United States Department of the Interior

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Memorandum

To: Regional Director, Region 2, Albuquerque, New Mexico

Through: Assistant Regional Director, Ecological Services, Region 2, Albuquerque, New Mexico

Through: Texas State Administrator, Austin, Texas

From: Field Supervisor, Austin Ecological Services Field Office, Austin, Texas

Subject: Biological Opinion for Oncor Electric Delivery Company LLC's Habitat Conservation Plan – Permit TE-40918A (Consultation No. 21450-2010-F-0184)

Enclosed is the biological opinion for the proposed Oncor Electric Delivery Company LLC's (Oncor) Habitat Conservation Plan (HCP) to avoid, minimize, and mitigate adverse effects to 11 threatened or endangered species from activities described in the HCP over a period of 30 years. We appreciate your staff's assistance throughout this consultation. If you have any questions regarding this biological opinion, please contact Christina Williams at 512-490-0057, extension 235.

The biological opinion is based on Oncor's HCP dated December 2011, the accompanying Environmental Impact Statement pursuant to the National Environmental Policy Act of 1969 dated December 2011, Service files, discussions with species experts, published and un-published literature available on the species of concern and related impacts, and other sources of information available to the Service. A complete administrative record of this consultation is on file at the Austin Ecological Services Office.

Attachment

TAKE PRIDE® IN AMERICA

This transmits our biological opinion for the issuance of a U.S. Fish and Wildlife Service (Service) 10(a)(1)(B) permit (Permit) for 30 years to Oncor Electric Delivery Company LLC (Oncor). The Permit would authorize incidental take in accordance with the associated Habitat Conservation Plan (HCP), which proposes to minimize and mitigate, to the maximum extent practicable, adverse effects to 11 species listed as threatened or endangered pursuant to the Endangered Species Act of 1973, as amended (Act) (16 U.S.C. 1531 et seq.) within Oncor's service area (102 counties), with the exception of Travis and Williamson counties, which are covered by regional HCPs. The 100 counties are referred to as the Permit Area. The species to be covered by the Permit are: the Louisiana black bear (*Ursus americanus luteolus*), golden-cheeked warbler (*Dendroica chrysoparia*), black-capped vireo (*Vireo atricapilla*), red-cockaded woodpecker (*Picoides borealis*), whooping crane (*Grus americana*), Houston toad (*Bufo houstonensis*), American burying beetle (*Nicrophorus americanus*), large-fruited sand-verbena (*Abronia macrocarpa*), Texas poppy-mallow (*Callirhoe scabriuscula*), Navasota ladies'-tresses (*Spiranthes parksii*), and Pecos sunflower (*Helianthus paradoxus*) (Covered Species).

Thirty-two other species listed as threatened or endangered pursuant to the Act or candidate species (Table 1) may occur in the Permit Area but will not be affected because of Oncor's planned avoidance, minimization, and conservation measures (see Appendix A of this biological opinion and also section 6.0 of the HCP). Therefore, the Service will not provide incidental take coverage for those species. Additionally, Oncor will coordinate with the appropriate agencies, including Texas Parks and Wildlife Department (TPWD), on a project-by-project basis where State-listed species may be affected.

Table 1: List of Species Not Being Affected

Endangered Species	
Texas prairie dawn-flower (*Hymenoxys texana*)	Pecos gambusia (*Gambusia nobilis*)
Pecos assiminea snail (*Assiminea pecos*)	Leon Springs pupfish (*Cyprinodon bovinus*)
Bee Creek Cave harvestman (*Texella reddelli*)	interior least tern (*Sterna antillarum*)
northern aplomado falcon (*Falco femoralis septentrionalis*)	southwestern willow flycatcher (*Empidonax traillii extimus*)
Comanche Springs pupfish (*Cyprinodon elegans*)	
Threatened Species	
Plant, no common name (*Geocarpon minimum*)	Mexican spotted owl (*Strix occidentalis lucida*)
piping plover (*Charadrius melodus*)	
Proposed Federally Endangered	
dunes sagebrush lizard (*Sceloporus arenicolus*)	
Federal Candidate Species	
Guadalupe fescue (*Festuca ligulata*)	Phantom Lake cave snail (*Cochliopa texana*)
Neches River rose-mallow (*Hibiscus dasycalyx*)	Texas golden gladecress (*Leavenworthia texana*)
Diamond Y Spring snail (*Pseudotryonia (=Tryonia) adamantina*)	Phantom springsnail (=Tryonia) (*Tryonia cheatumi*)
Gonzales springsnail (*Tryonia circumstriata (=stocktonensis)*	Diminutive amphipod (*Gammarus hyalleloides*)

Texas fatmucket (*Lampsilis bracteata*)	Smooth pimpleback (*Quadrula houstonensis*)
Texas pimpleback (*Quadrula petrina*)	Texas fawnsfoot (*Truncilla macrodon*)
Smalleye shiner (*Notropis buccula*)	Sharpnose shiner (*Notropis oxyrhynchus*)
Salado salamander (*Eurycea chisholmensis*)	Louisiana pinesnake (*Pituophis ruthveni*)
Lesser prairie-chicken (*Tympanuchus pallidicinctus*)	Yellow-billed cuckoo (*Coccyzus americanus*)
Sprague's Pipit (*Anthus spragueii*)	

Consultation History

September 2003 Oncor submitted a preliminary draft HCP to the Service;

May 2004-May 2007 The Service commented on two drafts of the HCP and informed Oncor that an Environmental Impact Statement would be necessary;

September 22, 2009 Publication in the *Federal Register* of a Notice of Intent to prepare the EIS (FR 48285)

October 13-27, 2009 Nine public scoping meetings were held throughout Oncor's service area;

March 2011 Oncor submitted a draft EIS and HCP along with their application for a 10(a)(1)(B) incidental take permit;

July 15, 2011 Publication in the *Federal Register* of a Notice of Availability of a draft EIS, and a notice of receipt of the draft HCP, public hearings, and public comment period (FR 41808);

August 23-25, 2011 Three public hearings were held: Grand Prairie, Sweetwater, and Waco, Texas;

September 15, 2011 Public comment period for the draft HCP/EIS closed and,

December 2011 Final draft HCP and EIS submitted.

BIOLOGICAL OPINION

I. Proposed Action

The Service proposes to issue a 10(a)(1)(B) permit to Oncor, a private corporation that distributes power over transmission and distribution lines in Texas. The proposed Federal action associated with the Oncor HCP and permit application is to issue a section 10(a)(1)(B) incidental take permit that will provide incidental take authorization to Oncor for activities associated with new construction, operation and maintenance of transmission lines, substations, switching stations, and a distribution network; and general activities, such as emergency response and restoration (e.g., electric facility outage), stormwater discharges from construction sites,

equipment access, and surveying (Covered Activities). The HCP establishes a conservation program that minimizes and mitigates, to the maximum extent practicable, the adverse effects of authorized incidental take of 11 federally threatened or endangered species (Covered Species).

The ESA section 7(a)(2) implementing regulations define an action area to be all areas affected directly or indirectly by the Federal action and not merely the immediate area affected by the proposed project (50 CFR § 402.02). For the purposes of this biological opinion, the action area includes the Permit Area and any area where HCP implementation is expected to affect listed species or designated Critical Habitat within the following 100 counties: Anderson, Andrews, Angelina, Archer, Bastrop, Baylor, Bell, Borden, Bosque, Brown, Burnet, Cherokee, Clay, Coke, Coleman, Collin, Comanche, Cooke, Coryell, Crane, Culberson, Dallas, Dawson, Delta, Denton, Eastland, Ector, Ellis, Erath, Falls, Fannin, Fisher, Franklin, Freestone, Gaines, Glasscock, Grayson, Haskell, Henderson, Hill, Hood, Hopkins, Houston, Howard, Hunt, Jack, Johnson, Jones, Kaufman, Kent, Lamar, Lampasas, Lee, Leon, Limestone, Loving, Lynn, Martin, McLennan, Midland, Milam, Mills, Mitchell, Montague, Nacogdoches, Navarro, Nolan, Palo Pinto, Parker, Pecos, Rains, Reagan, Red River, Reeves, Robertson, Rockwall, Runnels, Rusk, Scurry, Shackelford, Smith, Somervell, Stephens, Sterling, Tarrant, Taylor, Terry, Titus, Throckmorton, Tom Green, Trinity, Upton, Van Zandt, Ward, Wichita, Winkler, Wilbarger, Wise, Wood, and Young (see Figure 1-1 of the HCP).

Oncor operates the largest distribution and transmission system in Texas, providing power to 3 million electric delivery points over more than 102,000 miles of distribution and 14,000 miles of transmission lines. Oncor's ability to provide its services depends on the efficient installation, operation, and maintenance of numerous facilities within its service area. Currently, the electric system includes electric transmission lines, electric substations, electric switching stations, and an electric distribution network. The location and type of new facilities to be constructed is dependent upon the service demands of customers for energy and other related services. The 30-year Permit would provide Oncor with a streamlined mechanism to comply with the Act. Incidental take of the 11 Covered Species associated with the Covered Activities described below would be covered by the Permit (see Table 4-1 of the HCP for more detailed descriptions of the proposed actions).

<u>Typical activities for all of the electric transmission, distribution, and support facilities include the following</u>:

- **Emergency response and restoration** – Typically weather related to address storm damage to existing facilities.
- **Stormwater discharges from construction sites** – Stormwater discharges from maintenance and construction activities.
- **Equipment access** – Typically involves driving equipment within rights-of-way (ROWs). However, clearing, grading, or placement of material above-grade, such as the installation of temporary culverts and fill at creek crossings may be necessary. Staging areas for equipment either occur within the ROWs or are rented spaces typically used for such practices. Culverts and fill may also require U.S. Army Corps of Engineers (USACE) permits.
- **Surveying** – Includes ROWs centerline and support facility surveys prior to construction. Typically involves hand clearing of vegetation and placement of stakes along site boundaries.

Activities associated with maintenance of facilities include:

- **Vegetation management** – Includes maintaining ROWs via tree trimming/topping or removal and/or mowing and weed control around the perimeter of substations and switching stations.
- **Expansion of existing support facilities** – Typically occurs at substations and switching sites to facilitate load increases. Involves installation of additional electrical equipment and may result in expansion of the substation site boundaries (clearing and placement of base material).
- **Line upgrade-reconductoring** – Typically involves replacing old wires with new wires on existing transmission/distribution structures, which requires equipment access within the ROWs.
- **Line upgrade-rebuilds** – Typically involves removal of old transmission/distribution structures and replacement with new structures and new wire. Includes ROWs vegetation clearing, excavating, and pouring structure foundations; assembling and setting support structures; installing hardware on support structures; installing new lines; and final cleanup.
- **Insulator replacement** – Involves removal of existing insulators on transmission/ distribution line structures and new insulator installation. Requires equipment access within the ROWs.
- **Maintenance of underground electric facilities** – Typically includes replacement of electrical equipment, including wire or cable installed on the ground or subsurface. Maintenance includes ROWs vegetation clearing and excavation to access electrical equipment.

Activities associated with new construction include the following:

- **Construction of new overhead transmission and distribution lines** – Typically includes ROWs clearing, excavating, pouring structure foundations, assembling and setting support structures, installing hardware on support structures, installing new lines, and final cleanup. Equipment staging areas occur within cleared ROWs or are rented spaces that are typically used as parking areas.
- **Installation of new underground electric lines** – Typically installed in metropolitan areas, residential subdivisions, airports, and commercial developments. Activities include removal of vegetation from ROWs, trenching and/or boring/directional drilling, installing pipe, installing cable/conductors, splicing cable, terminating cable, filling with dielectric fluid, installing cathodic protection, and energizing.
- **Construction of new support facilities** – Involves vegetation clearing (if necessary), site grading, spreading, and compaction of base material, drilling of foundations, and installation of electrical equipment.
- **Upgrade facilities within existing ROWs** – Typically involves installation of new wire on one side of existing double-circuit structures. Activities include equipment access within ROWs and clearing ROWs on side where new wire is installed, if not already cleared.

Conservation Measures

- Avoid clearing and ground-disturbing activities during the breeding season of a Covered Species when Covered Activities are within or adjacent to potential habitat for that species and such activities would affect breeding success.
- Vegetation will be cleared by aboveground means when practical. Aboveground vegetation clearing methods, such as mowing or manual cutting, would minimize impacts to soil resources compared to belowground clearing methods, such as disking.
- Onsite qualified environmental personnel will monitor the stormwater Best Management Practices (BMPs); such as erosion and sedimentation control, pollution prevention, spill/leak prevention, dust reduction, and proper disposal of trash and sanitary waste; to ensure their use, and to document their success/failure.
- Onsite operations will be adaptively managed based on potential impacts to Covered Species and their habitat as assessed by qualified environmental personnel, and through referencing the best available science, technology, and industry methods through which to avoid or minimize these potential impacts.
- Minimize the use of herbicides and pesticides. If herbicides and pesticides are used in Covered Species habitat, Oncor or its contractors will use only appropriate herbicides and application methods that limit impacts on nontarget species (e.g., low volume basal and foliar applications, narrow-spectrum herbicides, and herbicides with low environmental persistence) and comply with Service guidelines for pesticide application, including but not limited to, "Recommended Protection Measures for Pesticide Applications in Region 2 of the U.S. Fish and Wildlife Service" (Service 2004b).
- Oncor will follow Texas Forest Service's or professional arborists' guidelines for preventing the spread of oak wilt when clearing or trimming trees within those counties where oak wilt is known to occur. These guidelines include, but are not limited to, sterilizing pruning or cutting equipment with bleach between trees, and immediately painting all wounds on oak trees that are larger than 0.5 inch in diameter.
- Disturbed areas will be returned to approximate preconstruction contours, where practical, based on baseline survey data, with the intent to minimize impacts to hydrology and avoid adverse indirect impacts to Covered Species.
- Disturbed areas will be reseeded with native species unless specifically prohibited by the landowner. The project will be monitored to ensure that the reseeding achieves sufficient native vegetation cover and in areas where sufficient cover is not achieved, the reseeding process will be repeated. Site-appropriate species will be selected by qualified biologists to achieve perennial vegetative cover, either through selection of perennial species or a combination of warm and cool season annuals.
- For new projects anticipated to encounter a Covered Species, Oncor will either provide a qualified environmental monitor onsite or conduct training for construction personnel to ensure compliance with the HCP. If this training takes place, the program will provide information on the Covered Species, including recognition of the species and habitat, general biology, potential threats and impacts, and instructions on what to do if a Covered Species is encountered in the field during Covered Activities. The attendees will also be made aware of the importance of onsite vigilance by staff and contractors regarding field conditions and application of the conservation measures designed to minimize potential impacts to the Covered Species. This training course will be provided by qualified personnel. Contracts of

contractors working within the proposed Permit Area will contain language requiring the use of the conservation measures identified in the HCP and the consequences and liabilities for noncompliance.

- New projects will be assessed on a project-by-project basis by qualified biologists for the likely occurrence of Covered Species habitat, as well as the presence of other regulated resources within or adjacent to a proposed facility. When projects are proposed in counties identified as within the range of a Covered Species, qualified biologists will conduct field habitat assessment surveys to ground-truth the existence, location, and quality of potential habitat. The need for the habitat assessment surveys will be determined by reviewing updated available literature such as county soil surveys, topographic maps, and aerial photography. The need for presence/absence surveys will be determined by reviewing the information gathered during the onsite habitat assessment surveys. In addition, updated records of known occurrences will be reviewed and, as necessary, consultation with Federal and State biologists and other experts will be continued.
- Presence/absence surveys, if conducted, will be completed by a qualified federally permitted biologist in accordance with the most recent Service protocols. In the event no Service protocols are available, other widely accepted survey methods will be utilized. If unavoidable potential habitat is identified and no presence/absence surveys are conducted, Oncor will assume the potential habitat is occupied and mitigate in accordance with the HCP.
- Because most of the land in Texas is privately owned and little information about biological resources is available on such lands, specific measures will be taken to identify the presence or absence of sensitive resources as part of the route selection process for new projects. Specific measures may include, but are not limited to, remote sensing techniques; aerial photo interpretation; and review of historic and current topographic, soil survey, National Wetlands Inventory, and other maps and geospatial data. When possible, routes will be selected or adjusted to minimize impacts to suitable and/or occupied habitat.
- Oncor will mitigate for unavoidable impacts through purchase of credits from a Service-approved conservation bank, or deposit funds into restricted accounts managed by a Service-approved third party and used prior to initiation of Covered Activities where such activities will result in the incidental take of Covered Species (see sections 6.4 and 10 of the HCP for more detail).
- Acquire mitigation credits from Service-approved conservation banks, if available, or mitigation funds, requisite to compensate for incidental take, to Service approved third-party entities for purchase (fee title or conservation easement) of conservation lands. The third party will be responsible for managing the land in perpetuity. If mitigation funds are insufficient to purchase a reasonable amount of land to support the conservation of the species, other options will be explored. The services of Service-approved multi-party committees may be called upon based on species-specific conservation needs for the federally listed endangered large-fruited sand verbena, Texas poppy-mallow, Navasota ladies'-tresses, American burying beetle, red-cockaded woodpecker, and threatened Pecos sunflower and Louisiana black bear (see section 6.4 of HCP for more detail).
- Acquire mitigation credits from Service-approved conservation banks for incidental take resulting from impacts to black-capped vireo and golden-cheeked warbler occupied or potential habitat, not to exceed species- and recovery region-specific take levels defined herein, from the recovery region in which take occurs, if available, or from the most appropriate recovery region. Should mitigation credits be unavailable at the time preceding

commencement of Covered Activities, requisite mitigation funds will be allocated to Service-approved third party entities for purchase (fee title or conservation easement) of conservation lands. If mitigation funds are insufficient for this purpose, other options will be explored. The services of Service-approved multi-party committees may be called upon based on species-specific conservation needs (see sections 6.4.8.3 and 6.4.9.3 of the HCP for more detail).

- Acquire mitigation credits from Service-approved conservation banks for incidental take resulting from impacts to Houston toad occupied or potential habitat not to exceed 100 acres. Should mitigation credits be unavailable at the time preceding commencement of Covered Activities, requisite mitigation funds will be allocated to Service-approved third-party entities for purchase (fee title or conservation easement) of conservation lands. If mitigation funds are insufficient for this purpose, other options will be explored. The services of Service-approved multi-party committees may be called upon based on species-specific conservation needs (see section 6.4.6.3 of the HCP for more detail).
- Within one mile of confirmed or potentially suitable stopover habitat for the whooping crane, Oncor will: 1) mark all new transmission lines with bird flight diverters, or 2) place new transmission or distribution lines underground, and 3) relocate or remove existing transmission or distribution lines, or 4) mark existing transmission or distribution lines (when these lines are temporarily out of service) at an equal ratio with new lines (e.g., marking 1 mile of existing transmission or distribution lines within one mile of confirmed or potentially suitable stopover habitat for 1 mile of newly constructed lines within 1 mile of potentially suitable stopover habitat) within 5 years of new construction (see section 6.4.7 of the HCP for more detail).
- Implement a monitoring and reporting process with annual delivery to the Service, to include evaluations and/or documentation of: all habitat assessment or presence/absence surveys completed; compliance with the Permit; HCP goal attainment; Covered Activities undertaken; impacts to Covered Species and receipts of payments made identified by activity, project, species impacted, and location; the effectiveness of avoidance, minimization and conservation measures, and species-specific restrictions; implementation and effectiveness of the terms of the Permit, including financial obligations; adaptive management-based recommendations for improvement; and any other appropriate information to document Oncor's compliance with the Permit (see section 9 of the HCP for more detail).
- Adopt an adaptive management strategy to address uncertainty and incorporate newly acquired information and experience into future management plans, as assessed in the annual review, to streamline and improve the decision-making process for the conservation program and to ensure that management changes in response to new, appropriate data are implemented in a timely fashion (see section 8 of the HCP for more detail).

II. Species Analysis

Note: Because of the number of species, the three sections (Status of the Species, Environmental Baseline, and Effects of the Action) are described together under each species for ease of reading.

This biological opinion does not rely on the regulatory definition of "destruction or adverse modification" of critical habitat at 50 CFR § 402.02. Instead, we have relied upon the statutory provisions of the Act to complete the following analysis with respect to critical habitat.

The incidental take that is anticipated to occur over the next 30 years from the Covered Activities are estimates, since not all projects that will be covered by the permit are known at this time. Estimates of the acreage of potential habitat impacted are based on typical specifications for a 345-kV electric transmission line facility. Such facilities typically have ROWs widths ranging from 70 to 160 feet depending on voltage rating, support structure design, and vegetation characteristics. To account for impacts from distribution line and support structures, staging areas, access roads, and other areas required for completion of Covered Activities, 160 feet for all lines was used. ROWs mileage was estimated via electronic measurement of facility computer aided design drawings. Potential habitat impact acreages include operation and maintenance impacts within existing facilities and new construction impacts associated with electric transmission facilities. These impacts are presented as maximum values and account for contingencies such as higher-than-estimated habitat acreage, expanding Covered Species populations (i.e., recovery) over the 30-year life of the proposed permit, higher-than-predicted human population or industrial growth rates, future acquisition of existing facilities from other companies, and impacts associated with operating or constructing electric distribution facilities. See Section 5.0 of the HCP for the methods for determining the estimates of maximum take.

Species specific assessments of impacts will occur as each project is designed to more accurately assess take. If the timing of the assessments does not coincide with animal species' survey seasons, Oncor will assume species presence when that species habitat is present. For plant species, if an associated soil series and vegetation community occurs in a facility's ROW, presence will be assumed unless recent surveys have indicated otherwise.

Louisiana black bear

Status of the Species

Species Description and Life History

The Louisiana black bear (*Ursus americanus luteolus,* LBB) was federally listed as threatened January 7, 1985 (57 FR 588) with critical habitat designated in Louisiana on March 10, 2009 (74 FR10350). Other free-roaming black bears, including the American black bear (*Ursus americanus*), which occurs within the historic range of the Louisiana black bear, were designated as threatened on January 7, 1992 (57 FR 588), due to similarity of appearance. A special rule was published August 2, 1999 (64 FR 41903) allowing for normal forest management activities to occur within the bear's range, aside from those that may cause damage to or loss of den trees, den sites, or candidate den trees in occupied LBB habitat. Candidate den trees include bald cypress (*Taxodium distichum*) and tupelo (*Nyssa* sp.) with visible cavities, having a diameter at breast height of at least 36 inches, and occurring in or along rivers, lakes, streams, bayous, sloughs, or other water-bodies.

One of 16 recognized subspecies of the American black bear (Hall 1981); the LBB is a large, bulky bear, weighing up to 600 pounds, usually with black hair. Individuals may have a white patch on the lower throat and chest. The face is typically blunt, with a broad yellowish brown muzzle, and each foot has short, curved claws. This subspecies was separated from other black bears on the basis of morphological differences showing the LBB to have a relatively longer, narrower, flatter skull, with proportionately large molar teeth (Kennedy 1989).

The LBB is a habitat generalist and can range over wide areas in a variety of habitats. Mobile and opportunistic, these largely herbivorous omnivores exploit a variety of foods. Their movements are chiefly determined by the availability of seasonal foods, particularly mast (nuts that typically collect on the forest floor) (Black Bear Conservation Committee 1992). The size of an area used by an individual bear is related to the diversity of vegetative cover and habitat diversity. Important habitat elements include the availability of hard and soft mast, escape cover, denning sites, corridor habitats, and some freedom from disturbance by man (Service 1992b). Black bears are strongly associated with bottomland hardwood habitat and floodplain forests, although upland hardwood forests, mixed pine-hardwood forests, wetlands, and agricultural fields may also be used (Black Bear Conservation Committee 2005, Service 1995a). An important spatial feature of black bear habitat is remoteness, which is largely determined by the absence of roads, although bears can tolerate close proximity to humans if sufficient areas of refuge are available (Rudis 1986, 1988; Pelton 1986).

Dens can consist of hollow trees, brush piles, and ground nests. Adult males and subadults use ground dens with greater frequencies than adult females (Weaver and Pelton 1994). Ground dens can consist of woven vegetation or be built from stacked palmettos. Brushpile dens are constructed of felled tree tops, typically from timber harvest operations (Weaver 1992). Both ground and brush dens need thick ground cover. Den trees include bald cypress, overcup oak (*Q. lyrata*), and even an American sycamore (*Platanus occidentalis*) stump, and are located in or adjacent to water (Weaver 1992).

The reproductive biology of the LBB is not well known, and most reproductive characteristics are assumptions based upon studies of black bears elsewhere. Female black bears become sexually mature at three to five years. Pregnant females enter dens from late November to mid-December and emergence dates range from early April to late May (Weaver 1992). Black bear cubs are born in the den during January and February with liter sizes ranging from one to three, with two cubs being most common (Weaver *et al*. 1991). Cubs den with their mother the following winter and then break off during the second summer, resulting in an alternate year breeding cycle.

Historic and Current Distribution

The historical distribution of the LBB in Texas included all counties east of and including Cass, Marion, Harrison, Upshur, Rusk, Cherokee, Anderson, Leon, Robertson, Burleson, Washington, Lavaca, Victoria, Refugio, and Aransas; Louisiana; and southern Mississippi. Some authorities include southern Arkansas within the historic range, but no scientific specimens exist for confirmation.

Currently, only three breeding populations of the LBB are known to occur, and they are all in Louisiana: one in the Tensas River Basin and two in the Atchafalaya River Basin (1,195,821 acres of which are designated critical habitat). All three breeding populations are considered demographically isolated (Campbell 2005). Although sightings have been reported outside of these two river basins, it is not known if they represent breeding populations or transient individuals. Additional areas may be occupied in Louisiana and Mississippi (Service 1995a).

Reasons for Decline and Threats to Survival

Although LBBs were eliminated from much of their former range by hunting (Schmidly 1983), the primary threat today is habitat destruction or modification. In addition to a reduction in the amount of available habitat, remaining forested areas are becoming increasingly fragmented and are often less productive as black bear habitat due to habitat conversion. Further habitat losses could reduce bear populations to below the minimum required for long-term viability (Service 1995a). The LBB is not an old-growth forest species, nor can it survive in open cropland conditions. Normal silviculture practices, such as timber harvest, can actually result in improved bear habitat. The dense regrowth that usually follows timber clearing can provide abundant food and shelter for bears. It is, therefore, believed that the principal threat to this bear is not from normal forest management, but from conversion of timbered tracts to agricultural use.

Fragmentation and degradation of habitat can also exacerbate interactions with humans and put black bears at more risk of exposure to various mortality factors. As the population of LBBs approaches the minimum viable threshold, any loss of that population becomes more significant. Natural mortality factors include disease, cannibalism, drowning, improper maternal care, and climbing accidents. Direct mortality from human causes includes hunting; trapping; poaching; collisions with vehicles, trains, and farm equipment; electrocution; depredation/nuisance kills; disturbance (causing den abandonment); and accidents related to research. In Mississippi and Louisiana the greatest mortality factors are poaching and road kills. During times of low food availability, black bears tend to wander and are, thus, more likely to come into conflict with humans and their crops, livestock, and vehicles.

Some black bears may live over 25 years in the wild. Because bears are relatively long-lived animals, population growth and persistence at small population sizes makes them especially sensitive to adult mortality rates (McCullough 1981, Suchy *et al*. 1985, Cox 1993). A more uncertain threat to the LBB is hybridization with other genetic stock, particularly since over 160 bears of the subspecies *Ursus americanus americanus* were introduced into the Atchafalaya and Tensas river basins from Minnesota in the mid-1960s.

Range-wide Survival and Recovery Needs

The LBB Recovery Plan (Service 1995a) recommends: 1) at least two viable subpopulations, one each in Tensas and Atchafalaya River Basins; 2) immigration and emigration corridors between the two subpopulations; and 3) long-term protection of habitat to support the subpopulations and their movement. A minimum viable subpopulation is defined as a subpopulation which has at least a 95 percent chance of persistence over 100 years (Shaffer 1981).

The Tensas River sub-population is believed to be increasing and faces decreasing threats due to on-going focused habitat restoration/protection efforts. The Upper Atchafalaya sub-population is believed to be stable to increasing and also faces decreasing threats due to ongoing focused habitat restoration efforts. The Lower Atchafalaya sub-population status is unknown, but is generally believed to be stable. As a result of repatriation, an additional breeding sub-population now exists in east-central Louisiana (with one or two bears in adjacent Mississippi). A total of 48 females and 102 cubs were relocated between 2001 and 2008. Natural reproduction by one relocated female was first documented in 2005. Since that time, reproduction has been documented in several females each year.

No reliable overall LBB population estimate currently exists; however, estimates have been developed for specific geographic areas. Population estimates for LBBs at the time of listing were 200 to 400 bears with a current estimate of 400 to 700 bears. Results of recent studies indicate that there has been a reversal in the pre-1980s trend of forest conversion to agricultural use in the Lower Mississippi River Alluvial Valley (LMAV). Available data indicates that, over the past three decades, forest restoration in the LMAV portions of Louisiana, Mississippi, and Arkansas, has increased dramatically, and has led to a significant removal of land from agricultural production for the purpose of hardwood forest establishment. Including existing forested lands that have been protected over approximately 600,000 ac of land have been restored or protected in the LBB's range in Louisiana alone since it was listed in January 1992.

Environmental Baseline

Counties in the action area in which the LBB has been documented are: Angelina, Anderson, Cherokee, Delta, Fannin, Hopkins, Lamar, Nacogdoches, Rusk, and Smith. However, according to the LBB Recovery Plan (Service 1995a), occupied habitat is only where there is evidence of reproduction, a female with her cubs, which hasn't been documented in Texas for many years. Therefore, the Service believes there is no occupied LBB habitat currently within the action area; however, due to increased sightings it is prudent to include them in the permit, due to the chance that they expand their range over the life of the permit.

While there are no recovery criteria addressing the Texas portion of the range, the Louisiana Black Bear Recovery Action Plan (Service 2009a) includes a task to continue habitat restoration and protection and studies of LBBs within the historic range in Texas. Texas Parks and Wildlife Department tracks black bear sightings and has documented 24 sightings between 1977 and 2000. More than 66 percent of those sightings occurred between 1991 and 2000, indicating a possible return/increase of LBBs to east Texas. Four more sightings occurred between 2002 and 2003 (TPWD 2005). However, none of these were of females with cubs.

Oncor currently has 1,334 miles (25,872 acres) of existing transmission ROWs within the range of the LBB in the action area. However, none of this is considered potential LBB habitat. Oncor estimates up to 194 acres of potential habitat may be directly impacted as a result of constructing new facilities within the action area. New construction estimates are based on 100 miles (1,939 acres) of planned new 345-kV electric transmission lines that will pass through potential habitat areas. This estimate was based on Soil Conservation Service and TPWD data (Soil Conservation Service 1988, TPWD 2004). Taking the percentage from Angelina County (10 percent) of

estimated bottomland hardwood forest coverage, Oncor estimates existing facilities could result in a potential of direct take of 194 acres. Indirect impacts are not expected as a result of constructing new facilities.

The East Texas Black Bear Task Force; a committee of stakeholders comprised of representatives from State, Federal, and private entities; drafted a management plan with several goals to be accomplished including increased public coordination and communication, habitat management, research activities, and development and distribution of informational materials. Specific strategies are to promote public awareness through outreach while providing public and private biologists and willing landowners with the technical knowledge to increase and/or enhance suitable black bear habitat throughout East Texas. Due to the proximity of known bear populations in Arkansas, Louisiana, and Oklahoma, management objectives in bordering states will influence the Texas planning effort as these bear populations expand. Unoccupied, suitable habitat is available in East Texas which may be attractive to transient bears, and as bear populations expand in these bordering states and displaced juvenile bears seek available suitable habitat, it is likely that Texas will continue to see an increase in bear activity. One of the most critical management tasks in assuring conservation of black bears within East Texas is managing potential conflicts resulting from bear-human interactions.

According to our consultations tracking database, there have been no formal consultations resulting in impacts to LBBs within Texas.

Effects of the Action

The Service is authorizing Oncor to impact a total of 194 acres of LBB habitat for direct impacts from new facilities. See section 5.3.11.3.2 in the HCP for how this acreage was derived.

Indirect effects of the action include both the direct and indirect effects of implementing the HCP. Direct impacts from implementation of the HCP could occur from loss of habitat resulting in adverse direct impacts to the foraging success of this species. Since LBBs would likely avoid the initial clearing and construction activities by moving into adjacent areas outside the ROWs, there is no expectation of injury to individuals. Indirect impacts from implementation of the HCP could occur from an increase in unauthorized human activity within the ROW (e.g., offroad vehicle trespass), an adverse impact, based on the sensitivity of the LBB. A beneficial indirect impact could also occur from the creation of edge habitat along the ROW, which would promote soft mast producing woody plants and other plants that contribute to black bear forage.

Currently there is no occupied habitat within the action area. However, Oncor is proposing to implement conservation measures in case LBBs begin reproducing within the action area over the life of the permit. To avoid adverse indirect impacts Oncor will obstruct access points, with gates or permanent road closures, to prevent unauthorized public use of the ROWs. Additionally, Oncor proposes to assess habitat suitability and/or occupancy on a project-by-project basis to more accurately assess take. Furthermore, to reduce adverse direct impacts to LBBs from Covered Activities Oncor will: 1) avoid populations of this species, its habitat, and lands managed for its conservation and recovery in completing the Covered Activities; 2) minimize fragmentation of contiguous patches of forest, and where suitable or potential habitat

cannot be avoided, paralleling other existing ROW; 3) avoid damage to existing or candidate den trees and den sites; 4) reduce ROWs widths; 5) limit clearing of access roads unless absolutely necessary; 6) trim taller trees adjacent to the ROW the minimum amount necessary; and 7) bush-hog ROWs within potential habitat to promote the growth of plant species suitable for LBB forage.

While the exact number of acres that will be impacted, and will therefore need to be mitigated for, is not currently known, a maximum impact has been estimated for LBBs. Oncor proposes to mitigate for their impacts to LBBs at a 1:1 ratio. Mitigation will occur through purchase of mitigation credits from a Service-approved conservation bank. However, should mitigation credits be unavailable from a Service-approved conservation bank, Oncor may coordinate directly with a conservation organization such as The Nature Conservancy of Texas or the TPWD for the purchase of conservation lands. If purchase of land is not a viable mitigation option (i.e., mitigation funds are not sufficient for purchase of a reasonable amount of land to support the conservation of the LBB), in coordination with and approval by the Service, other options such as habitat enhancement, management, or restoration activities will be explored. See section 6.0, Conservation Measures, for more specific examples of species specific alternative mitigation measures.

Critical habitat has been designated for the LBB, but does not occur within the action area; therefore, no adverse modification of critical habitat will occur.

Golden-cheeked warbler

Status of the Species

Species Description and Life History

The golden-cheeked warbler (*Dendroica chrysoparia*, GCWA) was emergency listed as endangered on May 4, 1990 (55 FR 18844). The final rule listing the species was published on December 27, 1990 (55 FR 53160). No critical habitat is designated for this species.

The GCWA is a small, insectivorous songbird, 4.5 to 5 inches long with a wingspan of approximately 8 inches (Pulich 1965 and 1976, Oberholser 1974). Golden-cheeked warblers breed exclusively in the mixed Ashe juniper/deciduous woodlands of the central Texas Hill Country west and north of the Balcones Fault (Pulich 1976). Golden-cheeked warblers require the shredding bark produced by mature Ashe junipers for nest material. Typical deciduous woody species include Texas oak (*Quercus buckleyi*), Lacey oak (*Q. glaucoides*), live oak (*Q. fusiformis*), Texas ash (*Frazinus texensis*), cedar elm (*Ulmus crassifolia*), hackberry (*Celtis occidentalis*), bigtooth maple (*Acer grandidentatum*), sycamore (*Platanus occidentalis*), Arizona walnut (*Juglans major*), and pecan (*Carya illinoinensis*)(Pulich 1976, Ladd 1985, Wahl *et al*. 1990). Breeding and nesting GCWAs feed primarily on insects, spiders, and other arthropods found in Ashe junipers and associated deciduous tree species (Pulich 1976).

Male GCWAs arrive in central Texas around March 1st and begin to establish breeding territories, which they defend against other males by singing from visible perches within their

territories. Females arrive a few days later, but are more difficult to detect in the dense woodland habitat (Pulich 1976). Three to five eggs are generally incubated in April, and unless there is a second nesting attempt, nestlings fledge in May to early June (Pulich 1976). If there is a second nesting attempt, it is typically in mid-May with nestlings fledging in late June to early July (Pulich 1976). By late July, GCWAs begin their migration south (Chapman 1907, Simmons 1924). Golden-cheeked warblers winter in the highland pine-oak woodlands of southern Mexico and northern Central America (Kroll 1980).

Historic and Current Distribution

The GCWA's entire breeding range occurs on the Edwards Plateau and Lampasas Cut Plain of central Texas. Golden-cheeked warblers have been confirmed in 39 counties: Bandera, Bell, Bexar, Blanco, Bosque, Burnet, Comal, Coryell, Dallas, Eastland, Edwards, Erath, Gillespie, Hamilton, Hays, Hill, Hood, Jack, Johnson, Kendall, Kerr, Kimble, Kinney, Lampasas, Llano, Mason, McLennan, Medina, Menard, Palo Pinto, Real, San Saba, Somervell, Stephens, Tom Green, Travis, Uvalde, Williamson, and Young. However, many of the counties where it is known to occur, now or in the past, have only small amounts of suitable habitat (Pulich 1976, USFWS 1996, Lasley et. al. 1997). Diamond (2007) estimated that the amount of suitable GCWA habitat across the species' range was approximately 4.2 million acres, much of this habitat occurring on private lands. As a result, the population status for the GCWA on private lands remains undocumented throughout major portions of the breeding range.

Reasons for Decline and Threats to Survival

Before 1990, the primary reason for GCWA habitat loss was juniper clearing to improve conditions for livestock grazing. Since then, habitat loss has occurred as suburban developments spread into prime GCWA habitat. Groce *et al*. (2010) summarized the rates of expected human population growth within the range of the GCWA and found by 2030 the growth rate ranges from 17 percent around the Dallas-Fort Worth area to over 164 percent around San Antonio. As the human population continues to increase, so do associated roads, single and multi-family residences, and infrastructure, resulting in continued habitat destruction, fragmentation, and increased edge effects (Groce *et al*. 2010).

Fragmentation is the reduction of large blocks of habitat into several smaller patches. While GCWAs have been found to be reproductively successful in small patches of habitat (<50 acres), there is an increased likelihood of occupancy and abundance as patch size increases (Coldren 1998, Butcher *et al*. 2010, DeBoer and Diamond 2006). Increases in pairing and territory success are also correlated with increasing patch size (Arnold *et al*. 1996, Coldren 1998, Butcher *et al*. 2010). In addition, while some studies have suggested that small patches that occur close to larger patches are likely to be occupied by GCWAs, the long-term survival and recovery of the GCWA is dependent on maintaining the larger patches (Coldren 1998, Peterson 2001, TNC 2002).

As habitat fragmentation increases, so too does edge, which is where two or more different vegetation types meet. For the GCWA edge is where woodland becomes shrubland, grassland, a subdivision, etc., and depending on the type of edge, it can act as a barrier for dispersal; act as a territory boundary; favor certain predators; increase nest predation; and/or reduce reproductive

output (Johnston 2006, Arnold *et al*. 1996). Canopy breaks (the distance from the top of one tree to another) as little as 36 feet have been shown to be barriers to GCWA movement (Coldren 1998). Territory boundaries have not only been shown to stop at edges, but GCWAs are more often farther from habitat edges (Beardmore 1994, DeBoer and Diamond 2006, Sperry 2007).

Other threats to GCWAs include the clearing of deciduous oaks upon which the GCWA forage, oak wilt infection in trees, nest parasitism by brown headed cowbirds (Engels and Sexton 1994), drought, fire, stress associated with migration, competition with other avian species, and particularly, loss of habitat from urbanization (Ladd and Gass 1999). Human activities have eliminated GCWA habitat throughout their range, particularly areas associated with the I-35 corridor between the Austin and San Antonio metropolitan areas.

Range-wide Survival and Recovery Needs

The recovery strategy outlined in the Golden-cheeked Warbler Recovery Plan (Service 1992a), which is currently being revised, divides the breeding range of the GCWA into eight regions, or units, and calls for the protection of sufficient habitat to support at least one self-sustaining population in each unit. These recovery units were delineated based primarily on watershed, vegetation, and geologic boundaries (Service 1992a).

Based on the Golden-cheeked Warbler Recovery Plan (Service 1992a), protection and management of occupied habitat and minimization of degradation, development, or environmental modification of unoccupied habitat necessary for buffering nesting habitat are necessary to provide for the survival of the species. Habitat protection must include elements of both breeding and non-breeding habitat (i.e., associated uplands and migration corridors). Current and future efforts to create new and protect existing habitat will enhance the GCWA's ability to expand in distribution and numbers. Efforts, such as land acquisition and conservation easements, to protect existing viable populations is critical to the survival and recovery of this species, particularly when rapidly expanding urbanization continues to result in the loss of prime breeding habitat.

According to the Golden-cheeked Warbler Population and Habitat Viability Assessment Report (Service 1996) (Golden-cheeked warbler PHVA) a viable population needs to consist of at least 3,000 breeding pairs. This and other population viability assessments on GCWAs have indicated the most sensitive factors affecting their continued existence are population size per patch, fecundity (productivity or number of young per adult), and fledgling survival (Service 1996, Alldredge *et al*. 2002). These assessments estimated one viable population will need a minimum of 32,500 acres of prime unfragmented habitat to reduce the possibility of extinction of that population to less than five percent over 100 years (Service 1996). Further, this minimum carrying capacity threshold estimate increases with poorer quality habitat (e.g., patchy habitat resulting from fragmentation).

Several State and federally owned lands occur within the breeding range of the GCWA, but the overriding majority of the species' breeding range occurs on private lands that have been either occasionally or never surveyed (Service 1992a). Currently there are only four large GCWA populations receiving some degree of protection: those at the Balcones Canyonlands Preserve in

Travis County; the nearby Balcones Canyonlands National Wildlife Refuge (NWR) in Travis, Burnet, and Williamson counties; Camp Bullis Military Installation in Bexar County; and the Fort Hood Military Reservation in Coryell and Bell counties. There are also several conservation banks (CB) that are protecting GCWAs: Hickory Pass CB in Burnet County, Majestic Ranch CB in Kendall County, and Bandera Canyonlands CB in Bandera and Real counties.

Environmental Baseline

The GCWA has been documented from 18 counties within the action area: Bell, Bosque, Burnet, Coryell, Dallas, Eastland, Erath, Johnson, Hill, Hood, Jack, Lampasas, McLennan, Palo Pinto, Somervell, Stephens, Tom Green, and Young (Pulich 1976, Oberholser 1974, Lasley *et al*. 1997, SWCA 2010). As described in the Golden-cheeked Warbler Recovery Plan (Service 1992a), the range of the GCWA is divided into 8 recovery regions. Portions of the action area fall within GCWA recovery regions 1, 2, 3, 4, and 5.

Table 2: Tracts within the action area receiving some management/protection that benefits GCWAs.

Region 1*	
Wagley Ranch	TPWD's Possum Kingdom State Park (SP)
Region 2	
TPWD's Dinosaur Valley SP	TPWD's Meridian SP
Cahopo Ranch	Fossil Rim Wildlife Center
Army Corps of Engineers' (COE) Lake Whitney	
Region 3	
Department of Defense's (DOD) Fort Hood Military Reservation	COE's Belton and Stillhouse Hollow reservoirs
Region 4	
TPWD's Longhorn Cavern SP	TPWD's Colorado Bend SP
Lower Colorado River Authority's (LCRA) Canyon of the Eagles	
Region 5	
Balcones Canyonlands NWR	Hickory Pass Mitigation Bank

* There are very few records of GCWAs within region 1

Oncor currently has 2,131 miles (41,328 acres) of existing transmission ROWs within the range of the GCWA in the action area. Oncor estimated that 787 acres of potential GCWA habitat could be directly impacted by the Covered Activities within existing ROWs and up to 465 acres of potential habitat may be directly impacted as a result of constructing new facilities. New construction estimates are based 300 miles of planned new 345-kV electric transmission lines that will pass through potential habitat areas: 60 miles through Recovery Region 1, 90 miles through Recovery Region 2, 105 miles through Recovery Region 3, and 22.5 miles each through Recovery Regions 4 and 5. At an assumed width of 160 feet this would result in 5,818 acres of new ROWs. Taking the highest maximum percentage (8 percent in Bosque County) of GCWA habitat estimated for Oncor's existing facilities results in the direct take of 465 acres. Using 300

feet from direct impacts to assess indirect impacts, approximately 21,818 acres would occur within 300 feet of newly created edges in potential habitat areas upon clearing an approximate 160-foot ROW. Using the maximum of 8 percent noted above for direct impacts, an estimated 1,745 acres of potential habitat may be indirectly impacted as a result of constructing new facilities.

Threats within the action area include a lack of oak recruitment due to herbivory from native and non-native animals, death of mature oaks from oak wilt, and catastrophic fires (Pulich 1976, Armstrong *et al*. 1991, Texas Forest Service 2008, USDA and DOI 2001). Further, as large blocks of good quality habitat within regions 1-5 become developed, opportunities to meet recovery goals become more limited due to increased development pressure, increased land prices, and fragmentation.

According to our consultations tracking database, there have been 48 formal section 7 consultations on the GCWA. The action area these consultations covered was over 61,742,287 acres. Four of these consultations were on Fort Hood; therefore, we've only counted that action area once. One consultation covered half of Texas at 60 million acres. Over 33,400 acres of GCWA habitat were authorized to be impacted by these consultations. Several large consultations make up the majority of this acreage: 1) over 10,000 acres were associated with Fort Hood, which still has over 55,000 acres of high quality GCWA habitat; 2) 9,424 acres were associated with a brush control project to be conducted throughout the GCWA's 35 county range; 3) 5,000 acres were for activities on Camp Bullis, less than 15 percent of which was considered occupied, with restrictions on the remaining 8,000 acres of occupied high quality GCWA habitat. Additionally, we have issued 123 individual 10(a)(1)(B) incidental take permits covering more than 23,000 acres (note: this is the permit area, not the actual acres of impacted habitat). Since 2006, we've authorized impacts to over 7,200 acres of GCWA habitat, 6,000 of which was authorized under Williamson County's Regional HCP. The consultations resulted in over $1.2 million given to the BCP for purchase of preserves in Travis County and over 71,000 acres of land preserved and/or maintained for the benefit of the GCWA.

Effects of the Action

The Service is authorizing Oncor to impact a total of 2,997 acres of GCWA habitat. This acreage includes 787 acres in existing ROWs, 465 acres of direct impact for new facilities, and 1,745 acres for indirect impacts for new. The impacts from Covered Activities by recovery region are: Region 1, 702 acres; Region 2, 933 acres; Region 3, 1,032 acre; Region 4, 166 acres; and, Region 5, 166 acres. See section 5.2.8.3 of the HCP for the methods used to determine potential acreage impacts.

Indirect effects of the action include both the direct and indirect effects of implementing the HCP. Direct impacts from implementation of the HCP include habitat removal, degradation, and/or fragmentation. Indirect impacts from implementation of the HCP could occur from increased edge, which can increase the presence of nest predators and parasites, and reduction in patch quality and overall habitat suitability.

Of the estimated 4.2 million acres of potential GCWA habitat throughout the range, the action area contains approximately 2.3 million acres of habitat (Morrison *et al*. 2010). The amount of habitat proposed to be impacted is 0.13 percent of GCWA habitat within the action area and 0.07 percent of habitat throughout the range. Additionally, Oncor proposes to assess habitat suitability and/or occupancy on a project-by-project basis to more accurately quantify take. Furthermore, to reduce adverse impacts to GCWAs from the Covered Activities Oncor will: 1) avoid known populations of this species, its habitat, and lands managed for its conservation; 2) minimize habitat fragmentation, where suitable or potential habitat cannot be avoided, by paralleling other existing ROWs; 3) limit clearing of oak-juniper woodland vegetation to the minimum necessary to operate and maintain lines; 4) perform Covered Activities, if within 300 feet of GCWA habitat, outside of the breeding season, except as described in Changed Circumstances; 5) limit clearing of access roads unless absolutely necessary; and 6) trim taller trees adjacent to the ROWs the minimum amount necessary.

While the exact number of acres that will be impacted, and will therefore need to be mitigated for, is not currently known, a maximum impact has been estimated for GCWAs. Oncor proposes to mitigate for their impacts to GCWAs from Covered Activities at a 3:1 ratio (i.e., 3 acres of mitigation for each acre of direct impact) for direct impacts and a 1.5:1 ratio for indirect impacts. This level of mitigation will contribute to overall recovery by permanently preserving more acreage than is removed and by focusing that mitigation in single parcels when acreage impacted will likely come from patches spanning linear projects. Mitigation will occur through purchase of mitigation credits from a Service-approved conservation bank with priority given to banks within the recovery region in which impacts occur. However, should mitigation credits be unavailable from a Service-approved conservation bank, Oncor may coordinate directly with a conservation organization such as The Nature Conservancy of Texas or TPWD for the purchase of conservation lands. If purchase of land is not a viable mitigation option (i.e., mitigation funds are not sufficient for purchase of a reasonable amount of land to support the conservation of the GCWA), in coordination with and approval by the Service, other options such as habitat enhancement, management, or restoration activities will be explored. See section 6.0, Conservation Measures, for more specific examples of species specific alternative mitigation measures.

Critical habitat has not been designated for the GCWA; therefore, no adverse modification of critical habitat will occur.

Black-capped vireo

Status of the Species

Species Description and Life History

The black-capped vireo (*Vireo atricapilla*, BCVI) was federally listed as endangered in 1987 (52 FR 37420). No critical habitat has been designated for this species.

The BCVI is a 4.5 inch long, insectivorous songbird (Service 1991b). Although BCVI habitat throughout Texas is quite variable with respect to plant species, soils, and rainfall, habitat types

generally have a similar overall appearance. Black-capped vireos typically inhabit patchy shrublands and open woodlands with a distinctive patchy structure. The shrub vegetation generally extends from the ground to about six feet above ground and covers about 30 to 60 percent of the total area. In the Edwards Plateau, common plants in BCVI habitat include Texas oak, shin oak (*Q. sinuata*), live oak, mountain laurel (*Sophora secundiflora*), sumac (*Rhus*. sp), redbud (*Cercis canadensis* var. *texana*), Texas persimmon (*Diospyros texana*), mesquite (*Prosopis glandulosa*), and agarita (*Mahonia trifoliata*). Densities of Ashe juniper are usually low. In the Edwards Plateau, suitable habitat for the BCVI is early successional scrub/shrub created by fire or woodland clearing. Black-capped vireos are opportunistic foragers; however, they prefer insect larvae and seeds (Grzybowski 1995).

Male BCVIs arrive in central Texas in late March and begin to establish breeding territories, which they defend against other males by singing within their territories. The females arrive a few days later, but are more difficult to detect in the dense brushy habitat. Three to four eggs are generally incubated in April, and unless there is a second nesting attempt, nestlings fledge in May to early June. In mid-July, BCVIs begin their migration south, beginning with females and young and followed by adult males (Campbell 2003, Graber 1957, Oberholser 1974). Typically, BCVIs are gone from Texas by mid-September.

Historic and Current Distribution

Black-capped vireos breed from Oklahoma south through central Texas to the Edwards Plateau, then south and west to central Coahuila, Nuevo Leon, and southwestern Tamaulipas, Mexico, and they winter on the Pacific slope of Mexico. Populations have been extirpated in Kansas and have been reduced in Oklahoma, suggesting habitat loss and parasitism may be particularly prevalent in that part of the species' range (Grzybowski 1995, Wilkins *et al*. 2006). The current section seven range of the BCVI includes 67 counties in Texas and 8 counties in Oklahoma. Records indicate that BCVIs are currently known from only 51 counties in Texas and 4 counties in Oklahoma.

Wilkins *et al*. (2006) estimated that in 2005, the known U.S. population of BCVIs was approximately 6,000 males, a marked increase since its listing. It is unknown whether estimated population numbers have increased due to increased survey efforts, increased habitat due to habitat management efforts, or some combination of both. Approximately 75 percent of the known population is known from three locations: two in Texas: Kerr Wildlife Management Area (WMA) and Ft. Hood, and one in Oklahoma shared between the Wichita Mountains NWR and adjacent DOD Ft. Sill (Wilkins *et al*. 2006). Utilizing records since 2006, there are 31 BCVI populations with more than 30 individuals, 10 of which contain more than 100 individuals. Within Texas many efforts are underway to assist landowners in determining the status of BCVIs on their property and to educate landowners on the implementation of management strategies beneficial to the BCVI. Fully understanding the current distribution of the BCVI in Texas largely depends on the data collected through these various efforts.

Reasons for Decline and Threats to Survival

Threats to the BCVI include habitat loss, fragmentation, and degradation due to development, vegetational succession, poor grazing practices, and brown-headed cowbird parasitism. A complete summary of the threats to the species can be found in in the Service's 5-year review (Service 2007).

Range-wide Survival and Recovery Needs

The Black-capped Vireo Recovery Plan (Service 1991b) divides the BCVI's Texas breeding range into six regions delineated based primarily on physiographic boundaries. Recovery could occur when there is a viable vireo population, greater than 1,000 breeding females, is protected in four of the six Texas regions and one each in Oklahoma and Mexico (Service 1991b and 1995b).

Based on the Black-capped Vireo Recovery Plan (Service 1991b), protection and management of occupied habitat and minimization of further degradation, development, or environmental modification of unoccupied habitat are necessary to provide for the survival of the species. Habitat protection must include elements of both breeding and non-breeding habitat (i.e., associated uplands and migration corridors). Efforts to create new, and protect existing, habitat will enhance the BCVI's ability to expand in distribution and numbers. Efforts; such as land acquisition, conservation easements, active habitat management/maintenance, and enrollment in Environmental Defense's Safe Harbor Agreement; to protect/maintain existing viable populations are critical to the survival and recovery of this species.

Environmental Baseline

There are confirmed records of BCVIs in 27 counties within the action area: Bell, Bosque, Brown, Burnet, Callahan, Coke, Coleman, Cooke, Coryell, Dallas, Eastland, Erath, Jack, Lampasas, McCulloch, Mills, Montague, Nolan, Palo Pinto, Parker, Pecos, Runnels, San Saba, Somervell, Sterling, Taylor, and Tom Green. According to the Black-capped Vireo Recovery Plan (1991b), the action area falls within portions of all six recovery regions.

Table 3: Populations of BCVIs within the action area with greater than 30 birds.*

Region 1	
Silver Star I (48, 2007) Wind Resource Area (WRA)	Silver Star II (46, 2008) WRA
Region 2	
DOD's Fort Hood Military Installation (>4,000, 2010)	Balcones Canyonlands NWR (133, 2009)
Clearwater Ranch (100, 2009)	
Region 3	
TPWD's Colorado Bend SP (46, 2009)	
Region 4	
Horse Hollow (93, 2010) WRA	Buffalo Gap I (59, 2005) WRA
Capricorn Ridge (67, 2008) WRA	Buffalo Gap II (45, 2008) WRA

* Numbers in parentheses are estimates of male BCVIs at each location and last year of estimate. There are no known populations greater than 30 BCVIs within the action area of regions 5 and 6.

Oncor currently has 3,631 miles (70,419 acres) of existing transmission ROWs within the range of the BCVI in the action area. Oncor estimates that 1,292 acres of potential BCVI habitat could be impacted by the operation and maintenance of the existing electric facilities. This acreage was derived from previous recovery region estimates of potential BCVI habitat (Service 2004a). Oncor estimates up to 931 acres of potential habitat may be directly impacted as a result of constructing new facilities within the action area. New construction estimates are based on 400 miles (7,758 acres) of planned new 345-kV electric transmission lines that will pass through potential habitat areas. Taking the highest maximum percentage (12 percent in Coryell County) of BCVI habitat estimated for Oncor's existing facilities results in a potential of direct take of 931 acres. Using 300 feet from direct impacts to assess indirect impacts, approximately 29,092 acres would occur within 300 feet of both newly created edges in potential habitat areas upon clearing an approximate 160-foot ROW. Using the maximum of 12 percent noted above for direct impacts, an estimated 3,491 acres of potential habitat may be indirectly impacted as a result of constructing new facilities.

Continued threats to BCVIs in the action area include the clearing of breeding habitat, overgrazing, and nest parasitism by brown headed cowbirds. The overall loss and potential fragmentation of native rangeland caused by land use conversion and ownership changes throughout major portions of the species' breeding range, especially in the Edwards Plateau and North-central Texas regions, has likely resulted in an overall decrease in the potential habitat available for the species (Wilkens *et al*. 2006).

No new threats to the BCVI have been identified since listing, and based on the 5-year status review (Service 2007), it appears the original threats to the species still exist, but the magnitude of the threats has changed, resulting in an overall decrease in threat level. Conservation programs and measures implemented to reduce the threats to the species include a 37-county Safe Harbor Agreement held by Environmental Defense, with 7 enrolled properties actively managing for BCVIs; private lands incentives; cowbird removal programs; and public outreach. Most of these measures have occurred within the species' range in Texas and target the major threats to the species – loss of habitat and brood parasitism.

According to our consultations tracking database, there have been at least 32 formal consultations on BCVIs since 1995. Four of these consultations were in Oklahoma, with the remainder in Texas. Of the remaining 28, 10 were within the action area. Six were associated with Fort Hood: four related to specific projects (1,400 acres of impact) and two the result of consultation on their Endangered Species Management Plans (ESMP). The 2005 ESMP consultation resulted in the lifting of restrictions on 4,381 acres of habitat, and the 2010 consultation lifted restrictions on 10,339 acres. However, Fort Hood continues to maintain enough BCVI habitat to support one viable population on the installation. Two other consultations authorized more than 50,000 acres of impact: the Natural Resource Conservation Service consultation covered brush management activities throughout the majority of the BCVI's range in Texas and the Balcones Canyonlands NWR prescribed burning consultation. Both,

however, were expected to result in a net benefit to BCVIs due to the creation of habitat as a result of the activities.

Effects of the Action

The Service is authorizing Oncor to impact a total of 5,714 acres of BCVI habitat. This acreage includes 1,292 acres in existing ROWs, 931 acres of direct impact for new facilities, and 3,491 acres for indirect impacts for new facilities. The impacts from Covered Activities by recovery region are: Region 1, 1,790 acres; Region 2, 1,918 acres; Region 3, none; Region 4, 1,785; Region 5, none; and Region 6, 221 acres. See section 5.2.9.3 of the HCP for the methods used to determine potential acreage impacts.

Indirect effects of the action include both the direct and indirect effects of implementing the HCP. Direct impacts from implementation of the HCP include habitat removal, degradation, and/or fragmentation. Indirect impacts could occur from increased potential for predation, including predation by the red imported fire ant (*Solenopsis invicta*), increased brood parasitism, and competition or changes in the structure or composition of adjacent habitat, which may affect foraging activity.

Of the approximately 1.45 million acres of BCVI habitat in Texas, the action area contains approximately 261,000 acres of habitat (Service 2004a). The amount of habitat proposed to be impacted is 2.19 percent of BCVI habitat within the action area and 0.4 percent of habitat within Texas. Additionally, Oncor proposes to assess habitat suitability and/or occupancy on a project-by-project basis to more accurately quantify take. Furthermore, to reduce adverse direct impacts to BCVIs from Covered Activities Oncor will: 1) avoid known populations of this species, its habitat, and lands managed for its conservation; 2) minimize habitat fragmentation, where suitable or potential habitat cannot be avoided, by paralleling other existing ROWs; 3) limit clearing vegetation to the minimum necessary to operate and maintain lines; 4) perform Covered Activities, if within 300 feet of BCVI habitat, outside of the breeding season, except as described in Changed Circumstances; 5) limit clearing of access roads unless absolutely necessary; and 6) trim taller trees adjacent to the ROWs the minimum amount necessary.

While the exact number of acres that will be impacted, and will therefore need to be mitigated for, is not currently known, a maximum impact has been estimated for BCVIs. Oncor proposes to mitigate for their impacts to BCVIs from Covered Activities at a 2:1 ratio for direct impacts and 1:1 ratio for indirect impacts. This level of mitigation will contribute to overall recovery by permanently preserving more acreage than is removed and by focusing that mitigation in single parcels when acreage impacted will likely come from patches spanning linear projects. Mitigation will occur through purchase of mitigation credits from a Service-approved conservation bank with priority given to banks within the recovery region in which impacts occur. However, should mitigation credits be unavailable from a Service-approved conservation bank, Oncor may coordinate directly with a conservation organization such as The Nature Conservancy of Texas or the TPWD for the purchase of conservation lands. If purchase of land is not a viable mitigation option (i.e., mitigation funds are not sufficient for purchase of a reasonable amount of land to support the conservation of the BCVI), in coordination with and approval by the Service, other options such as habitat enhancement, management, or restoration

activities will be explored. See section 6.0, Conservation Measures, for more specific examples of species specific alternative mitigation measures.

Critical habitat has not been designated for the BCVI; therefore, no adverse modification of critical habitat will occur.

Red-cockaded woodpecker

Status of the Species

Species Description and Life History

The red-cockaded woodpecker (*Picoides borealis*, RCW) was listed as endangered June 2, 1970 (35 FR 16047), and received Federal protection with the passage of the Endangered Species Act in 1973. No critical habitat has been proposed for this species.

Red-cockaded woodpeckers are relatively small with adults measuring 8 to 9 inches (Jackson 1994, Conner *et al.* 2001). The RCW inhabits open, park-like stands of pine forests in the southeastern U.S., with a known preference for older (>60 years) pines. Historically, these open stands were maintained by frequent, natural fires that reduced the density of the understory and midstory of the community and maintained a desirable basal area of pines. The RCW frequently selects longleaf pine (*Pinus palustris*), for which the bird may have a particular affinity, slash pine (*P. elliottii*), loblolly pine (*P. taeda*), shortleaf pine (*P. echinata*), pitch pine (*P. rigida*), and pond pine (*P. serotina*) for nest and roost sites (Jackson 1994, Thompson and Baker 1971).

The species excavates cavities for nesting and roosting almost exclusively in old living pine trees with a diameter at breast height of around 10 inches and usually infected with red heart fungus (*Phellinus pini*). Older trees are more frequently infected with this fungus, which softens the tough heartwood, and will more often have a heartwood diameter (at least 5.5 to 6.3 inches) sufficient for cavity excavation. Cavities are generally constructed at a height from 20 to 80 feet, taking up to 16 or more years to complete.

Cavity tree clusters, or aggregations of cavity trees utilized by single-family units, are ideally at least 10 acres of solid pine forest with few midstory species reaching no more than 15 feet in height (Campbell 2003). Encroachment of hardwoods in the midstory around cavity trees can lead to abandonment of the cavity; however, it is important that a sparse midstory of pines is maintained as a source of future cavity trees. Territories, including the cavity tree cluster and adjacent foraging habitat, can be from 100 to 250 acres (Hooper *et al*. 1980). Preferable foraging substrates within the RCW's home range are pine trees more than 30 years of age in pine or mixed pine-hardwood stands composed of at least 50 percent pine. Red-cockaded woodpecker diets consist primarily of insects (85 percent), supplemented by fruits and seeds (15 percent) (Campbell 2003, Campbell 1995).

The RCW has a unique social structure, unlike other woodpeckers where the social unit typically consists solely of the breeding pair. The RCW's social unit is composed of anywhere from two to nine birds (Hooper *et al*. 1980), including the breeding male and female and one or more

offspring, usually males, from previous broods. Typically, members of the group, or clan, occupy cavities singly. A group may use between 1 and 30 living pines as cavity trees, which are usually clustered relatively close together (Campbell 2003).

Not all groups attempt nesting in a given year. If the group does nest, the eggs are usually laid in the most recently completed cavity available, which typically is the breeding male's roost cavity (Conner *et al.* 1998). Most clutches contain 2 to 4 eggs. Many fledglings remain with the group through their first year and beyond, and become helpers. But even young that disperse in their first year may remain with the group for many months. Some young disperse in late summer, only weeks after fledging. However, most of those who have not yet departed by the onset of cooler weather in autumn remain with their natal group through the winter, and disperse in late February, March, and even into April.

Historic and Current Distribution

The historical range of the RCW extended from Texas, primarily east of the Trinity River, to the Atlantic seaboard and as far north as Maryland (Hooper *et al*. 1980). Today, the RCW occurs in the southeastern U.S. from Virginia south to Florida and west to Oklahoma and Texas (Jackson 1994).

The RCW was once found in 34 east Texas counties (Campbell 1995); currently, it occurs in 17 counties: Angelina, Cherokee, Hardin, Houston, Jasper, Liberty, Montgomery, Nacogdoches, Newton, Polk, Sabine, San Augustine, San Jacinto, Shelby, Trinity, Tyler, and Walker counties (Lockwood and Freeman 2004, Service 2010). In Texas, 88 percent of tree clusters are found on State and Federal lands, usually National Forests (R. Allen, Service RCW Recovery Coordinator, pers.comm.).

Reasons for Decline and Threats to Survival

Once a common bird distributed continuously across the southeastern United States, by the time of listing the species had declined to fewer than 10,000 individuals in widely scattered, isolated, and declining populations (Jackson 1971, Ligon *et al.* 1986). This precipitous decline was caused by an almost complete loss of habitat. Fire-maintained, old growth, pine savannahs and woodlands that once dominated the southeast no longer existed except in a few small patches.

Longleaf pine ecosystems, of primary importance to RCWs, are now among the most endangered systems on earth (Simberloff 1993, Ware *et al.* 1993). Shortleaf, loblolly, and slash pine ecosystems, important to RCWs outside the range of longleaf, also have suffered severe declines (Smith and Martin 1995). Loss of the original pine ecosystems was primarily due to intense logging for lumber and agriculture. Logging was especially intense at the turn of the century (Frost 1993, Martin and Boyce 1993, Conner *et al.* 2001). Two additional factors resulting in the loss of original pine systems in the 1800's, and earlier, were exploitation for pine resins and grazing of saplings by free-ranging hogs (*Sus scrofa*; Wahlenburg 1946, Frost 1993). Later, in the 1900's, fire suppression and detrimental silvicultural practices had major impacts on primary ecosystem remnants, second-growth forests, and consequently on the status of RCWs (Frost 1993; Ware *et al.* 1993; Ligon *et al.* 1986, 1991; Landers *et al.* 1995; Conner e*t al.* 2001).

Longleaf pine suffered a widespread failure to reproduce following initial cutting, at first because of hogs and later because of fire suppression (Wahlenburg 1946, Ware *et al.* 1993).

Range-wide Survival and Recovery Needs

Recovery criteria have been formulated using 11 recovery units delineated according to ecoregions. Populations required for recovery need to be distributed among recovery units to ensure the representation of broad geographic and genetic variation in the species. Viable populations within each recovery unit, to the extent allowed by habitat limitations, are essential to the recovery of the species as a whole.

To meet delisting criteria there need to be: 1) 10 populations of RCWs that each contain at least 350 potential breeding groups and 1 population that contains at least 1,000 potential breeding groups from among 13 designated primary core populations; 2) 9 populations of RCWs that each contain at least 250 potential breeding groups, from among 10 designated secondary core populations; 3) at least 250 potential breeding groups distributed among designated essential support populations and 6 of these populations exhibit a minimum population size of 40 potential breeding groups; and 4) the following populations are stable or increasing and contain at least 100 potential breeding groups each: (a) Northeast North Carolina/Southeast Virginia Essential Support Population of the Mid-Atlantic Coastal Plain Recovery Unit, (b) Talladega/Shoal Creek Essential Support Population of the Cumberlands/Ridge and Valley Recovery Unit, and (c) North Carolina Sandhills West Essential Support Population of the Sandhills Recovery Unit (Service 2003). For each of the populations meeting the above size criteria, responsible management agencies shall provide (1) a habitat management plan that is adequate to sustain the population and emphasizes frequent prescribed burning, and (2) a plan for continued population monitoring.

The primary actions needed to accomplish the delisting and recovery goals are: 1) application of frequent fire to both cluster and foraging habitat; 2) protection and development of large, mature pines throughout the landscape; 3) protection of existing cavities and judicious provisioning of artificial cavities; 4) provision of sufficient recruitment clusters in locations chosen to enhance the spatial arrangement of groups; and 5) restoration of sufficient habitat quality and quantity to support the large populations necessary for recovery.

Environmental Baseline

The RCW occurs in five counties within the action area: Angelina, Cherokee, Houston, Nacogdoches, and Trinity. The majority of the known woodpeckers within the action area currently occur on public lands (pers. comm. Robert Allen, Service, RCW Coordinator). According to the Red-cockaded Woodpecker Recovery Plan, Second Revision (Service 2003), which delineated 11 recovery units, a portion of the action area is within the West Gulf Coastal Plain Recovery Unit.

Within the West Gulf Coastal Plain Recovery Unit is Angelina National Forest (partially within the action area) and Sabine National Forest (outside of the action area), which are together designated as a primary core population. To achieve delisting, primary core population groups

must contain 350 or more potential breeding groups. Within this recovery unit there are 97 potential breeding groups, 16 of which are in Angelina County. Also within this recovery unit and within the action area is Davy Crockett National Forest, which is designated as a secondary core population. The secondary core populations were chosen from among several Federal properties that can hold populations of 250 potential breeding groups, and were selected to create a stepping-stone pattern in the hopes of enhancing natural dispersal. Davy Crockett National Forest currently supports 74 potential breeding groups, 54 of which are in Houston County and 20 in Trinity County. Additionally, the Texas Forest Service's 2,740 acre I. D. Fairchild State Forest in Cherokee County has the potential to support 7 potential breeding groups in a support population, but currently only contains 2. All of these properties are actively being managed for RCWs. There are no confirmed RCWs currently in Nacogdoches County, and there are two additional potential breeding groups on private lands in Trinity and Houston counties; however, they are not contributing to either the primary of secondary recovery populations within this recovery unit.

In 1998 the Service issued a joint Safe Harbor Agreement to TPWD and Texas Forest Service for RCWs covering 22 Texas counties. To be covered under this Safe Harbor Agreement landowners must agree to enhance and/or restore RCW nesting and foraging habitat. To date 15 properties covering over 24,000 acres within the action area have enrolled. However, none of these properties are currently known to support woodpeckers.

Oncor currently has 477 miles (9,251 acres) of existing transmission ROWs within the range of the RCW in the action area: 108 miles (2,095 acres) in Angelina County, 159 miles (3,084 acres) in Cherokee County, 62 miles (1,202 acres) in Houston County, and 148 miles (2,870 acres) in Nacogdoches County. Oncor estimates that 247 acres of potential RCW habitat could be impacted by the operation and maintenance of the existing electric facilities: 59 acres in Angelina County, 77 acres in Cherokee County, 28 acres in Houston County, and 83 acres in Nacogdoches County. This acreage was derived from a combination of Soil Conservation Service, Handbook of Texas, and TPWD data (Soil Conservation Service 1980c, 1988, 2002b; Handbook of Texas 2006; TPWD 2004). Oncor estimates up to 56 acres of potential habitat may be directly impacted as a result of constructing new facilities within the action area. New construction estimates are based on 100 miles (1,939 acres) of planned new 345-kV electric transmission lines that will pass through potential habitat areas. Taking the highest maximum percentage (2.9 percent in Nacogdoches County) of RCW habitat estimated for Oncor's existing facilities results in a potential of direct take of 56 acres. Using 300 feet from direct impacts to assess indirect impacts, approximately 7,273 acres would occur within 300 feet of both newly created edges in potential habitat areas upon clearing an approximate 160-foot ROW. Using the maximum of 12 percent noted above for direct impacts, an estimated 211 acres of potential habitat may be indirectly impacted as a result of constructing new facilities.

In Texas, commercial forestry (the predominant land use in this region) with short rotations (<40 years), continues to be the major threat to RCWs by eliminating essential nesting and foraging habitat (Ortego and Lay 1988). Despite continued protection under the ESA, the decline and local extirpation of RCWs has been well documented across their range. These losses are the result of a variety of factors including loss and fragmentation of habitat, fire suppression and

resultant changes in habitat structure, and vulnerability to environmental and demographic changes because of small population size.

According to our consultations tracking database, there have been no formal consultations authorizing impacts to RCWs in the action area.

Effects of the Action

The Service is authorizing Oncor to impact a total of 514 acres of RCW habitat. This acreage includes 247 acres in existing ROWs, 56 acres of direct impact for new facilities, and 211 acres for indirect impacts for new facilities. The impacts from Covered Activities within existing ROWs by county are: Angelina County, 59 acres; Cherokee County, 77; Houston County, 28 acres; Nacogdoches County 83. There is an additional 267 acres of potential impacts from future Covered Activities throughout the action area. See section 5.2.10.3 of the HCP for the methods in determining potential acres of impact.

Indirect effects of the action include both the direct and indirect effects of implementing the HCP. Direct impacts from implementation of the HCP could occur from habitat removal, degradation, and/or fragmentation forcing some individuals to migrate from suitable habitat to less-suitable locations where the species' habitat may already be at its carrying capacity. Indirect impacts could occur from vehicular activity within active colonies, which can result in excessive soil compaction, damage to cavity tree roots, groundcover disturbance, and noise disturbance.

Of the over 262,000 acres of RCW habitat being actively managed in Texas, the action area contains approximately 94,000 acres of that habitat (R. Allen, pers. comm.). The amount of habitat proposed to be impacted is 0.55 percent of RCW habitat within the action area and 0.12 percent of habitat within Texas. Additionally, Oncor proposes to assess habitat suitability and/or occupancy on a project-by-project basis to more accurately quantify take. Furthermore, to reduce adverse direct impacts to RCWs from Covered Activities Oncor will: 1) avoid populations of this species, its habitat, and lands managed for its conservation and recovery in completing the Covered Activities; 2) minimize habitat fragmentation, where suitable or potential habitat cannot be avoided, by paralleling other existing ROWs; 3) perform Covered Activities, if proximal to, but outside of, an RCW cluster boundary, outside of the nesting season and not during the hours immediately preceding and following sunrise and sunset; 4) limit clearing of access roads unless absolutely necessary; and 5) trim or top taller trees adjacent to the ROWs to the minimum necessary.

While the exact number of acres that will be impacted, and will therefore need to be mitigated for, is not currently known, a maximum impact has been estimated for RCWs. Oncor proposes to mitigate for their impacts to: poor quality RCW foraging habitat greater than 0.25 but less than 0.50 mile from an active colony at 0.5:1; good quality RCW foraging habitat greater than 0.25 but less than 0.50 mile from an active colony at 1:1; poor quality RCW foraging habitat less than 0.25 mile from an active colony at 1.5:1; and good quality RCW foraging habitat less than 0.25 mile from an active colony at 2:1. Good quality habitat is defined as having an open structure with an intermediate pine density and sparse or absent hardwood midstory (Service 2003). This level of mitigation will contribute to recovery by: 1) permanently preserving good

quality habitat even when poor quality habitat is impacted, and 2) focusing mitigation in single parcels when acreage impacted will likely come from patches spanning linear projects. Mitigation will occur through purchase of mitigation credits from a Service-approved conservation bank. However, should mitigation credits be unavailable from a Service-approved conservation bank, Oncor may coordinate directly with a conservation organization such as The Nature Conservancy of Texas or the TPWD for the purchase of conservation lands. If purchase of land is not a viable mitigation option (i.e., mitigation funds are not sufficient for purchase of a reasonable amount of land to support the conservation of the RCW), in coordination with and approval by the Service, other options such as habitat enhancement, management, or restoration activities will be explored. See section 6.0, Conservation Measures, for more specific examples of species specific alternative mitigation measures.

Critical habitat has not been designated for the RCW; therefore, no adverse modification of critical habitat will occur.

Whooping crane

Status of the Species

Species Description and Life History

The whooping crane (*Grus americana*) was listed as endangered in June 1970 (35 FR 8491). Critical habitat for the species was designated in May 1978 (43FR 20938) in four states (Nebraska, Kansas, Oklahoma, and Texas).

The whooping crane is a large wading bird that has returned from the brink of extinction. It is the tallest North American bird and males, which are larger than females, may reach nearly 5 feet. The life span in the wild is estimated to be 22 to 24 years (Campbell 2003, Canadian Wildlife Service [CWS] and the Service 2007, Lewis 1995).

Whooping cranes may start nesting as early as 3 years of age (Kuyt and Goossen 1987; Brian Johns, CWS, pers. comm.). However the average age of first egg production is 5 years (Kuyt and Goossen 1987). Pair formation can occur rapidly or be a lengthy process (Bishop 1984, Stehn 1997). Whooping cranes are monogamous, but will re-pair, sometimes within only a few days, following the death of their mate (Blankinship 1976, Stehn 1992a, 1997). Experienced pairs arrive at their breeding grounds in late April and begin nest construction. They show considerable fidelity to their breeding territories, and normally nest in the same general vicinity each year. From the initiation of egg laying until chicks are a few months of age, the activities of pairs and family groups are restricted to the breeding territory.

Autumn migration normally begins in mid-September, with most birds arriving on the wintering grounds between late October and mid-November. Occasionally, stragglers may not arrive until late December. Whooping cranes migrate south as singles, pairs, in family groups, or as small flocks of 3 to 5 birds (Johns 1992). They are diurnal migrants, flying during the day and resting at night, and make regular stops to feed and rest. Large groups of up to 20 sometimes use the

same stopover location. Pairs with young are among the last to leave the breeding range (Allen 1952, Archibald *et al*. 1976, Stephen 1979).

Whooping cranes are known to utilize a variety of habitat types during migration, including freshwater marshes, wet prairies, inland lakes, small farm ponds, upland grain fields, and riverine systems. Shallow flooded palustrine wetlands are used for roosting, while croplands and emergent wetlands are used for feeding. Riverine habitats, such as submerged sandbars, are often used for roosting as well. Most wetlands used for roosting are within 0.62 mile of a suitable feeding area (Armbruster 1990; Campbell 2003; CWS and the Service 2007; Howe 1987, 1989; Lewis 1995; Lingle *et al*. 1991). The whooping crane's principal wintering habitat consists primarily of brackish bays, marshes, and salt flats, but they will also forage on interior uplands (Campbell 2003, CWS and Service 2007, Lewis 1995).

As spring approaches, mating or "dancing" behavior (running, leaping, and bowing; unison calling; and flying) increases in frequency, and is indicative of pre-migratory restlessness (Allen 1952, Blankinship 1976, Stehn 1992b). Family groups and pairs are usually among the first to depart wintering grounds, often assisted by seasonal strong southeast winds. First departure dates are normally between March 25 and April 15, with the last birds usually leaving by May 1. Occasional stragglers may linger into mid-May, and in 19 years, from 1938-2005, 1 to 4 birds (34 birds total) have remained on the wintering grounds throughout the summer. Parents separate from their young of the previous year upon departure, in northward migration while in route to the breeding grounds, or soon after arrival on the breeding grounds (Allen 1952, Stehn 1992c, B. Johns, CWS, pers. comm.).

Historic and Current Distribution

Current evidence indicates that the species' historical range extended from the Arctic coast south to central Mexico, and from Utah east to New Jersey, South Carolina, Georgia, and Florida (Allen 1952, Nesbitt 1982). The major nesting area during the 19th and 20th centuries extended from central Illinois, northwestern Iowa, northwestern Minnesota, and northeastern North Dakota northwesterly through southwestern Manitoba, southern Saskatchewan, and into east central Alberta (Allen 1952). Some nesting apparently occurred at other sites such as Wyoming in the 1900's, but documentation is limited (Kemsies 1930, Allen 1952). Allen (1952) believed the whooping crane's principal wintering range was the tall grass prairies, in southwestern Louisiana, along the Gulf Coast of Texas, and in northeastern Mexico near the Rio Grande Delta. Other significant wintering areas were the interior tablelands in western Texas and the high plateaus of central Mexico, where whooping cranes occurred among thousands of sandhill cranes.

In the 19th century, there were several migration routes. The two most important ones were "...those between Louisiana and the nesting grounds in Illinois, Iowa, Minnesota, North Dakota, Manitoba, and the other from Texas and the Rio Grande Delta region of Mexico to nesting grounds in North Dakota, the Canadian Provinces, and Northwest Territories" (Allen 1952:103). A route through west Texas into Mexico apparently followed the route still used by sandhill cranes, and it is believed the whooping cranes regularly traveled with them to wintering areas in the central interior highlands region (Allen 1952). Another migration route crossed the

Appalachians to the Atlantic Coast. These birds apparently nested in the Hudson Bay area of Canada.

Whooping cranes currently occur only in North America within Canada and the United States. Approximately 83 percent of the wild nesting sites occur in Canada and 17 percent occur in Florida and Wisconsin. There is only one self-sustaining wild population and it nests in the Northwest Territories and adjacent areas of Alberta, Canada, primarily within the boundary of Wood Buffalo National Park (WBNP, Johns 1998). These cranes migrate southeasterly through Alberta, Saskatchewan, and eastern Manitoba, stopping in southern Saskatchewan for several weeks in fall migration before continuing migration into the United States. They migrate through the Great Plains states of eastern Montana, North Dakota, South Dakota, Nebraska, Kansas, Oklahoma, and Texas. They winter along the Gulf of Mexico coast at Aransas National Wildlife Refuge (ANWR) and adjacent areas in estuarine marshes, shallow bays, and tidal flats (Allen 1952, Blankinship 1976). Some individuals occur occasionally on nearby privately owned pasture or croplands.

Allen (1952:83) estimated that the whooping crane population in "... 1860, or possibly 1870, totaled between 1,300 and 1,400 individuals." Banks (1978), using 2 independent techniques, derived estimates of 500 to 700 whooping cranes present in 1870. The whooping crane disappeared from the heart of its breeding range in the north-central United States by the 1890s. By 1944 only 21 birds remained in 2 small breeding populations: a non-migratory population that inhabited the area around White Lake in southwestern Louisiana, and the migratory Aransas-Wood Buffalo population. The last reported reproduction in the nonmigratory Louisiana population occurred in 1939 (Lynch 1956, Gomez 1992, Drewien *et al*. 2001). In March, 1950, the Louisiana population ceased to exist as the last individual was captured and turned loose at Aransas, but did not survive the summer.

In 2011, 281whooping cranes, a record number, occured in the Aransas-Wood Buffalo population (O'Brian 2011). The second population of wild whooping cranes is non-migratory (Nesbitt *et al*. 1997) and occurs in central Florida. This population was first reintroduced in 1993, approximately 59 birds survived in February 2006, from 289 captive-reared whooping cranes released over a 13-year period. A third population of wild whooping cranes is migratory and was reintroduced starting in 2001. This population migrates from the Necedah NWR in central Wisconsin to Chassahowitzka NWR, a 30,800 acres expanse of salt marsh on the Gulf Coast of Florida. As of 2011, this population numbered 110 birds. There are also approximately 167 whooping cranes in captivity, mostly at Patuxent Research Refuge, Maryland (O'Brian 2011).

Reasons for Decline and Threats to Survival

Hunting was one of the primary reasons for the whooping crane's historical decline. Human-caused mortality of cranes declined following enactment of protective legislation. Although hunting whooping cranes is now illegal, shootings occasionally occur (Lewis *et al*. 1992).

The growth of the human population in North America has resulted in significant whooping crane habitat alteration and destruction. Conversion of potholes and prairies to hay and grain

production made much of the historic nesting habitat unsuitable for whooping cranes. Disruptive practices included draining, fencing, sowing, and the human activity associated with these actions. Settlement of the mid-continent and coastal prairies and associated disturbance, in addition to alteration of habitat, may have interfered with continued use of prairie and wetlands by breeding whooping cranes. The extensive drainage of wetlands in the prairie pothole region of Canada and the United States also resulted in a tremendous loss of migration habitat available to whooping cranes. Water diversions on major river systems, such as the Platte River, have degraded migration habitat.

Currently, expanding human populations throughout the range of the whooping cranes continue to threaten survival and recovery of the birds. Impacts are particularly severe on the wintering grounds. Freshwater inflows starting more than a hundred miles inland, primarily from the Guadalupe and San Antonio rivers, flow into whooping crane critical habitat at ANWR; these inflows are needed to maintain proper salinity gradients, nutrient loadings, and sediments that produce an ecologically healthy estuary (TPWD 1998). Spring flows originating from the Edwards Aquifer are also crucial, especially in times of drought when they can make up 70 percent of Guadalupe River water. Inflows are essential to maintaining the productivity of coastal waters and produce foods used by whooping cranes. Coastal waters with low saline levels are maintained by these in-stream flows, providing drinking water for cranes that would otherwise fly inland for freshwater.

Collisions with power lines are a substantial cause of whooping crane mortality in migration (Brown *et al*. 1987, Lewis *et al*. 1992). Collisions with power lines are responsible for the death or serious injury of at least 44 whooping cranes since 1956. In the 1980s, 2 of 9 radio-marked whooping cranes from the Aransas-Wood Buffalo population died within the first 18 months of life as a result of power line collisions (Kuyt 1992). Of 27 documented mortalities in the reintroduced Rocky Mountain population, which is now extirpated, almost two-thirds were due to collisions with power lines (40.1 percent) and wire fences (22.2 percent) (Brown *et al*. 1987). Twenty individuals within the Florida populations and two individuals in the migratory Wisconsin population have died hitting power lines.

Other threats include the increased risk of disease exposure and transmission, due to the concentration of birds using the limited available wetlands; increased disturbance to whooping cranes on the wintering grounds; climate change, which can prolong drought and reduce freshwater flows; and the potential for catastrophic chemical spills or hurricanes.

Range-wide Survival and Recovery Needs

The Whooping Crane Recovery Plan (CWS and Service 2007) has no delisting criteria, due to the extremely endangered status of the species, but does set forth two primary objectives that will allow the species to be reclassified to threatened (downlisted): 1) maintain a minimum of 40 productive pairs in the Aransas-Wood Buffalo population for at least 10 years, while managing for the continued increase of the population; and 2) establish a minimum of 25 productive pairs in self-sustaining populations at each of 2 other discrete locations. A productive pair is defined as a pair that nests regularly and has fledged offspring. The two additional populations may be migratory or non-migratory. All three populations must be self-sustaining for a decade at the

designated levels before downlisting could occur. The second objective is to maintain a genetically stable captive population to ensure against extinction of the species by maintaining 153 whooping cranes in captivity (21 productive pairs).

Conservation actions have improved the status of the species. Threats to whooping cranes have been alleviated to a degree sufficient to allow an average annual growth of 4.5 percent for a half century in the Aransas-Wood Buffalo population. For example, power lines are being marked to make them more visible, a technique shown to reduce sandhill crane collisions with power lines (Morkill 1990, Morkill and Anderson 1991, Brown and Drewien 1995), which could also help reduce whooping crane mortality. Additionally, the Cooperative Protection Plans implemented by provincial, State, and Federal agencies are believed to reduce losses to shooting and disease (Lewis 1992); erosion of wintering habitat along the Gulf Intracoastal Water Way has been reduced significantly through the use of concrete matting (Zang *et al*. 1993, Evans and Stehn 1997); and dredged material has been used to create additional wintering habitat (Evans and Stehn 1997).

Based on the 4.5 percent growth rate from 1938-1991, Mirande *et al*. (1993) projected the Aransas-Wood Buffalo population to reach 500 individuals within 17 years, with no measurable probability of extinction over 100 years. Wood Buffalo NP provides suitable protected nesting habitats that have supported population recovery from 3 or 4 adult pairs in 1941 to 75 adult pairs in 2011 (Whooping Crane Conservation Association 2011). Sufficient migratory stopover habitat is available to support the present population and numbers likely to be attained in the near future. Wintering habitats at ANWR are presently sufficient to support at least 500 individuals (Tom Stehn, ANWR, pers. comm.). Currently, 5 captive flocks are producing offspring. Captive production has been sufficient to provide 289 birds for the non-migratory reintroduction experiment in Florida since 1993. In 2001, another reintroduction using captive-produced young was initiated in the eastern U.S with Wisconsin as the proposed nesting area and western Florida the wintering site. Based upon overall habitat availability, a positive growth rate, success in captive breeding, and effective conservation measures, the potential for continued survival of the species and ultimate recovery is good (Service 2007).

Environmental Baseline

There are 52 counties that whooping cranes migrate through within the action area: Archer, Bastrop, Baylor, Bell, Bosque, Brown, Burnet, Clay, Coleman, Collin, Comanche, Cooke, Coryell, Dallas, Dawson, Denton, Eastland, Ellis, Erath, Falls, Freestone, Grayson, Haskell, Hill, Hood, Jack, Johnson, Kent, Lampasas, Lee, Leon, Limestone, Lynn, Martin, McLennan, Milam, Mills, Montague, Navarro, Palo Pinto, Parker, Robertson, Rockwall, Shackelford, Somervell, Stephens, Tarrant, Terry, Throckmorton, Wichita, Wilbarger, Wise, and Young (Oberholser 1974, Pulich 1976, Howe 1989, Austin and Richert 2001, Service 2010). There is no critical habitat designated for this species within the action area. There are no recovery criteria regarding the migration stopover habitat (CWS and Service 2007), but there are several recovery tasks that address locating and protecting stopover sites, particularly in Texas, as well as reducing collision risks and shootings.

According the recovery plan, there is sufficient migratory stopover habitat available to support the present and future estimated population numbers. In the last 10 years whooping cranes have been seen in the following counties in the action area: Archer (2005) around the City of Witchita Falls' Lake Kickapoo; Bastrop (2006); Bell (2003) around the COE's Stillhouse Hollow reservoir; Bosque (1992) near COE's Lake Whitney; Burnet (2007) at the Balcones Canyonlands NWR; Clay (2003) around Lake Arrowhead; Comanche (2004) near the COE's Lake Proctor; Coryell (2003) on DOD's Fort Hood; Dawson (2001); Denton (2003) near C. Hobson Dunn Lake #2; Ellis (2003) around COE's Lake Bardwell; Grayson (2007) at Hagerman NWR; Johnson near the City of Cleburne (2003) and near the City of Godley(2004); McLennan (2008) around the COE's Lake Waco; Parker (2003-2005, 2008) around the City of Weatherford's Lake Weatherford; Tarrant (2002, 2009) near the COE's Lake Benbrook; Terry (2000) near Mound Lake; Wichita (2003, 2008) near the City of Electra; and Young (2003) near the Brazos River Authority's Possum Kingdom Lake.

Oncor currently has 4,804 miles of existing electric transmission line within the whooping crane migration corridor within the action area (see table 5-7 of the HCP for a breakdown of miles by county). It is currently unknown how many of the existing facilities are in the vicinity of suitable stopover habitat, and whether any of those facilities are having an indirect impact on the species, since whooping cranes may avoid suitable stopover points because of the proximity of powerlines (Campbell 2003, CWS and Service 2007).

Threats to stopover habitat in the action area include the expanding human population, which degrades or destroys habitat; loss of flows needed to maintain riverine migration habitat; conversion of prairie habitat for agricultural use; drought, in particular the exceptional drought of 2011, decreases habitat availability; and collision risks from towers, power lines, and wind turbines. Collisions are known to have accounted for the death or serious injury of 45 whooping cranes since 1956 (Stehn andWassenich 2008). Of the nine documented power line collisions of whooping cranes from the Aransas-Wood Buffalo population, three were within the action area: Comanche, Coryell, and Lampasas counties. While the development of most wind farms in Texas is occurring west of the whooping crane migration corridor, the transmission and distribution lines transferring the wind power will cross the corridor and are an increased threat. In addition to collisions, the presence of power lines can cause cranes to avoid stopover sites.

According to our consultations tracking database, there have been no formal consultations authorizing impacts to whooping cranes or their habitat within the migration corridor within the action area.

Effects of the Action

The Service is authorizing Oncor to incidentally take one whooping crane over the 30-year life of the permit. While Oncor has 4,804 miles of existing lines within the whooping crane corridor, it is unknown how many of these lines are near suitable or potentially suitable stopover habitat. Indirect effects of the action include both the direct and indirect effects of implementing the HCP. Direct impacts from implementation of the HCP could occur from a collision with an existing or new line. Indirect impacts from implementation of the HCP could occur by placing a line too close to suitable stopover habitat forcing cranes to use suboptimal habitat or fly farther to

find more suitable habitat. However, suitable stopover habitat is not a limiting factor within the action area (Service 2007).

Oncor will conduct field habitat assessment surveys within the migration corridor to determine potential stopover habitat prior to commencement of clearing and construction activities. Oncor will minimize the potential incidental whooping crane impacts by installing bird flight diverters or other approved devices to clearly mark an extent of existing, high priority transmission line or distribution line within the whooping crane migration corridor (when these lines are temporarily out of service) equal to the length of new transmission line constructed within one mile of known occupied habitat or potentially suitable stopover habitat. Only those sections of the existing lines within one mile of stopover habitat will be marked. Installation would occur when lines are taken out of service for repair or upgrade, and methods used will be in accordance with the Avian Power Line Interaction Committee's (APLIC) "Mitigating Bird Collisions with Power Lines: The State of the Art in 1994" (APLIC 1994), or the latest industry standards for preventing avian-powerline interactions. Existing transmission lines and facilities with the highest probability for whooping crane collisions and the availability of potential stopover habitat within a one-mile radius of their lines will be given priority for marking.

Critical habitat has been designated for the whooping crane, but not within the action area; therefore, no adverse modification of critical habitat will occur.

Houston toad

Status of the Species

Species Description and Life History

In October 1970, the Houston toad (*Bufo houstonensis*) was federally listed as an endangered species (35 FR 16047). Critical habitat was designated in 1978 (43 FR 4022 - 4026) in Bastrop and Burleson counties. The critical habitat in Burleson County is a 2,000 acre circle surrounding Lake Woodrow while the land designated in Bastrop County covers about 98,000 acres in the central portion of the county.

Houston toads are generally brown and speckled, although individual coloration can vary considerably. The Houston toad's underside is usually pale with small, dark spots. Males have dark throats, which appear bluish when distended. Adult Houston toads are 2 to 3.5 inches long and, like all toads, are covered with raised patches of skin that resemble warts (Brown 1971). Although Houston toads are similar in appearance to the closely-related Gulf Coast toad (*B. valliceps*) and Woodhouse's toad (*B. woodhouseii*), these species can be discerned by physical and genetic characteristics (Brown 1971, Hillis *et al*. 1984). Mitochondrial DNA sequence analysis indicates that the Houston toad is a unique evolutionary unit separate from the other species (Forstner and Dixon 2000).

The life expectancy of the Houston toad is at least three years, but may be longer (Price 1993). Males reach sexual maturity at about one year of age, but females require one to two years to achieve reproductive maturity (Quinn 1981, Quinn and Mengden 1984). In mark-recapture

surveys of Houston toads in Bastrop County, observed sex ratios of males to females have been highly skewed in favor of males ranging from 3:1 to 10:1 (Dixon *et al*. 1990; Forstner 2002a, 2002b, 2003, 2006). The Houston toad is an "explosive" breeder, appearing in large numbers at breeding ponds where the males call to attract females over a period of a few nights throughout the breeding season, beginning as early as January 18 (Hillis *et al*. 1984, Dixon *et al*. 1990). Houston toads typically breed from late January to June (Kennedy 1962, Hillis *et al*. 1984). Reported egg-laying dates in the field range from February 18 to June 26 (Kennedy 1962, Dixon 1982, Hillis *et al*. 1984). Breeding is believed to be triggered in part by rainfall and warm night time temperatures (Kennedy 1962). Other factors may also play a role in the timing of chorusing activity. For example, Price (1992) found that Houston toads do not generally call during 7 to 10 days prior to a full moon. However, all cues that may stimulate Houston toad breeding activity are not known.

This species tends to concentrate their reproductive efforts into producing large numbers of eggs, but each egg has less than one percent probability of survival (Seal 1994). Eggs are laid in strings in the water and hatch into tadpoles that metamorphose into juvenile toadlets approximately 60 days after egg deposition (Hillis *et al*. 1984). After metamorphosis, juvenile Houston toads move into the surrounding terrestrial habitats where they grow and develop into adults (Forstner 2003).

Historic and Current Distribution

The Houston toad is endemic to east central Texas (Dixon 2000). Historically the toad was found in Austin, Bastrop, Burleson, Colorado, Harris, Fort Bend, Lavaca, Lee, Leon, Liberty, Milam, and Robertson counties. However, since the 1980s, the Houston toad has been extirpated from Harris, Fort Bend, and Liberty counties (Hillis *et al*. 1984; Yantis 1989, 1990, 1991, 1992).

There is a high correlation between the occurrence of the Houston toad and outcrops of the Eocene Epoch Sparta Sand, Weches, Queen City Sand, Recklaw, and Carrizo Sand formations (Yantis 1991, Seal 1994, Forstner 2003). The Carrizo Sand and Reklaw formations give rise to deep sandy soils, such as the Patilo-Demona-Silstid and Axtell-Tabor soils that are often found in toad habitat (Dixon *et al*. 1990, Forstner 2003).

Reasons for Decline and Threats to Survival

Small, sedentary species with restricted distributions, specialized habitat niches, and narrow climatic tolerances are especially sensitive to changes in habitat conditions (deMaynadier and Hunter 1998, Welsh 1990). The distribution of the Houston toad appears to be restricted naturally as the result of specific habitat requirements for breeding and development. These natural restrictions make them particularly vulnerable to the negative effects of human-induced changes that result in habitat loss, degradation, and fragmentation (Hillis *et al*. 1984). Habitat disturbance also encourages the establishment and proliferation of red-imported fire ants (*Solenopsis invicta*) (fire ants). Fire ants are known to prey on newly-metamorphosed toadlets (Freed and Neitman 1988, Forstner 2002a) as well as the invertebrate community that is believed to be an important part of the food base for the Houston toad (Bragg 1960). Paved roads and other forms of urban development can prevent or hinder amphibian dispersal and increase

mortality (Van Gelder 1973, Reh and Seitz 1990, Soulé *et al*. 1992, Fahrig *et al*. 1995, Yanes *et al*. 1995, Findlay and Houlahan 1997, Gibbs 1998, Vos and Chardon 1998, Knutson *et al*. 1999).

Other forms of habitat loss or disturbance include expanding urbanization, conversion of woodlands to agricultural use, logging, mineral production, alteration of watershed drainages, wetland degradation or destruction, and other processes that contribute to loss of suitable breeding, feeding, or sheltering habitat (Brown 1971, Seal 1994). Population viability analyses for the Houston toad indicate that risk of extinction increases with reduced migration and dispersal, survivorship, reproductive success, and sustained reduction of available habitat. Maintaining several relatively large populations of equal sizes that are interconnected so as to allow dispersal and re-colonization can enhance population survival (Seal 1994).

Rangewide Survival and Recovery Needs

The Houston toad has experienced considerable population declines (Forstner 2006; McHenry and Forstner 2009) and the juvenile survival rate of this species in the wild has been shown to be approximately 0.03 percent (Forstner 2006). A population viability analysis by Hatfield *et al*. (2004) indicates this level of survival may result in a probability of extinction at or greater than 60 percent within the next 10 years (Forstner 2006). The Houston Toad Recovery Plan (Service 1984b) calls for downlisting to threatened when: 1) moderately sized, self-sustaining population in two or more counties in addition to Bastrop and Burleson counties, and 2) when the survival of existing populations in Bastrop and Burleson counties are assured. Delisting can occur when breeding populations of the toad are self-sustaining in five or more counties. This recovery plan is considered out-of-date and the Service is currently drafting a revised recovery plan. In the interim, the Service recommends a minimum of three, interconnected Houston toad populations that include a combined total of 1,000 adult female Houston toads. Ensuring these populations are connected through corridors of suitable migration habitat will allow for dispersal and re-colonization to enhance population size and genetic diversity (Service 2009b).

The Service's Spotlight Species Action Plan for the Houston toad recommends (1) determining "priority areas" to protect or restore particular habitat based on the potential of each area to provide desired benefits to the species and (2) establishing habitat objectives that directly relate to achieving the Houston toad population targets mentioned above (Service 2009b). Pursuing ways of protecting existing Houston toad habitat or habitat that could be restored to support Houston toads through fee simple purchases, conservation easements, or other means in designated areas were also suggested (Service 2009b).

The Service is partnering with other non-government organizations as well as Federal and State agencies to engage private landowners in Houston toad conservation through outreach efforts that provide information on land management and financial incentives (Service 2009b). Landowner cooperation is critical to implementing habitat management and restoration efforts throughout the Houston toad's range. Headstarting and/or captive propagation to augment existing or establish new Houston toad populations in designated priority areas will also likely play a role in the recovery of this species (Service 2009b).

Environmental Baseline

This species has been recorded in five counties within the action area: Bastrop, Lee, Leon, Milam, and Robertson counties. Designated critical habitat within the action area includes 98,000 acres in the central portion of Bastrop County.

Only Bastrop County has been surveyed consistently on an annual basis since the 1970s. In the 1980s, surveyors reported observing 30 to 1,000 or more Houston toads at individual breeding ponds. Thereafter, estimates of 2,000 Houston toads in all of Bastrop County were reported. By 2003, the number of Houston toads in Bastrop County was estimated to be between 100 and 200 individuals. This annual trend continued until 2011, when only 11 Houston toads were detected in Bastrop County. In 2000-2001 extensive surveys were conducted in Lee County. Chorusing was common across the area; however, subsequent annual surveys indicate Houston toad detections have dropped from hundreds of individuals detected during 2001 to one male detected every other year on average since 2005 (Forstner and Dixon 2011). In Leon County Houston toads were found in the dozens in the 1990s near the City of Hilltop Lakes. One individual was heard in 2006 and was recaptured again in 2007 at the same location. The results from genetic analyses revealed hybridization and small population size. In 2008 Houston toad chorusing was detected at two locations near Hilltop Lakes; a chorus of two males and then a second chorus of 10 or more (Forstner and Dixon 2011). Milam County has now been surveyed across several recent years with multiple chorusing areas detected in 2007-08. Robertson County is data deficient, with only a small chorus (~4 males) detected in 2010 at a historically documented site. No other chorusing locations have been detected in Robertson County in recent years.

Oncor currently has 261 miles (5,062 acres) of existing transmission facilities in the Houston toad's range within the action area: 9 miles (175 acres) in Bastrop County, 11 miles (213 acres) in Lee County, 121 miles (2,347 acres) in Leon County, 104 miles (2,017 acres) in Milam County, and 16 miles (310 acres) in Robertson County. Oncor estimates that up to 411 acres of potential Houston toad habitat could be impacted by the Covered Activities within existing facilities. This acreage was derived from on-the-ground surveys and Soil Conservation Service, Natural Resources Conservation Service, and Texas Natural Resources Information System data (Soil Conservation Service 1979, 1989; Natural Resources Conservation Service 2004; Texas Natural Resources Information System 2004). Oncor estimates up to 213 acres of potential habitat may be directly impacted as a result of constructing new facilities within the action area. New construction estimates are based on 100 miles (1,939 acres) of planned new 345-kV electric transmission lines that will pass through potential habitat areas. Taking the highest maximum percentage (11 percent in Leon County) of Houston toad habitat estimated for Oncor's existing facilities results in a potential of direct take of 213 acres. Adding an extra 5 percent for edge effects (Service 2005), results in an additional 11 acres for indirect impacts.

Wildfires broke out in Bastrop County, Texas, on September 4, 2011, and burned approximately 35,000 acres of known and potential Houston toad habitat over a week-long period. At least 31,000 acres of the burn area are located within designated Houston toad critical habitat. At this time, the full extent of the damage to the Houston toad or its habitat is unknown. However, an estimate of at least 10,000 acres of habitat managed specifically for the Houston toad burned, including all but 100 acres of the 6,000-acre Bastrop State Park and half of the 4,848-acre

Griffith League Ranch. The most considerable effects to the Houston toad from these devastating wildfires will likely be adverse changes to its habitat through loss of canopy cover, understory vegetation, and surface debris (such as leaf litter and logs), which can lead to increased exposure to temperature extremes and predation; reduced dispersal and foraging capabilities, due to loss of habitat availability and small invertebrate species, which serve as the Houston toad's prey base.

In addition to wildfires, other threats within the action area are habitat loss, fragmentation, and degradation, which are the most serious threats facing the Houston toad. This includes expanding urbanization, conversion of woodlands to agricultural use, and wetland destruction or alteration. Other threats include toadlet predation by red-imported fire ants (Freed and Neitman 1988, Forstner 2002), which have also been known to drastically reduce the abundance of native insect species that serve as the Houston toad's food source. Drought can severely impact Houston toad breeding habitat and reduce the survivorship of juvenile toads. Texas is currently in an exceptional drought with the 12 months from October 2010 through September 2011 being the driest on record for that 12-month period. Additionally, a weak to moderate La Nina is forecast through the winter; therefore, rainfall is expected to be below normal during that time (LCRA 2011).

The Service had issued over 200 section 10(a)(1)(B) permits for incidental take of Houston toads. Most of these permits were issued under the "46-subdivision" HCP in Bastrop County, which covers more than 9,200 lots over 6,600 acres. Participation in this plan was available to residents of 46 subdivisions platted before 2000 in Bastrop County. Several other large HCPs issued for incidental take of Houston toads are: 1) the Boy Scout's Griffith League Ranch HCP in Bastrop County, which authorized impacts to approximately 500 acres of Houston toad habitat with the remaining 4,300 acres being maintained in a natural state; 2) the Lost Pines HCP, including the 46 subdivisions, thus negating the "46-subdivision" HCP, which covers 124,000 acres in Bastrop County and authorizes impacts to 5,736 acres and is expected to result in over 16,000 acres of conserved lands; and 3) the Bastrop Utlities HCP, Bastrop and Lee counties, covers 142,526 acres and could result in up to 2,500 acres of impact. Additionally, there have been at least 13 section 7 formal consultations on Houston toads, 7 of which were linear projects (roads, pipelines, or electric lines).

Within Bastrop, approximately 13 percent of the Houston toad's habitat is in public ownership or under some form of management for the toad. This percentage includes the 4,800 acre Boy Scout camp, and TPWD's 5,926 acre Bastrop and 1,017 acre Buescher state parks. LCRA owns approximately 2,100 acres adjacent of Lake Bastrop. Additionally, there are three Safe Harbor agreements: Robert Long covers 540 acres, Jim Small covers 836 acres, and the Lost Pines Boy Scout Reservation covers 541 acres. All three are actively managing and protecting the Houston toad.

Effects of the Action

Oncor estimated their Covered Activities over the life of the permit may impact as many as 635 acres of Houston toad habitat, including 411 acres in existing ROWs, 213 acres of direct impact for new facilities, and 11 acres for indirect impacts for new facilities. The impacts from Covered

Activities within existing ROWs by county are: Bastrop County, 9 acres; Lee County, 4 acres; Leon County, 258 acres; Milam County, 121 acres; and Robertson County, 19 acres. There is an additional 224 acres of potential impacts from future Covered Activities throughout the action area. See section 5.2.6.3 for the methods used to make these determinations.

Indirect effects of the action include both the direct and indirect effects of implementing the HCP. Direct impacts from implementation of the HCP could occur from injury or death of individual toads as a result of vehicle or equipment strikes, Houston toads being unearthed during ground-disturbing activities, and Houston toad eggs/tadpoles being destroyed if breeding/nursery sites are damaged; destruction or modification of habitat from ground-clearing activities; soil disturbance and/or compaction would have the potential to destroy or modify the habitat; habitat fragmentation; alteration of native vegetation and soils such that resources required by the Houston toad are eliminated or the habitat becomes more favorable to competing species, such as the Gulf Coast toad or Woodhouse's toad; and accidental leaks or spills during construction or maintenance. Indirect impacts from implementation of the HCP could occur from vegetation clearing in potential toad habitat that results in changes in the arthropod community on the forest floor; desiccation of adult and juvenile Houston toads; and increased densities of fire ants, which may in turn lead to decreased prey availability for the toad or increased predation rates on the toadlets. Herbicides and pesticides may also lead to a reduction in future prey availability. Fragmentation or alteration could potentially increase the opportunity for the Houston toad to hybridize with competitor species such as the Gulf Coast toad or Woodhouse's toad. Diseases could potentially be introduced with soils brought in for fill.

Of the over 1.4 million acres of potential Houston toad habitat range-wide, the action area contains approximately 740,000 acres of habitat. The amount of habitat proposed to be impacted is 0.13 percent of Houston toad habitat within the action area and 0.0074 percent of habitat throughout the range.

However, because of the extreme drought and recent catastrophic fires in Bastrop County, the Service is only authorizing Oncor to impact up to 100 acres. To avoid impacting more than 100 acres of habitat Oncor proposes to meet with the Service early in the planning phases of projects to determine the current status of recovery and reintroduction activities to reduce adverse direct impacts to the Houston toad from Covered Activities. Additionally, once the route has been selected by the PUC and prior to commencement of the clearing and construction activities, field habitat assessment surveys of the proposed ROWs will be conducted in areas of potential habitat to more accurately assess take, including surveying potential breeding sites immediately prior to any clearing/construction activity. Furthermore, to reduce adverse impacts to Houston toads within the action area Oncor will: 1) avoid populations of this species, its habitat, and lands managed for its conservation and recovery in completing the Covered Activities; 2) minimize soil disturbance by Covered Activities and, where disturbance occurs, recontouring to original grade and using native soils for backfill to preserve edaphic conditions (e.g., soil porosity, texture, and moisture regime) and to reduce the risk of red fire ant introduction; 3) implement stormwater BMPs to prevent indirect impacts from sedimentation, erosion, contamination, and pollution; 4) minimize herbicide and pesticide use, and using only appropriate herbicides and application methods that limit impacts on nontarget species (e.g., low-volume basal and foliar applications, narrow-spectrum herbicides, and herbicides with low environmental persistence),

and complying with Service (2004b) guidelines for pesticide application; 5) revegetate areas disturbed by Covered Activities with site-appropriate native species, when the landowner does not object, to ensure invasive plant species do not colonize and establish in the ROWs and spread to adjacent habitats; 6) minimize the number of activities being performed during the Houston toad's breeding season; 7) establish water management zones (see Section 6.4.1 for details); 8) except in emergency situations, no clearing or ground-disturbing activities will occur within 150 feet of wetlands, creeks, drainages, ditches, ponds, stock tanks, or other waterbodies in potential or known habitat during the breeding season (January 1–June 30); and 9) if it is not practical during construction of new facilities (and operation/maintenance of existing facilities) to drive around creeks, modifications to facilitate creek crossings will be acceptable under the following conditions providing that the crossings take place outside of the breeding season: a) stones may be placed on a creek bed and its banks providing that the natural hydrologic flow remains unimpeded and all state and Federal protection criteria for stormwater and jurisdictional waters of the U.S. (including wetlands) are met; b) steep, nonvegetated, stream banks may be graded if the creek does not have wooded riparian vegetation; and c) use of temporary culverts and fill. All state/Federal protection criteria for stormwater and jurisdictional waters of the U.S. will be met, and bare, graded stream banks will be revegetated with native species following project completion unless specifically prohibited by the landowner.

While the exact number of acres that will be impacted, and will therefore need to be mitigated for, is not currently known, a maximum impact has been estimated for Houston toads. Oncor proposes to mitigate for their impacts to Houston toads at 3:1. This level of mitigation will contribute to overall recovery by permanently preserving more acreage than is removed and by focusing that mitigation in single parcels when acreage impacted will likely come from patches spanning linear projects. Mitigation will occur through purchase of mitigation credits from a Service-approved conservation bank with priority given to banks within the recovery region in which impacts occur. However, should mitigation credits be unavailable from a Service-approved conservation bank, Oncor may coordinate directly with a conservation organization such as The Nature Conservancy of Texas or the TPWD for the purchase of conservation lands. If purchase of land is not a viable mitigation option (i.e., mitigation funds are not sufficient for purchase of a reasonable amount of land to support the conservation of the Houston toad), in coordination with and approval by the Service, other options such as habitat enhancement, management, or restoration activities will be explored. See section 6.0, Conservation Measures, for more specific examples of species specific alternative mitigation measures.

While critical habitat for the Houston toad has been designated and is within the action area, no existing facilities are located within or adjacent to this critical habitat, and no new electric facilities will be built within or adjacent to critical habitat; therefore, no adverse impacts to critical habitat are expected.

American burying beetle

Status of the Species

Species Description and Life History

The American burying beetle (*Nicrophorus americanus*, ABB) was listed as endangered on July 13, 1989 (54 FR 29652). Critical habitat has not been designated for the ABB.

The ABB is the largest species of its genus in North America, measuring 0.98-1.4 inches in length (Service 1991a). The ABB is fully nocturnal and presumed to be an annual species, active only when nighttime temperatures consistently (i.e., 5 consecutive nights) exceed 60°F (Service 1991a). In Oklahoma this typically occurs from May to September (National Oceanic and Atmospheric Administration 2002). For the remainder of its life cycle, late-September to mid-May, the ABB remains in an inactive condition buried in the soil at depths from 6 inches (Anderson 1982) to at least 36 inches (Kozol *et al*. 1988). American burying beetles feed and breed on a wide variety of carrion. They use keen antennal chemoreceptors to detect the presence of carrion.

Historic and Current Distribution

Historically, the geographic range of the ABB encompassed over 150 counties in 35 states, covering most of temperate eastern North America and part of Canada (Service 1991a, Peck and Kaulbars 1987). The ABB has disappeared from more than 90 percent of its historical range (Ratcliffe 1995). Historic records exist from Texas in the south, north to Montana (single record in 1913) and the southern fringes of Ontario, Quebec, and as far east as Nova Scotia and Florida (Service 1991a). However, documentation is not uniform throughout this broad historical range. More historic records exist from the Midwest into Canada and in the northeastern United States than from the southern Atlantic and Gulf of Mexico region (Service 1991a). The last ABB specimens along the mainland of the Atlantic seaboard, from New England to Florida, were collected in the 1940's (Service 1991a). At the time of listing, in July 1989, known populations were limited to Block Island, Rhode Island, and eastern Oklahoma.

Currently, the ABB has been documented in 8 states: on Block Island, Rhode Island; Nantucket and Peninskee Islands, Massachusetts; eastern Oklahoma; western Arkansas; the Sand Hills region in north-central Nebraska; the Chautauqua Hills region of southeastern Kansas; northeastern Texas; and South Dakota (Godwin 2003, Sikes and Raithel 2002, Ratcliff 1996, Bedick *et al.* 1993). Seeming differences in abundance throughout the ABB's range, may however largely be a function of survey intensity. Most extant populations are located on private land. Populations known to exist on public land include: Camp Gruber and Sequoyah NWR, Oklahoma; Fort Chaffee, Arkansas; Block Island NWR, Rhode Island; and Valentine NWR, Nebraska (Service 1991a).

There are currently three captive populations of ABBs: 1) Roger Williams Park Zoo, Providence, Rhode Island; 2) Entomology Department at Ohio State University, Columbus, Ohio; and 3) St. Louis Zoo, St. Louis, Missouri.

Reasons for Decline and Threats to Survival

The body of scientific literature confirming the adverse effects of habitat modification and fragmentation on ABB abundance, diversity, and success has been growing (Trumbo and Block 2000, Wolf and Gibbs 2005, Schnell *et al*. 2006). Primary causes of habitat modification and fragmentation are fire suppression, conversion of grassland/prairie habitat to agricultural lands, and overgrazing resulting in the invasion of eastern red cedar, (Collins and Wallace 1990, State of Oklahoma 2007, Walker and Hoback 2007). Competition for carcasses by scavengers is thought to be an important factor in the decline of ABBs (Service 1991a, Sikes and Raithel 2002). The distribution pattern of remaining populations also points to disease as a possible contributing factor, although this remains purely theoretical (Sikes and Raithel 2002, Peck and Anderson 1985).

Range-wide Survival and Recovery Needs

Although several ABB populations occur on public lands or private conservation organization properties, most of the protected lands supporting ABBs require ongoing management to ensure the species' continued presence. Elsewhere in the range (Nebraska, South Dakota, and Kansas), the species occurs almost exclusively on private land. The species thus receives varying levels of habitat protection across its current range. Given the ephemeral availability of carrion for ABB reproduction, it is unlikely that populations isolated by habitat fragmentation will be self-sustaining over the long term. Habitat fragmentation remains a risk across much of the species' current range, particularly because habitat conservation at the landscape level has not been initiated. In addition, little is known about ABB population size and trends across much of the current range, making it difficult to design appropriate habitat conservation strategies.

The ABB Recovery Plan (Service 1991a) has no down or delisting criteria, due to the profound decline and uncertainty for the decline. Therefore, the plan recommends conserving a representative distribution of a formerly widespread species. The plan's interim objective of eliminating the risk of immediate extinction has been met. However, the criterion for re-establishment of a representative distribution of the species in all four geographic portions of its former range has not. While the Midwest geographic recovery area has met the criterion, efforts to locate extant populations in the Southeast, Great Lakes, and Northeast recovery areas have been unsuccessful.

Environmental Baseline

In Texas, this beetle is only found in two counties: Lamar and Red River, both of which are in the action area.

The Lamar County population was documented mostly on an approximately 6,400 acre military base, Camp Maxey (Texas National Guard), and was considered to be a viable, source population (Godwin and Minich 2005). However, the species has not been found in the last three years of surveys, indicating possible extirpation (O. Bocanegra, Service, pers. comm.). Camp Maxey continues to actively manage and monitor for ABBs as part of their Integrated Natural Resource Management Plan (Service 2008). The Red River County locale is about 26 miles east

on a 275 acre preserve, Lennox Woods, owned by The Nature Conservancy of Texas. However, the species locale was based on a single specimen and has not been relocated since 1994 (Stewart *et. al* 1994). These populations are considered part of the geographically large ABB population in southeastern Oklahoma (Service 2008).

Oncor currently has 196 miles (3,801 acres) of existing transmission ROWs within the range of the ABB in the action area: 150 miles (2,909 acres) in Lamar County and 46 miles (892 acres) in Red River County. Based on on-the-ground surveys, Oncor estimates that 3,041 acres of potential ABB habitat could be impacted by the operation and maintenance of the existing electric facilities: 2,327 acres in Lamar County and 714 acres in Red River County. Oncor estimates up to 931 acres of potential habitat may be directly impacted as a result of constructing new facilities within the action area. New construction estimates are based on 60 miles (1,164 acres) of planned new 345-kV electric transmission lines that will pass through potential habitat areas. Taking the highest maximum percentage (80 percent in Red River County) of ABB habitat estimated for Oncor's existing facilities results in a potential of direct take of 931 acres from construction of new facilities. No indirect impacts are expected as a result of constructing new facilities.

Threats within the action area for ABBs are predation by red-imported fire ants, competition with other scavengers, possibly uprooting and predation of eggs by feral hogs, and conversion of woodland to agriculture (Godwin and Munich 2005, Service 2008).

According to our consultations tracking database, there has been only one formal consultation on the ABB in Texas and this was on Camp Maxey's 2007 Integrated and Natural Resources Management Plan. Based on the activities proposed on Camp Maxey, over 2,100 acres of temporary impacts from rotational burning and 60 acres of permanent impacts from construction activities would occur over a 5-year time frame. Since Camp Maxey has committed to actively manage, monitor, and minimize impacts to the ABB, the temporary and permanent impacts were determined to not cause jeopardy to the species. There have been four formal consultations on ABBs in Oklahoma: 1) authorization of impacts to 76 acres in Osage County for the construction of a botanical preserve, 2) authorization of take of 35 ABBs per year throughout the Camp Gruber National Guard Installation, 3) authorization of impacts to 5,998.98 acres of ABB habitat as part of a programmatic biological opinion for Federal Highway Administration (FHWA) projects in Oklahoma, and 4) authorization of impacts to 34,954 acres of ABB habitat within Oklahoma and Arkansas within the Ouachita National Forest.

Effects of the Action

The Service is authorizing impacts to a total of 3,972 acres of ABB habitat. This acreage includes 3,041 acres in existing ROWs and 931 acres of direct impact for new facilities. The impacts from Covered Activities within existing ROWs by county are: Lamar County, 2,327 acres; and Red River County, 714 acres. There is an additional 931 acres of potential impacts from future Covered Activities throughout the action area related to new construction. See section 5.2.5.3 of the HCP for the methods in determining potential acres of impact.

Indirect effects of the action include both the direct and indirect effects of implementing the HCP. Direct impacts from implementation of the HCP include mortality during construction or maintenance activities and destruction or modification of habitat during construction of new facilities. Excavation could result in the separation of adult ABBs from their larvae or eggs, or direct crushing of individuals, depending on the timing of activities. Indirect impacts from implementation of the HCP could occur when soil compaction prevents the beetles from carcass burial, or when clearing and revegetation of the ROWs lead to the introduction of invasive or exotic species into adjacent habitats that could outcompete or otherwise render the habitat unsuitable

It is unknown how much ABB habitat occurs within the action area. However, Oncor proposes to assess habitat suitability and/or occupancy on a project-by-project basis to more accurately quantify take. Furthermore, to reduce adverse direct impacts to ABBs from Covered Activities Oncor will: 1) assess habitat potential and/or occupancy on a project-by-project basis; 2) avoid populations of this species, its habitat, and lands managed for its conservation and recovery in completing the Covered Activities; 3) minimize soil disturbance by Covered Activities and, where disturbance occurs, recontouring to original grade and using native soils for backfill to preserve edaphic conditions (e.g., soil porosity, texture, and moisture regime) and to reduce the risk of red fire ant introduction; 4) minimize vehicular traffic in completing Covered Activities and controlling access to prevent future vehicular traffic unrelated to Covered Activities, which unabated would otherwise cause soil compaction and reduced habitat suitability; 5) minimize habitat fragmentation, where suitable or potential habitat cannot be avoided, by paralleling other existing ROWs; 6) limit the clearing of access roads outside of the ROWs to only where absolutely necessary; and 7) trim or top taller trees adjacent to the ROWs to the minimum necessary, and remove such trees only when they qualify as danger trees.

While the exact number of acres that will be impacted, and will therefore need to be mitigated for, is not currently known, a maximum impact has been estimated for ABBs. Oncor proposes to mitigate for their impacts to ABBs from Covered Activities at a 1:1 ratio. This mitigation will result in permanent protection specifically for the ABB and will focus preservation in single parcels when acreage impacted will likely come from patches spanning linear projects. Mitigation will occur through purchase of mitigation credits from a Service-approved conservation bank. However, should mitigation credits be unavailable from a Service-approved conservation bank, Oncor may coordinate directly with a conservation organization such as The Nature Conservancy or the TPWD for the purchase of conservation lands. If purchase of land is not a viable mitigation option (i.e., mitigation funds are not sufficient for purchase of a reasonable amount of land to support the conservation of the ABB), in coordination with and approval by the Service, other options such as habitat enhancement, management, or restoration activities will be explored. See section 6.0, Conservation Measures, for more specific examples of species specific alternative mitigation measures.

Critical habitat has not been designated for the ABB; therefore, no adverse modification of critical habitat will occur.

Large-fruited sand-verbena

Status of the Species

Species Description and Life History

Large-fruited sand-verbena (*Abronia macrocarpa*) was federally listed as endangered without designated critical habitat on September 28, 1988 (53 FR 37975).

A member of the four-o'clock family (Nyctaginaceae), the large-fruited sand-verbena is an herbaceous, taprooted perennial that blooms from March through June, opening its flowers in the afternoon and closing them by early morning. Its stems branch at the base and may be erect or spreading to about 20 inches in length, with opposite, ovate leaves about 2 inches in length. Both the leaves and stems are covered with glandular trichomes, or hairs. The flowers of the large-fruited sand-verbena are trumpet-shaped with five indented lobes, pink to purple in color, and up to 1.25 inches long. About 20 to 75 individual flowers comprise the plant's rounded inflorescence. Its fruits have five papery-thin wings, somewhat resembling a turbine, each holding a single, small, brownish black seed. These large, papery fruits distinguish this species from other similar members of the *Abronia* genus. The plants typically die back after flowering in June, until a basal rosette appears in October, which remains until early spring when the plant matures (Poole and Riskind 1987, TPWD 1996a).

All populations of the large-fruited sand-verbena occur on deep, Eocene-Age sands, such as the Padina and Arenosa series. These soils are commonly known as sugar sands or blowout sands because of their susceptibility to wind erosion and dune formation. The large-fruited sand-verbena is restricted to sparsely vegetated openings, including active blowouts (wind-hollowed depressions), in the post oak woodland/grassland mosaic found in the Post Oak Savannah Vegetational Area (Hatch *et al*. 1990, Texas Organization for Endangered Species 1993, TPWD 1996a). Species commonly associated with this flowering plant include Indian blanket (*Gaillardia* sp.), goldenmane coreopsis (*Coreopsis basalis*), silver croton (*Croton argyranthemus*), and angled hedeoma (*Rhododon ciliatus*) (Poole and Riskind 1987). Yaupon (*Ilex* sp.), milkweed (*Asclepias* sp.), and grape (*Vitis* sp.) are also considered important components of its habitat since they are known food sources for the larvae of moths in the families Sphingidae and Noctuidae believed to pollinate the large-fruited sand-verbena (Williamson *et al*. 1994).

Historic and Current Distribution

When the Large-fruited Sand-verbena Recovery Plan (Service 1992c) was published, only three populations were known on privately-owned land in Leon, Robertson, and Freestone counties. The Revised Status Report (Kennedy *et al*. 1990) indicates that no additional populations were found during surveys of 68 sites in 25 Texas counties (Anderson, Angelina, Atascosa, Bexar, Burleson, Caldwell, Colorado, Franklin, Freestone, Guadalupe, Hardin, Henderson, Leon, Medina, Nacagdoches, Newton, Robertson, Rusk, San Augustine, Shelby, Smith, Tyler, Upshur, Van Zandt, and Wood).

More recent surveys conducted in Leon, Robertson, Freestone, and Caldwell counties, Texas, documented nine populations with none found in Caldwell County (Williamson 2008; P. Williamson, Texas State University, pers. comm. 2010). All known populations are on privately-owned lands that were surveyed with landowner permissions. In addition, three small experimental populations have been successfully established on private land. The total known population has increased from about 35,250 individuals in 1996 to 94,509 in 2008. This increase is due both to the discovery of new populations, and to growth of the known populations resulting from land use changes that are more favorable to conservation of the species (Williamson 1996, 2008)

Reasons for Decline and Threats to Survival

The conversion of native grasslands to "improved pastures" of introduced grasses, such as bermudagrass (*Cynodon dactylon*) and weeping lovegrass (*Eragrostis curvula*), is an ongoing threat to large-fruited sand-verbena. These highly competitive introduced grasses are incompatible with large-fruited sand-verbena conservation. Other incompatible land uses include clearing of native vegetation, perennial wildlife food plots, over-stocking of grazing animals, herbicide application from October to April, mowing from February to April, off-road vehicle (ORV) use within populations from October to April, oil and gas exploration conducted within occupied habitat, and broad-scale insecticide use (which could kill the pollinating moths) (Williamson 2008). Similarly, the suppression of wildfire and poor rangeland management could certainly lead to increased cover of woody vegetation, as has happened elsewhere in Texas (Bogusch 1952; Texas Agricultural Extension Service 1980; Archer *et al*. 1988; Scifres and Hamilton 1993; Frost 1998). Competition from increased woody cover could reduce large-fruited sand-verbena habitat quality; however, the effects of fire frequency and grazing patterns on large-fruited sand-verbena ecology have not been investigated, making the degree of this threat to the plant difficult to assess.

Some land uses, including ORV use, mowing, small-scale clearing, herbicide application, and annual wildlife food plots, can directly harm or destroy large-fruited sand-verbena individuals, or reduce their reproductive potential. These threats may be avoided or minimized by conducting these activities during the seasons when large-fruited sand-verbena plants are not actively growing or flowering; many landowners have voluntarily adopted these recommendations to protect large-fruited sand-verbena populations on their land (Williamson 2002).

Range-wide Survival and Recovery Needs

According to the Large-fruited Sand-verbena Recovery Plan (Service 1992c) the criterion for downlisting is the discovery and/or establishment of 20 genetically viable, demographically stable populations of at least 600 individuals on 25 acres of habitat each. The species may be delisted if the downlisting criterion is maintained for at least 10 years. Since all known wild large-fruited sand-verbena populations occur on private land, recovery of the species will depend on successful public outreach and landowner cooperation.

Large-fruited sand-verbena conservation has been promoted through public presentations, local news media, and scientific conferences. Additionally, eight private landowners have been

provided specific land management recommendations for large-fruited sand-verbena (Williamson 1996, 2002, 2008). Those landowners have adopted many recommendations, such as delaying mowing or herbicide application until after large-fruited sand-verbena plants have dispersed seed and become dormant. Landowners have also been presented with TPWD voluntary conservation agreements; however, to date no landowners have signed an agreement (Williamson 2008). A landowner in Leon County wrote articles in a local newspaper promoting the conservation of large-fruited sand-verbena, which led to requests for surveys from additional landowners and the discovery of a new population near the town of Jewett.

In August, 1992, a petroleum well was excavated at the species' type locality, known as Hilltop Lakes Resort, in Leon County. An estimated 2,500 plants and 2.3 acres of habitat were destroyed. In 1993, a long-term study of this site was started comparing the disturbed site to undisturbed habitat (Couch 1996, Williamson 1998). By spring 1998 there were 418 large-fruited sand-verbena plants (85 seedlings, 254 mature vegetative, and 79 flowering individuals), and by 2005, 522 plants were present (Meredith 2006). However, there were still many differences between the disturbed and undisturbed areas.

Environmental Baseline

All known populations of the large-fruited sand-verbena occur within the action area (Freestone, Leon, and Robertson counties). Therefore, the "Status of the species" section above is the same for the status within the action area.

Oncor conducted on-the-ground habitat assessments for the large-fruited sand verbena on about 40 percent of their electric transmission ROWs in Leon County and 50 percent of the electric transmission ROWs in Robertson County. No occurrences or suitable potential habitat were observed. For the remainder of the lines a review of the soil surveys for Freestone (Soil Conservation Service 2002a) and Leon (Soil Conservation Service 1989) counties, and aerial photography (Texas Natural Resources Information System 2004) and electronic soil data (Natural Resources Conservation Service 2004) for Robertson County (no published soil survey is available for this county), showed less than 1 percent (0.01 to 0.1 percent) of Oncor's existing ROWs contain suitable potential habitat.

According to our consultations tracking database, there have been no formal consultations resulting in impacts to large-fruited sand-verbena.

Effects of the Action

The Service is authorizing Oncor to impact a total of 5.5 acres of large-fruited sand-verbena habitat. The impacts from Covered Activities within existing ROWs by county are: Freestone County, 2.9 acres; Leon County, 2.3 acres; and Robertson County, 0.3 acre. While impacts to large-fruited sand-verbena could occur from construction of new facilities, Oncor intends to avoid existing populations when designing and constructing new electric facilities. However, if impacts do occur, they cannot surpass the total 5.5 acres being authorized. Based on the minimal amount of take authorized, the avoidance measures, and the mitigation that would occur from

those impacts (see below), we do not believe the Covered Activities will result in jeopardy to the species. See section 5.2.1.3 of the HCP for the methods in determining potential acres of impact.

Indirect effects of the action include both the direct and indirect effects of implementing the HCP. Direct impacts from implementation of the HCP could occur from mortality or damage to individual plants through vehicular and pedestrian traffic; mortality or damage through mowing; and mortality as a result of herbicides. Indirect impacts from implementation of the HCP could occur from introduction of invasive or exotic species into habitats within and adjacent to the ROW. These introduced species could colonize, establish and then spread into habitat occupied or suitable for large-fruited sand-verbena and successfully outcompete extant populations of the species or alter resource availability so that habitat becomes less suitable or unsuitable for the species.

Oncor proposes to assess habitat potential and/or occupancy on a project-by-project basis to more accurately assess take. Furthermore, to reduce adverse direct impacts to the large-fruited sand-verbena from Covered Activities Oncor will: 1) avoid populations of this species, its habitat, and lands managed for its conservation and recovery in completing the Covered Activities; 2) minimize soil disturbance caused by Covered Activities; 3) minimize mechanical means of clearing within or near potential habitat during construction; 4) minimize herbicide use for vegetation control, and using only appropriate herbicides and application methods that limit impacts on nontarget species (e.g., low-volume basal and foliar applications, narrow-spectrum herbicides, and herbicides with low environmental persistence); and 5) temporarily fence off with chain-link fencing and avoid any populations of the large-fruited sand-verbena encountered within the existing ROWs. Additionally, populations adjacent to the ROWs will be avoided. Because Oncor's ROWs are easements and not fully owned, they must follow the landowners' wishes when revegetating. However, if the landowner has no objection, Oncor will maintain open, native plant composition on blowout sand dune habitats rather than planting fast-growing herbaceous species in the ROW to help preserve potential and occupied large-fruited sand verbena habitat.

While the exact number of acres that will be impacted, and will therefore need to be mitigated for, is not currently known, a maximum impact has been estimated for large-fruited sand-verbena. Oncor proposes to mitigate for their impacts to large-fruited sand-verbena at 2:1. This level of mitigation will contribute to overall recovery by: 1) permanently preserving more acreage than is removed; 2) protecting actual plants when acreage is assumed to be occupied, but may not be; and 3) focusing mitigation in single parcels when acreage impacted will likely come from patches spanning linear projects. Mitigation will occur through purchase of conservation credits from a Service-approved conservation bank. If this is not an available option, Oncor may coordinate directly with a conservation organization such as the Lady Bird Johnson Wildflower Center and the Service to discuss potential mitigation availability. Priority would be given to purchase of conservation lands and the conservation organization would be responsible for managing the purchased land in perpetuity. If purchase of land is not a viable mitigation option (i.e., mitigation funds are not sufficient for purchase of a reasonable amount of land to support the conservation of the large-fruited sand-verbena), other options such as habitat enhancement, management, or restoration activities will be explored. If these options are not viable, Oncor would implement the services of a Service-approved committee consisting of representatives

from Oncor, the Service, TPWD, and Lady Bird Johnson Wildflower Center, as well as a private- or academic-based species specialist, if necessary. The committee will first explore the use of funding for purchase of land through a third party, which will be responsible for managing the land in perpetuity and as appropriate for the large-fruited sand-verbena. Management of conservation easements in perpetuity will be included in the purchase agreement. If mitigation funds are not sufficient for purchase of a reasonable amount of land to support the conservation of the species, the committee will determine the best use of the funds for the large-fruited sand-verbena. A Service-approved time limit for spending the mitigation funds will be established. All options require Service approval, and all mitigation will be in place prior to occurrence of the take (i.e., construction through habitat).

Critical habitat has not been designated for the large-fruited sand-verbena; therefore, no adverse modification of critical habitat will occur.

Texas poppy-mallow

Status of the Species

Species Description and Life History

Texas poppy-mallow (*Callirhoe scabriuscula)* was listed as endangered on January 13, 1981 (46 FR 3184) with no critical habitat.

Texas poppy-mallow is a perennial with stiffly erect stems up to 3.3 feet tall from a slender unbranched taproot. The green parts of the plant (stems, petioles, leaves) are densely covered with stellate (star-shaped) hairs. The plant is topped by an inflorescence of large fuschia cup-shaped flowers between April and June. In contrast, the more common purple winecup (*C. involucrata)* is a much smaller plant with normally trailing, rather than erect, stems, and tall winecup (*C. leiocarpa)* has erect stems but lacks both the involucel (small bracts immediately beneath the calyx) and the stellate pubescence of Texas poppy-mallow (Amos 1979).

Suitable habitat for this plant consists of grasslands with open mesquite or oak woodlands on deep loose sands of the Tivoli Series (Wiedenfeld *et al*. 1970). These soils are sandy and sometimes as deep as 8 feet. Common associates include Havard oak (*Q. havardii*), Texas bullnettle (*Cnidoscolus texanus*), Indian blanket, yellow woolly-white (*Hymenopappus flavescens*), eastern sensitive briar (*Schrankia occidentalis*), trailing wildbean (*Strophostyles helvola*), prairie spiderwort (*Tradescantia occidentalis*), giant dropseed (*Sporobolus giganteus*), sand dropseed (*S. cryptandrus*), and threeawn grasses (*Aristida* spp.) (Service 1985).

Historic and Current Distribution

This plant is endemic to the upper Colorado River watershed on ancient and contemporary midslope terraces. While the U.S. Department of Agriculture's Natural Resource Conservation Association estimated 24,000 acres of Tivoli sands within Coke, Mitchell, and Runnels counties (Service 2004a), there are only approximately 10 extant Texas poppy-mallow populations. Only 2 populations have more than 100 individuals. Additionally, with the exception of plants

occurring on State highway ROWs, all populations are on privately owned lands with few formal protection measures in place.

Runnels County is home to the largest historical population, located several miles southwest of Ballinger, which is believed to have once covered about 395 acres of deep sands. Today, disturbance and encroachment have eliminated much of the historical population leaving small, segregated remnants in the area (Service 1985). The sites in Coke and Mitchell counties were recorded more recently, after 1985. As of 1987, all known locations occurred on private land and on Texas Department of Transportation and public transportation ROWs (Poole and Riskind 1987).

Reasons for Decline and Threats to Survival

Because Texas poppy-mallow is restricted in numbers and range (endemic to a single soil series), this species is extremely vulnerable to extinction due to habitat loss. Population size and vigor have been in decline since monitoring began nearly 20 years ago. It is a short-lived plant and recruitment is low. Threats to seed production include deer browsing and small mammal and insect herbivory. A lack of precipitation and an increase in flower and fruit predation by whitetail deer have greatly accelerated the decline. Additionally, with persistent drought conditions, the vigor of the populations could continue to decline.

In the past, habitat destruction has been caused by crop and pasture planting, residential development, road and railway construction, and sand mining. The showy bloom of the Texas poppy-mallow also exposes this plant to the risk of collection by gardeners and rare plant enthusiasts (46 FR 3184, TPWD 1996b).

Range-wide Survival and Recovery Needs

The Texas Poppy-mallow Recovery Plan (Service 1985) does not contain downlisting or delisting criteria, due to the limited data available at the time. It does, however, call for protecting known populations from further degradation and to maintain those populations through management. Once further information is gathered on the species, its threats, and steps necessary for recovery, the recovery plan will be updated and downlisting and/or delisting criteria will be added.

Environmental Baseline

All known populations of the Texas poppy-mallow occur within the action area (Coke, Mitchell, and Runnells counties). Therefore, the "Status of the species" section above is the same for the status within the action area.

Oncor only has existing facilities in Mitchell County. Since no published soil survey is available for Mitchell County (i.e., not published or out of print), estimates of potential habitat for the Texas poppy-mallow were based on a review of aerial photography (Texas Natural Resources Information System 2004) and electronic soil data (Natural Resources Conservation Service 2004). According to this information, about 3.3 miles (5.3 kilometers) or 1.5 percent of Oncor's

existing ROWs cross soils associated with the Texas poppy-mallow. As such, potential habitat occurs, at most, in 1.5 percent (64 acres) of Oncor's existing transmission ROWs in Mitchell County.

According to our consultations tracking database, there has been one consultation on Texas poppy-mallow, which involved Natural Resource Conservation Service funded brush management activities. No take was expected to occur as a result of survey and avoidance measures prior to initiating activities.

Effects of the Action

The Service is authorizing Oncor to impact a total of 64 acres of Texas poppy-mallow habitat. The impacts from Covered Activities were based on Oncor's existing ROWs in Mitchell County. While impacts to Texas poppy-mallow could occur from construction of new facilities, Oncor intends to avoid existing populations when designing and constructing new electric facilities. However, if impacts do occur, they cannot surpass the total 64 acres being authorized. Based on the minimal amount of take authorized, the avoidance measures, and the mitigation that would occur from those impacts (see below), we do not believe the Covered Activities will result in jeopardy to the species. See section 5.2.1.3 of the HCP for the methods in determining potential acres of impact.

Indirect effects of the action include both the direct and indirect effects of implementing the HCP. Direct impacts from implementation of the HCP could occur from mortality or damage to individual plants through vehicular and pedestrian traffic; mortality or damage through mowing; and mortality as a result of use of herbicides. Indirect impacts from implementation of the HCP could occur from alterations to the landscape, including disturbance of surface and subsurface soil horizons, use of nonnative soils as fill, or modification of natural drainages within ROWs. The later would cause the most important adverse indirect impacts to the Texas poppy-mallow. Changes in soil composition, either by disturbing soil horizons or by importing soil, could potentially have indirect effects on this species by inhibiting seed germination and/or growth, introducing competitors, such as weedy or invasive plant species, or changing habitat suitability by altering edaphic conditions.

Among the potential impacts resulting from alterations to surface hydrology, changes in the availability of moisture would have the most significant effect. Additionally, clearing and revegetation of the ROWs could potentially lead to the introduction of invasive or exotic species into habitats within and adjacent to the ROWs. These introduced species could successfully compete with and displace the Texas poppy-mallow or reduce habitat suitability for this species through altering resource conditions.

Oncor proposes to assess habitat potential and/or occupancy on a project-by-project basis to more accurately assess take. Furthermore, to reduce adverse direct impacts to the Texas poppy-mallow from Covered Activities Oncor will: 1) avoid populations of this species, its habitat, and lands managed for its conservation and recovery in completing the Covered Activities; 2) construct new facilities adjacent to existing maintained ROWs; 3) minimize soil disturbance caused by Covered Activities and, where disturbance occurs, recontouring to original grade to

reduce hydrologic impacts; minimizing mechanical means of clearing, such as mowing, until after the fruit has matured (July) where covered projects traverse or are adjacent to potential habitat; 4) comply with stormwater BMPs to prevent indirect impacts from sedimentation, erosion, contamination, and pollution; 5) minimize herbicide use for vegetation control, and using only appropriate herbicides and application methods that limit impacts on nontarget species (e.g., low-volume basal and foliar applications, narrow-spectrum herbicides, and herbicides with low environmental persistence); and 6) revegetate areas disturbed by Covered Activities with site-appropriate native species, to ensure invasive plant species do not colonize, establish, and then spread to adjacent occupied or suitable habitats where they could outcompete, displace, and extirpate this species. Because Oncor's ROWs are easements and not fully owned, they must follow the landowners' wishes when revegetating. However, if the landowner has no objection, Oncor will revegetate with native species to ensure invasive plant species do not colonize, establish, and then spread into adjacent occupied or suitable habitats where they could outcompete, displace, and extirpate this species.

While the exact number of acres that will be impacted, and will therefore need to be mitigated for, is not currently known, a maximum impact has been estimated for Texas poppy-mallow. Oncor proposes to mitigate for their impacts to Texas poppy-mallow at 2:1. This level of mitigation will contribute to overall recovery by: 1) permanently preserving more acreage than is removed; 2) protecting actual plants when acreage is assumed to be occupied, but may not be; and 3) focusing mitigation in single parcels when acreage impacted will likely come from patches spanning linear projects. Mitigation will occur through purchase of conservation credits from a Service-approved conservation bank. If this is not an available option, the Applicant may coordinate directly with a conservation organization such as the Lady Bird Johnson Wildflower Center and the Service to discuss potential mitigation availability. Priority would be given to purchase of conservation lands and the conservation organization would be responsible for managing the purchased land in perpetuity. If purchase of land is not a viable mitigation option (i.e., mitigation funds are not sufficient for purchase of a reasonable amount of land to support the conservation of the Texas poppy-mallow), other options such as habitat enhancement, management, or restoration activities will be explored. If these options are not viable, Oncor would implement the services of a Service-approved committee consisting of representatives from Oncor, the Service, TPWD, and Lady Bird Johnson Wildflower Center, as well as a private- or academic-based species specialist, if necessary. The committee will first explore the use of funding for purchase of land through a third party, which will be responsible for managing the land in perpetuity and as appropriate for the Texas poppy-mallow. Management of conservation easements in perpetuity will be included in the purchase agreement. If mitigation funds are not sufficient for purchase of a reasonable amount of land to support the conservation of the species, the committee will determine the best use of the funds for the Texas poppy-mallow. A Service-approved time limit for spending the mitigation funds will be established. All options require Service approval, and all mitigation will be in place prior to occurrence of the take (i.e., construction through habitat).

Critical habitat has not been designated for the Texas poppy-mallow; therefore, no adverse modification of critical habitat will occur.

Navasota ladies'-tresses

Status of the Species

Species Description and Life History

Navasota ladies'-tresses (*Spiranthes parksii*) was listed as endangered May 6, 1982 (47 FR 19539) without critical habitat.

A diminutive member of the orchid family (Orchidaceae), the Navasota ladies'-tresses reaches 8 to 15 inches tall and has a single row of small blooms (0.25 inch) wound loosely around the top third of the slender inflorescence. Each cream-colored flower has two long, hairy, lateral sepals that are hooked upward at the tips. The lateral petals are shorter than the sepals and appear to be hidden. The lower bract of each flower is broadly lanceolate to triangular and hairy, tapering to a pointed tip. These perennial orchids flower in mid-October to mid-November, and fruits form until the first frost, usually in late November. Each fruit contains thousands of tiny seeds. Its linear basal leaves are usually absent by bloom time, but the inflorescent stalk has several leaflike sheathes (Poole and Riskind 1987, Service 1984a, Campbell 1995, Wilson 2009).

Habitat of Navasota ladies'-tresses consists of sandy soil in the post oak savanna of central-east Texas, often along the naturally eroded slopes of the upper reaches of drainages and ephemeral streams, or occasionally near the margins of seeps and swales (Wilson 2009, Tejas Ecological Surveys 2001, Poole *et al*. 2007, Hammons *et al*. 2009). Post oak savanna, which extends in a narrow band from northeast Texas to southeast of San Antonio, forms an ecotone along the western fringe of the more mesic eastern deciduous forest and the blackland prairies to the west (Gould 1975, Poole et. al. 2007). Within the post oak savanna, Navasota ladies'-tresses typically occurs in a specific topographic position where permeable fine sand or sandy loam shallowly overlies less permeable clay. Along these narrow contours of shallow topsoil, where there may be less competition from more robust herbaceous and woody plants, available moisture may be sustained by seepage along the upper surface of the clay stratum. Micro-habitats occupied by Navasota ladies'-tresses are often described as seeps.

Historic and Current Distribution

Navasota ladies'-tresses were first collected by H.B. Parks in Brazos County in 1945, and described by D. S. Correll in 1947 (Correll 1947). This terrestrial orchid was not observed again until 1978, when 20 individuals were observed in post oak savanna in two locations northwest of Navasota, Brazos County, Texas (Catling and McIntosh 1979). Therefore, when Navasota ladies'-tresses was listed in 1982, it was known only from Brazos County. It has now been confirmed in 13 Texas counties: Bastrop, Brazos, Burleson, Fayette, Freestone, Grimes, Jasper, Leon, Limestone, Madison, Milam, Robertson, and Washington. The Jasper County location consists of a few plants in two small sites in Angelina National Forest and is disjunct from the other populations being 114 miles east of the nearest population in Madison County (Bridges and Orzell 1989). The known range of the species extends 210 miles east to west and 110 miles north to south.

Reasons for Decline and Threats to Survival

The primary threats to the continued existence of Navasota ladies'-tresses are habitat loss and modification, primarily from mines, a landfill, pipelines, highway construction, and various private development projects. Even where the species' habitat remains secure, habitat quality is declining as a result of a dense woody understory replacing the herbaceous component of the post oak savanna. This "thicketization" has occurred throughout the post oak savanna region, and elsewhere, and is attributed to a greatly reduced frequency of wildfire and to poor rangeland management techniques (Service 2009c).

Range-wide Survival and Recovery Needs

To date, 17 projects that required formal section 7 consultations resulted in the loss of 520 individual Navasota ladies'-tresses plants and 375 acres of habitat. These losses were compensated by: 1) creation of 21 protected sites with 425 acres of habitat; 2) establishment of 5 long-term monitoring and management plans; 3) $235,450 to support land acquisition and conservation (an additional amount of over $244,000 has not yet been collected); and 4) support for research on the ecology, management, propagation, and (pending) genetics of the species. The most recent surveys indicate that the plant has a potential population of 3,207 individuals (Service 2009c).

According to the Navasota Ladies'-tresses Recovery Plan (Service 1984a), recovery criterion for downlisting the species is establishment and securing of two safe sites containing portions of the existing Navasota ladies'-tresses population through cooperative agreements, purchases, easements, or other means of obtaining management rights, and through preparation and implementation of management plans. The plan then presents a step-down outline including the following: 1) remove immediate threats to Navasota ladies'-tresses by protecting the major population systems from threats posed by human modification of the habitat and impact from collecting; 2) minimize long-term threats to Navasota ladies'-tresses through development of a base of information that is relevant to recovery; and 3) develop public awareness, appreciation, and support for protection and recovery of Navasota ladies'-tresses.

In 2003 a Recovery Team was formed. While the recovery criteria, as written in the original recovery plan, have been met and exceeded, the recovery team has determined that the objectives of the existing plan are insufficient to recover the species. The Team concurred that the species will not recover solely through the establishment of two protected populations, and intends to draft a new recovery plan that addresses updated information on the range, habitat, ecology, genetics, propagation, and management of the species.

Environmental Baseline

Navasota ladies'-tresses occurs in six counties within the action area: Bastrop, Freestone, Leon, Limestone, Milam, and Robertson. Oncor has 440 miles (8,533 acres) of existing transmission ROWs in these six counties: 9 miles (175 acres) in Bastrop County, 151 miles (2,928 acres) in Freestone County, 121 miles (2,347 acres) in Leon County, 39 miles (756 acres) in Limestone

County, 104 miles (2,017 acres) in Milam County, and 16 miles (310 acres) in Robertson County.

Oncor conducted on-the-ground habitat assessments for the construction of new electric facilities in Freestone County and determined that approximately 6.5 percent (27.2 acres) of the new ROW possessed potential habitat for Navasota ladies'-tresses (PBS&J 2000b). Additionally, on-the-ground habitat assessments were conducted on about 40 percent of the existing electric transmission ROWs in Leon County, 20 percent in Madison County, 65 percent in Milam County, and 50 percent in Robertson County. They all indicated similar percentages of potential habitat to those encountered in Freestone County. While no on-the-ground habitat assessments have been conducted in Limestone County, the facilities in this county are near the Freestone county line; therefore, similar percentages of potential habitat to those encountered in Freestone County are expected.

Threats within the action area are habitat loss and modification. Even where habitat remains, the invasion of dense woody understory reduces the viability of that habitat for Navasota ladies'-tresses. Herbivory by deer, squirrels, and perhaps other herbivores has been documented to cause a significant amount of damage to flower stalks (Service 2009c).

According to the Navasota ladies'-tresses 5-year status review (Service 2009c), within the action area there have been at least eight formal consultations with the Service. For those consultations where projects were expected to impact Navasota ladies'-tresses, funds were donated to off-set those impacts. To date over $239,000 has been deposited into this conservation fund with no expenditures. The only known protected site within the action area is at the University of Texas' Brackenridge Field Laboratory in Bastrop County. However, there has only ever been just one plant at this site (Service 2009c).

Effects of the Action

The Service is authorizing Oncor to impact a total of 943 acres of Navasota ladies'-tresses habitat. The impacts from Covered Activities within existing ROWs by county are: Bastrop County, 4 acres; Freestone County, 293 acres; Leon County, 235 acres; Limestone County, 76 acres; Milam County, 202 acres; and Robertson County, 31acres. There is an additional 102 acres of potential impacts estimated for new facilities within the action area. See section 5.2.3.3 of the HCP for the methods in determining potential acres of impact.

Indirect effects of the action include both the direct and indirect effects of implementing the HCP. Direct impacts from implementation of the HCP could occur from mortality or damage to individual plants through vehicular and pedestrian traffic; mortality or damage through mowing; and mortality as a result of herbicides. Indirect impacts from implementation of the HCP could occur from disturbance of surface and subsurface soil horizons and use of nonnative soils as fill, which could indirectly affect this species by inhibiting seed germination and/or growth, introducing competitors, such as weedy or invasive plant species, or changing habitat suitability by altering resource conditions. Modification of natural or preexisting drainages within ROWs could change the availability of moisture, which would have the most significant effect. Additionally, clearing and revegetation of the ROW could lead to the introduction of invasive or

exotic species into habitats within and adjacent to the ROW. These introduced species could colonize, establish and then spread into habitat occupied or suitable for Navasota ladies'-tresses and successfully outcompete extant populations or alter resource availability so that habitat becomes less suitable or unsuitable for the species. Increased edge effects caused by habitat fragmentation from Covered Activities could facilitate growth in deer populations, which concomitantly could exacerbate browsing pressure on these plants.

Oncor proposes to assess habitat potential and/or occupancy on a project-by-project basis to more accurately assess take. Furthermore, to reduce adverse direct impacts to the Navasota ladies'-tresses from Covered Activities Oncor will: 1) avoid populations of this species, its habitat, and lands managed for its conservation and recovery in completing the Covered Activities; 2) construct new facilities adjacent to existing maintained ROWs; 3) minimize soil disturbance caused by Covered Activities and, where disturbance occurs, recontouring to original grade to reduce hydrologic impacts; 4) minimize mechanical means of clearing within or near potential habitat during construction, such as mowing during the months of October and November, to reduce potential damage to flowering Navasota ladies'-tresses; 5) comply with the stormwater BMPs to prevent indirect impacts from sedimentation, erosion, contamination, and pollution; 6) minimize herbicide use for vegetation control, and using only appropriate herbicides and application methods that limit impacts on nontarget species (e.g., low-volume basal and foliar applications, narrow-spectrum herbicides, and herbicides with low environmental persistence); and 7) temporarily fence off with chain-link fencing and avoid any populations of the Navasota ladies'-tresses encountered within the existing ROWs. Additionally, populations adjacent to the ROWs will be avoided. Because Oncor's ROWs are easements and not fully owned, they must follow the landowners' wishes when revegetating. However, if the landowner has no objection, Oncor will revegetate with native species to ensure invasive plant species do not colonize, establish, and then spread into adjacent occupied or suitable habitats where they could outcompete, displace, and extirpate this species.

While the exact number of acres that will be impacted, and will therefore need to be mitigated for, is not currently known, a maximum impact has been estimated for Navasota ladies'-tresses. Oncor proposes to mitigate for their impacts to Navasota ladies'-tresses at 2:1. This level of mitigation will contribute to overall recovery by: 1) permanently preserving more acreage than is removed; 2) protecting actual plants when acreage is assumed to be occupied, but may not be; and 3) focusing mitigation in single parcels when acreage impacted will likely come from patches spanning linear projects. Mitigation will occur through purchase of conservation credits from a Service-approved conservation bank. If this is not an available option, the Applicant may coordinate directly with a conservation organization such as the Lady Bird Johnson Wildflower Center and the Service to discuss potential mitigation availability. Priority would be given to purchase of conservation lands and the conservation organization would be responsible for managing the purchased land in perpetuity. If purchase of land is not a viable mitigation option (i.e., mitigation funds are not sufficient for purchase of a reasonable amount of land to support the conservation of the Navasota ladies'-tresses), other options such as habitat enhancement, management, or restoration activities will be explored. If these options are not viable, Oncor would implement the services of a Service-approved committee consisting of representatives from Oncor, the Service, TPWD, and Lady Bird Johnson Wildflower Center, as well as a private- or academic-based species specialist, if necessary. The committee will first explore the

use of funding for purchase of land through a third party, which will be responsible for managing the land in perpetuity and as appropriate for the Navasota ladies'-tresses. Management of conservation easements in perpetuity will be included in the purchase agreement. If mitigation funds are not sufficient for purchase of a reasonable amount of land to support the conservation of the species, the committee will determine the best use of the funds for the Navasota ladies'-tresses. A Service-approved time limit for spending the mitigation funds will be established. All options require Service approval, and all mitigation will be in place prior to occurrence of the take (i.e., construction through habitat).

Critical habitat has not been designated for the Navasota ladies'-tresses; therefore, no adverse modification of critical habitat will occur.

Pecos sunflower

Status of the Species

Species Description and Life History

Pecos (=puzzle, =paradox) sunflower *(Helianthus paradoxus)* was listed as federally threatened on October 20, 1999 (64 FR 56581) without critical habitat.

Pecos sunflower is an annual, herbaceous plant growing 3–10 feet tall and is branched at the top. The leaves are opposite on the lower part of the stem and alternate at the top, lance-shaped with three prominent veins, and up to 6.9 inches long by 3 inches wide. The stem and leaf surfaces have a few short, stiff hairs. Flower heads are 2.0-2.8 inches in diameter with bright yellow rays around a dark purplish brown center (the disc flowers). Pecos sunflower looks much like the common sunflower (*H. annuus*) seen along roadsides throughout the West, but differs from common sunflower by having narrower leaves, fewer hairs on the stems and leaves, smaller flower heads, and narrower bracts (phyllaries) around the base of the heads. The prairie sunflower (*H. pauciflorus*) also has narrow leaves and phyllaries, but is distinguished from Pecos sunflower by having white cilia in the dark center of the flower head and a branching pattern from the base of the plant that imparts a bushy appearance. Common sunflower and prairie sunflower usually bloom earlier in the season (May to August depending on location) than Pecos sunflower (September and October) and neither occupies the wet, saline soils that are typical of Pecos sunflower habitats (Service 2005).

Historic and Current Distribution

Pecos sunflower is found in only two counties in Texas: Pecos and Reeves. It is also located in New Mexico. Pecos sunflower is a wetland plant that had only a single known population near Fort Stockton, Pecos County, Texas, when it was proposed as a candidate for listing as endangered under the ESA on December 15, 1980 (45 FR 82480). Subsequent field surveys for this plant found additional populations in New Mexico and Texas. It is presently known to occur in two widely separated locations in the Pecos River valley in eastern New Mexico, two locations on the Rio San Jose and one on the Rio Grande in west-central New Mexico, and two

desert springs in west Texas. These populations occur on a variety of State, Federal, and private lands.

Reasons for Decline and Threats to Survival

The loss or alteration of wetland habitat is the main threat to Pecos sunflower. The lowering of water tables through aquifer withdrawals for irrigated agriculture and municipal use, diversion of water from wetlands for agriculture and recreational uses, and wetland filling for conversion to dry land uses destroyed or degraded desert wetlands before this sunflower was listed as threatened. Groundwater pumping has lessened in recent years due to the higher cost of removing water from deeper aquifers, but rising water tables and resumption of spring flows are not expected (Brune 1981 *in* Poole 1992). Texas water law provides no protection for the remaining springs, which limits options for addressing this threat. Additionally, the southwestern United States is currently experiencing a period of prolonged drought that is exacerbating this habitat degradation.

Infestations of exotic plant species also continue to destroy or degrade desert wetlands and riparian areas. High densities of saltcedar (*Tamarix* sp.) can dry out portions of cienegas and further make Pecos sunflower habitats unsuitable by creating an overstory canopy that reduces light in the understory. Saltcedars occur in or near all Pecos sunflower populations and without management intervention, will increase in density if these habitats become drier over time. Russian olive (*Elaeaganus angustifolia*) is another aggressive, exotic tree that is increasing in density at the Pecos sunflower habitat at Santa Rosa, New Mexico. Both saltcedar and Russian olive trees transpire considerable amounts of water from shallow water tables.

Because Pecos sunflower will naturally hybridize with common sunflower, there is concern about the extent to which backcrosses from common sunflower could affect the genetic integrity of small Pecos sunflower populations. Hybrid plants have been found on the drier peripheries of the Pecos sunflower population at Santa Rosa and La Joya, New Mexico. However, the dense stands of Pecos sunflower on wetter habitats appear to remain genetically pure based upon consistent morphology (R. Sivinski, University of New Mexico, personal observations, 1994-2004).

Vegetation removal, mowing, and utility trenching have directly impacted some Pecos sunflowers that occur in recreational areas and highway ROWs.

Range-wide Survival and Recovery Needs

There are seven distinct populations of Pecos sunflower, two in west Texas and five in New Mexico. These seven populations can be grouped within four highly disjunct regions that contain the entire genomic and ecotypical characteristics of Pecos sunflower (see Figure 3 in the Recovery Plan, Service 2005). The west Texas region is comprised of the Fort Stockton and Balmorhea populations. The westcentral New Mexico region consists of the populations on the Rio San Jose and the La Joya population on the Rio Grande. Finally, there are two distinct regions in eastern New Mexico within the Pecos River drainage: the Santa Rosa region and the Roswell/Dexter region.

The recovery criterion calls for establishing at least one core conservation area for Pecos sunflower in each of the four distinct recovery regions that would collectively, if protected, ensure the long-term survival of the species. Each core habitat must occur on wetlands that are not threatened by depletion of the contributing aquifer and have demonstrated a self-perpetuating stand of Pecos sunflower of greater than 5,000 individuals for a minimum of seven out of ten years. In addition to the core conservation area, each region should have at minimum one additional isolated stand of protected Pecos sunflowers with greater than 1,600 individuals for at least seven out of ten years to protect against catastrophic loss of the regional population. Long-term protection of designated core conservation areas and designated isolated stands must be ensured in perpetuity through the implementation of appropriate management plans, conservation easements, or land acquisition (Service 2005).

Currently five Pecos sunflower habitats occur on properties managed principally for wildlife and endangered species conservation. A major sunflower wetland occurs on Bitter Lake NWR near Roswell, New Mexico. This refuge is a series of spring-fed seeps and impoundments with several hundred acres in waterfowl ponds and farm fields. There is a small group of sunflowers on an impoundment at Dexter National Fish Hatchery near Dexter, New Mexico. The Rio Grande population occurs on the La Joya State Waterfowl Management Area, which is owned and managed by the New Mexico Department of Game and Fish. The Nature Conservancy of Texas owns and manages two sunflower wetland habitats in west Texas, the Diamond Y Spring Preserve near Fort Stockton and the Sandia Spring Preserve near Balmorhea. Significant desert springs are the principal features of these preserves. A Texas Department of Transportation ROW population at the Diamond Y Preserve has been fenced and protected from mowing.

Environmental Baseline

All Texas sites occur in Pecos and Reeves counties and are within the action area. The critical habitat (73 FR 17761) for the Pecos sunflower is divided into 5 units: units 1-4 occur in New Mexico and unit 5 is in Texas. Unit 5 is mostly located within the Diamond Y Spring Preserve in Pecos County, which is owned and operated by the Nature Conservancy of Texas, while the remainder of the unit is on adjacent private land. This population consists of several hundred thousand plants (Service 2005) and is a core population that needs to be protected for recovery. A second Texas population occurs at Sandia Spring Preserve (TNC) in the Balmorhea area of Reeves County, Texas, and is also needed for recovery.

Oncor has 46 miles (893 acres) of existing transmission ROWs in these two counties: 32 miles (621 acres) in Pecos County and 14 miles (272 acres) in Reeves County. Based on a review of the soil surveys for Pecos (Soil Conservation Service 1980a) and Reeves (Soil Conservation Service 1980b) counties, as well as U.S. Geological Survey 7.5-minute topographic maps to estimate the potential for crossing open water or wetlands, potential habitat may be 0.1 to 1 percent of Oncor's existing transmission ROWs. Therefore, an estimated maximum potential habitat that would be impacted by Covered Activities is 9 acres within the action area.

The main threat within the action area is groundwater withdrawal for agriculture in Pecos and Reeves counties, which have had an especially severe impact on desert springs. Beginning around 1946, groundwater levels fell as much as 400 feet in Pecos County and 500 ft in Reeves

County. Of the 61 historical desert springs in these two counties, only 13 were still flowing in 1980 (Brune 1981 *in* Poole 1992). Additionally, Texas is currently in an exceptional drought with the 12 months from October 2010 through September 2011 being the driest on record for that 12-month period. Additionally, a weak to moderate La Nina is forecast through the winter; therefore, rainfall is expected to be below normal during that time (LCRA 2011).

According to our consultations tracking database, there have been no consultations on the Pecos sunflower within the action area, and there have been only four formal consultations on the species, all of which were on the Bitter Lake NWR.

Effects of the Action

The Service is authorizing Oncor to impact a total of 9 acres of Pecos sunflower habitat. The impacts from Covered Activities within existing ROWs by county are: Pecos County, 6 acres, and Reeves County, 3 acres. While impacts to Pecos sunflower could occur from construction of new facilities, Oncor intends to avoid existing populations when designing and constructing new electric facilities. However, if impacts do occur, they cannot surpass the total 9 acres being authorized. Based on the minimal amount of take authorized, the avoidance measures, and the mitigation that would occur from those impacts (see below), we do not believe the Covered Activities will result in jeopardy to the species. See section 5.2.4.3 of the HCP for the methods in determining potential acres of impact.

Indirect effects of the action include both the direct and indirect effects of implementing the HCP. Direct impacts from implementation of the HCP could occur from mortality or damage to individual plants through vehicular and pedestrian traffic; mortality or damage through mowing; and mortality as a result of herbicides. Indirect impacts from implementation of the HCP could occur from introduction of invasive or exotic species into habitats within and adjacent to the ROW. These introduced species could colonize, establish and then spread into habitat occupied or suitable for Pecos sunflower and successfully outcompete extant species or alter resource availability so that habitat becomes less suitable or unsuitable for the species.

Oncor proposes to assess habitat potential and/or occupancy on a project-by-project basis to more accurately assess take. Furthermore, to reduce adverse direct impacts to the Pecos sunflower from Covered Activities Oncor will: 1) avoid populations of this species, its habitat, and lands managed for its conservation and recovery in completing the Covered Activities; 2) construct new facilities adjacent to existing maintained ROWs; 3) minimize soil disturbance caused by Covered Activities and, where soil disturbance occurs in potential habitat, doing so when the plant species is dormant, recontouring to original grade to reduce hydrologic impacts, and using native soils for backfill to preserve edaphic conditions (e.g., soil salinity), when possible; 4) comply with the stormwater BMPs to prevent indirect impacts from sedimentation, erosion, contamination, and pollution; and 5) minimize herbicide use for vegetation control, and using only appropriate herbicides and application methods that limit impacts on nontarget species (e.g., low-volume basal and foliar applications, narrow-spectrum herbicides, and herbicides with low environmental persistence). Additionally, populations adjacent to the ROWs will be avoided. Because Oncor's ROWs are easements and not fully owned, they must follow the landowners' wishes when revegetating. However, if the landowner has no objection, Oncor

will revegetate with native species to ensure invasive plant species do not colonize, establish, and then spread into adjacent occupied or suitable habitats where they could outcompete, displace, and extirpate this species.

While the exact number of acres that will be impacted, and will therefore need to be mitigated for, is not currently known, a maximum impact has been estimated for Pecos sunflower. Oncor proposes to mitigate for their impacts to Pecos sunflower at 2:1. This level of mitigation will contribute to overall recovery by: 1) permanently preserving more acreage than is removed; 2) protecting actual plants when acreage is assumed to be occupied, but may not be; and 3) focusing mitigation in single parcels when acreage impacted will likely come from patches spanning linear projects. Mitigation will occur through purchase of conservation credits from a Service-approved conservation bank. If this is not an available option, the Applicant may coordinate directly with a conservation organization such as the Lady Bird Johnson Wildflower Center and the Service to discuss potential mitigation availability. Priority would be given to purchase of conservation lands and the conservation organization would be responsible for managing the purchased land in perpetuity. If purchase of land is not a viable mitigation option (i.e., mitigation funds are not sufficient for purchase of a reasonable amount of land to support the conservation of the Pecos sunflower), other options such as habitat enhancement, management, or restoration activities will be explored. If these options are not viable, Oncor would implement the services of a Service-approved committee consisting of representatives from Oncor, the Service, TPWD, and Lady Bird Johnson Wildflower Center, as well as a private- or academic-based species specialist, if necessary. The committee will first explore the use of funding for purchase of land through a third party, which will be responsible for managing the land in perpetuity and as appropriate for the Pecos sunflower. Management of conservation easements in perpetuity will be included in the purchase agreement. If mitigation funds are not sufficient for purchase of a reasonable amount of land to support the conservation of the species, the committee will determine the best use of the funds for the Pecos sunflower. A Service-approved time limit for spending the mitigation funds will be established. All options require Service approval, and all mitigation will be in place prior to occurrence of the take (i.e., construction through habitat).

Critical habitat has not been designated for the Pecos sunflower; therefore, no adverse modification of critical habitat will occur.

III. Cumulative Effects

Cumulative effects include the effects of future State, local, or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions are not considered in this section because they require separate consultation pursuant to section 7 of the Act.

The action area includes 100 counties and the duration of the permit would be for 30 years. Because of this broad spatial extent and extended, multidecadal duration, exact identification of all specific past, present, and reasonably foreseeable future activities beyond those proposed under the Covered Activities is not feasible. However, identification of generalized activities and their impacts is possible and can be used to analyze their cumulative effect. Therefore, the cumulative impacts assessment is not project specific or quantifiable, but provides an overview

of past, present, and reasonably foreseeable projects. Some projects are described for the State; however, they are reasonably expected to occur within the action area, and others are more specific to the action area.

Future land use conversions and routine agricultural practices may alter the habitat or increase incidental take of, or impacts to, GCWAs, BCVIs, RCWs, Whooping cranes, ABBs, LBBs, Houston toads, large-fruited sand verbena, Navasota ladies'-tresses, Texas poppy mallow, and/or Pecos sunflower and are, therefore, cumulative to the proposed project. These additional cumulative effects include: (1) habitat destruction due to urbanization, wetland draining/filling, logging and/or land conversion; (2) increase in impervious cover and fragmentation due to urbanization (i.e., roads); (3) use of pesticides, (4) contaminated runoff from agriculture and urbanization, (5) parasitism, and, (6) predation. Specific project types that can be expected within the action area and could have an impact on one or more of the Covered Species include, but are not limited to: wind farms and the associated transmission and distribution lines; urban development, including the associated infrastructure like roads and electric distribution lines; and non-federally funded reservoir construction.

According to the U.S. Census Bureau, between 2000 and 2009, 11 of the top 13 counties in the action area with the largest increase in population were around the Dallas/Fort Worth metroplex. The increase ranged from 20 (Wise County) to 85 (Rockwall County) percent. Bastrop and Burnet counties were the other 2 counties in the top 13 with 28 and 30 percent increases, respectively. The majority of the remaining counties within the eastern half of the action area also saw an increase; however, not as great as the Dallas/Fort Worth metroplex (Texas Comptroller 2008a). The consequences of these increases are an increased need for energy, housing, and infrastructure, including water, sewer, and roads (Texas Comptroller 2008a). Forty three of the 100 counties saw a decrease in human population, with the majority of these occurring in the western portion of the action area. The changes in numbers show a shift from rural communities to more urban communities (Texas Comptroller 2008a).

Texas consumes energy from a wide variety of sources, including petroleum, natural gas, coal, nuclear power, and renewable sources such as biodiesel, hydroelectric, geothermal, wind and solar (Texas Comptroller 2008a). Texas' growing population will boost demand for electricity. While Texas has enough coal and natural gas to meet demands through 2030, Texas will need to turn to alternative fuel sources as well as conservation and efficiency to meet future demands for energy (Texas Comptroller 2008a). The Electric Reliability Council of Texas (ERCOT), which manages the power grid carrying about 85 percent of Texas' load, including 95 counties within the action area (http://www.ercot.com/news/mediakit), expects consumption in its power region to increase by 39.4 percent from 2007 through 2025(Texas Comptroller 2008a).

Expected increases in energy use will be in the form of transportation fuels, natural gas, propane, oil, and electricity. Texas has more than a fourth of all U.S. natural gas reserves, nearly a quarter of the nation's crude oil, and 13 surface mines with significant coal deposits (Texas Comptroller 2008a). According to the Texas Railroad Commission, 4 of the 7 oil and natural gas fields in Texas are in the action area, and 11 of the 22 permitted coal mines are also within the action area. Texas leads the nation in wind energy potential and production, accounting for 27 percent of the nation's total installed wind energy capacity (Texas Comptroller 2008a). As of 2007,

there were 18 wind resource areas (farms) in Texas, 14 of them were in the action area (Texas Comptroller 2008b). Texas is the nation's largest producer of biodiesel with a current production capacity of more than 200 million gallons annually, with another 87 million gallons in annual capacity under construction. Of the 15 counties with biodiesel plants, 5 are in the action area (Texas Comptroller 2008b). In addition, Texas has four ethanol refineries, mainly in the Panhandle. With Texas being the leading consumer of energy in the nation, consuming 12 percent of the nation's total energy, consumption of all of these resources is expected to increase (Texas Comptroller 2008b).

According to the *Texas Almanac* (Alvarez 2006), Texas leads the nation in total road and street mileage (300,000 miles), total railroad mileage (more than 10,000 miles) and total airports and airstrips (about 1,800). In 2007, the state highway system consisted of about 79,645 centerline miles (miles traveled in a one-way direction regardless of the number of lanes) of road and carried about 74 percent of the state's vehicular traffic. As of 2004, Texas also had about 143,578 centerline miles of county roads and 78,990 centerline miles of city streets (Texas Comptroller 2008a). All or portions of the following major highway projects occur within the action area: 1) I-69 will start on the Texas-Mexico border and extend to Louisiana; 2) the Ports-to-Plains Corridor extends from the Texas-Mexico border at Laredo through western Texas and parts of Oklahoma and New Mexico to Denver, Colorado; 3) US 190-I-10 is proposed to be either a multi-modal (highway/rail) or single use corridor from El Paso to the Louisiana State line; 4) the La Entrada al Pacifico Corridor is proposed to be a 10,500 mile network of rural, four-lane divided highways that includes and complements Texas' rural interstate highways; 5) the Gulf Coast Strategic Highway System is proposed as an upgrade of existing highways in Texas, Louisiana, and Mississippi to provide better connectivity between Fort Bliss, Fort Hood, and Fort Polk, and the ports of Corpus Christi and Beaumont (Texas Department of Transportation 2011, http://www.gulfcoaststrategichighway.org/). Additionally, the following toll roads are planned within the action area: Trans Texas Corridor, which will follow I-35; Interstate Highway 635 in Dallas; State Highway 121 in Dallas; Interstate Highway 820/State Highway183 from Fort Worth to DFW Airport.

IV. Conclusion

After reviewing the current status of each species, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects on the GCWA, BCVI, RCW, whooping cranes, ABB, LBB, Houston toad, large-fruited sand verbena, Navasota ladies'-tresses, Texas poppy mallow, and Pecos sunflower, it is the Service's biological opinion that the proposed action is not likely to jeopardize the continued existence of any of these species or destroy or adversely modify any of these species' designated critical habitat. As stipulated throughout the HCP, pursuant to section 10(a)(1)(B) of the Act, and the intent to provide some recovery benefit to the Covered Species (please refer to Section 6.0 of the HCP), the proposed action is an effort on the part of Oncor to add to the recovery potential for the GCWA, BCVI, RCW, whooping cranes, ABB, LBB, Houston toad, large-fruited sand verbena, Navasota ladies'-tresses, Texas poppy mallow, and Pecos sunflower.

Within the action area critical habitat has only been designated for the Houston toad. However, no Covered Activities will occur within this designated critical habitat. Therefore, no adverse impacts to critical habitat will occur as a result of issuance of this permit.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulations pursuant to section 4(d) of the Act prohibit take of endangered and threatened species, respectively, without special exemption. Take is defined by the Service as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harass is further defined by the Service as an intentional or negligent act or omission which creates the likelihood of injury to a listed species by annoying it to such an extent as to significantly disrupt normal behavioral patterns, which include, but are not limited to, breeding, feeding and sheltering (50 CFR §17.3). Harm is also further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by impairing behavioral patterns, including breeding, feeding, and sheltering. Incidental take is defined by the Service as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act, provided that such taking is in compliance with this Incidental Take Statement.

The measures described below are nondiscretionary and must be implemented by the Service so that they become binding conditions of any authorization issued to implement a project covered by this biological opinion, as appropriate, in order for the exemption in section 7(o)(2) to apply. The Service has a continuing duty to regulate the activity covered by this incidental take statement. If the Service (1) fails to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the authorizations, and/or (2) fails to retain oversight to ensure compliance with these terms and conditions, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, the Service must report the progress of the action and its effect on the species [50 CFR 402.14(i)(3)].

The Oncor HCP and its associated documents clearly identify anticipated impacts to affected species likely to result from the proposed taking and the measures that are necessary and appropriate to minimize those impacts. All avoidance, minimization and mitigation measures described in the HCP, and any section 10(a)(1)(B) permit or permits issued with respect to the HCP are hereby incorporated by reference as reasonable and prudent measures and terms and conditions within this Incidental Take Statement pursuant to 50 CFR sec. 402.14(i). Such terms and conditions are non-discretionary and must be undertaken for the exemptions under section 10(a)(1)(B) and section 7(o)(2) of the Act to apply. If the permittee fails to adhere to these terms and conditions, the protective coverage of the section 10(a)(1)(B) permit and section 7(o)(2) may lapse. The amount or extent of incidental take anticipated under the Oncor HCP, associated reporting requirements, and provisions for disposition of dead or injured animals are described in the HCP and its accompanying section 10(a)(1)(B) permit(s).

Sections 7(b)(4) and 7(o)(2) of the Act generally do not apply to listed plant species. However, limited protection of listed plants from take is provided to the extent that the Act prohibits the removal and reduction to possession of federally listed endangered plants from areas under Federal jurisdiction, or for any act that would remove, cut, dig up, or damage or destroy any such species on any other area in knowing violation of any regulation of any State or in the course of any violation of a State criminal trespass law.

To the extent that this statement concludes that take of any endangered species of migratory bird will result from the agency action for which consultation is being made, the Service will not refer the incidental take of any such migratory bird for prosecution under the Migratory Bird Treaty Act of 1918, an amended (16 U.S.C. §§ 703-712), if such take is in compliance with the terms and conditions (including amount and/or number) specified herein.

Amount or Extent of Take

The Service anticipates incidental take of the GCWA, BCVI, RCW, whooping crane, ABB, LBB, and Houston toad will occur as a result of the proposed action. Because quantifying take of, or impacts to, individuals is difficult (clearing of habitat typically results in harm or harassment through displacement, not in death or injury of individuals; or actual numbers of individuals injured are not known) for the GCWA, BCVI, RCW, ABB, LBB, and Houston toad, this biological opinion instead evaluates acres of habitat removed as a surrogate for the level of incidental take or impacts. For these species, most incidental take, or impacts, from the Covered Activities is expected to occur in the form of harm and harassment through direct loss of habitat and indirect adverse effects resulting from the issuance of an incidental take permit pursuant to 10(a)(1)(B) of the Act. However, there is an expectation, although unquantifiable, of injury or death of individuals of ABBs and Houston toads. For the whooping crane there is an expectation for death or injury; however, that limit is set at one individual. The following amount of incidental take will be authorized by the proposed permit:

1. No more than 2,997 acres of golden-cheeked warbler habitat that occurs within the action area may be adversely affected;
2. No more than 5,714 acres of black-capped vireo habitat that occurs within the action area may be adversely affected;
3. No more than 514 acres of red-cockaded woodpecker habitat that occurs within the action area may be adversely affected;
4. No more than 1 whooping crane may be adversely affected;
5. No more than 3,972 acres of American burying beetle habitat that occurs within the action area may be adversely affected;
6. No more than 194 acres of Louisiana black bear habitat that occurs within the action area may be adversely affected; and
7. No more than 100 acres of Houston toad habitat that occurs within the action area may be adversely affected.

Effect of the Take

In the accompanying biological opinion, the Service has determined that this level of anticipated take of animal species is not likely to result in jeopardy of the GCWA, BCVI, RCW, whooping crane, ABB, LBB, or Houston toad. No critical habitat has been designated within the action area for the GCWA, BCVI, RCW, whooping crane, ABB, LBB, large-fruited sand verbena, Navasota ladies'-tresses, Texas poppy mallow, and Pecos sunflower; therefore, none will be affected. Critical habitat has been designated for the Houston toad, whooping crane, and LBB; however, no Covered Activities will occur within this designated critical habitat. Therefore, no adverse impacts to critical habitat will occur as a result of issuance of the requested permit.

Reasonable and Prudent Measures

The Service believes the following reasonable and prudent measure is necessary and appropriate to minimize incidental take of, or impacts to, the GCWA, BCVI, RCW, whooping crane, ABB, LBB, large-fruited sand verbena, Navasota ladies'-tresses, Texas poppy mallow, Pecos sunflower, and Houston toad in the action area. The Service shall:

1. require that Oncor fully implement the HCP and complies with all terms and conditions of the issued section 10(a)(1)(B) incidental take permit.

The reasonable and prudent measure, with its implementing term and condition, is designed to minimize the impacts of incidental take that might otherwise result from the proposed actions. If, during the course of the action, this level of incidental take is exceeded, such incidental take represents new information requiring re-initiation of consultation and review of the reasonable and prudent measures.

Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the Act, the Service must comply with the following term and condition that implements the reasonable and prudent measure described above and outlined reporting/monitoring requirements. This term and condition is non-discretionary.

1.1 The authorization granted by the permit is subject to compliance with all terms and conditions contained in the permit.

1.2 Ensure that Oncor fully complies with avoiding and minimizing incidental take of, in the form of harassment and harm, the GCWA, BCVI, RCW, whooping crane, ABB, LBB, large-fruited sand verbena, Navasota ladies'-tresses, Texas poppy mallow, Pecos sunflower, and Houston toad through full implementation of the *Oncor Habitat Conservation Plan* dated December 2011; and

1.3 Ensure that Oncor fully mitigates the effects of the incidental take of the GCWA, BCVI, RCW, whooping crane, ABB, LBB, large-fruited sand verbena, Navasota ladies'-tresses, Texas poppy mallow, Pecos sunflower, and Houston toad from all Covered Activities, as described in the *Oncor Habitat Conservation Plan* dated December 2011.

Review Requirements

The reasonable and prudent measures, with their implementing term and condition, are designed to avoid, minimize, and mitigate effects of incidental take that might otherwise result from the issuance of the permit and implementation of the associated HCP. If, during the course of the authorized activities, the level of incidental take is exceeded prior to the annual review, such incidental take represents new information requiring review of the reasonable and prudent measure provided. The Austin Ecological Services Field Office must immediately provide an explanation of the causes of the taking and review the need for possible modification of the reasonable and prudent measures with the Chief of Endangered Species, Southwest Regional

Office. This biological opinion will expire with the expiration of the incidental take permit issued for implementation of the HCP.

Reinitiation Notice

This concludes formal consultation on the issuance of a Service 10(a)(1)(B) permit for the Oncor Habitat Conservation Plan to minimize and mitigate, to the maximum extent practicable, adverse effects to the endangered GCWA, BCVI, RCW, whooping crane, ABB, LBB, large-fruited sand verbena, Navasota ladies'-tresses, Texas poppy mallow, Pecos sunflower, and Houston toad from Covered Activities described in the HCP over a period of 30 years. As provided in 50 CFR Sec. 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of authorized incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this consultation; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species not considered in this biological opinion; or, (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

If you have any questions regarding this biological opinion, please contact Christina Williams at 512/490-0057, extension 235.

Approved:

Adam Zerrenner, Field Supervisor **Austin Ecological Services Field Office**	Jan. 5, 2012 **Date**

Concur:

Deputy Regional Director **Region 2**	January 18, 2012 **Date**

Non-conur:

Deputy Regional Director **Region 2**	**Date**

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Appendix A – Other Species within the Action Area that will not be affected by the Proposed Project

For the 32 other species within the action area, adverse impacts to Pecos assiminea snail, Leon Springs pupfish, Comanche Springs pupfish, Pecos gambusia, *Geocarpon minimum*, dunes sagebrush lizard; and Guadalupe fescue, Neches River rose-mallow, Texas golden gladecress, Phantom Lake cave snail, Diamond Y Spring snail, Phantom springsnail, Gonzales springsnail, Diminutive amphipod, Texas fatmucket, Smooth pimpleback, Texas pimpleback, Texas fawnsfoot, Smalleye shiner, Sharpnose shiner, Salado salamander, and Louisiana pinesnake will be avoided because Oncor will: avoid populations of these species, their habitat, and lands managed for their conservation and recovery in routing new transmission facilities, when possible; will construct new facilities, where possible, adjacent to existing maintained ROWs; or avoid impacts by spanning transmission lines across known populations of these species and their habitat; and minimize herbicide and pesticide use; and use only appropriate herbicides and application methods that limit impacts on non-target species (e.g., low-volume basal and foliar applications, narrow-spectrum herbicides, and herbicides with low environmental persistence), and complying with Service (2004b) guidelines for pesticide application..

An additional measure to avoid adverse impacts for the Texas prairie dawn-flower, Guadalupe fescue, Neches River rose-mallow, *Geocarpon minimum*, and Texas golden gladecress is minimizing soil disturbance caused by Covered Activities within potential habitat for these species. An additional measure to avoid adverse impacts to dunes sagebrush lizard and Louisiana pinesnake is adherence to stormwater BMPs (e.g., sediment and erosion controls).

Measures to avoid adverse impacts to the Bee Creek Cave harvestman are: avoiding karst features, such as sinkholes, springs, and cave openings, in compliance with pertinent regulations, when routing new facilities; avoiding lands managed and known populations for this species, should they be established, by re-routing or spanning transmission lines across their habitat; preventing sedimentation, erosion, and chemical contamination impacts through adherence to stormwater BMPs (e.g., sediment and erosion controls); minimizing impacts to surface and groundwater flows through recontouring disturbed areas to approximate preconstruction contours, where practical; minimizing impacts to soil resources; minimizing herbicide and pesticide use; and using only appropriate herbicides and application methods that limit impacts on non-target species (e.g., low volume basal and foliar applications, narrow-spectrum herbicides, and herbicides with low environmental persistence), and complying with Service (2004b) guidelines for pesticide application.

Measures to avoid adverse impacts to northern aplomado falcon, southwestern willow flycatcher, Mexican spotted owl, yellow-billed cuckoo, lesser prairie-chicken, Sprague's pipit, interior least tern, and piping plover are: avoiding populations of these species (e.g., individuals, nests, and nesting colonies), their habitats, and lands managed for their conservation and recovery in performing Covered Activities; and spanning riparian areas and wetlands to avoid impacts where re-routing is impracticable.

Furthermore, measures taken under the HCP for the Covered Species may collaterally benefit these 32 other species. However, since these species are not fully covered in the Oncor HCP dated December 2011 and were not requested to be included on the permit, the Habitat Conservation Plan Assurances, "No Surprises Rule", (63 FR 8859) are not applicable for these species.