contamination

Accidental spills or releases of petroleum products or hazardous materials while conducting the Covered Activities are possible, but unlikely. If such activities occurred over karst habitat occupied by one or more of the Covered Karst Invertebrates, it is possible that take via death, wounding, or harm could occur.

Surface Vegetation Changes

The surface plant community supports the karst ecosystem by contributing dead or decaying plant material that may fall or wash into caves (65 *Federal Register* 81419–81433). In addition, root masses entering karst void spaces through soil and rock fissures may also provide nutrient input to Covered Karst Invertebrate habitat (Howarth 1983). When changes in surface plant composition occur, there is the potential to alter the type and quality of nutrient input into the cave system. Moreover, changes in surface plant composition can in turn alter the surface animal species composition (Chapin et al. 2000). Alterations in animal species composition may lead to less nutrient input into caves by affecting local populations of troglophiles and trogloxenes. Trogloxenes such as cave crickets provide nutrient input to many, but not all, karst ecosystems (Barr 1968).

Covered Activities could convert woodland vegetation to open herbaceous vegetation on previously unmodified lands. However, given the linear nature of most Covered Activities, the permanent conversion of woodland vegetation to herbaceous cover related to the Covered Activities will not significantly alter the character of the landscape of the Plan Area. Much of the clearing associated with Covered Activities is limited to narrow linear corridors that already occur in a woodland-grassland mosaic. CPS Energy does not expect permanent conversion of wooded cover to herbaceous cover to alter surface biological communities in such a way that would significantly change the overall type or quality of nutrient input to the subsurface. The narrow linear nature of most of the proposed clearings also helps reduce the potential for significant alteration of the subsurface climate of any unknown karst features that may exist below CPS Energy ROWs. Denudation of the surface plant community and soil disturbances associated with the Covered Activities would be temporary in nature, since CPS Energy ROWs would be restored as quickly as possible to original or better conditions by replacing topsoil and revegetating with native plants.

Red Imported Fire Ants

The USFWS lists infestation by RIFA as a threat to listed karst invertebrates (USFWS 2011). The USFWS (2011, 2012) has indicated that an increase in RIFA leads to negative effects on the Covered Karst Invertebrates, although other studies (see Taylor et al. 2003 and Taylor et al. 2007) call this conclusion into question. For the purposes of this HCP, CPS Energy assumes that the presence of RIFA has a negative effect on the Covered Karst Invertebrates by indirectly resulting in death, wounding, or harm.

Tawny Crazy Ants

Early studies on the tawny crazy ant (*Nylanderia fulva*), a South American invasive ant species, indicate it can invade caves in moderate to high numbers when surface conditions are cold, or hot and dry, and has the potential to impact Covered Karst Invertebrates, including by predation or increased resource competition (LeBrun 2017).

5.3.4 Estimated Take

Incidental take of the Covered Karst Invertebrates arising from the Covered Activities is most likely to occur in the form of:

1. killing or wounding one or more Covered Karst Invertebrate when Covered Activities involve the disturbance or destruction of occupied void spaces during excavation;

2. harm when Covered Activities disrupt the connectivity of subsurface void spaces; or

3. harm when Covered Activities modify occupied habitats as a consequence of excavation that exposes occupied void spaces to the surface or when surface vegetation is changed from wooded to open cover.

However, while some amount of take is reasonably foreseeable in these circumstances, it is not always certain to occur.

5.3.4.1 SURROGATE METRIC

To simplify the estimation and quantification of take, CPS Energy proposes a surrogate metric for measuring the amount of take of the Covered Karst Invertebrates caused by the Covered Activities that uses the extent of surface and subsurface disturbances within areas mapped as Karst Zones 1, 2, 3, and 4. The proposed surrogate approach for this HCP rests on three central propositions: 1) reliable taxonomic identification of some karst invertebrates that might be present in karst formations encountered during construction would be exceedingly difficult and time consuming to achieve, and probably not possible in most cases; 2) it is likely that species assemblies in karst formations found in delineated KFRs are similar; and 3) surface acres provide a reliable metric for estimating the extent of karst habitat that may be affected. These propositions align closely with the conditions for approval of take surrogates.

Condition 1: *There is a causal link between the surrogate and take of the listed species.*

Caves and mesocaverns within the central Texas karst geologic formations provide habitat for the Covered Karst Invertebrates and hydrogeological processes acting on a regional scale formed the habitat matrix. This geology creates the physical environment in which the Covered Karst Invertebrates occur; although it may not be practical to know exactly where individuals occur in this 3-dimensional volume of potential habitat. Conceptually, the matrix of caves and mesocaverns within karst formations form a system of voids within the horizontal and vertical limits of the karstic strata. Karst invertebrates may move freely within this matrix of voids, perhaps using different areas at different times. The continuity and interconnectedness of this potential habitat may, however, be limited by the extent of karst development, secondary mineral growth that fills voids, faulting that displaces formations vertically, or exposure to conditions that render other critical aspects of habitat unsuitable—like water-filled voids or surface climate intrusion.

Based on this conceptual model of potential karst invertebrate habitat, Veni (2003) mapped the surface extent of the karst formations that provide potential habitat for listed species and ranked different areas by

the likelihood of occupancy by one or more of the listed species. Veni (2003) based the rankings on the distribution of known occurrences at the time and the continuity and similarity of the geology. The USFWS has adopted the concept of these Karst Zones acting as a measure of the extent of potential karst invertebrate habitat in permitting actions, consultations, and recovery planning.

There is a causal link between habitat modification and effects to the Covered Karst Invertebrates that may rise to the level of take. Direct and Indirect Habitat Modification associated with the Covered Activities is, in most cases, the triggering action for any resulting effects to the Covered Karst Invertebrates. For example, the USFWS has established that alteration of surface drainage patterns by changing topography or the addition of impervious cover; changes to surface plant and animal communities; and pollution from leaks or spills of sewage, petroleum products, or chemicals, are among the most serious threats to the Covered Karst Invertebrates. These threats indicate potential pathways for take of the Covered Karst Invertebrates from land use activities at the surface.

Similarly, the USFWS has defined many of the primary constituent elements of Critical Habitat for listed karst invertebrates in Bexar County in terms of various aspects of the surface environment over karst geology (77 *Federal Register* 8450–8523). Such elements include surface drainage basins and surface plant and animal communities where they occur over karst geology. The USFWS also recommends that preserves for karst invertebrates contain 100 acres or more around an occupied site, which could extend at least 1,178 feet from the occupied site.

The Covered Activities only have the potential to take the Covered Karst Invertebrates that use habitats affected directly or indirectly by the Covered Activities. Thus, if there is no habitat modification (i.e., CPS Energy completely avoids occupied habitat or does not conduct any Covered Activities), incidental take cannot occur because of the Covered Activities. Hence, the surface acres either disturbed or protected over the geologic formations that harbor listed karst invertebrate species are an appropriate causal surrogate for the take or conservation of individuals of the listed species that occur in those formations. Given the interconnectedness of the subsurface environment by the matrix of caves and mesocaverns that comprise karst geologic formations, it is rational to assume that the assemblage of species at one location is the same as the assemblage at nearby locations, where the extent of this karst habitat has not been fragmented by down cutting, fracturing, or other barriers. In fact, the USFWS's policy to date regarding these species uses surrogate metrics. Both the KFR and the Karst Zone policies rely on the assumption of presence of faunal communities across large areas based on extrapolating from a small number of surveyed caves.

Condition 2: *It is not practical to express the amount or extent of anticipated take or to monitor take-related impacts in terms of individuals of the listed species.*

With respect to the Covered Karst Invertebrates, it is impractical, and perhaps impossible, to establish the number and/or specific identity of the individuals of any particular listed species taken by the Covered Activities. The difficulties in making these determinations are due to the inaccessible nature of the habitat, the cryptic nature of the individuals themselves, and uncertainties about the basic taxonomic identity of several species of karst fauna. The same issues apply to efforts to measure the numbers or species of Covered Karst Invertebrates conserved by mitigation measures that protect areas of karst invertebrate habitat.

Inaccessible Habitat. Habitat for cave-adapted fauna in the Plan Area is the byproduct of the evolution of the Edwards Aquifer and related groundwater systems along the Balcones Escarpment, a hydrogeological process acting across approximately 20 million years of evolutionary time. The paleo aquifers developed locally to regionally extensive void networks along the structural grain imparted by the Balcones Fault Zone and the primary porosity of the Glen Rose Limestone, the Edwards Limestone, and Austin Chalk that are the host rocks for the great majority of caves in the area. The fauna are karst invertebrates, not

cave invertebrates, precisely because their habitat occurs within the fabric of the paleo aquifer. The voids within that fabric may be large enough to be accessible by a human (i.e., caves), but, by volume, the majority of potential habitat available to karst invertebrates is too small for human entry. Mesocaverns are the interconnected network of small voids in a karst formation that can harbor karst invertebrates that may be only 0.5 inch or less in diameter. It may be possible to detect subterranean habitat when a cave entrance is present at the surface in the form of a visible solution cavity or enlarged fracture. Habitat in larger voids may also be indirectly detectable with the use of geophysical technology such as ground-penetrating radar or electrical resistivity imaging, but the reliability of these methods is subject to false positive, false negatives, interference from utilities, and the like. Potential habitat for the species is difficult to detect from the surface and small mesocavernous voids may not be possible to detect (too small) or are so common in the karst formation that they are essentially "background noise."

Where voids are large enough to enter, either directly by a human or by the insertion of equipment like temperature/humidity probes, cameras, or bait traps, there is an opportunity to observe habitat conditions and potentially detect karst fauna. However, much of the void space that may comprise habitat for karst invertebrates—including the Covered Karst Invertebrates—is not accessible by humans or remote equipment. Therefore, it is not possible to observe the full extent of potential habitat for the Covered Karst Invertebrates for determining the presence or absence of either suitable habitat conditions or the species themselves. Nevertheless, Covered Karst Invertebrates have been collected from voids, including caves and mesocaverns, having no obvious surface connection prior to exposure by excavation.

Implementation of the Covered Activities, particularly excavation activities, could remove or alter habitat for the Covered Karst Invertebrates and take individuals of these species before it would even be possible to determine if such habitat or individuals were present in that space. Even then, only voids exposed by the excavation would be potentially accessible for direct or indirect observation and survey. It is not practical to fully access potential habitat for karst invertebrates at these sites without first destroying or altering the habitat and potentially and unknowingly taking listed species before they are able to be detected, making it impractical to measure take by a count of affected individuals.

Cryptic Species. The Covered Karst Invertebrates are small animals, generally ranging between 1 mm and 1 centimeter as adults. Individuals can be smaller as immature juveniles. Many karst invertebrates are pale in color, even somewhat translucent. Within caves and voids, some of the Covered Karst Invertebrates (i.e., the *Cicurina* species) occur under rocks or other cover items on the cave floor, some (like the *Neoleptoneta* species) utilize small cracks and spaces in cave walls and ceilings, and others (such as the *Rhadine* and *Batrisodes* species) rove across open spaces on floors, walls, and ceilings. At best, detecting the small, inconspicuous, and often hidden individuals of the Covered Karst Invertebrates is difficult where voids are large enough to permit entry by humans. However, most of the void space capable of providing shelter for individuals of the Covered Karst Invertebrates within caves occurs within the irregular talus pile habitat in breakdown areas where ancient cave ceilings have collapsed onto the cave floor. These areas are difficult to fully survey in the dark, cramped conditions. Largely, mesocaverns are not accessible to humans at all. As such, making direct counts of karst invertebrates, including the Covered Karst Invertebrates, in the bulk of the potentially suitable habitat area is impractical. Detectability issues are present even under favorable survey conditions in easily accessible caves since our current understanding of species' activity cycles is poor. Various cave-adapted species occurring within the same caves seem to share the habitat by staggering their activity cycles or by specializing in different microhabitats. For example, *Cicurina* sp., especially adult specimens, are apparently more available for collection during the coldest months of the year, whereas *Rhadine* sp. seem to peak in abundance during the late spring or early summer. Any one survey event is likely to miss the best temporal window for encountering a portion of the troglobitic community.

The Bexar County Karst Invertebrates Recovery Plan prepared by the USFWS (2011) acknowledges:

> Population estimates are unavailable for any of these species due to lack of adequate techniques, their cryptic behavior, inaccessibility of mesocaverns, and difficulty accessing cave and karst habitat. In known locations, one or two individuals are typically observed per survey event, and it is not uncommon to observe none at all (Krejca and Weckerley 2007). Results of point counts are available for some species at some localities in unpublished literature (for example, scientific permittee annual reports). Techniques that may be useful for population estimates of invertebrates include mark-recapture, such as have been used for cave crickets and troglobitic crustaceans (Knapp and Fong 1999, Taylor et al. 2005) but not for any of the listed species or their relatives.

Wildlife biologists sometimes use survey techniques involving mark-release-recapture or mark-capture methods to estimate population sizes of animals where complete census surveys are impractical. Biologists have not employed mark-release-recapture or mark-capture survey methods for the Covered Karst Invertebrates nor is CPS Energy aware of any safe, reliable marking techniques for these species. Even if such methods were available for conducting studies, it is not possible to access most of the habitat in which these animals occur, and the large open caves that humans are able to survey likely differ from the habitat available in small, tight mesocaverns. Due to the differences in habitat conditions between caves and mesocaverns, extrapolating data collected from cave environments to the more extensive mesocavern environments may not be valid. Furthermore, most species of listed karst invertebrates are very uncommon, and it may be difficult to mark enough individuals to conduct an informative study.

For the Covered Activities, CPS Energy cannot know the number of individuals of each of the Covered Karst Invertebrates that may be present within CPS Energy ROWs, nor are there reliable estimates of population sizes or density of individuals occurring in a given area of habitat. At best, CPS Energy may be able to confirm the presence of at least one individual of a particular species in an accessible void, but it is not practical to know how the Covered Activities might affect any individuals of the species.

Taxonomic Uncertainty. When biologists detect individuals of a karst invertebrate species, most are not identifiable to species in the field. For many species, taxonomic identity is only discernible with a detailed investigation of the minute differences in the shape or position of various body parts under a high-powered microscope. The ability of researchers to identify these species also relies on the sex and age of a particular specimen. For example, the morphological characteristics used to determine the different species of *Cicurina* spiders relies on adult genitalia, particularly adult female genitalia. It is not possible to use current morphological keys to identify most male *Cicurina* specimens to species. It is not possible to identify immature specimens of any *Cicurina* spider to species using morphological features, even though they are more commonly encountered during surveys than adults are. For most karst invertebrate taxa, only a few scientists are qualified and experienced enough to identify collected specimens to the species level using morphology. For some species, genetic studies can help determine taxonomic identity; but again, only a few qualified scientists available are capable of conducting this work (presuming that such individuals are even interested and available to review specimens). For genetic analysis to yield species-level identification, taxonomists require sufficient biological context in the form of other specimens from other sites that are rooted in a known taxonomic foundation. These investigations take years to complete and, as such, they are not practical as decision-making tools for individual projects operating on a relatively short period.

The Plan Area includes several KFRs. KFRs are geographic areas delineated based on potential discontinuity of karst habitat (such as down cutting of the geology by streams, changes in geologic formation, or faulting) that may reduce or limit interactions between troglobitic populations. The USFWS recognizes the distribution of the Covered Karst Invertebrates based on these KFR boundaries,

although, biologists do not have a clear understanding of the taxonomy of some of these species, and the acknowledged distribution of the Covered Karst Invertebrates is subject to change as biologists collect specimens from previously undocumented locations. See Paquin and Hedin (2004), Paquin and Dupérré (2009), and Hedin et al. (2018) as examples of suggested taxonomic changes that affect the known range or distribution of the *Cicurina* spiders of Bexar County.

While the taxonomic problems associated with the *Cicurina* genus are well known, the *Rhadine* beetles (including those of the Covered Karst Invertebrates) are also the subject of recent questions about taxonomy and distribution of species across the KFRs. For example, the USFWS previously recognized *Rhadine infernalis*, a species with a robust body form, as the only *Rhadine* species occurring in the Culebra Anticline KFR. Recently however, *Rhadine* specimens were collected from the Culebra Anticline KFR that exhibit an elongate body form, consistent with that of *Rhadine exilis*. The USFWS received taxonomic confirmation that despite being previously unrecorded within the Culebra Anticline KFR, these elongate individuals belong to *Rhadine exilis* (James Reddell, University of Texas at Austin, personal communication to Cyndee Watson, USFWS Austin Ecological Services Field Office, via email on May 29, 2015).

The foregoing information makes clear that it is not practical to express the amount or extent of anticipated take or to monitor take-related impacts in terms of individual members of the species.

Condition 3: *The surrogate provides a clear standard for determining when the level of anticipated take has been exceeded.*

Although the total number of individual Covered Karst Invertebrates in a given area is variable and subject to environmental and survey condition factors, the number of potential habitat acres is generally stable and easy to define. CPS Energy and their consultants can easily delineate the extent of the Karst Zones and KFRs. CPS Energy clearly defines the boundaries of any Covered Activity as part of the planning phase. As a result, calculating incidental take using the habitat modification surrogate requires overlaying the habitat layer and the project footprint in ArcGIS and determining the area of overlap. Once CPS Energy confirms the area of overlap, tracking the exhausted and remaining amounts of authorized incidental take is a simple accounting exercise, providing a clear standard for identifying when CPS Energy exceeds the level of anticipated take as represented by the Habitat Surrogate.

Based on the above, and in consideration of the precedent set by other issued ITPs for the Covered Karst Invertebrates, the use of acres of surface and subsurface habitat directly or indirectly modified by the Covered Activities as a surrogate for the number of Covered Karst Invertebrates taken meets the conditions set forth by the USFWS (80 *Federal Register* 26832–26845).

5.3.4.2 REQUESTED TAKE

For the purposes of estimating the total amount of incidental take of each Covered Karst Invertebrate species that may occur as a result of the Covered Activities over the ITP Term (Table 22), CPS Energy makes the following assumptions:

1. Each of the Covered Karst Invertebrates may occur within areas of potential habitat (represented by areas mapped as Karst Zones 1 through 4) in the Super KFRs where that species is known or assumed to occur (see Table 19).

2. The amount of Direct Habitat Modification for each Covered Karst Invertebrate species is approximated by the acres of subsurface disturbances on previously unmodified subsurface lands by Planning Sector (see Table 16) and the proportion of each Planning Sector that is represented by potential habitat for that species (see Table 21).

3. The amount of Indirect Habitat Modification for each Covered Karst Invertebrate species is approximated by the acres of surface disturbances on previously unmodified surface lands by Planning Sector (see Table 16) and the proportion of each Planning Sector that is represented by potential habitat for that species (see Table 21).

4. CPS Energy anticipates relying on participation in the Southern Edwards Plateau HCP for much of its incidental take authorization related to the Covered Karst Invertebrates (see Chapter 6.3.2.1). Therefore, the sum of Direct and Indirect Habitat Modifications across all Karst Zones for the Covered Karst Invertebrates that are addressed by the Southern Edwards Plateau HCP (i.e., Braken Bat Cave meshweaver, Madla's Cave meshweaver, Government Canyon Bat Cave meshweaver, Rhadine exilis, Rhadine infernalis, Government Canyon Bat Cave spider, and Helotes mold beetle) is likely an overestimate of the amount of incidental take authorization that CPS Energy may reasonably need under this HCP and related ITP. For the Covered Karst Invertebrates addressed by the Southern Edwards Plateau HCP, CPS Energy estimates its need under this HCP in terms of only those acres of Direct and Indirect Habitat Modification that affect Karst Zones 1 and 2, and further reduces the take request to 25% of the calculated estimate of Direct and Indirect Habitat Modification. The values in Table 22 for Direct and Indirect Habitat Modification and Requested Incidental Take reflect this 25% assumption, which is CPS Energy's best estimate for the maximum amount of enrollment of its activities in this HCP given uncertainties regarding the ongoing availability of the Southern Edwards Plateau HCP and the number of new Occupied Karst Features that may be added to the baseline during the ITP Term. For the Robber Baron Cave meshweaver and Cokendolpher Cave harvestman (species not covered by the Southern Edwards Plateau HCP), CPS Energy estimates its need for incidental take authorization in terms of the estimated Direct and Indirect Habitat Modifications across all Karst Zones. The 25% assumption does not apply to the Robber Baron Cave meshweaver or the Cokendolpher Cave harvestman.

It is important to note that CPS Energy relies on these assumptions only for estimating the total amount of incidental take that may be associated with this HCP over the ITP Term. CPS Energy will assess take for specific Covered Activities through the HCP's Conservation Program (see Chapter 6) based on project- and site-specific data. If, over time, CPS Energy anticipates that its requested incidental take authorization may be insufficient to address its need to perform Covered Activities, CPS Energy may seek to amend the HCP and ITP to receive additional incidental take authorization from USFWS.

Table 22. Estimated Direct and Indirect Habitat Modification and Requested Incidental Take for the Covered Karst Invertebrates.

Species / Planning Sector	Direct Habitat Modification (acres)	Indirect Habitat Modification (acres)	Requested Incidental Take (acres)
Madla's Cave Meshweaver (*Cicurina madla*)			
Urban Core	0.0	0.0	
North-Central	1.4	0.2	
Northern	16.8	183.0	
Southern	0.0	0.0	
TOTAL	**18.3**	**183.2**	**201.5**

Species / Planning Sector	Direct Habitat Modification (acres)	Indirect Habitat Modification (acres)	Requested Incidental Take (acres)
Robber Baron Cave Meshweaver (*Cicurina baronia*)			
Urban Core	7.4	1.1	
North-Central	15.7	2.5	
Northern	6.4	70.1	
Southern	0.0	0.0	
TOTAL	**29.5**	**73.7**	**103.2**
Government Canyon Bat Cave Meshweaver (*Cicurina vespera*)			
Urban Core	0.0	0.0	
North-Central	0.4	0.1	
Northern	7.5	81.8	
Southern	0.0	0.0	
TOTAL	8.0	81.8	**89.8**
Rhadine exilis (an elongate ground beetle)			
Urban Core	0.0	0.0	
North-Central	1.4	0.2	
Northern	16.8	183.0	
Southern	0.0	0.0	
TOTAL	18.3	183.2	**201.5**
***Rhadine infernalis* (a robust ground beetle)**			
Urban Core	0.0	0.0	
North-Central	1.4	0.2	
Northern	16.8	183.0	
Southern	0.0	0.0	
TOTAL	18.3	183.2	**201.5**
Government Canyon Bat Cave Spider (*Neoleptoneta microps*)			
Urban Core	0.0	0.0	
North-Central	0.0	0.0	
Northern	5.7	62.3	
Southern	0.0	0.0	
TOTAL	5.7	62.3	**68.0**
Cokendolpher Cave Harvestman (*Texella cokendolpheri*)			
Urban Core	7.4	1.1	
North-Central	15.7	2.5	
Northern	6.4	70.1	
Southern	0.0	0.0	
TOTAL	**29.5**	**73.7**	**103.2**

Species / Planning Sector	Direct Habitat Modification (acres)	Indirect Habitat Modification (acres)	Requested Incidental Take (acres)
Helotes Mold Beetle (*Batrisodes venyivi*)			
Urban Core	0.0	0.0	
North-Central	0.1	0.0	
Northern	7.9	85.7	
Southern	0.0	0.0	
TOTAL	**8.0**	**85.7**	**93.7**

5.3.5 Impact of the Taking

CPS Energy describes the impact of its requested maximum potential take for each Covered Karst Invertebrate in terms of the proportion of potential habitat in the Plan Area associated with the requested take. CPS Energy notes that not all take equates to complete habitat loss or the death of an individual of a Covered Species—ensuring that this assessment, which treats habitat degradation and sub-lethal effects to individuals the same as habitat loss or death, is conservative.

CPS Energy notes that a more precise assessment of impact of its take on the status of the Covered Species is not possible at this time given the programmatic nature of this HCP. However, CPS Energy will prepare more precise assessments of take for Covered Activities as it implements the Conservation Program of this HCP (see Chapter 6). CPS Energy commits to avoiding take that would jeopardize the continued existence of a Covered Karst Invertebrate or that would destroy or adversely modify Critical Habitat. For example, CPS Energy commits to avoid performing, to the extent possible, Covered Activities within 50 feet of a karst feature known to be occupied by one or more Covered Karst Invertebrate and to coordinate with the USFWS to identify and implement other practicable minimization measures within a certain distance of such features. CPS Energy describes these commitments in Chapter 6.

Table 23 summarizes the amount of incidental take requested for each Covered Karst Invertebrate and the proportion of the total amount of potential habitat affected (all Karst Zones) and in proportion to the acres of Karst Zone 1 or 2 only. The amount of requested incidental take does not exceed 0.2% of all potential habitat and does not exceed 2.0% of Karst Zones 1 or 2. The potential impact of the requested take is further minimized by the minimization measures described in Chapter 6, which emphasize the avoidance (where possible) of disturbances within 50 feet of the entrance or footprint (if known) of a karst feature known or assumed to be occupied by one or more of the Covered Karst Invertebrates.

Table 23. Impacts of Take for the Covered Karst Invertebrates

Covered Karst Invertebrate Species	Potential Habitat (acres, all Karst Zones)	Potential Habitat (acres, Karst Zones 1 and 2 Only)	Incidental Take Request (acres)	Incidental Take as Percentage of Potential Habitat (all Karst Zones)	Incidental Take as Percentage of Potential Habitat (Karst Zones 1 and 2 Only)
Madla's Cave meshweaver (*Cicurina madla*)	245,913	133,573	201.5	0.08%	0.15%

Covered Karst Invertebrate Species	Potential Habitat (acres, all Karst Zones)	Potential Habitat (acres, Karst Zones 1 and 2 Only)	Incidental Take Request (acres)	Incidental Take as Percentage of Potential Habitat (all Karst Zones)	Incidental Take as Percentage of Potential Habitat (Karst Zones 1 and 2 Only)
Robber Baron Cave meshweaver (*Cicurina baronia*)	81,874	5,140	103.2	0.1%	2.0%
Government Canyon Bat Cave meshweaver (*Cicurina vespera*)	142,697	56,688	89.8	0.06%	0.16%
Rhadine exilis (an elongate ground beetle)	245,913	245,913	201.5	0.08%	0.08%
Rhadine infernalis (a robust ground beetle)	245,913	133,573	201.5	0.08%	0.15%
Government Canyon Bat Cave spider (*Neoleptoneta microps*)	60,851	60,851	68	0.11%	0.11%
Cokendolpher Cave harvestman (*Texella cokendolpheri*)	81,874	5,140	103.2	0.1%	2.0%
Helotes mold beetle (*Batrisodes venyivi*)	86,014	56,315	93.7	0.11%	0.17%

5.3.6 Karst Invertebrate Critical Habitat

Critical Habitat for the Covered Karst Invertebrates occurs within the Plan Area and is colocated with the CPS Energy Network (Figure 12). The USFWS designated Critical Habitat for the Covered Karst Invertebrates including 30 CHUs covering 4,216 acres in Bexar County (77 *Federal Register* 8450–8523). CPS Energy considered the extent of the Covered Activities likely to impact areas of designated Critical Habitat within the Plan Area. CPS Energy based its analysis on the extent of the current CPS Energy Network that occurs within Critical Habitat (Table 24).

As described in Chapter 6, CPS Energy will attempt to avoid impacts to designated Critical Habitat where practicable. However, the CPS Energy Network includes existing facilities within designated Critical Habitat that predates the designation and that require routine O&M activities and possibly Significant Upgrades over the ITP Term. Table 24 identifies the acres of the CPS Energy ROW that occur within CHUs.

The CPS Energy Network currently occupies between 0% and 27.0% of the land within each CHU.

Table 24. Critical Habitat Unit Impact Analysis.

Unit Name	Unit Size (Acres)	Electric T-Lines (acres)	Electric D-Lines—Aboveground (acres)	Electric D- Lines—Underground (acres)	Gas T- Lines (acres)	Gas D-Lines (acres)	Total Extent of ROW within CHU (acres)	Percent of CHU within ROW (%)
1a	144	0.0	0.0	0.0	0.0	0.0	0.0	0.0%
1b	100	0.0	0.0	0.0	0.0	0.0	0.0	0.0%
1c	100	0.0	0.0	0.0	0.0	0.0	0.0	0.0%
1d	225	0.0	0.0	0.0	0.0	0.0	0.0	0.0%
1e	410	0.0	0.0	0.0	0.0	0.0	0.0	0.0%
1f	100	0.0	0.0	0.0	0.0	0.0	0.0	0.0%
2	180	0.0	7.3	0.0	0.0	0.0	7.3	4.1%
3	85	0.0	8.9	0.0	0.0	0.4	9.3	10.9%
4	210	0.0	9.0	0.0	0.0	0.0	9.0	4.3%
5	100	0.0	3.1	0.0	0.0	0.0	3.1	3.1%
6	96	0.0	4.4	0.0	0.0	0.0	4.4	4.6%
7	100	0.0	2.0	0.0	0.0	0.0	2.0	2.0%
8	243	11.8	6.3	0.0	0.0	<0.01	18.1	7.4%
9	105	0.0	0.0	0.0	0.0	1.2	1.2	1.1%
10a	38	0.0	2.9	0.0	0.0	0.0	2.9	7.6%
10b	35	0.0	0.0	0.0	0.0	0.0	0.0	0.0%
11e	89	5.3	0.0	3.1	0.3	3.4	12.1	13.6%
12	166	7.2	1.3	11.3	0.0	8.5	28.3	17.0%
13	100	5.5	2.0	0.7	0.0	0.7	8.9	8.9%
14	292	0.0	0.0	0.0	0.0	0.0	0.0	0.0%
15	217	0.0	17.3	0.6	0.0	0.2	18.1	8.3%
16	103	0.0	0.8	0.0	0.0	0.04	0.8	0.8%
17	96	0.0	2.1	0.2	0.0	0.0	2.3	2.4%
19	81	0.0	0.8	4.7	0.0	0.4	5.9	7.3%
20	247	0.0	35.8	5.1	0.0	25.7	66.6	27.0%
21	154	0.0	2.4	0.4	0.0	0.2	3.0	1.9%
22	100	0.0	0.0	0.0	0.0	0.0	0.0	0.0%
23	100	0.0	0.0	0.0	0.0	0.0	0.0	0.0%
25	100	0.0	5.7	0.3	0.0	3.4	9.4	9.4%
26	100	6.4	0.0	0.0	0.0	0.0	6.4	6.4%
ALL CHUs	**4,216**	**24.4**	**71.1**	**26.4**	**0.3**	**42.5**	**219.1**	**5.2%**

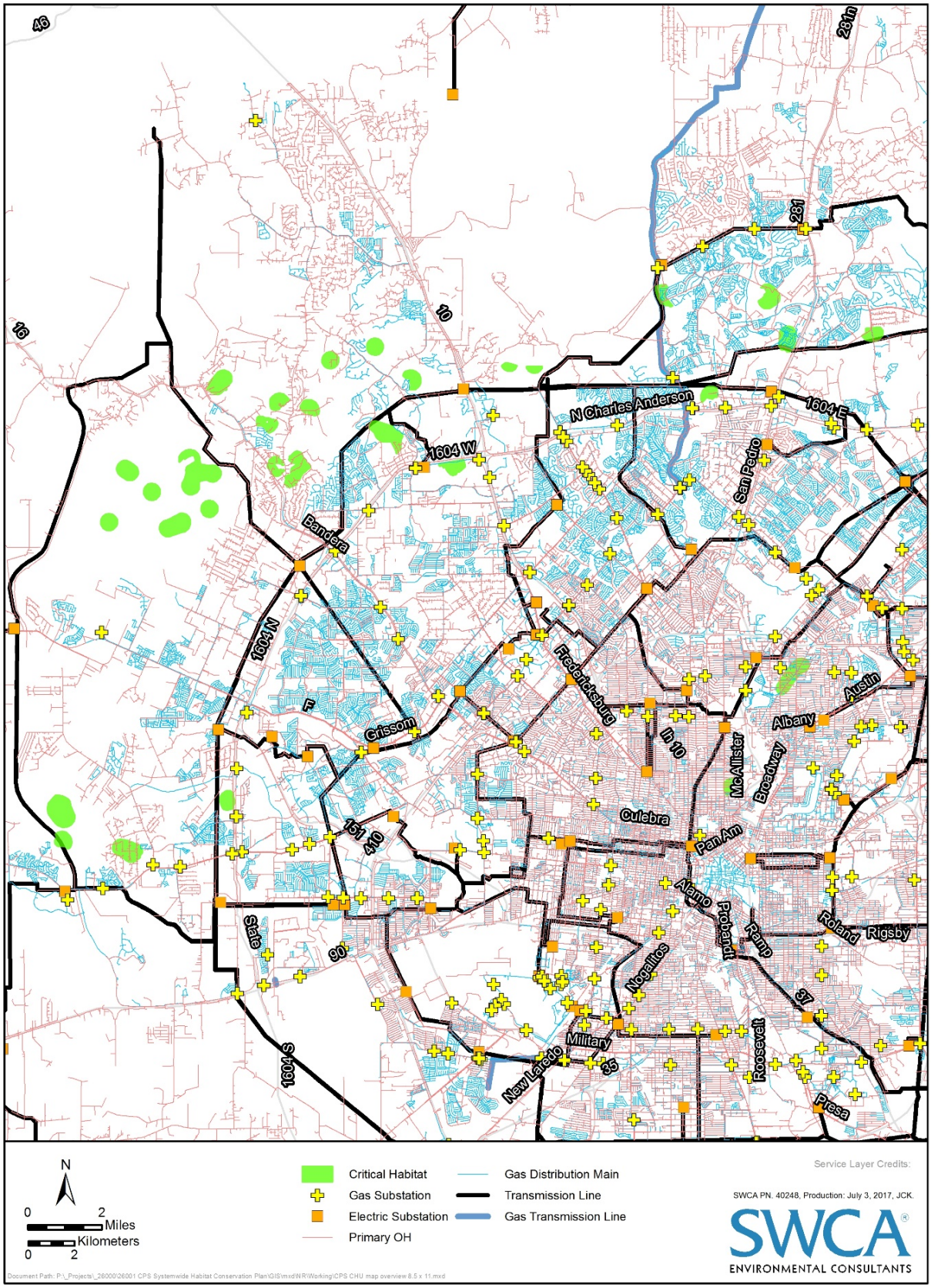

Figure 12. Critical Habitat Units for the Covered Karst Invertebrates.

5.4 Summary of Requested Take

In summary, CPS Energy requests an amount of incidental take authorization for each of the Covered Species in the amounts shown in Table 25. Although CPS Energy derived these take estimates using the assumptions elsewhere in this chapter, CPS Energy intends that the take allocation for any Covered Species may be applied anywhere across the Plan Area where needed for that species. It is also important to repeat that these take estimates are conceptual or theoretical maximums to ensure that, barring unforeseen circumstances, CPS Energy will not run out of take authorization for a Covered Species during the ITP Term.

Table 25. Summary of Incidental Take Request.

Covered Species	Direct Habitat Modification (acres)	Indirect Habitat Modification (acres)	Requested Incidental Take Authorization (acres)
Golden-cheeked warbler (*Setophaga chrysoparia*)	2,032.1	18,288.6	20,320.7
Madla's Cave meshweaver (*Cicurina madla*)	18.3	183.2	201.5
Robber Baron Cave meshweaver (*Cicurina baronia*)	29.5	73.7	103.2
Government Canyon Bat Cave meshweaver (*Cicurina vespera*)	8.0	81.8	89.8
Rhadine exilis (an elongate ground beetle)	18.3	183.2	201.5
Rhadine infernalis (a robust ground beetle)	18.3	183.2	201.5
Government Canyon Bat Cave spider (*Neoleptoneta microps*)	5.7	62.3	68.0
Cokendolpher Cave harvestman (*Texella cokendolpheri*)	29.5	73.7	103.2
Helotes mold beetle (*Batrisodes venyivi*)	8.0	85.7	93.7

Although CPS Energy relied on assumptions described herein to reach a reasonable estimate of the total amount of take authorization that it may need over the ITP Term, the requested incidental take authorization addresses all forms of take that may result from the Covered Activities anywhere across the Plan Area. CPS Energy will draw from its take authorization as it conducts Covered Activities over the ITP Term, pursuant to the processes outlined in Chapter 6.

6 CONSERVATION PROGRAM

6.1 Overview

CPS Energy will, on a case-by-case basis, select CPS Energy Activities to enroll in this HCP. CPS Energy Activities that are enrolled in this HCP are Covered Activities. Covered Activities are specific instances of one or more CPS Energy Activities performed within a specific geographic area during a specific period. The ITP authorizes incidental take of the Covered Species that is caused by Covered Activities when CPS Energy implements the provisions of this HCP respecting such Covered Activity and Covered Species.

Overall, this conservation program builds on the strong environmental review processes that CPS Energy has been successfully implementing for many years. CPS Energy intends for this HCP and the associated ITP to provide additional tools and flexibility for addressing take of the Covered Species, while effectively delivering essential public utility services to its customers.

6.2 Biological Goals and Objectives

Biological Goals and Objectives "guide management actions taken for an HCP to meet its conservation vision" (USFWS and NMFS 2016). Biological goals are broad guiding principles that describe the desired condition and biological needs of the species, while biological objectives "provide the foundation for determining the conservation measures, monitoring direction, and evaluating the effectiveness of the conservation strategy" (USFWS and NMFS 2016).

The biological goal of this HCP is to minimize and mitigate the impacts of taking of the Covered Species arising from the Covered Activities to the maximum extent practicable. The biological objectives in pursuit of this goal are as follows:

1. Apply measures to minimize the impacts of the Covered Activities on the Covered Species.

2. Apply a standardized approach for determining the amount of take and mitigation associated with Covered Activities that is practicable and fully offsets the impacts of the taking.

3. Demonstrate that mitigation is available to offset the impacts of the taking prior to conducting the Covered Activities, unless associated with unplanned Emergency Responses.

4. Protect and manage habitats for the Covered Species to mitigate for the impacts of the taking in accordance with the standards described in this HCP. Reasonable estimates of the amount of mitigation that might be provided for each Covered Species are shown in Table 26, which are based on full utilization of CPS Energy's requested take authorization (Chapter 5.4), application of the range of mitigation ratios specified in Chapters 6.5 and 6.6, and other specified assumptions. Mitigation for the Covered Species is expressed in terms of "Conservation Credits," which are generally equivalent to 1 acre of habitat protected and managed in perpetuity for the benefit of the Covered Species (see Chapter 6.7 for additional details about mitigation crediting and priorities).

Table 26. Estimated Mitigation.

Covered Species	Estimated Mitigation (credits)	Notes and Assumptions
Golden-cheeked warbler (*Setophaga chrysoparia*)	4,928	Mitigation ratios for Direct and Indirect Habitat Modification are specified in Chapter 6.5.5. Approximately 80% of incidental take is assumed to be associated with discounted mitigation ratios for Existing Impacts. Approximately 5% of incidental take is assumed to be associated with increased mitigation ratios for in-season clearing. The remaining 15% of incidental take is assumed to be associated with standard mitigation ratios. Rounded up to nearest whole acre.
Madla's Cave meshweaver (*Cicurina madla*)	303	Mitigation ratios are specified in Chapter 6.6.4 and applied as described in Appendix F. For Covered Karst Invertebrates outside of the Alamo Heights KFR: Approximately 25% of incidental take is assumed to be mitigated at ratios for Critical Habitat and Approved or Potential KFRs (non-colocated), based on CPS Energy's best assessment of where Covered Activities will be located and opportunities for colocation with existing structures and disturbances. Approximately 30% of incidental take is assumed to be mitigated at ratios for High Impact Zones adjacent to Occupied or Assumed Occupied Karst Features. Approximately 45% of incidental take is assumed to be mitigated at ratios for Potential Habitat (i.e., Karst Zones 1 through 4). The assumptions for application of High Impact and Potential Habitat ratios is based on the proportion of a conceptual 100-acre Approved KFA where 40 acres is within 750 feet of an Occupied Karst Feature. For Covered Karst Invertebrates in the Alamo Heights KFR: Approximately 5% of incidental take is assumed to be mitigated at ratios for Critical Habitat and Approved or Potential KFRs (non-colocated), based on CPS Energy's best assessment of where Covered Activities will be located and opportunities for colocation with existing structures and disturbances. Approximately 10% of incidental take is assumed to be mitigated at ratios for High Impact Zones adjacent to Occupied or Assumed Occupied Karst Features. Approximately 85% of incidental take is assumed to be mitigated at ratios for Potential Habitat (i.e., Karst Zones 1 through 4). All estimates are rounded up to nearest whole acre.
Robber Baron Cave meshweaver (*Cicurina baronia*)	86	
Government Canyon Bat Cave meshweaver (*Cicurina vespera*)	134	
Rhadine exilis (an elongate ground beetle)	303	
Rhadine infernalis (a robust ground beetle)	303	
Government Canyon Bat Cave spider (*Neoleptoneta microps*)	99	
Cokendolpher Cave harvestman (*Texella cokendolpheri*)	86	
Helotes mold beetle (*Batrisodes venyivi*)	137	

Notes:

Values in this table are estimates only, based on assumptions described in the text and in the table notes. Actual mitigation acres put in place during the ITP Term will depend on the circumstances of specific Covered Activities.

Mitigation acres for the Covered Karst Invertebrates are expected to be stacked for species that occur together, such that the total amount of mitigation that CPS Energy will provide for the Covered Karst Invertebrates will be less than the estimated sum for all Covered Karst Invertebrates. Mitigation stacking may also be possible for the GCWA and the Covered Karst Invertebrates.

6.3 Evaluating CPS Energy Activities for Possible HCP Enrollment

6.3.1 CPS Energy Environmental Checklist

CPS Energy currently uses an Environmental Checklist to identify environmental constraints associated with its CPS Energy Activities. CPS Energy project designers review published maps and information compiled within CPS Energy's internal GIS database to identify environmental constraints such as the presence of karst invertebrate zones, known karst features, or potential GCWA habitat based on habitat models, as well as non-species related parameters like wetlands and cultural resources. The project designer records this information on the Environmental Checklist and if this process identifies sensitive

environmental features, CPS Energy environmental staff become involved. CPS Energy environmental staff identify and fill knowledge gaps to guide decision-making.

CPS Energy environmental staff are qualified, degreed geologists, biologists, or environmental scientists whose duties include ensuring CPS Energy compliance with applicable federal and state environmental regulations. CPS Energy environmental staff have developed the Environmental Checklist process in coordination with species experts as a method of performing environmental screening of its activities.

As part of this review, CPS Energy project designers coordinate with environmental staff to evaluate the ability to avoid or minimize impacts to sensitive environmental features. For example, it may be possible to bore a gas line or underground electrical line under a stream and its associated riparian zone to minimize vegetation impacts. Where possible, alignments for underground utility lines may be re-routed to avoid or increase the distance of disturbance from an identified karst feature. Where feasible, CPS Energy also takes steps to minimize vegetation impacts within potential GCWA habitat.

Finally, when identifying potential routes or sites for new transmission and distribution facilities, CPS Energy designers and environmental staff strive to utilize existing previously disturbed areas such as Existing ROWs, property boundary lines, and previously cleared areas to the extent practicable, in consideration of other environmental and human impacts.

As part of this HCP, CPS Energy will revise its Environmental Checklist to provide explicit instruction for documenting impacts to sensitive environmental features that may provide potential habitat for the Covered Species. Specifically, the revised Environmental Checklist will require the following elements for CPS Energy Activities:

- **Delineate the Extent of GCWA Habitat:** CPS Energy project designers will map the extent of potential GCWA habitat within, and within 300 feet of, the limits of a CPS Energy Activity. CPS Energy will either review the combined output of all readily available and current habitat models or, if available, will rely on any site-specific habitat assessments performed by a USFWS-permitted biologist to identify areas of potential GCWA habitat. The Environmental Checklist will cite the source of any materials used to develop the delineation.
- **Delineate the Extent of Covered Karst Invertebrate Habitat:** CPS Energy project designers will map the extent of potential Covered Karst Invertebrate habitat (i.e., the extent of Karst Zones 1–4 from Veni [2003]) within the limits of a CPS Energy Activity. The Environmental Checklist will also document the occurrence of any known occupied caves and/or Critical Habitat (by CHU). CPS Energy will query the administrator of the Southern Edwards Plateau HCP or the USFWS at least annually to update its files of known occurrences. CPS Energy may also rely on the results of any site-specific karst surveys performed by USFWS-permitted biologists. The Environmental Checklist will cite the source of any materials used to develop the delineation.

In some cases, particularly associated with large-scale projects, CPS Energy may determine that a project is likely to affect sensitive environmental features and conduct a more detailed environmental assessment[9] in lieu of the Environmental Checklist. If an environmental assessment is completed, it will include environmental documentation exceeding the minimum specified for the Environmental Checklist.

[9] Such environmental assessment is conducted pursuant to CPS Energy's practices and is unrelated to the National Environmental Policy Act.

6.3.2 Alternate Means of ESA Compliance

Enrolling CPS Energy Activities in the HCP is voluntary and CPS Energy may, at its sole discretion, use alternate means of achieving compliance with the ESA for its CPS Energy Activities. Such alternate means may include, for example: 1) avoiding take of listed species; 2) obtaining take authorization pursuant to Section 7 of the ESA where CPS Energy activity is authorized or funded by a federal agency; 3) participation in the Southern Edwards Plateau HCP; or 4) obtaining a project-specific ITP. CPS Energy may also use one or more of these alternate means of achieving ESA compliance for some of the Covered Species that might be taken by CPS Energy Activities or Covered Activities. In such cases, CPS Energy will document how ESA compliance will be achieved for each Covered Species that occurs near Covered Activities. CPS Energy will provide this documentation to the USFWS as part of the process described in Chapter 6.3.3.

6.3.2.1 SOUTHERN EDWARDS PLATEAU HABITAT CONSERVATION PLAN

CPS Energy intends to use the Southern Edwards Plateau HCP for authorization of incidental take of the Covered Karst Invertebrates under the following circumstances:

1. when it determines that ESA Section 10 authorization for one or more of the Covered Karst Invertebrates covered by the Southern Edwards Plateau HCP is needed for CPS Energy Activities;

2. where CPS Energy Activities occur within the permit area for the Southern Edwards Plateau HCP; and

3. where the Southern Edwards Plateau HCP is available for use by CPS Energy (i.e., participation in the Southern Edwards Plateau HCP is achievable within the desired timeline for the CPS Energy Activities).

In such circumstances, CPS Energy would rely on the participation process and incidental take authorization of the Southern Edwards Plateau HCP for addressing impacts to those Covered Karst Invertebrates addressed by such participation, and would not draw upon its own incidental take authorization for those same Covered Karst Invertebrates under this HCP and ITP. CPS Energy and USFWS acknowledge that portions of a single project may be enrolled in different programs to achieve ESA compliance (see example in Appendix F).

CPS Energy, at its discretion, may also participate in the Southern Edwards Plateau HCP under other circumstances, including for authorization of incidental take of the GCWA, and has assumed for the purposes of this HCP that 10% of expected impacts to GCWA habitat resulting from CPS Energy Activities over the ITP Term will be authorized through participation in the Southern Edwards Plateau HCP. Participation in the Southern Edwards Plateau HCP may be desirable if CPS Energy is not able to find suitable mitigation opportunities in a timely manner, whereas the Southern Edwards Plateau HCP might be able to offer immediate authorization with the payment of the applicable fees.

6.3.2.2 SECTION 7 INTERAGENCY CONSULTATIONS

Compliance with other applicable federal laws, such as Section 404 of the Clean Water Act administered by the U.S. Army Corps of Engineers, may trigger the need for interagency consultation under Section 7(a)(2) of the ESA between the federal action agency and the USFWS. However, issuance of the ITP will substantially streamline the federal agency's obligations for interagency consultation related to Covered Activities, because effects to Covered Species and designated Critical Habitats will already have been

evaluated and addressed in this HCP and the USFWS's related Biological Opinion and NEPA environmental review document (see, for example, streamlining language in General Condition 18 of the U.S. Army Corps of Engineers Nationwide Permit Program).

6.3.3 Documenting and Confirming HCP Enrollment

CPS Energy will document Covered Activities and confirm that the Covered Activities conform to applicable requirements of the HCP and ITP. The documentation process will ensure that both CPS Energy and the USFWS have a record of all Covered Activities and that the total amount of take associated with all Covered Activities does not exceed the amount of take authorized by the ITP.

CPS Energy will prepare such documentation and submit it to the USFWS at least 30 days before initiating clearing or other land-use activities associated with a Covered Activity (excepting Emergency Responses) that would result in incidental take of a Covered Species. CPS Energy will develop and use standard templates (HCP Enrollment Form) to facilitate this reporting and USFWS reviews. CPS Energy will provide the USFWS an opportunity to review and comment on the template form. CPS Energy will solicit USFWS input on the content and format of the HCP Enrollment Form. For Covered Activities involving Emergency Responses, CPS Energy will provide to USFWS basic notification (anticipated to occur via email or telephone message) of the activity within 5 business days of the Emergency Response and will provide a completed HCP Enrollment Form to USFWS within 30 days following the Emergency Response. CPS Energy will only provide a completed HCP Enrollment Form for Emergency Responses that caused, or are likely to cause, incidental take of a Covered Species.

The HCP Enrollment Form will include:

- The type, location, extent (limits), and anticipated schedule of the Covered Activity.
- The amount of delineated habitat for each Covered Species (see Chapters 6.5.1 and 6.6.1) associated with the Covered Activity.
- Demonstration of incidental take avoidance or use of other ESA compliance options (including participation in the Southern Edwards Plateau HCP) for addressing incidental take of one or more Covered Species, where applicable.
- The amount of incidental take for each Covered Species, not otherwise addressed through an alternate compliance method, that will be caused by the Covered Activity, as quantified by the Habitat Surrogate and the assessment methods explained in Chapters 6.5.2 and 6.6.2.
- Demonstration that the amount of incidental take associated with the Covered Activity is within the limits authorized by the ITP, considering the amount of incidental take authorization already utilized by previous enrollments of CPS Energy Activities.
- The minimization and mitigation measures CPS Energy will apply to offset the impacts of the taking associated with the Covered Activity.
- Demonstration that CPS Energy has mitigation for the Covered Activity in place prior to clearing activities.
- As described in Section 9.1, Post-Enrollment Mitigation will necessarily accompany any Covered Activity that involves Emergency Responses.

6.4 General Minimization Measures

CPS Energy will implement the following measures that minimize the impacts caused by its Covered Activities:

1. **HCP Training:** CPS Energy will conduct periodic education and training sessions for CPS Energy project designers on federal, state, and local environmental requirements and HCP/ITP requirements.

2. **Vegetation Management:** CPS Energy will clear or manage vegetation within ROWs using aboveground means when practicable. Clearing or managing vegetation using aboveground means (e.g., mowing, hydro-ax, manual cutting; as opposed to scraping, grading, and ripping) minimizes subsurface disturbances and impacts to Covered Karst Invertebrates from soil disturbances. CPS Energy conducts vegetation management as necessary to create and maintain safe and reliable conditions.

3. **Oak Wilt Prevention:** CPS Energy will direct its work crews to follow the City of San Antonio Oak Tree Ordinance and Texas A&M Forest Service (TFS) prevention of oak wilt measures (TFS 2015). The TFS recommends eliminating diseased red oaks, handling firewood properly, and painting wounds on healthy oaks to prevent the spread of oak wilt (TFS 2015). Work crews will treat all trimming cuts or other wounds to oak trees, including freshly cut stumps and damaged surface roots immediately (within one hour) with a wound paint or latex paint to prevent exposure to contaminated insect vectors (TFS 2015).

4. **Herbicide Use:** CPS Energy is committed to judicious use of herbicides in areas covered by the HCP. Project areas will be evaluated to determine site-specific requirements, and hand application will be used where possible. Herbicides will not be applied when wind speed exceeds 12 mph. CPS Energy work crews will apply all pesticide and herbicides pursuant to label requirements for dilution, application, disposing of rinse water, and disposing of empty containers.

5. **Revegetation:** CPS Energy will restore disturbed areas to preconstruction contours, where practical, and revegetate disturbed areas with native species following completion of a Covered Activity.

6. **Waterway Protection:** CPS Energy work crews will install and maintain all appropriate erosion and sedimentation controls in accordance with local and state regulations and industry best practices.

7. **Line Markers:** CPS Energy will mark those sections of existing transmission lines that become subject to Significant Upgrades and that are within 1 mile of potential migration stopover habitat for whooping cranes that occurs within the “80-mile” migration corridor for the whooping crane. Markers will be traditional marker balls, spiral vibration dampeners, air flow spoilers, or similar technologies. CPS Energy will install markers on the shield wires, with spacing dependent on the type of marker used, and the marked area will extend from the river or waterway limits or boundary of the stopover habitat out to a distance of 300 feet. CPS Energy will inspect and replace markers as necessary as part of routine O&M activities.

8. **Listed and Proposed for Listing Plant Species:** CPS Energy will request from USFWS information on previously documented locations of federally listed plants and plants proposed for federal listing. CPS Energy will make such requests in advance of enrolling CPS Energy

Activities in the HCP during the Annual Coordination Meetings (see Chapter 8.3). CPS Energy will also request similar information from the TPWD through a query to the Texas Natural Diversity Database in advance of enrolling a CPS Energy Activity in the HCP.

CPS Energy will, to the extent practicable, avoid subsurface disturbances within 50 feet of any previously documented locality of such plant species, limited to those localities where continued occupancy by the plant species is likely. To minimize the impact of surface disturbances, CPS Energy will also, to the extent practicable, set mowing heights in such areas to the approximate aboveground height of the plant species. Specific to the endangered Tobusch fishhook cactus (*Sclerocactus brevihamatus* ssp. *tobuschii*), mowing height will be no less than 5 inches. If such measures are not practicable, CPS Energy will engage with the USFWS in advance of enrolling the CPS Energy Covered Activity to identify what other minimization measures, if any, would be necessary to avoid jeopardizing the continued existence of the federally listed or proposed for listing plant species or avoid the destruction or adverse modification of designated or proposed critical habitat for listed plant species. CPS Energy anticipates that such additional measures would most often include performing surveys to map the locations of individual plants more precisely and inform more refined micrositing of disturbances, salvage collection of individual plants from the ROW and relocation to a USFWS-approved site or repository, or avoidance of surface disturbances during the plant's flowering season.

CPS Energy will also implement other minimization measures that are specific to one or more Covered Species, as specified in Chapters 6.5.3 and 6.6.3.

6.5 Golden-cheeked Warbler Measures

This subchapter describes the measures CPS Energy will implement for Covered Activities where incidental take authorization for the GCWA is achieved through the application of this HCP and related ITP.

6.5.1 Habitat Delineations

CPS Energy may assess the amount of incidental take of the GCWA associated with a Covered Activity in one of two ways: 1) on the basis of Direct or Indirect Habitat Modification to potential habitat with assumed occupancy, or 2) on the basis of Direct or Indirect Habitat Modification to a refined delineation of occupied habitat that incorporates the findings of presence/absence survey information and other reported occurrence data. CPS Energy will provide to the USFWS the supporting information for methods used to delineate GCWA habitat in the HCP Enrollment Form.

6.5.1.1 POTENTIAL HABITAT WITH ASSUMED OCCUPANCY

As part of the Environmental Checklist, CPS Energy maps areas of potential GCWA habitat within, and within 300 feet of, the ROW for a Covered Activity. Such assessments will be made on the basis of the combined output of all readily available and current GCWA habitat models or based on a site-specific habitat assessment performed by a USFWS-permitted biologist. CPS Energy may rely on this mapping to assess the extent of Direct or Indirect Habitat Modification for Covered Activities and determine the acres of incidental take for the GCWA.

Although CPS Energy must map the extent of potential GCWA habitat outside of the limits of CPS Energy ROWs, neither CPS Energy nor its contractors are obligated to access lands outside of CPS Energy ROWs and may rely on desktop information (such as habitat models or aerial imagery)

and/or visual inspection from the air (i.e., via fly-over with fixed-wing aircraft or helicopter) or from the edge of CPS Energy ROWs or other publicly accessible lands.

6.5.1.2 OPTIONAL PRESENCE/ABSENCE SURVEYS AND OCCUPIED HABITAT DELINEATIONS

CPS Energy may refine habitat delineations performed under the methods described in Chapter 6.5.1.1 by optionally performing presence/absence surveys for the GCWA within CPS Energy ROWs and considering other reported GCWA occurrence data. Under this optional method of habitat delineation, CPS Energy may remove areas of potential habitat from the delineation when available data show that such areas are not occupied by the GCWA when the following conditions are met:

1. CPS Energy will perform presence/absence surveys for the GCWA in accordance with the USFWS Section 10(a)(1)(A) Scientific Permit Requirements for Conducting Presence/Absence Surveys and Habitat Assessments for Endangered Golden-cheeked Warblers (USFWS 2010b, or as may be updated in the future).

2. CPS Energy will perform presence/absence surveys during the GCWA Breeding Season and immediately prior to the start of Covered Activities that may cause incidental take of the GCWA, where all clearing will occur prior to the next GCWA Breeding Season. CPS Energy will conduct presence/absence surveys within 300 feet of the Project Area.

3. CPS Energy will query USFWS for known occurrences of the GCWA within 300 feet of the ROW associated with the Covered Activity. CPS Energy may disregard survey findings made under conditions that are no longer representative of current conditions (i.e., GCWA detections located in an area that has been developed, such that continued presence in that location is not reasonably expected). CPS Energy will make such requests in advance of enrolling a CPS Energy Activity in the HCP during the Annual Coordination Meeting between CPS Energy and the USFWS (see Chapter 8.3).

4. CPS Energy may refine the habitat delineation by removing from consideration those areas of potential GCWA habitat that are more than 300 feet away from relevant GCWA detections, considering both the findings of the presence/absence survey and any other reported GCWA detections, as described above. The area within 500 feet of a GCWA detection encompasses an area of approximately 18 acres, which is consistent with the typical size of a GCWA breeding territory (see Chapter 5.2.1).

6.5.2 Assessing Incidental Take

CPS Energy will identify the areas of potential or occupied GCWA habitat, as delineated in accordance with Chapter 6.5.1, that will be subject to Direct Habitat Modification or Indirect Habitat Modification, using the following standards:

- **Direct Habitat Modification:** Acres of potential or occupied GCWA habitat that are physically removed or altered beyond suitable use by Covered Activities; limited to delineated GCWA Habitat that occurs within CPS Energy ROWs.
- **Indirect Habitat Modification:** Acres of potential or occupied GCWA habitat that occurs within 300 feet of GCWA habitat that is subject to Direct Habitat Modification (may occur within the ROW) or as far as 300 feet outside of the ROW associated with the Covered Activity.

The sum of the acres of Direct Habitat Modification and Indirect Habitat Modification is the amount of incidental take of the GCWA associated with the Covered Activity.

6.5.3 Additional Minimization Measures

CPS Energy will, to the maximum extent practicable during the conduct of a Covered Activity, implement the following minimization measures specifically addressing impacts to the GCWA:

- **Seasonal Clearing Restrictions**: CPS Energy will, to the maximum extent practicable, perform vegetation clearing within GCWA habitat outside of the GCWA Breeding Season. CPS Energy will make all reasonable attempts to comply and anticipates that the substantial majority of vegetation clearing for its Covered Activities will be performed consistent with this minimization measure. However, it may not be practicable for CPS Energy to avoid vegetation clearing during the GCWA Breeding Season in all circumstances due to considerations essential to its obligations as a public utility provider or Emergency Responses that require urgent action regardless of the time of year.

  In the relatively rare circumstances where CPS Energy determines that it is not practicable to perform vegetation clearing within GCWA habitat outside of the GCWA Breeding Season, CPS Energy will engage with the USFWS in advance of enrolling the CPS Energy Activity. As part of the HCP Enrollment Form, CPS Energy will provide to the USFWS an explanation of its need to clear GCWA habitat during the GCWA Breeding Season and will provide additional mitigation for those Direct and Indirect Habitat Modifications that occur as a result of vegetation clearing during the GCWA Breeding Season, as specified in Chapter 6.5.5.

- **Seasonal Construction Measures**: With respect to Covered Activities involving New Construction or Significant Upgrades, CPS Energy may perform construction activities (not including clearing) within 300 feet of GCWA habitat during the GCWA Breeding Season, as long as those activities promptly follow permitted clearing and/or were initiated before March 1, therefore being a continuous activity (the specifics of what constitutes "continuous activity" will be determined on a case-by-case basis as described below). CPS Energy will make all reasonable attempts to comply and anticipates that the substantial majority of this set of Covered Activities will be performed consistent with this minimization measure. This measure does not apply to other types of Covered Activities (i.e., Operations and Maintenance and Emergency Responses), which may be performed during the GCWA Breeding Season.

  If CPS Energy anticipates the need for performing construction activities for New Construction or Significant Upgrades during the GCWA Breeding Season in areas adjacent to GCWA habitat, it will request a meeting with the USFWS in advance of enrolling the CPS Energy Activity or as soon as practicable upon identifying the need. CPS Energy will provide to the USFWS an explanation of its need to perform construction activities within 300 feet of GCWA habitat during the GCWA Breeding Season and why alternatives to in-season construction are not practicable. CPS Energy and USFWS will determine the measures CPS Energy will take to minimize the duration of any necessary in-season construction and either ensure that the continuous activity standard is met or provide additional mitigation to ensure that any additional impact to the GCWA is fully offset. CPS Energy and USFWS will come to agreement on such measures before in-season construction activities begin.

  Additional mitigation under this conservation measure, if required, will be assessed at a ratio of 0.1 : 1. This ratio is based on the unmitigated conservation value of indirectly affected GCWA Breeding Habitat (0.5) times the potential disruption of 1 year of breeding activity in a presumed 5-year average GCWA life-span (0.2 of a presumed average life-span). The additional mitigation will be applied to all GCWA habitat within 300 feet of the location of the in-season construction.

This additional mitigation will not be subject to the provisions for Post-enrollment Mitigation (see Chapter 9.1).

6.5.4 Considerations for Existing Impacts

CPS Energy seeks to co-locate its facilities with other infrastructure and utilize previously disturbed areas, when practical. Such colocation reduces the magnitude of adverse effects on the GCWA by taking advantage of areas that have already been directly or indirectly impacted by prior land uses.

For each Covered Activity, CPS Energy will identify areas of GCWA habitat (as delineated in accordance with Chapter 6.5.1) that are subject to Existing Impacts. For the GCWA, Existing Impacts will be those areas of GCWA habitat that are within 300 feet of previously developed land uses and structures, including, but not limited to, any public roads, utility ROWs, or developed lands. CPS Energy will identify the extent of any Existing Impacts to GCWA habitat in the HCP Enrollment Form. CPS Energy will use alternate ratios of mitigation for incidental take involving GCWA habitat that is subject to Existing Impacts (see Chapter 6.5.5).

6.5.5 Mitigation Ratios

CPS Energy will provide mitigation to fully offset the impacts of taking resulting from Covered Activities. CPS Energy proposes mitigation ratios that address the anticipated variation in the impacts of the taking. CPS Energy expects that these mitigation ratios, in concert with the minimization measures described in Chapter 6.4 and 6.5.3, fully offset the impacts of its authorized incidental take and are practicable to achieve.

CPS Energy will apply the GCWA mitigation ratios shown in Table 27 to the acres of Direct or Indirect Habitat Modification of GCWA habitat for the applicable scenario.

Standard mitigation ratios apply to those acres of Direct or Indirect Habitat Modification that do not involve Existing Impacts and where any clearing of GCWA habitat occurs outside of the GCWA Breeding Season. Existing Impacts mitigation ratios apply to those acres of Direct Habitat Modification that overlap with areas of Existing Impacts and where any clearing of GCWA habitat occurs outside of the GCWA Breeding Season. CPS Energy does not propose to provide mitigation for Indirect Habitat Modification when vegetation clearing occurs outside of the GCWA Breeding Season since such habitats already experience potentially adverse edge effects and the USFWS does not consider noise from construction activities to be a threat to the GCWA beyond the influence of other edge effects (USFWS 2016c). CPS Energy proposes higher mitigation ratios for Direct and Indirect Habitat Modification where vegetation clearing within GCWA habitat will occur during the GCWA Breeding Season. The mitigation ratios for in-season clearing are double the standard mitigation ratios to account for the additional impacts to live eggs, nestlings, or immobile fledglings that may be present in affected GCWA territories.

Table 27. GCWA Mitigation Ratios

Incidental Take	Standard Mitigation Ratios	Existing Impacts Mitigation Ratios	In-season Clearing Mitigation Ratios
Direct Habitat Modification	2:1	1:1	4:1
Indirect Habitat Modification	0.5:1	0	1:1

6.6 Covered Karst Invertebrates Conservation Program

This subchapter describes the measures CPS Energy will implement for Covered Activities where incidental take authorization for one or more of the Covered Karst Invertebrates is achieved through the application of this HCP and related ITP. These measures are not required for those Covered Species addressed by participation in the Southern Edwards Plateau HCP or other mechanism to achieve ESA compliance.

6.6.1 Habitat Delineations and Due Diligence Investigations

CPS Energy will delineate areas of potential habitat and perform site-specific surveys for karst features known or assumed to be occupied by one or more of the Covered Karst Invertebrates. For the Covered Karst Invertebrates, such site-specific studies are a required component of the HCP.

For each Covered Karst Invertebrate species, CPS Energy will delineate potential habitat as those areas of Karst Zones 1 through 4 that occur within the range of that species, as defined by the boundaries of the Super KFRs in which it is known or assumed to occur (see Table 19 for range distributions). However, CPS Energy will exclude from this delineation of potential habitat those areas of karst matrix that have been previously subject to excavation and backfill.

When an applicable Covered Activity occurs over Karst Zones 1 or 2, CPS Energy will perform a karst feature survey of lands within Karst Zone 1 or 2 that occur within the ROW. CPS Energy will follow USFWS (2015) protocols (as may be updated or revised) for the identification of karst features that may contain karst invertebrate habitat (i.e., generally, steps 1 through 3 of USFWS 2015). Karst features identified during such surveys that may contain karst invertebrate habitat can be addressed through the HCP with an assumption of occupancy without further investigation (Assumed Occupied Karst Feature).

However, CPS Energy may optionally perform additional investigations of such karst features following steps 4 or 5 of USFWS (2015) to determine if a feature does not contain karst invertebrate habitat (i.e., upon excavation, the feature does not contain karst invertebrate habitat) or is not likely occupied by one or more of the Covered Karst Invertebrates. Again, karst features identified during such surveys that may contain karst invertebrate habitat can be addressed through the HCP with an assumption of occupancy without presence/absence surveys (Assumed Occupied Karst Feature).

For each Covered Species that is detected through presence/absence surveys, the surveyed karst feature becomes an "Occupied Karst Feature." For any Covered Species not detected within the surveyed karst feature, the feature is treated as if it were potential habitat (i.e., general areas of Karst Zone).

CPS Energy will also review the area within 1,500 feet of a Covered Activity for previously documented Occupied Karst Features, using information from USFWS on the locations of such features updated no less than annually (see Chapter 8.3). For each Occupied Karst Feature within 1,500 feet of a Covered Activity (including any such features detected within the ROW of the Covered Activity), CPS Energy will determine if the Occupied Karst Feature is an Approved Karst Fauna Area (KFA) or a Potential KFA. A Potential KFA is defined for the purpose of the CPS Energy HCP as an Occupied Karst Feature lacking development within 345 feet of entrance or footprint (if known) and having at least 40 acres of undeveloped land contiguous with this core distance. The applicable acreage threshold will depend on the current conservation baseline status of the species involved (see USFWS 2011, as may be occasionally updated in the future). The limits of the Potential KFA only include the undeveloped lands needed to achieve the applicable acreage threshold, prioritizing the acres closest to the feature.

6.6.2 Assessing Incidental Take

CPS Energy will identify the areas of suitable or occupied habitat for Covered Karst Invertebrates, as delineated in accordance with Chapter 6.6.1, that will be subject to Direct Habitat Modification or Indirect Habitat Modification, using the following standards:

- **Direct Habitat Modification:** Acres of subsurface disturbance (e.g., excavation, trenching, surface grading) within potential habitat or occupied habitat.
- **Indirect Habitat Modification:** Acres of surface disturbance over potential habitat or occupied habitat, limited to the removal of woody vegetation cover (not root disturbance) and excluding areas subject to Direct Habitat Modification.

The sum of the acres of Direct Habitat Modification and Indirect Habitat Modification for each Covered Karst Invertebrate is the amount of incidental take of that species associated with a Covered Activity. Incidental take does not apply to Direct or Indirect Habitat Modifications of areas of karst matrix that have been previously subject to excavation and backfill.

6.6.3 Additional Minimization Measures

CPS Energy will, to the maximum extent practicable during the conduct of a Covered Activity, implement the following minimization measures specifically addressing impacts to the Covered Karst Invertebrates:

- **50-ft Avoidance Zone:** CPS Energy will avoid making subsurface disturbances within 50 feet of the entrance or footprint (if known) of an Occupied Karst Feature or an Assumed Occupied Karst Feature. CPS Energy will make requests for updated information on the locations of known Occupied Karst Features during the Annual Coordination Meeting (see Chapter 8.3). CPS Energy will also minimize, to the extent possible, the removal of vegetation from the area within 50 feet of the entrance or footprint (if known) of an Occupied Karst Feature or Assumed Occupied Karst Feature. However, CPS Energy may need to remove or trim trees within such areas to ensure the safety and reliability of its facilities following applicable American National Standards Institute (ANSI), National Electrical Safety Code, and North American Electric Reliability Corporation standards for vegetation management. These avoidance measures will only apply to those karst features that the USFWS has not deemed "completely taken" by other actions, such as karst features subject to impacts within *Occupied Cave Zone A* of the Southern Edwards Plateau HCP or similar impacts addressed by an ESA Section 7 interagency consultation[10].
- **Advance Coordination and Briefing:** CPS Energy will engage with the USFWS in advance of enrolling any CPS Energy Activity that meets the following criteria
    - within 345 feet (if an electric-related activity) or 750 feet (if a gas-related activity) of the entrance or footprint (if known) of an Occupied Karst Feature or Assumed Occupied Karst Feature,
    - within designated Critical Habitat for the Covered Karst Invertebrates, or
    - within an Approved or Potential KFA.

  CPS Energy will submit to the USFWS a brief (i.e., one to two pages long) description of its proposed Covered Activities within these zones and proposed measures to minimize (to the extent

[10] The Southern Edwards Plateau HCP defines "Occupied Cave Zone A" as the area within 345 feet of a species-occupied cave entrance (Bowman Consulting Group et al. 2015).

practicable) impacts to the Covered Karst Invertebrates. CPS Energy will submit this information to the USFWS as early as practicable, but at least 60 days before implementing Covered Activities in this zone (see Chapter 8.3 for notification procedures).

The USFWS will have the opportunity to review the proposed Covered Activities in this zone and recommend additional measures that may be reasonable and prudent to avoid the likelihood of jeopardizing the continued existence of a Covered Karst Invertebrate species or the likelihood of causing the destruction or adverse modification of critical habitat of a Covered Karst Invertebrate species. CPS Energy expects that USFWS will provide any such recommendations within 30 business days of receipt of the notice. Where USFWS has made recommendations within 30 business days of receiving notice, CPS Energy will, to the extent possible (for activities within 50 feet of the feature) or practicable (for activities between 50 feet and 345 feet or 750 feet of the feature, as applicable based on the activity type), implement the recommendations of the USFWS or provide a detailed response as to why such recommendations are not possible or practicable, as applicable. These measures do not apply when impacts to such features associated with the Covered Activity are authorized through other means, such as participation in another HCP or ESA Section 7 interagency consultation.

6.6.4 Mitigation Ratios

CPS Energy will provide mitigation to offset the impacts of take resulting from Covered Activities. CPS Energy proposes mitigation ratios that address the anticipated variation in the impacts of the taking. CPS Energy expects that these mitigation ratios, in concert with the minimization measures described in Chapter 6.4 and 6.6.3, fully offset the impacts of its authorized incidental take and are practicable to achieve. The mitigation ratios applicable to a particular Covered Activity (or part of a Covered Activity) will depend on the location of the habitat modification related to features important to the conservation of the Covered Karst Invertebrates, such as Critical Habitat, Approved or Potential KFA, Occupied or Assumed Occupied Karst Features, and Karst Zones 1 through 4. CPS Energy is also defining a Colocation Zone applicable to Covered Activities inside of Critical Habitat or Approved or Potential KFAs. The Colocation Zone is the area within or immediately adjacent to prior soil or subsurface disturbances, where "immediately adjacent" means within 25 feet of the edge of the prior disturbance. Covered Activities occurring within a Colocation Zone are not subject to the mitigation ratios for Critical Habitat and Approved or Potential KFAs.

CPS Energy will apply the mitigation ratios shown in Table 28 to the acres of Direct Habitat Modification or Indirect Habitat Modification for the Covered Karst Invertebrates under the applicable scenario.

Table 28. Covered Karst Invertebrate Mitigation Ratios

Incidental Take Scenario	Mitigation Ratios
Potential Habitat (Karst Zones 1—4 not associated with an Occupied or Assumed Occupied Karst Feature)	
Direct Habitat Modification	0.25:1
Indirect Habitat Modification	0.1:1
High Impact Zone (Karst Zone 1—4 within 345 or 750 feet of an Occupied or Assumed Occupied Karst Feature)	
Direct Habitat Modification	10:1
Indirect Habitat Modification	1:1

Incidental Take Scenario	Mitigation Ratios
Critical Habitat and Approved or Potential KFAs (for Non-co-located Habitat Modification)	
Direct Habitat Modification	20:1
Indirect Habitat Modification	2:1

Note: See Appendix F for additional detail regarding the application of these mitigation ratios.

The mitigation ratios for Covered Karst Invertebrates are roughly consistent with the participation fees charged by the Williamson County Regional HCP and the Southern Edwards Plateau HCP, both approved by the USFWS and address similar types of habitat modifications (i.e., modifications to general Karst Zone habitat and modifications to areas adjacent to features known to be occupied by listed karst invertebrates). For instance, the Williamson County Regional HCP charges $100/acre of disturbance to Karst Zone habitat and the Southern Edwards Plateau HCP charges $1,000/acre of disturbance to Karst Zone habitat. Similarly, the Williamson County Regional HCP charges $10,000/acre of disturbance within the zone between 50 and 345 feet of an occupied karst feature and the Southern Edwards Plateau HCP charges $40,000/acre of disturbance within the zone between 345 and 750 feet of an occupied karst feature. Based on these two examples, the mean fee for disturbances to general Karst Zones is $550/acre and the mean fee for disturbances at the outer zone of an Occupied Karst Feature is $25,000. The average per-acre rural land value for Bexar and Medina Counties in 2016, based on data provided by the Texas Real Estate Center (2018), is approximately $4,075.

6.6.5 Covered Karst Invertebrate Enrollment Flow Chart

Appendix F includes a flow chart to clarify the enrollment process and application of mitigation ratios for Covered Activities affecting the Covered Karst Invertebrates.

6.7 Mitigation Standards

6.7.1 Delivery of Mitigation

The delivery of mitigation by CPS Energy will involve one or more of the following options:

1. permittee-responsible mitigation lands;
2. purchase of conservation credits from USFWS-approved conservation banks with service areas that contain the location of the Covered Activity, unless otherwise allowed by the USFWS on a case-by-case basis;
3. third party mitigation transactions; or
4. payment to a fee-in-lieu program. [11]

CPS Energy may use any or a combination of these delivery options at its discretion. Consistent with the enrollment process, CPS Energy will obtain the required mitigation prior to implementing a Covered Activity, except in cases of Emergency Responses. If CPS Energy opts to implement its own permittee-

[11] CPS Energy is unaware of any operating in-lieu fee programs for the Covered Species at this time. However, in the event that such a program becomes available, CPS Energy may coordinate with the in-lieu provider on the amount of an appropriate fee to accomplish the mitigation goals of this HCP.

responsible mitigation or work with a third party to implement a specific conservation transaction, CPS Energy will coordinate with USFWS to provide the necessary baseline documentation, real estate, and financial assurances specified in the USFWS mitigation guidance (USFWS 2012, 2013b). CPS Energy will seek USFWS concurrence on the proposed mitigation for any CPS Energy Activity prior to enrolling the CPS Energy Activity in this HCP. The USFWS will have 30 days to review and comment on all proposed mitigation. If USFWS does not respond to the proposed mitigation within 30 business days, CPS Energy may proceed with the proposed mitigation transaction as described in the notice.

6.7.2 Mitigation Metrics

CPS Energy will assess and track the implementation of mitigation for each Covered Species in terms of the number of "Conservation Credits" generated. Conservation Credits are specific to each Covered Species or, where habitats for more than one Covered Species overlap, a specific group of Covered Species (i.e., "stacked" mitigation). CPS Energy will not unstack the individual conservation values of any stacked Conservation Credits when applying the mitigation to a Covered Activity.

Typically, Conservation Credits measure mitigation in terms of the number of acres that are involved in a conservation action, adjusted by the relative conservation value of the action. For the purposes of this HCP, the conservation value of one Conservation Credit is generally equivalent to the conservation value of 1 acre of the protection and maintenance of suitable habitat on new conservation lands. In rare circumstances, non-land-based conservation actions, such as funding research or captive propagation efforts, may also generate Conservation Credit under this HCP, subject to case-by-case approval by the USFWS (see Chapter 6.7.3).

6.7.3 Mitigation Crediting

All mitigation transactions that generate Conservation Credits are subject to USFWS approval, which the USFWS will not unreasonably withhold. The USFWS will have 30 days to review and comment on all proposed mitigation transactions. If USFWS does not respond to the proposed mitigation transaction within 30 business days, CPS Energy may proceed with the proposed mitigation transaction as described in the notice. The USFWS may grant exceptions to the crediting standards described above and to USFWS mitigation guidance with the concurrence of CPS Energy, if both parties agree that the exception will help achieve the Biological Goals and Objectives of this HCP or contribute to the recovery of the applicable Covered Species.

In most cases, CPS Energy will measure the conservation value of mitigation transactions completed through this HCP in terms of Conservation Credits. CPS Energy anticipates that for GCWAs, one Conservation Credit is generally equivalent to 1 acre of the protection and maintenance of suitable habitat on new conservation lands. CPS Energy will generate 0.5 Conservation Credit for the GCWA for each acre of non-habitat "buffer" that occurs adjacent to areas of habitat within a preserve. Acres of GCWA habitat that occur adjacent to an unprotected preserve boundary may only generate 0.5 Conservation Credit, instead of a full Conservation Credit. CPS Energy will receive Conservation Credits for the GCWA generated by CPS Energy-responsible or third-party-responsible mitigation transactions consistent with USFWS (2013b).

With respect to the Covered Karst Invertebrates, CPS Energy will prioritize mitigation opportunities that contribute to the creation of an Approved KFA, subject to the availability of practicable mitigation opportunities. If creation of a new Approved KFA or expansion of an existing Approved KFA is not practicable, then other opportunities may be evaluated in coordination with the USFWS, such as preservation of lands associated with a Potential KFA or another Occupied Karst Feature. Generally

speaking, one acre of protection and management of Karst Zone 1 through 4 associated with an Approved KFA = 1 Conservation Credit.

Conservation Credits for the Covered Karst Invertebrates are "stacked" when multiple Covered Karst Invertebrates are known to occur in a USFWS-approved mitigation area. CPS Energy may use the same stacked credit to mitigate for a similarly stacked impact. CPS Energy may use a stacked credit to mitigate for stacked impacts only if the set of species in the stacked credit is the same or larger as the stacked impact. Stacking may also be possible with the Covered Karst Invertebrates and the GCWA, when the corresponding take is similarly stacked, such as when GCWA habitat occurs above habitat for Covered Karst Invertebrates and the same Covered Activity affects all species at the same time. In such case, a preserve with GCWA habitat on the surface and Covered Karst Invertebrate habitat in the subsurface can mitigate for all species simultaneously. CPS Energy will not distribute the mitigation value of a stacked Conservation Credit among multiple Covered Activities; however, CPS Energy may apply Conservation Credits in units as small as 0.1 acre, where CPS Energy may allocate different tenths of a credit to different Covered Activities.

If CPS Energy opts to purchase Conservation Credits from a USFWS-approved third-party conservation bank or similar provider, CPS Energy will negotiate purchase prices and other details of the credit transaction directly with the conservation banker. USFWS approval for the use of Conservation Credits from an approved conservation bank, where the impact site is within the primary service area of the conservation bank, will not be necessary. If the conservation bank does not include the impact site in its primary service area, CPS Energy will coordinate with USFWS as necessary to obtain any additional approvals necessary to apply such credits as mitigation for the impact.

7 FUNDING PLAN

7.1 Funding Assurances

Federal regulation requires that ITP applicants provide funding assurances that the conservation program can be reasonably implemented prior to ITP issuance (16 USC §1539[a][2][A][ii]). The City of San Antonio, a Texas home rule municipality, owns CPS Energy and is authorized by state law to impose and collect charges for services sufficient to pay for all of its operating expenses, such as the costs associated with implementation of the HCP.

CPS Energy has a historically high credit rating, allowing it to obtain low interest rates when financing new projects or refinancing existing debts (CPS Energy 2016). CPS Energy provides annual budget reports that outline previous year expenditures and future fiscal planning that document cash-on-hand, available funds for infrastructure development, and other related incomes and expenditures. Since CPS Energy is largely user-funded, it is critical that the HCP provide an efficient and cost-effective process for conducting the CPS Energy Activities that considers the potential economic impacts to end users who are ultimately responsible for paying CPS Energy utility rates.

CPS Energy will fund its mitigation obligations for New Construction and Significant Upgrade HCP Specific Projects from the construction budgets for HCP Specific Projects. Mitigation associated with O&M HCP Specific Project and Emergency Responses will be included in the ongoing management budgets for the CPS Energy Network. The standard impact assessment and mitigation determinations allow project designers to build mitigation costs into these budgets during the planning phases of project development. On an annual basis, CPS Energy will project its mitigation needs for the coming year and provide the USFWS a Certificate of Funding Assurances. The Certificate of Funding Assurances will

confirm that: 1) CPS Energy has funding sufficient to cover all costs associated with the performance of its mitigation obligations that are required for the year in which the certification is made; and 2) that CPS Energy will perform all activities required by the HCP and ITP.

Several factors will affect the actual amount of funding necessary to implement the conservation program during any given year, including the nature, extent, number, and timing of HCP Specific Projects. This section provides a conceptual estimate of total costs for the HCP based on the amount of Direct and Indirect Habitat Modification for each Covered Species from Covered Activities and assumptions regarding how applicable mitigation ratios will apply to that habitat modification. Other factors that will affect the total cost of implementing the HCP include current market prices for conservation credits and land acquisition costs.

Since CPS Energy relies on the use of conservation credits (either purchased from a third party or generated by CPS Energy) to mitigate for the impacts of take arising from the Covered Activities, mitigation acquisitions will usually precede incidental take authorized by the ITP on a project-by-project basis (the only exception might be Emergency Response activities or those anticipated in the Changed Circumstances). As a result, funding and acquisition of appropriate mitigation will, in most cases, precede impacts to the species. This demonstrates that impacts to the species cannot go unmitigated if funding is for any reason unavailable.

7.2 HCP Implementation Costs

To estimate the total cost for implementing the GCWA conservation measures (Chapter 6.5), this HCP makes the following assumptions:

1. The estimated maximum mitigation for the GCWA under this HCP is 4,928 credits (see Table 26), where each credit is the equivalent of 1 acre of protection and maintenance of suitable habitat on new conservation lands.

2. The estimated cost to generate or purchase a GCWA Conservation Credit is $5,000 per credit, inclusive of land acquisition, management, monitoring, and endowment costs. This assumption relies on SWCA's understanding of the current market price for GCWA Conservation Credits and informal quotes received from the Bandera Corridor Conservation Bank (personal communication with Jesse McClean, Bandera Corridor Conservation Bank, on September 29, 2017).

To estimate the total cost for implementing the Covered Karst Invertebrate conservation measures (Chapter 6.6), this HCP makes the following assumptions:

1. The estimated maximum mitigation for each Covered Karst Invertebrate species under this HCP ranges between 303 and 86 Conservation Credits (see Table 26), where each credit is the equivalent of 1 acre of protection and maintenance of suitable habitat on new conservation lands.

2. Since mitigation for the Covered Karst Invertebrates will likely be stacked, CPS Energy assumes that the total amount of stacked mitigation for the Covered Karst Invertebrates will equal the mitigation estimates for Madla's Cave meshweaver/*Rhadine exilis*/*Rhadine infernalis* (i.e., 303 credits; these species occur across the Government Canyon, Helotes, UTSA, Stone Oak, and Culebra Anticline KFRs) plus the estimates for Robber Baron Cave meshweaver/Cokendolpher Cave harvestman (i.e., 86 credits, these species occur within the Alamo Heights KFR)—for a total stacked mitigation estimate of 389 Conservation Credits.

3. CPS Energy assumes that Covered Karst Invertebrate Conservation Credits will cost $40,000 per credit. This cost estimate assumes approximately 80% of acquisitions will be fee-simple and 20% will be easements at the rates quoted in the Southern Edwards Plateau HCP (i.e., $45,000 per acre for urban fee-simple acquisitions and $14,900 per acre for urban conservation easement acquisitions). The City of San Antonio and Bexar County heavily vetted the cost estimates included in the Southern Edwards Plateau HCP, so CPS Energy is comfortable carrying forward these educated cost estimates for the purposes of this HCP.

With these assumptions, the cost (in current dollars) to generate or purchase the amount of mitigation associated with the requested amount of incidental take could be approximately $40,199,025 over the 30-year ITP Term or approximately $1,339,968 per year on average. The exact circumstances of the Covered Activities and methods for achieving ESA compliance and implementing mitigation may result in actual costs that are different from this estimate. CPS Energy further acknowledges that these costs may change because of market prices and inflation, but it will secure any mitigation prior to conducting Covered Activities, therefore ensuring funding of the conservation program.

CPS Energy will be responsible for funding costs associated with the environmental review process. This includes completing necessary field studies including karst investigations and presence/absence surveys as required by this HCP. Since these studies generally occur prior to the decision to include a proposed project as a Covered Activity, the funding for these activities will occur outside the scope of this HCP. CPS Energy commits to fund any additional scientific fieldwork required by the HCP, such as monitoring during the GCWA Breeding Season, at the time such activities occur.

CPS Energy also anticipates that HCP administration will be an extension of current staff duties and will not require extra personnel, equipment, or materials. Similarly, costs for additional studies/reviews by CPS Energy consultants holding scientific permits will be equal to or less than current costs, since application of the HCP can streamline some project activities. Therefore, CPS Energy does not anticipate additional costs for administrative tasks such as completing Environmental Checklists; completing HCP Enrollment Forms; field studies; scientific reviews; reporting; or conducting ongoing coordination between CPS Energy project managers, CPS Energy environmental reviewers, and USFWS.

8 PLAN ADMINISTRATION

8.1 Permit Renewal

The ITP associated with this HCP is eligible for renewal pursuant to federal regulation and the HCP Handbook. If CPS Energy files a request for renewal at least 30 days prior to the ITP expiration date, the ITP will remain valid while the USFWS processes the request (50 CFR §13.22). If CPS Energy fails to file an extension request at least 30 days prior to ITP expiration, the ITP will become invalid on the original expiration date. The USFWS will honor the No Surprises assurances anticipated in this HCP to the extent that they comply with the statutory and regulatory requirements in place at the time of the renewal request (USFWS and NMFS 2016).

8.2 Compliance Monitoring and Reporting

CPS Energy will provide the USFWS with an annual report by March 31st of each calendar year (i.e., approximately 60 days following the close of the fiscal year). The annual report will document compliance with the terms and conditions of the ITP and measure progress towards achieving the

Biological Goals and Objectives described in the HCP. The content of the annual report will cover the preceding calendar year.

The annual report will include:

- descriptions of the Covered Activities including a complete accounting of all Direct and Indirect Habitat Modifications for the Covered Species;
- an accounting of earned, exhausted, and available Conservation Credits;
- an analysis of the progress towards achieving the Biological Goals and Objectives;
- an accounting of HCP related financial expenditures;
- a summary of management and monitoring activities conducted on CPS Energy-responsible mitigation lands (i.e., preserves);
- any recommended modifications to the management and monitoring programs associated with CPS Energy-responsible mitigation lands; and
- any applicable adaptive management recommendations.

If CPS Energy performs no HCP related activities during a calendar year, CPS Energy will submit to the USFWS a simple letter with this statement in lieu of a formal report. CPS Energy will electronically submit the annual report or letter to the Austin Ecological Services Field Office and the Division of Threatened and Endangered Species in Albuquerque unless otherwise requested by USFWS staff.

8.3 Annual Coordination Meeting

CPS Energy will request a meeting with the USFWS each year to discuss upcoming CPS Energy Activities, updated distribution or occurrence information for Covered Species, opportunities for mitigation, and/or other concerns. CPS Energy anticipates that the Annual Coordination Meetings will occur in December or January, after the finalization of CPS Energy's fiscal year business plan and corresponding with the start of CPS Energy's fiscal year (February 1).

8.4 Notices

In addition to the Annual Report, CPS Energy or the USFWS will provide written notice to the other party under certain circumstances. For disputes regarding compliance with the terms and conditions of the ITP or implementation of the HCP, both parties agree to initiate discussions informally with the goal of resolving such disputes without formal engagement under the processes at 50 CFR §13.27-13.28 for ITP suspension or revocation (USFWS and NMFS 2016:17-10).

CPS Energy will provide written notice to the USFWS Austin Ecological Services Field Office via electronic mail, U.S. Mail, and/or courier service, as appropriate, for:

- concurrence on all proposed mitigation prior to enrolling a CPS Energy Activity in the HCP (see Chapter 6.7.1 Delivery of Mitigation), except in cases of Emergency Responses (see Chapter 3.2.5 Emergency Responses);
- initiation of pre-enrollment coordination related to Covered Karst Invertebrates and Listed Plants (see General Minimization Measure #9 Chapter 6.4.1 and Chapter 6.6.3 Additional Minimizations Measures for Occupied or Assumed Occupied Karst Features);

- requests for Amendments, Renewals, or Transfers to the HCP, ITP, or related documents (see Chapter 8.5); and
- Changed Circumstances, as specified in Chapter 9.1, which trigger additional coordination with the USFWS.

USFWS will provide written notice to CPS Energy via electronic mail, U.S. Mail, and/or courier service, as appropriate, for:

- requests for Amendments, Renewals, or Transfers to the HCP, ITP, or related documents (see Chapter 8.5);
- the occurrence of Unforeseen Circumstances and any proposals to modify the HCP within the limits of CPS Energy's No Surprises assurances (see Chapter 9.2);
- formal notice of non-compliance with the ITP terms and conditions or provisions of the HCP that indicate the initiation of the ITP suspension or revocation process (50 CFR §13.27-13.28), with any proposals for redress;
- Findings of Necessity, subject to 50 CFR §13.23(b), that an ITP amendment outside of the collaborative process described in Chapter 8.5 is warranted and forthcoming; and
- proposed and final decisions by the USFWS to suspend or revoke the ITP, subject to 50 CFR §13.27-13.28.

Notices to CPS Energy will be addressed to:

Michael M. Malone, P.E., LEED Green Associate, R.E.M.
Senior Manager
Environmental Management
500 McCullough Avenue
San Antonio, Texas 78215
mmmalone@cpsenergy.org

Notices to USFWS will be addressed to:

Field Supervisor
Austin Ecological Services Field Office
U.S. Fish and Wildlife Service
10711 Burnet Road, Suite 200
Austin, Texas, 78758

8.5 Permit Amendments

CPS Energy may request clarification from the USFWS to address "small errors, omissions, or language that may be too general or too specific for practical application" found in the HCP or ITP (USFWS and NMFS 2016). CPS Energy will submit requested clarifications to the USFWS in writing for review and concurrence.

In general, changes to the conservation measures will not require an amendment to the HCP as long as the changes do not modify the HCP's Biological Goals and Objectives. In instances where the proposed amendment does not result in increased levels of incidental take or expand the effects on the Covered Species assessed during the initial NEPA process, proposed amendments will not likely trigger additional NEPA analysis and review (USFWS and NMFS 2016). Changes to the HCP that likely require a permit

amendment and publication in the *Federal Register* include, but are not limited to (USFWS and NMFS 2016):

- additional Covered Species, either listed or unlisted;
- increased level or different form of take for the Covered Species;
- additional land added to the Plan Area; and
- significant changes to the conservation program, including changes to the mitigation framework.

Either CPS Energy or the USFWS may initiate an amendment to the HCP or ITP, but the USFWS retains discretion over the level of review needed to incorporate the amendment. To amend the HCP or ITP, the initiating party must identify: 1) the original text as it appears in the HCP or ITP; 2) the proposed new text; 3) the reasoning and justification for the proposed change; and 4) the intended effect of the proposed change. If the USFWS initiates the proposed amendment, CPS Energy must provide written approval of the amendment before it becomes effective. If CPS Energy initiates a proposed amendment, the USFWS will review the proposed amendment and, if it concurs, will provide written confirmation to CPS Energy. If no additional NEPA analysis is required, on the date the USFWS provides confirmation, the amendment will automatically become effective, unless CPS Energy and the USFWS mutually agree to an alternative effective date. If additional NEPA analysis is required, CPS Energy will coordinate with the USFWS to satisfy these requirements.

The USFWS cannot amend the HCP or ITP without written approval from CPS Energy.

8.6 Adaptive Management Program

The USFWS considers adaptive management a tool "to address uncertainty in the conservation of a species covered by an HCP" (USFWS and NMFS 2016). The HCP Handbook establishes the USFWS's intent, where appropriate, to include adaptive management principles in the operating conservation program for an HCP to address uncertainty regarding natural resource management, as long as the permittee continues to contribute to the fulfillment of the Biological Goals and Objectives.

Examples of situations where CPS Energy may utilize adaptive management include, but are not limited to:

- the conservation program does not satisfactorily achieve the Biological Goals and Objectives;
- technological advances change the way CPS Energy conducts the CPS Energy Activities or provides mitigation; or
- the scientific understanding of the Covered Species changes such that certain measures included in this HCP are no longer applicable or beneficial to the species (i.e., the GCWA Breeding Season changes months or new habitat models or range distributions become available).

Since CPS Energy does not anticipate regular adaptive management decision-making over the ITP Term, it is not currently proposing a robust regular adaptive management review cycle. Instead, CPS Energy will identify opportunities for adaptive management decision-making as they arise over time and coordinate directly with the USFWS to identify an appropriate response, if warranted. In most cases, the annual report (see Chapter 8.2) will identify opportunities for adaptive management decision-making. All adaptive management decision-making must comply with the No Surprises Assurances (see Chapter 9) and will not require any additional obligation of land, water, or financial compensation from CPS Energy.

If annual reporting indicates that opportunities exist for adaptive management decision-making related to the operation of this HCP, CPS Energy will engage the following decision-making process:

1. **Identify the opportunity:** Determine what part of the conservation program could be adjusted to better achieve the Biological Goals and Objectives.

2. **Monitor and document the scientific implication of the proposed decision:** Determine what the practical and/or scientific impact of the opportunity is on the Biological Goals and Objectives.

3. **Coordinate with the USFWS to identify an appropriate response:** Provide the USFWS with information gathered that supports making an adaptive management decision and details the proposed response.

4. **Ensure the adaptive management decision complies with the process for permit amendments, if applicable:** If required, seek additional authorization prior to implementation of changes to ensure compliance with federal regulation.

5. **Implement the adaptive management action:** Once approved, begin implementation of the adaptive management action.

6. **Monitor the efficacy of the response:** Continue to monitor the operational or practical response to the adaptive management action to determine if the implemented action resolves the initial opportunity.

Land management plans for CPS Energy-operated preserves will also outline the process for adaptive management decision-making related to the successful management and monitoring of those preserves. Managers of conservation banks providing CPS Energy with Conservation Credits are responsible for any adaptive management decision-making relevant to their preserves.

9 NO SURPRISES RULE

An important incentive for ITP applicants is the assurances provided by the USFWS's "No Surprises Rule" (63 FR 8859, codified at 50 CFR §17.22, §17.32, §222.2). The USFWS assures that as long as ITP permittees properly implement the HCP, "no additional commitment of land, water, or financial compensation will be required with respect to the Covered Species, and no restrictions on the use of land, water, or other natural resources will be required beyond those specified in the HCP without the consent of the permittee" (USFWS and NMFS 2016). These assurances hold even if unforeseen circumstances arise after the USFWS issues the ITP indicating the necessity of additional mitigation.

The No Surprises rule recognizes that the permittee and the USFWS can reasonably anticipate and plan for some changes in circumstances affecting a species or geographic area covered by an HCP (e.g., the listing of additional species as threatened or endangered or a natural catastrophic event in areas prone to such events). To the extent that "Changed Circumstances" are provided for in the HCP, the permittee must implement the specified measures in response to the Changed Circumstances, if and when they occur.

This chapter describes the specific Changed Circumstances anticipated by CPS Energy and provided for in this HCP and explains the USFWS's assurances to CPS Energy with respect to any "Unforeseen Circumstances."

9.1 Changed Circumstances

The No Surprises Rule defines *Changed Circumstances* as "circumstances affecting a species or geographic area covered by a conservation plan that can reasonably be anticipated by plan developers and the USFWS and that can be planned for (e.g., the listing of new species, or a fire or other natural catastrophic event in areas prone to such events)" (50 CFR §17.3). To the extent that an ITP permittee provides for Changed Circumstances in the HCP, the permittee must implement the appropriate measures in response to the Changed Circumstances when they occur.

CPS Energy identifies the following Changed Circumstances may occur over the ITP Term and the responsive actions required of CPS Energy to remedy each Changed Circumstance. CPS Energy is not responsible for addressing Changed Circumstances not provided for in this HCP. Changed Circumstances require written acknowledgement by both CPS Energy and the USFWS to trigger the appropriate response prescribed below.

No Practicable Opportunities for Karst Preserve Establishment: Given the rarity of karst preserve opportunities in Bexar County, there may be instances where CPS Energy, despite its best efforts and intentions, is unable to create a karst preserve in advance of an essential Covered Activity. This Changed Circumstance will have occurred if CPS Energy has exhausted all known opportunities for karst preserves and/or is unable to reach an agreement with appropriate landowners by the time a Covered Activity requiring incidental take authorization begins.

Where a Covered Activity must proceed and no practicable opportunities for creating a karst preserve are available in a timely manner, CPS Energy will coordinate with the USFWS to identify other types of practicable conservation measures for the Covered Karst Invertebrates, which may include, but are not limited to:

- Approval for non-preserve conservation measures, such as education programs for homeowners in CHUs, homeowner grant programs for native plant landscaping, integrated pest management programs, or programs encouraging and/or installing pervious pavement.
- Funding for research or studies regarding the Covered Karst Invertebrates that further scientific understanding of how to manage karst habitat in an urban environment.

The USFWS in coordination with CPS Energy will determine the conservation value of such alternate measures (i.e., equivalent number of conservation credits).

ESA Section 10 and its implementing regulations require that an HCP describe the measures a permittee will implement to minimize and mitigate the impacts of the authorized taking to the maximum extent practicable (16 USC §1539, 50 CFR §17.22(b)(2)(B)). As set forth in Chapter 9.5.2 of the HCP Handbook, where an applicant cannot fully offset the impacts of the authorized taking, USFWS must conduct an analysis of whether the minimization and mitigation measures proposed in the HCP meet the maximum extent practicable test (HCP Handbook:9-33). USFWS has indicated that the term "maximum extent practicable" means that an applicant, within its available means, "can feasibly do no more to minimize or mitigate the impacts of the taking." (HCP Handbook:9-33, citing *National Wildlife Federation v. Norton*, 2000 WL 2175874 (E.D. Cal. 2000)). Among the ways an applicant may demonstrate that the practicability element has been met is to demonstrate that there are insufficient implementation options with respect to minimization and mitigation (HCP Handbook:9-33). The HCP Handbook provides an example of where covered activities would result in take of a species through habitat loss, but there is no available habitat to offset the loss caused by the covered activities (HCP Handbook:9-33). In such a case, the HCP Handbook suggests that the applicant should "propose an alternative form of mitigation to offset the impacts of take to the maximum extent practicable" (HCP

Handbook:9-33). The HCP Handbook notes that this "option should be used infrequently and only in situations where there truly are no other options" (HCP Handbook:9-33).

Post-enrollment Mitigation: In rare cases, it may not be practicable or even possible for CPS Energy to implement mitigation in advance of performing Covered Activities, particularly for Covered Karst Invertebrates. In such cases, the identification and implementation of appropriate mitigation activities would occur after the Covered Activity has begun (Post-Enrollment Mitigation). CPS Energy anticipates that Post-Enrollment Mitigation will be rare given its commitment to substantial upfront coordination with the USFWS (see Chapter 8.3) and the flexibility built into the HCP for the USFWS to approve a wide variety of potential conservation actions (see Chapter 6.7.3 and the above Changed Circumstance). Post-Enrollment Mitigation will necessarily accompany any Covered Activity that involves Emergency Responses, since CPS Energy cannot foresee precisely when or where these types of Covered Activities may occur. Post-Enrollment Mitigation may also occur in the unexpected circumstance that a conservation opportunity sufficient to win USFWS approval and crediting is not practicably available, yet the Covered Activity cannot be delayed.

This Changed Circumstance is triggered when CPS Energy is unable to identify and implement conservation actions that generate the requisite mitigation after exhausting all opportunities to generate the specified number and type of credits in a manner that is consistent with the standards and process described in Chapter 6 and other Changed Circumstances. CPS Energy will notify the USFWS as early as practicable using the provisions in Chapter 8.4 when it foresees a need for Post-Enrollment Mitigation. In the notice, CPS Energy will explain why Post-Enrollment Mitigation is anticipated for the Covered Activity, including all steps taken to identify and/or attempt to implement the required mitigation.

Consistent with USFWS guidance contained in the HCP Handbook (see HCP Handbook chapter 9.4.9—Timing of Mitigation), CPS Energy will implement the following measures in response to this Changed Circumstance:

- Establish Timelines for Implementing Post-Enrollment Mitigation—The HCP Handbook indicates that an HCP "must provide a clear timeline for implementing the mitigation" (HCP Handbook: 9-27). CPS Energy will establish practicable timelines for implementing any Post-Enrollment Mitigation associated with a Covered Activity. For example, CPS Energy will describe specific timelines for implementing any Post-Enrollment Mitigation. CPS Energy will also include timeline information in any mitigation proposals submitted to USFWS for review and approval related to permittee-implemented or third-party mitigation. These timelines will include, as applicable, interim progress milestones and final completion dates. These timelines may vary depending on the circumstances of the Covered Activity, the affected Covered Species, or proposed method of delivering the mitigation. However, in most cases, CPS Energy expects that Post-Enrollment Mitigation will be implemented within 5 years of the start of the associated Covered Activity.

- Offset Additional Impacts Associated with Mitigation Time Lags—The HCP Handbook notes that "the lag time between impacts and offset can result in additional impacts to the species which can affect the amount of mitigation needed to fully offset impacts and may affect the survival of the species at the site… In these cases, we must determine the type and level of additional impacts that would occur during the time lag and ensure that the proposed mitigation would also offset those impacts" (HCP Handbook:9-27). To illustrate this concept, the HCP Handbook includes a hypothetical example involving to a conservation action that protects and restores presumably degraded or non-functioning potential breeding habitat, where the conservation value of the action (i.e., the ability for the species to successfully breed in the restored habitat) is not

fully realized for a period of two years, creating loss of recruitment for two years in the protected habitat area (HCP Handbook:9-27).

Unlike the example provided in the HCP Handbook, CPS Energy anticipates that most (if not all) mitigation will be in the form of protection and maintenance of existing habitat that have demonstrated occupancy (see Chapter 6.7). Furthermore, USFWS is expected to only approve conservation actions for mitigation that are consistent, to the extent applicable, with its Conservation Banking Guidance (USFWS 2003). Therefore, the habitat areas that will be involved in this type of mitigation action will already exist on the landscape in a condition that supports the conservation of the Covered Species at the time the Covered Activity begins (i.e., there is no lag in conservation value as the habitat is already present and occupied, even if it is not immediately protected and actively maintained). This type of circumstance is different than the example provided in the HCP Handbook that illustrates when a lag in the timing of mitigation can create an additional impact to the species.

For this HCP, the timing of the execution of legal instruments that protect against future changes to lands used in mitigation actions is not likely to have much, if any effect, on the ecological functioning of the suitable habitat that is ultimately protected—particularly given relatively short timeline for implementing Post-Enrollment Mitigation (i.e., 5 years). For example, the GCWA uses habitat that is typically described as a climax or old-growth forest community, such that once suitable habitat conditions are achieved, very little active management is needed to preserve the conditions that support the species. In this example, the habitat areas ultimately included in the protected area are not likely to "grow out of" suitability in the absence of active management or monitoring in a 5-year period, such that the GCWA experiences a temporal loss in habitat availability due to the delayed protection and maintenance of the conservation area. Suitable habitats for the Covered Karst Invertebrates are similarly "stable" on the landscape and not likely to substantially change due to natural succession over a potential lag period of 5 years.

There is a potential, however, for the number of practicable conservation opportunities that are available for protection and maintenance to change over a lag period of 5 years. In the context of this HCP where CPS Energy will have made every effort to achieve mitigation in advance in coordination with USFWS, the need to invoke Post-Enrollment Mitigation via this Changed Circumstance will have meant that there were no practicable conservation opportunities meeting USFWS approval available for implementation in advance of the Covered Activity. Therefore, the time lag could have a beneficial effect by providing additional time to identify, negotiate, and implement USFWS-approved conservation actions. If there were no practicable conservation opportunities in advance of the Covered Activity and no practicable conservation opportunities at the end of the time lag, then the time lag would have had no effect, particularly when mitigation is in the form of protection and maintenance of existing and occupied habitat.

With respect to the purchase power of the conservation dollars allocated by CPS Energy in advance of implementing a Covered Activity, it is possible that a delay in acquiring lands for mitigation could cause the purchase power of any allocated funds to decrease due to inflation of land values or other costs. Therefore, when using Post-Enrollment Mitigation, CPS Energy will increase the amount of Conservation Credits or other mitigation associated with a Covered Activity by 5% each year that implementation is delayed. This amount is roughly equivalent to the state-wide rise in rural land values between 2016 and 2017 (i.e., 4.46%) (American Society of Farm Managers and Rural Appraisers 2017).

- Funding Assurances for Post-Enrollment Mitigation—The HCP Handbook states that "If the HCP's mitigation cannot be implemented until after impacts, the applicant needs to include

acceptable instruments in the HCP for ensuring implementation of the mitigation, such as bonds, letters of credit, or similar funding assurances." CPS Energy will budget for mitigation associated with Covered Activities based on the evaluation process described in Chapter 6.5.5 or Chapter 6.6.4 and the cost estimates for generating Conservation Credits described in Chapter 7.2. CPS Energy will transfer funding for implementing mitigation to in-lieu fee providers or its third-party conservation providers in advance of starting a Covered Activity, including in circumstances where Post-Enrollment Mitigation is anticipated. CPS Energy provides additional funding assurances as described in Chapter 7.1, including rate recovery, requiring its conservation providers to insure or bond performance.

New Species Listing or Critical Habitat Designation within the Plan Area: The USFWS occasionally adds new species to the federal list of threatened and endangered species or designates new or revised areas of Critical Habitat associated with listed species. This Changed Circumstance will have occurred when the USFWS publishes a Proposed Rule in the *Federal Register* to list a new species that occurs within the Plan Area or that creates or expands areas of Critical Habitat within the Plan Area. The USFWS will notify CPS Energy of the occurrence of this Changed Circumstance. Within 90 days of notification, CPS Energy will provide information to the USFWS assessing the impact of CPS Energy Activities on the newly proposed listed species or Critical Habitat designation. With this assessment, CPS Energy will also notify the USFWS if it intends to seek an amendment (following the process in Chapter 8.5) to address the newly listed species or newly designated Critical Habitat. The USFWS may provide technical guidance to CPS Energy as it considers whether an amendment is warranted. Regardless of this Changed Circumstance, CPS Energy reserves the discretion to seek an amendment to add a Covered Species or add conservation measures that avoid the destruction or adverse modification of Critical Habitat to the HCP, ITP, and related documents. Chapter 8.5 addresses the general process and other considerations for such amendments.

Delisting of Covered Species: The USFWS may delist a listed Covered Species during the ITP Term due to recovery, extinction, or error. This Changed Circumstance will have occurred when the USFWS publishes a Final Rule in the *Federal Register* that delists a Covered Species. The USFWS will notify CPS Energy of the occurrence of this Changed Circumstance.

In response to this Changed Circumstance, USFWS agrees that CPS Energy may, at its discretion, amend the HCP, ITP, and related documents to remove the delisted species from the list of Covered Species and strike some or all the provisions of these documents that pertain to the delisted species. The USFWS rationale for delisting, as published in the Final Rule, will determine the extent to which CPS Energy may retire its obligations related to the delisted species through this Changed Circumstance:

- In all delisting cases, CPS Energy may, at its discretion, amend the HCP, ITP, and related documents to remove obligations to address the delisted species for future Covered Activities.
- In the case of delisting due to recovery, where CPS Energy's previously completed mitigation measures contributed to the delisting decision, CPS Energy will not be relieved of any obligations under this HCP related to those previously completed mitigation actions without USFWS's expressed consent. This commitment applies only to mitigation delivered via permittee-implemented actions—the actions of third-party conservation banks and in-lieu fee program sponsors are outside of CPS Energy's control.
- In the case of delisting due to error or extinction, the USFWS will no longer require CPS Energy to maintain any mitigation established for the delisted species delivered by a Conservation Provider or by permittee-implemented actions. CPS Energy may use any such lands for other purposes, at its discretion, to the extent that the lands do not also support mitigation for other Covered Species.

USFWS and CPS Energy agree that changes to the HCP, ITP, and related documents that pertain to delisting of a listed Covered Species may be completed as an informal amendment (as described in Chapter 8.5) without additional public comment, NEPA analysis, or ESA Section 7 analysis. However, USFWS may publish public notice of the amendment on its website and/or in the *Federal Register*. In some cases, CPS Energy may prefer to maintain the delisted species as a Covered Species to protect against future re-listing of the species. If CPS Energy desires continued coverage of the delisted species, it will request a Clarification from the USFWS that updates the listing status of the delisted species.

Special Rules for Threatened Species: The USFWS may issue a Special Rule for threatened species under Section 4(d) of the ESA that specifies under what circumstances the prohibitions of ESA Section 9 apply to the threatened species. This Changed Circumstance will have occurred when the USFWS issues a Special Rule in the *Federal Register* for a Covered Species during the ITP Term. The USFWS will notify CPS Energy of the occurrence of this Changed Circumstance.

In the event of this Changed Circumstance, the USFWS agrees that CPS Energy may amend the HCP, ITP, and related documents incorporate any applicable provisions of the Special Rule into the HCP. Such related documents may include CPS Energy's Environmental Checklists, appendices to the HCP, or future management plans that CPS Energy may create to help it implement the HCP. For instance, if the Special Rule exempts certain types of activities from the prohibitions on take and those exempted activities are consistent with aspects of the CPS Energy Activities, then CPS Energy will not be obligated to account for take associated with those exempted aspects of the CPS Energy Activities during HCP implementation.

Taxonomic Changes to Covered Species: The taxonomy of the Covered Karst Invertebrates, including those in the genera *Cicurina* and *Rhadine*, is currently unsettled. It is possible that new science will emerge that indicates one or more of the Covered Karst Invertebrates is not a valid taxon or that it belongs to a different taxon. A Changed Circumstance will have occurred if researchers publish new scientific information involving the karst invertebrate fauna of Bexar County in a peer-reviewed, scientific journal that changes the taxonomic classification of one or more of these species and the USFWS formally accepts the taxonomic change in writing.

If this Changed Circumstance occurs, CPS Energy will coordinate with USFWS to amend the HCP and ITP to update the names of the Covered Species, adjust estimates of take as necessary to conform to the new species designations, and clarify how mitigation already in place address the updated taxonomy of the Covered Species. If the taxonomic change does not alter the total amount of take authorized by the HCP and ITP, but merely redistributes the take among different listed entities within the same KFR, then a major amendment to the ITP may not be necessary. If the taxonomic changes expand the range of a Covered Species in ways not currently evaluated in the HCP, CPS Energy may coordinate with the USFWS to determine if the revision warrants additional take authorization.

Cost of Mitigation Becomes Impractical: The funding needed to implement the HCP is a key factor in determining the practicability of the HCP's conservation program. CPS Energy estimated the costs of implementing the HCP over the ITP Term in Chapter 7. This funding analysis demonstrates that CPS Energy anticipated the costs of implementing the HCP, given the assumptions used to generate the funding plan. CPS Energy provides assurances, consistent with its legal authorities, that funding at this level is available to support implementation of the HCP. However, if the assumptions used to generate the costs of implementing the mitigation specified in the HCP no longer hold and the funding needed to implement the HCP exceeds the levels described in Chapter 7, CPS Energy will consult with the USFWS to reprioritize its obligations under the HCP and ITP to achieve maximum compliance within the established funding constraints. CPS Energy will provide to the USFWS information needed to assess if any changes proposed under this Changed Circumstance continue to meet the "maximum extent

practicable" standard for ITP issuance. Under no circumstance will CPS Energy be required to provide the commitment of additional land, water, or fiscal resources.

Revised Karst Zones or KFRs: This Changed Circumstance will have occurred if USFWS publishes or adopts in writing new Karst Zone or KFR boundaries. If this Changed Circumstance occurs, CPS Energy will conduct the environmental review (i.e., the Environmental Checklist) and optional field studies for the Covered Karst Invertebrates in the same manner outlined in the HCP, pursuant to the revised boundaries. CPS Energy does not expect that the USFWS will authorize additional take beyond that anticipated in this HCP without an amendment to the HCP. Karst conservation credits awarded for previously established mitigation transactions and mitigated take allocations will be unchanged by the boundary revisions, even if the protected space is no longer co-located with the KFR it was associated with at the time it was initially established.

Revised USFWS Guidance: From time to time, the USFWS may formally (through a Final Rule published in the *Federal Register*) or informally (by releasing revised guidance within a USFWS region) revise guidance documents pertaining to the establishment and management of preserve lands for Covered Species (e.g., mitigation or preserve design guidance). CPS Energy will consider any revisions to USFWS guidance documents to determine if the revised guidance is practicable within the funding constraints of the HCP. If practicable within the funding constraints of the HCP funding plan, then CPS Energy will adopt the revised guidance. If the revision would incur unreasonable additional cost, CPS Energy can continue to follow the protocols and guidance in place at the time of ITP issuance.

Catastrophic Natural Events: Catastrophic natural events such as wild fires, tornadoes, floods, outbreaks of tree diseases (e.g., oak wilt), prolonged periods of severe drought, and similar events could temporarily reduce or degrade potential habitat for the Covered Species within CPS Energy-responsible mitigation lands. Many of these acute and catastrophic events are a normal or at least occasional occurrence, particularly at wildland-urban interfaces. If such an event occurs, the USFWS may require CPS Energy to temporarily reallocate funding for the management and monitoring of its permittee-responsible mitigation lands to restoration efforts. Under no circumstance, will such responses deemed necessary for addressing the impacts of catastrophic natural events require the acquisition or management of additional mitigation lands or funds outside that anticipated for management and monitoring in Chapter 7. The USFWS will not withhold access to conservation credits acquired for CPS Energy-responsible mitigation as long as CPS Energy is otherwise in compliance with the terms and conditions of the ITP and continues to conduct restoration activities to the extent available funding permits.

9.2 Unforeseen Circumstances

Unforeseen circumstances are changes in circumstances affecting a species or geographic area covered by an HCP that could not reasonably have been anticipated by the ITP applicant and the USFWS at the time of the HCP's development, and that result in a substantial and adverse change in the status of a Covered Species. The USFWS will have the burden of demonstrating that unforeseen circumstances exist and must base the determination on the best scientific and commercial data available. The USFWS shall notify CPS Energy in writing of any unforeseen circumstances the USFWS believes to exist.

The No Surprises Rule states that the USFWS may require additional conservation measures of an incidental take permittee as a result of unforeseen circumstances "only if such measures are limited to modifications within conserved habitat areas, if any, or to the conservation plan's operating conservation program for the affected species, and maintain the original terms of the conservation plan to the maximum extent possible." No Surprises assurances apply only to the species adequately covered by the HCP, and only to those permittees who are in full compliance with the terms of their plan, permit, and other supporting documents, as applicable.

10 ALTERNATIVES CONSIDERED

Section 10(a)(2)(A) of the ESA requires that HCPs include a description of the "alternative actions to such taking the Applicant considered and the reasons why such alternatives are not being utilized." The following sections discuss the alternatives considered by CPS Energy.

10.1 No Programmatic HCP Alternative

Under the No Programmatic HCP Alternative, CPS Energy would not seek a programmatic HCP. Instead, CPS Energy would comply with the ESA on a project-by-project basis. Prior to initiating a project, CPS Energy would review its activities to determine if an activity is likely to result in incidental take of a listed species. If incidental take is likely, CPS Energy would either modify the activity to avoid the reasonable certainty of take or seek authorization for such take.

Preparation of individual-project HCPs and the associated NEPA documents that may be necessary to achieve ESA compliance for independent projects may require an extensive time and financial commitment on behalf of CPS Energy. CPS Energy estimates that for each project, the planning and administrative costs involved in obtaining an ITP (including, as applicable, field investigations, science reviews, impact assessments, conservation planning, management planning, document preparation, public involvement, agency coordination, and similar tasks) may cost CPS Energy between $100,000 and $600,000, depending on the scope and unique circumstances associated with that project (Amanda Aurora, SWCA, personal communication). This estimate does not include the additional cost of any necessary mitigation. With a programmatic HCP, CPS Energy incurs these administrative expenses once for the entire set of CPS Energy Activities. Just as critical to CPS Energy's operations, developing the necessary documentation for project-specific ITPs would require as many as 2 to 5 years for each CPS Energy Activity, significantly lengthening the process for delivering necessary public infrastructure and services.

With project-specific HCPs, CPS Energy would still be required to complete the same number of projects over the 30-year ITP Term, as required by its CCN to respond to growth and provide utility services. Without a programmatic HCP, CPS Energy may use project-specific routing to reduce effects on the Covered Species, but these routing decisions may also result in significantly higher project budgets that place an unjustifiable economic burden on CPS Energy and its customers. However, project-specific HCPs would consider the impacts associated with isolated cases of incidental take and would not provide the same large-scale analysis of the impacts of the taking provided in a programmatic plan. Similarly, the mitigation would be commensurate with project scale, eliminating the necessity for larger-scale mitigation with potentially greater benefit to the Covered Species. CPS Energy expects that project-specific impacts will be small in scale and required mitigation will be minimal. Although mitigation ratios may be higher for project-specific mitigation, consideration of mitigation on a single-project level is likely to result in smaller, more scattered mitigation parcels with no incentive to establish, or contribute to establishing, larger, recovery-quality preserves.

Project-specific permitting does not facilitate a streamlined approach to ESA compliance, in contrast to the programmatic HCP that expedites processing time and reduces the staffing burden on both CPS Energy and the USFWS. Given the uncertainty associated with processing times for HCPs, CPS Energy may be at risk for significant project delays that could have significant health and safety implications for its customers. Additionally, economic growth and development within the Plan Area would suffer if utility services were unable to meet increased demand promptly.

The nature of CPS Energy's operations and its critical role in the community require CPS Energy to consider alternatives that reduce uncertainty and encourage strict financial and schedule planning. Project-specific permitting subjects CPS Energy to uncertainty regarding the time and financial resources necessary to achieve ESA compliance as CPS Energy conducts its basic function. CPS Energy has determined that a programmatic, system-wide HCP best alleviates this uncertainty and therefore best complements the utility's core mission.

10.2 Reduced Take Alternative

CPS Energy considered an alternative to the proposed HCP that included commitments for the application of best management practices (BMPs) for routing, siting, construction methods, and operations that would minimize the amount of take to the extent that any remaining take would be unavoidable given current technologies.

For the GCWA, this alternative would include a commitment to avoid all construction and O&M activities within 300 feet of habitats for this species when individuals of the GCWA could be present. Under this alternative, CPS Energy would commit to not conduct Covered Activities in such areas during the breeding seasons for the GCWA. To further ensure that no individuals of the GCWA would be present, the period for seasonal restrictions would include an additional 2 weeks on either end of the currently accepted breeding seasons for this species. CPS Energy would also commit to minimize the removal of habitats for the GCWA associated with the construction of new electric transmission and distribution lines by using taller poles or towers when traversing such habitats (to provide more clearance for conducting lines over such habitats, thereby minimizing the amount of vegetation removal needed to create and maintain safe clearance) and stringing lines by helicopter or other equipment that minimizes the amount of clearing required for construction access. Where outside of habitats for the Covered Karst Invertebrates, CPS Energy would also prioritize construction methods that installed new electric lines underground, preferably by boring under habitats for the GCWA where technically feasible.

For all Covered Species, this alternative would include a commitment from CPS Energy to increase the priority given to minimize effects on Covered Species in its routing and siting decisions. CPS Energy generally follows PUC guidelines during the routing and siting process for proposed projects (though CPS Energy does not currently require PUC approval on routing and siting decision-making). The PUC guidelines prefer routing that, to the extent reasonable, "moderate[s] the impact on the affected community and landowners" (PUC 25.101). Although CPS Energy could give higher priority to endangered species in routing and siting decision-making for transmission lines, if presented with significant cost to private landowners, then there may be pressure to reject routing that favors the species over landowners and CPS Energy customers.

CPS Energy rejected this reduced take alternative on the basis that it: 1) would result in unacceptable restrictions on necessary public utility activities and operations; 2) would dramatically increase the costs of installing and maintaining new facilities and create an undue burden on rate payers; 3) would risk the safety and reliability of the CPS Energy Network; and 4) would restrict the ability of CPS Energy to appropriately balance the full suite of human and environmental constraints when planning for new facilities. CPS Energy must respond to the growth of its customer base as quickly and efficiently as possible, and restricting all Covered Activities to the fall and winter months (essentially half of the year) would significantly reduce the amount of work that CPS Energy could accomplish in a given year or would require CPS Energy to seasonally increase the size of its workforce to accomplish needed activities in a shorter amount of time. Neither outcome is desired by CPS Energy. CPS Energy does not believe that the additional costs for constructing new electric transmission lines and distribution lines in a manner that avoids (to the extent technically feasible) the removal of habitat is a prudent use of rate payer funding

when the continued existence of the Covered Species is not in question and practicable options for mitigating the impacts of take are available. Finally, CPS Energy believes that flexibility to balance priorities related to project constraints is important and rejects unnecessary restrictions on choosing routes for new facilities.

Nevertheless, it is unlikely that most new construction projects could completely avoid the potential for incidental take of at least one of the Covered Species. Therefore, even with the reduced amount of take, CPS Energy might still need to engage in the HCP process with the USFWS. In practice, obtaining an ITP takes at least 2 years, even for HCPs addressing very small amounts of take. CPS Energy might experience costs savings from the reduced take alternatives related to mitigation costs, but the costs of implementing the additional minimization measures and inability to consider effects on the Covered Species in context with other important public interests represent an unacceptable alternative for CPS Energy.

10.3 Participation in the Southern Edwards Plateau HCP

While CPS Energy intends to use the Southern Edwards Plateau HCP for authorization of incidental take of the Covered Karst Invertebrates under the certain circumstances (see Chapter 6.3.2.1), CPS Energy considered participating in and fully relying on the Southern Edwards Plateau HCP as an alternative to preparing its own HCP. CPS Energy acknowledges that participation in the Southern Edwards Plateau HCP could provide a ready process for obtaining incidental take authorization for the GCWA and some of the Covered Karst Invertebrates. However, the Southern Edwards Plateau HCP does not fully address CPS Energy's purpose and need for incidental take authorization.

First, the Southern Edwards Plateau HCP does not address the full set of species for which CPS Energy desires take authorization (for instance, the Southern Edwards Plateau HCP does not cover *Cicurina baronia*). Second, the Permit Area for the Southern Edwards Plateau HCP does not include the full extent of CPS Energy's desired Plan Area, such as the "transmission tails" that capture existing CPS Energy electric and gas transmission lines outside of its Service Area. Third, the Southern Edwards Plateau HCP is a plan primarily intended to address land development activities with effects on the Covered Species that are in some ways very different from those anticipated from linear activities without intensive, on-going human activity. Therefore, CPS Energy does not believe that the impact assessment and mitigation determinations in the Southern Edwards Plateau HCP directly apply to its activities. Finally, the Southern Edwards Plateau HCP includes strict avoidance measures for listed karst invertebrates that would unnecessarily limit CPS Energy's activities and operations.

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APPENDIX A

Citizens Advisory Committee Supporting Information

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NOTICE OF OPEN MEETING

CPS ENERGY SYSTEM-WIDE HABITAT CONSERVATION PLAN
CITIZENS ADVISORY COMMITTEE MEETING

February 17, 2015 at 6:30 p.m.
San Antonio Central Library Auditorium
600 Soledad
San Antonio, Texas

At this meeting, the following items may be discussed and are subject to potential committee action:

1. Call to order and roll call
2. Welcome and introductions of committee members, CPS Energy staff, and consultant staff
3. Presentation of Open Meetings Act requirements and guidelines
4. Overview of the Endangered Species Act and Southern Edwards Plateau Habitat Conservation Plan
5. Proposed CPS Energy system-wide habitat conservation plan
6. Introduction and discussion of committee charge
7. Discussion of the Biological Advisory Team (BAT) role and identification of possible candidates; CAC appointment of BAT representative
8. Public comment
9. Review project schedule and anticipated future meeting dates

DRAFT MEETING MINUTES

CPS ENERGY SYSTEM-WIDE HABITAT CONSERVATION PLAN
CITIZENS ADVISORY COMMITTEE MEETING

February 17, 2015 at 6:30 p.m.
San Antonio Central Library Auditorium
600 Soledad
San Antonio, Texas

1. Call to order and roll call

Committee members present: Charles "Frosty" Forster, Michael Moore, Chester Rackley, Ian Cude, Ram Khatti, and Chris Holm; committee member absent: Klaus Weiswurm

Other attendees: see attached sign-in sheet

2. Welcome and introductions of committee members, CPS Energy staff, and consultant staff

Juan Sandoval (CPS Energy) welcomed the Committee and facilitated the introductions of the CPS Energy Habitat Conservation Plan (HCP) team and the consulting team from SWCA Environmental Consultants (SWCA), Sedgwick LLP, and the Arsenal Group.

3. Presentation of Open Meetings Act and Public Information Act requirements and guidelines

Brooke Wahlberg (Sedgwick LLP) explained that pursuant to Texas Parks and Wildlife Code (TPW Code) Chapter 83, the Citizens Advisory Committee (CAC) is subject to the Open Meetings Act and Public Information Act and provided an overview of the basic requirements of the Open Meetings Act and Public Information Act.

4. Overview of the Endangered Species Act and Southern Edwards Plateau Habitat Conservation Plan

Brooke Walberg provided an overview of Sections 4, 9, 7, 10, and 11 of the Endangered Species Act (ESA) of 1973 with particular focus on the definition of "take" "harm" and "harass" under the ESA and the procedures and requirements identified in ESA Section 10.

Amanda Aurora (SWCA) presented on the various ESA compliance options available to CPS Energy (including the use of project-by-project consultations, participation in existing local plans, complete take avoidance and preparation of an individual programmatic HCP). Ms. Aurora also explained why reliance on the proposed Southern Edwards Plateau Habitat Conservation Plan for ESA compliance would not meet all of CPS Energy's needs and that the preferred compliance approach for CPS Energy is to pursue an individual programmatic HCP.

5. Proposed CPS Energy system-wide habitat conservation plan

As an introduction to the CPS Energy HCP, Jenna Cantwell (SWCA) presented the draft Plan Area, draft Covered Activities, draft Covered Species, and potential mitigation approaches currently being considered by CPS Energy.

6. Introduction and discussion of committee charge

Brooke Wahlberg described the CAC requirements and charge as identified by Chapter 83.016 of the TPW Code.

7. Discussion of the Biological Advisory Team (BAT) role and identification of possible candidates; CAC appointment of BAT representative

Christine Westerman (SWCA) presented on the requirements for a Biological Advisory Team (BAT) under TPW Code Chapter 83. Ms. Westerman provided the resumes and background information for two candidates recommended by CPS Energy for inclusion on the BAT. After some discussion, the CAC members requested an opportunity to consider other potential BAT candidates with stronger backgrounds in the specific avian and karst invertebrate species relevant to the HCP. The CAC postponed action on the appointment of a BAT member until a later meeting date.

8. Public comment

None.

9. Review project schedule and anticipated future meeting dates

The next meeting of the CAC will be held within a few weeks (date not yet confirmed) to consider candidates for the BAT to be appointed by the landowner members of the CAC.

It is expected that the CAC will be convened in May or June of 2015 to review the first draft of the HCP. Additional meetings will occur as appropriate throughout the consultation process with the United States Fish and Wildlife Service.

Attachments: meeting agenda; meeting sign-in sheets; PowerPoint presented at the meeting; USFWS Section 10 Consultation handouts provided at the meeting; CAC charge/committee member list provided at the meeting; and resumes for potential BAT candidates.

NOTICE OF OPEN MEETING

CPS ENERGY SYSTEM-WIDE HABITAT CONSERVATION PLAN
CITIZENS ADVISORY COMMITTEE MEETING

March 17, 2015
6:30-7:35 p.m.
San Antonio Central Library Auditorium
600 Soledad
San Antonio, Texas

At this meeting, the following items may be discussed and are subject to potential committee action:

1. Call to order and roll call
2. Consider and take possible action to approve the minutes of the February 17, 2015, Citizens Advisory Committee meeting
3. Consider and take possible action to adopt operational rules and procedures, including, but not limited to, the appointment of a Committee Chair
4. Consider and take possible action on the appointment of the landowner-appointed member to the Biological Advisory Team (BAT)
5. Public comment
6. Consider future meeting dates, locations, and agendas

DRAFT MEETING MINUTES

CPS ENERGY SYSTEM-WIDE HABITAT CONSERVATION PLAN
CITIZENS ADVISORY COMMITTEE MEETING

March 17, 2015
6:30-7:35 p.m.
San Antonio Central Library Auditorium
600 Soledad
San Antonio, Texas

1. Call to order and roll call

Committee members present: Charles "Frosty" Forster, Michael Moore, Chester Rackley, Ian Cude, Ram Khatti, and Klaus Weiswurm; committee member absent: Chris Holm

Richard Heilbrun (Texas Parks and Wildlife Department [TPWD]) was present as an alternate for Chris Holm.

2. Consider and take possible action to approve the minutes of the February 17, 2015, Citizens Advisory Committee meeting

Ian Cude moved and Frosty Forster seconded to approve the February 17, 2015, minutes as presented. There were no objections; thus, the motion passed.

3. Consider and take possible action to adopt operational rules and procedures, including, but not limited to, the appointment of a Committee Chair

As a reminder, Amanda Aurora (SWCA) presented the CAC charge to the committee and introduced a series of potential operational rules and procedures. The committee agreed that a quorum should consist of at least four members of the Committee at a posted meeting location (simple majority). To take action, the items will be put up for a vote and discussion with a simple majority needed to pass. Alternates will not be allowed to vote, nor will they contribute to achieving a quorum.

The committee requested that SWCA continue to prepare the meeting minutes for approval at the next meeting of the committee.

Frosty Forster moved and Ian Cude seconded to appoint Michael Moore as the CAC Chair. There were no objections; thus, the motion passed.

The committee agreed that public comment should be a standing agenda item at the beginning of all meetings. A three-minute limit per comment will be enforced. The posted agenda will include a note describing the public comment process for each meeting.

The committee agreed that use of doodle polls to set meeting dates provided ample opportunity for meetings to be scheduled around member's availability, so having a process in place for members that consistently missed meetings is not currently recommended. The members committed to prioritizing meeting attendance.

4. Consider and take possible action on the appointment of the landowner-appointed member to the Biological Advisory Team (BAT)

Christine Westerman (SWCA) provided an overview to the committee on the BAT charge and presented four candidates for consideration by the landowner members of the committee (Molly Keck, Kelly Lyons, Richard Kostecke, and Benjamin Hutchins). Christine confirmed that the four candidates presented had already agreed to serve should they be selected. The entire committee considered and discussed these candidates.

Richard Heilbrun asked Meredith Longoria (TPWD) if she had asked any candidates other than those presented if they were interested in participating in the BAT; Meredith stated that discussions were on-going but that she had not personally inquired if any other potential candidates were interested in serving. Richard Heilbrun stated that Chapter 83 of the Parks and Wildlife Code requires that TPWD and the CAC be involved in the appointment of all BAT members. CAC members asked CPS Energy to confirm that they will make the remaining appointments to the BAT in consultation with Meredith Longoria (TPWD BAT Chairperson) and the CAC, and strongly encouraged CPS Energy staff to commit to working with Meredith Longoria in assembling the BAT.

After some discussion regarding process, Kip Giles (CPS Energy) stated that CPS Energy would consult with Meredith Longoria for the final BAT member appointments, but emphasized that TPWD has indicated that staff-time may be an issue they should be conscientious about, so the inclusion of additional TPWD staff may need to be discussed further. Meredith Longoria stated, and Frosty Forster agreed, that species experts for each taxa should be represented on the BAT. Meredith Longoria stated that she will identify additional potential BAT candidates for discussion with CPS Energy. Klaus Weiswurm stated that CPS Energy should consider inclusion of a botanist and that he does not believe it is critical to maintain an odd number of members on the BAT.

Klaus Weiswurm moved and Frosty Forster seconded to appoint Richard Kostecke as the CAC landowner appointee to the BAT. There were no objections among the landowner members of the CAC; thus, the motion passed.

5. Public comment

None.

6. Consider future meeting dates, locations, and agendas

Amanda Aurora stated that the next step will be a complete first working draft of the HCP for distribution to the CAC so they can see the layout of the plan. Ram Khatti suggested that a draft of the plan be made available to the CAC prior to the next meeting date, and SWCA staff agreed that the review would proceed that way. The next meeting is expected to occur in June or July. The precise date will be identified using a doodle poll closer to that time.

Michael Moore adjourned the meeting at 7:35 p.m.

NOTICE OF OPEN MEETING

CPS ENERGY SYSTEM-WIDE HABITAT CONSERVATION PLAN
CITIZENS ADVISORY COMMITTEE MEETING

February 09, 2016
6:30 – 8:30 p.m.
San Antonio Central Library Auditorium
600 Soledad
San Antonio, Texas

The Citizens Advisory Committee may discuss and take action on any agenda item listed below.

1. Call to order
2. Brief review of Open Records/Open Meetings requirements
3. Public Comment (limited to 3 minutes per speaker)
4. Brief review of Citizens Advisory Committee charge
5. Review and approval of draft minutes from the Citizens Advisory Committee meeting on March 17, 2015
6. Presentation of the [December 18, 2015] Draft Habitat Conservation Plan by SWCA Environmental Consultants
7. Citizens Advisory Committee discussion and Q&A with the consultant team regarding the Draft Habitat Conservation Plan
8. Citizens Advisory Committee discussion and approval of process for submission of committee member comments on the Draft Habitat Conservation Plan
9. Discuss future meeting dates and agenda items
10. Adjourn

MEETING MINUTES

CPS ENERGY SYSTEM-WIDE HABITAT CONSERVATION PLAN
CITIZENS ADVISORY COMMITTEE MEETING

February 09, 2016
6:30 – 8:30 p.m.
San Antonio Central Library Auditorium
600 Soledad
San Antonio, Texas

1. Call to order

Michael Moore (Committee Chair) called the meeting of the Citizen's Action Committee to order at 6:32 p.m.

Present: Michael Moore, Chester Rackely, Ian Cude, Ram Khatti, and Chris Holm.

Absent: Frosty Forester and …

2. Brief review of Open Records/Open Meetings requirements

Brooke Wahlberg, Nossaman LLP, reviewed the requirements of the Open Records/Open Meetings requirements.

3. Public comment

None.

4. Brief review of Citizens Advisory Committee charge

Brooke Wahlberg, Nossaman LLP, read the Citizens Advisory Committee charge from the Texas Parks and Wildlife Code.

5. Review and approval of draft minutes from the Citizens Advisory Committee meeting on March 17, 2015

Ram Khatti moved to approve the March 17, 2015, minutes as provided. Chester Rackely seconded the motion. There were no objections; thus, the motion passed.

6. Presentation of the December 18, 2015 Draft Habitat Conservation Plan by SWCA Environmental Consultants

Christine Westerman (SWCA Environmental Consultants) and Jenna Cantwell (SWCA Environmental Consultants) presented briefly on each chapter of the Draft Habitat Conservation Plan.

7. Citizens Advisory Committee discussion and Q&A with the consultant team regarding the Draft Habitat Conservation Plan

The Citizens Advisory Committee discussed the Draft Habitat Conservation Plan with SWCA Environmental Consultants and CPS Energy staff. Specific comments will be incorporated into a comment matrix and combined with comments submitted following the meeting.

8. Citizens Advisory Committee discussion and approval of process for submission of team member comments on the Draft Habitat Conservation Plan

Comments on the Draft Habitat Conservation Plan will be accepted through the close of business on February 26, 2016. Comments can be submitted to SWCA staff electronically.

9. Discuss future meeting dates and agenda items

Future meetings of the Citizens Advisory Committee will occur when/if substantive revisions to the Habitat Conservation Plan are made.

10. Adjourn

Ian Cude moved to adjourn the meeting at 8:17 p.m. Ram Khatti seconded the motion. There were no objections; thus, the motion passed.

NOTICE OF OPEN MEETING

CPS ENERGY SYSTEM-WIDE HABITAT CONSERVATION PLAN
CITIZENS ADVISORY COMMITTEE MEETING
Tuesday, November 6, 2018 11:30am
SWCA Environmental Consultants
6200 UTSA Boulevard #102
San Antonio, TX 78249

At this meeting, the following items may be discussed and are subject to potential committee action:

1. Call to order and roll call
2. Update on HCP progress and timeline
3. Overview of changes to revised draft HCP
4. Committee discussion of revised draft HCP
5. Consider and take possible action on form of CAC comments on revised draft HCP
6. Public comment
7. Adjourn

DRAFT MEETING MINUTES

CPS ENERGY SYSTEM-WIDE HABITAT CONSERVATION PLAN
CITIZENS ADVISORY COMMITTEE MEETING

Tuesday, November 6, 2018 11:30am
SWCA Environmental Consultants
6200 UTSA Boulevard #102
San Antonio, TX 78249

1. Call to order and roll call

   Citizens Advisory Committee (CAC) committee chair Michael Moore called the meeting to order at 11:35 am. CAC members present: Michael Moore, Chester Rackley, and Klaus Weiswurm. CPS Energy staff present: Antulio Garcia, Kip Giles, LeeRoy Perez, Juan Sandoval, and Kim Stoker. Nossaman staff present: Rebecca Barho. SWCA staff present: Amanda Aurora and Christine Westerman. CAC members absent were Ian Cude, Frosty Forster, Chris Holm, and Ram Khatti. Quorum was not achieved since four of the seven committee members were absent.

2. Update on HCP progress and timeline

   Amanda Aurora reviewed the HCP progress and milestones to date. These are summarized in the attached memo entitled *CPS Energy System-wide Habitat Conservation Plan: Status Update and Summary of Plan Changes Between December 2017 and October 2018*.

3. Overview of changes to revised draft HCP

   Ms. Aurora provided an overview of substantive changes between the December 2017 and October 2018 versions of the HCP. These changes are summarized in the attached memo entitled *CPS Energy System-wide Habitat Conservation Plan: Status Update and Summary of Plan Changes Between December 2017 and October 2018*.

4. Committee discussion of revised draft HCP

   The committee discussed next steps and remaining committee responsibilities, timeline following submittal of final draft to U.S. Fish and Wildlife Service, requested summary of Biological Advisory Team comments, and discussed differences between SEP-HCP and CPS Energy HCP.

5. Consider and take possible action on form of CAC comments on revised draft HCP

The committee did not take action since a quorum was not present.
Ms. Aurora noted that draft meeting minutes would be prepared by November 9, and asked the committee to submit any HCP comments by November 16, 2018.

6. Public comment

   No members of the public requested an opportunity to comment.

7. Adjourn

   Mr. Moore adjourned the meeting at 12:27 pm.

Attachments

CPS Energy System-wide Habitat Conservation Plan: Status Update and Summary of Plan Changes Between December 2017 and October 2018.

Meeting Sign-in Sheet

Appendix A – Citizens Advisory Committee Supporting Information

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APPENDIX B

Biological Advisory Team Supporting Information

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NOTICE OF OPEN MEETING

CPS ENERGY SYSTEM-WIDE HABITAT CONSERVATION PLAN
BIOLOGICAL ADVISORY TEAM MEETING
June 09, 2015
1:00-3:00
SWCA Environmental Consultants, San Antonio Office
6200 UTSA Boulevard, Suite 102
San Antonio, Texas

At this meeting, the following items may be considered and recommended for committee action:

1. Call to order—establish that all BAT members are present
2. Introductions of BAT members, CPS Energy staff, and consultant staff
3. Presentation of Open Meetings Act and Public Information Act requirements and guidelines
4. Overview of the Endangered Species Act and existing Habitat Conservation Plans as relevant to the purpose and need for an individual CPS Energy Habitat Conservation Plan
5. Introduction to the proposed CPS Energy system-wide habitat conservation plan
6. Introduction and discussion of committee charge and expectations
7. Public comment
8. Overview of anticipated HCP development schedule and future meeting dates and agenda items

DRAFT MINUTES

CPS ENERGY SYSTEM-WIDE HABITAT CONSERVATION PLAN
BIOLOGICAL ADVISORY TEAM MEETING

June 09, 2015
1:00-3:00
SWCA Environmental Consultants, San Antonio Office
6200 UTSA Boulevard, Suite 102
San Antonio, Texas

1. Call to order—establish that all BAT members are present

Biological Advisory Team Members Present: Meredith Longoria (Chair), Mike Duran, Ben Hutchins, Kelly Lyons, Richard Kostecke.

Other attendees: see attached sign-in sheet

2. Introductions of BAT members, CPS Energy staff, and consultant staff

Juan Sandoval (CPS Energy) welcomed the Committee and facilitated the introductions of the CPS Energy Habitat Conservation Plan (HCP) team and the consulting team from SWCA Environmental Consultants (SWCA), Nossaman LLP, and the Arsenal Group.

3. Presentation of Open Meetings Act and Public Information Act requirements and guidelines

Brooke Wahlberg (Nossaman LLP) explained that pursuant to Texas Parks and Wildlife Code (TPW Code) Chapter 83, the Biological Advisory Team is subject to the Open Meetings Act and Public Information Act and provided an overview of the basic requirements of the Open Meetings Act and Public Information Act.

4. Overview of the Endangered Species Act and existing Habitat Conservation Plans as relevant to the purpose and need for an individual CPS Energy Habitat Conservation Plan

Amanda Aurora (SWCA) provided an overview of the Endangered Species Act (ESA) of 1973 with particular focus on the definition of "take" "harm" and "harass" under the ESA and the procedures and requirements for obtaining an incidental take permit under Section 10(a) of the ESA. Ms. Aurora then

presented on the various ESA compliance options available to CPS Energy (including the use of project-by-project permitting, participation in potential future regional habitat conservation plans (HCPs), complete take avoidance, and preparation of an individual programmatic HCP. Ms. Aurora also explained why reliance on the proposed Southern Edwards Plateau Habitat Conservation Plan for ESA compliance would not meet all of CPS Energy's needs and that the preferred compliance approach for CPS Energy is to pursue an individual programmatic HCP.

5. Introduction to the proposed CPS Energy system-wide habitat conservation plan

As an introduction to the CPS Energy HCP, Christine Westerman (SWCA) presented the draft Plan Area, draft Covered Activities, draft Covered Species, and potential mitigation approaches currently being considered by CPS Energy.

6. Introduction and discussion of committee charge and expectations

Brooke Wahlberg described the BAT requirements and charge as identified by Chapter 83 of the TPW Code.

7. Public comment

None.

8. Overview of anticipated HCP development schedule and future meeting dates and agenda items

It is expected that the BAT will be convened in August or September of 2015 (per BAT member request to accommodate summer vacation schedules) to review the first draft of the HCP. Additional meetings will occur as appropriate throughout the consultation process with the United States Fish and Wildlife Service.

NOTICE OF OPEN MEETING

CPS ENERGY SYSTEM-WIDE HABITAT CONSERVATION PLAN
BIOLOGICAL ADVISORY TEAM MEETING
February 08, 2016
1:30-3:30 p.m.
SWCA Environmental Consultants, San Antonio Office
6200 UTSA Boulevard, Suite 102
San Antonio, Texas

The Biological Advisory Team may discuss and take action on any agenda item listed below.

1. Call to order
2. Brief review of Open Records/Open Meetings requirements
3. Public comment
4. Brief review of Biological Advisory Team charge
5. Review and approval of draft minutes from the Biological Advisory Team meeting on June 09, 2015
6. Presentation of the December 18, 2015 Draft Habitat Conservation Plan by SWCA Environmental Consultants
7. Biological Advisory Team discussion and Q&A with the consultant team regarding the Draft Habitat Conservation Plan
8. Biological Advisory Team discussion and approval of process for submission of team member comments on the Draft Habitat Conservation Plan
9. Discuss future meeting dates and agenda items
10. Adjourn

MEETING MINUTES

CPS ENERGY SYSTEM-WIDE HABITAT CONSERVATION PLAN
BIOLOGICAL ADVISORY TEAM MEETING

February 08, 2016
1:30-3:30 p.m.
SWCA Environmental Consultants, San Antonio Office
6200 UTSA Boulevard, Suite 102
San Antonio, Texas

1. Call to order

Meredith Longoria called the meeting of the Biological Advisory Team to order at 1:32 p.m.

Biological Advisory Team members present: Meredith Longoria, Ben Hutchins, Mike Duran, Richard Kostecke

Absent: Kelly Lyons

2. Brief review of Open Records/Open Meetings requirements

Brooke Wahlberg, Nossaman LLP, reviewed the requirements of the Open Records/Open Meetings requirements.

3. Public comment

None.

4. Brief review of Biological Advisory Team charge

Brooke Wahlberg, Nossaman LLP, read the Biological Advisory Team charge from the Texas Parks and Wildlife Code.

5. Review and approval of draft minutes from the Biological Advisory Team meeting on June 09, 2015

Ben Hutchins made a motion to approve the June 09, 2015, minutes as provided. Richard Kostecke seconded the motion. There were no objections; thus, the motion passed.

6. Presentation of the December 18, 2015 Draft Habitat Conservation Plan by SWCA Environmental Consultants

Christine Westerman (SWCA Environmental Consultants) and Jenna Cantwell (SWCA Environmental Consultants) presented briefly on each chapter of the Draft Habitat Conservation Plan.

7. Biological Advisory Team discussion and Q&A with the consultant team regarding the Draft Habitat Conservation Plan

The Biological Advisory Team discussed the Draft Habitat Conservation Plan with SWCA Environmental Consultants and CPS Energy staff. Specific comments will be incorporated into a comment matrix and combined with comments submitted following the meeting.

8. Biological Advisory Team discussion and approval of process for submission of team member comments on the Draft Habitat Conservation Plan

Comments on the Draft Habitat Conservation Plan will be accepted through the close of business on February 26, 2016. Comments can be submitted to SWCA staff electronically.

9. Discuss future meeting dates and agenda items

Future meetings of the Biological Advisory Team will occur when/if substantive revisions to the Habitat Conservation Plan are made.

10. Adjourn

Richard Kostecke moved to adjourn the meeting at 2:58 p.m. Mike Duran seconded the motion. There were no objections; thus, the motion passed.

NOTICE OF OPEN MEETING

CPS ENERGY SYSTEM-WIDE HABITAT CONSERVATION PLAN
BIOLOGICAL ADVISORY TEAM MEETING
Wednesday, October 31, 2018 11:30am
SWCA Environmental Consultants
6200 UTSA Boulevard #102
San Antonio, TX 78249

At this meeting, the following items may be discussed and are subject to potential committee action:

1. Call to order and roll call
2. Update on HCP progress and timeline
3. Overview of changes to revised draft HCP
4. Committee discussion of revised draft HCP
5. Consider and take possible action on form of CAC comments on revised draft HCP
6. Public comment
7. Adjourn

DRAFT MEETING MINUTES

CPS ENERGY SYSTEM-WIDE HABITAT CONSERVATION PLAN
BIOLOGICAL ADVISORY TEAM MEETING

Wednesday, October 31, 2018 11:30am
SWCA Environmental Consultants
6200 UTSA Boulevard #102
San Antonio, TX 78249

1. Call to order and roll call

   Biological Advisory Team (BAT) committee chair Meredith Longoria called the meeting to order at 11:43 am. BAT members present: Meredith Longoria (TPWD), Dr. Ben Hutchins (TPWD) and Mike Duran (The Nature Conservancy). CPS Energy Citizens Advisory Committee member present: Klaus Weiswurm. CPS Energy staff present: Kip Giles, Mike Malone, LeeRoy Perez, Juan Sandoval, and Kim Stoker. SWCA staff present: Amanda Aurora and Christine Westerman. BAT members absent were Richard Kostecke (The Nature Conservancy) and Dr. Kelly Lyons (Trinity University). Quorum was met through presence of three of the five committee members.

2. Update on HCP progress and timeline

   Amanda Aurora reviewed the HCP progress and milestones to date. These are summarized in the attached memo entitled *CPS Energy System-wide Habitat Conservation Plan: Status Update and Summary of Plan Changes Between December 2017 and October 2018*.

3. Overview of changes to revised draft HCP

   Ms. Aurora provided an overview of substantive changes between the December 2017 and October 2018 versions of the HCP. These changes are summarized in the attached memo entitled *CPS Energy System-wide Habitat Conservation Plan: Status Update and Summary of Plan Changes Between December 2017 and October 2018*.

4. Committee discussion of revised draft HCP

   The committee discussed HCP changes on use of SEP-HCP where feasible, removal of take coverage for black-capped vireo, how new listings would be addressed in the future, and taxonomic revisions for listed *Cicurina* species. Dr. Hutchins noted that he plans to submit a small number of written comments that are mostly requests for clarification.

5. Consideration and possible action on form of CAC comments on revised draft HCP

   The committee members agreed to submit written comments individually. Comments are expected to be minor. Ms. Aurora asked the committee to submit comments by November 16, 2018.

6. Public comment

   No members of the public requested an opportunity to comment.

7. Adjourn

   Ms. Longoria adjourned the meeting at 12:25 pm.

Attachments

CPS Energy System-wide Habitat Conservation Plan: Status Update and Summary of Plan Changes Between December 2017 and October 2018.

Meeting Sign-in Sheet

Appendix B – Biological Advisory Team Supporting Information

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APPENDIX C

Compliance with Section 106 of the National Historic Preservation Act

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Compliance with Section 106 of the National Historic Preservation Act

The U.S. Fish and Wildlife Service's (Service) issuance of an incidental take permit (ITP) under Endangered Species Act (ESA) section 10(a)(1)(B) is considered an "undertaking" covered by the Advisory Council on Historic Preservation and must comply with Section 106 of the National Historic Preservation Act of 1966 (NHPA; 16 USC 470, et seq. [1966]) and its implementing regulations (36 CFR Part 800 [2000]). Advisory Council on Historic Preservation regulations define an undertaking as a "project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a federal agency, including those carried out by, or on behalf of, a federal agency; those carried out with federal financial assistance; and those requiring a federal permit, license or approval" (36 CFR §800.16(y)). In this context, the federal undertaking is issuance of an ITP, which approves, or approves with conditions, the applicant-proposed Habitat Conservation Plan (HCP), when ESA-section 10 permit issuance criteria are met. The executed HCP and ITP would be binding on the applicant.

The Permit-holder(s) associated with the HCP will work with a cultural resources professional that meets the Secretary of Interior's Professional Qualifications Standards (36 CFR Part 61), to assist the Service in fulfilling the requirements of Section 106 of the NHPA and its implementing regulations. CPS Energy currently employs a cultural resources professional that meets the Secretary of Interior's Professional Qualifications Standards (36 CFR Part 61) to help fulfill its obligations under Section 106 and the Antiquities Code of Texas. CPS Energy also has entered into a Memorandum of Understanding with the Texas Historical Commission, signed in October 2020, which outlines its operating procedures for compliance with the above regulations.

The NHPA requires that the area of potential effects (APE) be identified for each project for purposes of analysis. The APE is the geographic area within which an undertaking may directly or indirectly cause changes in the character or use of historic properties. For projects enrolling in the HCP, the APE would be limited to those portions of projects seeking authorization under the HCP and necessary to meet the ITP conditions.

Permit-holders, with assistance from their cultural resource professional, will follow the process below:

- Use State and/or Tribal cultural resource databases, e.g., databases maintained by the State Historic Preservation Office (SHPO) and/or the Tribal Historic Preservation Office (THPO), in identifying a proposed APE and assessing any potential impacts to known historic or cultural sites within the proposed APE.

- Coordinate with the appropriate Service Ecological Services Field Office (based on the location of their project activities) to define the APE and timing of activities for their proposed project. The proposed APE and timing of activities covered by the HCP will be submitted to the Service for review and concurrence prior to commencing the steps outlined below. If the Service does not concur with the proposed APE, the Service and the Permit-holder, with assistance from their cultural resource professional, will coordinate to identify the proposed APE for the proposed activity. The steps below will

be conducted after the Service has concurred, in writing, with the proposed APE for the prospective activity.

- Submit for review project information resulting from the consultation with the Service above to the relevant SHPO and any other consulting parties identified as having an interest in the APE (e.g. THPOs or Tribes). A specific SHPO's review form can be used, or correspondence with equivalent information. The supporting documentation submitted will include, but may not be limited to: information from the pre-project review; maps; database searchers; information from any cultural/historical resources field studies; and the procedure that will be followed to address inadvertent discoveries of human remains, burials, funerary items, sacred objects, or objects of cultural patrimony found during project implementation.

- The SHPO and the other consulting parties will review the submitted project information within timeframes established by law. The SHPO/THPO may request a field survey. The SHPO/THPO should respond to both the Service and the Permit-holder. If no response is given or no survey is requested by the SHPO/THPO, the Service and Permit-holder will document this for their records. This would conclude the Service's Section 106 compliance related to the particular APE.

- If a field survey is requested by the SHPO/THPO, a cultural resource professional, meeting the above-referenced standards in the academic discipline needed, will perform the survey consistent with the recommendations provided by the SHPO/THPO.

- The Permit-holder will provide the Service and SHPO with results of the requested surveys within 30 days of completion, and the Service shall promptly provide the THPO, if involved, with the survey results.

- If the Service/SHPO/THPO concur with the results, in writing, the Service's Section 106 compliance would be concluded.

- If a historic property (listed or possibly eligible for listing on the National Register of Historic Places) is identified within the APE, the Permit-holder, Service, and SHPO (and THPO, if involved) representatives will collaborate on methods to avoid, minimize or mitigate the effects so that a no-effect determination on the proposed undertaking may be reached; or collaborate on the creation of a Memorandum of Agreement (MOA) to resolve adverse effects, prior to the initiation of the project activities with the potential to affect the historic property.

- In the event of any post-review discovery of historic/cultural resources, unmarked cemeteries, human remains, and funerary objects during the implementation of a Permit-holder's activities, all activities will be immediately suspended. The Permit-holder will immediately contact the appropriate Service Ecological Services Field Office (based on the location of their project activities), SHPO (and THPO, if involved), and local law enforcement. No activities will continue until an appropriate buffer to the area of

discovery is identified with concurrence from the Service, SHPO (and THPO, if involved).

Please note, at any point in the Section 106 process the SHPOs/THPOs may choose to engage the Service directly, rather than the Permit-holder's cultural resource professional.

APPENDIX D

Evaluation Species and Review Criteria for Potential Coverage

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Appendix D. Evaluation Species and Review Criteria for Potential Coverage

Species Common Name (Scientific Name)	Current Listing Status *	Likely Occurrence Within Plan Area	Likely Affected by CPS Energy Activities	ESA Section 9 Take Not Prohibited	Include as Covered Species (Yes/No)	Rationale
BIRDS						
Attwater's greater prairie-chicken (*Tympanuchus cupido attwateri*)	FE, SE	✓			N	Species is federally listed with known occurrences only on dedicated conservation lands. The nearest known population is located in Goliad County at least 25 miles south of Plan Area (U.S. Fish and Wildlife Service [USFWS] 2010a). The species is a permanent resident of its range and generally sedentary (Lockwood and Freeman 2014), and not expected to be exposed to the CPS Energy Activities, so impacts to this species are expected and incidental take coverage is not warranted.
Eastern black rail (*Laterallus jamaicensis* ssp. *jamaicensis*)	PT, ST	✓			N	Species is proposed for federal threatened status by USFWS (2018). Expected migrant across eastern portion of Plan Area (Lockwood and Freeman 2014). Species occurs as a permanent or seasonal resident in coastal marshes that are unlikely to be exposed to CPS Energy Activities. When migrating, birds are expected to be flying well above the ground, suggesting risk of collision with infrastructure is very low, so incidental take coverage is not warranted.
Eskimo curlew (*Numenius borealis*)	FE, SE				N	Although the species is federally listed, the species is presumed to be extinct. The last confirmed sighting of this species was in Texas in 1962 (Lockwood and Freeman 2014). Near certainty that this species will not be adversely affected by CPS Energy Activities, so incidental take coverage not warranted.
Golden-cheeked warbler (*Setophaga chrysoparia*)	FE, SE	✓	✓		Y	Species is federally listed. CPS Energy Activities may occur in areas of occupied habitat and impacts are possible.
Golden-winged warbler (*Vermivora chrysoptera*)	FUR, SNL	✓		✓	N	Species is not federally listed but has been petitioned for listing with a positive 90-day finding. Species does not nest or overwinter in Texas but may migrate across the eastern part of the state, including all of the Plan Area (Lockwood and Freeman 2014). Exposure to CPS Energy Activities is possible during migration, but collision impacts not reasonably certain to occur so incidental take coverage not warranted.

Species Common Name (Scientific Name)	Current Listing Status *	Likely Occurrence Within Plan Area	Likely Affected by CPS Energy Activities	ESA Section 9 Take Not Prohibited	Include as Covered Species (Yes/No)	Rationale
Gray hawk (*Buteo plagiatus*)	FNL, ST			✓	N	Species is not federally listed and is not petitioned for federal protection. The gray hawk generally inhabits wooded lowland streams and is known to frequent South Texas, well south of the Plan Area (Audubon 2020). Species could be exposed to CPS Energy Activities, but incidental take coverage not warranted based on non-listed status.
Interior least tern (*Sterna antillarum athalassos*)	FE, SE	✓			N	Species is federally listed but nesting colonies are not known unlikely to occur in areas that may be exposed to CPS Energy Activities. Species is mostly found along major rivers or shores of water bodies and could collide with transmission lines. The USFWS recognizes the interior population as any nesting bird 50 miles or greater from the coast, the nearest nesting population greater than 50 miles from the coast may be at a constructed wetland complex in southern Atascosa County (eBird 2017) is located at Choke Canyon Reservoir approximately 1,618 miles southwest of the main body southernmost extent of the Plan Area. Because the species is not known to reside within the Plan Area, risk of collision is low and so incidental take coverage not warranted. (Lockwood and Freeman 2014). USFWS (2020) states that this species need only be considered when in relation to wind energy projects. The CPS Energy Activities involve gas and electric transmission and distribution and are not related to energy generation or wind energy.

Species Common Name (Scientific Name)	Current Listing Status *	Likely Occurrence Within Plan Area	Likely Affected by CPS Energy Activities	ESA Section 9 Take Not Prohibited	Include as Covered Species (Yes/No)	Rationale
Piping plover (*Charadrius melodus*)	FT, ST	✓			N	Species is federally listed and occurs in areas where it may be exposed to the CPS Energy Activities as a migrant across the Plan Area (Lockwood and Freeman 2014). Species over-winters on Gulf Coast and breeding season on coastal beaches and mud flats, except when migrating. Elliott-Smith and Haig (2004) observed that comparatively few piping plovers have been recorded during migration at seemingly suitable inland stopover sites and suggested this could be a result of piping plovers usually flying non-stop between their breeding and wintering grounds. However, a handful of records of the species do exist from the Plan Area (eBird 2017), indicating birds do occasionally make stopovers. No Critical Habitat for this species occurs in the Plan Area, the nearest Critical Habitat for this species is located approximately 30 miles southeast Plan Area (USFWS 2020). USFWS (2020) states that this species need only be considered when in relation to wind energy projects. The CPS Energy Activities involve gas and electric transmission and distribution and are not related to energy generation or wind energy. The Plan Area does not include coastal areas and the USFWS believes that the only collision concerns for this species involve infrastructure facilities located adjacent to or on the wintering grounds (for example, a powerline running parallel with a barrier island where the birds use both sides of the island) (Christina Williams, USFWS, personal communication to Amanda Aurora, SWCA). Owing to the scarcity at which this species has been recorded within the Plan Area (eBird 2017), collision impacts not reasonably certain to occur so incidental take coverage not warranted.
Reddish egret (*Egretta rufescens*)	FNL, ST			✓	N	A coastal species that is not federally listed and occurs regularly only in areas that are unlikely to be exposed to the CPS Energy Activities (i.e., coastal mudflat and beach habitats). Individuals occasionally venture inland and the species has been recorded in the Plan Area (eBird 2017), suggesting the species could be exposed to CPS Energy Activities on a highly infrequent basis. Likelihood of future listing is low due to the species' wide range and relatively abundant population. Because this species is not federally listed, incidental take coverage is not warranted.

Species Common Name (Scientific Name)	Current Listing Status *	Likely Occurrence Within Plan Area	Likely Affected by CPS Energy Activities	ESA Section 9 Take Not Prohibited	Include as Covered Species (Yes/No)	Rationale
Rufa red knot (*Calidris canutus*)	FT, ST	✓			N	Species is federally listed, nests in the Arctic, and winters coastally. The easternmost extent of the Plan Area terminates approximately 30 miles from the coast. Birds and migrates across parts of eastern Texas where CPS Energy Activities may occur. This species is rarely detected inland (Lockwood and Freeman 2014), but has been recorded as a migrant in the Plan Area (eBird 2017). USFWS (2020) states that this species need only be considered when in relation to wind energy projects. The CPS Energy Activities involve gas and electric transmission and distribution and are not related to energy generation or wind energy. The Plan Area does not include coastal areas and the USFWS believes that the only collision concerns for this species involve infrastructure facilities located adjacent to or on the wintering grounds (for example, a powerline running parallel with a barrier island where the birds use both sides of the island) (Christina Williams, USFWS, personal communication to Amanda Aurora, SWCA). Accordingly, collision is not reasonably certain to occur, and incidental take coverage is not warranted.
Swallow-tailed kite (*Elanoides forficatus*)	FNL, ST			✓	N	Species is not federally listed, and future listing seems unlikely due to the species' wide range and stable population. The swallow-tailed kite is a migrant along the Texas coast and is unlikely to utilize the Plan Area (Audubon 2020). Species could be exposed to CPS Energy Activities, but incidental take coverage not warranted based on non-listed status.
Tropical parula (*Setophaga pitiayumi*)	FNL, ST			✓	N	Species is not federally listed, and future listing seems unlikely due to the species' wide range and abundant population. Regularly occurring species in South Texas, venturing as far north as Kingsville, but well south of the Plan Area (Audubon 2020). Species could be exposed to CPS Energy Activities, but incidental take coverage not warranted based on non-listed status.
White-faced ibis (*Plegadis chihi*)	FNL, ST	✓		✓	N	Species is not federally listed, and future listing seems unlikely due to the species' wide range and abundant population. Regularly occurring transient across the Plan Area, may be a permanent resident of its eastern extent (Lockwood and Freeman 2014). Species could be exposed to CPS Energy Activities, but incidental take coverage not warranted based on non-listed status.

Species Common Name (Scientific Name)	Current Listing Status *	Likely Occurrence Within Plan Area	Likely Affected by CPS Energy Activities	ESA Section 9 Take Not Prohibited	Include as Covered Species (Yes/No)	Rationale
White-tailed hawk (*Buteo albicaudatus*)	FNL, ST	✓		✓	N	Species is not federally listed, and future listing seems unlikely due to the species' wide range and abundant population. Permanent resident of the eastern portion of the Plan Area, can occur in the southern portion as an irregularly occurring visitor in all seasons (Lockwood and Freeman 204). Species could be exposed to CPS Energy Activities, but incidental take coverage not warranted based on non-listed status.
Whooping crane (*Grus americana*)	FE, SE	✓			N	Species is federally listed. A portion of the Plan Area (45.7%) overlaps with the 95% migration corridor for the whooping crane, with only 2.9% of the Plan Area overlapping portions of the 75% migration corridor. This "higher risk" portion of the Plan Area is associated with an existing transmission line that forms the basis for the southeastern extension of the Plan Area. CPS Energy anticipates performing only CPS Energy Activities related to O&M, Significant Upgrades, or Emergency Responses in this area during the ITP Term (all largely related to the management of vegetation within the CPS Energy ROW associated with this transmission line). Therefore, CPS Energy does not anticipate that its CPS Energy Activities (which will be largely related to the management of vegetation within the CPS Energy ROW associated with this transmission line) are reasonably certain to cause incidental take of the whooping crane. Nor does CPS Energy anticipate that its other CPS Energy Activities will be reasonably certain to cause incidental take of this species. Therefore, this species is not included as a Covered Species. CPS Energy has agreed to implement minimization measures associated with CPS Energy Activities affecting those portions of the Plan Area that are associated with migration stopover use areas modeled by the USFWS (see Chapter 6.4).
Wood stork (*Mycteria americana*)	FNL, ST	✓		✓	N	Population occurring in Texas not federally listed. Not known to nest in Texas, but a regularly occurring post-breeding visitor, primarily in summer and early fall (Lockwood and Freeman 2014). Species is federally listed but does not nest in the state—limiting its exposure to the CPS Energy Activities. This species is a rare migratory visitor and utilizes wetland habitats (Lockwood and Freeman 2014). Species could be exposed to CPS Energy Activities, but incidental take coverage not warranted based on non-listed status.

Species Common Name (Scientific Name)	Current Listing Status *	Likely Occurrence Within Plan Area	Likely Affected by CPS Energy Activities	ESA Section 9 Take Not Prohibited	Include as Covered Species (Yes/No)	Rationale
Zone-tailed hawk *(Buteo albonotatus)*	FNL, ST	✓		✓	N	Species is not federally listed, and future listing seems unlikely given an increasing population (Johnson et al. 2020). A regularly occurring breeding season resident of the northwestern portion of the Plan Area, may occur more widely as a migrant and rare winter visitor (Lockwood and Freeman 2014). Species could be exposed to CPS Energy Activities, but incidental take coverage not warranted based on non-listed status.
FISH						
Fountain darter (*Etheostoma fonticola*)	FE, SE	✓			N	Species is federally listed but occurs in aquatic habitats within a highly restricted range. Known from the Comal River, Comal County, within the Plan Area (USFWS 1995). Critical Habitat is designated for this species, but outside the Plan Area (USFWS 2020), the nearest Critical Habitat is located approximately 109 miles to the northeast of the Plan Area. CPS Energy Activities are not expected to affect aquatic habitats or species; therefore, incidental take coverage is not warranted.
Guadalupe darter (*Percina apristis*)	FNL, ST	✓		✓	N	Species is not federally listed and is not currently petitioned for federal protection. Species occurs in the tributaries of the Guadalupe River, possibly within the northern portion of the Plan Area (Fishes of Texas 2020). CPS Energy Activities are not expected to unlikely to affect aquatic habitat or the species and incidental take coverage is not warranted.
Headwater catfish (*Ictalurus lupus*)	FNL, ST			✓	N	Species is not federally listed and is not currently petitioned for federal protection. Species now likely occurs only in the Pecos and Rio Grande drainages (west of the Plan Area), with former populations in upper Nueces, San Antonio, Guadalupe, and Colorado River populations likely extirpated (Fishes of Texas 2020). CPS Energy Activities are not expected to unlikely to affect aquatic habitat or the species and incidental take coverage is not warranted.
Medina roundnose minnow (*Dionda nigrotaeniata*)	FNL, ST	✓		✓	N	Species is not federally listed and is not currently petitioned for federal protection. Species occurs in the spring fed tributaries of the Guadalupe and Colorado Rivers, possibly within the northern portion of the Plan Area (Fishes of Texas 2020). CPS Energy Activities are not expected to unlikely to affect aquatic habitat or the species and incidental take coverage is not warranted.

Species Common Name (Scientific Name)	Current Listing Status *	Likely Occurrence Within Plan Area	Likely Affected by CPS Energy Activities	ESA Section 9 Take Not Prohibited	Include as Covered Species (Yes/No)	Rationale
Nueces roundnose minnow (*Dionda serena*)	FNL, ST			✓	N	Species is not federally listed and is not currently petitioned for federal protection. Species occurs in the Sabinal and Nueces Rivers, west of the Plan Area (Fishes of Texas 2020). CPS Energy Activities are not expected to unlikely to affect aquatic habitat or the species and incidental take coverage is not warranted.
Oceanic whitetip (*Carcharhinus longimanus*)	FT, ST				N	Species is federally listed but occurs in marine aquatic habitats that are not expected to be impacted by the CPS Energy Activities. CPS Energy Activities are not expected to affect marine aquatic habitats or species. The nearest marine aquatic environment is located approximately 30 miles southeast of the easternmost extent of the Plan Area. For this reason, no impacts to the species are expected and incidental take coverage is not warranted.
Pleateau shiner (*Cyprinella lepida*)	FNL, ST			✓	N	Species is not federally listed and is not currently petitioned for federal protection. Species occurs in the headwaters of the Frio and Sabinal Rivers, west of the Plan Area (Fishes of Texas 2020). CPS Energy Activities are not expected to unlikely to affect aquatic habitat or the species and incidental take coverage is not warranted.
Saltmarsh topminnow (*Fundulus jenkinsi*)	FUR, SNL			✓	N	Species is not federally listed but has been petitioned for listing with a positive 90-day finding. Species occurs in brackish, coastal aquatic habitats and does not occur in the Plan Area (Fishes of Texas 2020) has a restricted range in Texas. CPS Energy Activities are unlikely to affect aquatic habitat or the species and incidental take coverage is not warranted.
San Marcos gambusia (*Gambusia georgei*)	FE, SE				N	Species is federally listed but once associated with the San Marcos Springs complex in Hays County. This species is considered extinct (Fishes of Texas 2020). CPS Energy Activities are not expected to unlikely to affect aquatic habitat or the species and incidental take coverage is not warranted.
Shortfin mako shark (*Isurus oxyrinchus*)	FNL, ST			✓	N	Species is federally listed but occurs in marine aquatic habitats that are not expected to be impacted by the CPS Energy Activities. CPS Energy Activities are not expected to affect marine aquatic habitats or species. The nearest marine aquatic environment is located approximately 30 miles southeast of the easternmost extent of the Plan Area. For this reason, no impacts to the species are expected and incidental take coverage is not warranted.

Species Common Name (Scientific Name)	Current Listing Status *	Likely Occurrence Within Plan Area	Likely Affected by CPS Energy Activities	ESA Section 9 Take Not Prohibited	Include as Covered Species (Yes/No)	Rationale
Toothless blindcat (*Trogloglanis pattersoni*)	FUR, ST	✓		✓	N	Species is not federally listed but has been petitioned for listing with a positive 90-day finding. Species occurs in deep aquifer aquatic habitats unlikely to be impacted by the CPS Energy Activities. For this reason, incidental take coverage is not warranted.
Widemouth blindcat (*Satan eurystomus*)	FUR, ST	✓		✓	N	Species is not federally listed but has been petitioned for listing with a positive 90-day finding. Species occurs in deep aquifer aquatic habitats unlikely to be impacted by the CPS Energy Activities. For this reason, incidental take coverage is not warranted.
ARTHROPODS						
A ground beetle (*Rhadine exilis*)	FE, SNL	✓	✓		Y	Species is federally listed, and CPS Energy Activities may occur in areas that could have suitable habitat. Species may occur more widely than currently documented. This species could be affected by activities that involve excavation or surface disturbance.
A ground beetle (*Rhadine infernalis*)	FE, SNL	✓	✓		Y	Species is federally listed, and CPS Energy Activities may occur in areas that could have suitable habitat. Species may occur more widely than currently documented. This species could be affected by activities that involve excavation or surface disturbance.
Cokendolpher cave harvestman (*Texella cokendolpheri*)	FE, SNL	✓	✓		Y	Species is federally listed, and CPS Energy Activities may occur in areas that could have suitable habitat. Species may occur more widely than currently documented. This species could be affected by activities that involve excavation or surface disturbance.
Comal Springs dryopid beetle (*Stygoparnus comalensis*)	FE, SE	✓			N	Species is federally listed, but CPS Energy Activities are unlikely to occur near or impact the Comal River/Comal Springs and aquatic habitats or species. Therefore, no impacts to this species are expected and incidental take coverage is not warranted.
Comal Springs riffle beetle (*Heterelmis comalensis*)	FE, SE	✓			N	Species is federally listed, but CPS Energy Activities are unlikely to occur near or impact the Comal River/Comal Springs and aquatic habitats or species. Therefore, no impacts to this species are expected and incidental take coverage is not warranted.

Species Common Name (Scientific Name)	Current Listing Status *	Likely Occurrence Within Plan Area	Likely Affected by CPS Energy Activities	ESA Section 9 Take Not Prohibited	Include as Covered Species (Yes/No)	Rationale
Government Canyon Bat Cave meshweaver (*Cicurina vespera*)	FE, SNL	✓	✓		Y	Species is federally listed, and CPS Energy Activities may occur in areas that could have suitable habitat. Species may occur more widely than currently documented. Hedin et al. (2018) synonymized *Cicurina loftini* under *C. vespera*, extending the range of this listed species into the Culebra Anticline Karst Fauna Region. This species could be affected by activities that involve excavation or surface disturbance.
Government Canyon Bat Cave spider (*Neoleptoneta microps*) ‡	FE, SNL	✓	✓		Y	Species is federally listed, and CPS Energy Activities may occur in areas that could have suitable habitat. Species may occur more widely than currently documented. This species could be affected by activities that involve excavation or surface disturbance.
Madla's Cave meshweaver (*Cicurina madla*)	FE, SNL	✓	✓		Y	Species is federally listed, and CPS Energy Activities may occur in areas that could have suitable habitat. Species may occur more widely than currently documented. This species could be affected by activities that involve excavation or surface disturbance.
Monarch butterfly (*Danaus plexippus plexippus*)	FUR, SNL	✓	✓	✓	N	Species is not federally listed but has been petitioned for listing with a positive 90-day finding. However, the likelihood of actual listing is uncertain at this time. Adults not likely to collide with infrastructure; vegetation clearing activities could result in loss of eggs or larvae. Incidental take coverage not warranted at this time.
Peck's cave amphipod (*Stygobromus pecki*)	FE, SE	✓			N	Species is federally listed, but CPS Energy Activities are unlikely to occur near or impact the Comal River/Comal Springs and aquatic habitats or species. Therefore, no impacts to this species are expected and incidental take coverage is not warranted.
Robber Baron Cave meshweaver (*Cicurina baronia*)	FE, SNL	✓	✓		Y	Species is federally listed, and CPS Energy Activities may occur in areas that could have suitable habitat. Species may occur more widely than currently documented. This species could be affected by activities that involve excavation or surface disturbance.
Texas cave diving beetle (*Haedeoporus texanus*)	FUR, SNL	✓		✓	N	Species is not federally listed but has been petitioned for federal listing with a positive 90-day finding. CPS Energy Activities are unlikely to occur near or impact the Comal River/Comal Springs and aquatic habitats or species. Therefore, no impacts to this species are expected and incidental take coverage is not warranted.

Species Common Name (Scientific Name)	Current Listing Status *	Likely Occurrence Within Plan Area	Likely Affected by CPS Energy Activities	ESA Section 9 Take Not Prohibited	Include as Covered Species (Yes/No)	Rationale
Texas troglobitic water slater (*Lirceolus smithii*)	FUR, ST	✓		✓	N	Species is not federally listed but has been petitioned for federal listing with a positive 90-day finding. CPS Energy Activities are unlikely to occur near or impact the San Marcos Springs and aquatic habitats or species. Therefore, no impacts to this species are expected and incidental take coverage is not warranted.
MAMMALS						
Black bear (*Ursus americanus*)	FNL, ST			✓	N	Species was federally delisted due to recovery. Sub-species is restricted in regular occurrence to mountainous regions of Trans Pecos. Individuals may vary rarely wander eastward into the Plan Area. Sub-species is not likely to be exposed to the CPS Energy Activities in a manner that would cause significant impact. For these reasons, no impacts to the species are expected and incidental take coverage is not warranted.
Blue whale (*Balaenoptera musculus*)	FE, SE				N	Species is federally listed but occurs in marine aquatic habitats that are not expected to be impacted by the CPS Energy Activities. CPS Energy Activities are not expected to affect marine aquatic habitats or species. The nearest marine aquatic environment is located approximately 30 miles southeast of the easternmost extent of the Plan Area. For this reason, no impacts to the species are expected and incidental take coverage is not warranted.
Gulf Coast jaguarundi (*Herpailurus (=felis) yaguarondi cacomitli*)	FE, SE				N	Species is federally listed but may no longer occur in Texas despite anecdotal reports. No records of this species have been confirmed in Texas since 1986; last documented, which was recorded was approximately 180 miles from the Plan Area (USFWS 2013a). Species likely extirpated in Plan Area and state; not expected to be affected by CPS Energy Activities. For this reason, no impacts to the species are expected and incidental take coverage is not warranted.
Gulf of Mexico Bryde's whale (*Balaenoptera edeni*)	FE, SE				N	Species is federally listed but occurs in marine aquatic habitats that are not expected to be impacted by the CPS Energy Activities. CPS Energy Activities are not expected to affect marine aquatic habitats or species. The nearest marine aquatic environment is located approximately 30 miles southeast of the easternmost extent of the Plan Area. For this reason, no impacts to the species are expected and incidental take coverage is not warranted.

Species Common Name (Scientific Name)	Current Listing Status *	Likely Occurrence Within Plan Area	Likely Affected by CPS Energy Activities	ESA Section 9 Take Not Prohibited	Include as Covered Species (Yes/No)	Rationale
North Atlantic right whale (*Eubalaena glacialis*)	FE, SE				N	Species is federally listed but occurs in marine aquatic habitats that are not expected to be impacted by the CPS Energy Activities. CPS Energy Activities are not expected to affect marine aquatic habitats or species. The nearest marine aquatic environment is located approximately 30 miles southeast of the easternmost extent of the Plan Area. For this reason, no impacts to the species are expected and incidental take coverage is not warranted.
Ocelot (*Leopardus pardalis*)	FE, SE				N	Species is federally listed but is unlikely to occur in the Plan Area. The nearest known breeding population of this species is located in Kenedy County, approximately 130 miles south from the southernmost extent of the Plan Area (USFWS 2016). Species is not likely to be exposed to the CPS Energy Activities in a manner that would cause significant impact. For this reason, no impacts to the species are expected and incidental take coverage is not warranted.
Plains spotted skunk (*Spilogale putorius interrupta*)	FUR, SNL	✓	✓	✓	N	Species is not federally listed but has been petitioned for federal listing with a positive 90-day finding. May use rock cavities, hollow logs, and old buildings as dens (Schmidly and Bradley 2016). Earth-moving or vegetation-clearing activities could impact individuals. Since the species is not federally listed, incidental take coverage is not warranted.
Sei whale (*Balaenoptera borealis*)	FE, SE				N	Species is federally listed but occurs in marine aquatic habitats that are not expected to be impacted by the CPS Energy Activities. CPS Energy Activities are not expected to affect marine aquatic habitats or species. The nearest marine aquatic environment is located approximately 30 miles southeast of the easternmost extent of the Plan Area. For this reason, no impacts to the species are expected and incidental take coverage is not warranted.
Sperm whale (*Physeter macrocephalus*)	FE, SE				N	Species is federally listed but occurs in marine aquatic habitats that are not expected to be impacted by the CPS Energy Activities. CPS Energy Activities are not expected to affect marine aquatic habitats or species. The nearest marine aquatic environment is located approximately 30 miles southeast of the easternmost extent of the Plan Area. For this reason, no impacts to the species are expected and incidental take coverage is not warranted.
Tricolored bat (*Perimyotis subflavus*)	FUR, SNL	✓	✓	✓	N	Species is not federally listed but has been petitioned for federal listing with a positive 90-day finding. May use rock cavities, caves, and mines as dens (Schmidly and Bradley 2016). Activities may occur in areas that could have suitable habitat. Incidental take coverage not warranted at this time.

Species Common Name (Scientific Name)	Current Listing Status *	Likely Occurrence Within Plan Area	Likely Affected by CPS Energy Activities	ESA Section 9 Take Not Prohibited	Include as Covered Species (Yes/No)	Rationale
West Indian manatee (*Trichechus manatus*)	FT, ST				N	Species is federally listed but occurs in marine aquatic habitats that are not expected to be impacted by the CPS Energy Activities. CPS Energy Activities are not expected to affect marine aquatic habitats or species. The nearest marine aquatic environment is located approximately 30 miles southeast of the easternmost extent of the Plan Area. For this reason, no impacts to the species are expected and incidental take coverage is not warranted.
White-nosed coati *(Nasua narica*)	FNL, ST			✓	N	Species is not federally listed, and future listing seems unlikely due to the species' wide range and potentially abundant numbers outside of Texas. Likely not a resident of the Plan Area (Schmidly and Bradley 2016),but could occur very occasionally as a visitor. Species is not likely to be exposed to the CPS Energy Activities in a manner that would cause significant impact. For these reasons, no impacts to the species are expected and incidental take coverage is not warranted.
MOLLUSKS						
False spike mussel (*Fusconaia mitchelli*)	FUR, ST	✓		✓	N	Species is not federally listed, but has been petitioned for federal listing with a positive 90-day finding. Species occurs in aquatic habitats that are unlikely to be impacted by the CPS Energy Activities. For this reason, no impacts to the species are expected and incidental take coverage is not warranted.
Guadalupe fatmucket (*Lampsilis bergmanni*)	FUR, ST	✓		✓	N	Species is not federally listed, but has been petitioned for federal listing with a positive 90-day finding. Species occurs in aquatic habitats that are unlikely to be impacted by the CPS Energy Activities. For this reason, no impacts to the species are expected and incidental take coverage is not warranted.
Guadalupe orb (*Cyclonaias necki*)	FUR, ST	✓		✓	N	Species is not federally listed, but has been petitioned for federal listing with a positive 90-day finding. Species occurs in aquatic habitats that are unlikely to be impacted by the CPS Energy Activities. For this reason, no impacts to the species are expected and incidental take coverage is not warranted.
Mimic cavesnail (*Phreatodrobia imitata*)	FUR, SNL	✓		✓	N	Species is not federally listed but has been petitioned for federal listing with a positive 90-day finding. Species occurs in deep aquatic habitats that are unlikely to be impacted by the CPS Energy Activities. For this reason, no impacts to the species are expected and incidental take coverage is not warranted.

Species Common Name (Scientific Name)	Current Listing Status *	Likely Occurrence Within Plan Area	Likely Affected by CPS Energy Activities	ESA Section 9 Take Not Prohibited	Include as Covered Species (Yes/No)	Rationale
Texas fatmucket (*Lampsilis bracteata*)	FC, ST	✓		✓	N	Species is not federally listed but is a candidate for federal listing. Species occurs in aquatic habitats that are unlikely to be impacted by the CPS Energy Activities. For this reason, no impacts to the species are expected and incidental take coverage is not warranted.
Texas fawnsfoot (*Truncilla macrodon*)	FC, ST	✓		✓	N	Species is not federally listed but is a candidate for federal listing. Species occurs in aquatic habitats that are unlikely to be impacted by the CPS Energy Activities. For this reason, no impacts to the species are expected and incidental take coverage is not warranted.
Texas pimpleback (*Cyclonaias petrina*)	FC, ST	✓		✓	N	Species is not federally listed but is a candidate for federal listing. Species occurs in aquatic habitats that are unlikely to be impacted by the CPS Energy Activities. For this reason, no impacts to the species are expected and incidental take coverage is not warranted.
REPTILES AND AMPHIBIANS						
Black-spotted newt (*Notophthalmus meridionalis*)	FUR, ST	✓		✓	N	Species is not federally listed but has been petitioned for federal listing with positive 90-day finding. An aquatic species that may occur in the southeastern portion of the Plan Area (Tipton et al. 2012). CPS Energy Activities are not expected to affect aquatic habitats or species. For this reason, no impacts to the species are expected and incidental take coverage is not warranted.
Cagle's map turtle (*Graptemys caglei*)	FNL, ST	✓		✓	N	Species is not federally listed. Species occurs in aquatic habitats that are unlikely to be impacted by the CPS Energy Activities. For this reason, no impacts to the species are expected and incidental take coverage is not warranted.
Cascade Caverns salamander (*Eurycea latitans complex*)	FUR, ST	✓		✓	N	Species is not federally listed but has been petitioned for federal listing with positive 90-day finding. However, the likelihood of actual listing is uncertain at this time. Localized resident of spring outlets and subterranean aquatic habitats at sites in Comal and Kendall Counties (Tipton et al. 2012). CPS Energy Activities are not expected to affect aquatic habitats or species. For this reason, no impacts to the species are expected and incidental take coverage is not warranted.

Species Common Name (Scientific Name)	Current Listing Status *	Likely Occurrence Within Plan Area	Likely Affected by CPS Energy Activities	ESA Section 9 Take Not Prohibited	Include as Covered Species (Yes/No)	Rationale
Comal blind salamander (*Eurycea tridentifera*)	FUR, ST	✓		✓	N	Species is not federally listed but has been petitioned for federal listing. Occurs within portions of the Plan Area in subterranean aquatic habitat (Tipton et al. 2012). CPS Energy Activities may occur over the Edwards Aquifer, impacts on the surface or shallow subsurface should have minimal effects on the species or its deep aquifer habitat. CPS Energy Activities are not expected to affect aquatic habitats or species. For this reason, no impacts to the species are expected and incidental take coverage is not warranted.
Houston toad (*Anaxyrus houstonensis*)	FE, SE				N	Species is federally listed, however, not known nor expected to occur in the Plan Area (Tipton et al. 2012). Potential habitat in Lavaca County is outside of HCP Plan Area. Surveys have not documented this species in Lavaca County since 1991 and systematic surveys in 2007 and 2008 failed to detect any individuals in this county. This species is believed to be extirpated from Lavaca County (Forstner and Dixon 2011). CPS Energy Activities are not expected to impact this species or its potential habitat. For this reason, no impacts to the species are expected and incidental take coverage is not warranted.
Mexican treefrog (*Smilisca baudini*)	FNL, ST			✓	N	Species is not federally listed and the Plan Area likely lies outside the range of the species and is typically only known from Cameron and Hidalgo Counties in Texas; however, though there is some question regarding the species' status in Bexar County (LaDuc and Cannatella 2020). CPS Energy Activities are not expected to impact this species or its potential habitat. For this reason, no impacts to the species are expected and incidental take coverage is not warranted.
Robust blind salamander (*Eurycea robusta*)	FUR, ST			✓	N	Species is not federally listed and the Plan Area lies outside the range of the species (LaDuc and Cannatella 2020). Since the species is not listed and not expected to occur in the Plan Area, no impacts are expected and incidental take coverage is not warranted.
San Marcos salamander (*Eurycea nana*)	FT, ST				N	Species is federally listed, but CPS Energy Activities are unlikely to occur near or impact the San Marcos Springs complex and aquatic habitats or species. Therefore, no impacts to this species are expected and incidental take coverage is not warranted.

Species Common Name (Scientific Name)	Current Listing Status *	Likely Occurrence Within Plan Area	Likely Affected by CPS Energy Activities	ESA Section 9 Take Not Prohibited	Include as Covered Species (Yes/No)	Rationale
Sheep frog (*Hypopachus variolosus*)	FNL, ST	✓	✓	✓	N	Species is not federally listed, and future listing seems unlikely given its broad overall range and estimated abundance. May occur in very southern extent of Plan Area in Bee County (Tipton et al. 2012). Individuals perhaps susceptible to harm from ROW maintenance activities. Incidental take coverage not warranted because the species is not federally listed.
South Texas siren (large form) (*Siren* sp.1)	FNL, ST			✓	N	Species is not federally listed and is not currently petitioned for federal protection. Kline and Carreon (2013) indicate this species inhabits shallow water bodies and wetlands in South Texas, with its former range possibly extending into Jim Wells and San Patricio Counties, which are outside the Plan Area. CPS Energy Activities are not expected to affect aquatic habitats or species. For this reason, no impacts to the species are expected and incidental take coverage is not warranted.
Spot-tailed earless lizard (*Holbrookia lacerata*)	FUR, SNL			✓	N	Species is not federally listed, but has been petitioned for federal listing with a positive 90-day finding. According to spot-tailed earless lizard specialist and member of the CPS Energy Biological Advisory Team (BAT), Mike Duran, the spot-tailed earless lizard is unlikely to occur in the Plan Area (personal communication, Mike Duran, during BAT meeting, February 2016). For this reason, no impacts to the species are expected and incidental take coverage is not warranted.
Texas blind salamander (*Eurycea rathbuni*)	FE, SE				N	Species is federally listed, but CPS Energy Activities are unlikely to occur near or impact the San Marcos Springs complex or subterranean streams associated with Purgatory Creek and aquatic habitats or species. Therefore, no impacts to this species are expected and incidental take coverage is not warranted.
Texas horned lizard (*Phrynosoma cornutum*)	FNL, ST	✓	✓	✓	N	Species is not federally listed. Individuals susceptible to harm from ground-disturbing activities and vehicular travel. Since the species is not federally listed, incidental take coverage is not warranted.
Texas salamander (*Eurycea neotenes*)	FUR, ST	✓		✓	N	Species is not federally listed but has been petitioned for federal listing with positive 90-day finding. However, the likelihood of actual listing is uncertain at this time. Localized resident of spring outlets and subterranean aquatic habitats at sites in Bexar and Kendall Counties (Tipton et al. 2012). CPS Energy Activities are not expected to affect aquatic habitats or species. For this reason, no impacts to the species are expected and incidental take coverage is not warranted.

Species Common Name (Scientific Name)	Current Listing Status *	Likely Occurrence Within Plan Area	Likely Affected by CPS Energy Activities	ESA Section 9 Take Not Prohibited	Include as Covered Species (Yes/No)	Rationale
Texas tortoise (*Gopherus berlandieri*)	FNL, ST	✓	✓	✓	N	Species is not federally listed. It likely occurs across the southern portions of the Plan Area (Dixon 2013). Could be exposed to CPS Energy Activities and could be harmed by ground-disturbing activities and vehicular travel. Since the species is not federally listed, incidental take coverage is not warranted.
PLANTS						
Big red sage (*Salvia penstemonoides*)	FUR, SNL	✓	✓	✓	N	Species is not federally listed but has been petitioned for federal listing with a positive 90-day finding. Highly restricted range; occurrence in Plan Area likely limited to Kendall County (Poole et al. 2007). CPS Energy Activities unlikely to impact this species as a result of General Minimization Measures (Section 6.4 of HCP). CPS Energy does not anticipate that the CPS Energy Activities will violate the ESA with respect to listed plants.
Bracted twistflower (*Streptanthus bracteatus*)	FC, SNL	✓	✓	✓	N	Species is not federally listed but is a candidate species for federal listing. Known to occur on Edwards Plateau in Bexar and Medina Counties (Poole et al. 2007). Plants could be exposed to CPS Energy Activities. CPS Energy does not anticipate that the CPS Energy Activities will violate the ESA with respect to listed plants.
Correll's false dragon-head (*Physostegia correllii*)	FUR, SNL	✓		✓	N	Species is not federally listed but has been petitioned for federal listing with a positive 90-day finding. Species occurs in association with wetlands habitats. Historically known from Bexar County but not currently known to occur in Plan Area (Poole et al. 2007). CPS Energy Activities are unlikely to affect this species due to lack of exposure. CPS Energy does not anticipate that the CPS Energy Activities will violate the ESA with respect to listed plants.
Shinner's sunflower (*Helianthus occidentalis ssp. plantagineus*)	FUR, SNL	✓		✓	N	Species is not federally listed but has been petitioned for federal listing with a positive 90-day finding. CPS Energy does not anticipate that the CPS Energy Activities will violate the ESA with respect to listed plants.
Texas snowbells (*Styrax platanifolius ssp. texanus*)	FE, SE	✓			N	Species is federally endangered and is known from the Edwards Plateau in Edwards, Kinney, Real, and Val Verde Counties (Poole et al. 2007). CPS Energy Activities are unlikely to affect this species due to lack of exposure. CPS Energy does not anticipate that the CPS Energy Activities will violate the ESA with respect to listed plants.

Species Common Name (Scientific Name)	Current Listing Status *	Likely Occurrence Within Plan Area	Likely Affected by CPS Energy Activities	ESA Section 9 Take Not Prohibited	Include as Covered Species (Yes/No)	Rationale
Texas wild-rice (*Zizania texana*)	FE, SE				N	Species is federally endangered and is only known from San Marcos Springs and immediate stream-run. CPS Energy Activities are unlikely to affect this species due to lack of exposure. CPS Energy does not anticipate that the CPS Energy Activities will violate the ESA with respect to listed plants.
Tobusch fishhook cactus (*Sclerocactus brevihamatus ssp tobuschii*)	FT, SE	✓	✓	✓	N	Species is federally listed and CPS Energy Activities could affect habitat. CPS Energy does not anticipate that the CPS Energy Activities will violate the ESA with respect to listed plants.

Note: Green-shaded rows indicate species for which CPS Energy requests incidental take authorization (i.e., the Covered Species).

* FE=Federally listed endangered; SE=State listed endangered; FT=Federally listed threatened; FPT= Federally proposed threatened; ST=State listed threatened; FC=Federal candidate; FUR= Federal Under Review; FNL=Federal not listed; FDL= Federal delisted; SNL=State not listed.

‡ Ledford et al. (2011) reassigned this species to *Tayshaneta microps*; the USFWS has not officially recognized this taxonomic revision, so for the purposes of this HCP, *Neoleptoneta microps* is used to identify this species.

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APPENDIX E

Justification for the Delineation of Super Karst Fauna Regions

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Appendix E. Geological Justification for the Delineation of Super Karst Fauna Regions

The U.S. Fish and Wildlife Service (USFWS) recognizes six karst faunal regions (KFRs) within Bexar County. The KFR boundaries were defined in a study by Veni and Associates in 1994. The boundaries are generally based on geologic formation boundaries, faults, and stream channels that have isolated areas of karst that theoretically limit movement of karst invertebrates between KFRs. Four of the KFRs are within the Edwards Plateau and Balcones Escarpment within outcrop areas of the Edwards Group and upper member of the Glen Rose Formation (the Government Canyon KFR, Helotes KFR, UTSA KFR, and the Stone Oak KFR). Two KFRs are south of the Balcones Escarpment within outcrop areas of the Austin Chalk Formation (the Culebra Anticline KFR and Alamo Heights KFR).

The USFWS also recognizes five zones with varying probability for the potential of occurrence for karst invertebrate habitat. Areas defined as Zone 1 are known to contain endangered karst invertebrate habitat and Karst Zone 2 have a high probability of containing karst invertebrate habitat. All areas defined as Karst Zone 1 and 2 lie within the KFRs. However, there areas of Karst Zone 3 and 4 with less potential for karst invertebrate habitat that lies outside of the KFR boundaries. In order to approximate impacts to karst invertebrate habitat outside of the KFRs, but within Karst Zones 3 and 4, SWCA Environmental Consultants (SWCA) evaluated the geologic and geomorphological features used by Veni and Associates to expand the boundaries of the existing KFRs to include areas of Karst Zones 3 and 4 that currently lie outside of the designated KFRs. The revised KFR boundaries are displayed on Figure 11 of the CPS Energy Habitat Conservation Plan.

The boundary between the Government Canyon and Helotes KFR generally follows the center line of Los Reyes Creek upstream until it reaches a southwest-northeast trending fault, where the northern boundary of the KFRs end. North of the fault the valleys are predominantly within Karst Zone 4, while hillsides and hilltops are in Karst Zones 2 and 3. North of the southwest-northeast trending fault the KFR boundary was extended by SWCA up Chimenea Creek, which has cut downward stratigraphically deeper than other creeks in this area. Karst Zone 4 lies within the center of Chimenea Creek and crosses over a topographic saddle into a dry tributary of Leon Creek. The KFR boundary line was drawn to cross that topographic saddle and extend into the Leon Creek watershed until the boundary of Karst Zone 5.

For purposes of calculating impacts to karst invertebrates in the CPS Energy Habitat Conservation Plan, the Helotes and UTSA KFRs were grouped together because the karst invertebrates distribution within these KFRs is the same.

The boundary between the UTSA KFR and Stone Oak KFR follows the Edwards Group-Glen Rose Formation contact along the western edge of Leon Creek valley northward until it intersects a major southwest-northeast trending fault. This is the same fault that marks the northern edge of the Government Canyon and Helotes KFRs. The geologic contact marks the eastern edge of Karst Zones 1 and 2 within the UTSA KFR. For purposes of this report, this KFR boundary was extended to the northeast along the southwest-northeast trending fault between Karst Zones 3 and 4, until Karst Zone 5 was encountered.

The Culebra Anticline and Alamo Heights KFRs are isolated areas south of the Balcones Escarpment. These KFRs generally include areas where the Austin Chalk formation outrcops and in close proximity to areas where caves with endangered karst invertebrates have been previously discovered. Large areas of Karst Zone 3 surround these KFRs between the KFRs. The Pecan Gap Chalk outcrops over most of the area between the KFRs. The Pecan Gap Chalk only contains a few known caves and no endangered invertebrates. There are no major streams that completely bisect the Pecan Gap formation. There are two intersecting faults that trend southwest-northeast that extend from the southeastern edge of the Culebra Anticline northeast toward the Edwards Aquifer Recharge Zone, which have significant amounts of

displacement. The displacement is approximately 250 feet across the faults, which is enough to offset the full thickness of the Austin Chalk formation in this area. The Austin Chalk is less than 240 thick in this area (Pedraza and Shaw 2010). Therefore, the fault was selected as the primary boundary between the Culebra Anticline and Alamo Heights KFRs. The fault was followed as the boundary from the southern edge of the Stone Oak KFR to Leon Creek near the southeastern edge of the Culebra Anticline KFR. The center line of Leon Creek, which has a significant thickness of alluvium, was used as the boundary for a short distance.

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APPENDIX F

Covered Karst Invertebrate Enrollment Flow Chart

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Covered Karst Invertebrate Enrollment Flow Chart

Clarifications

For the Covered Karst Invertebrates, if a CPS Energy Activity is eligible to participate in the Southern Edwards Plateau HCP and participation is available, CPS Energy will preferentially enroll the Activity in the Southern Edwards Plateau HCP. See Chapter 6.3.2

CPS Energy will perform the applicable portions of the USFWS Karst Feature Survey Protocol within Covered Activity ROW. CPS Energy may assume occupancy of features with potential habitat. CPS Energy will also review records from USFWS for known Occupied Karst Features within 1,500 feet of the Covered Activity ROW.

See definitions for Direct and Indirect Habitat Modification included in Take Assessment – Chapter 6.6.2

The CPS Energy HCP uses tiered mitigation ratios, as shown in Table 29: Suitable Habitat (lowest ratios for general karst zone impacts), High Impact Zone (moderate ratios for impacts near Occupied Karst Features), Critical Habitat/Special Circumstances (highest ratios for the most important areas)

See Additional Minimization Measures in Ch 6.6.3 that are applicable to Covered Activities performed within 750 feet of an Occupied Karst Feature or Assumed Occupied Karst Feature, in three parts:

- Paragraph 1 = avoid to maximum extent practicable subsurface disturbances within 50 feet of entrance or footprint of the Occupied Karst Feature (50-ft Avoidance)
- Paragraph 2 = coordination with USFWS with submittal of a Covered Activity brief and proposed mitigation measures (USFWS Briefing)
- Paragraph 3 = USFWS additional recommendations to avoid Jeopardy/Adverse Modification (Additional Measures)

See Changed Circumstances for situations where there are No Practicable Opportunities for Karst Preserve Establishment. Options for alternate crediting and timing of mitigation. With USFWS coordination and approval.

Selected Definitions

Existing Impacts = Areas with prior subsurface disturbances to soil or rock (i.e., such as trenching, excavation, surface grading, landscaping, impervious cover added, etc.) plus the adjacent 25 feet (the maximum typical ROW for CPS Energy distribution lines).

Suitable Habitat (Karst Zone) Mitigation = Mitigation credit for each relevant karst species may be stacked as described in Chapter 6.7.3. Mitigation credit will be awarded for protection and management of undeveloped lands over Karst Zones 1 or 2. No demonstration of occupancy is needed.

High Impact Zone Mitigation = Should be the protection and management of land that is within 1,200 feet of an Occupied Karst feature with similar set of reported species or that otherwise contributes to creation or expansion of an approved KFA or potential KFA for a similar set of reported species.

Potential KFA Needed for Recovery = Occupied Karst Feature lacking development within 345 feet of entrance or footprint (if known) and having at least 100 acres or 40 acres of undeveloped land contiguous

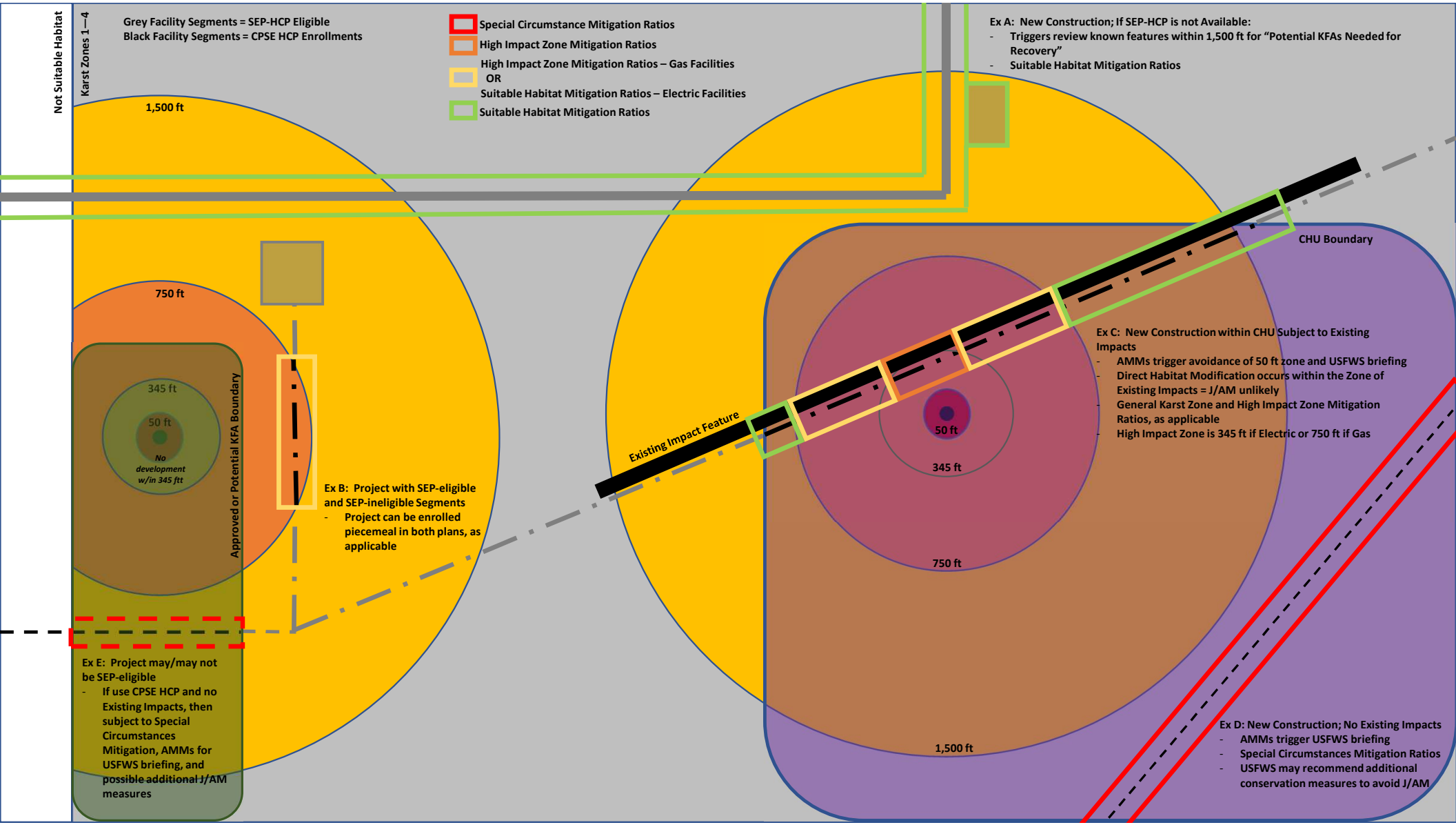
with the undeveloped core. Acreage threshold depends on the current conservation baseline status of the species involved. Limits of the Potential KFA only include the undeveloped lands needed to achieve the applicable acreage threshold, prioritizing acres closest to the feature.

Karst Participation Flow Chart

1. Is Project over **Suitable Habitat** in Karst Zones 1—4?
    a. No—END. Impacts to Covered Karst Invertebrates are not likely.
    b. Yes—Go to #2
2. Will Project involve **O&M with no new Direct or Indirect Habitat Modification**?
    a. YES—END. Impacts to Covered Karst Invertebrates are not likely.
    b. No—Go to #3
3. Does CPS Energy desire incidental take coverage for karst invertebrates (e.g., **Negative P/A Surveys**)?
    a. No—END
    b. Yes—Go to #4
4. Will Project impacts to Covered Karst Invertebrates be addressed through **participation in the Southern Edwards Plateau HCP** or other available compliance program?
    a. Yes—END. Take and impacts to Covered Karst Invertebrates are addressed through other means.
    b. No—Go to #5
5. Is the Project within a **CHU, Approved KFA, or Potential KFA** needed for recovery?
    a. No—No Special Circumstances. Go to #6
    b. Yes—Special Circumstances may apply. Go to #8
6. Does Project involve **Electric or Gas activities**?
    a. Electric—High Impact Zone distance is 345 feet from feature entrance or footprint (if known). Go to #7
    b. Gas—High Impact Zone distance is 750 feet from feature entrance or footprint (if known). Go to #7
7. Does Project involve Direct or Indirect Habitat Modification within a **High Impact Zone**?
    a. No—General Karst Zone Impacts. Suitable Habitat Mitigation Ratios apply.
    b. Yes—
        i. High Impact Zone Mitigation Ratios apply.
        ii. Additional Minimization Measures apply. (see paragraphs 1 and 2 of Ch 6.6.3 for 50-ft Avoidance and USFWS Briefing)
8. Does Project occur within an area of **Existing Impacts**?
    a. Yes—Jeopardy/Adverse Modification are unlikely. Go to #6.
    b. No—
        i. Coordinate with USFWS during Annual Coordination Meeting or at least 60 days before beginning the Project. (see paragraph 2 of Ch 6.6.3 for USFWS Briefing)
        ii. Go to #9
9. Does the USFWS recommend additional conservation measures to **avoid the likelihood of Jeopardy/Adverse Modification**?
    a. No—USFWS accepts impact analysis and mitigation proposal. Jeopardy/Adverse Modification are unlikely.
        i. Special Circumstances Mitigation Ratios apply.
        ii. Additional Minimization Measures apply. (see paragraph 1 of Ch 6.6.3 for 50-ft Avoidance)

b. Yes—Go to #10

10. Can CPS Energy adopt the additional conservation measures recommended by USFWS?
    a. Yes—With additional measures, Jeopardy/Adverse Modification are unlikely.
        i. Additional Minimization Measures apply. (see paragraph 1 of Ch 6.6.3 for 50-ft Avoidance)
        ii. Special Circumstances Mitigation Ratios apply.
        iii. USFWS Additional Measures apply.
    b. No—CPS may elect to proceed with the Covered Activity without implementing some or all of the additional recommended conservation measures.
        i. USFWS may assert that Jeopardy/Adverse Modification is likely and issue a formal notification to CPS Energy presenting its assessment of jeopardy or destruction or adverse modification of critical habitat.
        ii. USFWS may begin its permit suspension or revocation process.


Not Suitable Habitat
Karst Zones 1—4
Grey Facility Segments = SEP-HCP Eligible
Black Facility Segments = CPSE HCP Enrollments
Special Circumstance Mitigation Ratios
High Impact Zone Mitigation Ratios
High Impact Zone Mitigation Ratios – Gas Facilities
OR
Suitable Habitat Mitigation Ratios – Electric Facilities
Suitable Habitat Mitigation Ratios
Ex A: New Construction; If SEP-HCP is not Available:
- Triggers review known features within 1,500 ft for "Potential KFAs Needed for Recovery"
- Suitable Habitat Mitigation Ratios
1,500 ft
750 ft
345 ft
50 ft
No development w/in 345 ftt
Approved or Potential KFA Boundary
Ex B: Project with SEP-eligible and SEP-ineligible Segments
- Project can be enrolled piecemeal in both plans, as applicable
Existing Impact Feature
CHU Boundary
Ex C: New Construction within CHU Subject to Existing Impacts
- AMMs trigger avoidance of 50 ft zone and USFWS briefing
- Direct Habitat Modification occurs within the Zone of Existing Impacts = J/AM unlikely
- General Karst Zone and High Impact Zone Mitigation Ratios, as applicable
- High Impact Zone is 345 ft if Electric or 750 ft if Gas
50 ft
345 ft
750 ft
1,500 ft
Ex D: New Construction; No Existing Impacts
- AMMs trigger USFWS briefing
- Special Circumstances Mitigation Ratios
- USFWS may recommend additional conservation measures to avoid J/AM
Ex E: Project may/may not be SEP-eligible
- If use CPSE HCP and no Existing Impacts, then subject to Special Circumstances Mitigation, AMMs for USFWS briefing, and possible additional J/AM measures