EASTERN COLLIER MULTIPLE SPECIES HABITAT CONSERVATION PLAN

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EXECUTIVE SUMMARY

The Eastern Collier Multiple Species Habitat Conservation Plan (ECMSHCP or Plan) will permanently preserve approximately 107,000 acres of privately held land worth an estimated $1.4 billion that could otherwise be developed, to provide valuable habitat for the Florida panther and eighteen other protected species in Southwest Florida. The Plan will also cluster and direct up to 45,000 acres of development toward areas of less valuable habitat (primarily intensive row crop fields and citrus groves), permanently preserving wildlife dispersal corridors that provide crucial linkages between existing public conservation lands. Because the Plan is the result of a novel partnership between eleven private landowners and four leading conservation organizations, the substantial conservation benefit that the Plan will create will come at no direct cost to taxpayers.

The ECMSHCP is being prepared in connection with applications by several landowners in eastern Collier County, Florida, for Incidental Take Permits (ITPs) under section 10 of the Endangered Species Act. 16 U.S.C. § 1539. Section 10 of the Act authorizes the U.S. Fish & Wildlife Service (USFWS) to issue permits for “take” of Federally-listed species that is “incidental to, and not the purpose of, the carrying out of an otherwise lawful activity.” 16 U.S.C. §1539(a)(1)(B). An applicant for an ITP must submit an HCP that describes likely impacts, steps to minimize and mitigate those impacts, funding to implement those steps, and alternatives considered by the applicant. 16 U.S.C. §1539(a)(2)(A). The form of take anticipated to occur is, for most species, limited to unintentional “harassment” – e.g., a development activity that unintentionally annoys a species to the extent that normal behavioral patterns are disrupted. No intentional take (such as hunting, capturing or killing) will occur, and no such take authorization is requested.

The Plan is designed to more than fully offset any incidental take (e.g., unintentional harassment) that results from covered activities within the 45,000 acres of land identified as available for development (land that has lower habitat value for listed species). Specifically, the plan will provide permanent preservation and enhancement of approximately 107,000 acres of land that is substantially more valuable to listed species and other wildlife than the 45,000 acres that will be available for development, and will provide substantial additional minimization and mitigation measures.

Landscape Level Initiative By Landowners in Collaboration With Key Conservation Organizations

This Plan is the result of a collaborative effort by the landowner applicants and four leading conservation organizations, including Defenders of Wildlife, Florida Wildlife Federation, Audubon Florida and Audubon of the Western Everglades. To plan for future development while protecting the endangered Florida panther in Southwest Florida, this group formed the Florida Panther Protection Program (FPPP). The FPPP builds on Collier County’s successful Rural Land Stewardship Program (RLSP)\(^1\) by ensuring

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\(^1\) The RLSP is effective within the Rural Land Stewardship Area (RLSA), the boundaries of which are depicted in Figure 2-1. As explained in Chapter 1, the area covered by the Plan (HCP Area) is contained within the boundaries of the RLSA.
coordinated landscape-scale planning for future development, avoiding piecemeal development under the RLSP that could fragment valuable habitat, and providing revenue that will create a multi-million-dollar fund for species conservation activities.

Under the Plan, the primary mitigation for the covered activities includes the phased perpetual preservation of 107,000 acres of diverse habitats, and the maintenance of these preservation lands in perpetuity. In addition to this primary mitigation, the implementation of the HCP will produce the multi-million-dollar fund revenues through dual funding mechanisms based on (i) contributions to be made on a per-acre basis as lands within the HCP Area are developed and (ii) transfer fees to be paid on a per-unit basis as homes within the HCP Area are sold and re-sold. These contributions will be deposited into the Paul J. Marinelli Fund, originally created by the FPPP to fund panther conservation activities. The Marinelli Fund will be administered by a board of directors comprised of representatives of each of the four conservation organizations that are members of the FPPP, two representatives of the landowner members of the FPPP, and one at-large member who will serve at the invitation of the other six members of the Board.

In 2016, the FPPP expanded the potential scope of the Fund’s uses to include funding conservation activities to benefit other species covered by the ECMSHCP, in addition to panther. The Marinelli Fund is expected to grow to approximately $150 million during the 50-year term of the ITPs, and to be used for conservation activities that go beyond the Plan, including such initiatives as enhancement and management of the wildlife corridors within the preservation area; location and construction of panther and other wildlife fencing along and crossings under roadways; funding for land acquisition, enhancement, and/or management, to provide additional species habitat; and scientific research relevant to conservation of the species addressed by the HCP.

The FPPP will be implemented through the Plan. The landowner members of the FPPP worked with their conservation organization partners, as well as FWC and USFWS, to develop this Plan for the benefit of the Florida panther, seven other federally-listed species, eight species listed as threatened by the State of Florida, two species that are under review for federal listing, and one candidate species for federal listing.

Permanent Protection of 107,000 Acres of Private Lands Will Provide Valuable Habitat and Serve as A Critical Linkage For Species Movements Between Public Lands

The Plan will provide for preservation through permanent conservation easements of approximately 107,000 acres of otherwise developable, privately owned lands within the approximately 151,779-acre HCP Area. These preserved lands will serve as habitat for the nineteen species covered by the Plan, as well as other wildlife, while allowing for economically productive land uses in smaller, clustered parts of the HCP Area. Under the Plan, the approximately 107,000 acres of preserved lands will be placed under permanent protection through conservation easements for use by those species, and restricted to the

2 The Marinelli Fund and funding to support the ECMSHCP are described in greater detail in Chapter 9.
3 The conservation easements will be held by a State agency, such as the Florida Fish and Wildlife Conservation Commission (FWC), the Florida Department of Agriculture and Consumer Services (FDACS), the Florida Department
types of rural and agricultural uses that have occurred historically throughout the HCP Area. The
107,000-acre area of preservation lands include areas that function as regional wildlife corridors,
allowing for wildlife movement between publicly owned conservation lands in Southwest Florida, such
as the Florida Panther National Wildlife Refuge, Big Cypress National Preserve, Corkscrew Regional
Ecosystem Watershed, and the Okaloacoochee Slough State Forest, among others.

The 45,000 Acres of Clustered Development on Lands that Comprise Less Valuable Habitat Will
Generate Funding for Additional Panther Conservation Activities

Approximately 45,000 acres of land within the HCP Area are identified in the Plan for residential and
commercial development and earth mining. These 45,000 acres will be clustered, and located in areas
that are less valuable to the covered species than the preservation lands. These lands have a low
proportion of native habitats, and most of the land is already disturbed. Based upon existing
developments at Ave Maria and planned developments at Rural Lands West (aka Collier Ranch), the 50-
year buildout on 45,000 acres will comprise an estimated 91,480 dwelling units that will accommodate
174,000 residents. Development within these 45,000 acres will be offset by mitigation that includes the
107,000 acres of preservation. This will allow future population growth in Southwest Florida to be
accommodated within a detailed regional plan that protects existing and future habitat and habitat
linkages.

The Plan will offset the potential impacts of development through extensive preservation and perpetual
maintenance of lands with high natural resource values, securing a vast area of interconnected habitats
for the Florida panther and eighteen other covered species. Preserved lands will be placed under
permanent conservation easements as development occurs. In addition, contributions to the Marinelli
Fund will be made as lands within the HCP Area are developed, and as homes are sold.

The Plan Will Be Further Refined Through Public Involvement and Agency Review

USFWS, in cooperation with the U.S. Army Corps of Engineers, is preparing an environmental impact
statement (EIS) under the National Environmental Policy Act (NEPA) to evaluate the ITP applications and
associated ECMSHCP. In March of 2016, USFWS published a public notice in the Federal Register
describing the Plan and ITP applications, and announcing the start of a public scoping period, during
which the public had the opportunity to provide comments regarding the scope of issues and
alternatives to be included in the EIS. 81 Fed. Reg. 16,200 (March 25, 2016). A public scoping meeting
was held in Naples, Florida on April 12, 2016, and USFWS received over 2,400 comments from Federal
and State agencies, local government, non-governmental organizations, and private citizens, including
businesses. The public will also be involved through review of and an opportunity to comment on a
draft EIS and the ECMSHCP. Comments received from stakeholders will be important to development of
the final Plan.

Success Will Be Ensured by Enforceable 50-Year Permits

of Environmental Protection (FDEP), or the South Florida Water Management District (SFWMD), and will identify
the Service as a third-party beneficiary with enforcement rights.
This draft Plan establishes an overall framework for the permanent protection of approximately 107,000 acres of land to benefit covered species. The requested 50-Year ITPs will be developed by USFWS to describe the specific mechanisms that will implement the framework described in the Plan. The Plan, which is the product of collaboration among landowners and conservation organizations, in coordination with State and Federal agencies, will provide a robust program for the protection of the Florida panther and the other eighteen species covered by the Plan, and will serve as a model for future HCPs.
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### ACRONYMS AND ABBREVIATIONS

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<td>ACSC</td>
<td>Area of Critical State Concern</td>
</tr>
<tr>
<td>AFR</td>
<td>Air Force Range (Avon Park AFR)</td>
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<td>BCFS</td>
<td>Big Cypress fox squirrel</td>
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<tr>
<td>BCNP</td>
<td>Big Cypress National Preserve</td>
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<td>BSR</td>
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<tr>
<td>CCWMP</td>
<td>Collier County Watershed Management Plan</td>
</tr>
<tr>
<td>CFA</td>
<td>Core foraging area (wood stork)</td>
</tr>
<tr>
<td>CFR</td>
<td>Code of Federal Regulations</td>
</tr>
<tr>
<td>CLC</td>
<td>Cooperative Land Cover</td>
</tr>
<tr>
<td>CREW</td>
<td>Corkscrew Regional Ecosystem Watershed</td>
</tr>
<tr>
<td>DO</td>
<td>Dissolved oxygen</td>
</tr>
<tr>
<td>DPS</td>
<td>Distinct Population Segment</td>
</tr>
<tr>
<td>EAA</td>
<td>Everglades Agricultural Area</td>
</tr>
<tr>
<td>ECMSHCP</td>
<td>Eastern Collier Multiple Species Habitat Conservation Plan</td>
</tr>
<tr>
<td>ECPO</td>
<td>Eastern Collier Property Owners</td>
</tr>
<tr>
<td>ENP</td>
<td>Everglades National Park</td>
</tr>
<tr>
<td>ESA</td>
<td>Endangered Species Act</td>
</tr>
<tr>
<td>ET</td>
<td>Evapotranspiration</td>
</tr>
<tr>
<td>FDACS</td>
<td>Florida Department of Agriculture and Consumer Services</td>
</tr>
<tr>
<td>FDEP</td>
<td>Florida Department of Environmental Protection</td>
</tr>
<tr>
<td>FDOT</td>
<td>Florida Department of Transportation</td>
</tr>
<tr>
<td>FLUCCS</td>
<td>Florida Land Use, Cover and Forms Classification System</td>
</tr>
<tr>
<td>FNAI</td>
<td>Florida Natural Areas Inventory</td>
</tr>
<tr>
<td>FPNWR</td>
<td>Florida Panther National Wildlife Refuge</td>
</tr>
<tr>
<td>FPPP</td>
<td>Florida Panther Protection Program</td>
</tr>
<tr>
<td>FPRIT</td>
<td>Florida Panther Recovery Implementation Team</td>
</tr>
<tr>
<td>FSSP</td>
<td>Fakahatchee Strand State Preserve</td>
</tr>
<tr>
<td>FWC</td>
<td>Florida Fish and Wildlife Conservation Commission</td>
</tr>
<tr>
<td>GIS</td>
<td>Geographic Information System</td>
</tr>
<tr>
<td>GPS</td>
<td>Global Positioning System</td>
</tr>
<tr>
<td>HCP</td>
<td>Habitat Conservation Plan</td>
</tr>
<tr>
<td>IA</td>
<td>Implementing Agreement</td>
</tr>
<tr>
<td>ITP</td>
<td>Incidental Take Permit</td>
</tr>
<tr>
<td>KCOL</td>
<td>Kissimmee Chain of Lakes</td>
</tr>
<tr>
<td>Acronym</td>
<td>Definition</td>
</tr>
<tr>
<td>---------</td>
<td>------------</td>
</tr>
<tr>
<td>LIDAR</td>
<td>Light Detection And Ranging</td>
</tr>
<tr>
<td>LRTP</td>
<td>Long-Range Transportation Plan</td>
</tr>
<tr>
<td>LULC</td>
<td>Land use/land cover</td>
</tr>
<tr>
<td>MERIT</td>
<td>Multi-species/Ecosystem Recovery Implementation Team</td>
</tr>
<tr>
<td>MOU</td>
<td>Memorandum of Understanding</td>
</tr>
<tr>
<td>MPO</td>
<td>Metropolitan Planning Organization</td>
</tr>
<tr>
<td>MSHCP</td>
<td>Multiple Species Habitat Conservation Plan</td>
</tr>
<tr>
<td>MSRP</td>
<td>Multi-Species Recovery Plan</td>
</tr>
<tr>
<td>NAVD</td>
<td>North American Vertical Datum</td>
</tr>
<tr>
<td>NGVD</td>
<td>National Geodetic Vertical Datum</td>
</tr>
<tr>
<td>NEPA</td>
<td>National Environmental Policy Act</td>
</tr>
<tr>
<td>NGO</td>
<td>Non-Governmental Organization</td>
</tr>
<tr>
<td>NMFS</td>
<td>National Marine Fisheries Service</td>
</tr>
<tr>
<td>NOAA</td>
<td>National Oceanic and Atmospheric Administration</td>
</tr>
<tr>
<td>NSLP</td>
<td>Natural Soils Landscape Position</td>
</tr>
<tr>
<td>OSSF</td>
<td>Okaloacoochee Slough State Forest</td>
</tr>
<tr>
<td>PHU</td>
<td>Panther habitat unit</td>
</tr>
<tr>
<td>PRT</td>
<td>Panther Review Team (FPPP)</td>
</tr>
<tr>
<td>PSSF</td>
<td>Picayune Strand State Forest</td>
</tr>
<tr>
<td>PVA</td>
<td>Population viability analysis</td>
</tr>
<tr>
<td>RCW</td>
<td>Red-cockaded woodpecker</td>
</tr>
<tr>
<td>RLSA</td>
<td>Rural Land Stewardship Area</td>
</tr>
<tr>
<td>RLSP</td>
<td>Rural Land Stewardship Program</td>
</tr>
<tr>
<td>RO</td>
<td>Reverse Osmosis</td>
</tr>
<tr>
<td>SFWMD</td>
<td>South Florida Water Management District</td>
</tr>
<tr>
<td>SHPO</td>
<td>State Historic Preservation Office</td>
</tr>
<tr>
<td>SR-29</td>
<td>State Route 29</td>
</tr>
<tr>
<td>SR-82</td>
<td>State Route 82</td>
</tr>
<tr>
<td>SSA</td>
<td>Stewardship Sending Area</td>
</tr>
<tr>
<td>TBD</td>
<td>To Be Determined</td>
</tr>
<tr>
<td>TDR</td>
<td>Transfer of Development Rights</td>
</tr>
<tr>
<td>TMDL</td>
<td>Total Maximum Daily Load</td>
</tr>
<tr>
<td>TTINWR</td>
<td>Ten Thousand Islands National Wildlife Refuge</td>
</tr>
<tr>
<td>USACE</td>
<td>U.S. Army Corps of Engineers</td>
</tr>
<tr>
<td>USEPA</td>
<td>U.S. Environmental Protection Agency</td>
</tr>
<tr>
<td>USFWS</td>
<td>U.S. Fish and Wildlife Service</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Description</td>
</tr>
<tr>
<td>--------------</td>
<td>-------------</td>
</tr>
<tr>
<td>VHF</td>
<td>Very high frequency (radio telemetry)</td>
</tr>
<tr>
<td>WBID</td>
<td>Water Body Identification (FDEP basin code)</td>
</tr>
<tr>
<td>WCA</td>
<td>Water Conservation Area</td>
</tr>
<tr>
<td>WMA</td>
<td>Wildlife Management Area</td>
</tr>
</tbody>
</table>
1. INTRODUCTION AND BACKGROUND

1.1 OVERVIEW/BACKGROUND

Southwest Florida encompasses a variety of urban, agricultural, and natural landscapes that support, among other things, residential, commercial, and public activities, food production, recreation, natural ecosystem functions, and wildlife. Collier County, located west of the Everglades and south of the Caloosahatchee River (Figure 1-1), has experienced rapid human population growth over the past several decades, while simultaneously witnessing the dedication of vast expanses of natural areas to conservation as State and Federal lands. Over two-thirds of Collier County’s land area is currently in conservation status, with over 880,000 of the county’s 1,300,000 acres protected (FNAI 2017).

The Federal preserves within Collier County include the Big Cypress National Preserve (BCNP), the Florida Panther National Wildlife Refuge (FPNWR), the Ten Thousand Islands National Wildlife Refuge (TINWR), and the western coastal portions of Everglades National Park (ENP). State conservation lands within the County include the Fakahatchee Strand State Preserve (FSSP), the Picayune Strand State Forest (PSSF), the Okaloacoochee Slough State Forest (OSSF), and extensive portions of the Corkscrew Regional Ecosystem Watershed (CREW). In addition, the National Audubon Society maintains approximately 13,000 acres of conservation lands in Collier County, comprised of the Corkscrew Swamp Sanctuary and nearby lands.

These Federal and State preserves were generally established to protect vast tracts of Southwest Florida’s diverse natural ecosystems, which harbor a wide variety of plants and wildlife, including many species listed as endangered or threatened under the Endangered Species Act, 16 U.S.C. §§ 1531 et seq. (ESA or Act), protected by the State of Florida, or both. Among these listed species, the Florida panther (*Puma concolor coryi*) represents a major “focal species,” meaning that conservation activities directed toward conserving the panther also promote multiple aspects of regional biodiversity conservation (Lambeck 1997; Noss 2007). The public conservation lands within Collier County protect many species that have limited localized distributions, home ranges, and/or dispersal distances (e.g., red-cockaded woodpeckers; rare orchids; Big Cypress fox squirrels), but the Florida panther utilizes habitats and establishes home ranges on a landscape scale that extends well beyond the boundaries of the existing public conservation lands.

The role of private lands for sustaining the Florida panther has been addressed repeatedly in the scientific literature for over 30 years (e.g., Belden et al. 1988; Maehr 1990; Logan et al. 1993; Main et al. 1999; Beier 2009). Beier et al. (2003, 142) stated “it is certainly true that private lands are essential to security of this population, and that conserving these lands will require active support from water management districts, Seminoles, and private landowners.” (italics added.) A recent panther annual monitoring report (FWC 2016b, 15) stated that “[c]onserving panther habitat on private lands is essential for advancing panther recovery throughout its range.” Scientific literature on the panther contains numerous discussions related to the development and implementation of private-landowner incentives for preserving and maintaining panther habitat as valuable tools that are needed to complement public land acquisition and management (Logan et al. 1993; Evans 1994; Maehr 1997;
FIGURE 1-1
Eastern Collier MSHCP Location Map
August 2018

LEGEND

- HCP Area
- Rural Land Stewardship Area Boundary
- Existing Conservation Land
- Water
- County Boundary

Disclaimer: Stantec assumes no responsibility for data supplied in electronic format. The recipient accepts full responsibility for verifying the accuracy and completeness of the data. The recipient releases Stantec, its officers, employees, consultants and agents, from any and all claims arising in any way from the content or provision of the data.
Kreye and Pienaar 2015). However, to date, the types of incentives offered to private landowners, and the conservation funding available to State and Federal agencies to engage private landowners, have been limited and largely ineffective.

Since 1981, State and Federal wildlife biologists have captured over 249 Florida panthers in Southwest Florida, and fitted them with radiotelemetry collars and, more recently, global positioning system (GPS) collars (FWC 2017a). The location data provided by these collared panthers have helped to define the “core population area” for the species (USFWS 2002a, Figure 37) and general patterns of habitat utilization throughout the panther’s range (see section 4, Florida Panther). While the majority of the core population area lands are currently protected within public conservation lands, including the BCNP, FPNWR, and FSSP, sizable portions of the core population area extend onto private lands in eastern Collier County and southern Hendry County that adjoin these public lands. The panther radiotelemetry and GPS data also reveal regular utilization of native habitats within two regional flowway systems in eastern Collier County (Okaloacoochee Slough and Camp Keais Strand), and sporadic utilization of extensive nearby agricultural areas.

Scientific literature on the Florida panther indicates that existing public conservation lands alone are insufficient for viable long-term conservation of the Florida panther’s core population (USFWS 2002a; Kautz et al. 2006). There is broad-based agreement among Federal and State wildlife biologists, academic conservation researchers, and many environmental non-governmental organizations (NGOs) that the engagement and active support of private landowners is essential to landscape-scale conservation efforts designed to address the panther’s ecological needs.

Given the potential for privately-held native habitats within eastern Collier County to benefit the conservation of the Florida panther, a Habitat Conservation Plan (HCP) can provide a valuable mechanism for achieving permanent protection of the landscape-scale features that support panther ecology. The proposed HCP would also provide conservation benefits for other species that occur within the lands proposed to be covered by the HCP.

The U.S. Fish & Wildlife Service’s (USFWS) “Habitat Conservation Planning and Incidental Take Permit Processing Handbook” (USFWS and NMFS 2016, hereinafter “HCP Handbook”) speaks to the type of situation that exists in eastern Collier County, and advocates striking a balance between agriculture, economic development, and species conservation:

Congress intended the HCP program to address listed and at-risk species in an ecosystem context, generate long-term commitments to conserve such species, and deliver regulatory assurances to project proponents. Congress also envisioned the HCP program as an opportunity to establish “creative partnerships” between the public and private sectors and State, municipal, and Federal agencies to conserve endangered and threatened species and their habitats (H.R. Rep. No. 97-835 (1982)). . . . Congress intended the HCP program to function not only to authorize incidental take, but also as a process to integrate non-Federal development and land-use activities with conservation goals, resolve conflicts between protection of listed species and economic activities on non-Federal lands, and create a climate of partnership and cooperation.
In that spirit, the Services should encourage permit applicants and partners to use Congress’ intent as the foundation for working together to develop an HCP. Collaboration, flexibility, ingenuity, innovation, and thoughtful planning are key to developing effective HCPs and resolving complex and controversial issues that may arise.

(HCP Handbook at 1-2.) Indeed, the HCP Handbook notes that “[a]lthough some listed species are located on wildlife refuges, national parks, military bases, and other Federal lands, the majority of them are on non-federal lands [, and for that reason,] [t]he Services and other Federal agencies cannot recover those listed species alone.” (HCP Handbook at 2-5.) The benefits of protecting private lands in eastern Collier County for the Florida panther are well documented (see Beier et al. 2003 for a literature review), and this HCP represents a viable means for achieving permanent protection of native panther habitats. Thus, the purpose of this HCP is to create a long-term balance among the complementary goals of environmental preservation, species protection, continued agricultural use of lands, and economic development. This HCP will achieve these goals through a combination of economic incentives and regulatory mechanisms, and will provide a balanced, sustainable future for the region. Because multiple species in eastern Collier County will be covered by this HCP, the plan is named the Eastern Collier Multiple Species Habitat Conservation Plan (ECMSHCP, or the Plan).

1.2 THE EASTERN COLLIER MULTIPLE SPECIES HABITAT CONSERVATION PLAN

The ECMSHCP provides a detailed, long-term, science-based methodology for the permanent protection of habitats for the endangered Florida panther and other species within the lands proposed to be covered by the Plan, referred to herein as the HCP Area (depicted in Figure 2-1, infra). The Plan is required to support the applications submitted by several Collier County landowners for Incidental Take Permits (ITPs) under Section 10(a)(1)(B) of the ESA. 16 U.S.C. § 1539(a)(1)(B). The Plan provides a long-term (50-year) conservation and land-use planning framework for 151,779± acres in Southwest Florida (Figure 1-1).

The eastern portions of Collier County comprise a variety of land uses, including, among other things, crop production, ranching, native vegetation communities, urban areas, and public lands (see Chapter 3, Environmental Setting). The ultimate planning goal for this region is to ensure a long-term compatible balance of conservation, continued agricultural land use, and economic development that contributes to the protection, survival, and recovery of the species covered by the Plan.

This Plan arose from a collaborative effort among a group of landowners in eastern Collier County, Florida (the Eastern Collier Property Owners, or “ECPO,” described in section 1.3), and four leading conservation organizations, including Defenders of Wildlife, Florida Wildlife Federation, Audubon Florida and Audubon of the Western Everglades (hereinafter, ECPO’s “conservation partners”), along with Federal and State wildlife agencies, to address long-term planning issues related to the conservation of the Florida panther. As explained above, the landscape-scale mosaic of habitats that support the Florida

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4 Citations hereinafter are only to the Act.
5 For the purpose of this Plan document, geographic information system (GIS) acreages are the best currently available estimates. Precise acreages will be determined during ITP processing.
panther also support many other federal and state-listed species, allowing for a multi-species approach for the Plan and ITPs. The Plan emphasizes the preservation of large expanses of native panther habitats, in a way that maintains landscape-scale habitat connectivity and facilitates panther utilization and movement.

The Plan covers eight federally-listed species: five avian species, one reptile species, and two mammal species. The Plan also covers three species – the gopher tortoise, eastern diamondback rattlesnake, and gopher frog – that are being considered for listing but are not currently federally-listed. The gopher tortoise is currently designated as a candidate species for federal listing within its Florida range, and also is listed as threatened by the State of Florida; the eastern diamondback rattlesnake and gopher frog are currently proposed for federal listing. The Plan also covers eight other non-federally-listed species that are currently listed as threatened by the State of Florida. All species to be covered by the Plan are included, along with their listing status, in Tables 1-1, 1-2, and 1-3, below (the Covered Species). The landowners have submitted applications for ITPs that would provide take coverage for each of these species under section 10 of the ESA.

The USFWS (2002a, 73) characterized the long-acknowledged role of private lands for Florida panther conservation as follows:

Regional conservation planning also recognizes the importance of the ecological interactions among native ecosystems, agricultural areas, and developed lands and attempts to design conservation areas and strategies that maximize compatibility and effectively conserve natural resources including biodiversity and important ecosystem processes.

A regional landscape strategy for the Florida panther in south Florida is dependent on two complementary aspects: science-based management of existing and potential future public lands consistent with panther conservation, and cooperation with private landowners that currently manage thousands of acres of panther habitat (Maehr 1990).

Ultimately, the Plan and ITPs allow participating property owners to plan and coordinate future permitted activities within defined areas in the HCP Area (the areas designated for Covered Activities, depicted on Figure 2-1, infra), enabling integrated and more effective conservation planning, avoiding piecemeal development scenarios, supporting effective long-term cumulative impact analyses, and simplifying future individual consultations between the USFWS and other Federal agencies. These goals are consistent with the longstanding consensus that private lands constitute a key component for successful Florida panther conservation, and that the active cooperation of private property owners is an essential component.
Table 1-1. Covered Species for the Eastern Collier Multiple Species Habitat Conservation Plan: federally-listed species.\(^6\)

<table>
<thead>
<tr>
<th>COMMON NAME</th>
<th>SCIENTIFIC NAME</th>
<th>FEDERAL STATUS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BIRDS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Florida scrub jay</td>
<td><em>Aphelocoma coerulescens</em></td>
<td>T</td>
</tr>
<tr>
<td>Northern crested caracara</td>
<td><em>Caracara cheriway</em></td>
<td>T</td>
</tr>
<tr>
<td>Wood stork</td>
<td><em>Mycteria americana</em></td>
<td>T</td>
</tr>
<tr>
<td>Red-cockaded woodpecker</td>
<td><em>Picoides borealis</em></td>
<td>E</td>
</tr>
<tr>
<td>Everglade snail kite</td>
<td><em>Rostrhamus sociabilis plumbeus</em></td>
<td>E</td>
</tr>
<tr>
<td><strong>REPTILES</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eastern indigo snake</td>
<td><em>Drymarchon corais couperi</em></td>
<td>T</td>
</tr>
<tr>
<td><strong>MAMMALS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Florida bonneted bat</td>
<td><em>Eumops floridanus</em></td>
<td>E</td>
</tr>
<tr>
<td>Florida panther</td>
<td><em>Puma concolor coryi</em></td>
<td>E</td>
</tr>
</tbody>
</table>

\(^1\) Federal status abbreviations (as of March 2018): T - Threatened; E – Endangered

Table 1-2. Covered Species for the Eastern Collier Multiple Species Habitat Conservation Plan: candidate species and species under review for Federal listing.

<table>
<thead>
<tr>
<th>COMMON NAME</th>
<th>SCIENTIFIC NAME</th>
<th>FEDERAL STATUS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>REPTILES</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gopher tortoise</td>
<td><em>Gopherus polyphemus</em></td>
<td>C</td>
</tr>
<tr>
<td>Eastern diamondback rattlesnake</td>
<td><em>Crotalus adamanteus</em></td>
<td>Under Review</td>
</tr>
<tr>
<td>Gopher frog</td>
<td><em>Lithobates capito</em></td>
<td>Under review</td>
</tr>
</tbody>
</table>

\(^1\) Federal status abbreviations (as of March 2018): C - Candidate species for federal listing; the gopher tortoise is also listed as Threatened by the State of Florida.

\(^6\) All federally-listed species are also protected by the State of Florida.
Table 1-3. Covered Species for the Eastern Collier Multiple Species Habitat Conservation Plan: species listed by the State of Florida (not federally listed).

<table>
<thead>
<tr>
<th>COMMON NAME</th>
<th>SCIENTIFIC NAME</th>
<th>STATE STATUS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BIRDS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Burrowing owl</td>
<td><em>Athene cunicularia</em></td>
<td>T</td>
</tr>
<tr>
<td>Florida sandhill crane</td>
<td><em>Antigone canadensis pratensis</em></td>
<td>T</td>
</tr>
<tr>
<td>Little blue heron</td>
<td><em>Egretta caerulea</em></td>
<td>T</td>
</tr>
<tr>
<td>Roseate spoonbill</td>
<td><em>Platalea ajaja</em></td>
<td>T</td>
</tr>
<tr>
<td>Southeastern American kestrel</td>
<td><em>Falco sparverius paulus</em></td>
<td>T</td>
</tr>
<tr>
<td>Tricolored heron</td>
<td><em>Egretta tricolor</em></td>
<td>T</td>
</tr>
<tr>
<td><strong>MAMMALS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Big Cypress fox squirrel</td>
<td><em>Sciurus niger avicennia</em></td>
<td>T</td>
</tr>
<tr>
<td>Everglades mink</td>
<td><em>Neovison vison evergladensis</em></td>
<td>T</td>
</tr>
</tbody>
</table>

1 State status abbreviations (as of March 2018): T – Threatened

1.3 PERMIT APPLICANTS AND PERMIT DURATION

As noted above, the ITP applicants are a group of landowners known as the Eastern Collier Property Owners, or ECPO. Collectively, ECPO members own approximately 85 percent of the private land within eastern Collier County (see section 1.7 and Figure 2-1), as well as other lands in South and Central Florida outside the eastern Collier County area. The ECPO applicants and eventual permit holders would be (in alphabetical order): Alico, Inc.; Barron Collier Investment, Ltd.; Collier Enterprises Management, Inc.; Consolidated Citrus Limited Partnership; English Brothers Partnership; Half Circle L Ranch, LLP; Heller Bros. Packing Corp.; JB Ranch; Owl Hammock Immokalee, LLC; Pacific Land, Ltd.; and Sunniland Family Limited Partnership.

The duration of the ITPs will be 50 years. This is the time period necessary to complete planned and/or foreseeable permitted activities within the portion of the HCP Area designated for Covered Activities, and to fully enact conservation provisions associated with the Plan elements and ITP conditions.

1.4 PERMIT BOUNDARY/HCP AREA

The HCP Area is located in the northeastern corner of Collier County, and surrounds the Town of Immokalee (Figure 1-1). The HCP Area is located within the boundaries of Collier County’s Rural Land
Stewardship Area (RLSA) — the geographical area within which Collier County’s Rural Land Stewardship Program (RLSP) applies7 (see Figure 2-1) — and comprises approximately 151,779 acres of lands owned by the applicants, which do not include existing or future County and State roads within eastern Collier County. Over 20,000 acres of non-ECPO private property are located within the RLSA. Because the applicants do not own these lands, they are outside the HCP Area. These non-ECPO lands may later be voluntarily incorporated into the Plan through Certificates of Inclusion, and are therefore depicted in Figure 2-1 as lands “Eligible for HCP Inclusion (Non-ECPO Lands)” (see section 2.4). The major existing and traditional land uses and land cover within the HCP Area include agriculture, ranching, native vegetation communities, residential and commercial development, and earth mining.

As shown on Figure 1-1, the HCP Area borders the FPNWR and BCNP to the south, public conservation lands that support the core population area for the Florida panther. The HCP Area also borders the OSSF to the north and east, which is heavily utilized by panthers and serves as a landscape linkage in a panther dispersal corridor leading to the Caloosahatchee River and then northward into Central Florida. To the west are the privately owned 13,000-acre Audubon Corkscrew Swamp Sanctuary, which harbors the largest breeding colony of threatened wood storks in South Florida, and the publicly-owned CREW conservation lands. The HCP Area therefore occupies a strategic area that, if properly planned and managed, can function as an area of increased value to the Florida panther and other species, featuring important, landscape-scale habitat linkages (“critical linkages”) in perpetuity (Oetting et al. 2014). The avoidance, minimization, mitigation, and management actions proposed in the Plan and specified in the ITPs would promote and maintain these linkages.

The approximately 151,779-acre HCP Area — all of which is owned by ECPO members — occupies approximately 85 percent of the private lands within the RLSA in eastern Collier County. As described in greater detail in Chapter 2, the Plan designates 50,175 acres of lands, primarily within previously-cleared agricultural areas, where up to 45,000 acres of Covered Activities may occur. The remaining approximately 107,000 acres, which include existing regional wildlife corridors that allow for wildlife movement among existing public conservation lands, will be permanently preserved under the Plan. Further enhancing the ratio of preserved areas to development, the 5,027-acre Town of Ave Maria will be included in the 45,000 acres where Covered Activities may occur, even though Federal permitting and section 7 consultation has been completed for the Town of Ave Maria, reducing the maximum acreage of Covered Activities attributable to the ITPs to 39,973 acres. There are two parcels of land located within the RLSA (and the outer boundaries of the HCP Area) — the Hogan Island Quarry and the Immokalee Sand Mine — that are owned by ECPO members but are not included in the HCP Area or as Covered Activities because the Federal permitting process for each, including section 7 consultations, is either already complete or is expected to be complete by the time the ITPs are issued (depicted in Figure 2-1 as “Prior Federal Permitting Initiated”). Nonetheless, these two parcels are accounted for in the overall configuration and planning for wildlife corridors and other ecologically beneficial features of the Plan.

7 Please see section 1.7 for a description of the RLSP.
1.5 SPECIES TO BE COVERED BY PERMIT

The federally-listed species to be covered under the ITPs are listed in Table 1-1. These species are included in the online USFWS database of federally-listed and candidate species for Collier County (Information for Planning and Consultation database at: https://ecos.fws.gov/ipac/location/index). A candidate species for federal listing in Florida, the gopher tortoise (Gopherus polyphemus), is also included in the Plan, along with two species that are proposed for federal listing, the eastern diamondback rattlesnake (Crotalus adamanteus) and the gopher frog (Lithobates capito) (Table 1-2). Section 8.1.4 details the measures to be taken if, subsequent to issuance of the ITP, additional species become federally-listed within the HCP Area. Federally-listed species that occur exclusively in marine environments, coastal ecosystems (beaches, mangroves, nearshore environments), and other environments are not present within the HCP Area and therefore are not included as Covered Species under the Plan. Only one plant species that occurs within Collier County – Florida prairie clover (Dalea carthagenesis floridana) – is federally listed. This species was listed as endangered on October 2017. 82 Fed. Reg. 46,691 (Oct. 6, 2017). However, the rocklands, costal uplands, and marl prairies that the plant inhabits are not found within the HCP Area. For this reason, no plant species are included in the Covered Species.

In addition to the federally-listed Covered Species, the Plan will cover eight species currently listed by the State of Florida as “Threatened” (Table 1-3), based on recent Biological Status Reviews performed by the Florida Fish and Wildlife Conservation Commission (FWC). All of the State-listed species in Table 1-3 will benefit directly from the Plan, because each of these species utilizes the same or similar habitat(s) as the federally-listed Covered Species. Given the large expanse of the areas designated under the Plan for Preservation/Plan-Wide Activities and Very Low Density Use (see section 2, Plan Description), other game and non-game species that are not currently listed or recommended for listing by State or Federal agencies and that are not covered by the Plan – such as the Florida black bear – will also benefit from these conservation actions.

For the status, distribution, habitat utilization, and occurrence of each Covered Species within the HCP Area, please refer to section 4 (Florida Panther) and section 5 (Other Covered Species) of this document.

1.6 REGULATORY FRAMEWORK

1.6.1 Federal Endangered Species Act

Section 9 of the Act and Federal Regulations enacted pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct.” ESA § 3(19). Harm is further defined by the USFWS to include significant habitat modification or degradation that results in death or injury to listed species “by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering.” Harass is defined as intentional or negligent actions that create the likelihood of injury to listed species by annoying them “to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to,
breeding, feeding, or sheltering.” Incidental take is defined as take that is “incidental to, and not the purpose of, the carrying out of an otherwise lawful activity.” 50 CFR § 17.3.

Pursuant to section 11(a) and (b) of the Act, any person who knowingly violates section 9 of the Act or any permit, certificate, or regulation issued pursuant to section 9, may be subject to civil penalties of up to $25,000 for each violation or criminal penalties up to $50,000 and/or imprisonment of up to one year.

Individuals and State and local agencies proposing action that may result in the take of federally-listed species may apply for an ITP under section 10(a)(1)(B) of the Act to maintain compliance with the law. Such permits are issued by the USFWS when take is not intentional, and is incidental to otherwise legal activities. An application for an ITP must be accompanied by an HCP. Under section 10(a)(1)(B) of the Act, the anticipated take to be authorized must be incidental, the applicant must “minimize and mitigate the impacts of” take “to the maximum extent practicable,” the authorized take must not “appreciably reduce the likelihood of the survival and recovery of the species in the wild,” and adequate funding for the plan must be ensured.

Section 7 of the Act requires Federal agencies to ensure that their actions, including issuing permits, are “not likely to jeopardize the continued existence of [federally-listed] species or result in the destruction or adverse modification of habitat of such species. ESA § 7(a)(2). “Jeopardize the continued existence of” pursuant to 50 CFR § 402.02, means “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, numbers, or distribution of that species.” Issuance of an incidental take permit under section 10(a)(1)(B) of the Act by the USFWS is a Federal action subject to section 7 of the Act. Under section 7, the USFWS is required to consult with itself (i.e., conduct an internal consultation), as well as other Federal agencies.

Under ESA section 7, cumulative effects are effects of future State or private actions that are reasonably certain to occur in the action area, which is defined by the influence of direct and indirect impacts of the Federal action.

1.6.2 The Section 10(a)(1)(B) Process: HCP Requirements and Guidelines

Although the Section 10(a)(1)(B) process is iterative and often non-linear, the process includes four primary phases: (1) pre-application; (2) development of the HCP and environmental compliance documents; (3) application processing, permit decision-making, and issuance of the ITP; and (4) the post-issuance phase, including implementation of the HCP and compliance monitoring.

During the first phase, USFWS provides guidance to prospective applicants, and determines the level of analysis required under the National Environmental Policy Act (NEPA) based on the nature and scale of the HCP.

During the second phase, the applicant prepares a plan that integrates the proposed project or activity with the protection of listed species. An HCP submitted in support of an ITP application must include the following information per the HCP Handbook (USFWS and NMFS 2016, C-1):
• impacts likely to result from the proposed taking of the species for which permit coverage is requested;

• measures that will be implemented to monitor, minimize, and mitigate impacts; the funding that will be made available to undertake such measures; and the procedures to deal with unforeseen circumstances;

• a description of alternative actions that the applicant considered, and an explanation of why those alternatives were not selected; and

• additional measures USFWS may require as necessary or appropriate for purposes of the plan.

The HCP development phase concludes and the permit processing phase begins when a complete application package is submitted to the appropriate permit-issuing office. A complete application package consists of (i) a draft HCP, (ii) an Implementing Agreement, if applicable, (iii) a permit application, and (iv) payment of a $100 fee by the applicant(s). [HCP Handbook at 2-13.] USFWS is required to publish a Notice of Availability of the HCP package in the Federal Register and allow for public comment. The USFWS also prepares an Intra-Service Section 7 Biological Opinion and a Set of Findings, which evaluates the Section 10(a)(1)(B) permit application in the context of permit issuance criteria (see below). An Environmental Action Statement, Environmental Assessment, or Environmental Impact Statement serves as the USFWS’s record of compliance under NEPA, and is subject to public comment. As noted in the Executive Summary, USFWS published a notice of intent to prepare an EIS in the Federal Register in March 2016 (81 Fed. Reg. 16,200 (March 25, 2016)), held a public scoping meeting on April 12, 2016, and has begun drafting an EIS analyzing the proposed ITPs.

During the third phase, USFWS oversees the public review process and undertakes decision-making. This phase includes development by USFWS of a document that describes USFWS’s findings and provides a basis for USFWS’s permitting decision. The third phase ends with USFWS’s permit issuance decision. Pursuant to ESA § 10(a)(1)(B), USFWS will issue an ITP if the following statutory criteria for issuance of the permit are met:

• the taking will be incidental;

• the impacts of incidental take will be minimized and mitigated to the maximum extent practicable;

• adequate funding for the HCP will be provided;

• the taking will not appreciably reduce the likelihood of survival and recovery of the species in the wild;

• the applicant will provide any additional measures that the Secretary of the Interior requires as being necessary or appropriate; and
• the Secretary of the Interior has received any other assurances, as may be required, that the HCP will be implemented.

The public is notified of permit issuance by publication in the Federal Register.

During the fourth phase, the permittee and other responsible entities implement the Plan, and the USFWS monitors the permittee’s compliance with the Plan as well as the long-term progress and success of the Plan.

1.6.3 National Environmental Policy Act

The purpose of NEPA is two-fold: to ensure that Federal agencies examine environmental impacts of their actions (in this case, deciding whether to issue an ITP) and to inform and involve the public. NEPA serves as an analytical tool to consider direct, indirect, and cumulative impacts of the proposed action and alternatives to help the USFWS decide whether to issue an ITP. The USFWS will complete a NEPA analysis as part of the ITP application process.

1.6.4 National Historic Preservation Act

All Federal agencies are required to examine the cultural impacts of their actions (e.g., issuance of a permit). This may require consultation with the State Historic Preservation Office and appropriate American Indian tribes. All ITP applicants are requested to submit a Request for Cultural Resources Compliance form to the USFWS. To complete compliance, the applicants may be required to contract for cultural resource surveys and possibly provide mitigation to address the impacts on cultural resources, if any, of authorizing incidental take of listed species.

1.7 COUNTY-LEVEL PLANNING AND ZONING

The Plan builds upon, and closely integrates with, Collier County’s planning and zoning framework for lands within eastern Collier County. This section briefly summarizes the recent history of planning and zoning in eastern Collier County, the evolution of the County’s innovative program to protect natural resources and agriculture while allowing for economic development, how that program underpins several key elements of the Plan, and how the Plan builds on the RLSP to provide significant conservation value beyond what is possible under the RLSP alone.

1.7.1 Background

In the late 1990s, the State of Florida challenged Collier County’s comprehensive plan, contending that the required conservation elements would not sufficiently protect natural resources (including listed species and their habitats). Two environmental NGOs – which are now two of ECPO’s conservation partners – intervened in support of the State. The challenge was upheld by a Florida administrative law judge in a March 1999 ruling. In June 1999, Governor Jeb Bush issued Final Order AC-99-02, which directed Collier County to perform an assessment of 195,000 acres in eastern Collier County (known as the “Immokalee Area Study”). Specifically, the order required that the assessment address long-term
planning issues in order to balance natural resource protection, agriculture, and economic development within the 195,000-acre area.

Between 1999 and 2002, the applicants collaborated with Collier County, conservation groups, consultants, local citizens, and State agencies to complete the assessment, and to develop new comprehensive planning strategies and policies that would satisfy the requirements of the State’s Final Order. The initial efforts involved a thorough compilation, mapping, and synthesis of natural resource and land use data for the 195,000-acre area, to serve as an objective and verifiable basis for planning and natural resource protection. The datasets collected through this process were entered into a geographic information system (GIS) to allow for spatial analyses, data visualizations, data updating, and reporting. A report synthesizing this information was submitted to Collier County in December 2000.

Between 2000 and 2002, stakeholders utilized the GIS data to develop and test various scenarios for meeting the requirements of the Final Order. The stakeholders realized that any attempt to simply impose restrictive new zoning regulations would seriously compromise any chance of creating a broadly supported and viable long-term plan for the area. Collaborative stakeholder engagement likely would have ceased as a result of new zoning restrictions that would have effectively imposed the most restrictive burdens on those property owners who possessed the highest value natural resources, preventing those property owners from realizing the economic value of their land, including the benefits of future development and continued agricultural land use. Moreover, State of Florida statutes require that any such change that compromises private property vested rights (e.g., “downzoning” property) be considered a taking that must be compensated economically by the government entity imposing the change (Chapter 70, Florida Statutes). In short, simply imposing new zoning and/or land use regulations in eastern Collier County would likely have been counterproductive, logistically difficult, subject to protracted legal challenges, and ultimately unworkable.

As various scenarios were considered (with a 2002 Final Order deadline looming), the stakeholders understood that any effort to successfully achieve a long-term balance between agriculture, natural resource conservation, and economic development must recognize the potential economic value of each of these activities, and be available to all property owners within the 195,000-acre area. A breakthrough occurred when the parties concluded that economic development, primarily master-planned residential and commercial development, must be directly and quantifiably tied to permanent conservation benefits that could achieve the desired balance for future land uses. Ultimately, this collaborative process resulted in a system for calculating “credits” generated by protecting environmentally sensitive lands, and established procedures for calculating how many credits would be required to entitle a proposed development. Although the system possessed some similarities to Transfer of Development Rights programs, this system provided more economic and regulatory incentives to protect the highest-quality natural environments, and allowed more flexibility to property owners for relinquishing various land-use rights. The resulting system was carefully calibrated, using GIS, to generate a total number of credits that could entitle a maximum development footprint within the 195,000-acre area. The plan was designed as a “closed system,” so a maximum development footprint would leave the balance of the area as agricultural lands and native habitats.
This credit system became the basis for new planning policies and amendments, and was codified as the Collier County Rural Land Stewardship Program (RLSP).\(^8\) The RLSP, approved by Collier County and the State of Florida in 2002, offers landowners a voluntary alternative to existing zoning, at the option of the property owner, and provides for a more strategic and environmentally sensitive balance between conservation and development. Because entry into the program is purely voluntary for each property owner, no downzoning or property rights issues are triggered. As of this writing, the RLSP has operated continuously for over 15 years, and has proven successful in meeting the policy goals for balanced economic development, agricultural land use, and permanent protection of environmentally sensitive lands.

### 1.7.2 Rural Land Stewardship Program (RLSP) Basics

Prior to the 2002 adoption of the RLSP, the zoning in eastern Collier County was (and to this day remains) one dwelling unit per five-acre area. This zoning plan can result in low-density growth patterns that fragment habitat, create inefficiencies in infrastructure and services, and generally complicate effective conservation actions. These low-density patterns are found immediately west of the HCP Area in the area known as “Golden Gate Estates” (see Figure 2-1, aerial imagery on left side of figure).

The RLSP did not change the underlying zoning of eastern Collier County, for the reasons outlined in the previous section. Rather, the RLSP operates as a zoning overlay, where the standards and criteria defined for the RLSP are applicable only if a property owner within the RLSA voluntarily elects to enter the program. Property owners may elect to enter the program when they wish to develop their property at densities greater than one dwelling unit per five acres, when they wish to set aside environmentally sensitive lands for protection, when they wish to receive credit for permanently limiting land uses to agriculture, and/or when they want to undertake other allowable activities incentivized by the program.

The RLSP creates incentives for property owners to protect environmentally sensitive lands (sending areas) permanently, in exchange for “stewardship credits” that can be used, traded, or sold to entitle compact forms of development (receiving areas) at higher densities than baseline zoning. RLSP policies mandate that compact development at higher densities can only occur within those areas that have been mapped as having limited natural resource values (i.e., previously cleared areas), and then only through the use of stewardship credits. Stewardship credits are only recognized after a perpetual “Stewardship Easement” is recorded for the land parcel being protected. The easement runs with the land in favor of Collier County and a State agency such as the Florida Department of Agriculture and Consumer Services (FDACS), the Florida Department of Environmental Protection (FDEP), or the South Florida Water Management District (SFWMD).

Under the RLSP, the local approval process for sending areas and receiving areas involves applicant submittal of a technical report that characterizes the sending area’s natural resources and credits.

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\(^8\) The acronym “RLSP” is used throughout this document to refer to the Rural Land Stewardship Program and its associated elements. The Collier County Land Development Code (LDC), which implements the RLSP, utilizes the acronym “RLSA” to refer to the Rural Land Stewardship Area, the geographic area within which the County’s RLSP policies and codes apply.
generated, a rigorous application review by county planning and environmental staff, issuance of a staff report to the Collier County Board of County Commissioners, a public hearing before the commissioners (with a minimum 15 days’ notice in local newspapers), and majority approval of a resolution by the Board. Easements are recorded in the official County records after Board approval.

For property owners who enter the RLSP and seek to develop land at densities greater than existing zoning, Collier County will not issue any development approvals until the owner obtains (generates or purchases) the quantity of stewardship credits necessary to entitle the development. In essence, this mechanism ensures that the construction of higher-density development (receiving areas) cannot commence until after the associated sending areas are under permanent protection with recorded easements.

The stewardship credit system was calibrated in a manner that protects several acres of native habitat and/or open space in exchange for one acre of higher-density development (the exact ratio depends upon habitat quality and other environmental factors). Implementation of the RLSP is intended to preserve the large regional wetland flowway systems and large blocks of interconnected upland and wetland native habitats that occur within the program area. Skeptics of the RLSP questioned whether the program would protect environmentally sensitive lands as planned. To date, however, over 50,000 acres have been designated for protection under the RLSP, including the vast majority of one regional flowway, and 20,000 acres of high-value panther habitats directly adjacent to the FPNWR and BCNP. A five-year review of the RLSP completed in 2009 concluded that the program was meeting the policy objectives it sought to achieve (Collier County 2009a).

The five-year review resulted in a recommendation that residential and commercial development be capped at 45,000 acres within the RLSP. In order to reach that development cap, the balance of the HCP Area (approximately 107,000 acres, or 70 percent) would be protected permanently, in return for sufficient stewardship credits to entitle the development. Another recommendation was to increase the incentives for agricultural preservation, in order to preserve open space, agriculture, and the rural economy. This landscape-scale mosaic of native habitats and agricultural uses currently supports the Covered Species, as well as other species.

Since 2002, the RLSP policies have been implemented through the Collier County Land Development Code, which provides the detailed standards, procedures, protection mechanisms, site design criteria, and related program elements. The documentation may be accessed online at: https://library.municode.com/fl/collier_county/codes/land_development_code; see Section 4.08).

Several aspects of the RLSP provide assurance that the protection of environmentally sensitive lands (sending areas) will precede any local approvals to begin development activities within designated receiving areas:

- Lands within the RLSA cannot be developed at densities greater than existing zoning (1 dwelling unit per 5 acres) unless a property owner voluntarily enters the program;
• Stewardship credits can only be generated (and officially recorded in the County ledger) through the designation of environmentally sensitive lands as sending areas, which requires the recording of perpetual easements over those lands;

• A receiving area (and its associated development plans) cannot be approved by Collier County unless/until the applicant can demonstrate that it possesses a sufficient number of stewardship credits;

• Therefore, no construction activities within receiving areas may commence until the Collier County staff and the Board of County Commissioners have verified that the required stewardship easements over the associated sending areas have been recorded; that the applicant possesses a sufficient number of credits to entitle the development; and the receiving area development plans are in compliance with the Collier County Land Development Code, Section 4.08.

• Stewardship credits can only be generated and utilized within the RLSA. The system was initially calibrated to limit the extent of potential future development. Current proposed RLSP amendments would enforce a strict cap for receiving areas of 45,000 acres total, and the system would be recalibrated to achieve that policy goal.

Many factors provide assurance that the RLSP will remain in place through the 50-year term of the ITP:

• The RLSP has been in place for over 15 years, and the program is working as designed;

• The RLSP is considered a great planning success by Collier County commissioners, staff, and RLSP stakeholders;

• The first development under the RLSP – the Town of Ave Maria – brought mixed-use economic development to the area and preserved over three acres of environmentally valuable lands for every acre of development;

• The tax base for Collier County is increased by the new developments, and the sending areas (placed under perpetual easements) remain on the County tax rolls;

• All of the requirements of the 1999 Final Order are satisfied through the adoption and implementation of the RLSP.

The RLSP is unlikely to be changed substantially or replaced. If the RLSP were discontinued, all of the benefits listed above would cease. The county’s comprehensive plan would no longer be in compliance with State regulations, and new natural resource protection measures would need to be developed for eastern Collier County (a process that spanned three years until the RLSP was created). There would be a high likelihood of litigation resulting from any new comprehensive plan element for the area, brought by property owners and/or third-party challenges. In short, the RLSP is working so well, and the downsides of changing it substantially are so great, that the probability of such change is exceptionally low.
1.7.3 Added Benefits of the Plan

The RLSP and the Plan work in concert through a combination of economic incentives and regulatory mechanisms to achieve a balanced, sustainable future for the region. The Plan builds upon the goals of the RLSP and increases substantially the conservation benefits that are possible under the RLSP to create a long-term balance between environmental preservation, listed species protection, agriculture, and economic development.

The Plan will integrate with and reinforce the RLSP elements addressed in the section above. The permit holders would be the ECPO members listed in section 1.3. Property bordering the HCP Area owned by other entities could become part of the Plan through Certificates of Inclusion, if acceptable to USFWS (see section 2.4). The Plan itself limits future development to those lands depicted on Figure 2-1 as “Covered Activities,” and caps that development at 45,000 acres. Additionally, under the terms of the ITPs, any development within the HCP Area must provide compensation for panther habitat loss in the form of panther habitat units (PHUs; see Chapter 4). The Plan verifies that sufficient PHUs can be generated by the 107,000 acres set aside for protection in perpetuity.

In addition, the Plan will use the framework provided by the RLSP to provide benefits that extend well beyond those that would be possible through the RLSP alone. These benefits include the following:

- Landscape-level planning that will result in greater conservation benefits than would exist under uncoordinated participation in the RLSP, including systematic preservation of regional wildlife habitat corridors that allow for movement of wildlife among existing public conservation lands in Southwest Florida;

- Incorporation and implementation of the Florida Panther Protection Program (FPPP), a collaboration between ECPO and several leading conservation organizations that integrates a variety of programs, studies, and strategies to enhance and fund a science-based program “to better protect and manage the Florida panther in southwest Florida.” (FPPP 2008).

- Creation and funding of the Marinelli Fund, which will be used for conservation activities that will benefit the Florida panther, as well as other wildlife;

- Coordination with the Service and FWC; and

- Additional monitoring required under the ITPs that is not required under the RLSP.

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9 “The purpose of the Florida Panther Protection Program ... is to facilitate the management and protection of panthers within the Enhanced Protection Area [i.e., RLSP/Plan area] by providing a contiguous range of preserved panther habitat in the Enhanced Protection Area to assist recovery through the use of buffering against panther-human interaction, locating and construction of panther crossings, and the protection, enhancement, restoration, including corridor enhancement or restoration, or acquisition of panther habitat demonstrated to be important to panther protection and management within the Enhanced Protection Area based upon a technical review and analysis of available data...” (excerpt from FPPP MOU between Rural Landowners and Conservation Organizations, June 2008).
The requested term of the ITPs – 50 years – will allow for planning, permitting and completion of contemplated or foreseeable development within the portion of the HCP Area designated for Covered Activities, and for implementation of conservation actions that benefit Covered Species in the portions of the HCP Area designated for Preservation/Plan-Wide Activities and Very Low Density Use.

1.8 SUMMARY OF ALTERNATIVES TO THE ECMSHCP

Chapter 10 of this document describes four basic alternatives considered by the applicants (ECPO), and the reasons why the Plan emerged as the most practicable viable alternative. The four alternatives included: Existing Zoning (no HCP); the Proposed HCP (Plan); a Panther-Only HCP; and a Panther Review Team (PRT) HCP Configuration.

When assessing these four alternatives, it is useful to consider a 2016 academic study of statewide population growth and projected land use, and specifically the projected land use patterns for eastern Collier County. The widely cited “Florida 2070” report (Carr and Zwick 2016) utilized population projections from 2010-2070, the existing gross urban densities (as of 2010), and estimates of developable land (considering proximity of urban centers; absence of wetlands; soil ratings; road densities; and other factors) to model population distributions on 1-acre grid cells in GIS.

Figure 1-2 depicts the Florida 2070 data within the RLSP. In this modeled scenario, approximately 135,000 acres of land would be developed and populated. This 2070 scenario would impact much of the native habitat acreage in eastern Collier County, and would disconnect and fragment regional flowways and wildlife corridors. In short, Figure 1-2 depicts one scenario of how unplanned development patterns contrast with the preservation of unfragmented habitats and habitat linkages under the proposed HCP (Figure 2-1).

The existing Collier County zoning within the HCP Area allows for one dwelling unit per five-acre area, and thus defines one baseline alternative to the Plan. Figure 1-3 illustrates the extent of potential development for the “Existing Zoning” alternative, using the same color scheme as Figure 1-2 to allow for visual comparisons. Under the existing program, over 90,000 acres of land within the RLSP area are designated as “Open” to allow potential development. Approximately half of this acreage could be developed if property owners voluntarily entered the RLSP and developed within receiving areas. Those owners who voluntarily chose not to enter the program and elected to develop at the existing 1:5 zoning could develop the other half of the “Open” lands, bringing the total development footprint (RLSP and existing zoning) to over 90,000 acres. This scenario would preserve the core of the regional flowways, large blocks of habitat, and wildlife corridors, but would preserve far less land and native habitats than the proposed HCP.

The proposed ECMSHCP (Plan), schematically depicted in Figure 2-1, occupies 151,779 acres within the RLSA, and proposes up to 45,000 acres of development (see Chapter 2). The balance of the HCP Area, 107,000 acres, would be placed under perpetual easements that run with the land (see section 2.2). The proposed Plan limits potential development, preserves the greatest land acreage, preserves the greatest extent of native habitats, and protects the existing flowways and wildlife corridors within the RLSP. The proposed...
Corkscrew Regional Ecosystem Watershed

Lake Trafford

Fakahatchee Strand State Preserve

Big Cypress National Preserve

Florida Panther National Wildlife Refuge

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FIGURE 1-2
Florida 2070 Projected Development
August 2018

LEGEND

Rural Land Stewardship Area Boundary

Developed Land (Cair and Zwick 2016)

Conservation Land

Agriculture and Open Space

County and State Roads (not covered in ECMSHCP)

Disclaimer: Stantec assumes no responsibility for data supplied in electronic format. The recipient accepts full responsibility for verifying the accuracy and completeness of the data. The recipient releases Stantec, its officers, employees, consultants and agents, from any and all claims arising in any way from the receipt or use of the data.
FIGURE 1-3
Current RLSP: All Open Land Developed
August 2018

LEGEND

- Rural Land Stewardship Area Boundary
- Developed Land
- Conservation Land
- County and State Roads (not covered in ECMSHCP)

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Corkscrew Regional Ecosystem Watershed
Okaloacoochee Slough State Forest
Big Cypress National Preserve
Florida Panther National Wildlife Refuge
Fakahatchee Strand State Preserve

Development Level
- All Open Land Developed
- Developed Land
- Conserved Land
- Rural Land Stewardship Area Boundary
- County and State Roads (not covered in ECMSHCP)
Plan provides an integrated conservation plan for the Florida panther and eighteen other species on a landscape scale, while the other alternatives lack a long-term plan and would result in ad-hoc development patterns and mitigation.

The third alternative, a “Panther-Only HCP,” would cover the same land area as the proposed Plan (Figure 2-1), but would only cover the Florida panther under the terms of the ITPs. The eighteen other Covered Species would be evaluated by the relevant permitting authorities on a project-by-project basis, and conservation actions for those species would be determined for each project. While the panther would benefit from an integrated conservation plan under the ITPs, the other species would not be “Covered Species.”

The “Panther Review Team (PRT) Configuration” alternative accommodated up to 45,000 acres of development, as does the proposed HCP (see section 10.4). Although much of the potentially developable land area in this alternative overlaps with the proposed Plan, the PRT configuration proposed some additional area for preservation, additional buffers along the Camp Keais and Corkscrew systems, and different configurations for two panther corridors. However, the PRT alternative included approximately 13,000 acres of non-ECPO lands outside the HCP Area in its analyses (see Figure 2-1 and section 2.4). While those lands could eventually be included in the Covered Lands, they are not currently in the Plan. Additionally, the configuration of ECPO land ownership and landowner interests do not align with the PRT configuration, rendering the alternative impracticable.

In summary, the proposed Plan represents the alternative that provides the best opportunity for perpetual preservation of habitats for the Florida panther and the eighteen other Covered Species. The applicants control over 71,000 of the 90,000 acres of the lands designated as “Open” to potential development under the RLSP. Under the HCP, the applicants will limit their development within the RLSA to a maximum of 45,000 acres. In comparing the proposed HCP to a “Panther-Only HCP,” there are clear conservation and regulatory benefits to including the eighteen other Covered Species. Finally, although the PRT alternative proposed a similar development footprint as the proposed HCP, the PRT configuration includes non-ECPO lands outside of the HCP area, and does not align with ECPO land ownership patterns and landowner interests. The proposed HCP therefore represents the most practicable alternative.

1.9 CONCLUSION

The Plan furthers the goal of panther conservation, and conserves many other federally-listed and state-listed species, by working with USFWS to incorporate RLSP and FPPP program elements in a formal plan under Section 10 of the ESA. The RLSP and the Plan synergistically provide assurances at the local and federal levels that conservation measures will be implemented, and that a long-term balance of land uses will be achieved. Using the framework established by the RLSP, the Plan provides landscape-level planning and other benefits that extend well beyond what the RLSP could accomplish alone.

Once issued, the ITPs will specify the rights and responsibilities of all parties to the Plan, and legally bind the parties to its provisions. After several decades of panther research, meetings, agency outreach, and discussions, this Plan finally provides a viable science-based, legally binding federal mechanism for the
realization of Florida panther habitat preservation on private lands, along with preservation of other Covered Species habitat, and a long-range vision for sustainable regional planning in eastern Collier County.
2. PLAN DESCRIPTION AND ACTIVITIES COVERED BY PERMIT

2.1 PLAN DESCRIPTION

The Plan provides a long-term (50-year) framework for the preservation and management of approximately 107,000 acres of privately owned land, located within the 151,779± acres of privately owned lands in eastern Collier County. The approximately 107,000 acres protected through the Plan—the lands that will ultimately be dedicated for Preservation/Plan-Wide Activities and Very Low Density Use at Plan completion (described in section 2.2 below and depicted in Figure 2-1)—comprise an ecologically important landscape-scale mosaic of habitats and land uses that support the Florida panther and seven other federally-listed species. These lands also support one candidate species for federal listing, two species that are under review for federal listing, and eight non-federally-listed species that are listed as threatened by the State of Florida.10

The Plan conserves major regional wildlife habitat linkages, preserving habitat connectivity between the existing public conservation lands to the south of the HCP Area that are part of the panther’s core population area, and between the public conservation lands and dispersal corridors to the north and east of the HCP Area. Specifically, these regional linkages—which are depicted in Figure 2-2—connect the Big Cypress National Preserve (BCNP), Florida Panther National Wildlife Refuge (FPNWR), Fakahatchee Strand State Preserve (FSSP) and Picayune Strand State Forest to the Corkscrew Regional Ecosystem Watershed (CREW), Okaloacoochee Slough State Forest (OSSF), Dinner Island Ranch Wildlife Management Area, Spirit of the Wild Wildlife Management Area, and the panther “Dispersal Zone” (USFWS 2002a; Kautz et al. 2006). The conservation and management of these lands will provide important ecological benefits for the Florida panther, the other Covered Species, and other wildlife, including black bear.

Under the Plan, the traditional, historic, and ongoing rural land uses within the approximately 107,000 acres of protected lands—primarily agriculture and ranching—will continue and will provide the basis for long-term sustainable activities compatible with conserving the Covered Species. Outside of the protected areas, Covered Activities will include up to 45,000 acres (combined total) of residential/commercial development and earth mining within predefined portions of the 151,779±-acre HCP Area, consistent with the Collier County RLSP. These 45,000 acres include the 5,027-acre Town of Ave Maria, for which Federal permitting and section 7 consultations have been completed. The acreage of Covered Activities attributable to the ITPs, therefore, is actually less than 40,000 acres (45,000 – 5,027 = 39,973).

The Covered Activities will occur primarily within previously-cleared agricultural areas that currently possess low proportions of native habitats, and exhibit little native habitat connectivity. These previously-cleared or otherwise disturbed areas generally consist of active agricultural fields, fallow fields, pastures, and other areas managed for agricultural production, which may include minor remnants of native vegetation (e.g., small cypress domes; small depressional wetlands). The Plan will

10 The species covered by the Plan are listed in Tables 1-1, 1-2, and 1-3 (see Chapter 1, Background).
thereby provide prospective, landscape-level management of future development on privately owned
lands, by consolidating and directing development away from more ecologically valuable areas of
interconnected native habitats and toward previously cleared areas with lower habitat support
functions. This integrated landscape approach provides substantial ecological benefits over the
piecemeal, project-by-project approach that typically occurs without landscape-level coordination and
planning of conservation actions among separate, private landowners.

The Plan builds upon the ecological benefits arising from the RLSP (see Chapter 1), augmenting the RLSP
by providing greater certainty for long-term planning of economic activities, as well as habitat
preservation for the Florida panther and other Covered Species, through extensive preservation of
habitats and regional wildlife corridors. The Plan institutes a 50-year integrated framework, and will
reduce planning risks and regulatory uncertainties for property owners, regulatory agencies,
environmental advocates, and the general public. Expanding upon the potential benefits of the RLSP,
the Plan will provide the following benefits that will further long-term protection goals for the Florida
panther and other Covered Species:

- Preservation, through conservation easements, of approximately 107,000 acres of land, which
  include existing regional wildlife corridors (“critical linkages”) that provide landscape-scale
  “ecological greenways” among existing public conservation lands;

- Maintenance of lands designated as Preservation/Plan-Wide Activities and Very Low Density
  Use, to preserve the ecological value of those lands for Covered Species, through land
  management practices such as control of invasive plant species;

- Minimization of adverse impacts to Covered Species (e.g., concentrating and directing
  development to the more heavily developed western portions of the RLSP; directing lights and
  noise away from habitat);

- Monitoring potential impacts of the Covered Activities to listed species and their habitat to
  ensure that impacts are accounted for and minimized; and

- Incorporation and implementation of the Florida Panther Protection Program (FPPP).

The Plan will also provide funding for activities undertaken through the Paul J. Marinelli Florida Panther
Protection Fund (the Marinelli Fund, described in Chapter 9). The Marinelli Fund was established
through the FPPP to fund panther conservation activities. In 2016, the FPPP expanded the potential
scope of the Fund’s uses to include funding conservation activities to benefit other Covered Species, in
addition to the panther. The Plan will support the Marinelli Fund through (i) contributions to be made
on a per-acre basis as Covered Activities are initiated and (ii) transfer fees to be paid on a per-unit basis
as homes within the HCP Area are sold and re-sold. Initiatives to benefit the Florida panther and other
Covered Species will be undertaken at the discretion of the Fund’s Board of Directors, and are expected
to include funding for activities such as the following:
• Restoration, enhancement, and management of habitat within the HCP Area, including enhancement of wildlife corridors (the “North” and “South” corridors, described in section 2.2 infra, with areas to be enhanced depicted as arrows on Figure 4-9) that facilitate landscape-scale movement of panther and black bear, in addition to other wildlife;

• Construction of panther and other wildlife crossings on roadways within the HCP Area;

• Land acquisition, enhancement, and/or management, providing additional habitat for panther and other Covered Species; and

• Scientific research relevant to conservation of the species addressed by the HCP.

Figure 2-1 depicts the extent of the HCP Area within the RLSA, the areas designated for Covered Activities (residential/commercial development and earth mining), Preservation/Plan-Wide Activities, Very Low Density Use, and Base Zoning (each described below). The Plan sets forth the acreage and general location for each of the designated uses (Figure 2-1). Precise locations will be determined in the future.

The Plan designates 97,086 acres as “Preservation/Plan-Wide Activities.” The Plan also designates a 50,175-acre area where Covered Activities may occur, but caps the total for Covered Activities at 45,000 acres. Thus, 45,000 acres of Covered Activities may occur anywhere within this 50,175-acre area. The unused balance (5,175 acres) will be placed in the “Preservation/Plan-Wide Activities” designation, bringing the total of that designation to 102,261 acres. The Plan designates 2,087 acres “Very Low Density Use,” indicating areas that may be used for such purposes as isolated residences, lodges, and hunting/fishing camps. In the event this property is used for such purposes, any construction would be limited to no more than one dwelling unit per 50 acres. Finally, the 2,431-acre area within the HCP Area that makes up the Half Circle L Ranch is currently identified as “Base Zoning.” These lands are located in an RLSP “Open” overlay area, where either development or preservation can occur under RLSP regulations, and where base zoning (1 dwelling unit per 5 acres) under the Collier County Land Development Code applies. The Half Circle L Ranch is for sale on the open market, and the current property owner is a member of the FPPP and an applicant for an ITP (see section 2.5).

Figure 2-2 provides a regional view that illustrates how areas within the HCP Area designated for Preservation/Plan-Wide Activities serve to link existing public conservation lands. Table 2-1 summarizes the current land use and land cover within the HCP Area, by land designation category.

The primary elements of the Plan are outlined in sections 2.2 and 2.3 below. The first two elements – Preservation/Plan-Wide Activities and Very Low Density Use – currently occur and/or will occur within the approximately 107,000 acres slated for permanent protection. The Covered Activities (residential/commercial development and earth mining activities), will occur on up to 45,000 acres within the 50,175 acres identified for Covered Activities described in section 2.3 (“Activities Covered By Incidental Take Permit”).
Note: The location of Covered Activities was delineated in a Geographic Information System (GIS) to define the location, extent, and general configuration of where these Covered Activities may occur over a 50-year timeframe. The acres depicted in Covered Activities total approximately 50,175 acres. The actual total acreage of Covered Activities is constrained by the ECMSHCP to 45,000 acres within the HCP boundary. The exact configuration of Covered Activities will be refined during the design and permitting processes for each project.
Table 2-1. Existing land use / land cover within the ECMSHCP, by land designation category.

<table>
<thead>
<tr>
<th>LAND USE / LAND COVER CATEGORY</th>
<th>COVERED ACTIVITIES (ACRES)¹</th>
<th>PRESERVATION/PLAN-WIDE ACTIVITIES (ACRES)²</th>
<th>VERY LOW DENSITY USE (ACRES)³</th>
<th>BASE ZONING (ACRES)⁴</th>
<th>TOTAL ACRES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban / Infrastructure</td>
<td>2,203</td>
<td>164</td>
<td>10</td>
<td>4</td>
<td>2,381</td>
</tr>
<tr>
<td>Mining / Oil and Gas</td>
<td>0</td>
<td>334</td>
<td>445</td>
<td>0</td>
<td>779</td>
</tr>
<tr>
<td>Pastures (Improved)</td>
<td>5,126</td>
<td>9,467</td>
<td>446</td>
<td>1,211</td>
<td>16,250</td>
</tr>
<tr>
<td>Cropland / Pasture</td>
<td>15,795</td>
<td>9,481</td>
<td>0</td>
<td>568</td>
<td>25,844</td>
</tr>
<tr>
<td>Citrus groves / other groves</td>
<td>19,842</td>
<td>8,287</td>
<td>0</td>
<td>1</td>
<td>28,130</td>
</tr>
<tr>
<td>Other Agriculture Rural Open Lands</td>
<td>1,730</td>
<td>4,457</td>
<td>117</td>
<td>0</td>
<td>6,304</td>
</tr>
<tr>
<td>Exotic Plants</td>
<td>377</td>
<td>541</td>
<td>2</td>
<td>0</td>
<td>920</td>
</tr>
<tr>
<td>Native upland non-forested</td>
<td>428</td>
<td>1,009</td>
<td>138</td>
<td>0</td>
<td>1,575</td>
</tr>
<tr>
<td>Native upland forested</td>
<td>1,775</td>
<td>9,791</td>
<td>307</td>
<td>16</td>
<td>11,889</td>
</tr>
<tr>
<td>Native wetland non-forested</td>
<td>2,101</td>
<td>25,672</td>
<td>169</td>
<td>536</td>
<td>28,478</td>
</tr>
<tr>
<td>Native wetland forested</td>
<td>796</td>
<td>27,717</td>
<td>442</td>
<td>93</td>
<td>29,048</td>
</tr>
<tr>
<td>Water</td>
<td>0</td>
<td>161</td>
<td>10</td>
<td>0</td>
<td>171</td>
</tr>
<tr>
<td><strong>TOTALS PER FIGURE 2-1⁵</strong></td>
<td><strong>50,175</strong></td>
<td><strong>97,086</strong></td>
<td><strong>2,087</strong></td>
<td><strong>2,431</strong></td>
<td><strong>151,779</strong></td>
</tr>
<tr>
<td><strong>TOTALS AT PLAN COMPLETION⁶</strong></td>
<td><strong>45,000</strong></td>
<td><strong>102,261</strong></td>
<td><strong>2,087</strong></td>
<td><strong>TBD</strong></td>
<td><strong>151,779</strong></td>
</tr>
</tbody>
</table>

¹ “Covered Activities” may occur anywhere within the 50,175-acre area shown on Figure 2-1, but will be capped at 45,000 acres total. The balance of acreage between Figure 2-1 and the 45,000-acre cap (5,175 acres) eventually will be placed into “Preservation/Plan-Wide Activities.”

² “Preservation/Plan-Wide Activities” (102,261 acres) refers to land areas preserved at Plan completion.

³ “Very Low Density Use” refers to isolated rural structures (lodges, camps), and the acreage contributes to habitat support for Covered Species.

⁴ “Base Zoning” was retained on the Half Circle L Ranch, and refers to a maximum of 1 dwelling unit per 5 acres. See section 2.5 of text.

⁵ The “Totals Per Figure 2-1” are reported from GIS calculations. The sum for each land designation category may differ by up to 0.1% due to rounding.

⁶ “Totals at Plan Completion” reflect the 45,000-acre cap for “Covered Activities,” with the balance of land dedicated to the other land designations. The “TBD” (To Be Determined) notation reflects the fact that the Half Circle L Ranch is currently for sale, and its current zoning is retained until the current or new property owner places the land into a specific designation under the ECMSHCP.
2.2 PRESERVATION/PLAN-WIDE ACTIVITIES AND VERY LOW DENSITY USE

Activities that may occur in the lands designated for Preservation/Plan-Wide Activities include the types of agricultural, ranching, and other rural activities that have occurred throughout the HCP Area historically, and are expected to continue into the future. These predominantly agricultural activities preserve the current extent and function of the landscape-scale mosaic of habitats and land uses in this area that support the Covered Species, and are consistent with the protection of lands under the Plan.

These include activities such as the following:

- Crop Cultivation;
- Ranching/Livestock Operations;
- Forestry and Silviculture;
- Recreation;
- Exotic and Nuisance Species Control; and
- Oil and Gas Exploration and Production.

Many of these activities have generally occurred for a century or more in eastern Collier County, and in their present form are compatible with use of the lands designated for Preservation/Plan-Wide Activities and Very Low Density Use by the Covered Species. Some historic land use practices, such as the establishment and maintenance of pastures, directly benefit one or more Covered Species (e.g., northern crested caracara; Florida burrowing owl; Florida sandhill crane). In addition, existing land management practices may benefit the Covered Species. For example, prescribed burning benefits the Florida panther, gopher tortoise, and Eastern indigo snake; water retention area management may benefit wood stork and snail kite; and control of exotic species benefits the Florida panther and many of the other Covered Species). Allowing these activities to continue also provides the opportunity for long-term agricultural use of lands, environmentally beneficial land management, and species conservation within a contiguous regional landscape.

Active oil and gas production has occurred within the HCP Area since the 1940s, and remains ongoing. Long-term radiotelemetry data and GPS data demonstrate that oil and gas production is compatible with utilization of the surrounding habitat by the Florida panther. No adverse effects of oil and/or gas exploration or production have been documented for the Covered Species within the HCP Area, and no incidental take of Covered Species is expected based on these activities. The oil and gas activities conducted in the HCP Area are subject to regulation and permitting by the State of Florida (FDEP) and Federal agencies. Under the Plan, oil and gas exploration and production are activities that may occur anywhere within the HCP Area, as there are inherent uncertainties related to locating productive oil and gas reserves.
The permittees will also have the option of using the 2,087-acre area designated for Very Low Density Use for such purposes as isolated residences, lodges, and hunting/fishing camps (see Figure 2-1, Very Low Density Use). Any construction in this area would be limited to no more than one dwelling unit per 50 acres, with no more than 10 percent of the total existing native vegetation subject to clearing. The low density of any development on these lands, and restrictions on clearing, would be compatible with the panther’s continued use of these lands.

The Plan will designate the vast majority (approximately 107,000 acres, or 70%) of the HCP Area as Preservation/Plan-Wide Activities and Very Low Density Use, which represent over 92 percent of the native habitats found within the HCP Area. This will ensure that the approximately 107,000 acres of contiguous lands will continue to support the needs of the Florida panther and other Covered Species through preservation, management, and ecological restoration (to be initiated through the Marinelli Fund where feasible). These lands include large blocks of native habitat where panthers have been documented extensively (Maehr 1990; USFWS 2002a; FPPP Technical Review Team [FPPPTRT] 2009).

The Plan includes the following activities that are collectively designed to meet biological goals and objectives for the Covered Species within the HCP Area:

**Extensive, Contiguous Land Preservation.** The primary ecological benefit of the Plan is the designation of approximately 107,000 acres of contiguous lands for Preservation/Plan-Wide Activities and Very Low Density Use by Plan completion. These vast interconnected lands support the Florida panther as the Plan’s major “focal species” (Beier 2010), as well as the other Covered Species. The approximately 107,000 acres of contiguous lands contain an ecologically valuable landscape-scale mosaic of native habitats and agricultural land uses that are utilized by the Florida panther and the other Covered Species. The preservation of these lands, which include two existing regional wildlife corridors – the Camp Keais Strand and Okaloacoochee Slough flowways – has been a goal of conservationists dating back several decades, and a goal identified specifically with respect to the panther since the 1980s (Belden et al. 1988; Maehr 1990; Logan et al. 1993). The Plan will prevent impacts that would have resulted from more intensive uses or development of the land designated for Preservation/Plan-Wide Activities and Very Low Density Use; preserve large, interconnected blocks of panther habitat; and minimize potential impacts of future development by concentrating and directing that development toward existing development and previously cleared areas in the western portions of the HCP Area, in the area designated for Covered Activities.

As residential/commercial and earth-mining activities are approved and implemented in the area designated for Covered Activities, commensurate acreages within the lands designated for Preservation/Plan-Wide Activities and Very Low Density Use will be placed under perpetual conservation easements to compensate for permitted impacts. The conservation easements will run with the land and will be held by a State of Florida agency (FWC, FDACS, FDEP, or SFWMD), with USFWS retaining full third-party enforcement rights. A summary of the current acreage of various types of land cover and land use within the approximately 107,000-acre area that will be designated for Preservation/Plan-Wide Activities and Very Low Density Use is provided in Table 3-1, and depicted in Figure 3-4 (see Chapter 3, Environmental Setting). These phased land preservation activities will be augmented by the land
management, mitigation, and monitoring activities described below, which will preserve and enhance
the ecological function of these lands.

**Management of Preserved Lands.** The lands designated for Preservation/Plan-Wide Activities and Very
Low Density Use will be managed to preserve their existing ecological functions. Many of the activities
that already occur within the lands designated for Preservation/Plan-Wide Activities, such as exotic and
nuisance species control and pasture management, will benefit some or all of the Covered Species. The
land management activities will be performed by the permittees and/or their agents, as has been done
for the past several decades.

The management activities that may occur within areas designated for Preservation/Plan-Wide Activities
and Very Low Density Use in native habitat areas include, but are not limited to: exotic and nuisance
species control; prescribed burning; mechanical control of excessive forest understory/fuel loads; tree
thinning to improve native forest productivity; mechanical, hydrologic, and/or chemical control of
vegetation to improve community structure and/or plant species diversity; construction and
maintenance of surface water management structures for preservation or enhancement of
existing/natural hydrologic function; scouting and monitoring of lands on foot, horseback, or by vehicle.

The management activities that may occur within areas designated for Preservation/Plan-Wide Activities
and Very Low Density Use in areas with non-native land cover types (predominantly agricultural fields
and pastures) include a subset of the activities as listed above: crop cultivation; ranching/livestock
operations; forestry and silvicultural operations; and exotic and nuisance species control. Collectively,
these predominantly agricultural management activities will preserve the ecological functions of the
area by maintaining healthy agro-ecosystems, controlling invasive species, and providing varying
degrees of direct habitat support to some or all of the Covered Species.

**Mitigation and Monitoring.** The designation of these lands for Preservation/Plan-Wide Activities and
Very Low Density Use provides an effective framework for the implementation of systematic (rather
than *ad-hoc*) mitigation and monitoring activities within the HCP Area. The Plan will restrict
residential/commercial development activities and earth mining (section 2.3) to areas designated for
Covered Activities, which are largely previously cleared or otherwise disturbed areas with little native
panther habitat and little habitat connectivity. Potential impacts to the Florida panther and the other
Covered Species will be covered under ITPs issued to the applicants, which will provide for appropriate
levels of mitigation and subsequent monitoring. Consistent with the RLSP, and as specified by USFWS
under the ITPs, mitigation will be provided by placing conservation easements on lands designated for
Preservation/Plan-Wide Activities as development in the area designated for Covered Activities occurs.
Monitoring will be conducted by the permittees and/or their agents to verify mitigation compliance,
with USFWS having access to the preservation areas, monitoring data, and aerial imagery to
independently monitor site conditions.

Additional mitigation activities may include: wildlife mitigation activities designed to benefit one or
more of the Covered Species, in coordination with USFWS and/or FWC; and wetland mitigation activities
required by Federal and/or State resource agencies, including the U.S. Army Corps of Engineers (USACE),
Wildlife mitigation activities may include habitat enhancement (invasive species control, prescribed burning, supplemental planting, etc.); hydrologic enhancement (increasing/decreasing seasonal high water to influence community composition); surface water management for species-specific requirements (e.g., northern caracara, wood stork, Everglade snail kite); and wetland creation, restoration, and/or enhancement.

**Preservation of Existing Panther Movement Corridors.** Several planning and conservation efforts have identified the potential benefit of creating and/or enhancing wildlife movement corridors within Southwest Florida and eastern Collier County (Collier County 2009b; FPPPTRT 2009; Love 2013). As part of a comprehensive mitigation program, the Plan sets aside lands designated for Preservation/Plan-Wide Activities and Very Low Density Use that will allow for preservation of these corridors, which link large blocks of preserved habitat within and beyond the HCP Area. As depicted schematically in Love (2013), setting aside these lands will allow for the enhancement of two corridors within the HCP Area: one corridor linking the Corkscrew Marsh system with the Okaloacoochee Slough system (“North” corridor); and another corridor linking habitats just east of SR 29 to the middle portions of the Okaloacoochee Slough (“South” corridor) (See Chapter 4, Florida Panther, and Figure 4-9). The Marinelli Fund could be used to fund activities to enhance the utility of these corridors through the planting of native vegetation used as cover by the panther and other Covered Species. Additionally, where these panther movement corridors intersect roadways, the Marinelli Fund could be used to fund activities to arrange for construction of fenced wildlife crossings to ensure safe passage of panthers and other wildlife through the landscape.

### 2.3 ACTIVITIES COVERED BY INCIDENTAL TAKE PERMIT

The Plan proposes two general categories of Covered Activities that will be conducted by or under the direction or control of the applicants: (i) residential/commercial development and (ii) earth mining. Upon full implementation of the Plan, including full build-out of the up to 45,000 acres of land within the 50,175 acres designated for Covered Activities, the areas that will be designated for Preservation/Plan-Wide Activities and Very Low Density Use will encompass approximately 107,000 acres within the HCP Area, with the land permanently protected under conservation easements. The land utilized for Covered Activities will be capped at a maximum combined total of 45,000 acres, but as indicated above, the maximum combined total attributable to the ITPs will be less than 40,000 acres due to the inclusion of the Town of Ave Maria.

The applicants are seeking authorization for incidental take of the Covered Species resulting from Covered Activities conducted by or on behalf of the applicants, their lessees, their contractors, and/or holders of Certificates of Inclusion,¹¹ that may occur within the pre-defined “Covered Activities” land designation areas within the HCP Area (Figure 2-1). The applicants request that ITPs be issued to the

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⁠1¹ See section 2.4, below.
Plan applicants at the conclusion of Plan development. Any other activities that may potentially affect federally-listed species are not covered by the Plan.12

As shown in Figures 2-1 and 2-2, and summarized in Table 2-1, the Plan will accommodate up to a maximum of 45,000 acres of residential/commercial development and earth mining, in areas largely already cleared for agriculture that have low qualities of native habitat and little or no native habitat connectivity. The Town of Ave Maria (5,027 acres) will be included in this 45,000-acre cap.13 The Covered Activities will be phased over the 50-year duration of the ITPs. The number of residences that could be present at full buildout (within a maximum of 45,000 acres), based on data from the Ave Maria and the proposed Rural Lands West (aka Collier Ranch) projects, is estimated to be 91,480 units, corresponding to a projected population of 174,000 residents. This analysis is based upon the approved land uses, densities and intensities for the existing Ave Maria development, and comparable planning data for Rural Lands West, which represent the best available data for making forward-looking projections within the HCP Area. Ave Maria and Rural Lands West reflect an overall density of 2.5 dwelling units per gross acre, consistent with past and current market demands in Southwest Florida and consistent with data used in Carr and Zwick (2016, Appendix 2).

Prior to the conversion of a given tract within the “Covered Activities” areas designated for development and/or earth mining activities (Figure 2-1), pre-existing activities (section 2.2) can continue to occur. At any given time during the 50-year ITP duration, the total area designated for development will be a mix of agricultural lands, earth mining, and residential/commercial development, but at no time will the combined acreage of residential/commercial development and earth mining within the area designated for Covered Activities exceed 45,000 acres. The residential/commercial development and earth mining activities included in the Plan, for which incidental take authorization is requested, are described in the following bulleted paragraphs.

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12 For example, the ITPs will not authorize or control incidental take (or any other form of take) resulting from activities of third parties (e.g., actions that are not conducted by or on behalf of the applicants), such as collisions between vehicles and panthers or other Covered Species on roadways external to development projects. Collisions between vehicles and panthers or other Covered Species, are not expected during construction and maintenance of roads internal to development areas permitted under the ITPs, based on factors such as the low speed of travel of construction and maintenance vehicles on these roads and relatively lower likelihood of Covered Species crossing roads, and therefore take coverage for such collisions on these internal roads is not requested. In addition, the ITPs will not cover potential vehicle collisions with panthers or other Covered Species by third parties on roadways internal to development areas or any other roadways within the HCP Area (whether public or private). For example, roadway improvements conducted as part of county and/or State programs, are not covered by the Plan, including improvements made pursuant to any current or future Long-Range Transportation Plans (LRTPs) developed by the Collier County Metropolitan Planning Organization (MPO).

13 As described in Chapter 1, there are two parcels of land located within the RLSA (and the outer boundaries of the HCP Area) – the Hogan Island Quarry and the Immokalee Sand Mine – that are owned by ECPO members but are not included in the HCP Area or as Covered Activities because the Federal permitting process for each, including section 7 consultations, is either already complete or is expected to be complete by the time the ITPs are issued. These two parcels are accounted for in the overall configuration and planning for wildlife corridors and other ecologically beneficial features of the Plan.
Residential/Commercial Development. These activities include the planning, design, permitting, and construction of mixed-use residential communities and associated commercial facilities, along with infrastructure internal to the development footprint necessary to support these activities. Land uses within these developments may include, but are not limited to: single-family housing; multi-unit housing; public and private institutional facilities; commercial space; office space; retail establishments; surface water management; internal roadways; utilities; open space (e.g., parks, landscaping buffers, lakes); and other elements typical of mixed-use developments. Wherever feasible, developments will employ environmentally friendly planning and designs, such as clustering, low-impact development, water reuse techniques, and greenspace buffers. These activities are subject to local, State, and Federal regulatory programs related to the establishment and operation of residential/commercial developments.

Earth Mining. These activities include the planning, design, permitting, construction, operation, and decommissioning of surface earth mines. Within the area designated for Covered Activities, the earth materials extracted will be soil, sand, limestone, and similar earth materials used for construction fill, roadway fill, landscaping, and similar uses. Earth mines may occur as a prelude to future land uses, such as development, or may occur as an end-use. Permitting and regulation of earth mining activities is administered by USACE, FDEP, and Collier County.

Land Management. In addition to the Covered Activities, the applicants also seek take coverage for land management and maintenance activities to be conducted within the lands designated as Plan-Wide/Preservation and Very Low Density Use will require periodic land management in perpetuity to maintain or improve habitat functions; maintain agriculture operations; maintain drainage infrastructure; control exotic vegetation; and control pests and diseases. Under the Plan, these activities will be performed by the applicants or their agents, as the applicants have successfully done for many decades. The activities include land management techniques such as prescribed burning; mechanical control of groundcover (e.g., roller chopping, brush-hogging, mowing); ditch and canal maintenance; mechanical and/or chemical control of exotic vegetation; soil tillage; and similar activities that maintain or improve land quality. The applicants also seek take coverage for these activities.

2.4 CERTIFICATES OF INCLUSION HOLDERS AND LESSEES

The permit applicants seek incidental take authorization for the Covered Activities, up to a maximum footprint of 45,000 acres, which will occur within the 50,175-acre area designated for Covered Activities on Figure 2-1. This incidental take authorization will extend to the applicants’ subsidiaries, employees, lessees, and contractors, and other parties carrying out otherwise lawful activities conducted under the direction of the applicants and in compliance with the terms of the ITPs.

Although the applicants (ECPO members) own the entirety of the 151,779± acres within the HCP Area, non-ECPO private property owners hold over 20,000 acres of land (as calculated from the Collier County Property Appraiser database) within the RLSA where the Plan is set. Figure 2-1 depicts these non-ECPO private property holdings as “Eligible for HCP Inclusion” within the RLSP boundary. Some of these non-ECPO lands possess conservation value that could augment the conservation benefits provided by the
Plan, should the current or future non-ECPO property owners choose to add some or all of their land to the Plan.

Given the 50-year duration of the ITPs, the intent of this Plan element is to provide additional flexibility in implementing the Plan, while adhering to the 45,000-acre limit for Covered Activities. The goal is to recognize the possibility that future land transfers, purchases of new conservation lands, conservation incentives, or other mechanisms may provide new opportunities for enhancing the Plan, especially for the Florida panther.

Programmatic HCPs, such as those implemented by counties or states, often include a mechanism for non-participating property owners to participate in an HCP after issuance of the ITP. The reason for doing this is to facilitate the assembly of a wider and/or more complete conservation area and comprehensively address activities within the area to the extent practicable. In such cases, a “Certificate of Inclusion” may be issued, which conveys the incidental take authorization to the new participant, while maintaining the take limitations and conservation requirements of the ITP.

At least one private-sector HCP – the Tehachapi Uplands Multiple Species Habitat Conservation Plan – has utilized this mechanism. The permit applicants recognize the potential benefits of such an approach for augmenting the Plan, and also for providing flexibility in responding to changed or unforeseen circumstances. The use of “Certificates of Inclusion” would not result in any increased take, reduce the conservation benefits specified in the ITP, or result in changes to the extent of Covered Activities, but would provide a means for flexibly enhancing the Plan.

2.5 BASE ZONING AREA

Figure 2-1 depicts a “Base Zoning” area on 2,431 acres comprising the Half Circle L Ranch, east of Immokalee. These 2,431 acres represents an RLSP “Open” overlay area, where either development or preservation could occur under RLSP regulations, and where base zoning (1 dwelling unit per 5 acres) under the Collier County Land Development Code applies. As of this writing, the Half Circle L Ranch is for sale on the open market. Although the current property owner is a member of the FPPP and an applicant for an ITP, it is not currently known what land designation may ultimately be applied to these 2,431 acres in the event of a sale. State and county conservation acquisition programs (Florida Forever and Conservation Collier) have targeted the property for potential acquisition.

The status of this property is expected to be resolved during the timeframe for USFWS review of the HCP document, completion of the NEPA process, and processing of the ITP applications. For the purposes of this draft of the HCP document, the Base Zoning area is simply identified, and counts neither as land designated for Covered Activities, or for Preservation/Plan-Wide Activities or Very Low Density Use. If the current owner or a future owner that elects to participate in the Plan chooses not to develop the area, it will be included in the Plan as land designated for Preservation/Plan-Wide Activities. If the current owner or a future owner that elects to participate in the Plan chooses to develop the area at base zoning or higher densities, the development footprint will be included under the 45,000-acre cap for Covered Activities, and 2,431 acres that would have otherwise been designated for Covered Activities will be included in the area designated for Preservation/Plan-Wide Activities. If the area is
purchased by a person or entity that chooses not to participate in the Plan, the property will be removed from the HCP Area, and take coverage will not be provided for that area. Exclusion of Half Circle Ranch from the HCP Area would have the effect of reducing the total area designated for Preservation/Plan-Wide Activities and Very Low Density Use to approximately 104,350 acres.

Regardless of the eventual status of the Half Circle L Ranch property under the HCP, or whether the property remains within the HCP, the Plan as described will still be robust and viable in terms of its overall design, conservation value, and regulatory compliance. In particular, the Half Circle L Ranch comprises a relatively small portion (only 1.6 percent) of the HCP Area. The Plan-Wide/Preservation and Very Low Density Use habitat acreage preservation areas and/or specific habitat restorations (e.g., caracara habitat) will more than fully offset anticipated take and will exceed the mitigation required for the Florida panther and the other Covered Species habitat impacts occurring within the Covered Activities areas, even if Half Circle L Ranch (the Base Zoning Area) or another 2,431-acre area is not added to the lands designated for Preservation/Plan-Wide Activities.

The ECPO members do not anticipate other applicants will decide to withdraw their ITP application. In the event that an ECPO member withdraws its ITP application and as a result the amount of Plan-Wide/Preservation and Very Low Density Use habitat acreage is not sufficient to fully offset take or exceed the mitigation required for the Florida panther and the other Covered Species, which is not expected, the ECPO members will work with the Service to proportionally reduce the amount of acreage available for covered activities under this Plan.

2.6 OTHER TAKE AVOIDANCE AND MINIMIZATION MEASURES

The primary avoidance and minimization measure for potential impacts to the Florida panther and other Covered Species is the strategic designation of approximately 107,000 acres of contiguous lands for Preservation/Plan-Wide Activities and Very Low Density Use (Figure 2-1). Within the 45,000 acres proposed for Covered Activities, multiple avoidance and minimization measures will be implemented at project-level scales as part of project planning, design, permitting, and construction. The Plan’s direction of development toward less ecologically valuable, previously cleared areas, and preservation of more ecologically valuable contiguous areas of land, serves as a significant avoidance and minimization strategy. Other project-level avoidance and minimization measures for the Covered Species are described in Chapter 4 (Florida Panther) and Chapter 7 (Conservation Plan for Other Covered Species).

2.7 OTHER PLAN ELEMENTS

A major benefit of the Plan is the opportunity for coordination with the FPPP (see Chapters 1 and 9). The FPPP is a collaborative effort among the applicants and several major environmental groups to assist in the conservation and recovery of the Florida panther. A central component of the FPPP is the establishment of the Marinelli Fund, which will be governed by its own board of directors, and will be funded by the Plan.
The Fund will be underwritten by (i) contributions to be made on a per-acre basis as Covered Activities are initiated and (ii) transfer fees to be paid on a per-unit basis as homes within the HCP Area are sold and re-sold (see Chapter 9 for more detail). In addition to possible creation and/or enhancement of the North and South Corridors (described above), the Marinelli Fund may be used for a variety of conservation activities that assist with panther recovery, such as design and construction of wildlife underpasses and fencing along roadways to prevent wildlife vehicle collisions; panther habitat acquisition, management, restoration and/or enhancement; and other activities that are consistent with the FPPP goals; the Fund may also be used to benefit the other Covered Species (Chapter 9).

The Plan also identifies the potential for changed and unforeseen circumstances (see Chapter 8). Examples of reasonably foreseeable changed circumstances include the potential impacts of hurricanes; wildfires; pests, and diseases affecting Covered Species and/or their habitats; effects of climate change; and new listings of species not covered by the Plan. The Plan also incorporates measures for responding to changed circumstances that may impact one or more Plan elements. Under USFWS’s “No Surprises” rule, permittees are not required to provide additional resources or funds to address unforeseen circumstances.

The Plan identifies alternatives to the issuance of the ITPs as proposed under the Plan, and explains why the other alternatives were not selected (see Chapter 10, Alternatives).

The detailed provisions for implementing this Plan will be incorporated into the terms and conditions of the ITPs, which will specify the mutual obligations of the applicants and USFWS for executing the Plan elements, and for carrying out the Plan in accordance with Federal regulations.
3. ENVIRONMENTAL SETTING

This chapter describes the environmental setting for the Plan, including the regional ecosystem relationships; climate; topography; geology; soils; land cover/land use; hydrology; and hydrogeology. Detailed accounts of the ecology of the Covered Species are provided in Chapter 4 (Florida Panther), and Chapter 5 (Other Covered Species). These chapters include information related to habitat requirements and utilization, ecological relationships among/between listed and non-listed wildlife species, and species occurrence within the HCP Area. Together, the environmental setting and species accounts provide the baseline conditions for the design and implementation of the Plan.

All figures included in this chapter depict the Collier County RLSA boundary, within which the Plan occurs (Figure 2-1), to cartographically simplify the figures so area-wide patterns in environmental variations can be visualized easily without interference from depictions of internal Plan boundaries.

3.1 GENERAL ENVIRONMENTAL SETTING

The general environmental setting for the Plan can best be described in terms of “ecoregions.” Ecoregions are broadly defined as geographic areas possessing similar ecosystems, classified either by single factors (e.g., vegetation) or multiple factors (e.g., climate, vegetation, geology, topography, hydrology, and soils). The purpose of ecoregion classification and mapping is to provide a resource-based framework for environmental assessment, research, monitoring, and management of ecosystems and their associated components. As such, ecoregion classification assists with environmental characterization and is useful for regional conservation planning.

Federal agencies have utilized a variety of schemes to classify and map environmental attributes at various scales, according to agency needs. USFWS has divided peninsular Florida into two major ecosystem units – North Florida and South Florida – based primarily on regional watersheds and county boundaries (USFWS 2000). The U.S. Environmental Protection Agency (USEPA) has delineated finer-scale ecoregions within Florida, determined by the interactions of multiple environmental factors, including climate, vegetation, geology, topography, hydrology, soils, human land use, and other abiotic and biotic factors (Omernik 1987; Griffith et al. 1994). USEPA “Level IV” ecoregions correspond most closely to the interrelated ecological characteristics and gradients within and around the HCP Area. See https://www.epa.gov/eco-research/ecoregion-download-files-state-region-4#pane-08.

Figure 3-1 shows the location of the HCP Area relative to the “Level III and IV Ecoregions of Florida” map (USEPA 2012). The majority of the HCP Area is located within the “Southwestern Florida Flatwoods” Level IV ecoregion (Figure 3-1, Ecoregion 75b), specifically within a physiographic division known as the Immokalee Rise (Brooks 1981a; Griffith 1997). The Immokalee Rise comprises a local topographic high between the Caloosahatchee River valley and Big Cypress, with extensive uplands, large slough (flowway) wetland systems, and depressional wetlands (see section 3.3). Within this portion of the HCP Area, the total acreage of non-hydric soils, native upland communities, and agricultural land uses exceeds the total acreage of hydric soils and wetlands (FWC and FNAI 2016).
FIGURE 3-1
Florida Ecoregions
Level III & IV Ecoregions
August 2018

LEGEND

75 Southern Coastal Plain
75b Southwestern Florida Flatwoods
75c Central Florida Ridges and Uplands
75d Eastern Florida Flatwoods

76 Southern Florida Coastal Plain
76a Everglades
76b Big Cypress
76c Miami Ridge/Atlantic Coastal Strip
76d Southern Coast and Islands

Rural Land Stewardship
Area Boundary
County Boundary
The southern portion of the HCP Area, roughly located south of Oil Well Road and adjacent to the FPNWR, comprises a lower elevation landscape with a higher proportion of hydric soils and native wetland communities (wetland forests, wet prairies, and freshwater marshes). Local topographic highs within this landscape support upland forests and some areas have been historically utilized for agriculture. This southern area falls within the “Big Cypress” Level IV ecoregion, part of the greater “Southern Florida Coastal Plain” ecoregion (Figure 3-1, Ecoregion 76b). Topography, soils, vegetation communities, and drainage networks within the Big Cypress Level IV ecoregion are generally similar to those found elsewhere within the HCP Area, but differ primarily in extent and proportion from those found on the Immokalee Rise ecoregion. For example, forested wetlands occur throughout the HCP Area, but comprise a much greater proportion of the land area south of Oil Well Road as compared to areas to the north (see Figure 3-4).

The HCP Area is topographically and hydrologically separated from the Everglades ecoregion to the east by the Immokalee Rise in southern Hendry County, and the Big Cypress Spur topographic feature along the Collier, Broward, and Miami-Dade County boundaries (USEPA 2012; Brooks 1981; White 1970).

The following sections briefly summarize the major environmental attributes found within the HCP Area, which interact on a landscape-level scale to influence the ecosystem patterns that are reflected in the ecoregion mapping (Figure 3-1).

3.2 CLIMATE

The climate of southwestern Florida and the HCP Area can generally be described as humid sub-tropical, with a hot and humid wet season and a cool dry season (Peel et al. 2007). The wet season months extend from June through October, with October representing the wet-to-dry season transition. The dry season extends from November through May, with May representing the dry-to-wet season transition (Ali and Abtew 1999).

Long-term averages for total annual precipitation within the HCP Area cluster around 50 inches per year (MacVicar 1981; NOAA 2007; NOAA 2010). The most recent long-term precipitation data for the period 1981-2010 reflect a mean annual precipitation total of 50.7 inches at the Corkscrew Swamp Sanctuary headquarters, and 49.8 inches at the Immokalee station (University of Florida experiment station) just north of Immokalee (NOAA 2010). In general, more than half of the total annual precipitation occurs during just four months of the wet season (June-September), and more than 70 percent of the total annual precipitation occurs during the five wet season months (Ali and Abtew 1999; NOAA 2010). The precipitation data for basin-wide analyses presented by Ali and Abtew (1999) indicate that the Southwest Florida region experiences the greatest seasonal contrast in average rainfall in southern Florida, with the lowest average dry-season precipitation and the highest average wet-season precipitation.

In addition to precipitation, unbiased estimates of daily, monthly, and annual evapotranspiration (ET) are important for characterizing the hydrologic cycle and water budget within a region. ET was quantified and published for the period 2007-2010 within the BCNP, across sites representing five different native land cover types (Shoemaker et al. 2011), with one of the five measurement sites.
(Marsh) located approximately three miles south of the HCP Area. Monthly and annual ET values were comparable at all five sites in year three of the three-year study period (2009-2010), when the effects of recent fires and drought conditions reduced spatial variations between sites. Year three of the study therefore represented more typical conditions for accurately assessing ET in native vegetation communities. The total annual ET values for year three ranged from 1270 to 1372 millimeters (50 to 54 inches) across the five sites. For the study period, the authors stated, “Available water is computed as the difference between rainfall and ET on an annual and monthly basis. Available water was always positive on an annual basis, indicating surplus rainfall was always available for aquifer recharge and runoff toward the coast.” (Shoemaker et al. 2011, 34). In terms of seasonal variability, the wet season months generally exhibited positive available water (evapotranspiration < rainfall), while the dry season months exhibited negative available water (evapotranspiration > rainfall).

The long-term average (1981-2000) for annual mean temperature equaled 73.7 °F at the Immokalee station (NOAA 2010). For the same period of record (1981-2010), the long-term average of mean summer temperature equaled 81.9 °F, while the average of mean winter temperature equaled 64.4 °F. In terms of seasonal temperature patterns, the average summer maximum temperatures equaled 92.3 °F, while winter temperature minima averaged 51.3 °F. Over the 1981-2010 recording period, the lowest temperature observed at the Immokalee station was 20 °F (January 12, 1982), while the highest temperature recorded was 102 °F (June 18, 1998).

From 1981-2010, there were an average of 3.1 days per winter when the temperature dropped below 32 °F, which can damage native vegetation as well as agricultural crops (NOAA 2010). For the same period, there were 14.5 days on average when the temperature fell below 40 °F. The nearly annual recurrence of sub-freezing daily minimum winter temperatures explains why the distribution of frost-intolerant tropical vegetation is generally limited to lands south of the HCP Area, and found especially within the large wetland systems that are well-buffered from low temperatures by surrounding vegetation and/or surface water.

3.3 TOPOGRAPHY

Most of the HCP Area is located on a regional topographic high known as the Immokalee Rise, which corresponds to the southern limit of Southwestern Florida Flatwoods ecoregion (Figure 3-1, Ecoregion 75b). The Immokalee Rise was described and delineated as a geomorphic unit by White (1970), and was included in the Physiographic Divisions of Florida map (Brooks 1981a) and accompanying geomorphic unit summaries (Brooks 1981b). The Immokalee Rise is bounded on the southeast (outside the HCP Area) by a geomorphic feature that White (1970) mapped as the Big Cypress Spur, an area with elevations lower than the Immokalee Rise but slightly higher than the Everglades ecoregion to the east (Campbell 1988). The southern and southwestern portions of the HCP Area grade into an area termed the Southwestern Slope, which dips generally to the southwest at a very low gradient. The boundary between the Immokalee Rise and Southwestern Slope geomorphic units of White (1970) corresponds closely to the Level IV ecoregions boundary between the Southwestern Florida Flatwoods and Big Cypress ecoregions (Figure 3-1).
Figure 3-2 depicts the surface elevations within the HCP Area, derived from Light Detection and Ranging (LIDAR) data (FDEM 2009). The highest topographic areas within the HCP Area are found on the Immokalee Rise north and northeast of Lake Trafford near the Collier County-Hendry County line, with maximum elevations of 41 feet above sea level (North American Vertical Datum of 1988; USGS 1987; FDEM 2009). From the Immokalee Rise area, elevation generally decreases toward the south and southwest, with slough systems and localized depressions occurring throughout the landscape. The lowest elevations within the HCP Area are found in the southwestern portion of the area, where spot measurements of 12 feet above sea level comprise the minimum recorded land elevation (USGS 1990; FDEM 2009).

### 3.4 GEOLOGY

Peninsular Florida is comprised of a thick sedimentary sequence of predominantly carbonate rocks, which rests on an igneous-metamorphic basement complex known as the Florida Platform (Scott 1992). In Collier County, the sedimentary sequence is approximately 17,000 feet (5.2 miles) thick, and the deepest and oldest sedimentary rocks date to the Jurassic Period (Applegate and Lloyd 1985; Campbell 1988). These basal clastic sedimentary rocks, known as the Wood River Formation, are overlain by more than ten thousand feet of Cretaceous limestone, dolomite, and evaporite deposits (Scott 1992; Pollastro et al. 2000).

At 11,000-12,000 feet below mean sea level, a lower Cretaceous geologic (stratigraphic) unit known as the Sunniland Formation contains scattered fields of petroleum deposits (the Sunniland Trend). The petroleum in the Sunniland Trend was first discovered in the early 1940s near Sunniland, in the southeastern portion of the HCP Area. Since the discovery of petroleum in the area, a total of eleven oil and gas fields have been identified and placed into production in Collier County. Most of these oil and gas fields are still in production (Applegate and Lloyd 1985). Oil and gas exploration and production activities continue within the Sunniland Trend, extending across the HCP Area, BCNP, Hendry County, and Lee County.

The Cretaceous rocks in eastern Collier County are overlain by more than 5,000 feet of Cenozoic strata, predominantly carbonate rocks. Siliciclastic materials (transported sediments like quartz sand, silt, and/or clay) appear more frequently in strata of the Miocene epoch and younger (23 million years ago and younger) than in older Cenozoic strata. Detailed stratigraphic descriptions for various units and geologic interpretations are well documented in several publications (Knapp et al. 1986; Campbell 1988; CDM 2002). Aside from oil and gas deposits at depth, the significance of Collier County’s geologic framework for the Plan is limited to the upper portions of the geologic column. These near-surface strata and deposits are significant because they determine the characteristics of the regional aquifer systems and water supply, serve as substrate (parent materials) for soil formation, and provide construction materials, such as limestone and sand, for human activities.

The mined mineral resources in eastern Collier County currently consist of crushed limestone and fill sand, which are excavated by open pit methods from near-surface deposits (Campbell 1988). One active mine (Sunniland Mine) exists in the southeastern portion of the HCP Area.
FIGURE 3-2

Topography
Rural Land Stewardship Area – Collier County, FL
August 2018

LEGEND

- Rural Land Stewardship Area Boundary
- Topography

Feet Above Mean Sea Level (NAVD 88)

<table>
<thead>
<tr>
<th>Feet</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>43</td>
<td>+/- 0.6 ft. vertical</td>
</tr>
<tr>
<td>12</td>
<td></td>
</tr>
</tbody>
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3.5 **SOILS**

Collier County and the HCP Area have been mapped and characterized by two U.S. Department of Agriculture soil surveys within the past 70 years. The first published soil survey (Leighty et al. 1954) was based on field work performed in the early 1940s. Although that soil survey has limited utility for present-day applications, it provides an excellent technical basis (along with 1940-1950 aerial photography) for evaluating pre-settlement land cover and hydrology patterns within the county (see, for example, Zahina et al. 2007). The 1954 soil survey provided detailed soil map-unit descriptions that inventoried dominant vegetation, and also provided tabular correlation of vegetation and soil types.

Field work for the second, more modern soil survey of the Collier County area (excluding BCNP and ENP) was completed in 1988, using 1984-1986 aerial photography as the mapping base (Liudahl et al. 1990). The small-scale (1:380,160) general soil map developed in connection with the 1990 survey reflects a similar landscape-scale pattern to the USEPA ecoregion map (Figure 3-1), where the Immokalee Rise area contains a higher proportion of upland soils and areas south of the rise exhibit a higher proportion of wetland soils. In general, eastern Collier County consists mainly of poorly to very poorly drained soils, where small changes in ground elevation can influence the range of water table depths and consequently the native vegetation patterns. As noted in section 3.7 below (Hydrology), extensive ditching and canal excavations for agriculture, highways, urban stormwater drainage, and other land uses have historically altered the drainage class of many soils.

These soils generally formed in the sandy unconsolidated deposits associated with Pleistocene sea-level fluctuations, nearshore depositional environments, and marine terrace sequences (Liudahl et al. 1990; Scott 1992). Sandy deposits tend to be thicker (20-40 feet) in the northern part of the county (near Immokalee) and become thin or absent in the southern portions of the HCP Area, often exposing the underlying limestone or “caprock” (Campbell 1988).

In terms of soil classification, the eastern Collier County soils classify into the Alfisol, Spodosol, Entisol, Mollisol, and Histosol soil orders. With few exceptions, these soils classify into the “aquic” suborders, reflecting their generally poor natural drainage and seasonally high water tables. Alfisols contain a clay-enriched subsurface horizon, while Spodosols are generally associated with flatwood and dry prairie landscapes, and possess an organic-enriched subsurface horizon that contains higher amounts of aluminum and/or iron. The Entisols are soils with minimal horizon development that formed in sandy parent materials. Mollisols are mineral soils with a thick dark surface and high base saturation (high percentage of available calcium, magnesium, and potassium), occurring in lower, consistently moist or wet landscapes. Histosols are organic soils, which signify the year-round presence of water at or above the soil surface in normal rainfall years; they are typically found in the deepest marshes and/or adjacent to open water.

Visualizing and interpreting the landscape-scale pattern of soil map-units, soil properties, and their ecological significance over a large area can be challenging. For this reason, Zahina et al. (2001) developed a soil classification database that sorted and grouped soil survey map units by similar landform, hydrological, morphological (e.g., soil texture, color, horizonization), and natural vegetation
characteristics. The classification scheme derived from this database is known as the Natural Soils Landscape Position (NSLP) classification. The purpose of the database was “to provide a clearer understanding of the relationships that exist between soil, hydrology, and the vegetation community.” (Zahina et al. 2001, 1).

Figure 3-3 depicts the NSLP classification for the HCP Area. One major advantage of the NSLP is that the natural patterns of topography, soils, and hydrology are readily evident at smaller (county-wide) mapping scales. The most extensive NSLP units within the HCP Area are the “Flatwood Soils,” which Zahina et al. (2001, 20) characterized as “poorly drained, nonhydric, upland soils with sandy marine sediments throughout the profile...Most of the soils in this category are Spodosols.” In the HCP Area, the next most extensive NSLP units are “Sand Depression” soils, which are hydric soils and very poorly drained. The Sand Depression soils depicted in Figure 3-3 generally coincide with the locations of the major flowways, cypress strands, and the depressional wetlands that are scattered across the landscape.

The NSLP “Flats Soils” occupy a landscape position between Flatwood and Sand Depression soils, and are considered transitional between upland and wetland characteristics, tending toward wetland natural communities. Although categorized as hydric soils within the NSLP classification, they include some upland areas because the depth and/or duration of the seasonal high water table may not be sufficient to meet hydric soil and/or wetland hydrology criteria in slightly higher landscape positions.

Three NSLP classifications occupy relatively limited areas within the HCP Area (Figure 3-3). “Knolls” soils are found on small ridges, or knolls, that rise a few feet higher than the surrounding uplands, but possess deeper water tables and support more xeric (drier) vegetation communities, such as upland hammocks, scrubby flatwoods, or scrub vegetation. At the opposite end of the soil hydrology continuum, “Muck Depressions” are found only where year-round soil saturation allows the development and persistence of thick layers of decomposed organic materials (muck). Finally, “Urban or Made Lands” NSLP units correspond to areas where the soils have been altered extensively by human activities, generally for urban development purposes, and such areas no longer function as they did in the natural landscape.

3.6 LAND USE AND LAND COVER

A variety of agencies and researchers have performed land cover and land use/land cover (LULC) mapping in southern Florida over the last several decades, at multiple scales and employing various methodologies. The South Florida Water Management District (SFWMD) has performed vector-based LULC mapping on aerial photography base maps since the 1970s. Geographic Information System (GIS) databases of this LULC mapping have been available beginning with the 1988 database, and now include the 1995, 1999, 2004, 2008 databases (SFWMD 2011). The classification scheme used for the SFWMD LULC mapping was the Florida Land Use, Cover and Forms Classification System (FLUCCS) (FDOT 1999). Early mapping did not include accuracy analyses for classification errors, but post-1995 mapping requires an overall accuracy of greater than 75 percent for FLUCCS Level III and IV mapping, at an overall classification accuracy of 90% (SFWMD 2011; see metadata).