103-89627



Levy Nuclear Plant Project

Listed Species Assessment

Levy to Central Florida South Transmission Line



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1.0 INTRODUCTION

Progress Energy Florida, Inc. (PEF) is committed to providing safe, reliable, and affordable energy to its customers. PEF provides electric service to 1.7 million customers and a population of more than 5 million people. The company maintains a diverse mix of power generating facility resources to ensure affordable, efficient, and reliable service. The Levy Nuclear Plant (LNP) and associated facilities are components in PEF's baseload generation plan. PEF is proposing to construct and operate two Westinghouse, AP1000 Reactors at the LNP site located in Levy County, Florida. Project requirements include several offsite linear facilities including a new blow down pipeline and approximately 180 miles of new transmission lines. PEF is continuing to pursue all licenses and permits necessary to construct and operate the LNP. These permits include a Combined Operating License (COL) from the Nuclear Regulatory Commission (NRC), a Clean Water Act Section 404 permit from the U.S. Army Corps of Engineers (USACE) and certification from the State under the Florida Electrical Power Plant Siting Act (PPSA).

On June 2, 2008, PEF submitted a Site Certification Application (SCA) to the Florida Department of Environmental Protection (FDEP) pursuant to the PPSA, Chapter 403, F.S., and Chapter 62-17, Florida Administrative Code (F.A.C.) requesting certification of the LNP, including the new transmission lines.

The Governor and Cabinet, sitting as the Siting Board, voted unanimously to approve the Administrative Law Judge's Recommended Order to grant full and final certification to PEF for the construction and operation of the LNP and associated facilities. The Final Order on Certification of PEF LNP Units 1 and 2 was granted on August 11, 2009 (Final Order). The Final Order for the project approved by the Siting Board contains a set of conditions that the project must abide by during the construction and operation of the plant and associated facilities. These are collectively referred to as the LNP Conditions of Certification (COC).

PEF has also submitted a Combined Operating License Application (COLA) to the NRC in July 2008. The USACE is a cooperating agency with the NRC and has participated in the development of a Draft Environmental Impact Statement (DEIS) for the project. The NRC issued the DEIS on the project in August 2010. The public comment period for the DEIS has closed. The NRC expects to issue a Final Environmental Impact Statement (FEIS) on the project around April 2012.

PEF has also submitted a permit application for wetland impacts under Section 404 of the Clean Water Act to the USACE. PEF has been working with the USACE to address additional information needs for the Section 404 permit. The USACE anticipates issuing a Record of Decision on the project sometime after the FEIS.



The preparation of these various regulatory documents required the review of the potential impacts to listed species for the project.

To support this effort, Golder Associates Inc. (Golder) conducted preliminary assessments of listed plant and animal species occurrence within each of the transmission line rights-of-way (ROWs) and substation sites. The purpose of the preliminary listed species assessments was to gather information regarding the existing habitat conditions within each transmission line ROW and substation site, document the occurrence of listed species, both plants and animals, and, based on the results of the field assessment and habitat conditions, develop species-specific surveys to be conducted prior to clearing and construction within each ROW and substation site in consultation with the Florida Fish and Wildlife Conservation Commission (FWC) and the U.S. Fish and Wildlife Service (USFWS).

Listed plant species are those plants that are listed by the U.S. Fish and Wildlife Service (USFWS) under Title 50, Part 17 of the Code of Federal Regulations (50 CFR 17), or by the Florida Department of Agriculture and Consumer Services (FDACS) as endangered, threatened, of special concern, or commercially exploited. Listed animal species are those animals that are classified as endangered, threatened, or of special concern by the USFWS under 50 CFR 11-12, or by the FWC under Chapter 68-27, Florida Administrative Code.

The following presents the listed species assessment for the 500-kV Levy - Central Florida South (LCFS) transmission line preferred ROW.

1.1 LCFS Preferred ROW Description

The approximately 57-mile 500-kV LCFS transmission line preferred ROW originates at the Levy Nuclear Plant in Levy County and terminates at the Central Florida South substation site in Sumter County (see Figure 1). Illustrations of the LCFS transmission line preferred ROW on a USGS topographic map and a habitat classification map are provided in Figures 2 and 3, respectively. Approximately the first 8 miles of the LCFS transmission line preferred ROW, between the LNP and the proposed Citrus Substation Site, are included as part of the Common Route transmission line preferred ROW (discussed in a separate report).

From the Citrus Substation Site, the LCFS transmission line preferred ROW turns east to traverse north of and adjacent to PEF's existing 500-kV Crystal River to Central Florida substation (CRCF) and 230-kV Crystal River to Central Florida substation (CCF) transmission line ROWs. The land use is mostly improved pasture, intermixed with shrub and brushland, longleaf pine-xeric oak forests, freshwater marshes, and wet prairies. East of State Road (SR) 495 (North Citrus Avenue), the preferred ROW traverses areas of improved and unimproved pasture, mixed hardwood-conifer forests, sand pine forests, longleaf pine-xeric oak forests, xeric oak forests, and low density residential areas. Northeast of the



intersection of North Lecanto Highway and North Deltona Boulevard, near the Holder substation, the preferred ROW crosses the Withlacoochee State Trail and U.S. Highway (US) 41. The preferred ROW continues east co-located on the north side of the existing 500-kV CRCF and 230-kV CCF transmission line ROWs through the Two-Mile Prairie Tract of the Withlacoochee State Forest northwest of the intersection of CR 491 and SR 200. Northeast of the Withlacoochee State Trail, the LCFS transmission line preferred ROW continues co-located with the existing 500-kV CRCF and 230-kV CCF transmission line ROWs to cross the Withlacoochee River and its associated mixed forested wetland floodplains. The preferred ROW intersects freshwater marshes, improved pasture, mixed hardwood-conifer forests, and xeric oak forests, turns east, and borders the south boundary of the Ross Prairie State Forest still colocated with the existing 500-kV CRCF and 230-kV CCF transmission line ROWs. Southwest of the Marion Oaks area and located east of the existing 500-kV CRCF and 230-kV CCF transmission line ROWs, the preferred ROW traverses longleaf pine-xeric oak forests, low density residential areas, sand pine forests, pine plantations, and large areas of improved pasture farther south. Where the preferred ROW parallels Interstate 75 (I-75) and SR 44, it traverses areas of live oak forests, improved pasture, freshwater marshes, mixed hardwood-conifer forests, and residential areas. The LCFS transmission line preferred ROW then turns south, intersecting SR 44, and crosses mixed rangeland, mixed hardwoodconifer forests, freshwater marshes, improved pasture, and mixed forested wetlands, and improved pasture. The preferred ROW turns southeast to intersect Florida's Turnpike and traverses large tracts of improved pastures, mixed forested wetlands, and mixed hardwood-conifer forests co-located with the existing 500-kV CRCF and 230-kV CCF transmission line preferred ROW. The preferred ROW continues southeast crossing CR 468 to then parallel Florida's Turnpike and terminates at the Central Florida South Substation Site in an area of improved pasture.



2.0 METHODOLOGY

Golder evaluated the likelihood of listed species occurrence within the LCFS transmission line preferred ROW through a combination of assessment of existing habitat type, quality, and extent, geographic information system (GIS) database queries, literature reviews, and field reconnaissance, described below.

2.1 Habitat Classification

Golder updated existing landuse/landcover and ecological habitats within the LCFS preferred ROW utilizing the Florida Department of Transportation's 1999 Florida Land Use, Cover and Forms Classification System (FLUCFCS). The FLUCFCS classification system uses dominant components of the vegetative habitat or land use characteristics to assign landuse/landcover codes. Habitat classification is useful in the assessment of potential threatened and endangered species utilization of a site. Based upon the habitat present, inferences can be made regarding the potential for listed species occurrence.

Land use/land cover data was obtained from the Southwest Florida Water Management District (SWFWMD), dated 2007, and was updated based on field observations (see Figure 3).

2.2 Data Review

Prior to field surveys, county-specific information regarding the presence of listed species was obtained from the Florida Natural Areas Inventory (FNAI), which maintains a database of documented occurrences of listed species throughout the State of Florida, as well as lists of federally listed species by county from the USFWS (http://www.fws.gov/northflorida/CountyList). The FNAI geographic information system (GIS) element occurrence data and the FWC bald eagle nest database were reviewed to assess the location of documented listed species occurrence within, adjacent to, or in the vicinity of the preferred ROW. In addition, a site-specific Element Occurrence Report from the FNAI was obtained, detailing known occurrences of listed species within and adjacent to the LCFS transmission line preferred ROW (see Appendix A). USFWS listed species consultation area data were also obtained and their geographic location in relation to the transmission line preferred ROW are presented in Appendix C.

In addition to review of FNAI, FWC, and USFWS data, references utilized for the listed species assessment include:



Beever, James W. III. 2006. Standardized State-Listed Animal Survey Procedures for Use in the Review of SWFRPC Projects. Southwest Florida Regional Planning Council, Hollywood, FL.

Coile, N.C. and M.A. Garland. 2003. Notes on Florida's Regulated Plant Index (Rule 5B-40), Botany Contribution 38, 4th edition. Florida Department of Agriculture & Consumer Services, Division of Plant Industry, Gainesville, FL.

Florida Natural Areas Inventory. 2001. Field Guide to the Rare Plants and Animals of Florida, http://www.fnai.org/FieldGuide/search_001.cfm (retrieved March 2010). Humphrey, S.R., editor, 1992. "Rare and Endangered Biota of Florida, Volume I. Mammals." University Press of Florida, Gainesville, FL.

Moler, P.E., editor, 1992. "Rare and Endangered Biota of Florida, Volume III. Amphibians and Reptiles." University Press of Florida, Gainesville, FL.

Rodgers, J.A., H.W. Kale II and H.T. Smith, editors. 1992. "Rare and Endangered Biota of Florida, Volume V. Birds." University Press of Florida, Gainesville, FL.

Runde, D.E., J.A. Gore, J.A. Hovis, M.S. Robson and P.D. Southall. 1991. "Florida Atlas of Breeding Sites for Herons and Their Allies: Update 1986-89." Florida Game and Freshwater Fish Commission, Division of Wildlife, Nongame Wildlife Program Technical Report, No. 10. Florida Fish and Wildlife Conservation Commission, Tallahassee, FL

Wood, Don A. 2001. "Florida's Fragile Wildlife – Conservation and Management" University Press of Florida, Gainesville, FL.

These data sources were used to prepare a comprehensive summary of listed species known to occur within Citrus, Lake, Marion, and Sumter Counties, their habitat preferences, and regulatory status, which were then updated with results of field surveys and presence of suitable habitat to determine individual species' probability of occurrence (Table 2).

2.3 Preliminary Field Survey

A reconnaissance-level listed species survey was conducted within the LCFS transmission line preferred ROW concurrent with the jurisdictional wetland delineation field effort in November 2009, during which time the entire transmission line preferred ROW was traversed by pedestrian and vehicular surveys. Observations were made for the presence of listed species based upon sight, call, burrow, nest, track, scat, and probable habitat. Locations of observed listed species were marked upon aerial photographs and, where feasible, identified with flagging and coordinates recorded with a GPS receiver.



3.0 RESULTS

3.1 Habitat Classification

A summary of land use/land cover and corresponding acreages within the LCFS transmission line preferred ROW is presented in Table 1. The location and extent of vegetative communities and land use/land cover classifications are depicted on Figure 3.

Upland habitats compose approximately 748 acres within the preferred ROW, dominated by pasturelands (approximately 350 acres), longleaf pine-xeric oak (138 acres), and hardwood-conifer mixed forest (116 acres), with additional areas of pine plantation, xeric oak, sand pine, live oak, mixed rangeland, pine flatwoods, woodland pastures, shrub and brushland, palmetto prairies, row crops, and horse farms.

Wetland habitats compose approximately 60 acres within the preferred ROW, primarily in the form of mixed forested wetlands (27 acres), wet prairies (17 acres) and freshwater marshes (15 acres), with additional areas of mixed wetland hardwood forests, willow and elderberry marshes, hydric pine flatwoods, and wetland scrub.

Surface waters compose approximately 12 acres within the preferred ROW, and include streams and waterways, ditches, lakes, and reservoirs. Of these, reservoirs (including stormwater retention ponds) are the most prevalent.

3.2 Data Review

Based on the presence of suitable habitat as described in Beever (2006); Coile and Garland (2003); FNAI (2001); Humphrey (1992); Moler (1992); and Rodgers et al. (1992); and preferred ROW location within the species' geographic ranges, a variety of listed species are likely to occur within the LCFS preferred ROW (Table 2).

Freshwater marsh, wetland scrub, wet prairie, forested wetlands, and surface waters within the LCFS preferred ROW provide potential foraging habitat for listed species of wading birds, including limpkin (*Aramus guarauna*), little blue heron (*Egretta caerulea*), snowy egret (*Egretta thula*), tricolored heron (*Egretta tricolor*), white ibis (*Eudocimus albus*), Florida sandhill crane (*Grus canadensis pratensis*), and wood stork (*Mycteria americana*), as well as the American alligator (*Alligator mississippiensis*). Listed plants known to occur in wetland habitats within Citrus, Marion, and Sumter Counties that potentially occur within the LCFS preferred ROW include Piedmont jointgrass (*Coelorachis tuberculosa*), spoonleaved sundew (*Drosera intermedia*), white-top pitcher plant (*Sarracenia leucophylla*), and cutthroat grass (*Panicum abscissum*).

Pasturelands, upland forests, and shrub and brushlands within the LCFS preferred ROW provide suitable habitat for the gopher tortoise (*Gopherus polyphemus*) and Florida burrowing owl (*Athene cunicularia*)



floridana), while the burrows of the gopher tortoise provide habitat for listed commensal species, including the Eastern indigo snake (*Drymarchon couperi*), Florida pine snake (*Pituophis melanoleucus mugitus*), Florida mouse (*Podomys floridana*), and gopher frog (*Rana capito*). Upland habitats within the LCFS preferred ROW also provide suitable habitat for the Florida scrub-jay (*Aphelocoma coerulescens*), Southeastern American kestrel (*Falco sparverius paulus*), Sherman's fox squirrel (*Sciurus niger shermanii*), short-tailed snake (*Lampropeltis extenuata*), and bald eagle (*Haliaeetus leucocephalus*), as well as several listed species of plants including incised groove-bur (*Agrimonia incisa*), Florida bonamia (*Bonamia grandiflora*), Ashe's savory (*Calamintha ashei*), Chapman's sedge (*Carex chapmanii*), sand butterfly pea (*Centrosema arenicola*), long-spurred mint (*Dicerandra cornutissima*), Florida spiny-pod (*Matalea floridana*), pinesap (*Monotropa hypopithys*), pygmy pipes (*Monotropsis reynoldsiae*), Florida beargrass (*Nolina atopocarpa*), Britton's beargrass (*Nolina brittoniana*), Lewton's polygala (*Polygala lewtonii*), giant orchid (*Pteroglossaspis ecristata*), Florida mountain mint (*Pycnanthemum floridanum*), and scrub stylisma (*Stylisma abdita*).

According to the FNAI GIS database and the FNAI element occurrence report (Appendix A), several listed species observations have been documented adjacent to the LCFS preferred ROW, as discussed below and identified on Figure 4.

In April 1990, several listed species were documented north of the LCFS preferred ROW in what was then an area of sandhill, longleaf pine-turkey oak, and wiregrass west of County Road 495 (Figure 4). In this area, 300+/- gopher tortoise burrows were identified during burrow surveys, six gopher frogs were captured in funnel traps set at the entrance of gopher tortoise burrows, and 36 adult and juvenile Florida mice were captured and released during a trap survey; the majority of these traps were set in the vicinity of the gopher tortoise burrows. Additionally, six Sherman's fox squirrels and eight southeastern American kestrel individuals, fledglings, and two confirmed nests were observed within the sandhill and pasture in this area.

An adult Florida pine snake killed by an automobile was documented in July 1999 in a semi-developed subdivision in former sandhill off of Glenhaven Drive, north of the ROW and west of North Deltona Boulevard (Figure 4).

In May 1994, an adult Sherman's fox squirrel was documented southeast of the ROW during a field assessment of Jordan Ranch, south of the Withlacoochee Trail (Figure 4).

Two Florida scrub-jays were documented in March 1981, southeast of the ROW and north of the Withlacoochee Trail in an area of second growth oak scrub (Figure 4).



Long-spurred mint was documented northeast of the LCFS ROW in November 1988, within the existing PEF maintained ROW, in an area surrounded by sand pine (Figure 4).

In May 1988, several individuals of snowy egret, little blue heron, and tricolored heron were documented in willow wetlands north of the LCFS ROW and the Florida Turnpike (Figure 4).

The FWC bald eagle nest database (<u>https://public.myfwc.com/FWRI/EagleNests/nestlocator.aspx</u>) includes the location of active and inactive bald eagle nests documented by the FWC. The information contained within this database is current through the 2008-2009 nesting season, with accuracy of the nest locations estimated to be within 0.1 miles of the true location. According to the FWC bald eagle nest database, there are no FWC documented bald eagle nests within or adjacent to the LCFS preferred ROW.

The majority of the preferred ROW falls within areas designated as wood stork Core Foraging Areas (CFAs) (see Appendix C). Nesting wood storks do most of their feeding in wetlands between 5 and 40 miles from the colony (Ogden, 1990), with CFAs surrounding nesting colonies within north, central, and south Florida defined as 13, 15, and 18.6 miles, respectively. Wood storks typically nest colonially in medium to tall trees located either in swamps or in islands surrounded by relatively broad expanses of open water (Ogden, 1991; Rodgers et al., 1996). Due to their tactile feeding method, wood storks forage most effectively in shallow water (depths between 5 and 15 inches) areas that support a concentrated population of fish between 1 and 8 inches in length. In the wet season, wood storks typically feed in the shallow water of short-hydroperiod wetlands, while during the dry season, foraging shifts to longer hydroperiod interior wetlands as they progressively dry down.

The following federally listed species are reported in Citrus, Lake, Marion, and/or Sumter Counties but are not expected to be observed within the LCFS preferred ROW due to lack of appropriate habitat or location outside of their geographic range: West Indian (Florida) manatee (*Trichechus manatus*), Gulf sturgeon (*Acipenser oxyrhynchus desotoi*), piping plover (*Charadrius melodus*), red-cockaded woodpecker (*Picoides borealis*), Everglades snail kite (*Rostrhamus sociabilis plumbeus*), Florida panther (*Puma concolor coryi*), loggerhead sea turtle (*Caretta caretta*), green sea turtle (*Chelonia mydas*), Hawksbill (*Eretmochelys imbricata*), leatherback sea turtle (*Dermochelys coriacea*), and sand skink (*Neoseps reynoldsi*), as well as seven listed plants, pygmy fringe tree (*Chionanthus pygmaeus*), scrub buckwheat (*Eriogonum longifolium* var. *gnaphalifolium*), Cooley's water willow (*Justicia cooleyi*), papery whitlow-wort (*Paronychia chartacea*), Lewton's polygala (*Polygala lewtonii*), scrub plum (*Prunus geniculata*), wide-leaf warea (*Warea amplexifolia*), and Carter's mustard (*Warea caretri*).

USFWS-designated consultation areas for the following species include portions of the LCFS transmission line preferred ROW (Appendix C): Everglades snail kite (*Rostrhamus sociabilis plumbeus*),



red-cockaded woodpecker (*Picoides borealis*), and scrub jay (*Aphelocoma coerulescens*). Red-cockaded woodpeckers and Everglades snail kites are unlikely to occur on the LCFS preferred ROW due to lack of suitable habitat, as discussed below.

The red-cockaded woodpecker is a federally listed endangered species endemic to open, mature and old growth pine ecosystems in the southeastern United States (USFWS, 2003). They likely once occurred in all 67 Florida counties, with exception of the Florida Keys in Monroe County (Hovis and Labisky, 1996). This species is still widely distributed in the state, but substantial populations now occur only in the Panhandle; elsewhere, populations are relatively small and disjunct (USFWS, 1999). Pine stands, or pine-dominated pine/hardwood stands, with a low or sparse understory and ample old-growth pines, constitute primary red-cockaded woodpecker nesting and roosting habitat. The low or sparse understory affords unimpeded access to cavities. Red-cockaded woodpeckers will abandon otherwise suitable nesting/roosting areas when the understory approaches cavity height (Wood, 1996). Suitable foraging habitat consists of mature pines with an open canopy, low densities of small pines, little or no hardwood or pine midstory, few or no overstory hardwoods, and abundant native bunchgrass and forb groundcovers (USFWS, 2003). Due to lack of suitable habitat within the LCFS preferred ROW and lack of documented occurrences of red-cockaded woodpeckers in the vicinity, it is unlikely that red-cockaded woodpeckers occur on the LCFS preferred ROW.

The Everglades snail kite is classified by both the USFWS and the FWC as endangered. The combination of a range restricted to the watersheds of the Everglades, lakes Okeechobee and Kissimmee, and the upper St. Johns River, with a highly specific diet composed almost entirely of apple snails (Pomacea paludosa), makes the snail kite's survival directly dependent on the hydrology and water quality of these watersheds (USFWS, 1999). Historically, snail kites were known to nest in Crescent Lake and Lake Panasoffkee in north-central Florida and as far west as the Wakulla River (Howell, 1932; Sykes, 1984). Six large freshwater systems are located within the current range of the snail kite: Upper St. Johns drainage, Kissimmee Valley, Lake Okeechobee, Loxahatchee Slough, the Everglades, and the Big Cypress basin (Beissinger and Takekawa, 1983; Sykes, 1984; Rodgers et al., 1988; Bennetts and Kitchens. 1992; Rumbold and Mihalik, 1994; Sykes et al,. 1995). In the Kissimmee Chain of Lakes, snail kites are found at Lake Pierce, Lake Tohopekaliga, East Lake Tohopekaliga, Cypress Lake, Lake Hatchineha, Lake Marion, Lake Marian, Lake Kissimmee, Tiger Lake, Lake Arbuckle, and Lake Istokpoga (USFWS, 1999). The LCFS preferred ROW does not include any of these areas. Large open freshwater marshes and lakes with shallow water, < 4 ft. (1.2 m) deep, and a low density of emergent vegetation are preferred foraging habitat (FNAI, 2001). The LCFS preferred ROW does not cross any areas of suitable habitat within the Everglade snail kite consultation area, and no individuals have been documented within the preferred ROW, therefore it is unlikely that any Everglade snail kites occur within the LCFS preferred ROW.



3.3 **Preliminary Field Survey**

Figure 4 depicts the locations of listed species observed during field surveys conducted in November 2009 as well as documented occurrences from the FNAI GIS database. Listed species known to occur in Citrus, Lake, Marion, and Sumter Counties, their suitable habitat, presence of suitable habitat within the LCFS preferred ROW, likelihood of occurrence, regulatory status, and any field observations are summarized in Table 2. Species observed during field surveys or likely to potentially occur based upon presence of suitable habitat are discussed below. FNAI species descriptions for species observed or likely to potentially occur are provided in Appendix B.

3.4 Amphibians

3.4.1 Gopher Frog

The gopher frog is listed as a species of special concern by the FWC, but is not listed federally by the USFWS. The gopher frog is a medium-sized, boldly spotted frog with a chunky appearance. Gopher frogs are found in dry, sandy uplands that include isolated wetlands or large ponds within one mile. Breeding occurs in seasonal or more permanent wetlands. Gopher frogs are nocturnal, spending the daytime hours in stump holes, tunnels, or burrows (particularly those of gopher tortoises) (FNAI, 2001). No individuals were observed on the LCFS preferred ROW.

3.5 Birds

3.5.1 Florida Scrub-Jay

Both the USFWS and the FFWCC list the Florida scrub-jay as threatened. They prefer low-growing oak scrub habitats, but they can persist in overgrown scrub habitats (FNAI, 2001). Optimal habitat for scrub-jays consists of oaks 1 to 3 m high, interspersed with 10 to 50 percent unvegetated, sandy openings, and a sand pine (*Pinus clausa*) canopy of less than 20 percent (Woolfenden and Fitzpatrick, 1990). Florida scrub-jays historically were distributed throughout the Florida peninsula in suitable scrub habitat in 39 of the 40 counties south of, and including, Levy, Gilchrist, Alachua, Clay, and Duval counties (Fitzpatrick et al. 1991). Currently, on the Atlantic coast, scrub-jays extend from Flagler to Palm Beach counties. On the Gulf coast, scrub-jays persist patchily from Levy, Citrus, western Marion, and northwestern Sumter counties south to Sarasota, western DeSoto, Charlotte, Lee, and northwestern Collier counties. In central Florida, scrub-jays range from southwestern Clay through Putnam and Marion counties, south through Polk, Highlands, and Glades counties. Florida scrub-jays have been extirpated from Broward, Dade, Duval, Gilchrist, Pinellas, and St. Johns counties.

A total of eight scrub-jays were observed within and adjacent to the LCFS ROW, in the existing PEF maintained ROW north of Abeline Drive and west of U.S. 41 in Citrus County, and adjacent to large tracts of planted sand pine south of Marion Oaks and west of I-75 in Sumter County (Figure 4).



3.5.2 Limpkin

The limpkin is classified as a species of special concern by the FWC, but is not listed federally. It is a large, brown feathered, long-billed, long legged wader of swamps and marshes. Limpkins inhabit mangroves, freshwater marshes, swamps, springs and spring runs, and pond and river margins. They are also found along lake margins in peninsular Florida and swales, strand swamps, sloughs, and impoundments in south Florida and may also forage in ruderal areas such as sugarcane fields and the banks of irrigation canals. Limpkins utilize a wide range of nesting sites, including mounds of aquatic vegetation and marsh grasses among cypress knees and high up in trees. Nesting generally occurs from late February - May in north Florida and late January - March in central Florida, and possibly earlier in south Florida (FNAI, 2001). No individuals were observed on the LCFS preferred ROW.

3.5.3 Florida Burrowing Owl

Florida burrowing owls are classified as a species of special concern by the FWC, but are not listed federally by the USFWS. They are opportunistic feeders, preying on invertebrates, small mammals, and other birds. Burrowing owls are small, ground-dwelling owls with long legs, white chin strip, round head, and a stubby tail. They will often dig their own burrows, and prior to egg laying, will line the entrance and burrows with materials such as palm fronds and grass clumps. In Florida, burrowing owl burrows are considered active (potentially having eggs or unfledged young) from February 15 to July 10. The female lays 7 to 10 eggs, which she incubates for 28 to 30 days (FWC, 2011). No individuals were observed on the LCFS preferred ROW.

3.5.4 Little Blue Heron

The little blue heron is classified as a species of special concern by the FWC, but is not listed by the USFWS. The little blue heron is a medium-sized heron, with a purplish to maroon-brown head and neck, small white patch on throat and upper neck, a and slate-blue body. The little blue heron feeds in shallow freshwater, brackish, and saltwater habitats. The largest nesting colonies of little blue herons occur in coastal areas, but they prefer to forage in freshwater lakes, marshes, swamps, and streams. Little blue herons nest in a variety of woody vegetation types, including cypress, willow, maple, black mangrove, and cabbage palm. They usually breed in mixed-species colonies in flooded vegetation or on islands. Little blue herons are mostly resident throughout year, but numbers in north Florida in winter are lower than numbers during spring, summer, and fall (FNAI, 2001). No individuals were observed on the LCFS preferred ROW.

3.5.5 Snowy Egret

The snowy egret is classified as a species of special concern by the FWC, but is not listed by the USFWS. The snowy egret is a medium sized, all-white wading bird. Adults have black legs with bright yellow feet. Snowy egrets occur in Florida in all seasons, but are generally less common in winter.



Snowy egrets nest both inland and in coastal wetlands, with nests placed in many types of woody shrubs, especially mangroves and willows. Almost all nesting is over shallow waters or on islands that are separated from shoreline by extensive open water. Snowy egrets feed in a variety of permanently and seasonally flooded wetlands, streams, lakes, and swamps, and in manmade impoundments and ditches. A wide variety of wetland types must be available within 7 miles to support breeding colonies (FNAI, 2001). Nesting may begin as early as January in southern Florida. Egg laying occurs primarily between late March and June, but may continue into August (Ogden, 1996b). No individuals were observed on the LCFS preferred ROW.

3.5.6 Tricolored Heron

The tricolored heron is classified as a species of special concern by the FWC, but is not listed by the USFWS. It is a medium sized heron with dark slate coloration on the head, neck, and body that contrasts with the white rump, belly, and undertail. Most tricolor nesting colonies occur on mangrove islands or in willow thickets in fresh water, but nesting sites include other woody thickets on islands or over standing water. Egg laying can begin as early as February in south Florida and continue into August (Ogden, 2001c). Tricolored herons prefers coastal environments, but will feed in a variety of permanently and seasonally flooded wetlands, mangrove swamps, tidal creeks, ditches, and edges of ponds and lakes. Tricolored herons are permanent residents and found throughout Florida in all seasons, except they are rare in winter in the western Panhandle and also somewhat less common inland during winter (FNAI, 2001). No individuals were observed on the LCFS preferred ROW.

3.5.7 White Ibis

The white ibis is classified as a species of special concern by the FWC, but is not listed by the USFWS. The white ibis is found throughout Florida in a wide variety of habitats, including freshwater and brackish marshes, salt flats and salt marsh meadows, many types of forested wetlands, wet prairies, swales, seasonally inundated fields, and man-made ditches. White ibis typically nest in Florida from March to August. Nesting occurs in trees, shrubs, cactus, and grass clumps, from ground level to a height of approximately 50 feet. Eggs incubate for a period of approximately 22 days and young begin leaving the nest around 9 to 16 days of age, but complete independence from the parents does not occur until 40 to 50 days of age (FWC, 2003). No individuals were observed on the LCFS preferred ROW.

3.5.8 Southeastern American Kestrel

Southeastern American kestrels are listed as threatened by the FFWCC. Kestrels are the smallest falcon in the U.S. They are found throughout Florida year-round, but northern migrants are also present in the winter. The subspecies that breeds in Florida (southeastern American kestrel) is listed as threatened by the FWC, but the northern migrants are not listed. Northern migrants generally arrive in September and leave by March, but there are some records outside of these dates. In Florida, the southeastern



American kestrel typically nests from March to June (Collopy, 1996). Seven southeastern American kestrels were observed either within or directly adjacent to the LCFS preferred ROW in areas of improved and unimproved pasture (Figure 4).

3.5.9 Florida Sandhill Crane

The Florida sandhill crane is classified as threatened by the FWC, but is not listed by the USFWS. The Florida sandhill crane is indistinguishable from the greater sandhill crane, which winters in Florida. Greater sandhill cranes generally arrive in Florida in October and leave in March. Florida sandhill cranes typically start nesting in late December and continue through June, creating nest mounds of plant material in herbaceous wetlands. The female will lay two eggs, which incubate for 28 to 32 days. Fledging occurs at about 67 days (FWC, 2003).

Two sandhill cranes were observed in a large freshwater marsh, north of the LCFS ROW, and one was observed west of the LCFS ROW, in an area of wet prairie (Figure 4). Due to the time of year (November), it could not be determined if the species observed were the listed (threatened) subspecies, the Florida sandhill crane, or the non-listed migrant, greater sandhill crane.

3.5.10 Bald Eagle

The bald eagle was removed from the USFWS endangered species list on June 28, 2007 and is no longer protected under the Endangered Species Act, but remains protected under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act (U.S. Department of Interior, 2007). The bald eagle was delisted by the FWC through adoption of the Bald Eagle Management Plan on April 9, 2008 (FWC, 2008). The Bald Eagle Management Plan recommends maintaining a 660 ft buffer zone around any active bald eagle nest, with certain activities allowable within between 330 and 660 ft of an active nest outside of the nesting season (October 1 - May 15).

Bald eagles typically inhabit areas close to coastal areas, bays, rivers, lakes, or other bodies of water that provide concentrations of food sources (FNAI, 2001). Bald eagles were observed west of the LCFS ROW in a large area of improved pasture (Figure 4), flying overhead and perching on transmission line structures. Two potential bald eagle nests were observed adjacent to the LCFS ROW upon existing transmission structures, adjacent to the Florida Turnpike (Figure 4). No eagles were observed in the nests at the time of the field survey. According to the FWC bald eagle nest database, there are no FWC documented bald eagle nests within or adjacent to the LCFS preferred ROW.

3.5.11 Wood Stork

The wood stork is classified as endangered by the USFWS and the FWC. Wood storks utilize a variety of habitats, including cypress/gum ponds, forested wetlands, river swamps, marshes (freshwater and saltwater), and bays. The wood stork is highly gregarious in its nesting and feeding behavior. They are



tactile feeders (vision is seldom used to locate or catch prey) and usually forage in shallow water (6 to 20 inches). Small fish are the primary food items, but storks also consume crustaceans, salamanders, tadpoles, and insects. The distance between nesting colonies and feeding areas can range up to 60 miles or more, although the average distance is typically 12 to 15 kilometers (km) (7 to 9 miles) (Ogden, 1996a). Colonies are typically located on coastal islands and on willow islands in swamps, cypress swamps, impoundments, and other inundated areas. Nesting has been reported throughout the year, with nests consisting of platforms of sticks formed in tall cypress trees and, less often, mangroves. Typically, three to five eggs are laid and incubate for 28 to 32 days before hatching, while the young fledge in 50 to 55 days. Although the majority of the LCFS preferred ROW is contained within a wood stork colony CFA (Appendix C), no individual wood storks were observed on the LCFS preferred ROW.

3.6 Mammals

3.6.1 Florida Mouse

The Florida mouse is classified as a species of special concern by the FWC, but is not listed by the USFWS. It is distinguished from all other mice within its range by the presence of five plantar tubercles on the hind feet versus six or seven in *Peromyscus* spp. The Florida mouse is found in xeric upland communities with sandy soils, including scrub, sandhill, and ruderal sites where they inhabit the burrows of the gopher tortoise. In the absence of gopher tortoises, Florida mice will dig their own burrows or use those of oldfield mice. The Florida mouse is active year-round except on especially cold nights (FNAI, 2001). No individuals were observed on the LCFS preferred ROW.

3.6.2 Sherman's Fox Squirrel

Sherman's fox squirrel is classified as a species of special concern by the FWC, but is not listed federally by the USFWS. Sherman's fox squirrels are larger than gray squirrels and have tails almost as long as their head and torso length. They occur in sandhills, pine flatwoods, pastures, and other open, ruderal habitats with scattered pines and oaks. They depend on a variety of oak trees for seasonal food and nest material; longleaf pine cones and seeds are important foods. Sherman's fox squirrels are active year-round in Florida (FNAI, 2001). Three Sherman's fox squirrels were observed in the LCFS preferred ROW within an area of improved pasture (Figure 4).

3.7 Reptiles

3.7.1 American Alligator

American alligators are classified as threatened by the USFWS due to their similarity in appearance to the endangered American crocodile (*Crocodylus acutus*). The FWC also regulates the harvesting of alligators and their eggs. Alligators nest in late spring and young hatch in the summer. Females nest along the water edge, creating a nest mound of herbaceous vegetation. Approximately 30 to 60 eggs will



be laid and will incubate for 2 months in the decomposing vegetation. About half of these eggs will survive to maturity, with young typically hatching in mid-August through September (FNAI, 2001). No individuals were observed on the LCFS preferred ROW.

3.7.2 Eastern Indigo Snake

The Eastern indigo snake is classified as a threatened species by both the USFWS and the FWC. In peninsular Florida, the Eastern indigo snake may be found in a variety of habitats ranging from swamps to xeric pinelands and scrub (Moler, 1992). In its northern range, it is often commensal with gopher tortoises, using their burrows for shelter during the winter (FNAI, 2001). An Eastern indigo snake was observed along the edge of the LCFS ROW adjacent to large tracts of planted sand pine south of Marion Oaks and west of I-75 (Figure 4).

3.7.3 Gopher Tortoise

Gopher tortoises are listed as a threatened species in the State of Florida due to loss of preferred habitat, but are not listed federally by the USFWS. They are medium-sized terrestrial turtles that dig burrows for shelter, typically in dry sandy areas where the depth to the seasonal high water table is greater than 45 centimeters (FWC, 2009). Gopher tortoises are commonly found in dry upland habitats, such as sandhills, scrub, xeric oak hammock, and dry pine flatwoods. They are also found in pastures and old fields (FNAI, 2001). The breeding season for gopher tortoises is generally considered to be spring, but males may attempt to mate from April through December. During May and June, females deposit 3-12 eggs in the sand mounds in their burrow mounds or in other nearby open sandy sites. Incubation depends upon climate and takes from 80 to 110 days. Other listed species such as the Eastern indigo snake, gopher frog, Florida mouse, and Florida pine snake may utilize gopher tortoise burrows.

According to FWC regulations, construction activities or land disturbance are to be avoided within a 25foot buffer around gopher tortoise burrows; where burrow avoidance is not practicable, a permit for the excavation and relocation of gopher tortoises is required. The FWC Gopher Tortoise Permitting Guidelines, revised April 2009, describe regulations and permits required for disturbance of gopher tortoises, including the protocols for surveying, burrow excavation, and relocation of gopher tortoises.

A total of 98 gopher tortoise burrows were observed within or adjacent to the LCFS preferred ROW. The burrows were observed in improved and unimproved pasture, and adjacent to upland forests (Figure 4).

3.7.4 Short-tailed Snake

The short-tailed snake is classified as a threatened species by the FWC, but is not federally listed. The short-tailed snake is an extremely slender, spotted snake with a cylindrical body, rarely exceeding 20 in. total length. It is found in dry upland habitats, principally sandhill, xeric hammock, and sand pine scrub from the Suwannee River south to Highlands County. It is a secretive burrower only rarely seen above



ground or under cover objects. Most above-ground activity occurs in October and November, with a few sightings in March and April (FNAI, 2001). No individuals were observed on the LCFS preferred ROW.

3.7.5 Florida Pine Snake

The Florida pine snake is listed as a species of special concern by the FWC, but is not listed federally. They are large, stocky, tan or rusty colored snakes with an indistinct pattern of large blotches on a lighter background. Adults may reach lengths greater than 7 feet. Florida pine snakes are found in habitats with relatively open canopies and dry sandy soils, in which they burrow. They often coexist with pocket gophers and gopher tortoises. Florida pine snakes spend most of time below ground with occasional surface activity from spring through fall, especially May - October. Eggs are laid June – August and hatch in September and October (FNAI, 2001). No individuals were observed on the LCFS preferred ROW.

3.8 Plants

3.8.1 Incised Groove-bur

Incised groove-bur is a perennial herb classified as state endangered, but is not listed federally. It grows to 1 meter tall, with 7 to 9 leaflets and amber glands on the lower leaf surface, and a hypanthium with small petals present between September and October. It occurs in sandhills, woods and thickets in Alachua, Calhoun, Citrus, Escambia, Hernando, Jackson, Madison, Marion, Suwannee, Wakulla and Washington Counties. No individuals were observed on the LCFS preferred ROW.

3.8.2 Florida Bonamia

Florida bonamia is classified as an endangered species in the State of Florida and as a threatened species by the USFWS. It is a perennial trailing vine with stout stems up to 3 feet long and bright blue flowers that have a white throat in the morning but fade to pale blue by early afternoon when they close. The flowers somewhat resemble that of a common morning-glory. Florida bonamia is known from openings or disturbed areas in white sand scrub on central Florida ridges, with scrub oaks, sand pine, and lichens. It is known from Hardee, Highlands, Hillsborough, Lake, Manatee, Marion, Orange, Polk and Sarasota counties. Florida bonamia flowers from May–August, but leaves and vines are distinctive all year. No individuals were observed on the LCFS preferred ROW.

3.8.3 Ashe's Savory

Ashe's savory is classified as a threatened species in the State of Florida, but is not listed federally. It is a perennial, woody mint that is found in dry pinelands and sand pine scrub in canopy openings and disturbed areas. It produces pinkish-purple flowers from January through November. Ashe's savory is known from Glades, Highlands, Lake, Marion, Polk and Volusia counties. No individuals were observed on the LCFS preferred ROW.



3.8.4 Chapman's Sedge

Chapman's sedge is classified as threatened in the State of Florida, but is not listed by the USFWS. It is perennial sedge that fruits in the spring. Chapman's sedge is found in grasslands and pinelands in Alachua, Clay, Citrus, Columbia, Dixie, Duval, Franklin, Hernando, Hillsborough, Jefferson, Lake, Levy, Marion, Orange, Osceola, Pasco, Polk, Putnam, Seminole, St. Johns, Sumter, Taylor, Volusia and Wakulla counties (Coile and Garland, 2003). No individuals were observed on the LCFS preferred ROW.

3.8.5 Sand Butterfly Pea

The sand butterfly pea is classified as state endangered, but is not listed federally. It is a perennial vine with stems up to 10 feet long twining over bushes and somewhat leathery leaves with 3 oval or lance-shaped leaflets to two inches long. The flowering period occurs from June through October, with each flower approximately 1.5 inches wide, purplish-blue, and twisted so that the large, notched banner petal is lowest. It occurs in sandhill, scrubby flatwoods, and dry upland woods in Brevard, Citrus, Hernando, Highlands, Hillsborough, Lake, Marion, Orange, Pasco, Polk, Seminole, Sumter and Volusia Counties. No individuals were observed on the LCFS preferred ROW.

3.8.6 Piedmont Jointgrass

Piedmont jointgrass is classified as state threatened, but is not listed federally. It is a perennial grass that grows up to approximately 1 m tall, with an inflorescence in the form of a jointed, cylindric spike to approximately 8 cm in length during June to July. It occurs within marshes and edges of ponds in Alachua, Brevard, Calhoun, Hernando, Highlands, Lake, Marion, Martin, Orange, Palm Beach, Pasco, Putnam, Santa Rosa, Seminole, St. Lucie, Volusia and Washington Counties. No individuals were observed within the LCFS preferred ROW.

3.8.7 Long-spurred Mint

The long-spurred mint is a state and federally endangered species, and is typically found in sand pine and oak scrub habitats of Marion and Sumter Counties (FNAI, 2001). It is a low shrub, to 1.3 feet tall, with numerous stiff square stems rising from a woody base. Leaves are opposite, narrow, needle-like, and smell of mint. Flowers are rose-purple with dark purple lines and dots, whitish throat, and sharply bent flower tube, present between September and October. Long-spurred mint was observed northeast of the LCFS preferred ROW, within the existing PEF maintained ROW, in an area surrounded by sand pine (Figure 4).

3.8.8 Spoon-leaved Sundew

The spoon-leaved sundew is classified as threatened in the State of Florida, but is not listed federally. Spoon-leaved sundew is an insectivorous plant with leaf blades that are densely covered with stalked mucilaginous glands which secrete a sugary nectar to attract insects. It has white to pinkish flowers from



April-November. Spoon-leaved sundew is found in shallow freshwater wetlands such as bogs and wet prairies. It is known from Alachua, Bay, Calhoun, Duval, Escambia, Franklin, Gulf, Hernando, Highlands, Hillsborough, Lake, Leon, Levy, Marion, Okaloosa, Osceola, Pasco, Polk, Putnam, Santa Rosa, Sumter, Volusia and Walton counties. No individuals were observed within the LCFS preferred ROW.

3.8.9 Florida Spiny-pod

Florida spiny-pod is a state endangered species, but is not listed federally. It is a deciduous herbaceous vining milkweed with heart-shaped leaves. Florida spiny-pod produces deep burgundy flowers with five petals in late spring through early summer. It is found in open woodlands, sandhills and open fields in Alachua, Bradford, Citrus, Clay, Columbia, Dade, Duval, Hernando, Lake, Levy, Liberty, Madison, Manatee, Marion, and Orange counties. No individuals were observed on the LCFS preferred ROW.

3.8.10 Pinesap

Pinesap is classified as an endangered species in the State of Florida, but is not listed federally. The entire plant lacks chlorophyll and is a pale creamy white, coral pink, or red in color with leaves that are scale-like and occur along the flower stalk. It is found under sand pines in sandy soil. Pinesap is known from Lake, Marion, Okaloosa, Orange and Walton counties. No individuals were observed on the LCFS preferred ROW.

3.8.11 Pygmy Pipes

Pygmy pipes are a state endangered species, but are not listed federally. Pygmy pipes are a perennial herb that lacks chlorophyll, and are parasitic on underground fungi that are associated with roots of trees. The stems are 1.5 - 5 inches tall and clustering. Flowers are formed at the top of the stem and are nodding, white or lavender, and slightly fragrant. Flowering occurs January through February. Pygmy pipes are found in upland mixed hardwood forest, mesic and xeric hammock, sand pine, and oak scrub in Brevard, Citrus, Hernando, Marion, Pasco, St. Johns and Volusia counties. No individuals were observed on the LCFS preferred ROW.

3.8.12 Florida Beargrass

Florida beargrass is classified as a threatened species in the State of Florida, but is not listed federally by the USFWS. It is perennial herb found in grassy areas of flatwoods, bordering savannahs, and shell middens. The small whitish flowers are present between May and August. Florida beargrass is known to occur in Brevard, Charlotte, Franklin, Lee, Liberty, Marion, Orange, St. Johns and Volusia counties. No individuals were observed on the LCFS preferred ROW.

3.8.13 Britton's Beargrass

Britton's beargrass is classified as both state and federally endangered. It is a perennial herb with long, stiff leaves in a grass-like clump rising from a bulbous stem. Young leaves stand erect, while older leaves



are up to 6 feet long, spreading on the ground. The conspicuous flowering stalk is 3 to 6 feet tall, topped by a large, showy cluster of small, white flowers between March and May. It occurs in scrub, sandhill, scrubby flatwoods, and xeric hammock. No individuals were observed on the LCFS preferred ROW.

3.8.14 Cutthroat Grass

Cutthroat grass is classified at endangered in the State of Florida, but is not listed by the USFWS. It is a perennial grass found in mesic flatwoods and dry prairies; wet flatwoods; edges of depressional marshes; wet prairies; and, on the ecotones between flatwoods and drainageways. It is known to occur in Highlands, Orange, Osceola, Palm Beach and Polk counties (Coile and Garland, 2003). According to the FNAI, cutthroat grass also occurs within Lake County. No individuals were observed on the LCFS preferred ROW.

3.8.15 Giant Orchid

The giant orchid is a state threatened perennial herb with 2 to 4 basal leaves 6 to 28 inches long that resemble those of saw palmetto seedlings. It is not listed federally by the USFWS. The leafless flower stalk is 1 to 5.5 feet tall with a terminal spike of 5 to 30 flowers in July-September. It typically occurs in sandhill, scrub, pine flatwoods, and pine rockland habitats (FNAI, 2001). No individuals were observed on the LCFS preferred ROW.

3.8.16 Florida Mountain Mint

Florida mountain-mint is classified as state threatened, but is not listed federally. It is a perennial herb with glabrous opposite leaves over 3 cm long and a terminal inflorescence present during the months of July and August. Preferred habitat includes sandhills, hammocks, and wet pinelands in Alachua, Clay, Duval, Flagler, Hernando, Leon, Levy, Madison, Marion, Putnam, Seminole, St. Johns and Volusia Counties. No individuals were observed on the LCFS preferred ROW.

3.8.17 White-top Pitcher Plant

The white-top pitcher plant is classified as state endangered, but is not listed federally. It is a carnivorous plant found in bogs, savannas, seepage slopes, hydric pine flatwoods, ditches and shallow borrow areas in Bay, Calhoun, Escambia, Gulf, Franklin, Holmes, Liberty, Okaloosa, Santa Rosa and Walton counties. The red to maroon flowers are present from March to May, and occasionally in Fall. No individuals were observed on the LCFS preferred ROW.

3.8.18 Scrub Stylisma

The scrub stylisma is classified as state endangered, but is not listed federally. It is an herbaceous vine in the morning-glory family, and occurs in pinelands, sandhills, and scrub habitats in Citrus, Clay, Collier, Highlands, Lee, Marion, Orange, Polk, and Putnam Counties. White flowers are present in spring and summer. No individuals were observed on the LCFS preferred ROW.



4.0 LISTED SPECIES SURVEYS

The results of the preliminary listed species assessment will be used to develop a detailed listed species survey plan for the LCFS transmission line preferred ROW in accordance with the Conditions of Certification and federal and state requirements. PEF will consult with the FWC and the USFWS to review the listed species assessment and obtain consensus on the location, timing, and methodology for conducting the detailed species-specific surveys prior to clearing and construction.

Following FWC and USFWS consultation, surveys will be conducted within the LCFS preferred ROW prior to clearing and construction in accordance with the survey protocols. The results of those detailed surveys will be provided to FWC, and coordination will occur with the FWC on appropriate impact mitigation methodologies.

Based upon the results of the preliminary listed species assessment and proposed impacts associated with construction of the LCFS transmission line, pre-clearing surveys and additional evaluations are proposed for the following species: gopher tortoise and commensals, Eastern indigo snake, bald eagle, scrub jay, wood stork, and federally listed species of plants, as described below:

4.1 Gopher Tortoise and Commensals

As detailed in the Conditions of Certification, PEF will conduct surveys for gopher tortoises within the LCFS preferred ROW in accordance with the FWC-approved Gopher Tortoise Management Plan (adopted in 2007) and FWC Gopher Tortoise Permitting Guidelines (revised April 2009), or subsequent FWC-approved versions of the Plan or Guidelines. A burrow survey covering a minimum of 15 percent of the potential gopher tortoise habitat to be impacted by development will be conducted in order to apply for a relocation permit. Potential gopher tortoise habitat includes those areas classified as preferred habitat, as described in Section 3.5.1, underlain by acceptable soils with depth to the water table of greater than 31-45 centimeters, as defined by FWC in Table 2 of the Gopher Tortoise Permitting Guidelines. Soil types within the LCFS preferred ROW are illustrated in Figure 5; areas of acceptable gopher tortoise soils within the LCFS preferred ROW are identified on Figure 6.

Immediately prior to capturing tortoises for relocation, a 100 percent survey will be conducted to locate and mark all potentially occupied tortoise burrows and to subsequently remove the tortoises. Burrow survey methods will follow Gopher Tortoise Permitting Guidelines Appendix 4, Methods for Burrow Surveys on Development (Donor) and Recipient Sites. Surveys will be conducted within 90 days of application submittal to the FWC; and will not be conducted within 30 days of any ground disturbance or clearing activities on the Donor Site. The gopher tortoise surveys will be conducted during the months of April through October.



PEF will minimize impacts to gopher tortoises through maintenance of a minimum 25-foot buffer zone around all burrows to the greatest extent practicable. Where gopher tortoise burrow avoidance is not feasible, PEF will coordinate with and provide the FWC a detailed gopher tortoise relocation permit application for the LCFS transmission line in accordance with the FWC-approved Gopher Tortoise Management Plan and Gopher Tortoise Permitting Guidelines as a post-certification submittal. This permit application will provide information on the location for on-site recipient areas and/or any off-site FWC-approved recipient site, as well as appropriate mitigation contributions.

Any commensal species observed during the burrow excavations that are listed by the USFWS or FWC will be relocated in accordance with the applicable guidelines for that species.

4.2 Eastern Indigo Snake

Prior to clearing and construction, PEF will perform a survey for Eastern indigo snakes in accordance with the *Survey Protocol for the Eastern Indigo Snake, Drymarchon couperi, in North/North-Central Florida* established by the USFWS North Florida Ecological Services Field Office (NFESFO) in February 2011. Pedestrian surveys will be conducted during the period from October 1st through April 30th along established transects within areas to be impacted by construction of the transmission facilities. The impact area will be surveyed a minimum of five times per the *Survey Protocol* with surveys being conducted under the optimum temperature range of 60° F – 70° F.

Pedestrian surveys are intended to locate Eastern indigo snakes above ground and to identify refugia for subsequent inspection of the impact area. Underground refugia commonly used by this species include active or inactive burrows excavated by gopher tortoises or other species, natural ground holes, and hollows at the base of trees. Above ground refugia include thick shrub formations, the base of thick palmetto (*Serenoa repens* or *Sabal etonia*) ground litter, trash piles, abandoned structures, and crevices of rock-lined ditch walls. The preferred inspection methods when underground refugia are present in the impact area include the excavation of burrows or natural holes in the ground. Excavation of burrows will be conducted in conjunction with any permitted gopher tortoise relocation activities. If an Eastern indigo snake is located during excavation procedures, all activities must be temporarily halted in order to photograph the specimen, allow it to move out of harm's way, and the USFWS is to be notified as soon as possible with all pertinent information. PEF will submit a Final Survey Report to USFWS after the completion of all Eastern indigo snake survey and gopher tortoise burrow excavation activities. During construction, PEF will comply with the USFWS Standard Protection Measures for the Eastern Indigo Snake (2004).



4.3 Bald Eagle

Prior to clearing and construction, PEF will update the bald eagle nest location and status (active/inactive) information within and adjacent to the LCFS preferred ROW. During clearing and construction, PEF will avoid impacts to bald eagle nests where possible. If impacts cannot be avoided within the 660-foot nest buffer zone, construction activities will be conducted consistent with the FWC-approved Bald Eagle Management Guidelines, outlined in the FWC-approved Bald Eagle Management Plan, dated April 9, 2008, or any subsequent FWC-approved versions. In areas where bald eagle nests are present, efforts will be made to avoid construction activities during the nesting season (October 1 - May 15), or when eagles are present before October 1 or after May 15.

In accordance with the FWC Eagle Management Guidelines, for construction areas that fall within 330 feet of an active or alternate bald eagle nest, construction activities will be conducted only during the nonnesting season (May 16 - September 30). Any construction activities that fall within 660 feet of the nest during the nesting season will be conducted following USFWS-approved Bald Eagle Monitoring Guidelines, dated 2007, or USFWS-approved subsequent versions.

In areas where adverse impacts to nests cannot be avoided, resulting in nest disturbance, PEF will obtain the information required for an FWC Eagle Permit from the FWC, as authorized by Section 372.072, F.S., and Rule 68A-16.002, F.A.C, and minimization and conservation measures outlined in the FWC Bald Eagle Management Plan will be followed, as applicable.

4.4 Florida Scrub-Jay

PEF will conduct surveys for Florida scrub-jays prior to clearing and construction in accordance with the USFWS 2007 guidelines and protocols (<u>http://www.fws.gov/northflorida/Scrub-Jays/general-survey-guide-082407.htm</u>) to determine a count of all scrub-jay groups within the preferred ROW and develop an approximate territory map for each group. According to the USFWS, the most effective method for surveying a site for Florida scrub-jays is to traverse the area systematically using high quality tape recordings of Florida scrub-jay territorial scolds and the female "hiccup" call in an attempt to attract the jays.

Parallel line transects will be established within areas of appropriate upland habitats, with playback stations established along each transect. Transects and playback stations will be located so that the recordings will be effectively broadcast across the areas of potential habitat. Generally, a 100 to 200 meter distance between transects and playback stations is adequate. At each playback station, calls will be broadcast for at least one minute in all four directions around the playback station. Locations and group sizes of any Florida scrub jays where they are first seen or heard will be plotted, and adults will be distinguished from juveniles, if feasible.



The surveys will be conducted during morning hours on calm, clear days. Surveys can be conducted anytime between March 1 and October 31, but ideal survey months are March, July, September, and October. USFWS recommends that a site is surveyed as often as necessary (minimum of five days) to establish an accurate count of jay groups and territorial boundaries. PEF will provide the Florida scrub-jay survey results to the USFWS and FWC and, if necessary, coordinate with the USFWS and FWC to determine appropriate mitigation measures for areas where impacts to Florida scrub-jays cannot be avoided.

4.5 Wood Stork

Nesting wood storks primarily feed in wetlands between 5 and 40 miles from their colonies (Ogden 1990), with CFAs surrounding nesting colonies within north, central, and south Florida defined as 13, 15, and 18.6 miles, respectively. This circular area around a nesting colony is considered the minimum area necessary to provide enough prey biomass to support the adults and new offspring during a nesting season. It is believed that loss of suitable wetlands within these CFAs may reduce foraging opportunities for the wood stork. The majority of the LCFS transmission line preferred falls within areas designated as wood stork CFAs (Appendix C, Figure 1).

The USFWS has developed a Wood Stork Key for Central and North Peninsular Florida and a Wood Stork Effect Determination Key for South Florida to facilitate evaluation of potential adverse effects upon wood storks associated with a particular project. Impacts to wetlands within a CFA that provide wood stork foraging habitat must be compensated through provision of mitigation that provides for equal or greater wood stork foraging habitat value, measured as either functional units of wood stork foraging habitat (Central and North Peninsular Florida) or the estimated prey biomass available on an annual basis (South Florida).

PEF will prepare a wood stork foraging habitat assessment for the LCFS transmission line preferred ROW, consistent with the Wood Stork Key for Central and North Peninsular Florida, to quantify the loss of wood stork foraging habitat units associated with construction of the Project. PEF will utilize site-specific data for each wetland, including functional assessment evaluation utilizing the Uniform Mitigation Assessment Method (UMAM), vegetative community composition, suitability as wood stork foraging habitat, estimated hydroperiod, and acreage of impact to evaluate the potential loss of foraging opportunities resulting from construction of the LCFS transmission line in the preferred ROW.

4.6 Plants

Federally protected plants in Citrus, Lake, Marion, and Sumter Counties that have a medium to high probability of occurring with the LCFS preferred ROW, their flowering times, and recommended survey periods are provided in Table 3. PEF will conduct specific surveys for these species during the



appropriate season to identify the presence of any individuals within the LCFS preferred ROW prior to construction.



5.0 SUMMARY

To support compliance with the Conditions of Certification and the federal regulatory process, Golder has prepared an evaluation of listed species occurrence within the LCFS transmission line preferred ROW. In consultation with the FWC and the USFWS, this listed species evaluation will facilitate the development of detailed listed species surveys to be conducted prior to clearing and construction, including specific locations and protocols.

The LCFS preferred ROW contains approximately 748 acres of uplands and 72 acres of wetlands and surface waters, which provide suitable habitat to a variety of listed species. Based upon field reconnaissance, database queries, presence of suitable habitat, and literature reviews, a total of 13 species were observed or are highly likely to occur within the LCFS preferred ROW, as identified in Table 2.

Based on the results of the assessment, detailed listed species surveys are recommended prior to construction for the gopher tortoise and commensals, Eastern indigo snake, scrub jay, and listed species of plants, as described below. Additional evaluation is also recommended for bald eagle and wood stork. Specific listed species survey locations, timing, and methodology will be determined in consultation with the FWC and USFWS.

PEF will conduct surveys for gopher tortoises within the LCFS preferred ROW in accordance with the FWC-approved Gopher Tortoise Management Plan (adopted in 2007) and FWC Gopher Tortoise Permitting Guidelines (revised April 2009). PEF will minimize impacts to gopher tortoises during construction through maintenance of a minimum 25-foot buffer zone around all burrows to the greatest extent practicable. Where gopher tortoise burrow avoidance is not feasible, PEF will coordinate with the FWC and submit a detailed gopher tortoise relocation permit application for the LCFS transmission line in accordance with the FWC-approved Gopher Tortoise Management Plan and Gopher Tortoise Permitting Guidelines prior to clearing and construction.

PEF will perform a survey for Eastern indigo snake in accordance with the *Survey Protocol for the Eastern Indigo Snake, Drymarchon couperi, in North/North-Central Florida* established by the USFWS NFESFO. Pedestrian surveys will be conducted during the period from October 1st through April 30th along established transects within areas to be impacted during construction of the transmission facilities. During construction, PEF will comply with the USFWS Standard Protection Measures for the Eastern Indigo Snake (2004).

PEF will conduct surveys for Florida scrub-jays within the LCFS preferred ROW prior to clearing and construction in accordance with the USFWS 2007 guidelines and protocols in order to determine a count of all scrub-jay groups within the preferred ROW and develop an approximate territory map for each



group. Parallel line transects will be established within areas of appropriate upland habitats, with playback stations established along each transect. Locations and group sizes of any Florida scrub jays where they are first seen or heard will be plotted, and adults will be distinguished from juveniles, if feasible. The surveys will be conducted between March 1 and October 31 for a minimum of five days to establish an accurate count of jay groups and territorial boundaries. PEF will provide the USFWS and FWC with the Florida scrub-jay survey results and, if necessary, coordinate with the USFWS and FWC to determine appropriate mitigation measures for areas where impacts to Florida scrub-jays cannot be avoided.

Prior to construction, PEF will update the bald eagle nest location and status information within and adjacent to the LCFS preferred ROW. In accordance with the FWC Eagle Management Guidelines, for construction areas that fall within 330 feet of an active or alternate bald eagle nest, construction activities will be conducted only during the non-nesting season (May 16 - September 30). Any construction activities that fall within 660 feet of the nest during the nesting season will be conducted following USFWS-approved Bald Eagle Monitoring Guidelines, dated 2007, or USFWS-approved subsequent versions. In areas where adverse impacts to nests cannot be avoided, resulting in nest disturbance, PEF will obtain the information required for an FWC Eagle Permit from the FWC, as authorized by Section 372.072, F.S., and Rule 68A-16.002, F.A.C, and minimization and conservation measures outlined in the FWC Bald Eagle Management Plan will be followed, as applicable.

PEF will prepare a wood stork foraging habitat assessment for the LCFS transmission line preferred ROW, consistent with the Wood Stork Key for Central and North Peninsular Florida, to quantify the loss of wood stork foraging habitat units associated with construction of the Project. PEF will utilize site-specific data for each wetland, including functional assessment evaluation utilizing the UMAM, vegetative community composition, suitability as wood stork foraging habitat, and estimated hydroperiod to evaluate the potential loss of foraging opportunities resulting from construction of the LCFS transmission line in the preferred ROW.

Prior to construction, PEF will conduct specific surveys for federally listed plants that have a medium to high probability of occurrence within the LCFS preferred ROW during the appropriate seasons corresponding to flowering periods. If any individuals are observed, PEF will avoid areas of listed plant occurrence during construction to the greatest extent practicable, or relocate individuals to undisturbed areas of the ROW as feasible, in consultation with the USFWS.



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TABLES

TABLE 1

Progress Energy Florida – Levy Nuclear Plant Project Levy - Central Florida South Transmission Line

Land Use/Land Cover Summary of the LCFS Transmission Line Preferred Right of Way

FLUCFCS Code	Description	Acreage within ROW		
110	Residential, Low Density	17.22		
112	Mobile Home Units	1.05		
130	Residential, High Density	0.76		
140	Commercial and Services	0.11		
148	Cemeteries	0.10		
180	Recreational	0.34		
211	Improved Pastures	322.77		
212	Unimproved Pastures	27.24		
213	Woodland Pastures	0.41		
214	Row Crops	0.35		
251	Horse Farms	2.30		
320	Shrub and Brushland	2.91		
321	Palmetto Prairies	0.38		
330	Mixed Rangeland	9.12		
411	Pine Flatwoods	5.50		
412	Longleaf Pine - Xeric Oak	138.17		
413	Sand Pine	29.88		
421	Xeric Oak	30.46		
427	Live Oak	10.55		
434	Hardwood - Conifer Mixed	116.30		
441	Coniferous Plantations	50.27		
510	Streams and Waterways	0.53		
511	Ditches	0.62		
520	Lakes	1.11		
534	Reservoirs < 10 acres	9.85		
617	Mixed Wetland Hardwoods	0.55		
618	Willow and Elderberry	0.55		
625	Hydric Pine Flatwoods	0.26		
630	Wetland Forested Mixed	27.00		
631	Wetland Scrub	0.21		
641	Freshwater Marshes	14.71		
643	Wet Prairies	17.17		
720	Sand other than Beaches	1.74		
743	Spoil Areas	0.12		
812	Railroads	0.48		
814	Roads and Highways	29.00		
831	Electric Power Facilities	1.14		
	TOTAL	871.23		

TABLE 2

Progress Energy Florida – Levy Nuclear Plant Project Levy - Central Florida South Transmission Line

Protected Plants and Animals of Citrus, Lake, Marion and Sumter Counties and Their Potential for Occurrence on the LCFS Transmission Line Right-of-Way

		Habitat Present in ROW (Y/N)	Habitat	Likelihood of	Status		Observed
Species	Habitat of Occurrence		Occurrence on ROW	USFWS	FWC		
	AMPHI	BIANS					
Ambystoma cingulatum Frosted flatwoods salamander	Pine flatwoods (longleaf or slash) communities with wiregrass groundcover and scattered wetlands often dominated by cypress or gum	Yes	Low	Ν	Т	No	
<i>Rana capito</i> Gopher frog	Sandhill and scrub with isolated wetlands or large ponds; commensal with gopher tortoises	Yes	Medium	Ν	SSC	No	
	BIR	DS		_			
Ammodramus maritmus peninsulae Scott's seaside sparrow	Extensive stands of black needlerush, with smooth cordgrass and scattered areas of saltgrass	No	Unlikely	N	SSC	No	
Aphelocoma coerulescens Florida scrub-jay	Low-growing oak scrub habitat	Yes	High	Т	Т	Yes	
<i>Aramus guarauna</i> Limpkin	Freshwater marshes, swamps, springs, spring runs, pond, river, and lake margins	Yes	Medium	Ν	SSC	No	
Athene cunicularia floridana Florida burrowing owl	Dry prairie, sandhill, pastures	Yes	Medium	Ν	SSC	No	
Charadrius melodus Piping plover	Open, sandy beaches and tidal mudflats	No	Unlikely	Т	Т	No	
Cistothorus palustris marianae Marian's marsh wren	Tidal marshes dominated by black needlerush	No	Unlikely	Ν	SSC	No	
<i>Egretta caerulea</i> Little blue heron	Freshwater lakes, marshes, swamps, and streams, cypress	Yes	High	Ν	SSC	No	
<i>Egretta thula</i> Snowy egret	Wetlands, streams, lakes, and swamps, manmade impoundments, ditches	Yes	High	Ν	SSC	No	
Egretta tricolor Tricolored heron	Wetlands, ditches, pond and lake edges, coastal areas	Yes	High	Ν	SSC	No	
<i>Eudocimus albus</i> White ibis	Freshwater and brackish marshes, salt flats, forested wetlands, wet prairies, swales, man-made ditches	Yes	High	Ν	SSC	No	

TABLE 2

Progress Energy Florida – Levy Nuclear Plant Project Levy - Central Florida South Transmission Line

Protected Plants and Animals of Citrus, Lake, Marion and Sumter Counties and Their Potential for Occurrence on the LCFS Transmission Line Right-of-Way

Habitat of Occurrence		Likelihood of	Status		
		Occurrence on ROW	USFWS	FWC	Observed
Open pine habitats, woodland edges, prairies, pastures	Yes	High	Ν	Т	Yes*
pastures	Yes	High	Ν	Т	Yes*
Large areas of beach, sandbar, mudflats, and shellfish beds for foraging. Sparsely vegetated, sandy areas for nesting	No	Unlikely	Ν	SSC	No
Coastal areas, bays, rivers, lakes, or other bodies of water	Yes	High	Ν	N	Yes
Cypress strands and domes, mixed hardwood swamps, freshwater marshes	Yes	High	E	Е	No
Mainly coastal; feeds in shallow, estuarine waters and occasionally offshore. Nests mainly on small islands in open water	No	Unlikely	Ν	SSC	No
Mature pine woodlands	Yes	Low	E	Е	No
Tidal flats, coastal and freshwater marshes	Yes	Low	Ν	SSC	No
Large open freshwater marshes and lakes with shallow water less than 4 feet deep and a low density of emergent vegetation	Yes	Low	E	E	No
Coastal waters, including beaches, bays, estuaries, sandbars, tidal creeks (foraging), and also inland waters of large lakes, phosphate pits, and flooded agricultural fields	No	Unlikely	Ν	SSC	No
Coastal areas throughout Florida; nesting limited to well-drained sand or gravel areas with little to no vegetation.	No	Unlikely	N	Т	No
	Open pine habitats, woodland edges, prairies, pastures Prairies, freshwater marshes, and pastures Large areas of beach, sandbar, mudflats, and shellfish beds for foraging. Sparsely vegetated, sandy areas for nesting Coastal areas, bays, rivers, lakes, or other bodies of water Cypress strands and domes, mixed hardwood swamps, freshwater marshes Mainly coastal; feeds in shallow, estuarine waters and occasionally offshore. Nests mainly on small islands in open water Mature pine woodlands Tidal flats, coastal and freshwater marshes Large open freshwater marshes and lakes with shallow water less than 4 feet deep and a low density of emergent vegetation Coastal waters, including beaches, bays, estuaries, sandbars, tidal creeks (foraging), and also inland waters of large lakes, phosphate pits, and flooded agricultural fields Coastal areas throughout Florida; nesting limited to well-drained sand or gravel	Habitat of OccurrencePresent in ROW (Y/N)Open pine habitats, woodland edges, prairies, pasturesYesPrairies, freshwater marshes, and pasturesYesLarge areas of beach, sandbar, mudflats, and shellfish beds for foraging. Sparsely vegetated, sandy areas for nestingNoCoastal areas, bays, rivers, lakes, or other bodies of waterYesCypress strands and domes, mixed hardwood swamps, freshwater marshesYesMainly coastal; feeds in shallow, estuarine waters and occasionally offshore. Nests mainly on small islands in open waterNoMature pine woodlandsYesTidal flats, coastal and freshwater marshesYesLarge open freshwater marshes and lakes with shallow water less than 4 feet deep and a low density of emergent vegetationYesCoastal waters, including beaches, bays, estuaries, sandbars, tidal creeks (foraging), and also inland waters of large lakes, phosphate pits, and flooded agricultural fieldsNo	Habitat of OccurrencePresent in ROW (Y/N)Occurrence on ROWOpen pine habitats, woodland edges, prairies, pasturesYesHighPrairies, freshwater marshes, and 	Habitat of Occurrence ROW (Y/N)Present in ROW (Y/N)Occurrence on ROWUSFWSOpen pine habitats, woodland edges, prairies, pasturesYesHighNPrairies, freshwater marshes, and pasturesYesHighNLarge areas of beach, sandbar, mudflats, and shellfish beds for foraging. Sparsely vegetated, sandy areas for nestingNoUnlikelyNCoastal areas, bays, rivers, lakes, or other bodies of waterYesHighNCypress strands and domes, mixed hardwood swamps, freshwater marshesYesHighEMainly coastal; feeds in shallow, estuarine waters and occasionally offshore. Nests mainly on small islands in open waterNoUnlikelyNMature pine woodlandsYesLowETidal flats, coastal and freshwater marshesYesLowECoastal waters, including beaches, bays, estuaries, sandbars, tidal creeks (foraging), and also inland waters of large lakes, phosphate pits, and flooded agricultural fieldsNoUnlikelyNCoastal areas throughout Florida; nesting limited to well-drained sand or gravelNoUnlikelyN	Habitat of Occurrence ROW (Y/N)Present in ROW (Y/N)Occurrence on ROWUSFWSFWCOpen pine habitats, woodland edges, prairies, pasturesYesHighNTPrairies, freshwater marshes, and pasturesYesHighNTLarge areas of beach, sandbar, mudflats, and shellfish beds for foraging. Sparsely vegetated, sandy areas for nestingNoUnlikelyNSSCCoastal areas, bays, rivers, lakes, or other bodies of waterYesHighNNNCypress strands and domes, mixed hardwood swamps, freshwater marshesYesHighEEMainly coastal; feeds in shallow, estuarine waters and occasionally offshore. Nests mainly on small islands in open waterNoUnlikelyNSSCMature pine woodlandsYesLowEEETidal flats, coastal and freshwater marshesYesLowRSSCCoastal waters, including beaches, bays, estuaries, sandbars, tidal creeks (foraging), and also inland waters of large lakes, phosphate pits, and flooded agricultural fieldsNoUnlikelyNSSCCoastal areas throughout Florida; nesting limited to well-drained sand or gravelNoUnlikelyNSSC

Progress Energy Florida – Levy Nuclear Plant Project Levy - Central Florida South Transmission Line

	Habitat		Likelihood of	Status		
Species	Habitat of Occurrence	Present in ROW (Y/N)	Occurrence on ROW	USFWS	FWC	Observed
<i>Acipenser oxyrhynchus desotoi</i> Gulf sturgeon	Forages in Gulf of Mexico and associated estuaries; spawns in most major coastal rivers in areas with limestone outcrops	No	Unlikely	Т	SSC	No
Cyprinodon variegatus hubbsi Lake Eustis pupfish	Very narrow, shallow zone of shoreline that is exposed to heavy wave action and typically devoid of vegetation	No	Unlikely	Ν	SSC	No
<i>Etheostoma olmstedi</i> Tessellated Darter	Small to medium-sized streams in areas where the current is below maximum, including flowing pools.	Yes	Low	Ν	SSC	No
Pteronotropis welaka Bluenose shiner	Quiet backwaters and pools of blackwater streams and rivers and spring runs; usually with thick vegetation nearby	Yes	Low	Ν	SSC	No
	MAMN	IALS				
Podomys floridanus Florida mouse	Xeric upland communities with sandy soils, including scrub, sandhill, and ruderal sites; potential gopher tortoise burrow commensal	Yes	Medium	Ν	SSC	No
<i>Puma concolor coryi</i> Florida panther	Extensive blocks of mostly forested communities; large wetlands that are generally inaccessible to humans are important for diurnal refuge; will tolerate improved areas in a mosaic of natural communities	No	Unlikely	E	Е	No
Sciurus niger shermani Sherman's fox squirrel	Sandhills, pine flatwoods, pastures and other open, ruderal habitats with scattered pines and oaks	Yes	High	Ν	SSC	Yes
Sorex longirostris eionis Homosassa shrew	Moist areas, forested wetlands, riparian forests, fields, brushy areas; near Homosassa Springs area	No	Low	Ν	SSC	No
<i>Trichechus manatus</i> West Indian manatee	Rivers, bays, canals, estuaries, Gulf of Mexico	No	Unlikely	E	Е	No

Progress Energy Florida – Levy Nuclear Plant Project Levy - Central Florida South Transmission Line

		Habitat	Likelihood of	Sta	itus		
Species	Habitat of Occurrence	Present in ROW (Y/N)	Occurrence on ROW	USFWS	FWC	Observed	
Ursus americanus floridanus Florida black bear	Large areas of forested uplands, forested wetlands	No	Low	Ν	Т	No	
	REPT	ILES					
Alligator mississippiensis American alligator	Most permanent bodies of fresh water, including marshes, swamps, lakes, and rivers	Yes	Medium	T (SA)	SSC	No	
<i>Caretta caretta</i> Loggerhead sea turtle	Estuarine and marine coastal and oceanic waters; nests on sandy beaches	No	Unlikely	Т	т	No	
<i>Chelonia mydas</i> Green sea turtle	Estuarine and marine coastal and oceanic waters; nests on sandy beaches	No	Unlikely	Е	E	No	
Dermochelys coriacea Leatherback sea turtle	Estuarine and marine coastal and oceanic waters; nests on sandy beaches	No	Unlikely	E	E	No	
<i>Drymarchon couperi</i> Eastern indigo snake	Broad range of habitats, from scrub and sandhill to wet prairies and mangrove swamps; often commensal with gopher tortoises	Yes	High	Т	т	Yes	
Eretmochelys imbricata Hawksbill	Marine coastal and oceanic waters, commonly associated with coral reefs, keys, and mangroves	No	Unlikely	Е	Е	No	
Gopherus polyphemus Gopher tortoise	Dry upland habitats, including sandhills, scrub, xeric oak hammock, and dry pine flatwoods; also pastures, old fields	Yes	High	Ν	т	Yes	
Lampropeltis extenuata Short-tailed snake	Sandhill, xeric hammock, sand pine scrub	Yes	Medium	Ν	Т	No	
Lepidochelys kempii Kemp's ridley sea turtle	Estuarine and marine coastal and oceanic waters; nests on sandy beaches	No	Unlikely	E	E	No	

Progress Energy Florida – Levy Nuclear Plant Project Levy - Central Florida South Transmission Line

		Habitat	Likelihood of	Sta	itus	
Species	Habitat of Occurrence	Present in ROW (Y/N)	Occurrence on ROW	USFWS	FWC	Observed
<i>Neoseps reynoldsi</i> Sand skink	Principally rosemary scrub, but also in sand pine and oak scrubs, scrubby flatwoods, turkey oak ridges within scrub, and along edges of citrus groves occupying former scrub (Mt. Dora Ridge, Lake Wales Ridge, Winter Haven Ridge).	Yes	Low	т	т	No
Pituophis melanoleucus mugitus Florida pine snake	Sandhill, old fields and pastures, sand pine scrub, scrubby flatwoods; often commensal with gopher tortoises and pocket gophers	Yes	High	Ν	SSC	No
Pseudemys concinna suwanniensis Suwannee cooter	Rivers, large streams	Yes	Low	Ν	SSC	No
	PLAN	NTS				
<i>Adiantum tenerum</i> Brittle maidenhair fern	Limestone outcrops, grottoes, sinkholes	No	Low	Ν	Е	No
<i>Agrimonia incisa</i> Incised groove-bur	Sandhills and scrub	Yes	Medium	Ν	Е	No
Asplenium erosum Auricled spleenwort	Pinelands – epiphytic on tree trunks and logs in swamps and hammocks	Yes	Low	N	Е	No
Asplenium pumilum Dwarf spleenwort	Shaded limestone boulders and ledges	No	Low	Ν	Е	No
Asplenium verecundum Modest spleenwort	Rockland hammocks, limestone outcrops, grottoes, sinkholes	No	Low	Ν	Е	No
Blechnum occidentale Sinkhole fern	Moist woodlands, hammocks, rocky creek banks, woodlands with open shade	Yes	Low	N	E	No
Bonamia grandiflora Florida bonamia	Openings or disturbed areas in white sand scrub	Yes	Medium	Т	Е	No
Calamintha ashei Ashe's Savory	Dry pinelands and sand pine scrub in canopy openings and disturbed areas	Yes	Medium	Ν	Т	No

Progress Energy Florida – Levy Nuclear Plant Project Levy - Central Florida South Transmission Line

	Habitat	Habitat	Likelihood of	Status		
Species	Habitat of Occurrence	Present in ROW (Y/N)	Occurrence on ROW	USFWS	FWC	Observed
<i>Carex chapmanii</i> Chapman's sedge	Grasslands, pinelands	Yes	Medium	Ν	Т	No
Centrosema arenicola Sand butterfly pea	Sandhill, scrubby flatwoods, dry upland woods	Yes	Medium	N	E	No
Cheilanthes microphylla Southern lip fern	Crevices of limestone outcrops and shell mounds in partial to full sun	No	Low	N	Е	No
Chionanthus pygmaeus Pygmy fringe-tree	Scrub, sandhill, and xeric hammock, primarily on the Lake Wales Ridge	Yes	Low	E	E	No
<i>Clitoria fragrans</i> Pigeon wings	Turkey oak barrens with wire grass, bluejack and turkey oak; also scrub and scrubby high pine (Lake County)	No	Low	т	E	No
Coelorachis tuberculosa Piedmont jointgrass	Freshwater habitats	Yes	Medium	Ν	Т	No
Cucurbita okeechobeensis Okeechobee gourd	Pond apple swamps and mucky soils on Lake Okeechobee shores and islands; floodplain forests along the St. Johns river	No	Low	Ν	E	No
Dicerandra cornutissima Longspurred mint	Sand pine and oak scrub	Yes	Medium	E	E	Yes
Drosera intermedia Spoon-leaved sundew	Freshwater habitats	Yes	Medium	N	Т	No
Eriogonum longifolium var. gnaphalifolium Scrub buckwheat	Sandhill, oak-hickory scrub on yellow sands, high pineland between scrub and sandhill, turkey oak barrens	Yes	Low	Т	Е	No
<i>Euphorbia commutata</i> Wood spurge	Open woods, sandy soils, stream borders and other riparian areas, rocky slopes	Yes	Low	Ν	Е	No
Forestiera godfreyi Godfrey's swampprivet	Upland hardwood forests with limestone at or near the surface, often on slopes above lakes and rivers	No	Low	Ν	E	No
<i>Glandularia maritima</i> Coastal vervain	Disturbed sandy areas, back dunes, dune swales, and coastal hammocks	No	Low	N	Е	No

Progress Energy Florida – Levy Nuclear Plant Project Levy - Central Florida South Transmission Line

		Habitat	Likelihood of	Status		
Species	Habitat of Occurrence	Present inOccurrenceROW (Y/N)on ROW		USFWS	FWC	Observed
<i>Glandularia tampensis</i> Tampa vervain	Live oak-cabbage palm hammocks and pine-palmetto flatwoods	Yes	Low	Ν	Е	No
<i>Hartwrightia floridana</i> Hartwrightia	Seepage slopes, edges of baygalls and springheads, wet prairies, flatwoods	Yes	Low	Ν	Т	No
Hasteola robertiorum Florida hasteola	Saturated, peaty soils of river and creek floodplain swamps; hydric hammocks with cabbage palm, cypress, or hardwood canopy	Yes	Low	Ν	E	No
Illicium parviflorum Star anise	Banks of spring-run or seepage streams, bottomland forest, hydric hammock, and baygall	Yes	Low	Ν	Е	No
<i>Justicia cooleyi</i> Cooley's Water-willow	Mesic hardwood hammocks over limestone (Southern Sumter Co.)	No	Low	E	E	No
<i>Litsea aestivalis</i> Pondspice	Edges of baygalls, flatwoods ponds, and cypress domes. May form thickets around edges of ponds	Yes	Low	Ν	E	No
<i>Matelea floridana</i> Florida spiny-pod	Pinelands, temperate forests	Yes	Medium	Ν	Е	No
<i>Monotropa hypopithys</i> Pinesap	Under sand pines in dry sandy soil	Yes	Medium	Ν	Е	No
<i>Monotropsis reynoldsiae</i> Pygmy pipes	Upland mixed hardwood forest, mesic and xeric hammock, sand pine and oak scrub	Yes	Medium	Ν	Е	No
<i>Najas filifolia</i> Narrowleaf naiad	Freshwater lakes and blackwater river reaches	Yes	Low	Ν	Т	No
Nemastylis floridana Celestial lily	Freshwater habitats (Lake County)	No	Low	Ν	Е	No
<i>Nolina atopocarpa</i> Florida beargrass	Pine flatwoods	Yes	Medium	Ν	Т	No
<i>Nolina brittoniana</i> Britton's beargrass	Scrub, sandhill, scrubby flatwoods, and xeric hammock	Yes	Medium	E	E	No

Progress Energy Florida – Levy Nuclear Plant Project Levy - Central Florida South Transmission Line

		Habitat	Likelihood of	Sta	itus	
Species	Habitat of Occurrence	Present in ROW (Y/N)	Occurrence on ROW	USFWS	FWC	Observed
Panicum abscissum Cutthroat grass	Found in mesic flatwoods and dry prairies; wet flatwoods; edges of depressional marshes; wet prairies; and, on the ecotones between flatwoods and drainageways	Yes	Medium	Ν	Е	No
Parnassia grandifolia Large-leave grass-of- parnassus	Open, grassy seepage slopes and wet prairies; edges of cypress strands and white cedar swamps along streams	Yes	Low	Ν	E	No
Paronychia chartacea Papery whitlow-wort	Scrub habitat of the Lake Wales Ridge	No	Low	Т	E	No
Pecluma dispersa Widespread polybody	Tree branches and limestone outcrops in dry hammocks	No	Low	N	E	No
<i>Pecluma plumula</i> Plume polypody	Tree branches or limestone in hammocks, wet woods, and limesinks	No	Low	N	Е	No
Pecluma ptilodon Swamp plume polypody	Rockland hammocks, strand swamps, wet woods	No	Low	Ν	Е	No
Peperomia humilis Terrestrial peperomia	Shell mounds and limestone outcrops in mesic hammocks, coastal berms, cypress swamps	No	Low	Ν	E	No
<i>Polygala lewtonii</i> Lewton's polygala	Oak scrub, sandhill, and transition zones between high pine and turkey oak barrens (Lake Wales Ridge and Mt. Dora Ridge – eastern Marion County)	Yes	No	E	Е	No
Prunus geniculata Scrub plum	Sandhill and oak scrub (Lake County)	No	Low	E	Е	No
Pteroglossaspis ecristata Giant orchid	Sandhill, scrub, pine flatwoods, pine rocklands	Yes	Medium	Ν	Т	No
Pycnanthemum floridanum Florida mountain mint	Full sun, well-drained soils	Yes	Medium	Ν	Т	No
Salix floridana Florida willow	Springheads, edges of spring runs, hydric hammocks, floodplains	Yes	Low	Ν	E	No

Progress Energy Florida – Levy Nuclear Plant Project Levy - Central Florida South Transmission Line

Protected Plants and Animals of Citrus, Lake, Marion and Sumter Counties and Their Potential for Occurrence on the LCFS Transmission Line Right-of-Way

		Habitat	Likelihood of	Sta	atus		
Species	Habitat of Occurrence	Present in ROW (Y/N)	Occurrence on ROW	USFWS	FWC	Observed	
<i>Sarracenia leucophylla</i> White-top pitcher plant	Found in bogs, savannas, seepage slopes, hydric pine flatwoods, ditches and shallow borrow areas.	Yes	Medium	Ν	Е	No	
Sideroxylon alachuense Silver buckthorn	Upland hardwood forests around limesinks and on shell mounds	Yes	Low	Ν	Е	No	
Sideroxylon lycioides Buckthorn	Wooded slopes, floodplains, and bluffs	Yes	Low	N	Е	No	
Spigelia loganioides Pinkroot	Floodplain forests, upland and hydric hardwood hammocks over limestone	Yes	Low	N	E	No	
Spiranthes polyantha Green ladies'-tresses	Rock outcrops in mesic hammock, rockland hammock, maritime hammock	No	Low	N	E	No	
<i>Stylisma abdita</i> Scrub stylisma	Pinelands, sandhills, scrub	Yes	Medium	Ν	Е	No	
Thelypteris reptans Creeping maiden fern	Limestone grottoes and sinkholes	No	Low	N	Е	No	
Trichomanes punctatum ssp. floridanum Florida filmy fern	Found in tropical hardwood hammocks over limestone	No	Low	Ν	Е	No	
<i>Triphora craigheadii</i> Craighead's nodding-caps	Mesic hardwood hammocks	Yes	Low	Ν	Е	No	
Vicia ocalensis Ocala vetch	Open wet thickets along margins of spring runs and streams	No	Low	N	E	No	
<i>Warea amplexifolia</i> Wide-leaf warea	Sandhill with longleaf pine and wiregrass (Lake County)	No	Low	E	E	No	
<i>Warea carteri</i> Carter's mustard	Sandhill, scrubby flatwoods, inland and coastal scrub (Lake County)	No	Low	E	E	No	

Notes:

N = Not Listed

T = Threatened

E = Endangered

SSC = Species of Special Concern

T(SA) = Threatened due to similarity in appearance to a federally listed species

*Non-migratory listed subspecies not confirmed due to time of year observed

Progress Energy Florida – Levy Nuclear Plant Project Levy – Central Florida South Transmission Line

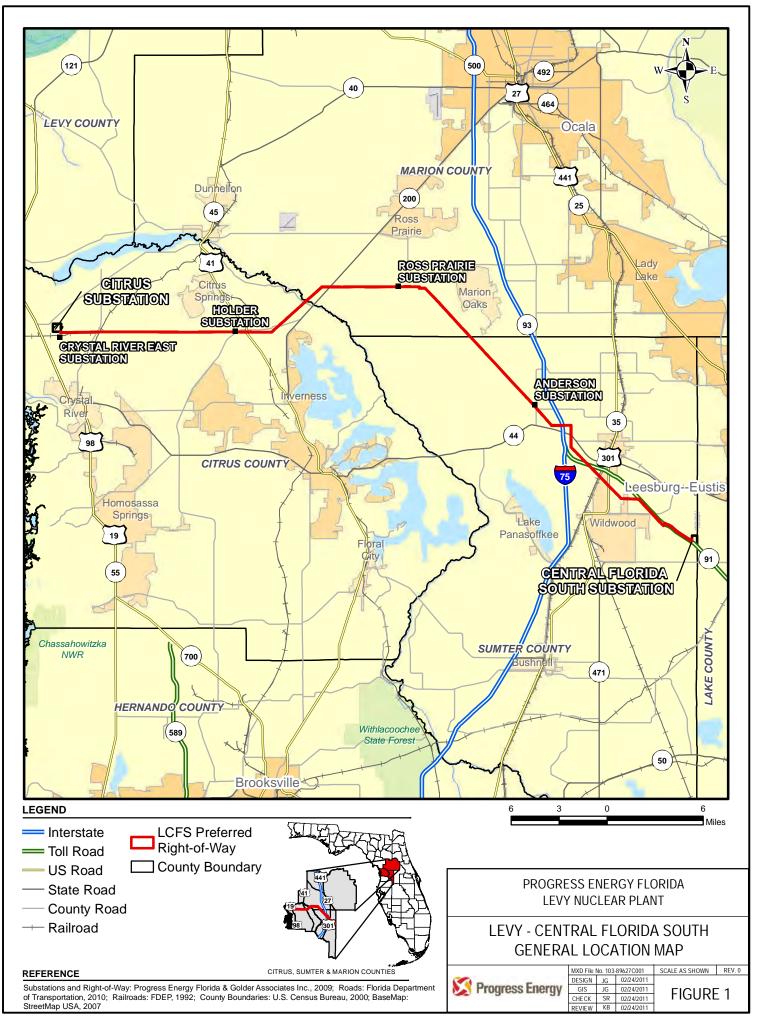
Federally Listed Plants of Citrus, Lake, Marion, and Sumter Counties with Medium to High Probability of Occurrence in the Levy – Central Florida South Transmission Line Preferred ROW, their Habitats, Flowering Periods, and Suggested Survey Periods

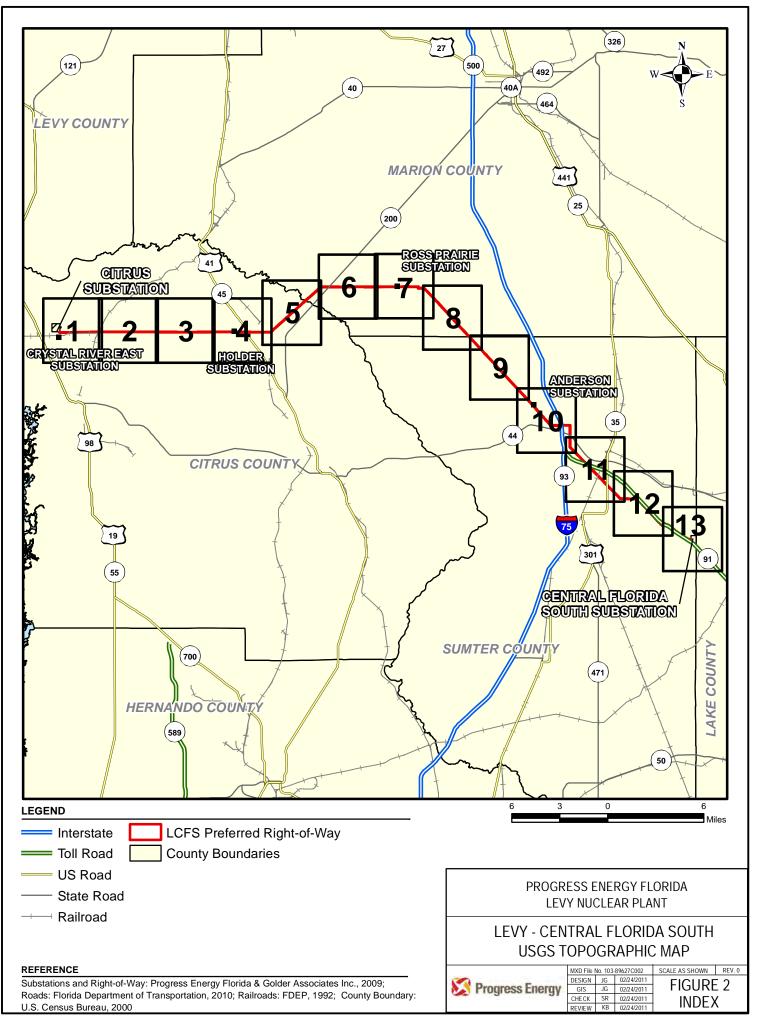
Species	Habitat of Occurrance	Status		Flowering	Suggested
Species	Habitat of Occurrence	USFWS	FWC	Period	Survey Period
Bonamia grandiflora	Openings or disturbed areas in white sand	Т	E	April-Sept(1)	Summer
Florida bonamia	scrub				
Dicerandra cornutissima	Sand pine and oak scrub	E	E	Sept-Oct(1)	Fall
Longspurred mint					
Nolina brittoniana	Scrub, sandhill, scrubby flatwoods, and xeric	E	E	March-May(1)	Spring
Britton's beargrass	hammock				

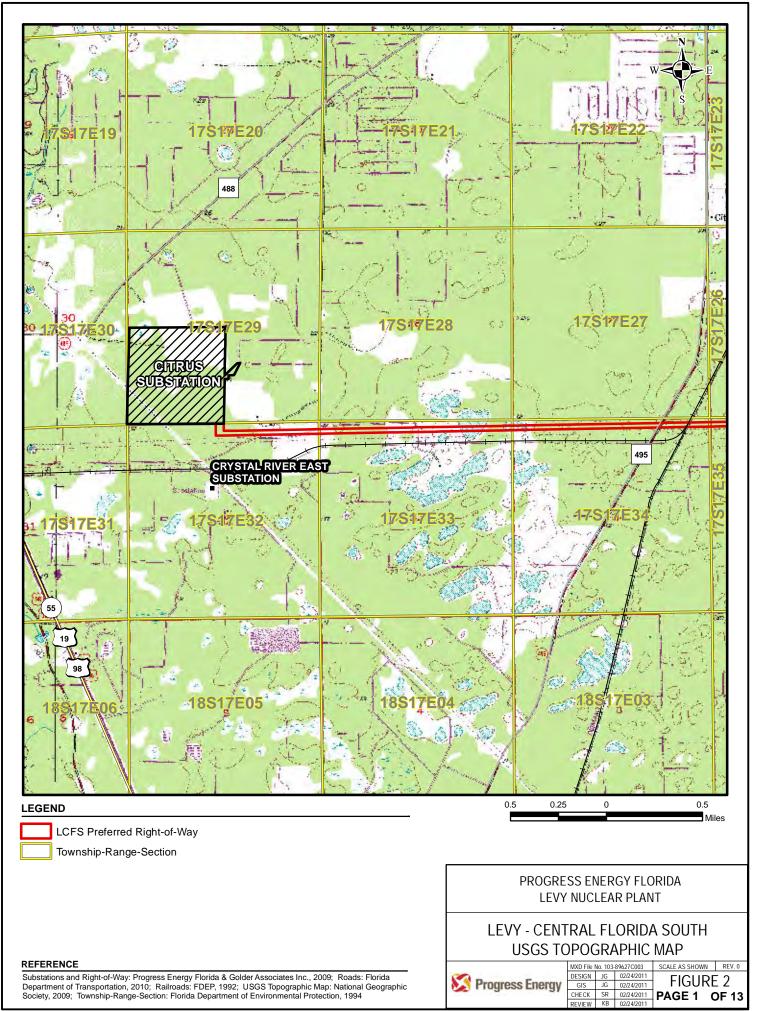
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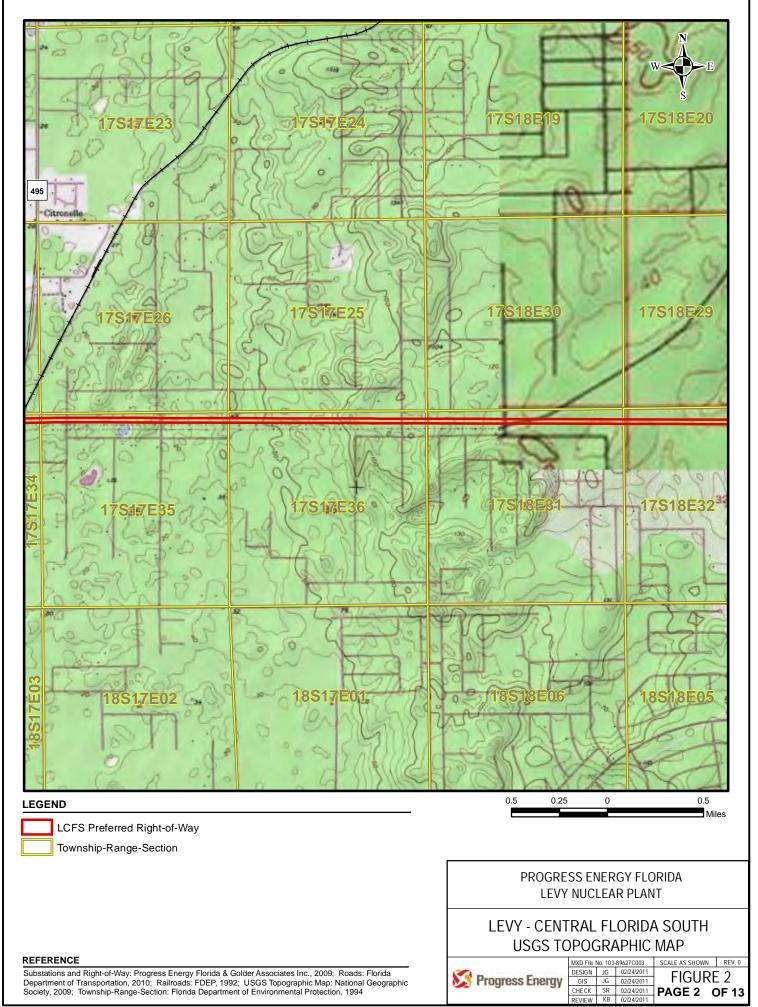
1. Coile, N. C. & M. A. Garland. 2003. Notes on Florida's Endangered and Threatened Plants. Botany Contribution No. 38, 4th ed. FL Dept. Agric. & Consumer Serv., Div. Plant Industry, Gainesville

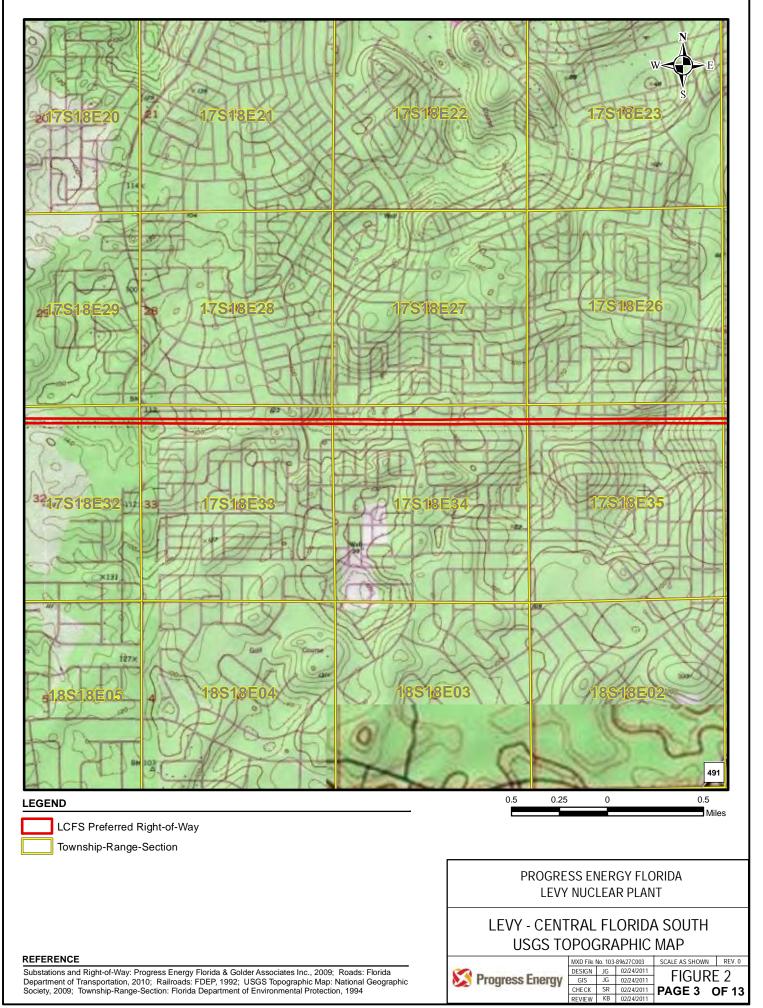
FIGURES

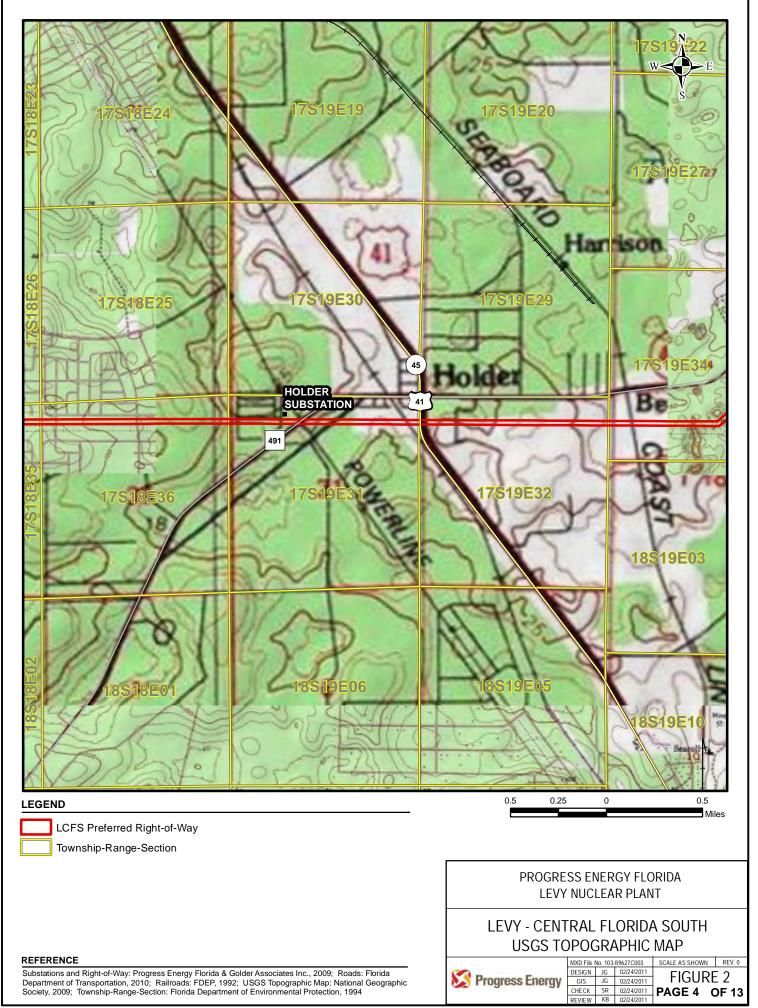


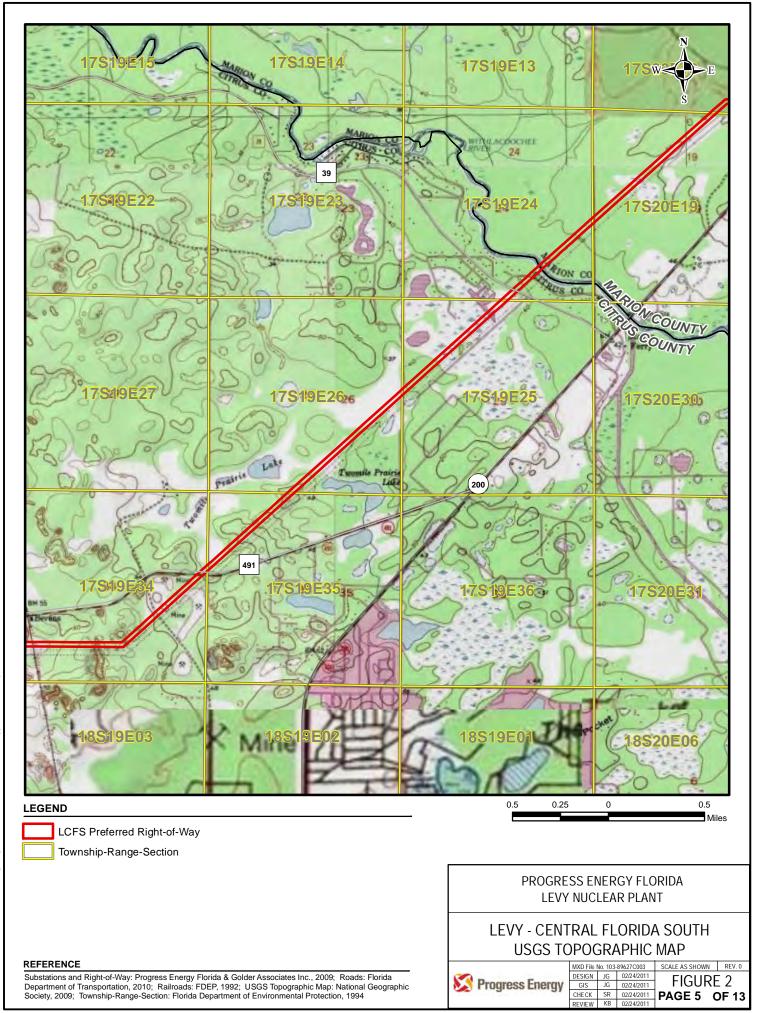


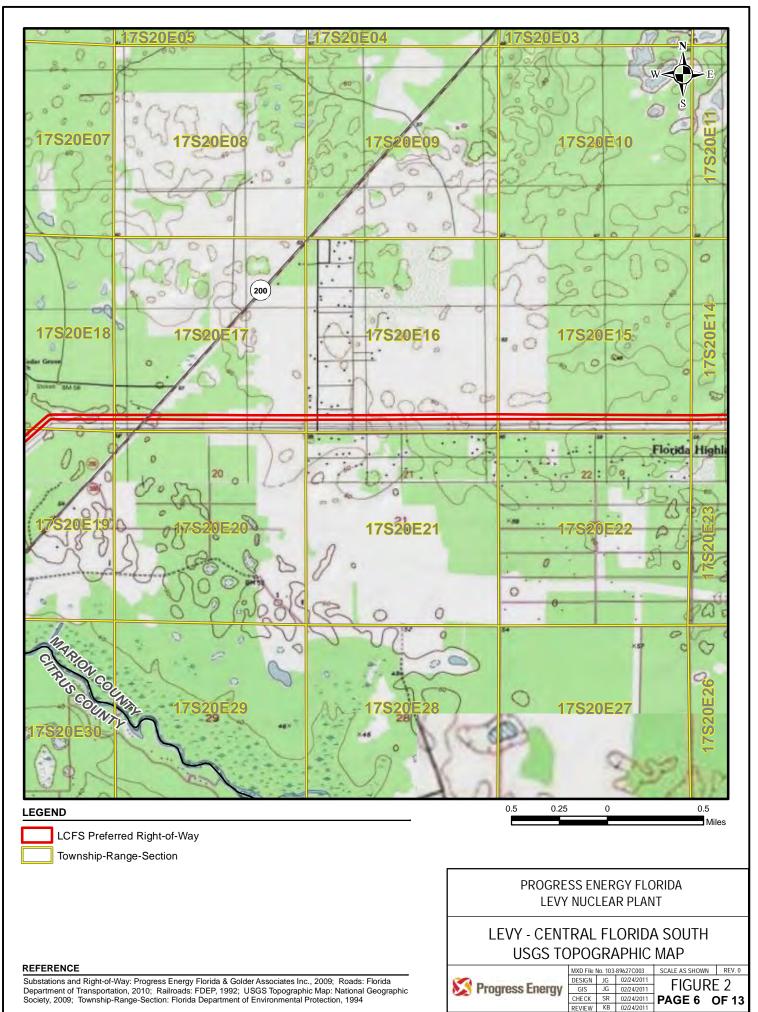


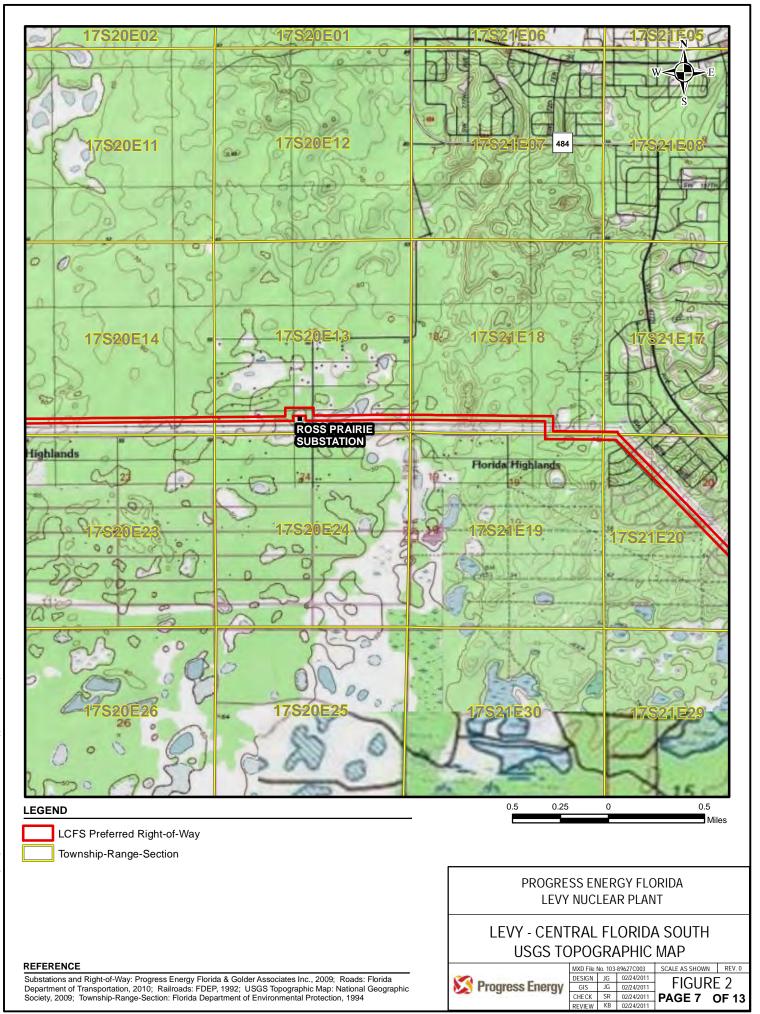


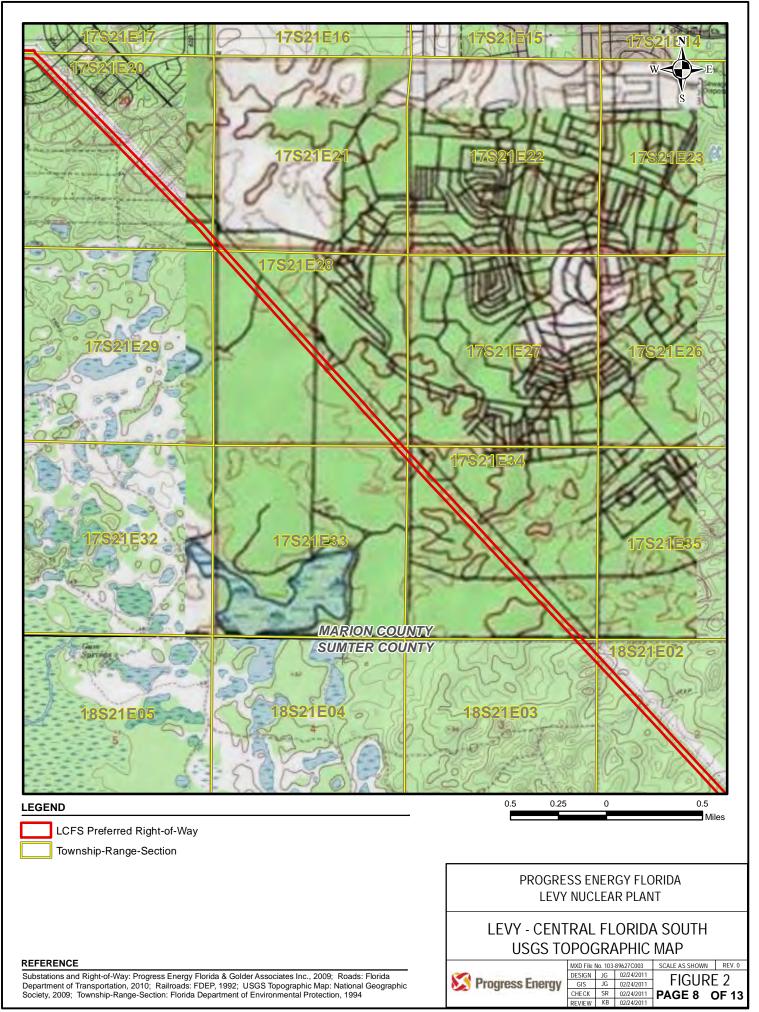


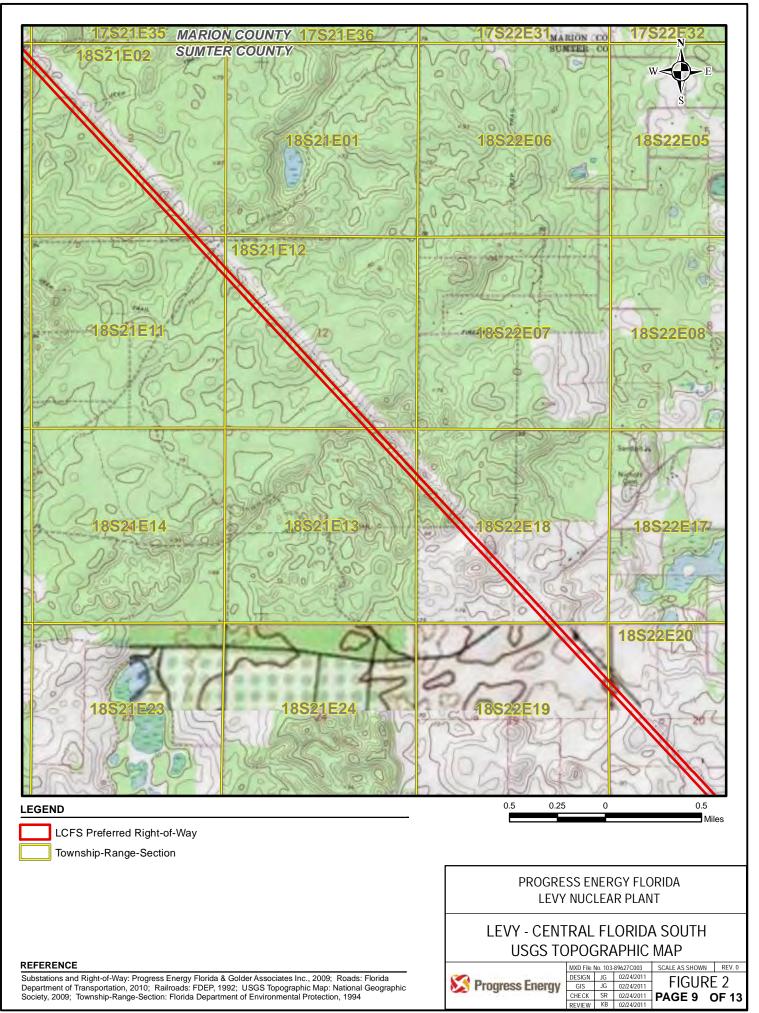


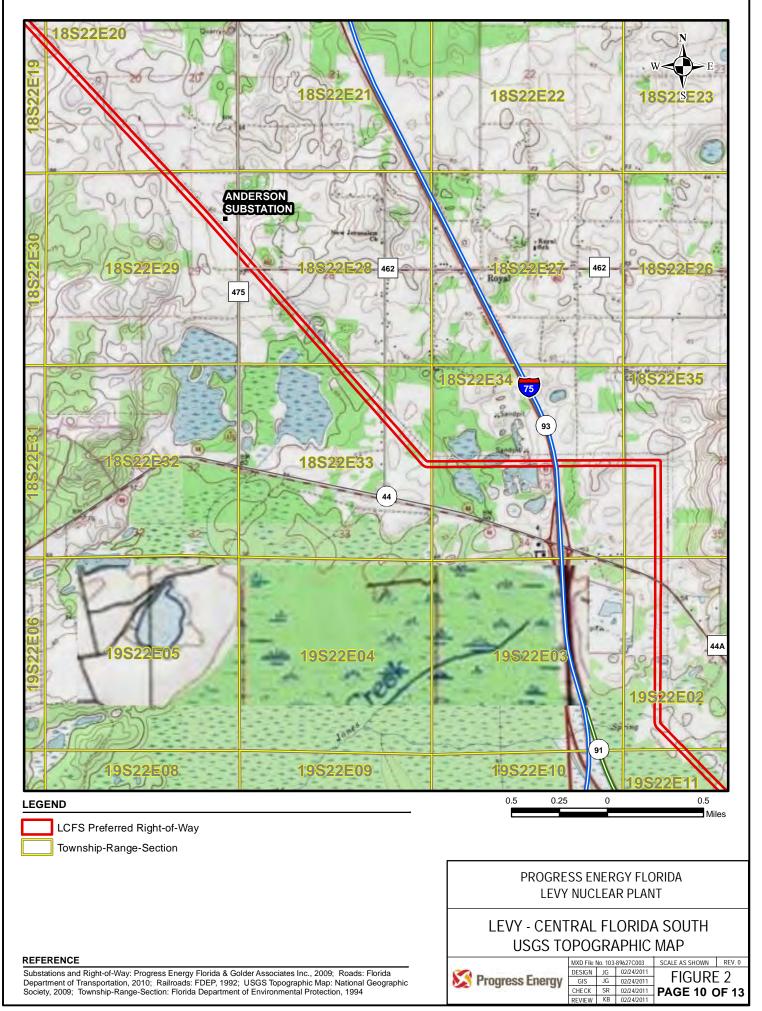


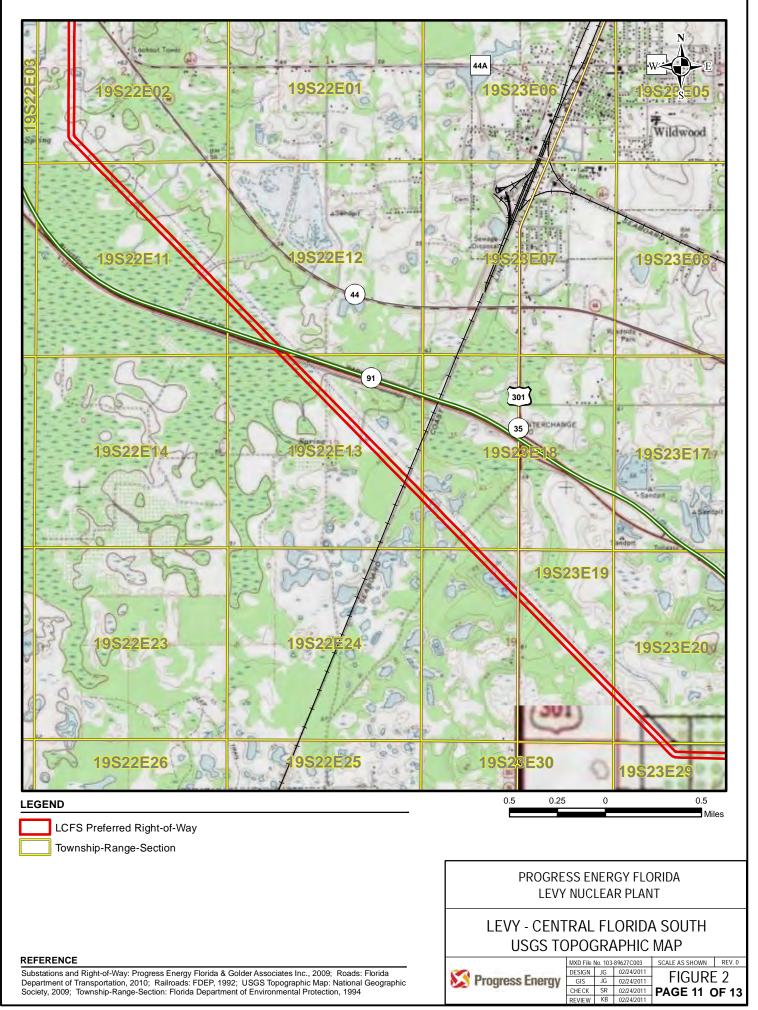


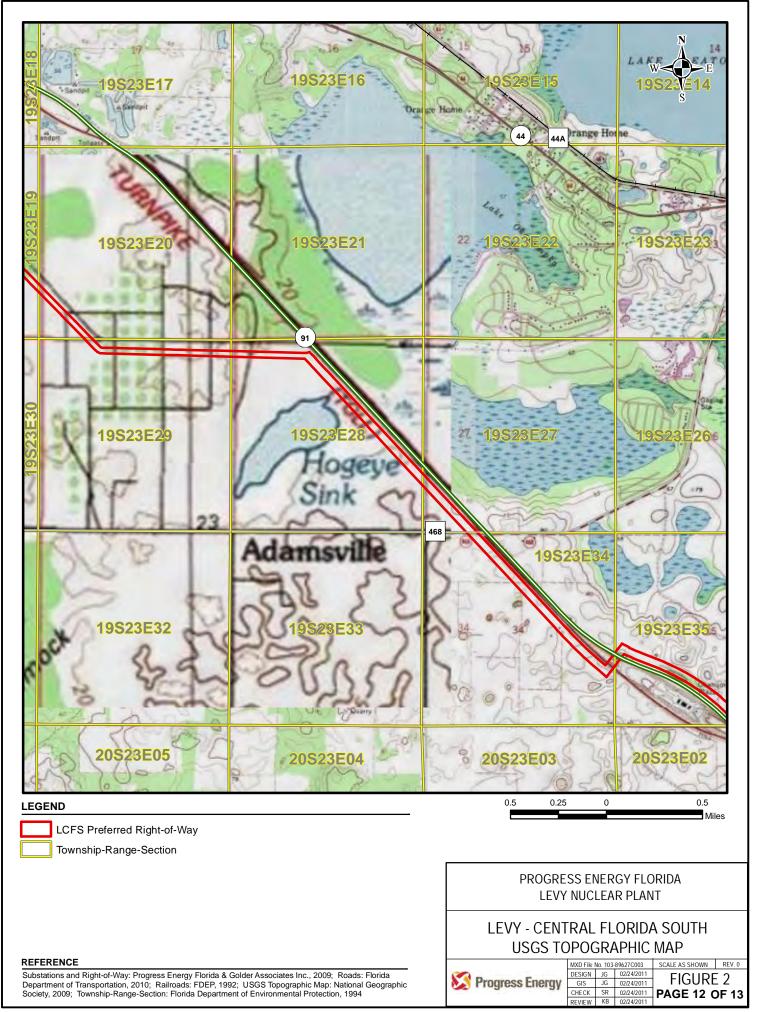


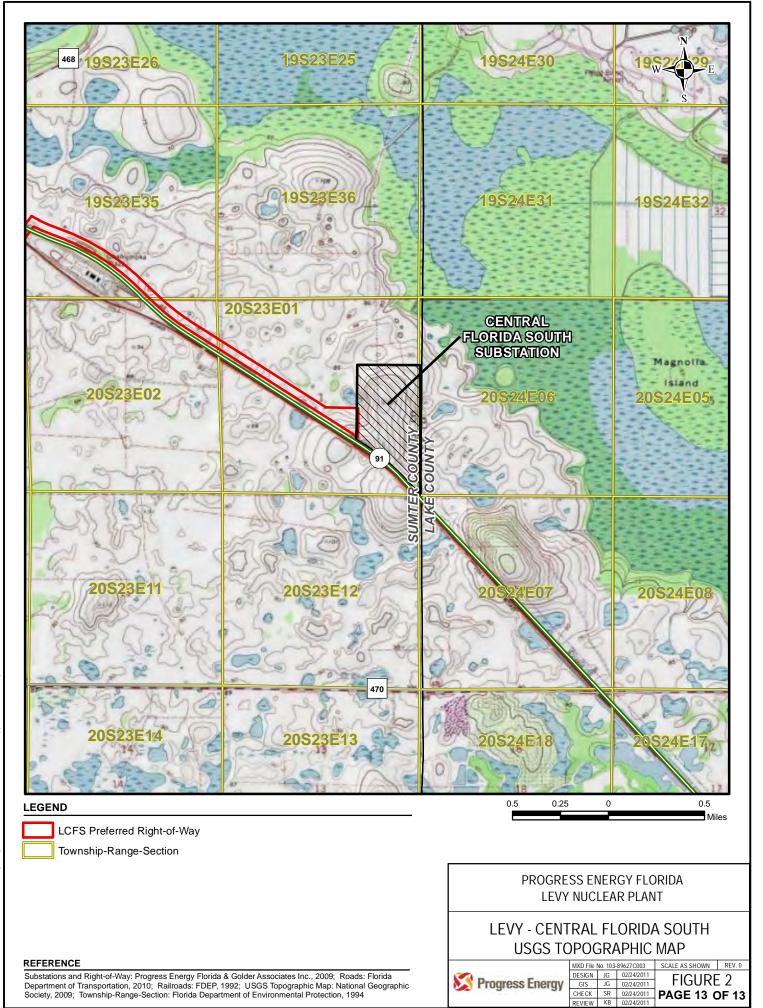












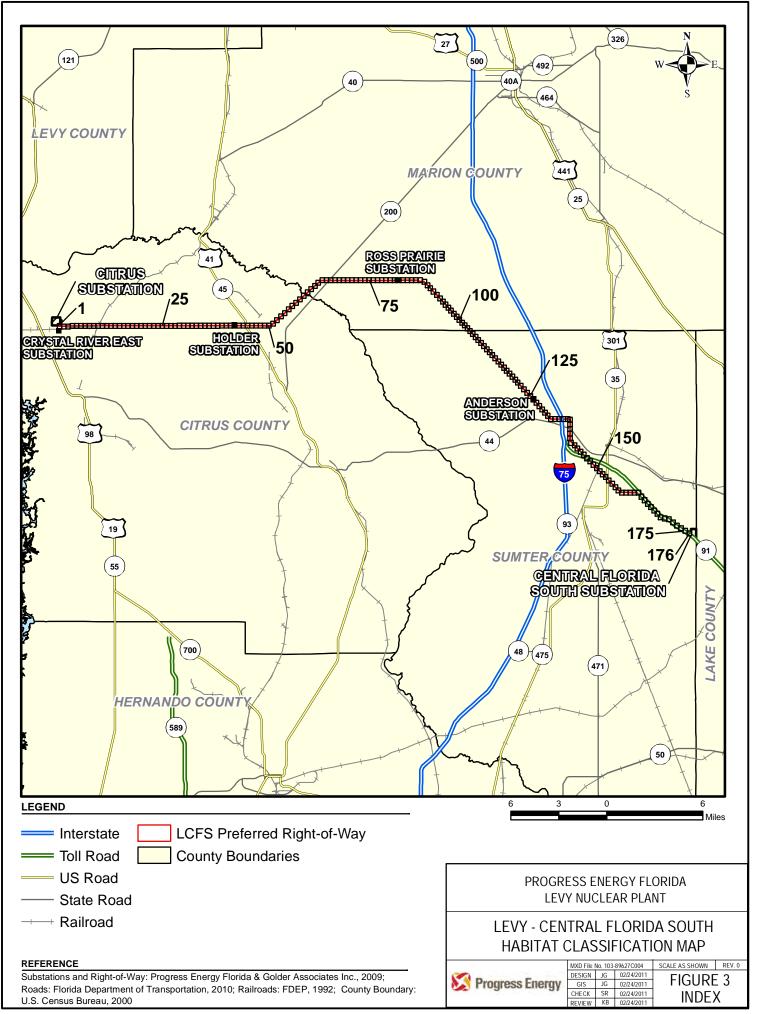
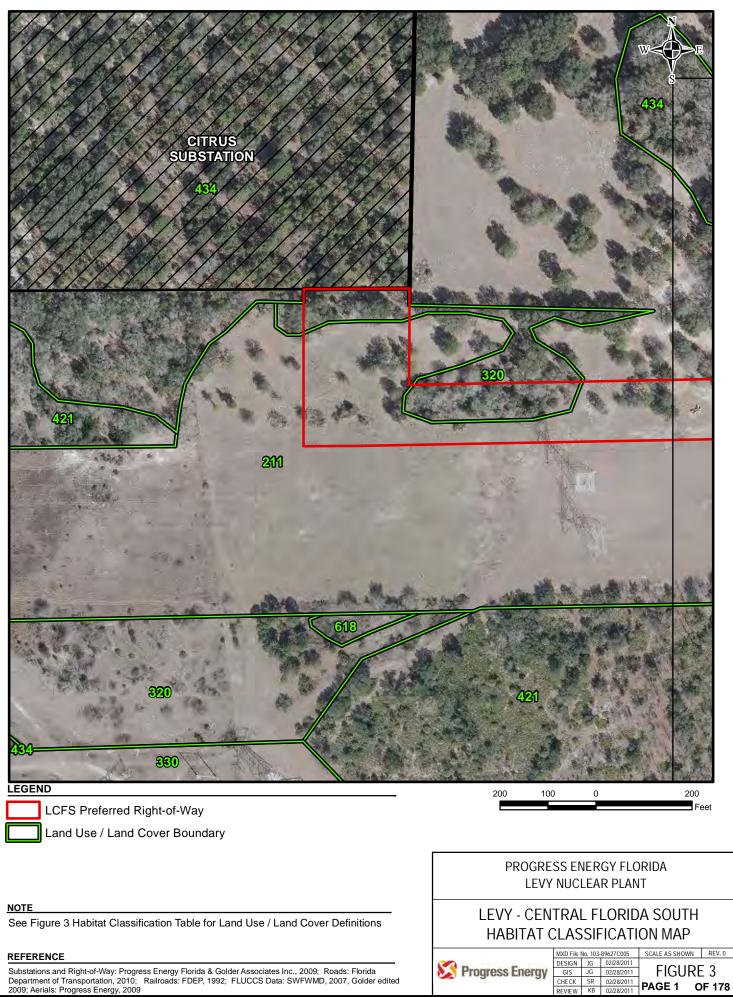


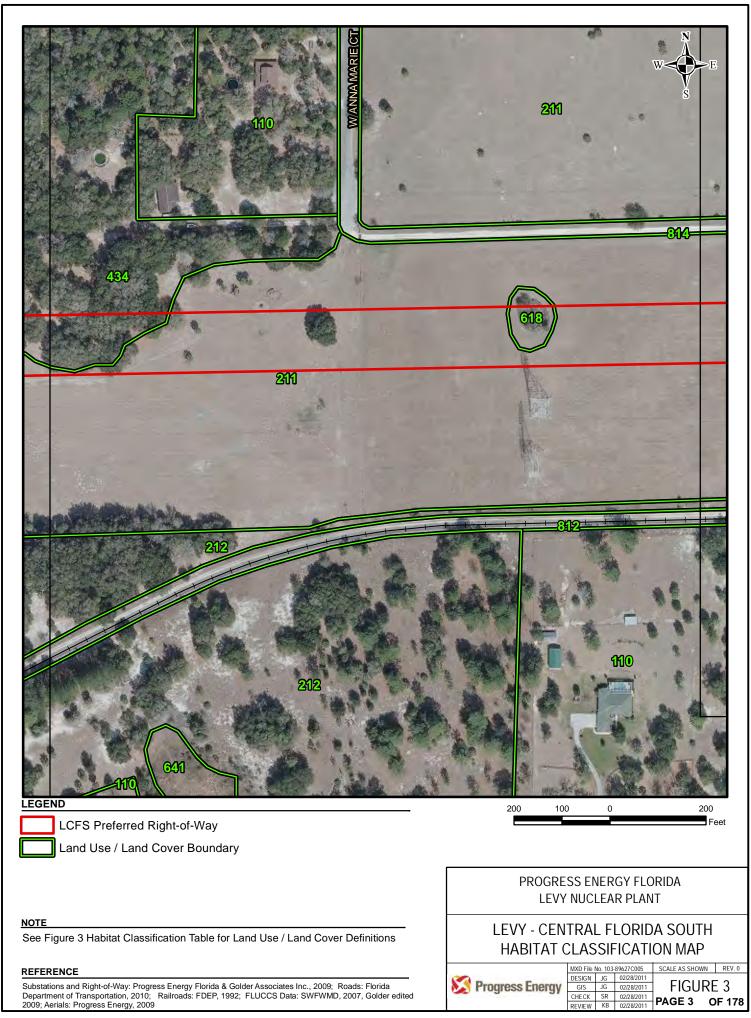
FIGURE 3 LEVY - CENTRAL FLORIDA SOUTH HABITAT CLASSIFICATION TABLE

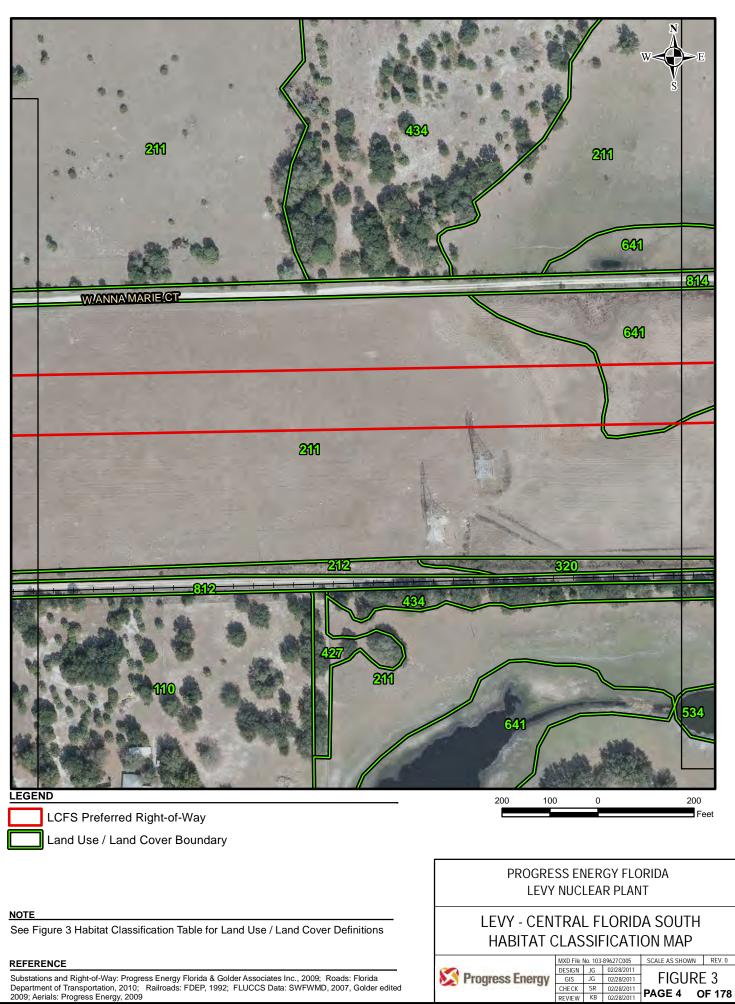
LAND USE/LAND	DESCRIPTION
COVER CODE	RESIDENTIAL, LOW DENSITY
110	MOBILE HOME UNITS
112	RESIDENTIAL HIGH DENSITY
130	COMMERCIAL AND SERVICES
140	CEMETERIES
148	INDUSTRIAL
130	INDUSTRIAL
180	RECREATIONAL
211	
211 212	
212	WOODLAND PASTURES
213	ROW CROPS
	NURSERIES AND VINEYARDS
240 250	SPECIALTY FARMS
250	HORSE FARMS
320	SHRUB AND BRUSHLAND
320	PALMETTO PRAIRIES
330	MIXED RANGELAND
411 412	PINE FLATWOODS LONGLEAF PINE - XERIC OAK
412	SAND PINE
413	XERIC OAK
421	LIVE OAK
427	HARDWOOD - CONIFER MIXED
434	MIXED HARDWOODS
438	
	STREAMS AND WATERWAYS
510 511	•••••
520	DITCHES LAKES
530	RESERVOIRS
530	RESERVOIRS <10 ACRES
615	STREAM AND LAKE SWAMPS (BOTTOMLAND)
615	MIXED WETLAND HARDWOODS
618	WILLOW AND ELDERBERRY
621	CYPRESS
625	HYDRIC PINE FLATWOODS
630	WETLAND FORESTED MIXED
631	WETLAND FORESTED MIXED
641	FRESHWATER MARSHES

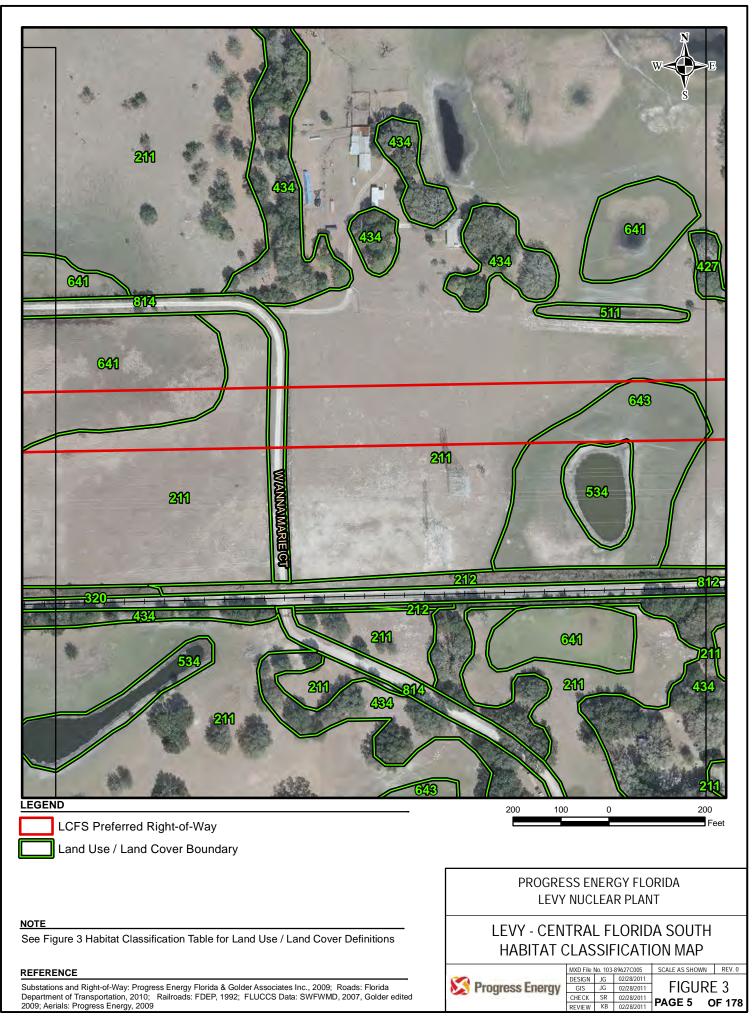
LAND USE/LAND COVER CODE	DESCRIPTION
643	WET PRAIRIES
644	EMERGENT AQUATIC VEGETATION
653	INTERMITTENT PONDS
720	SAND OTHER THAN BEACHES
740	DISTURBED LANDS
743	SPOIL AREAS
812	RAILROADS
814	ROADS AND HIGHWAYS
831	ELECTRIC POWER FACILITIES

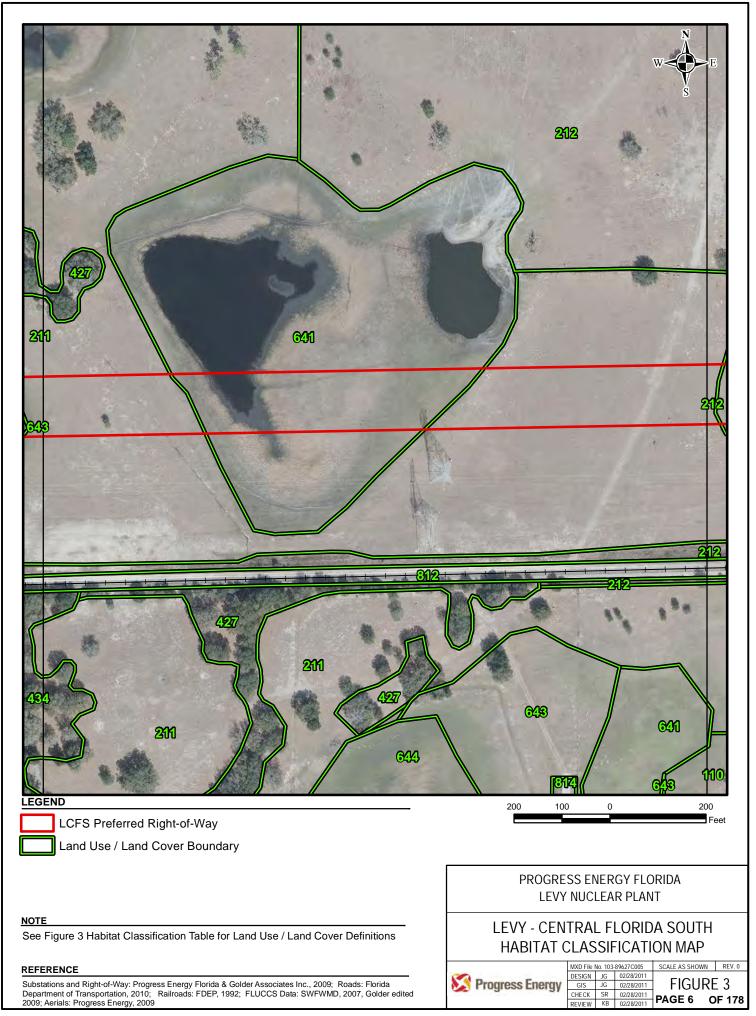


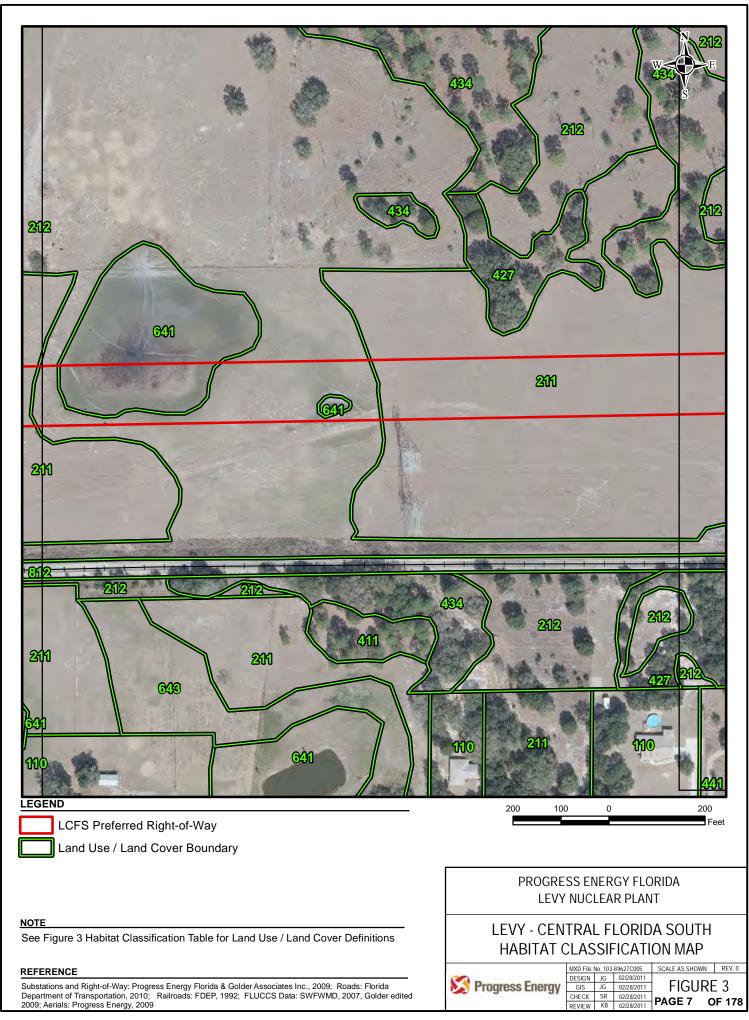


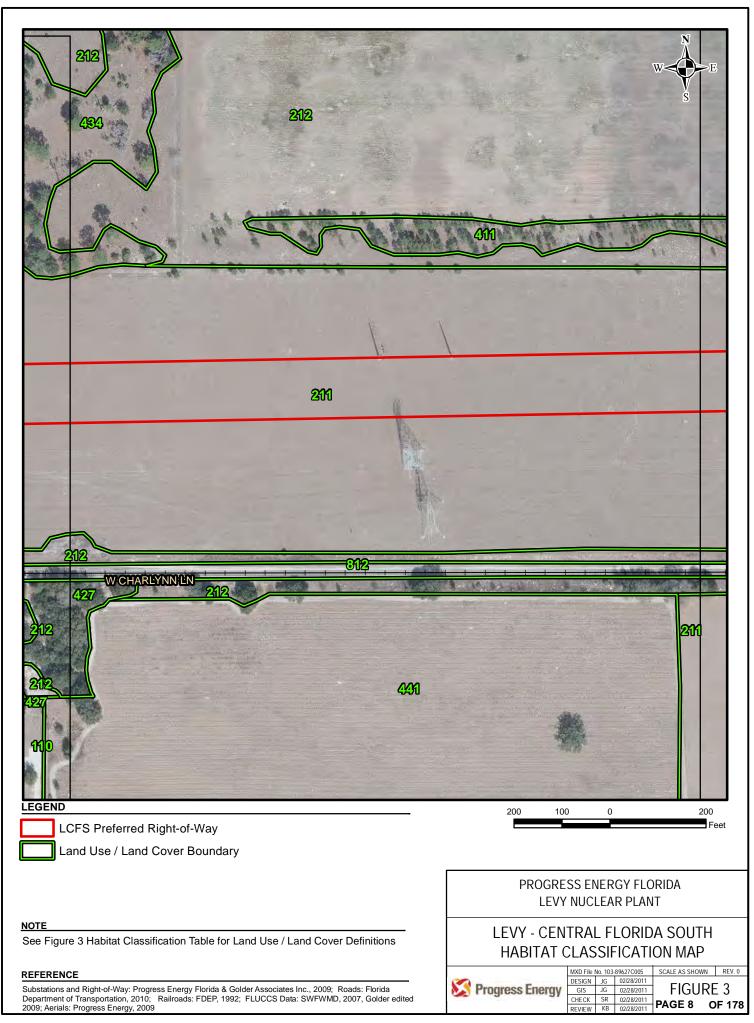




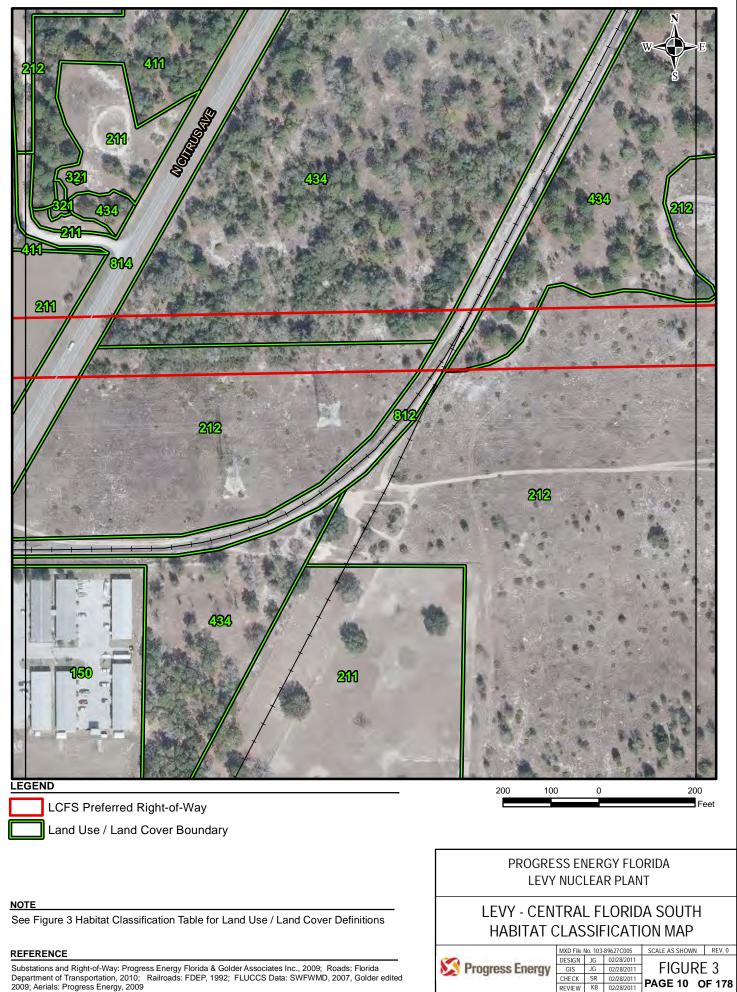


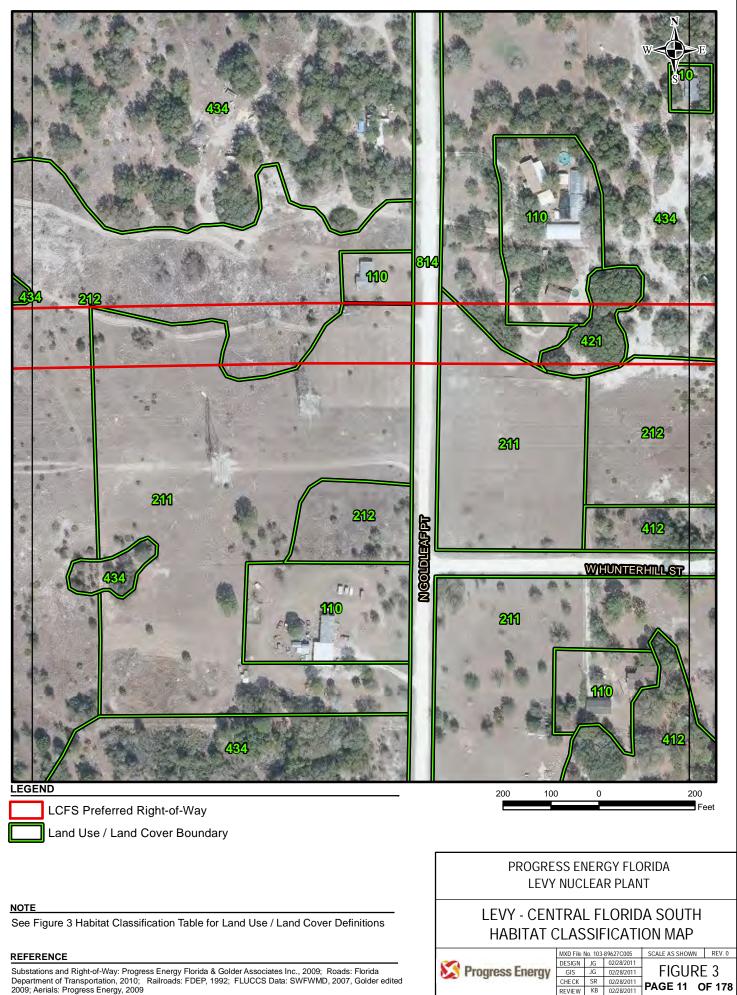




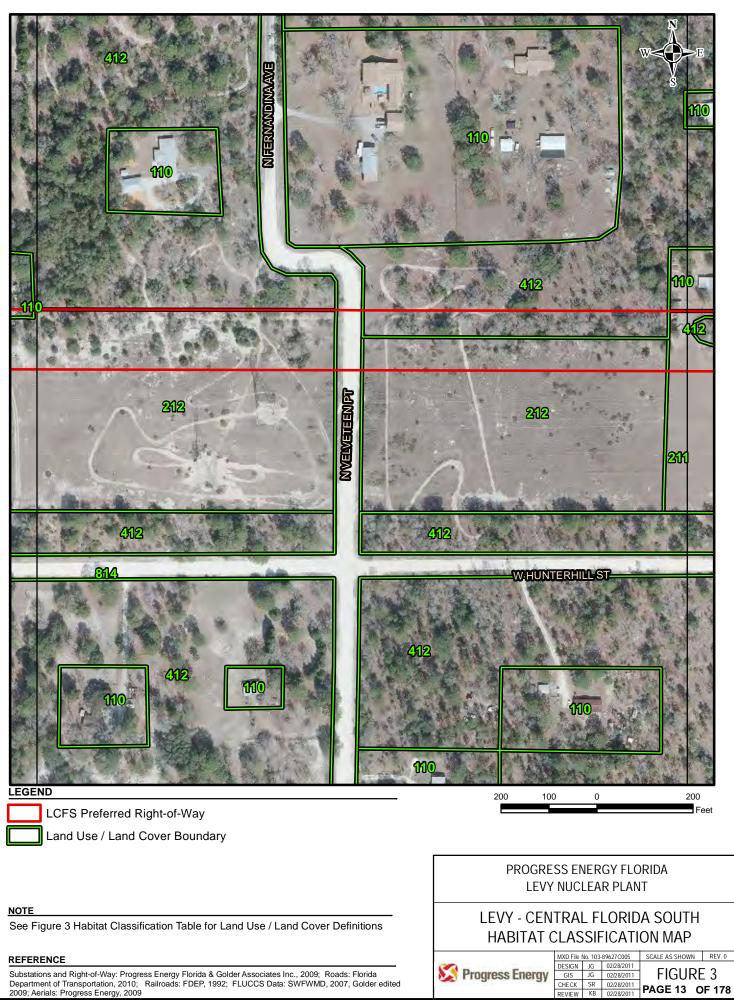


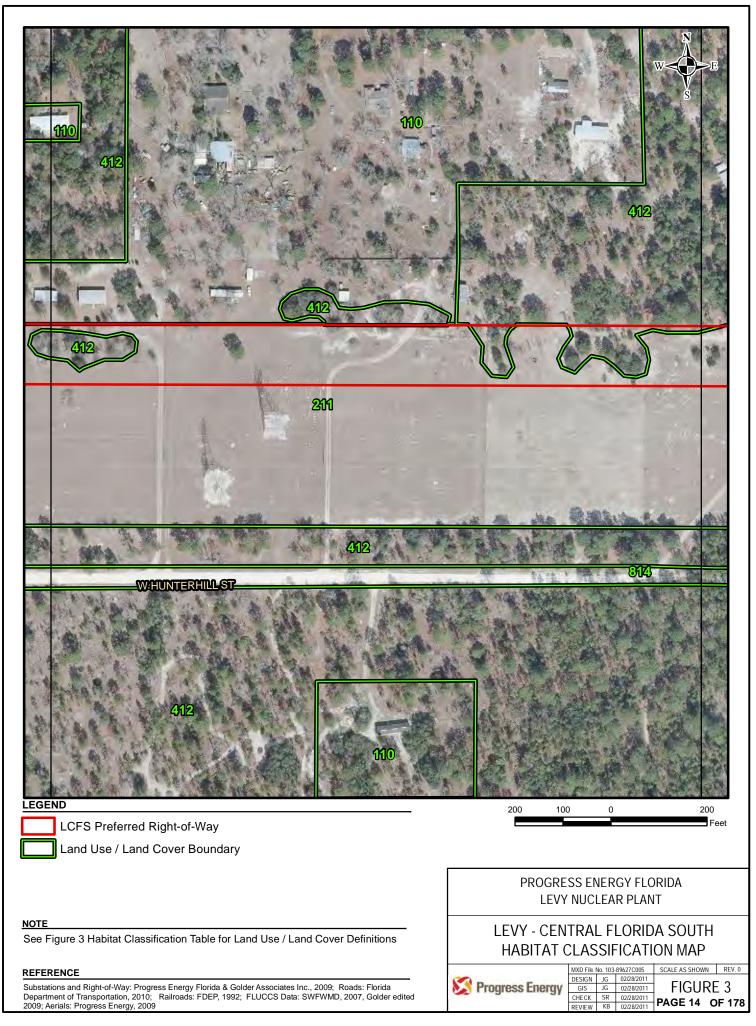




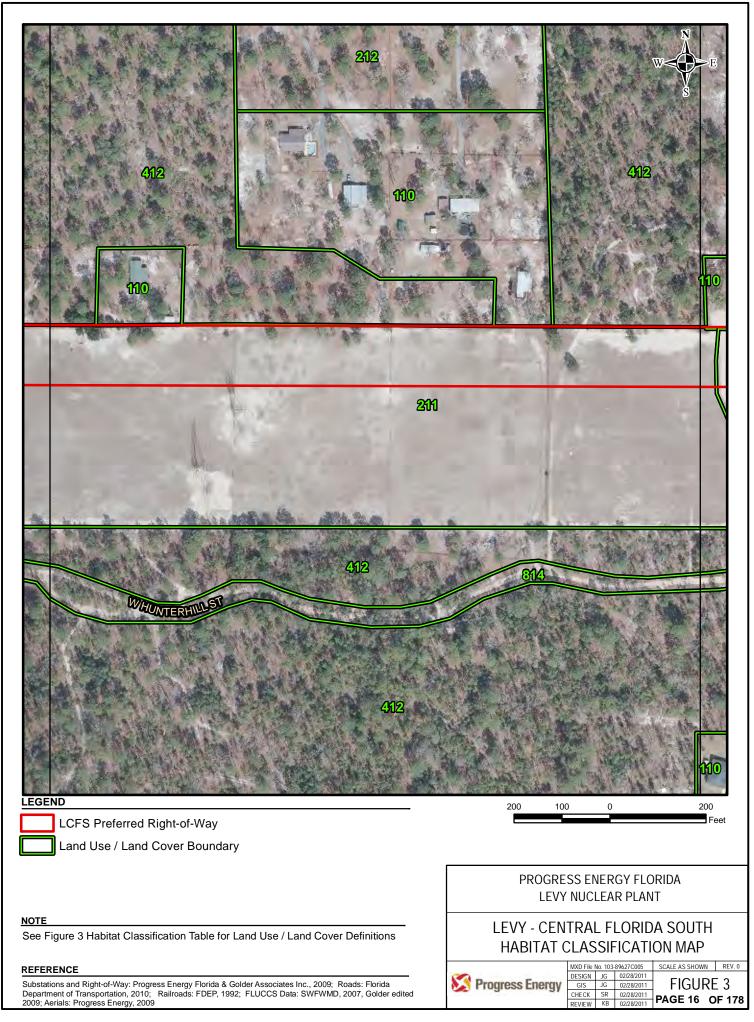


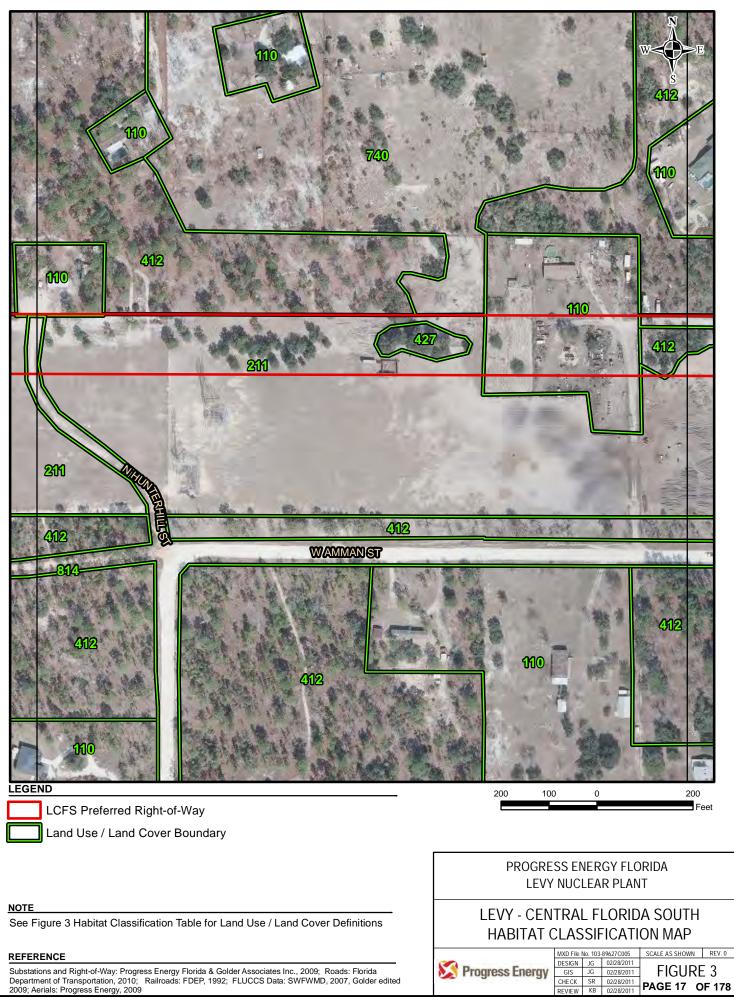


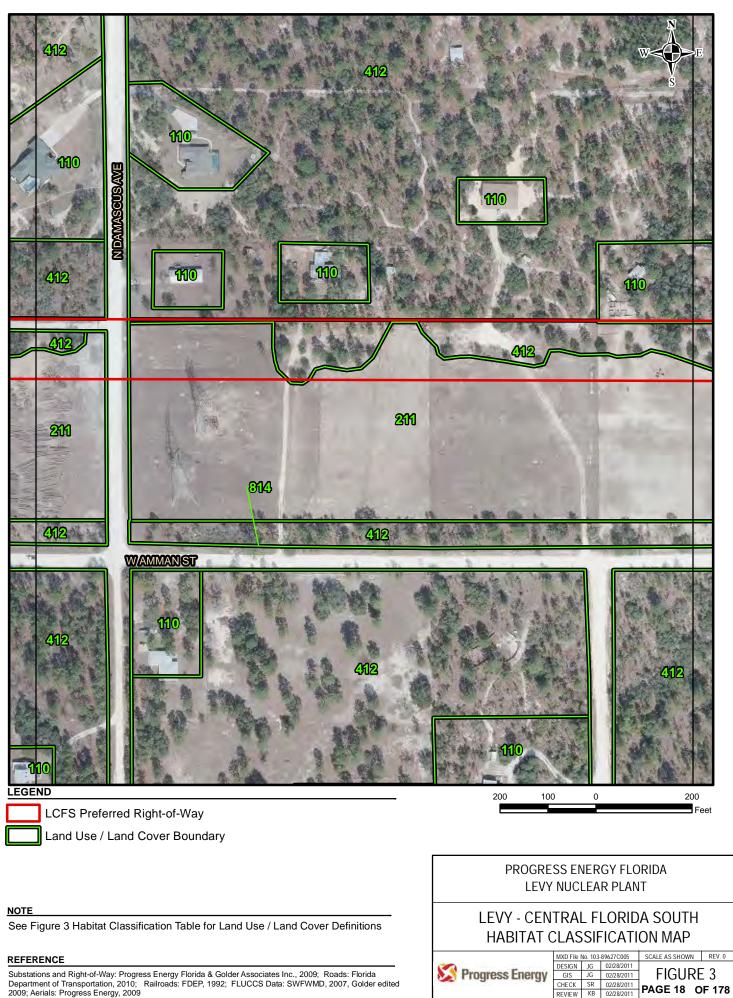


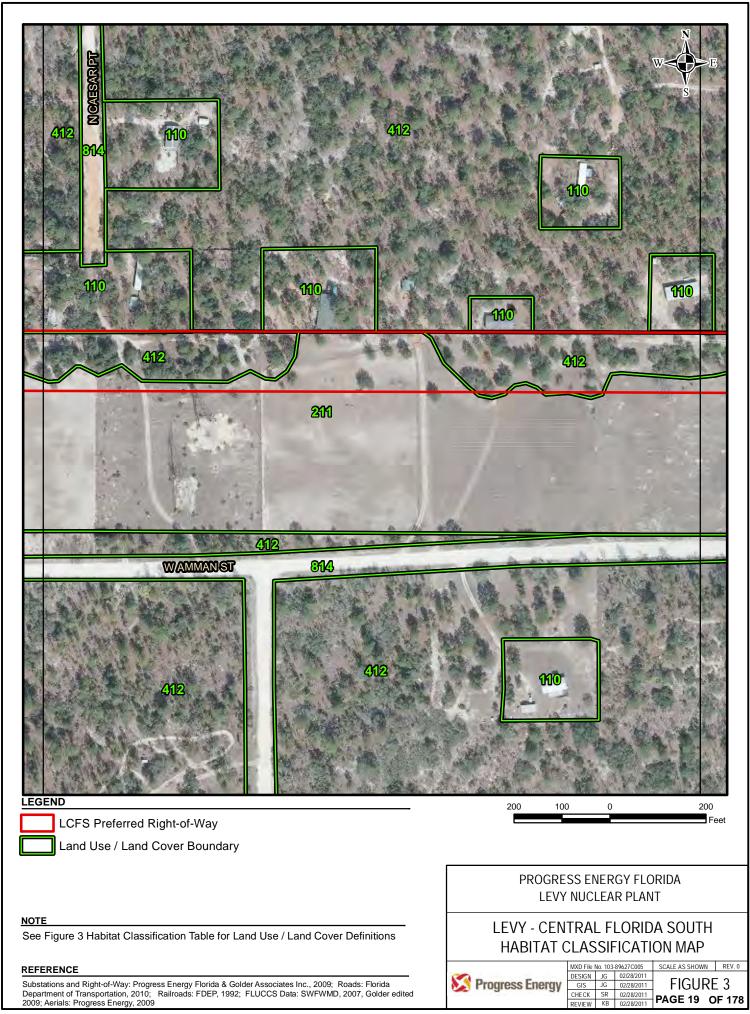


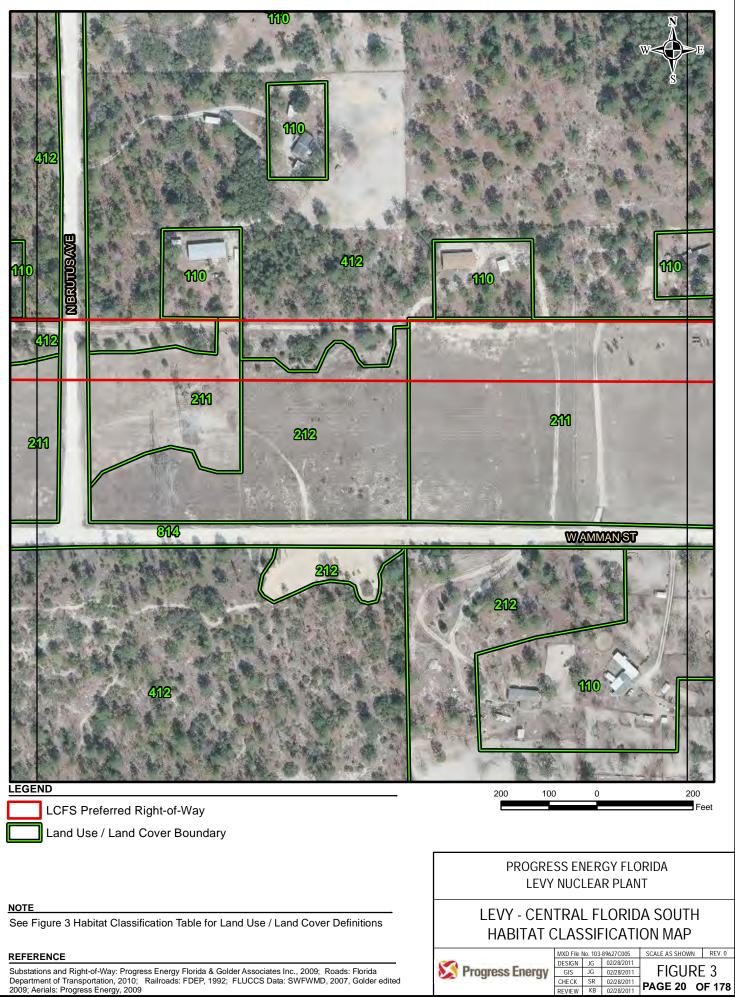


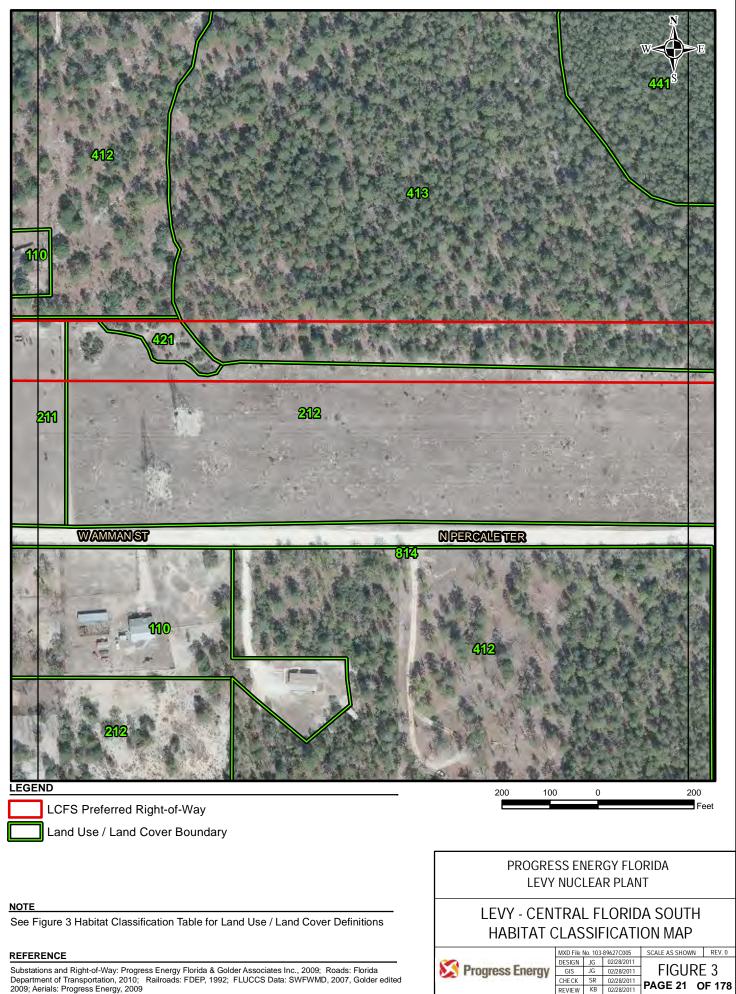


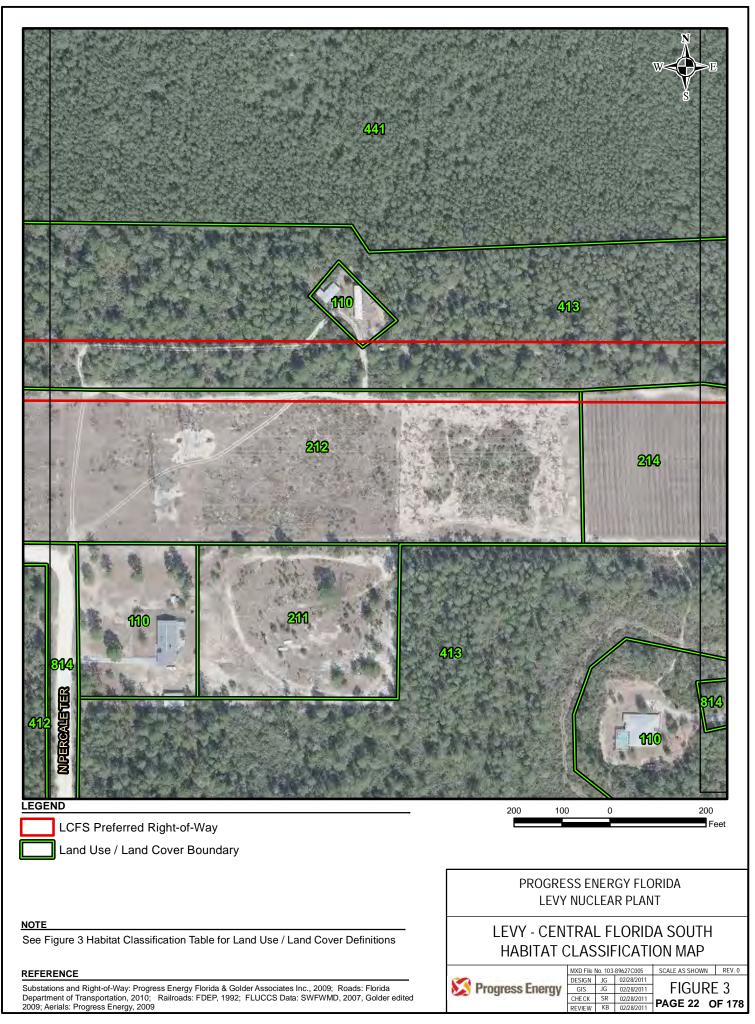


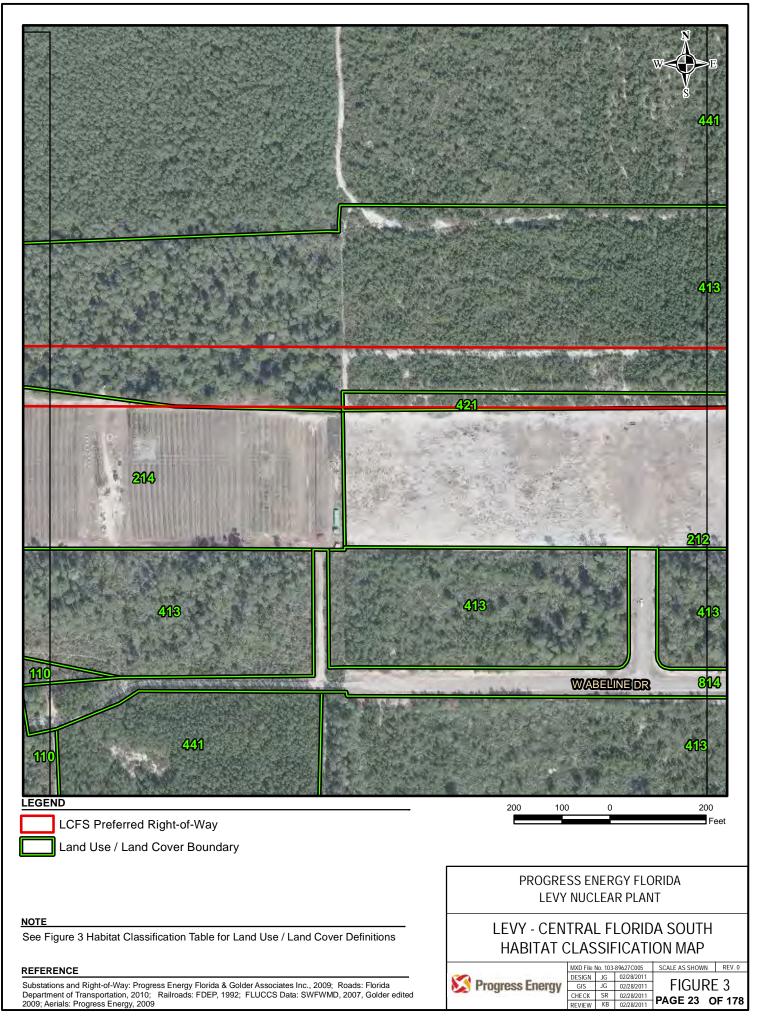


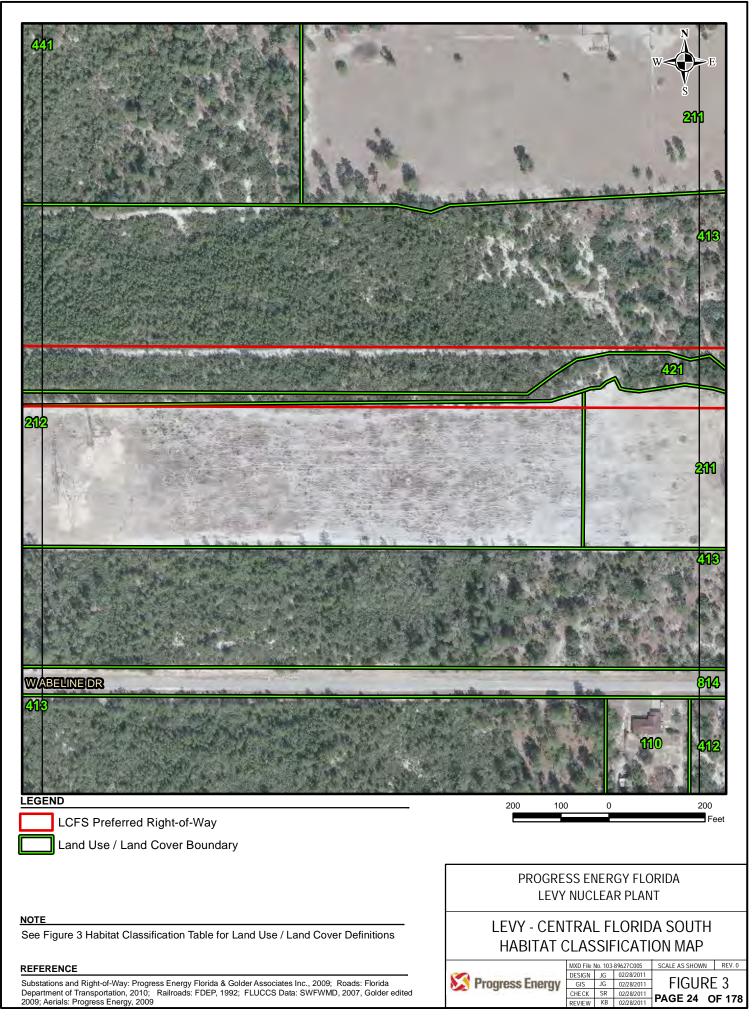


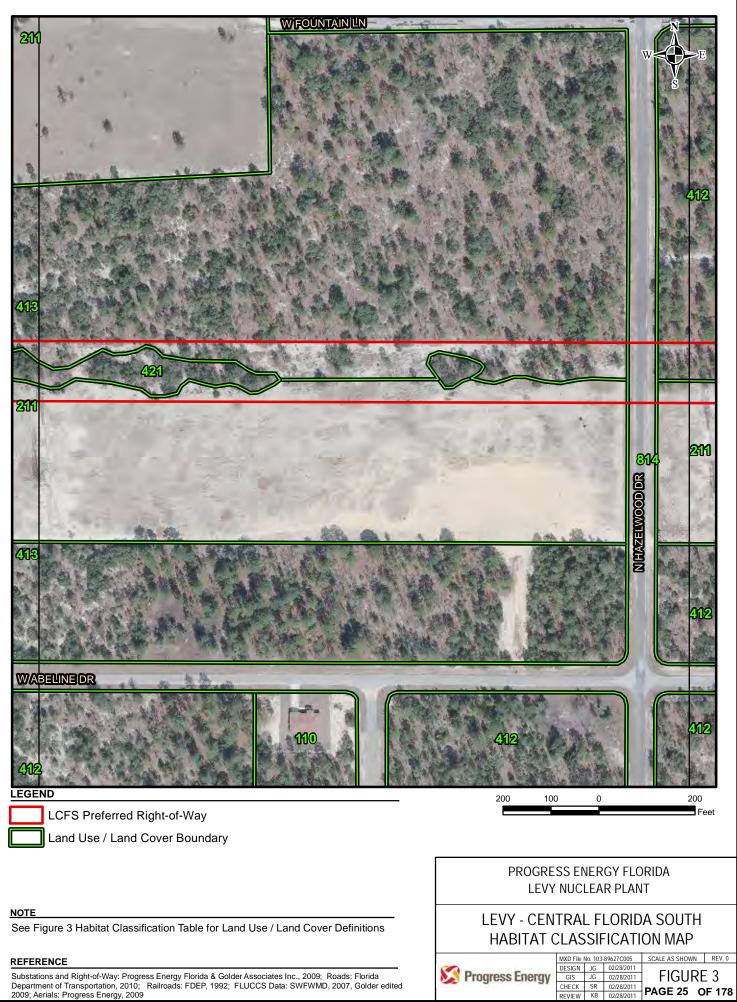


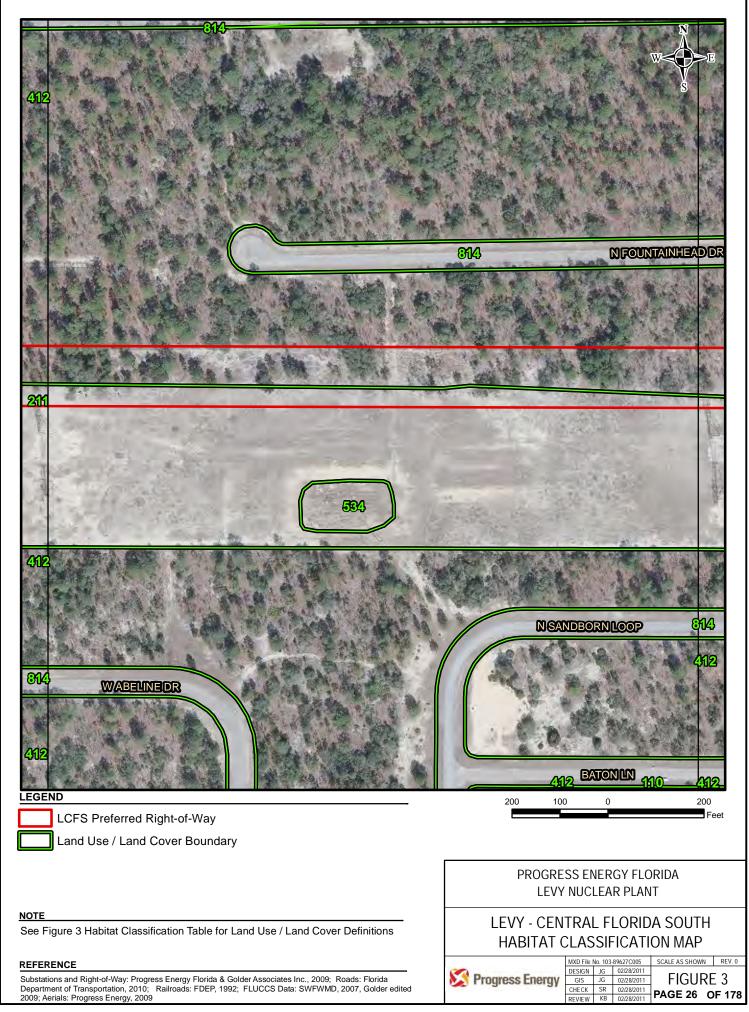


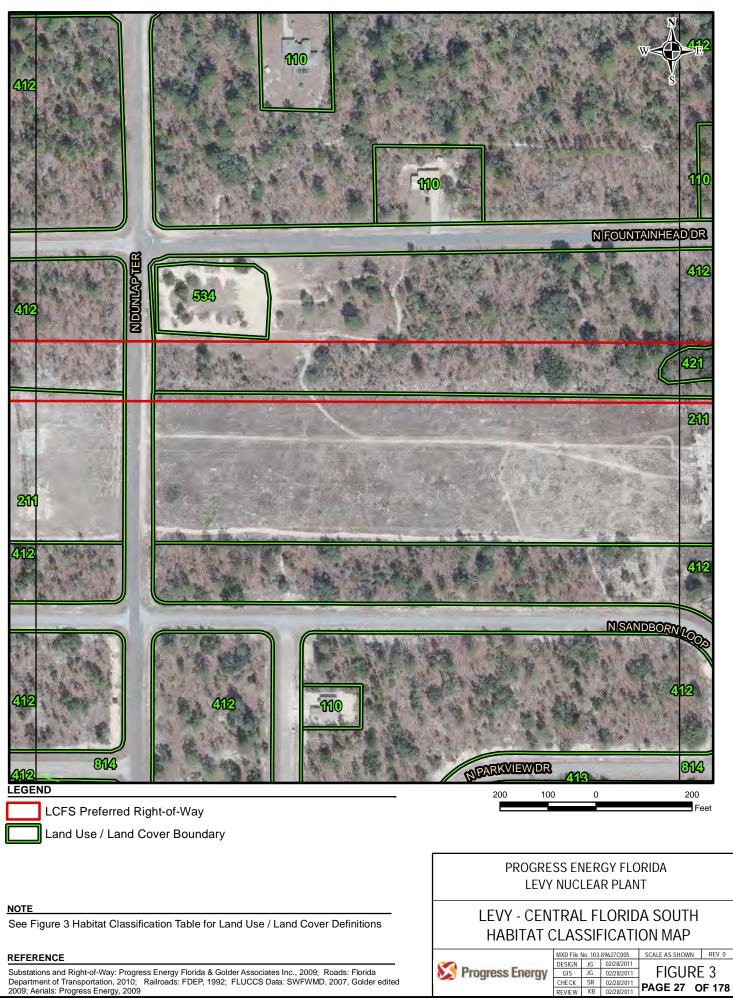


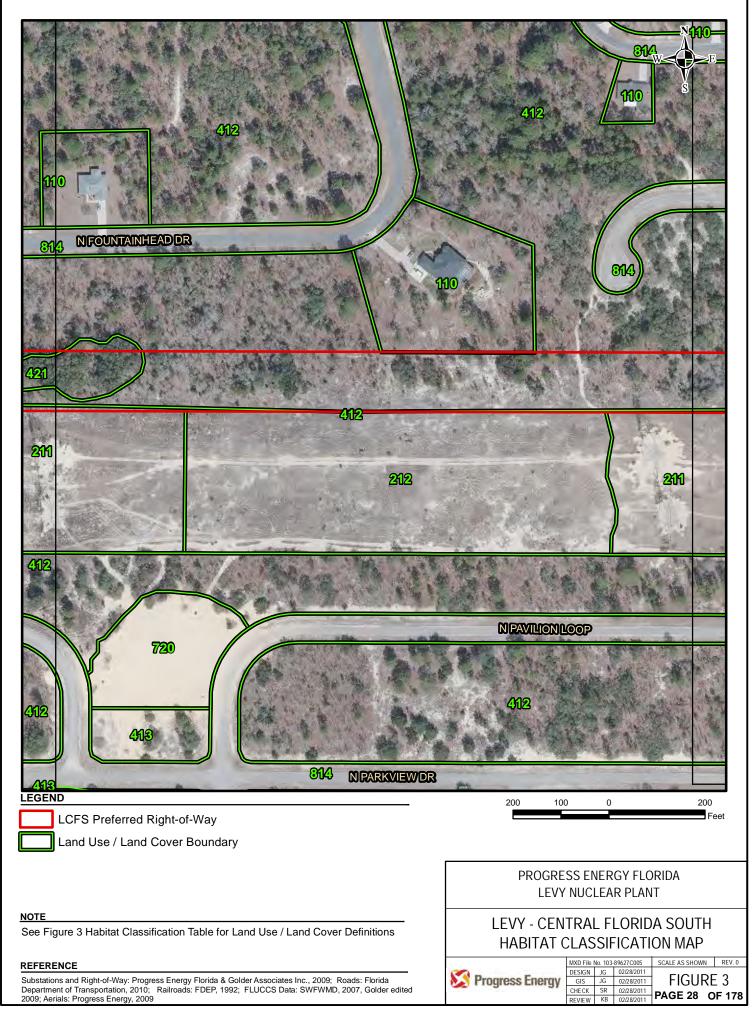


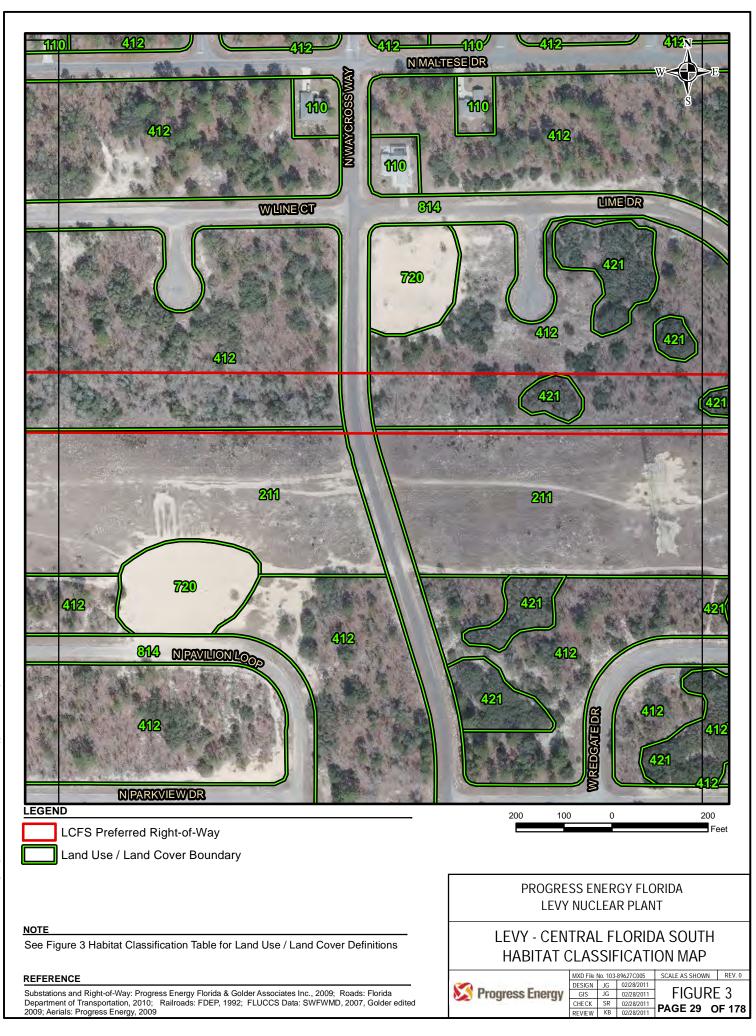


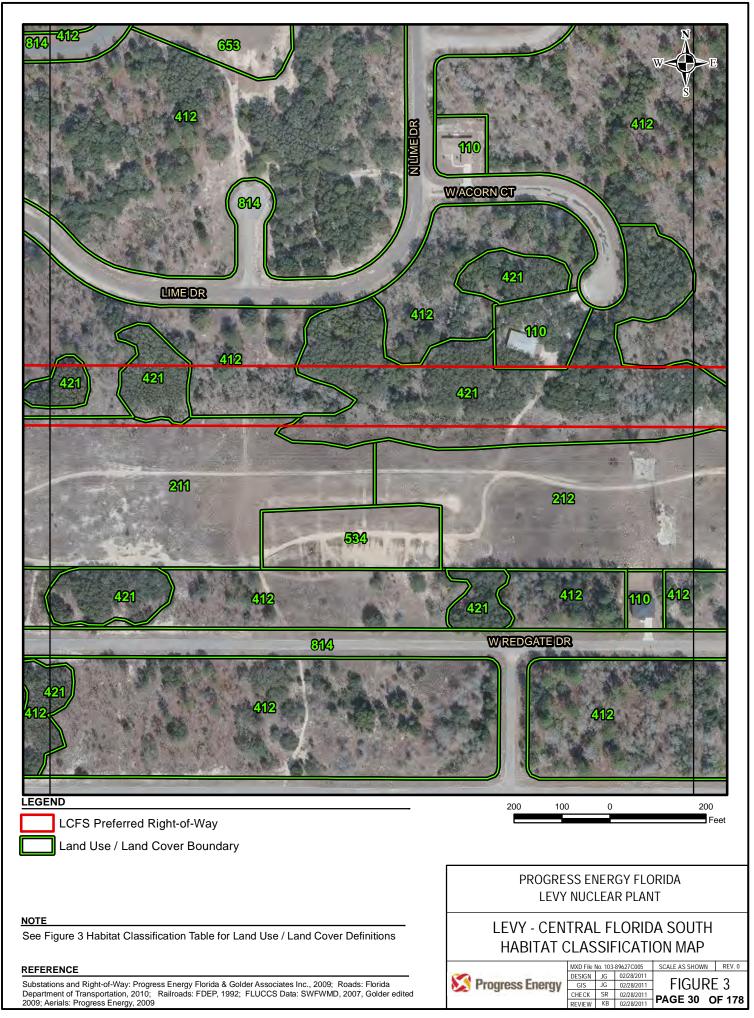


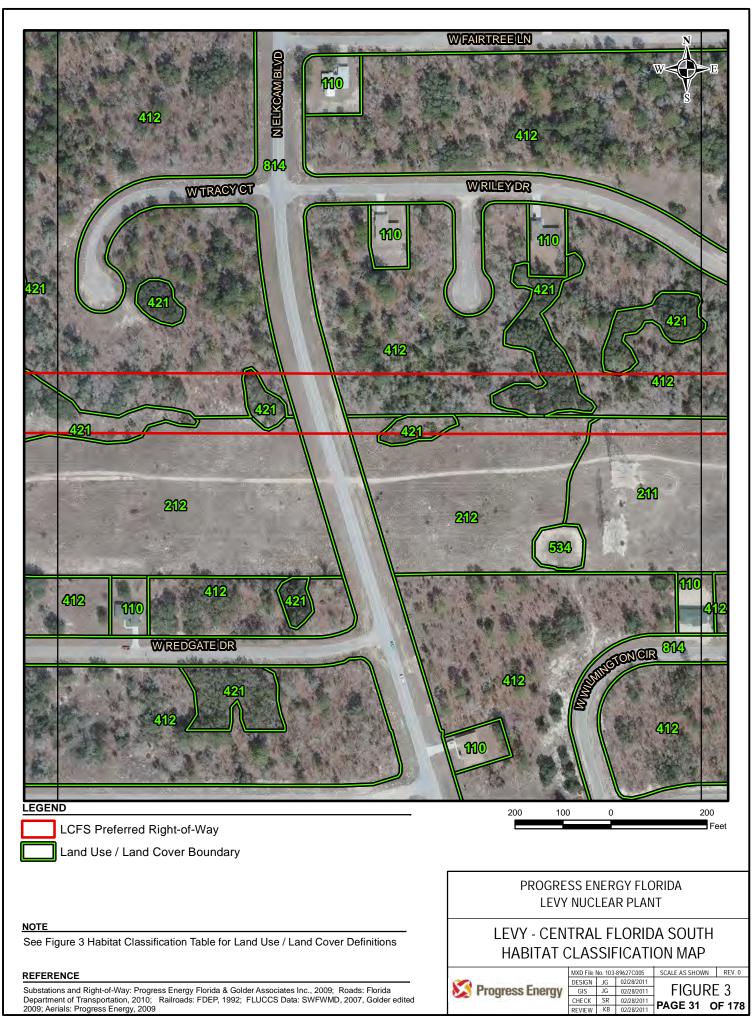


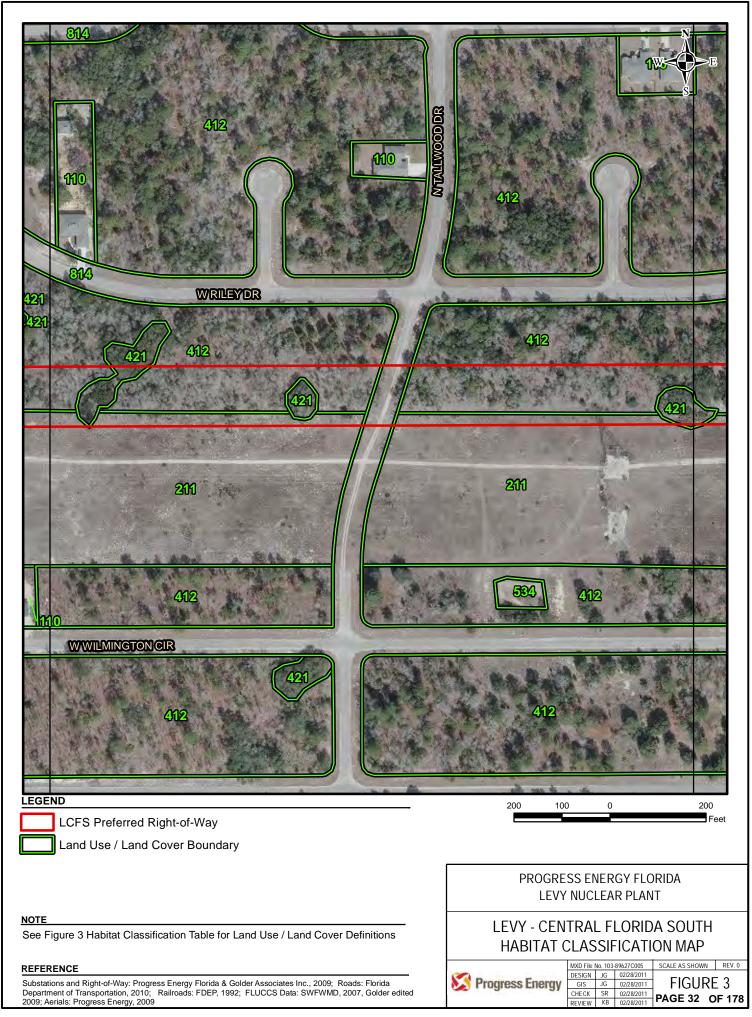




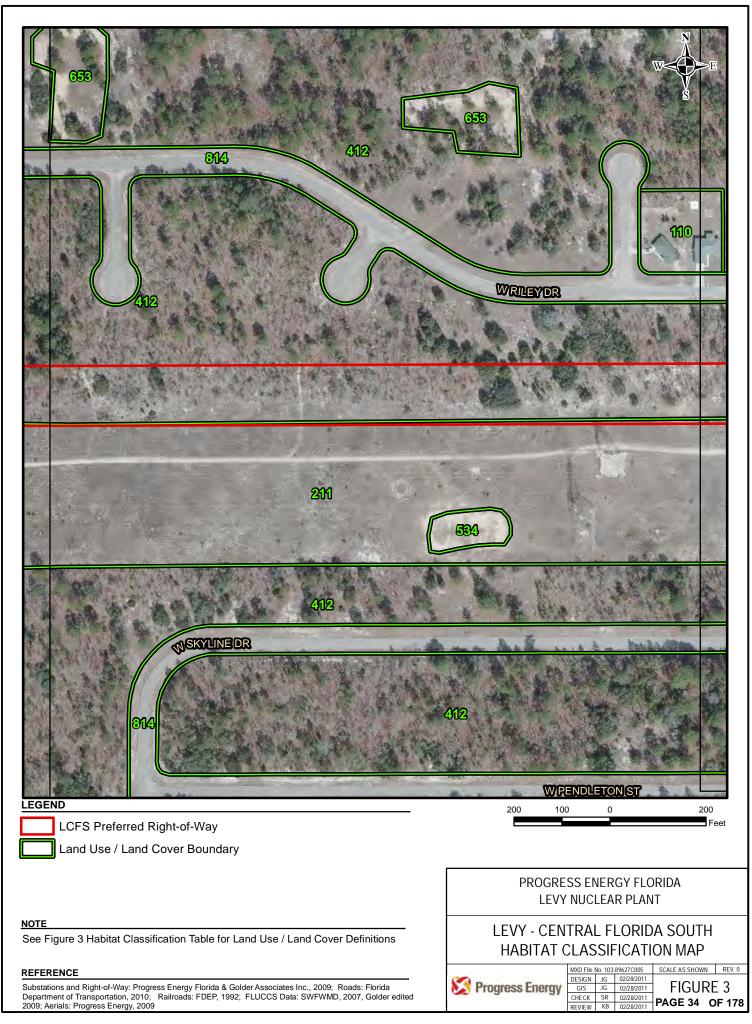


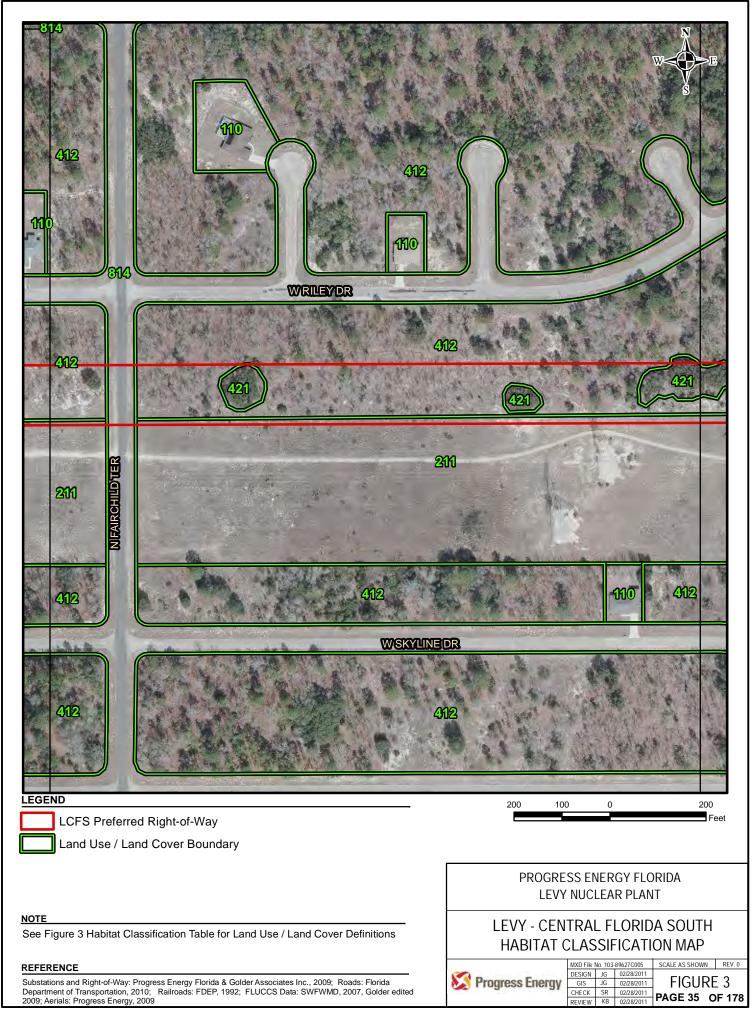


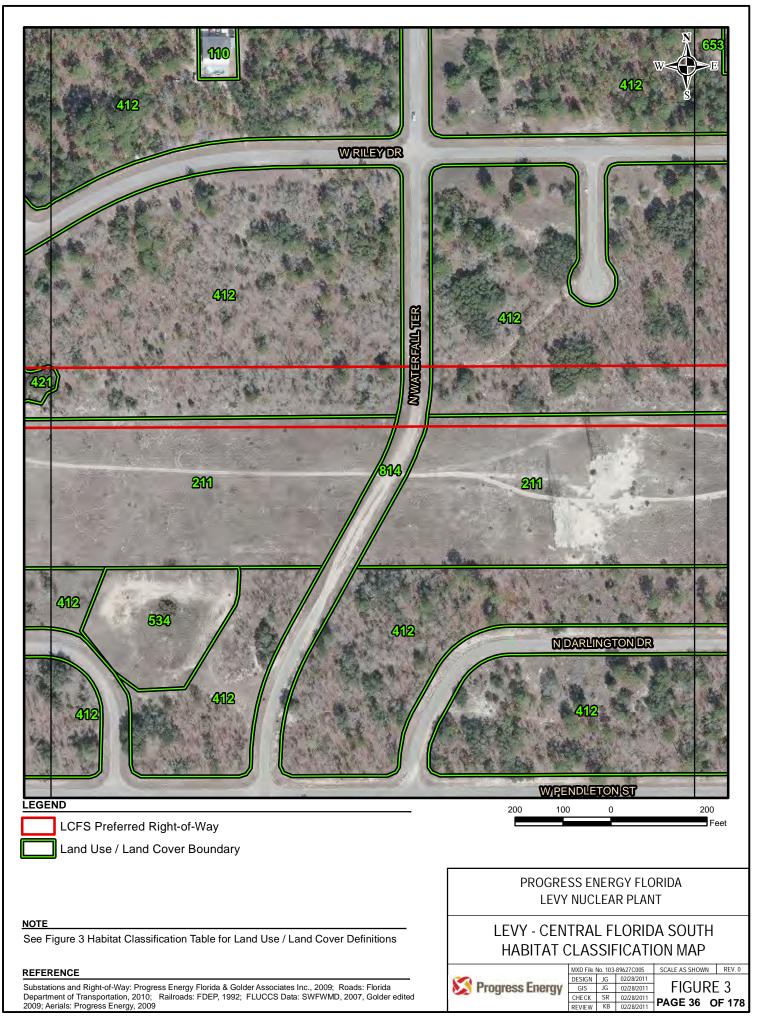


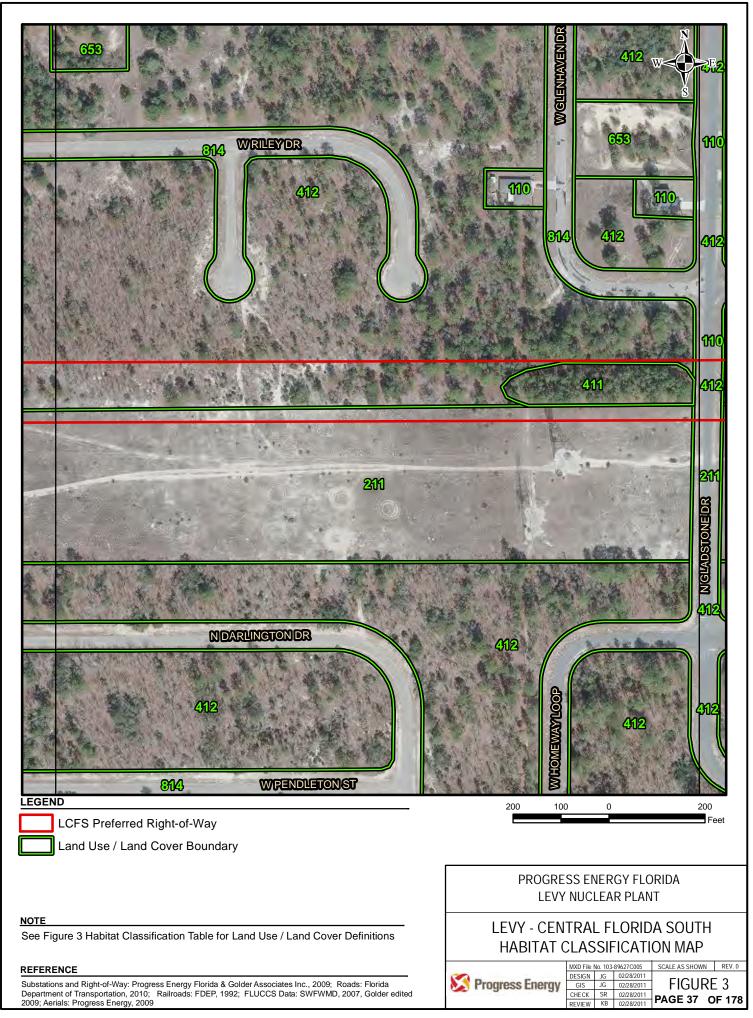




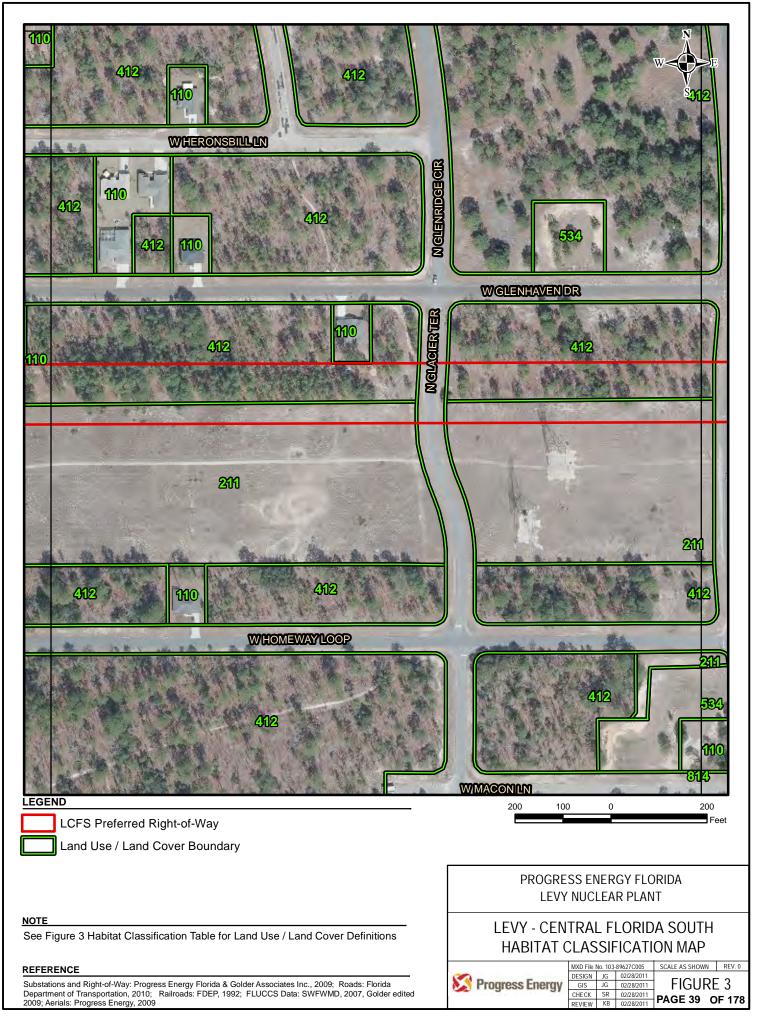


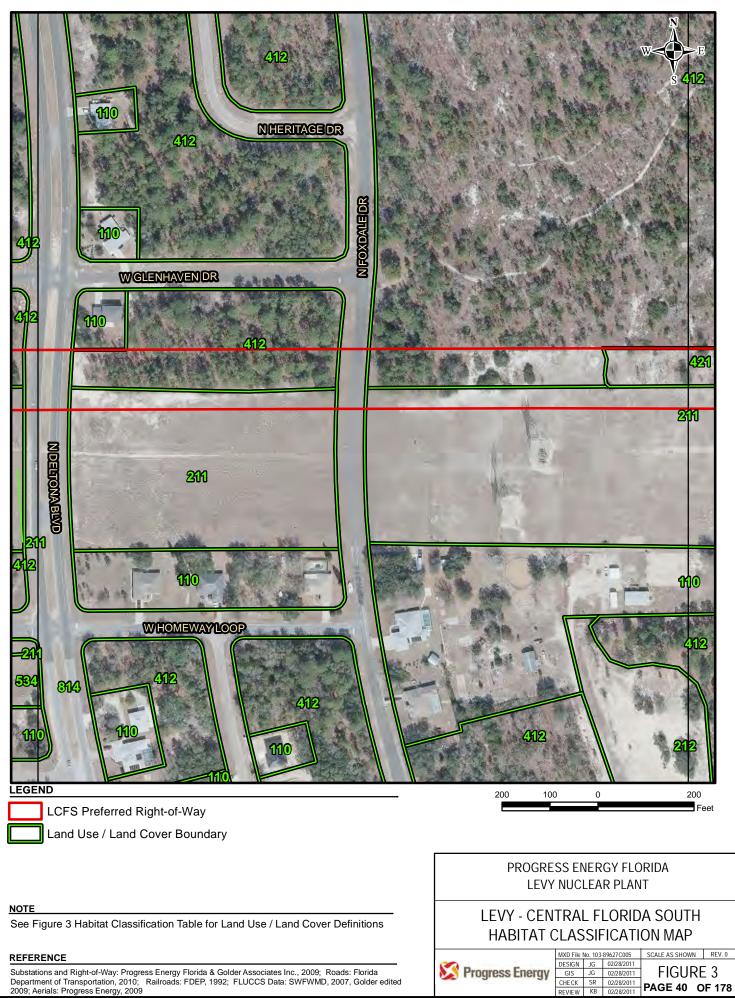


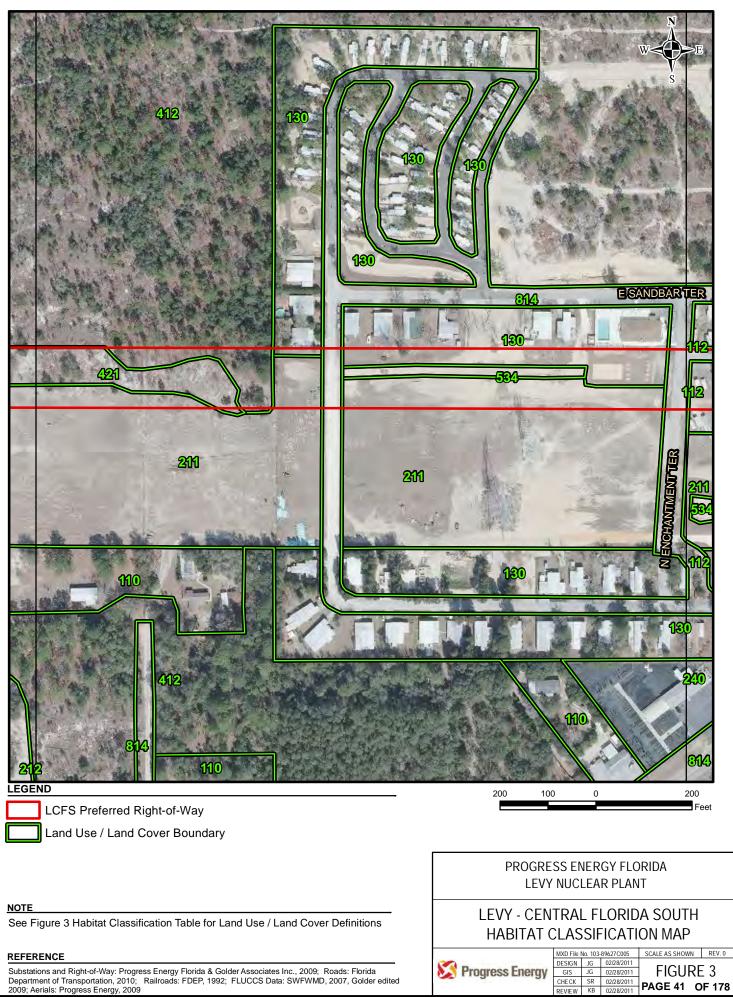


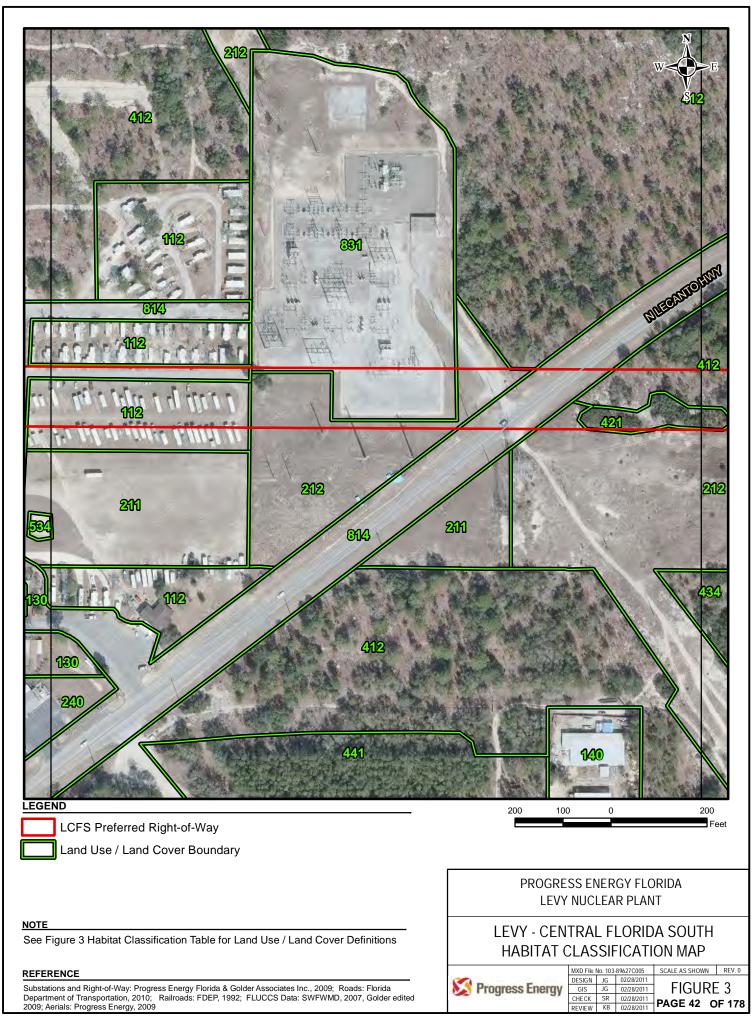


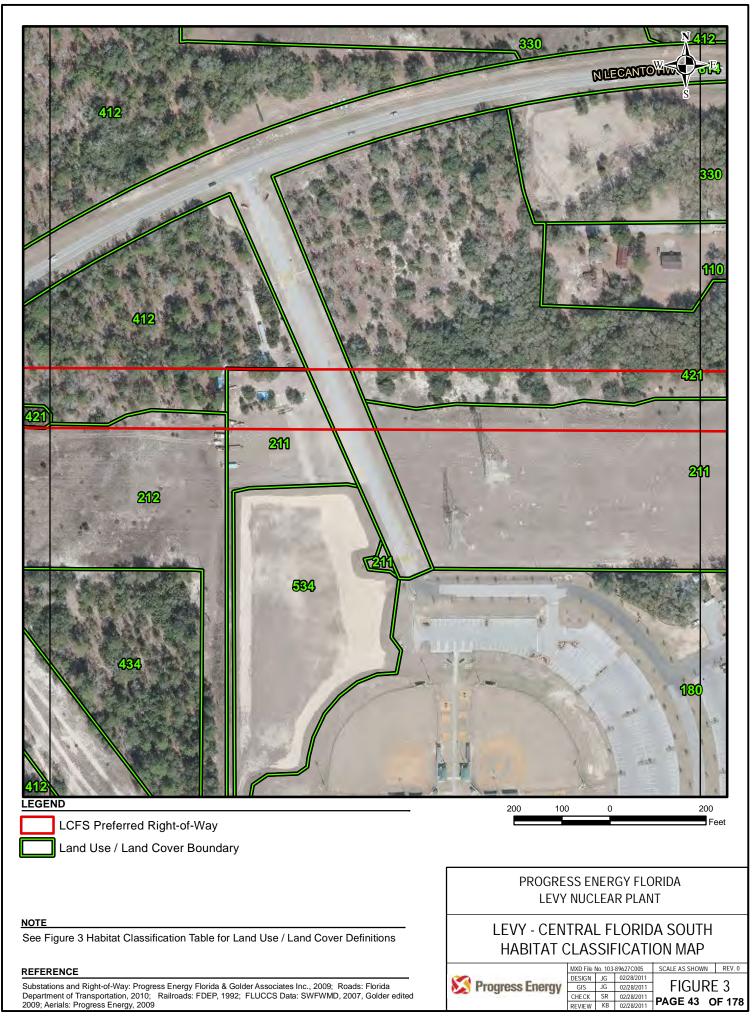


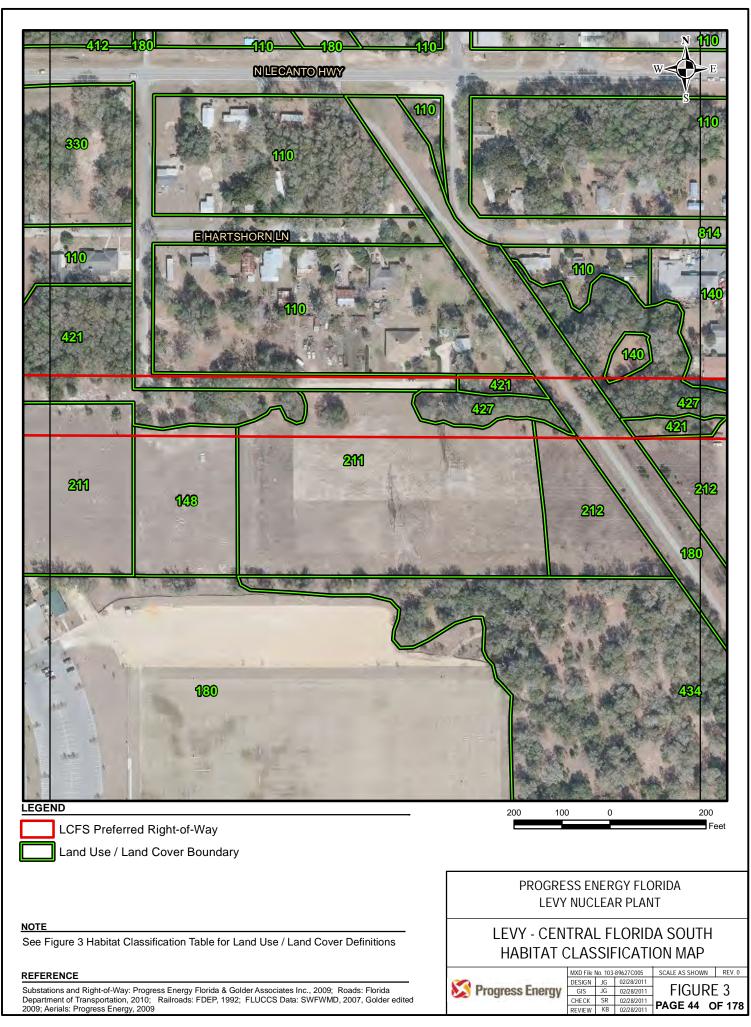


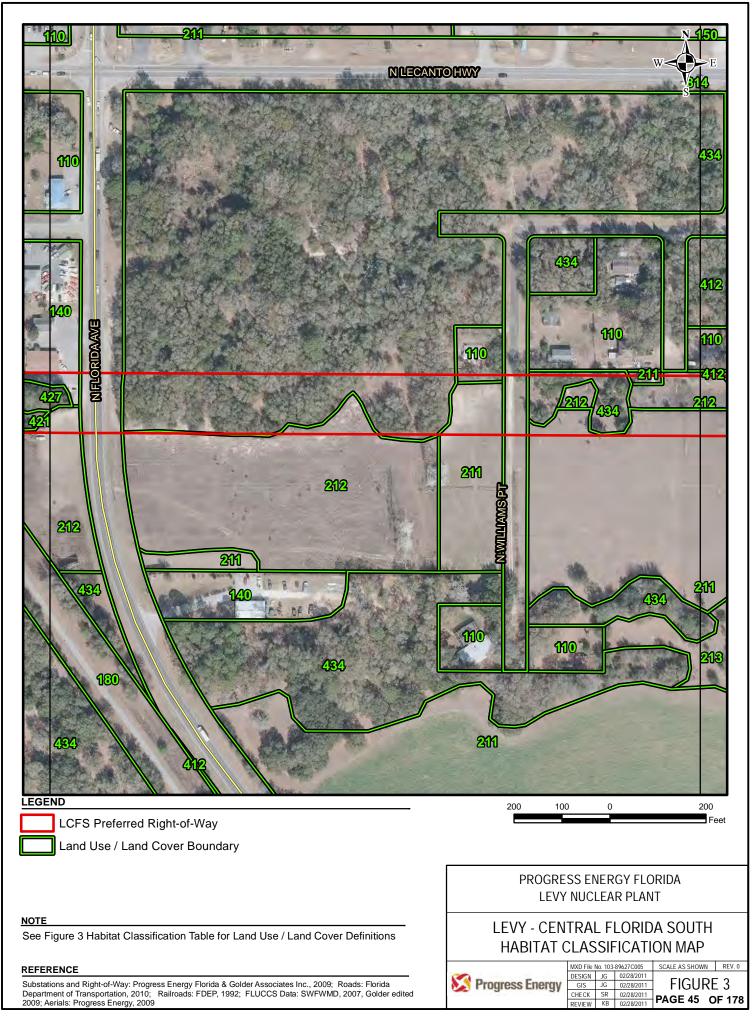


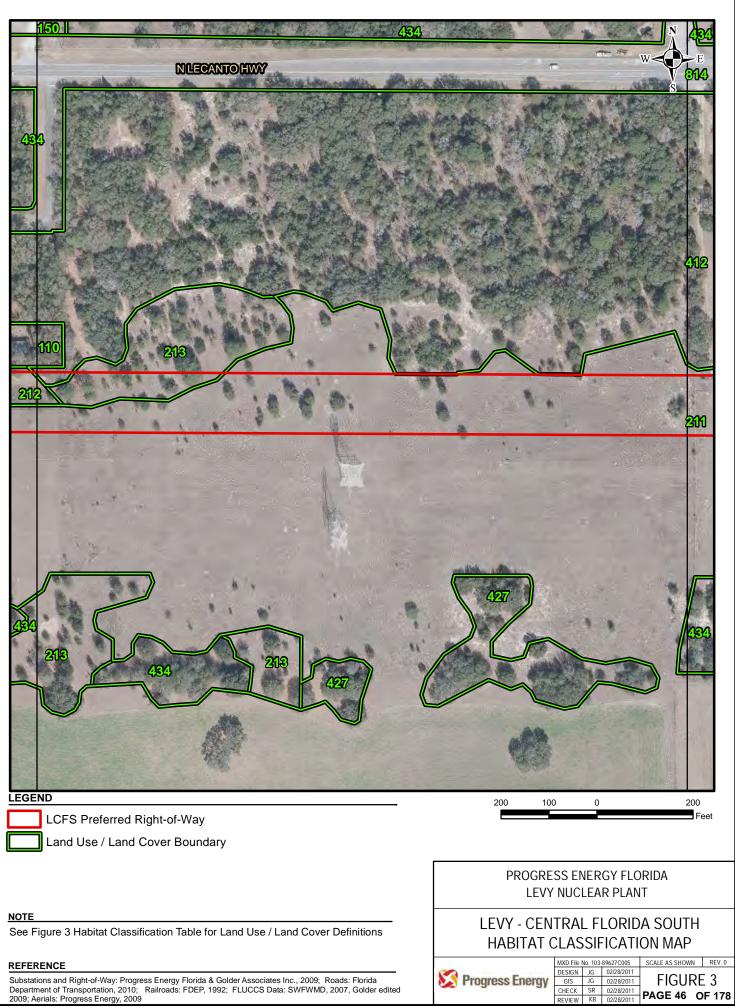


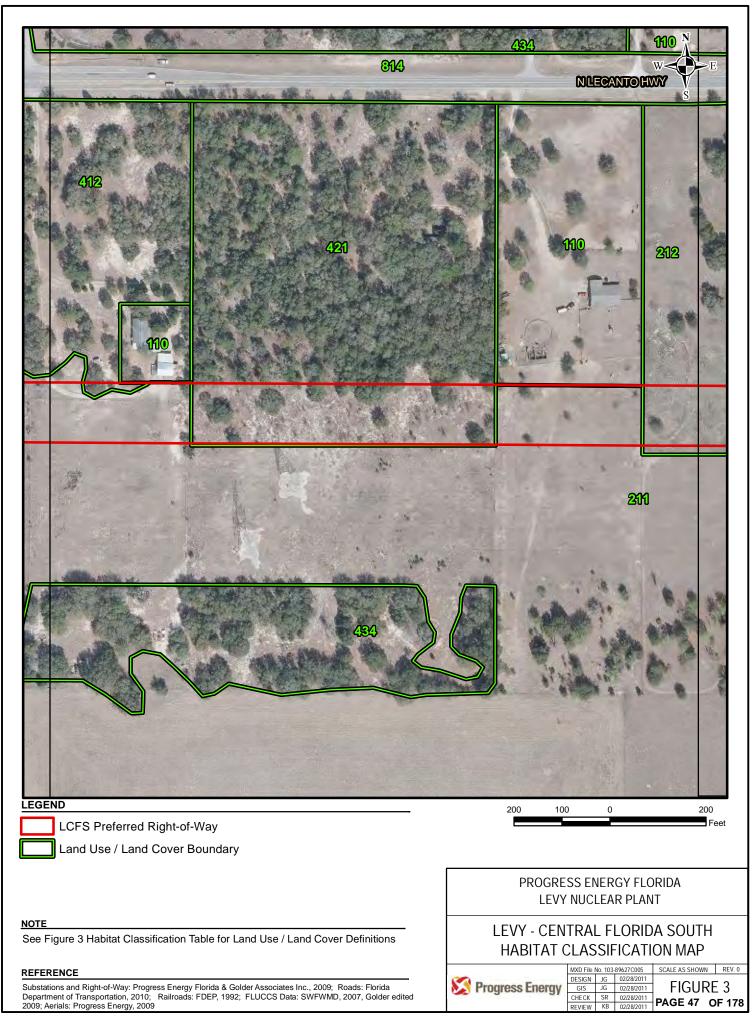


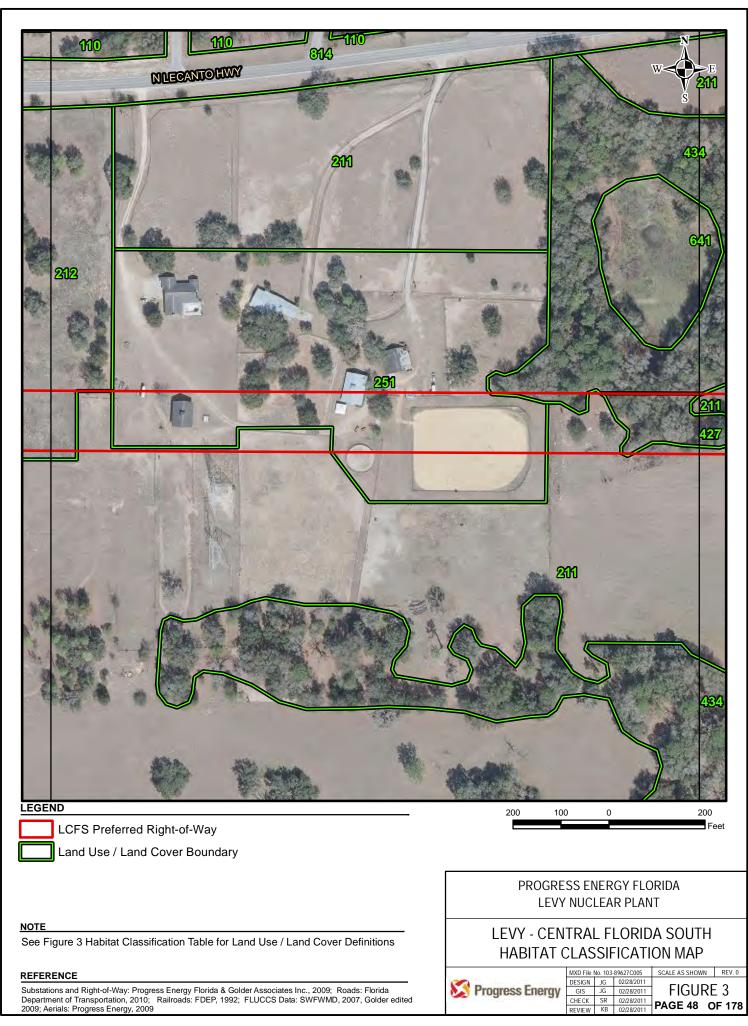


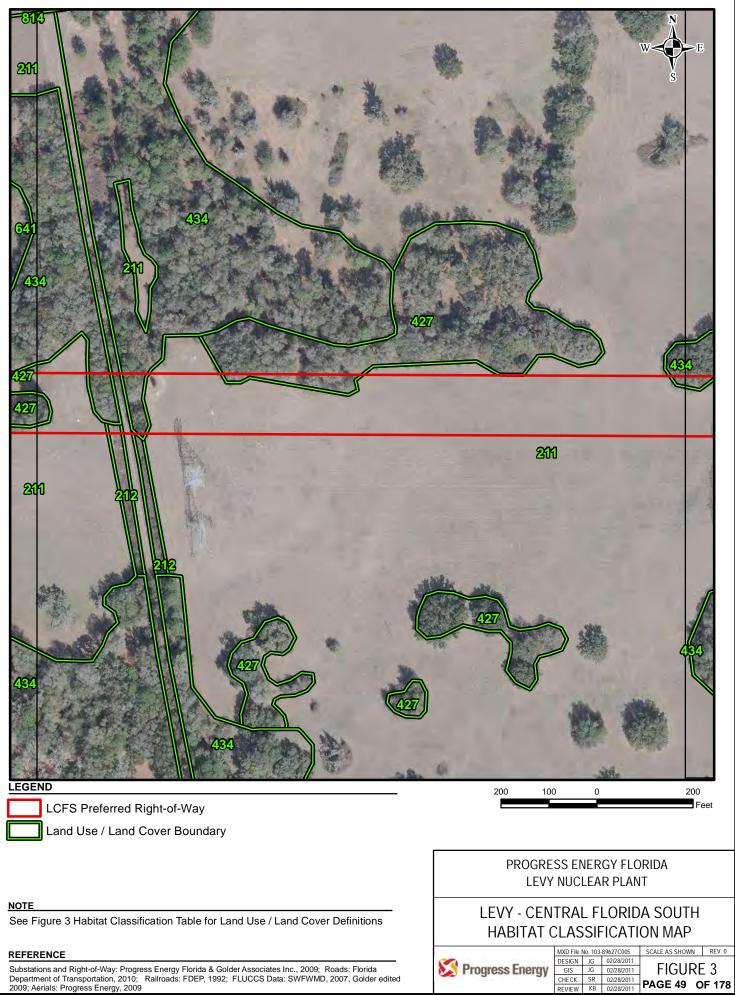


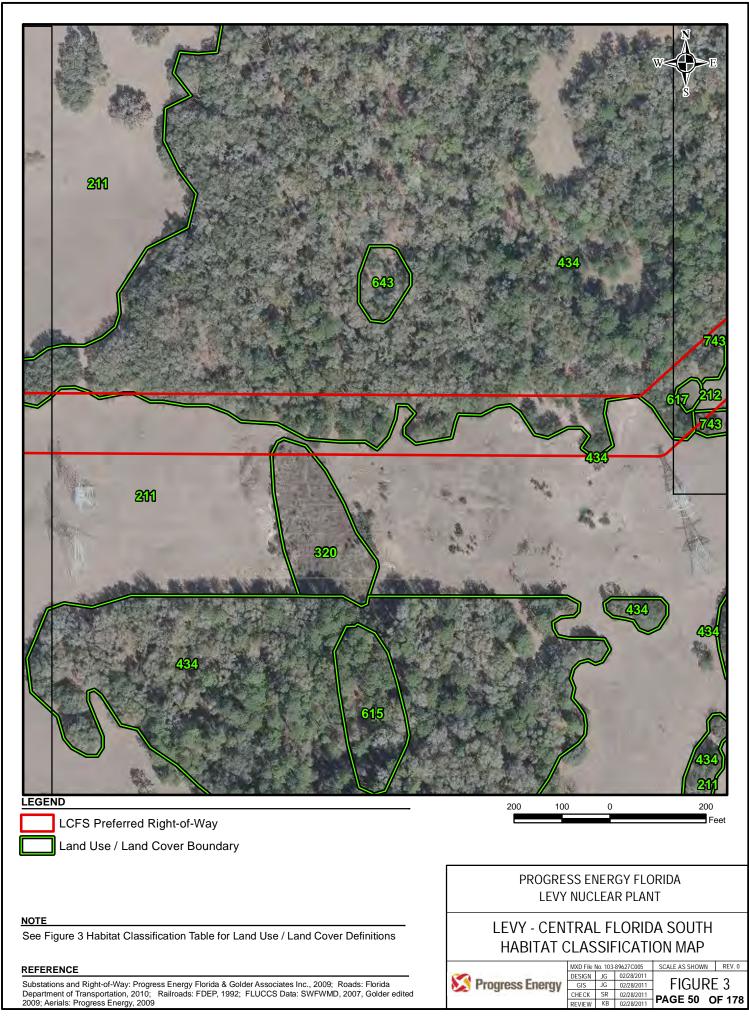


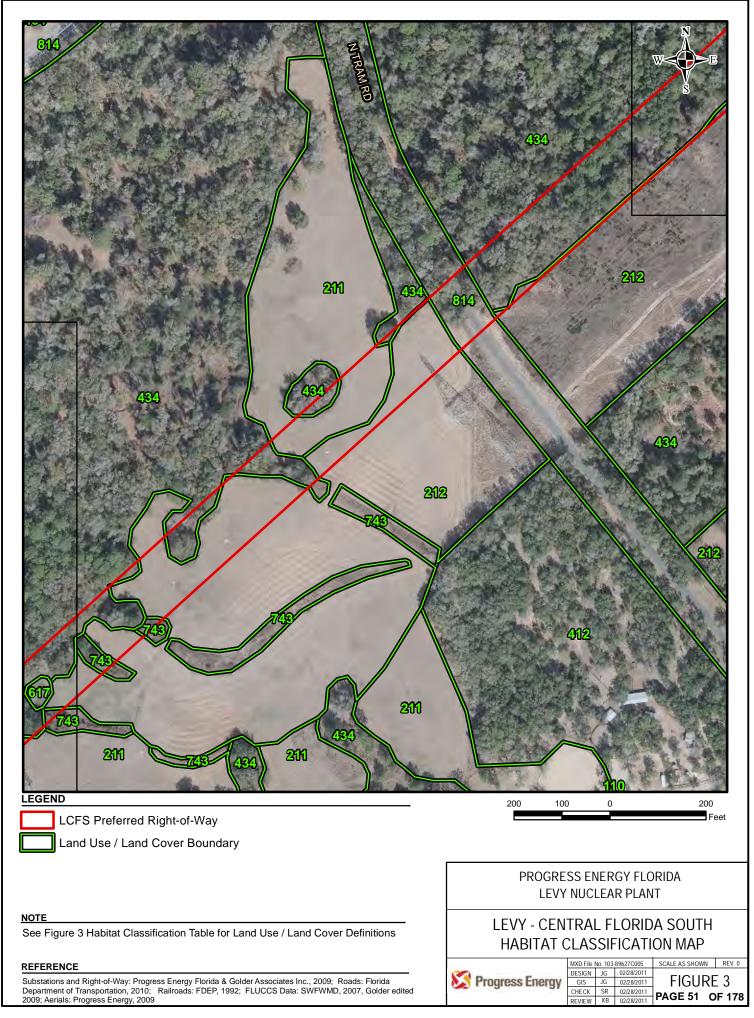




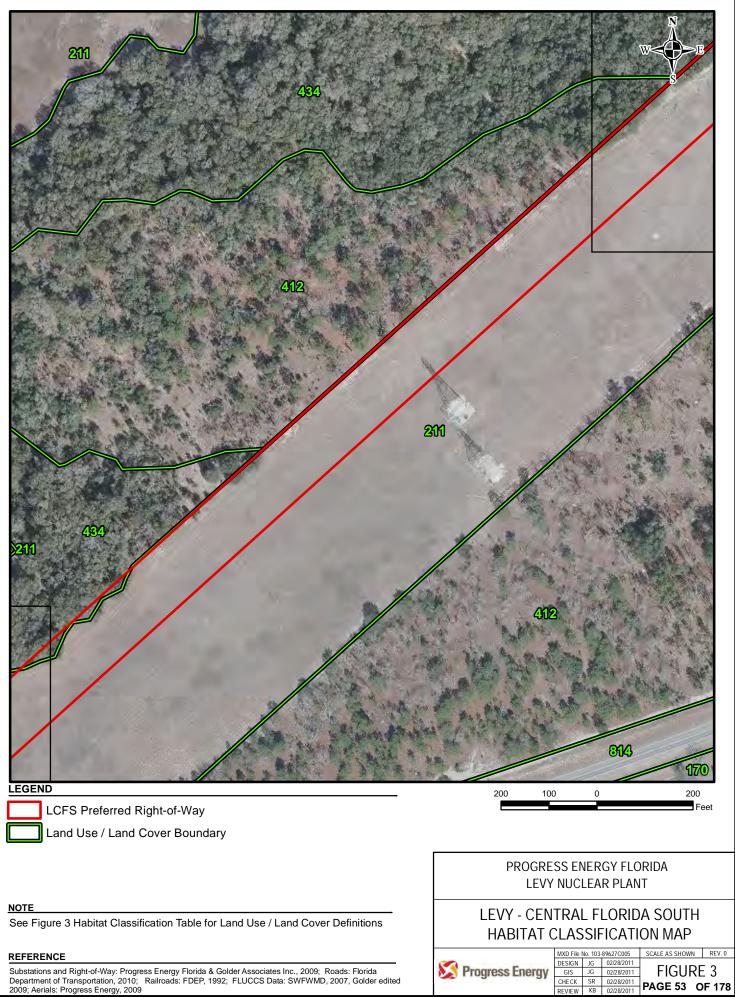


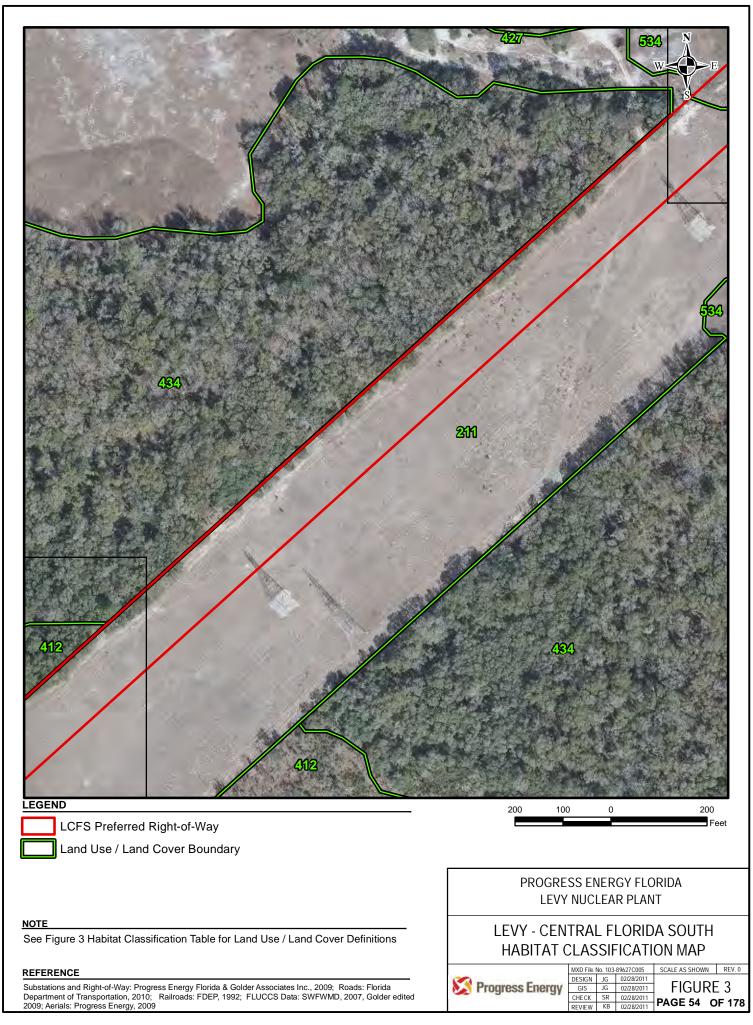


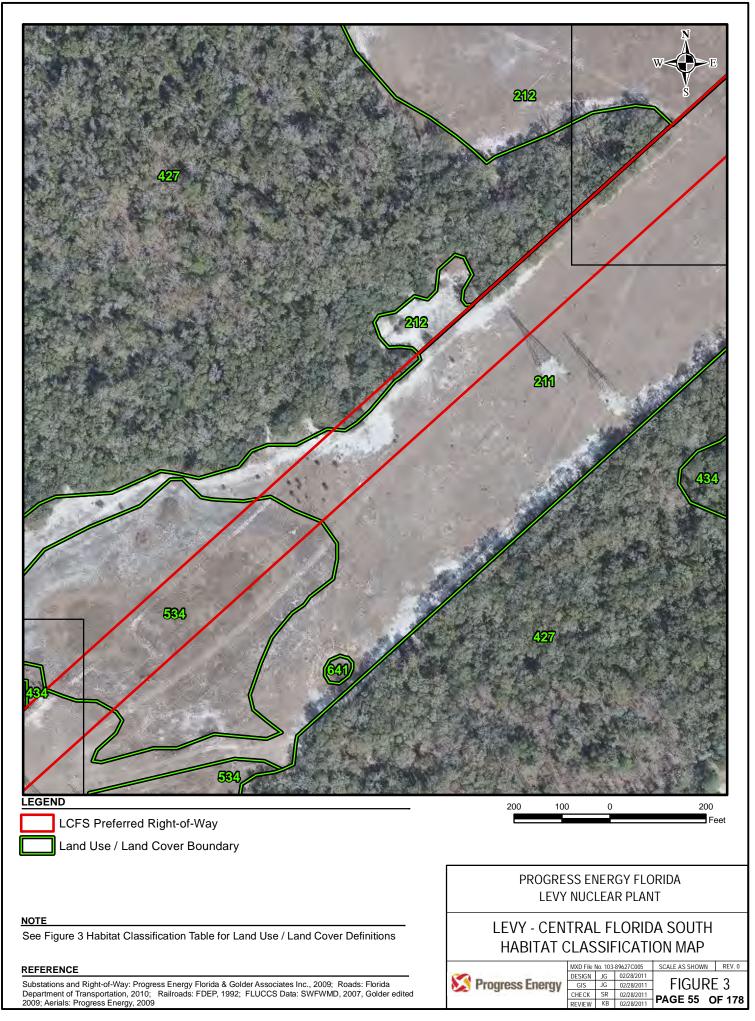


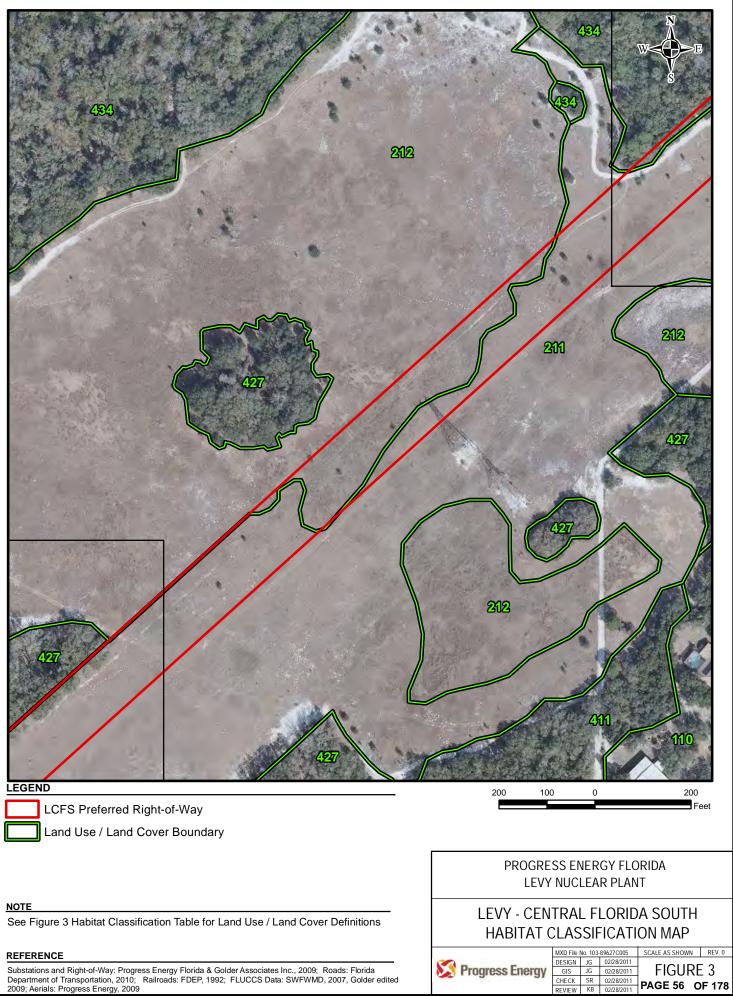


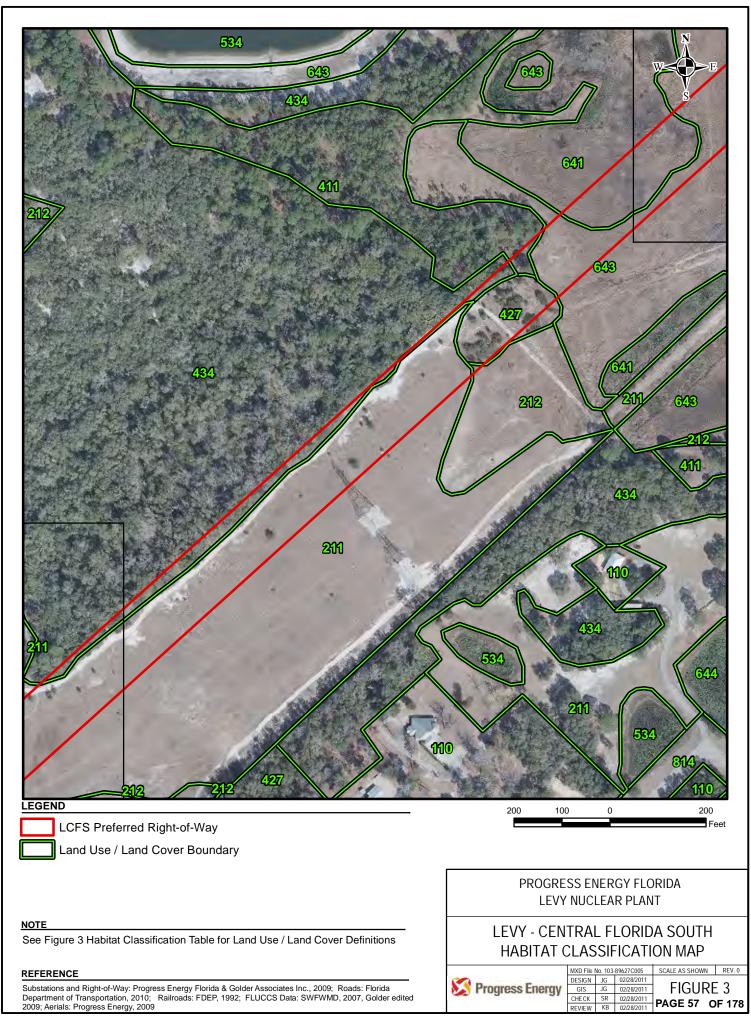


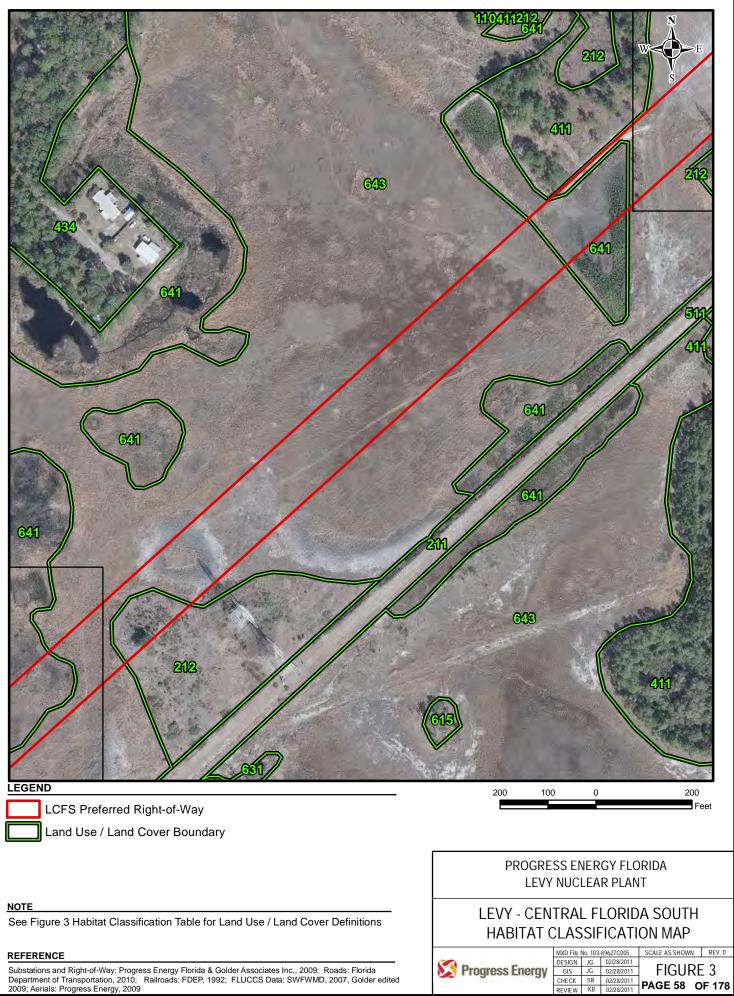


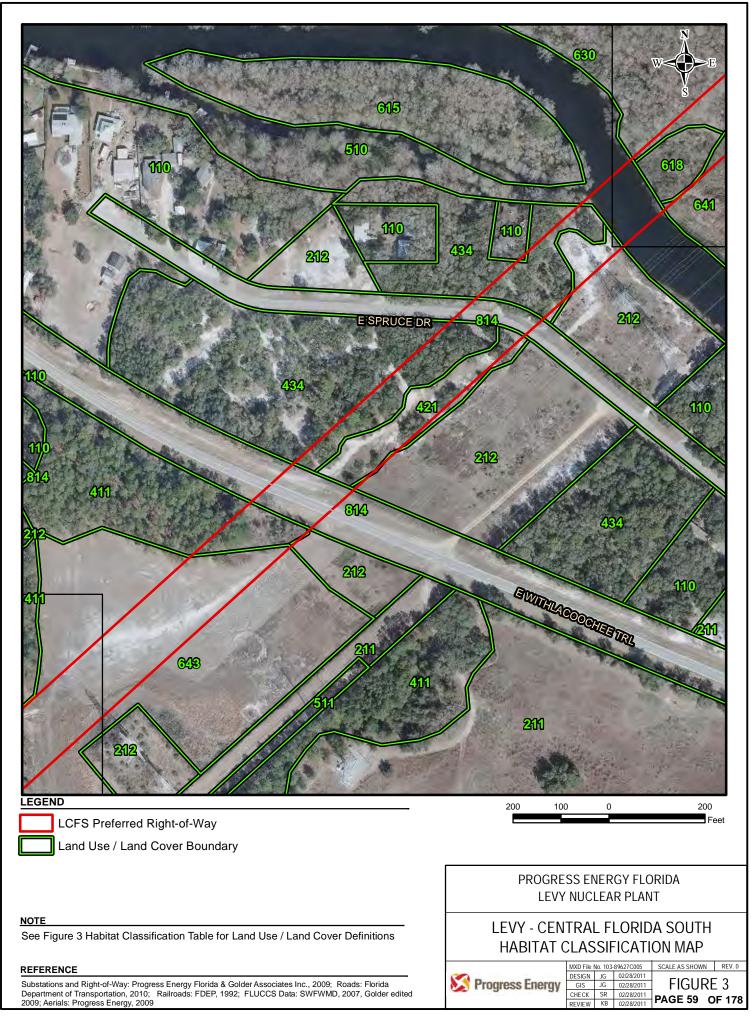


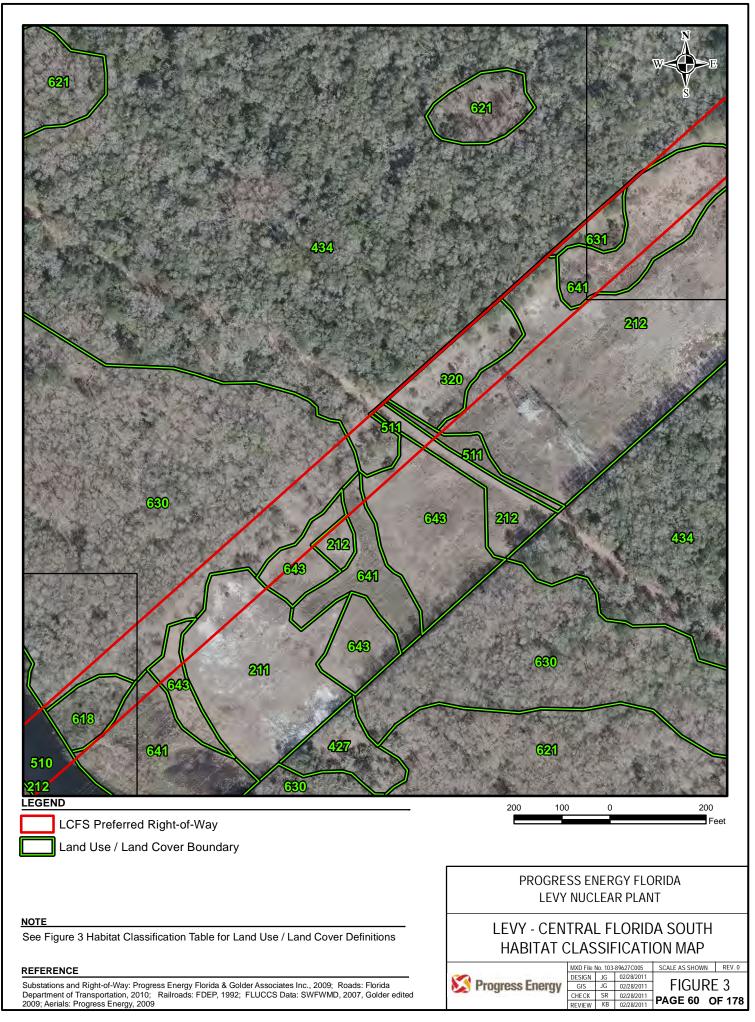


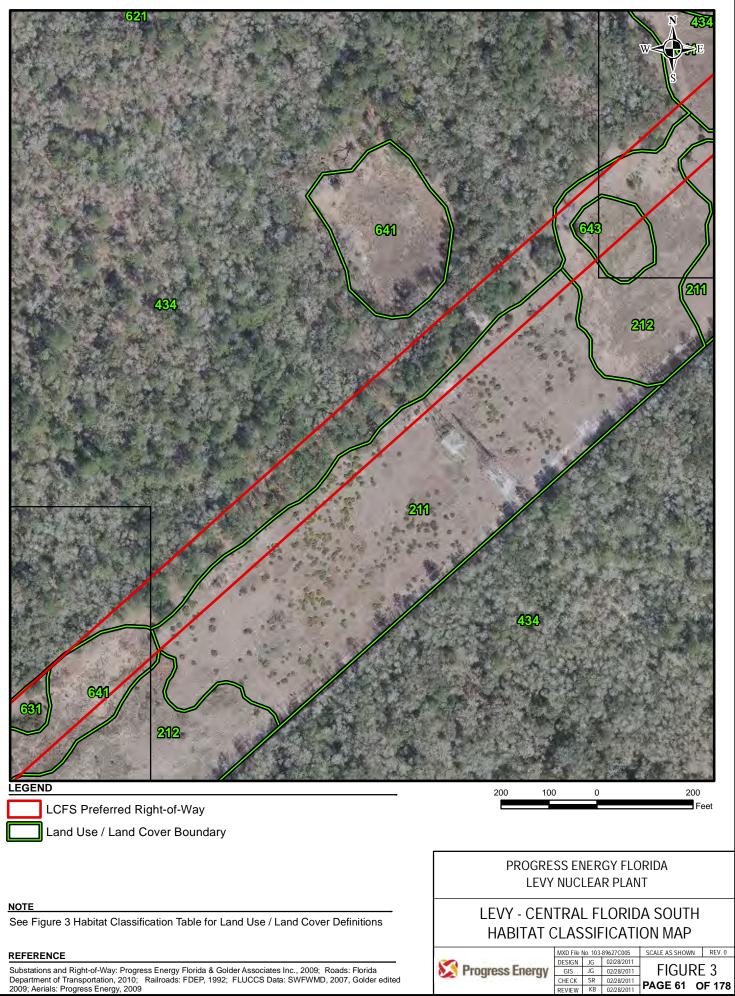


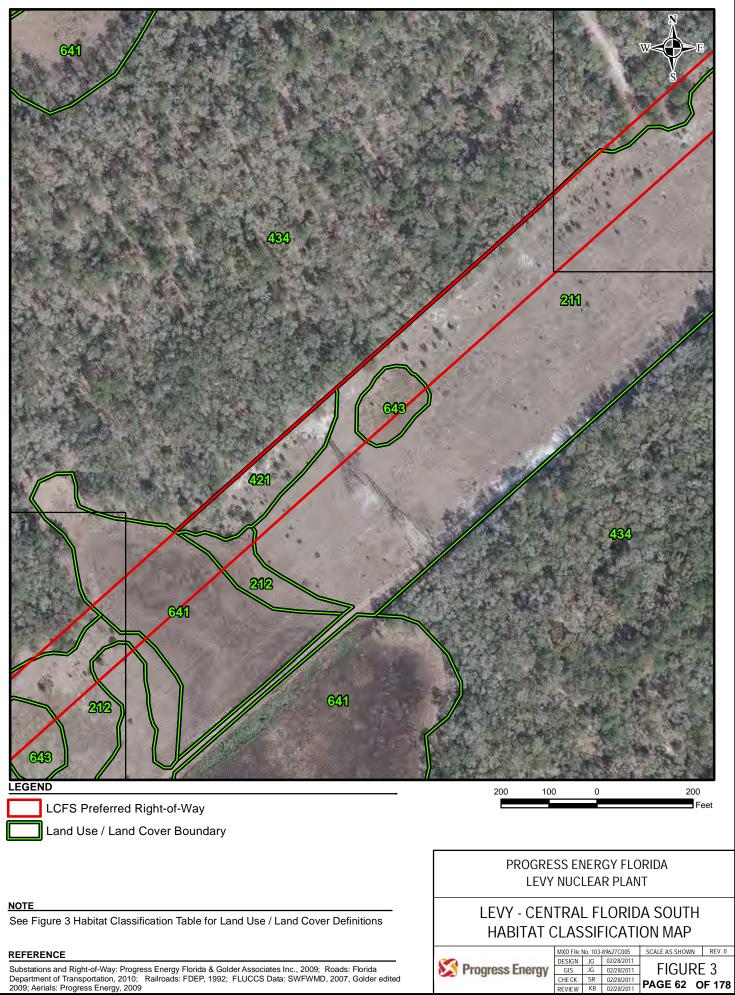


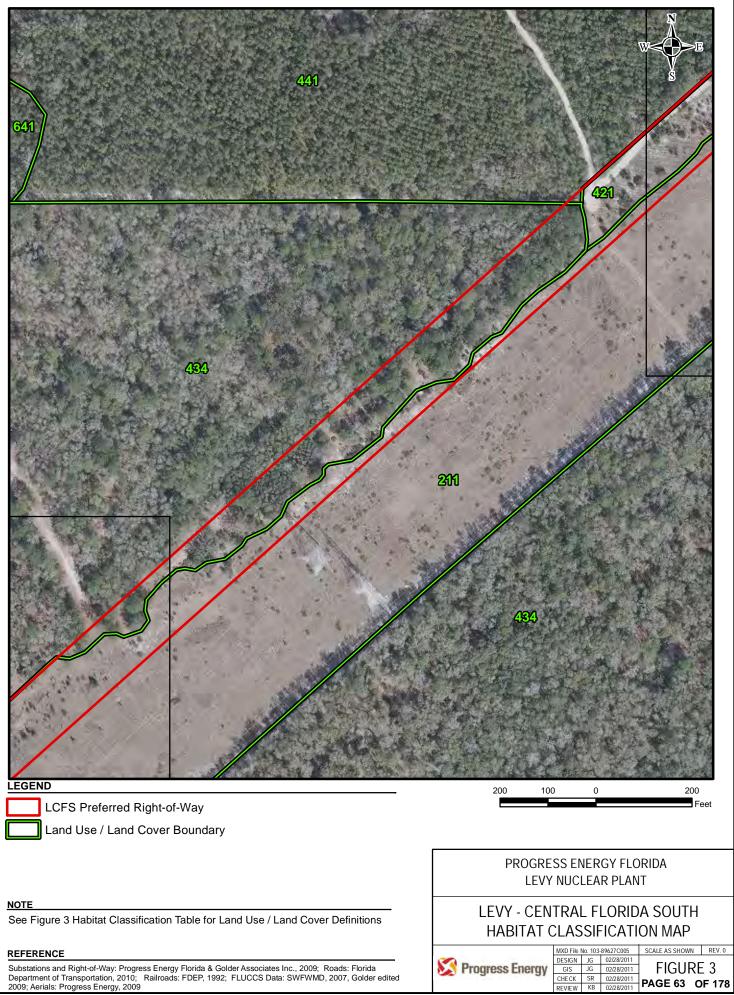


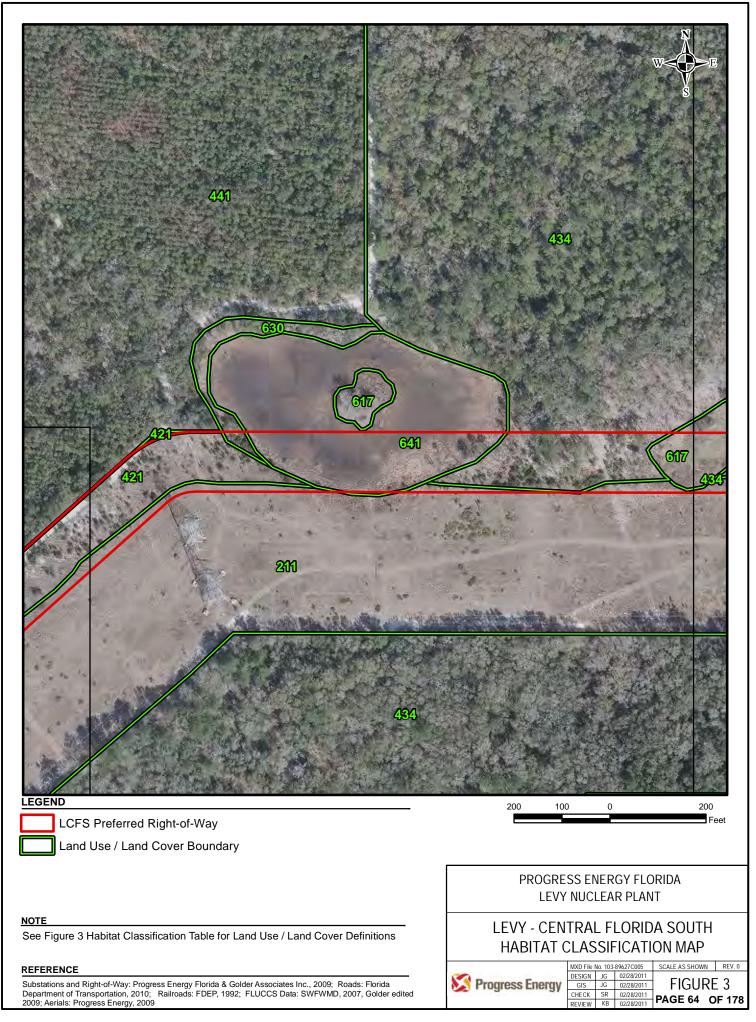




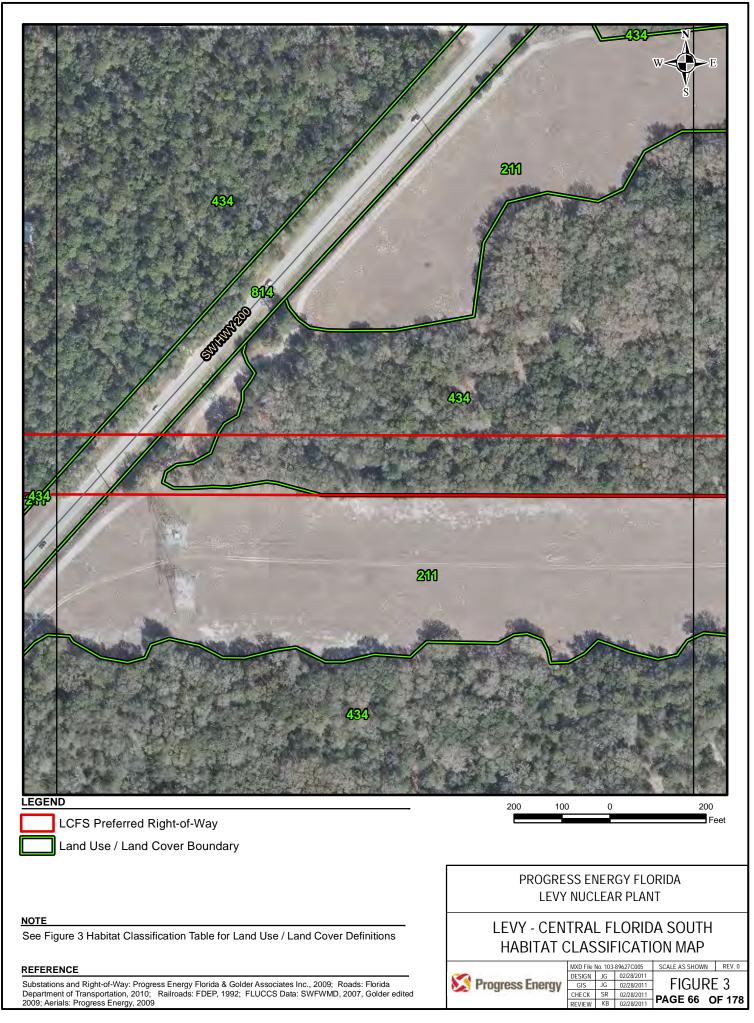


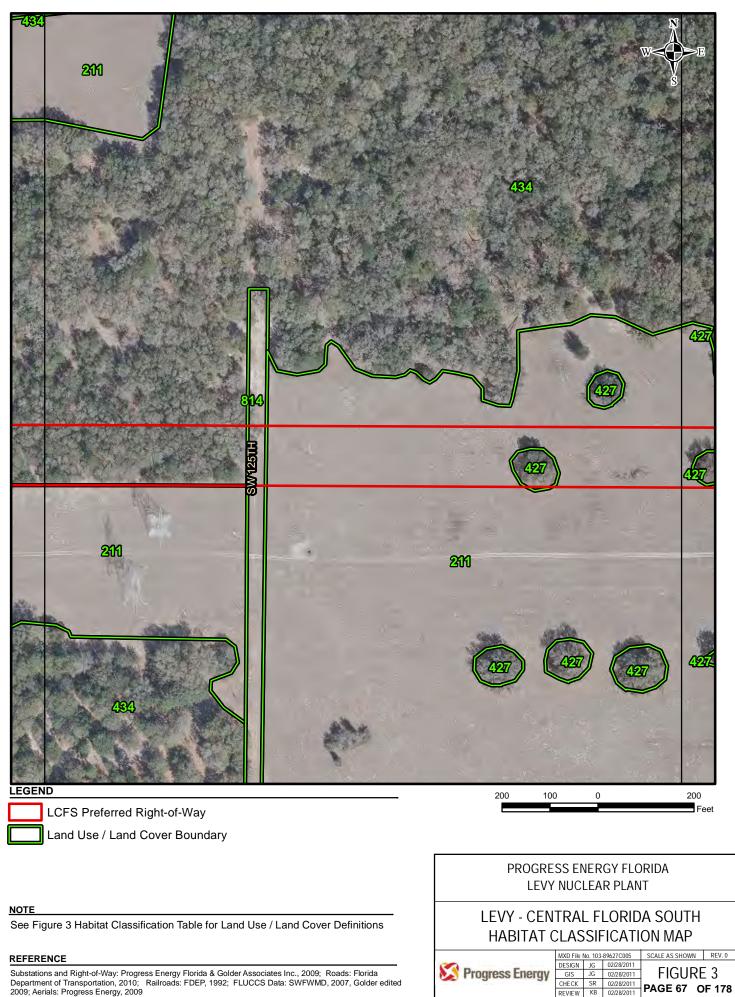




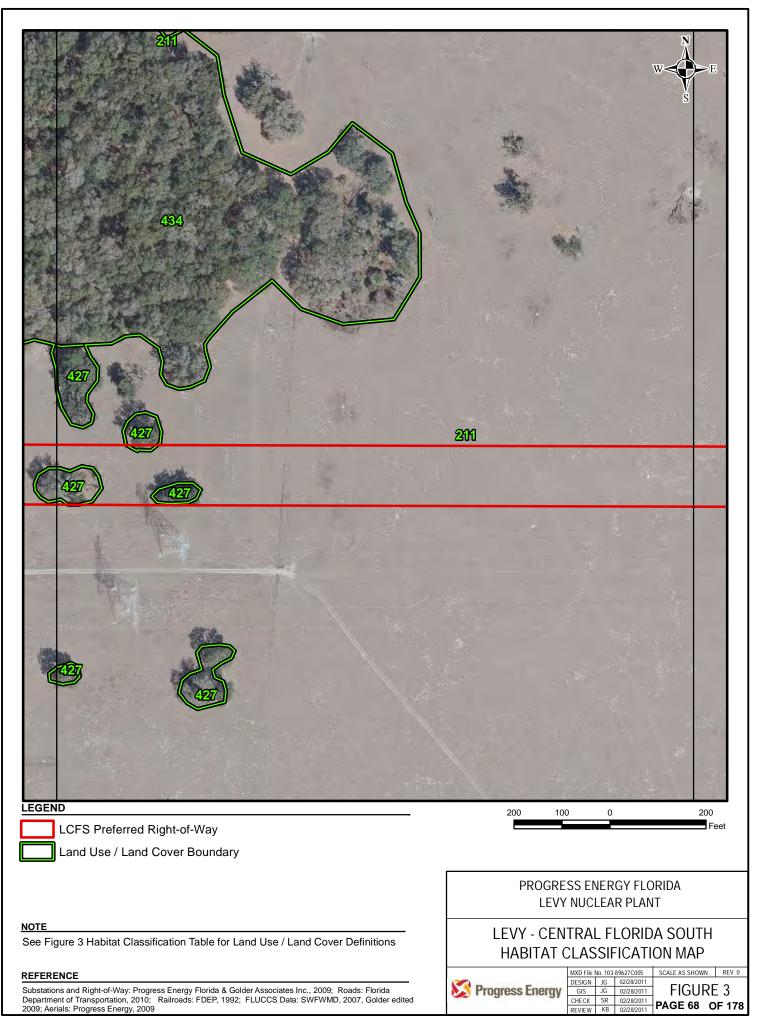






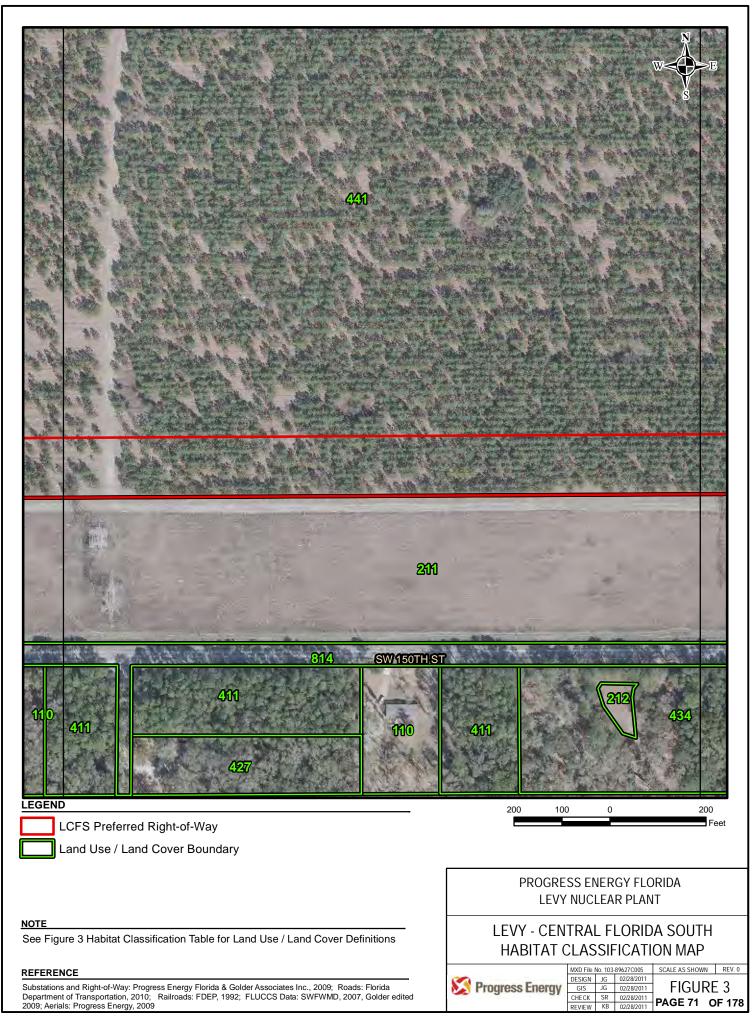


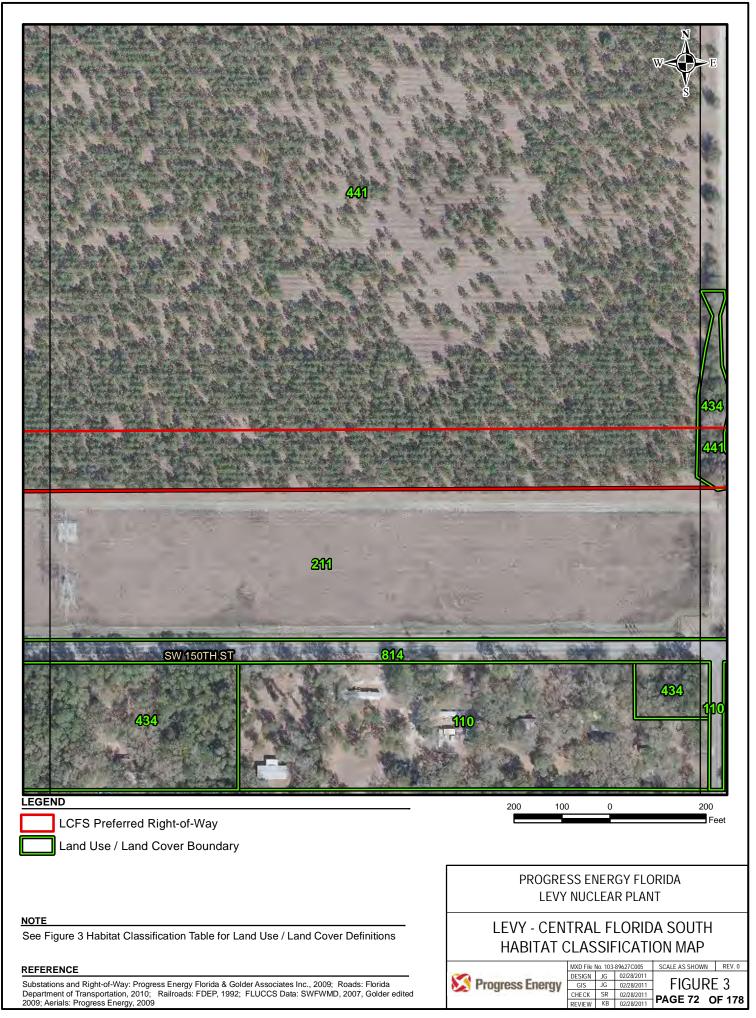
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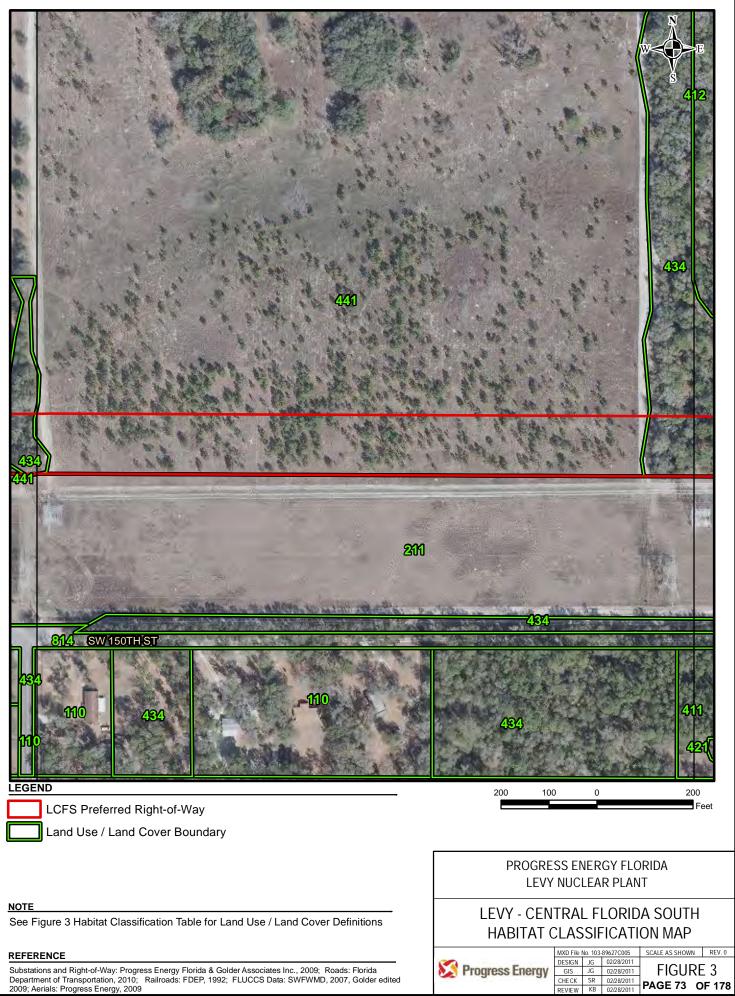




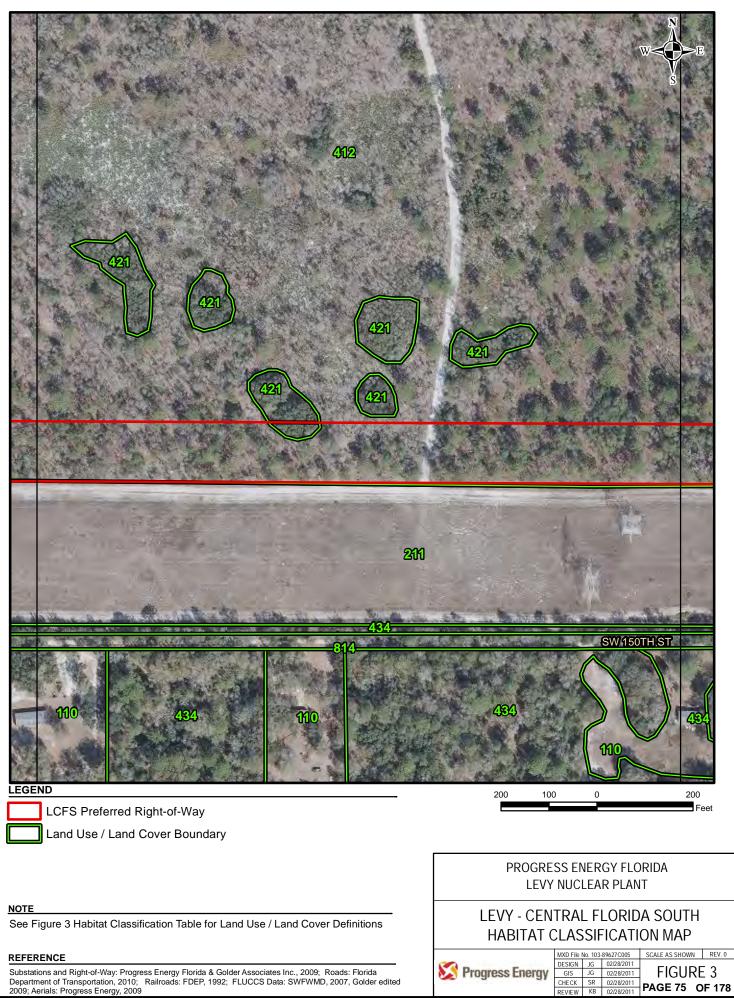


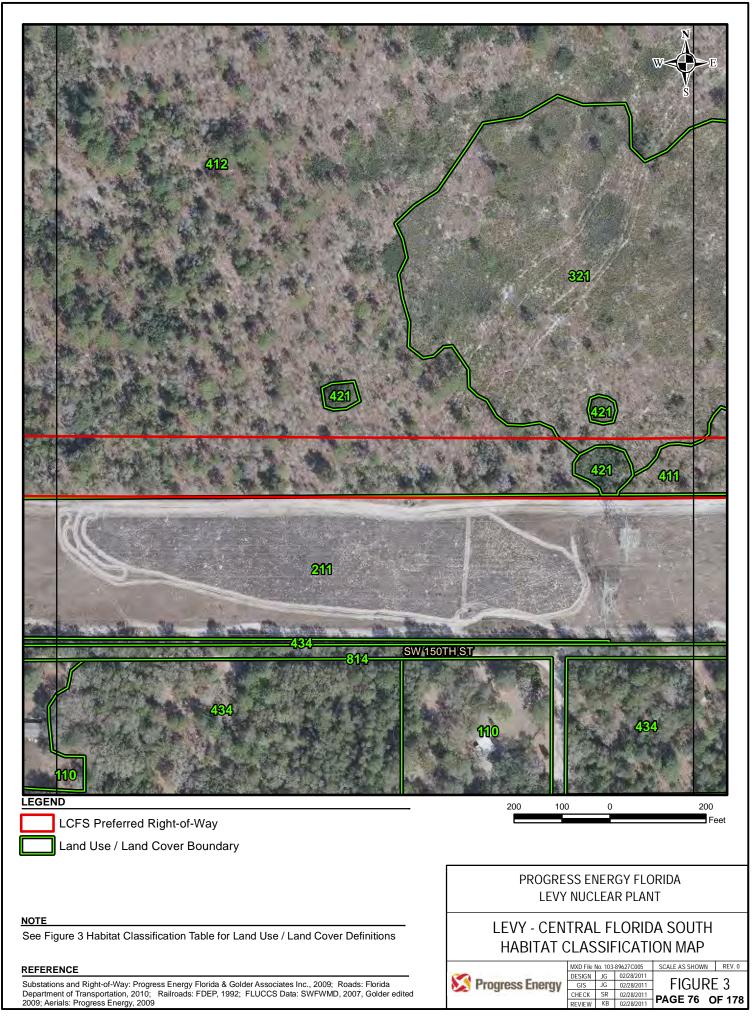


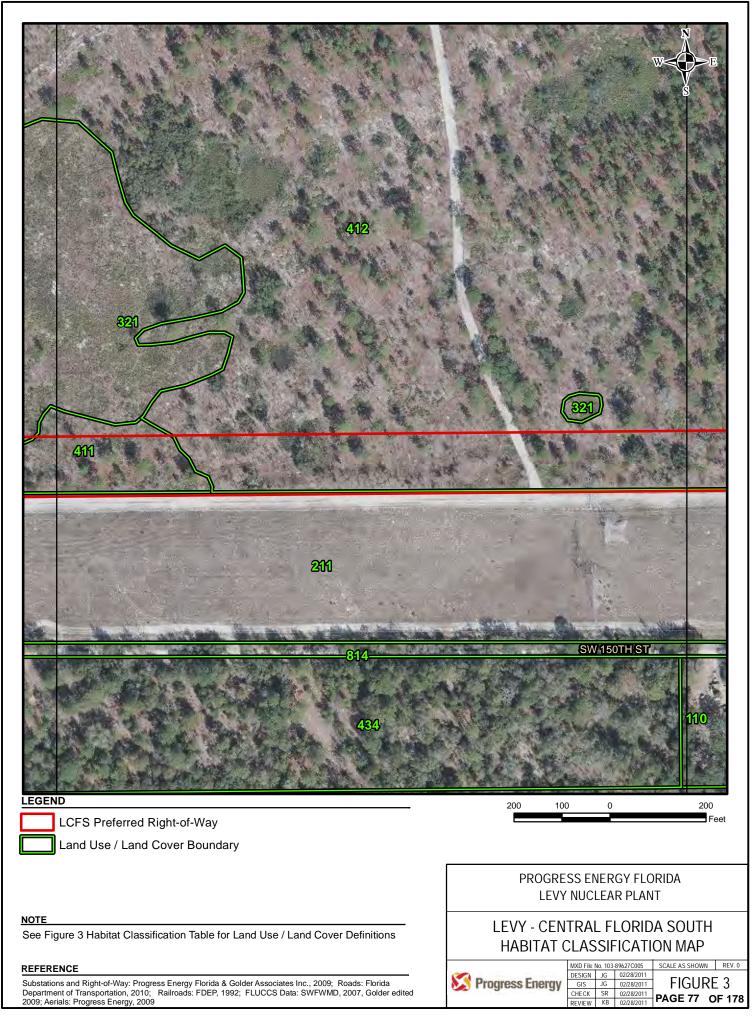




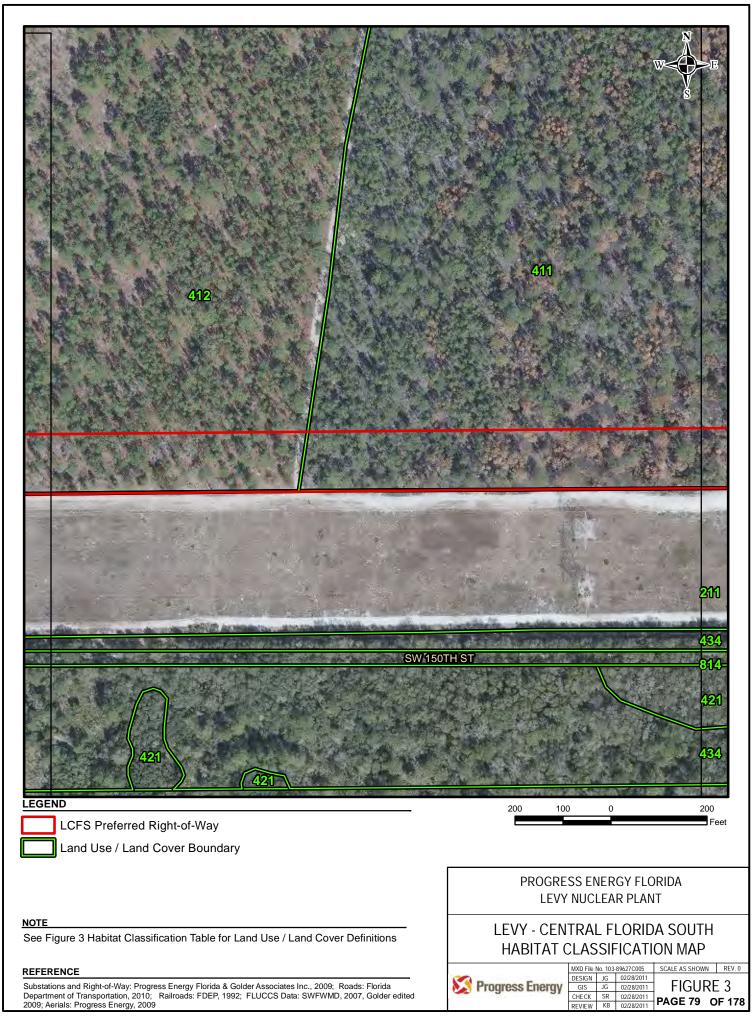


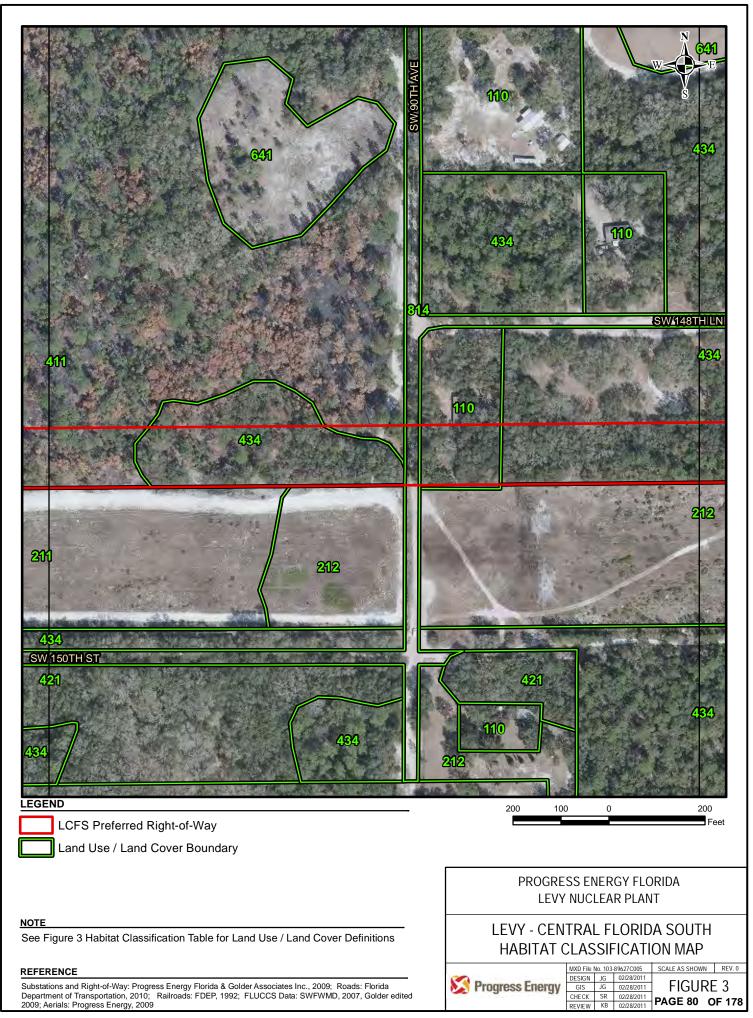






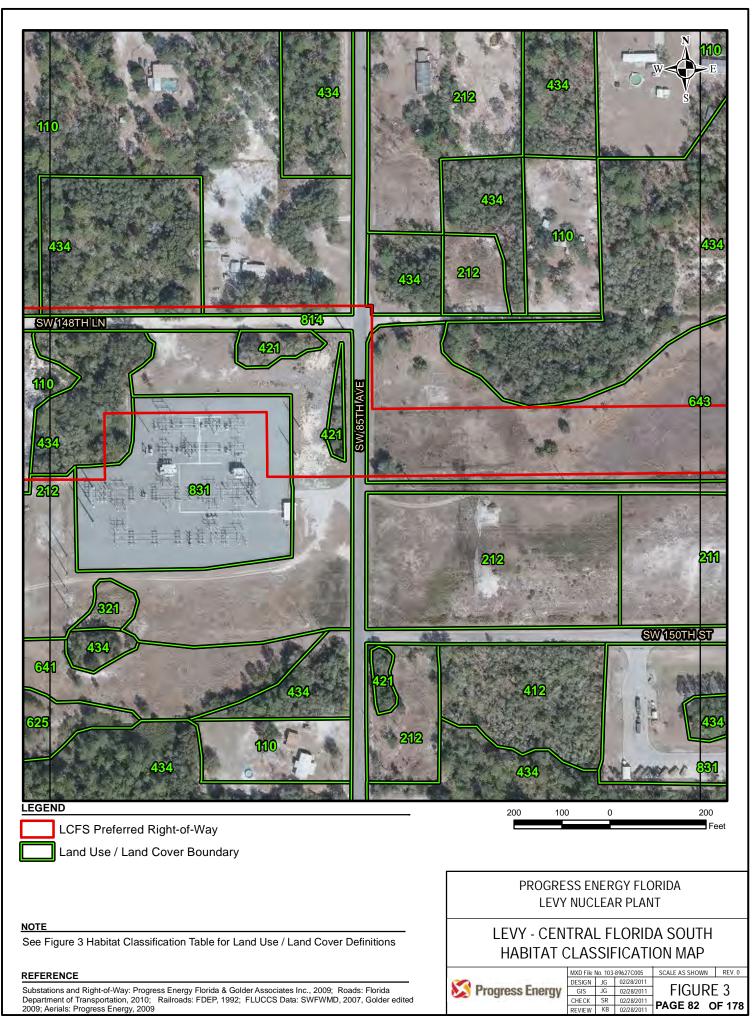


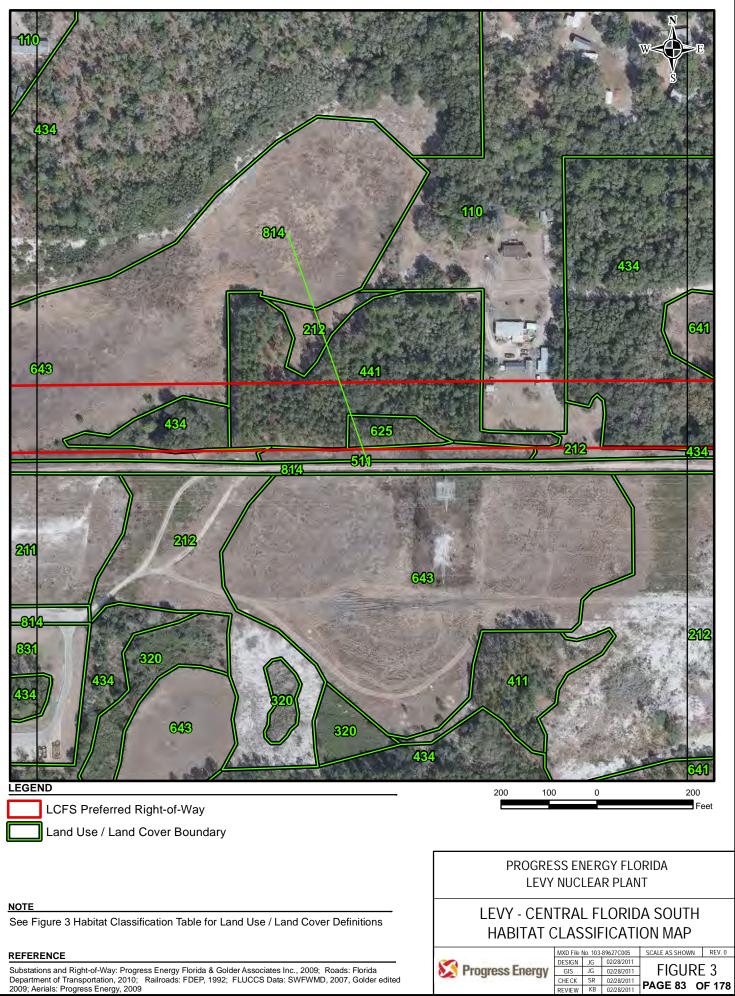


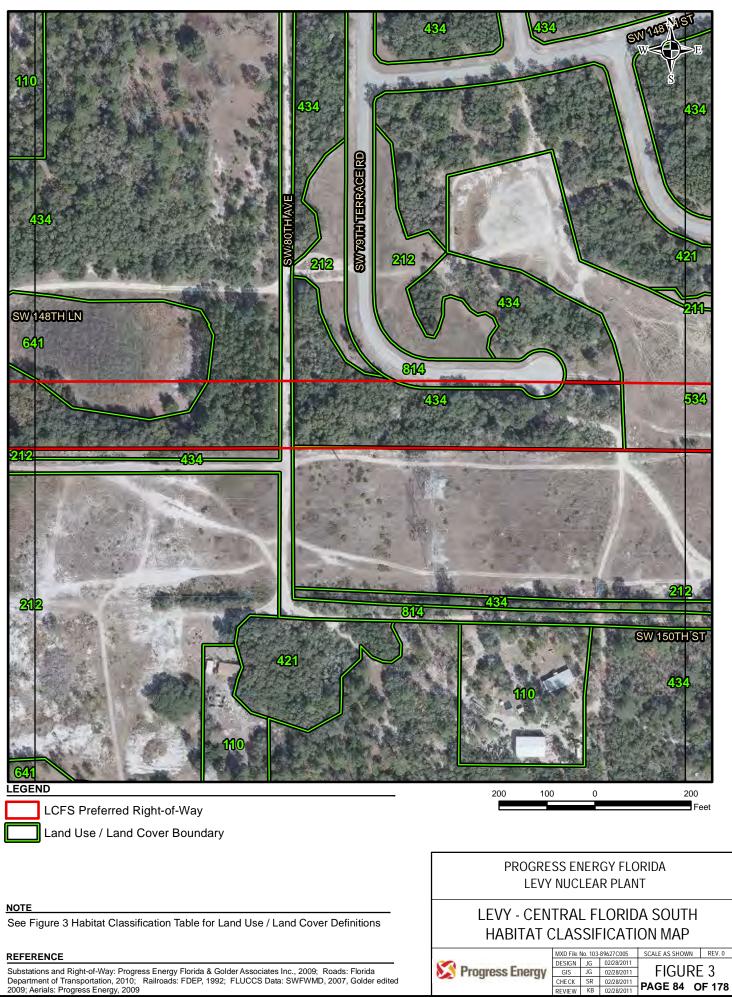


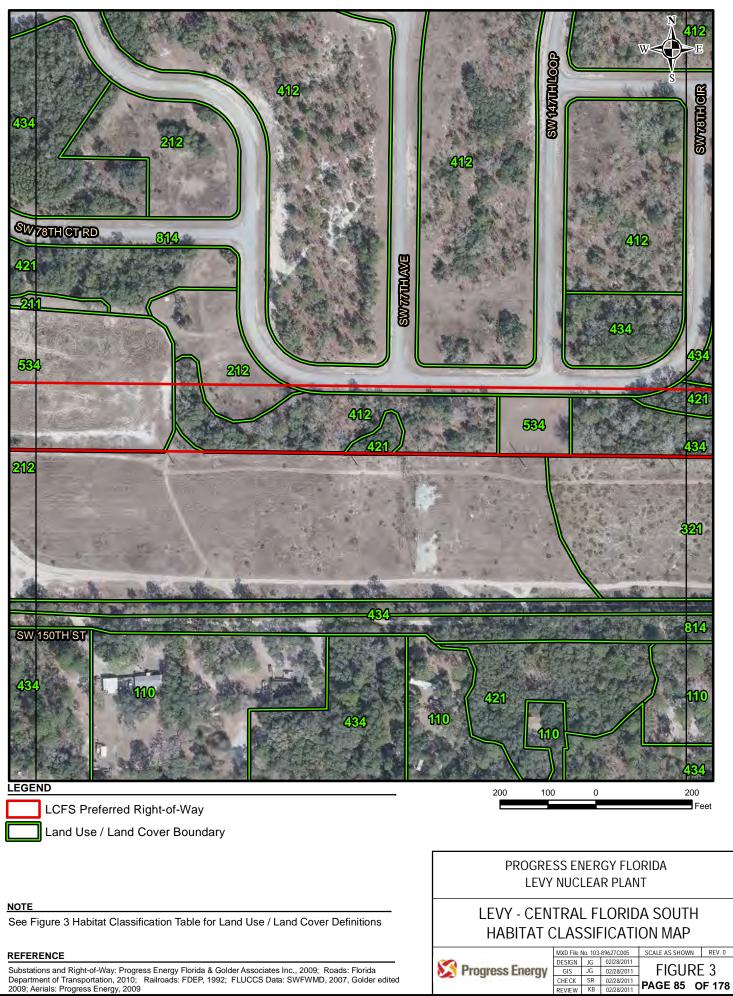


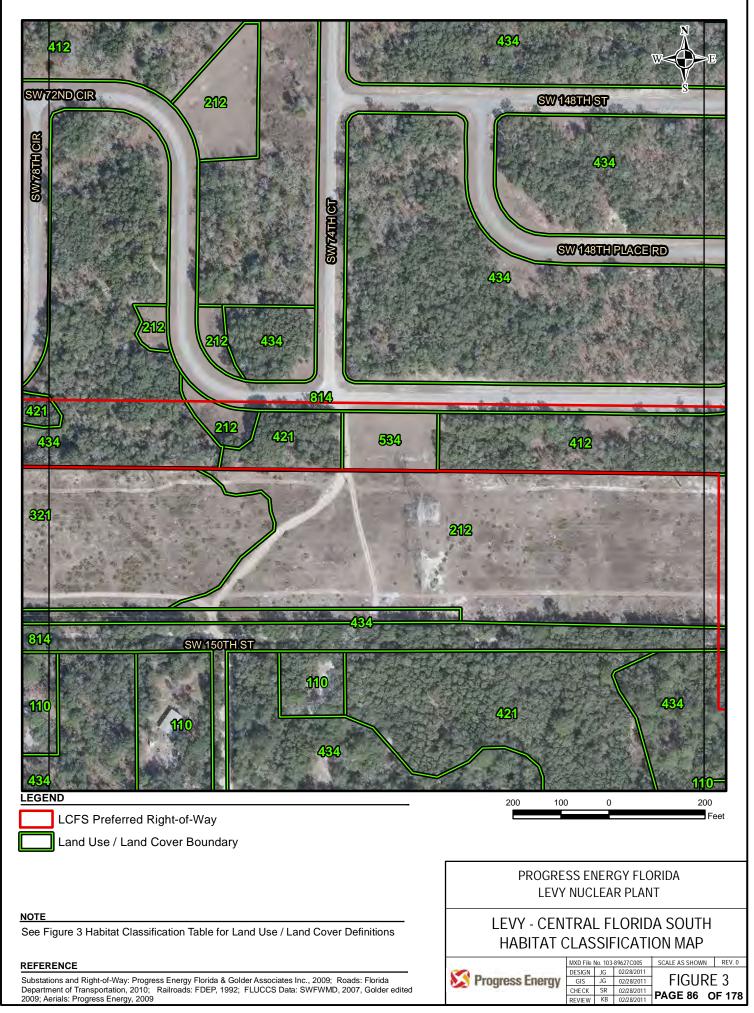
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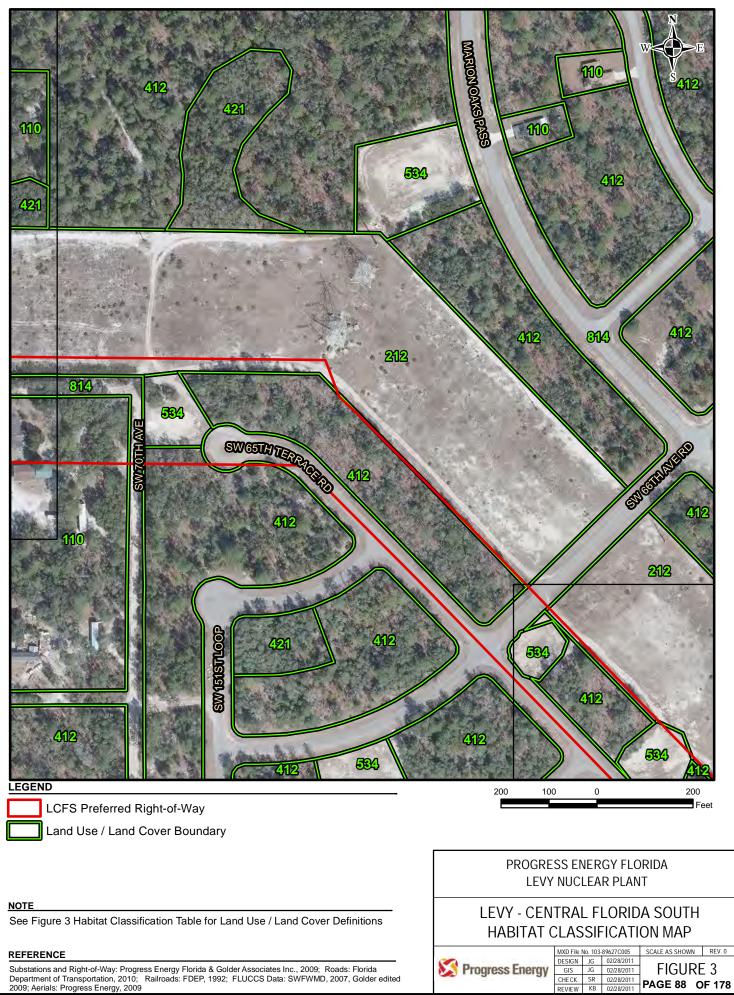


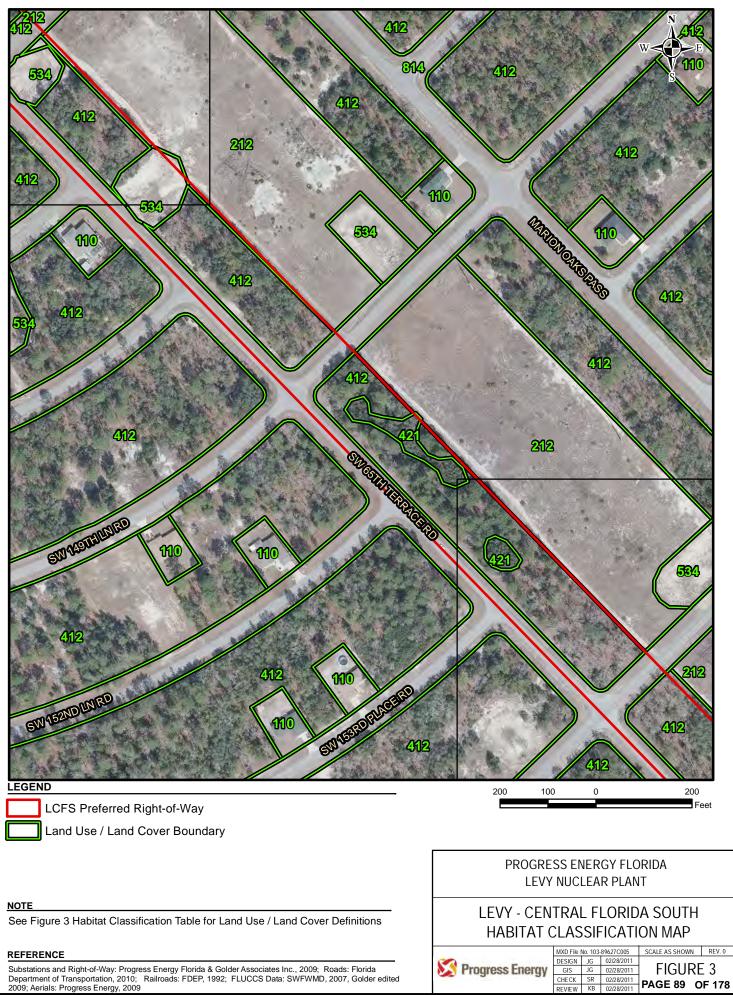


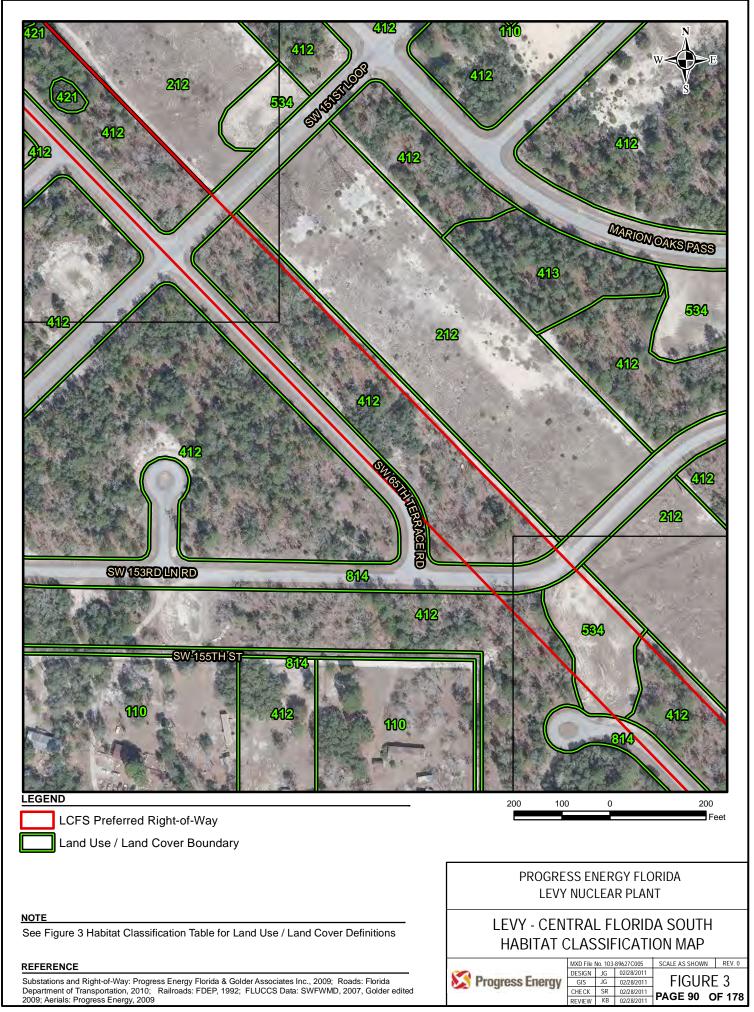


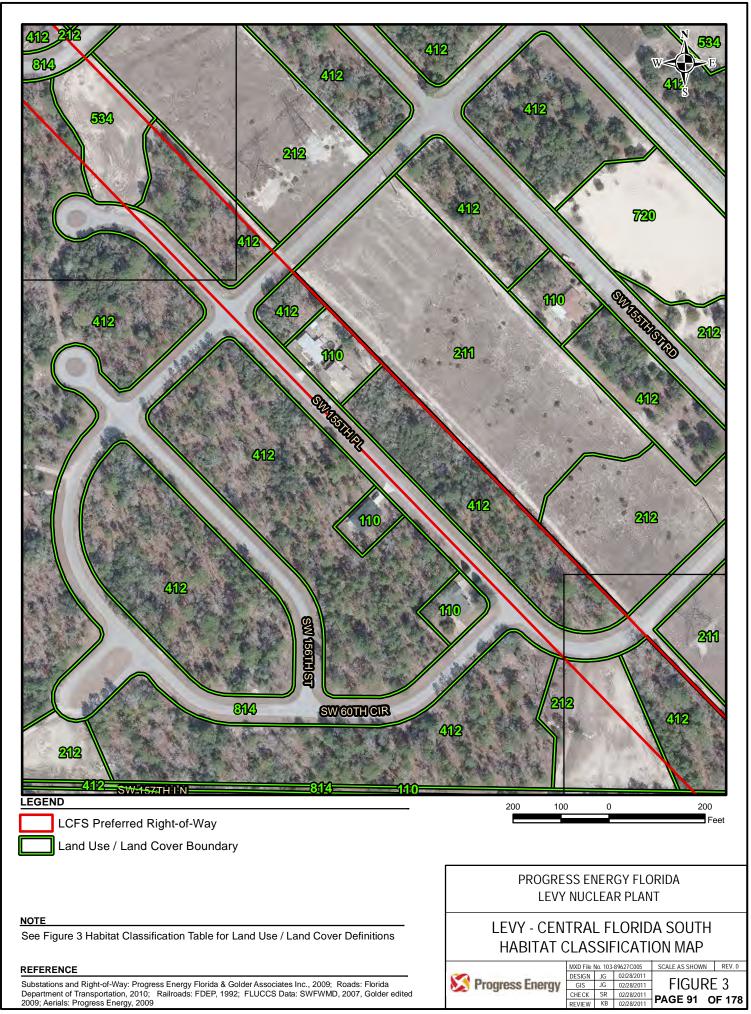


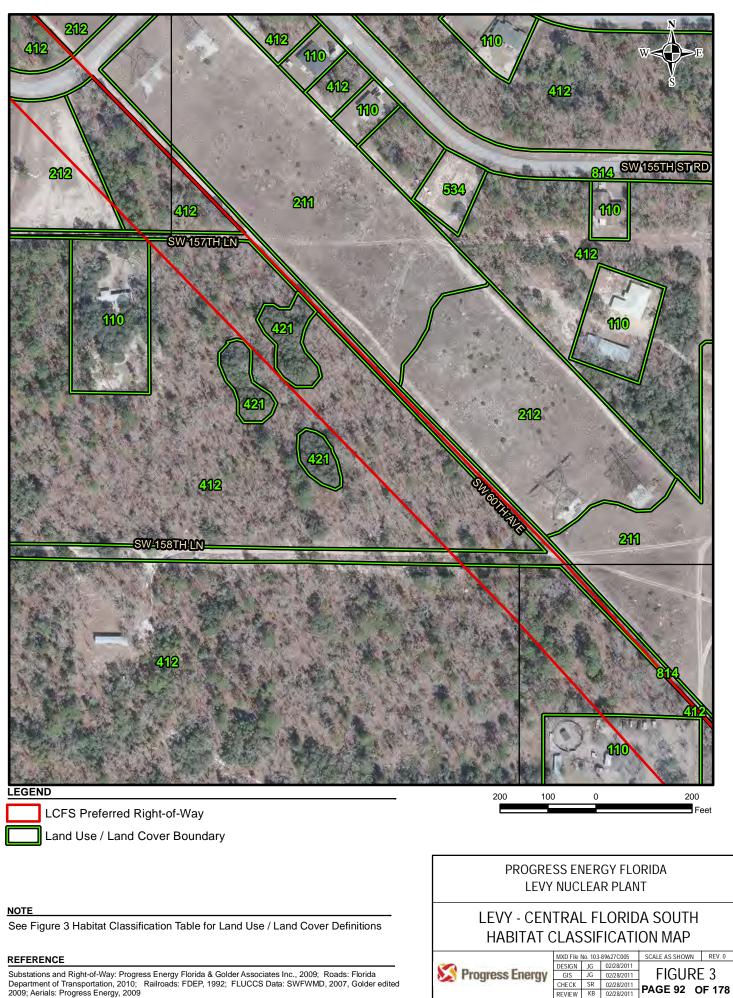




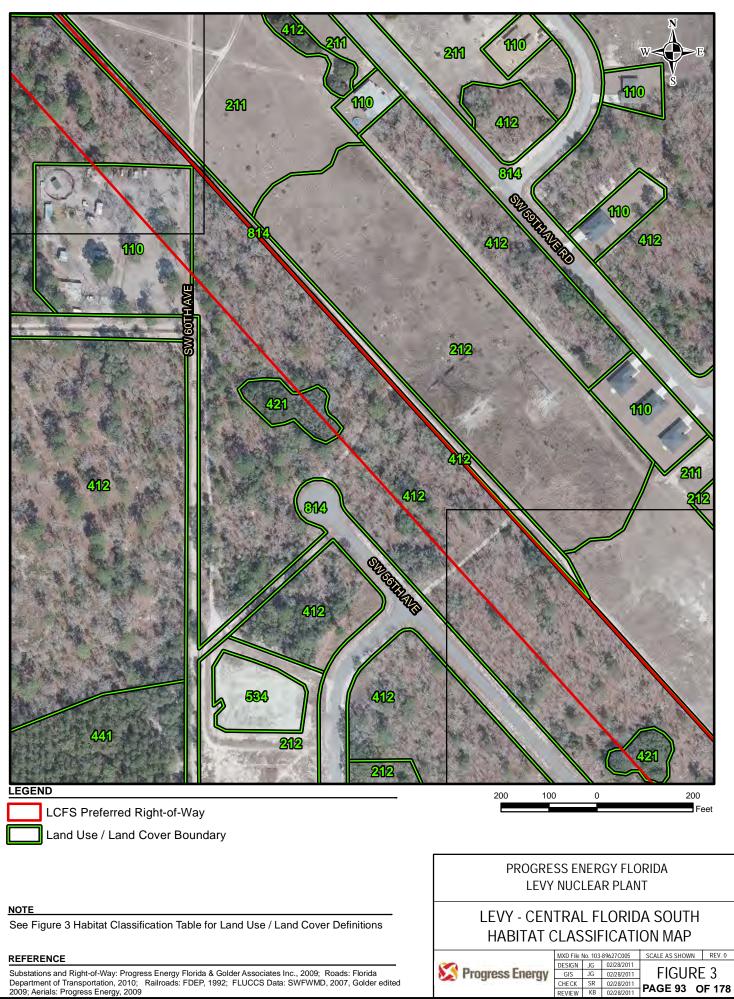


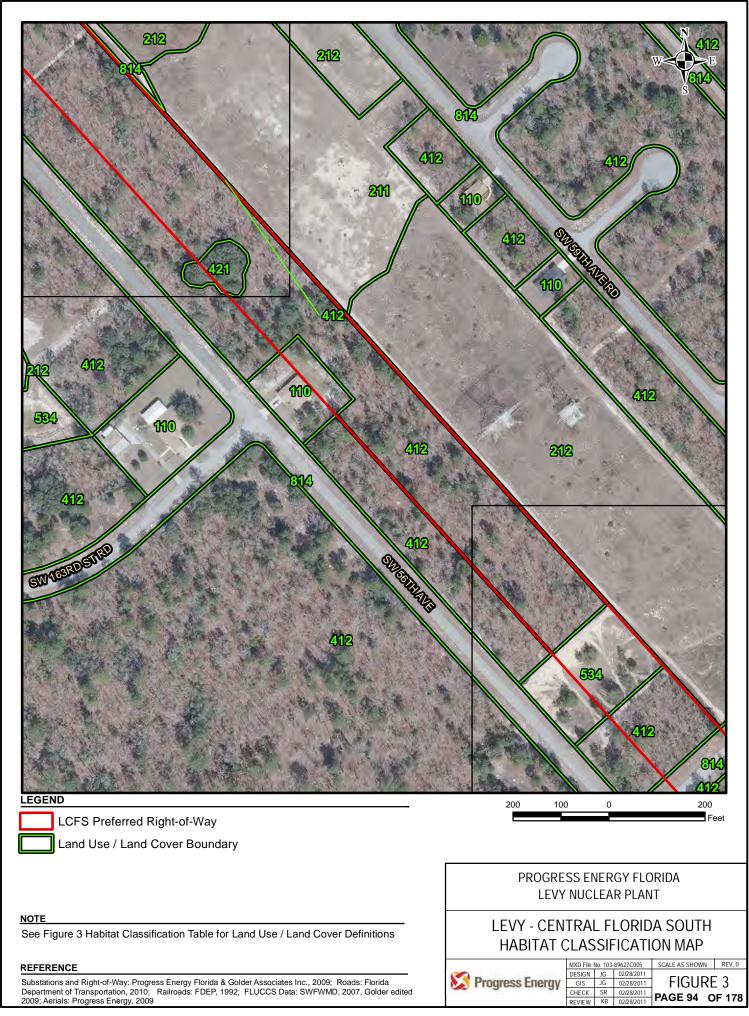


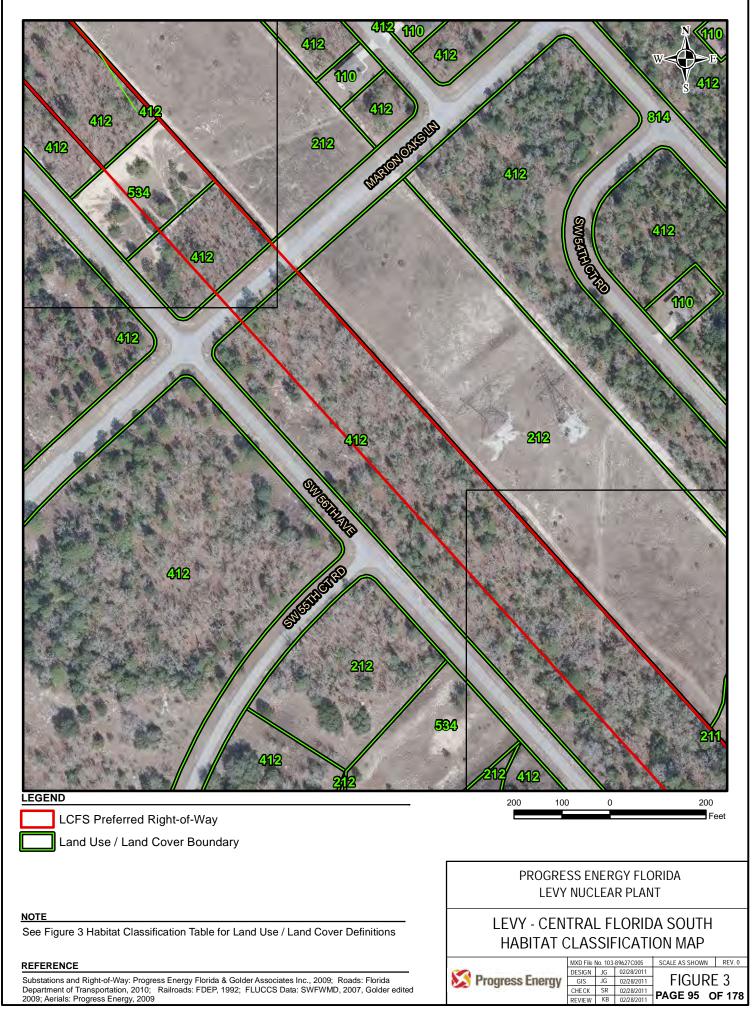


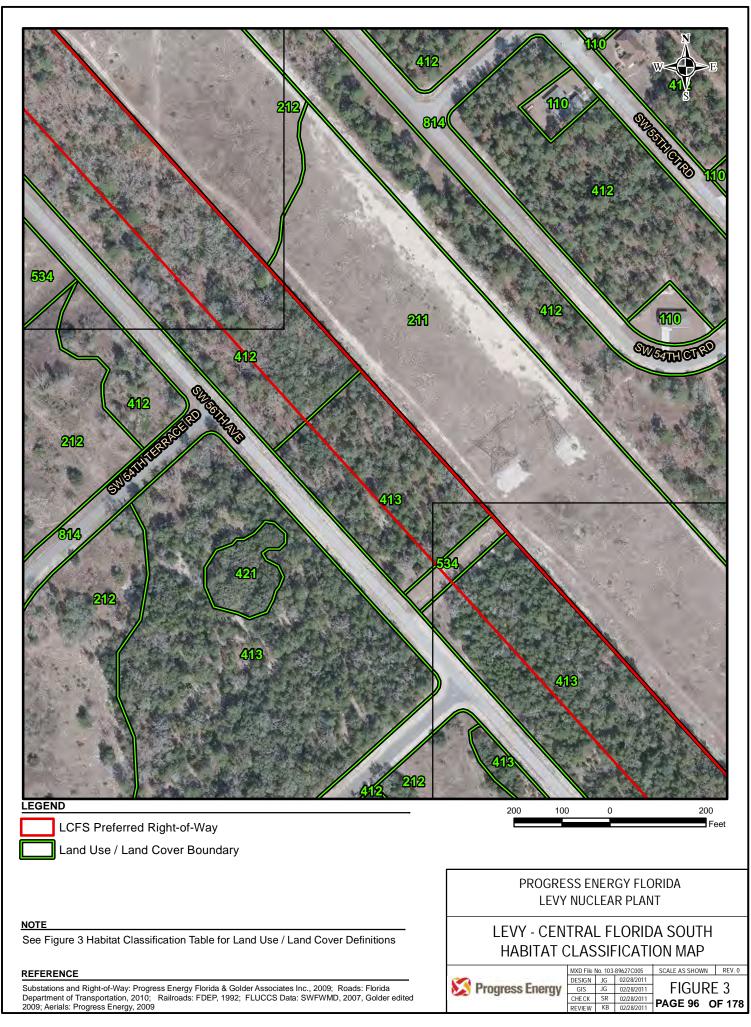


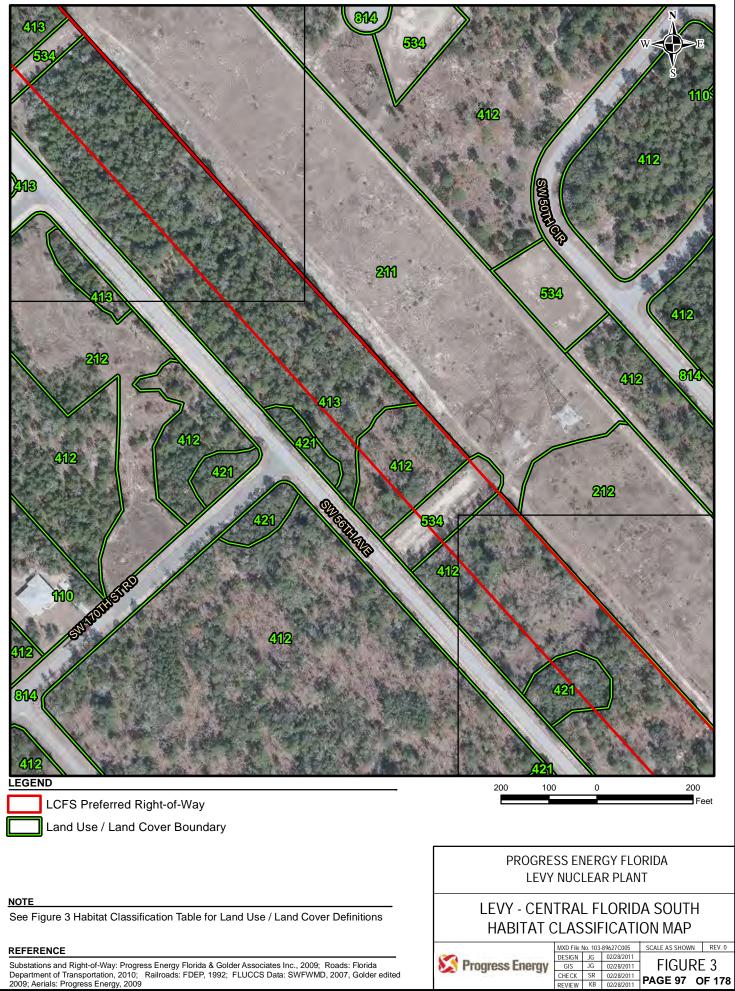
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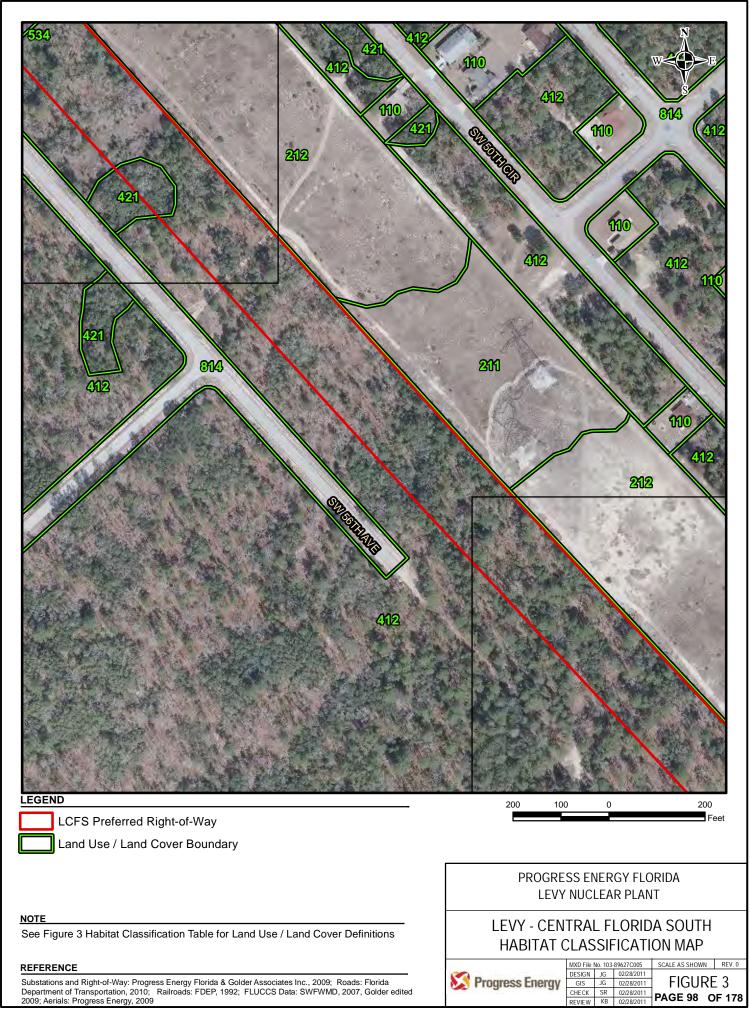


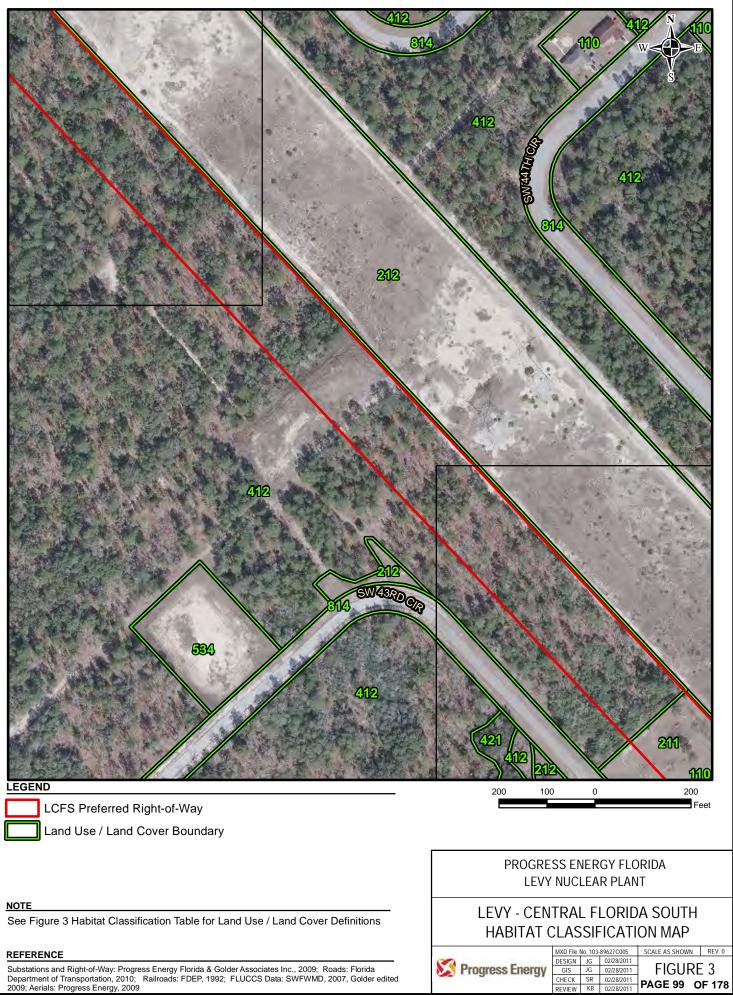


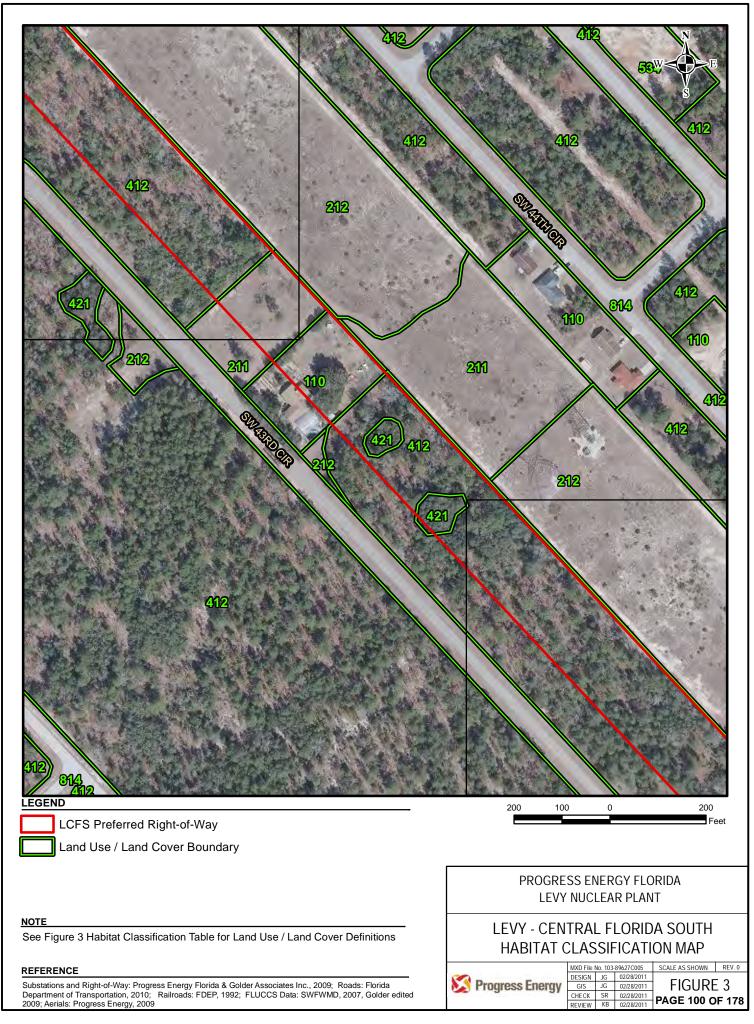


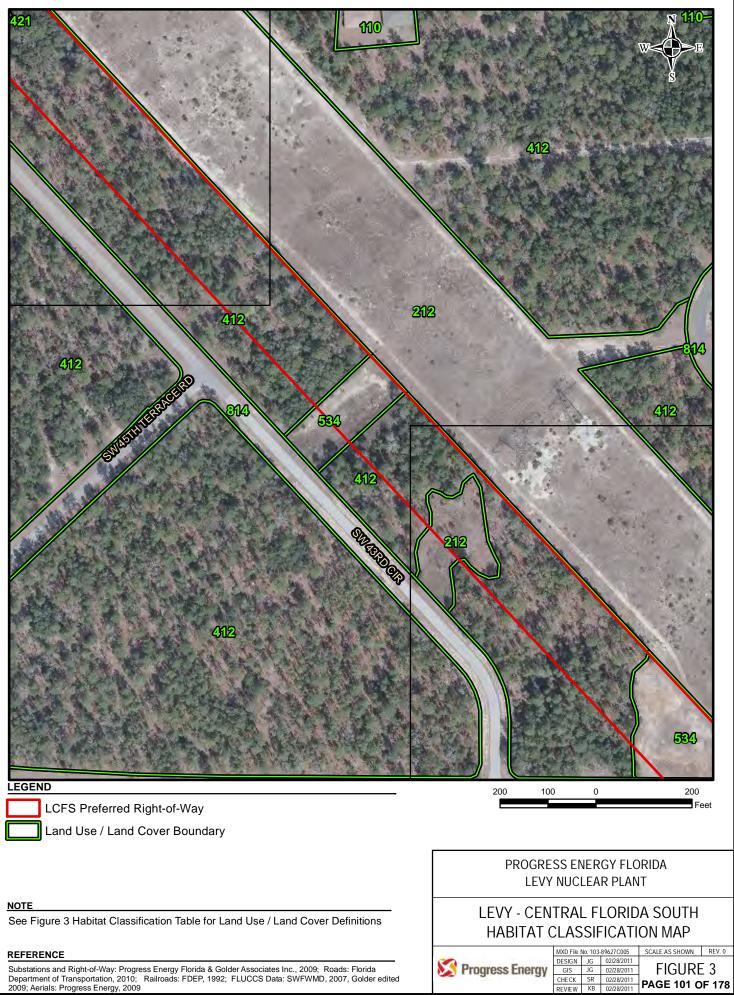


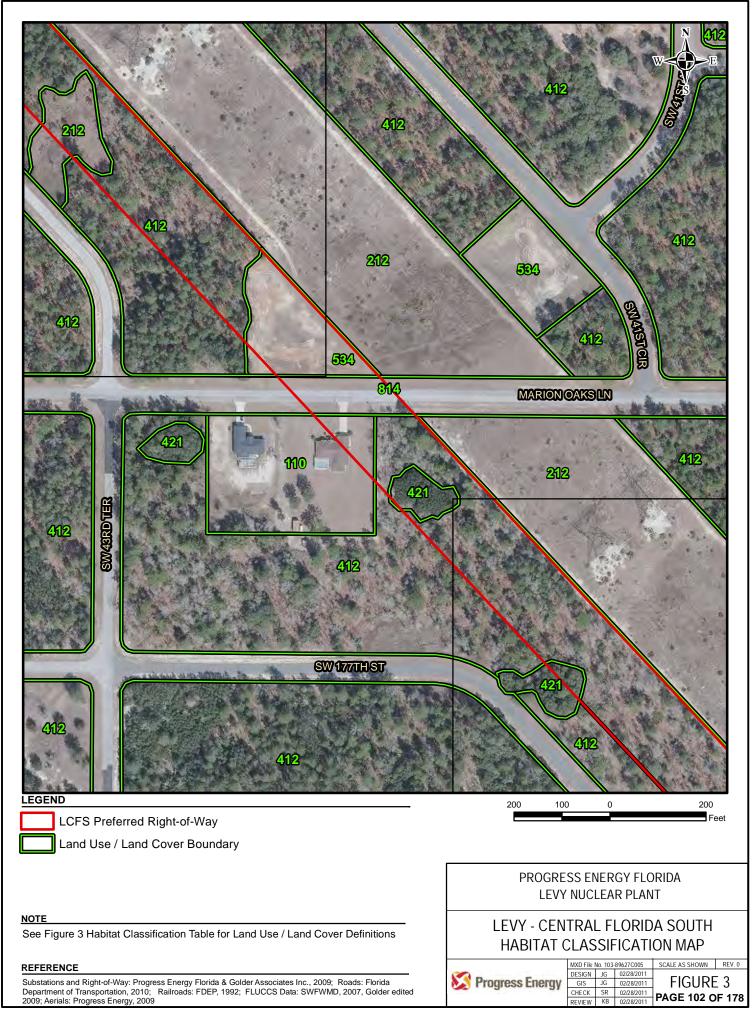


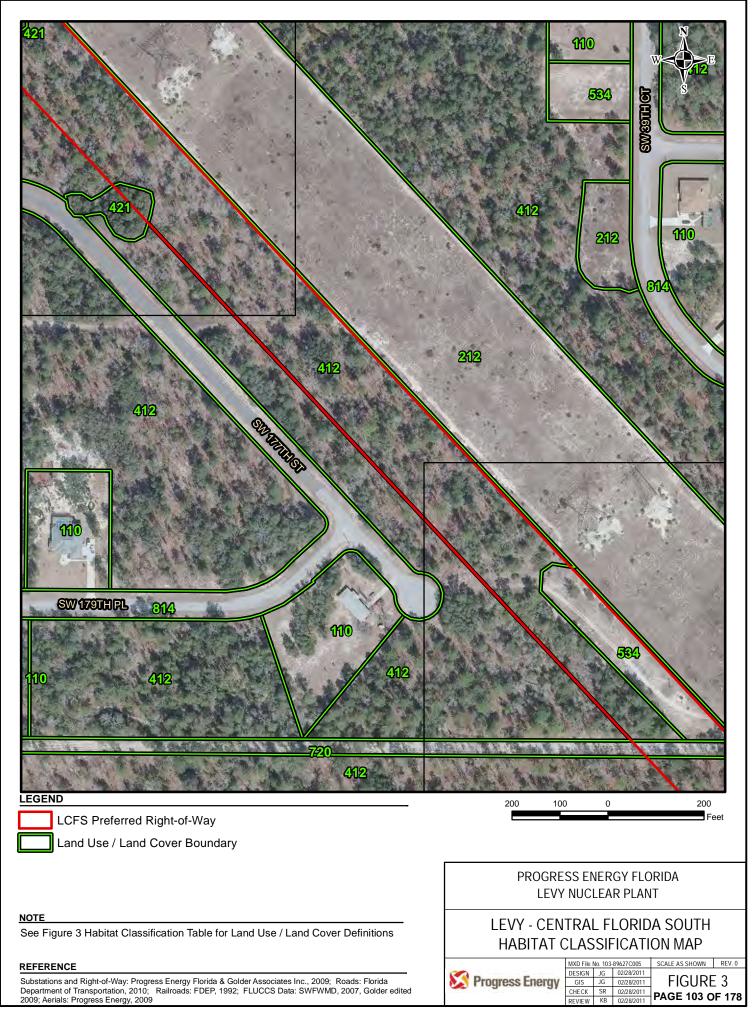


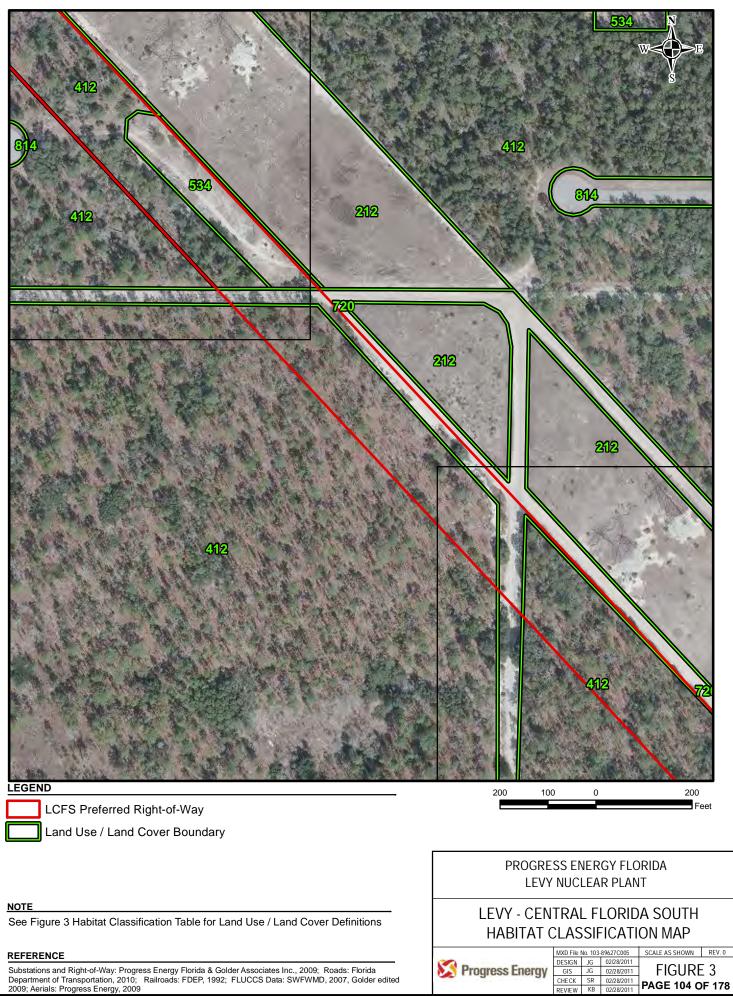


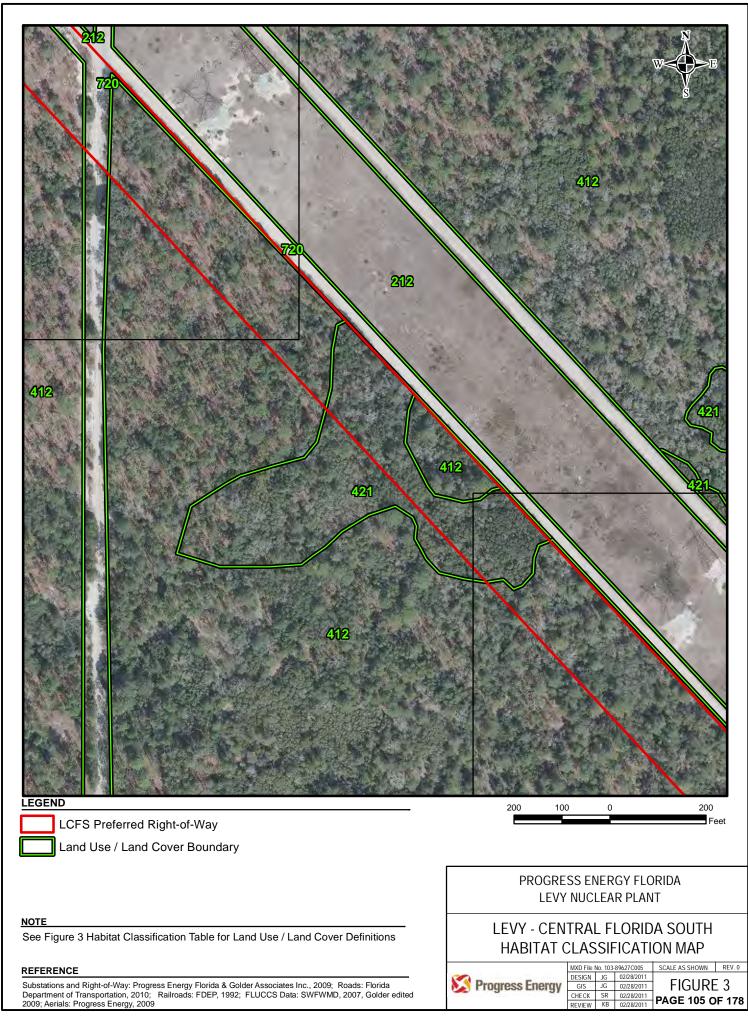


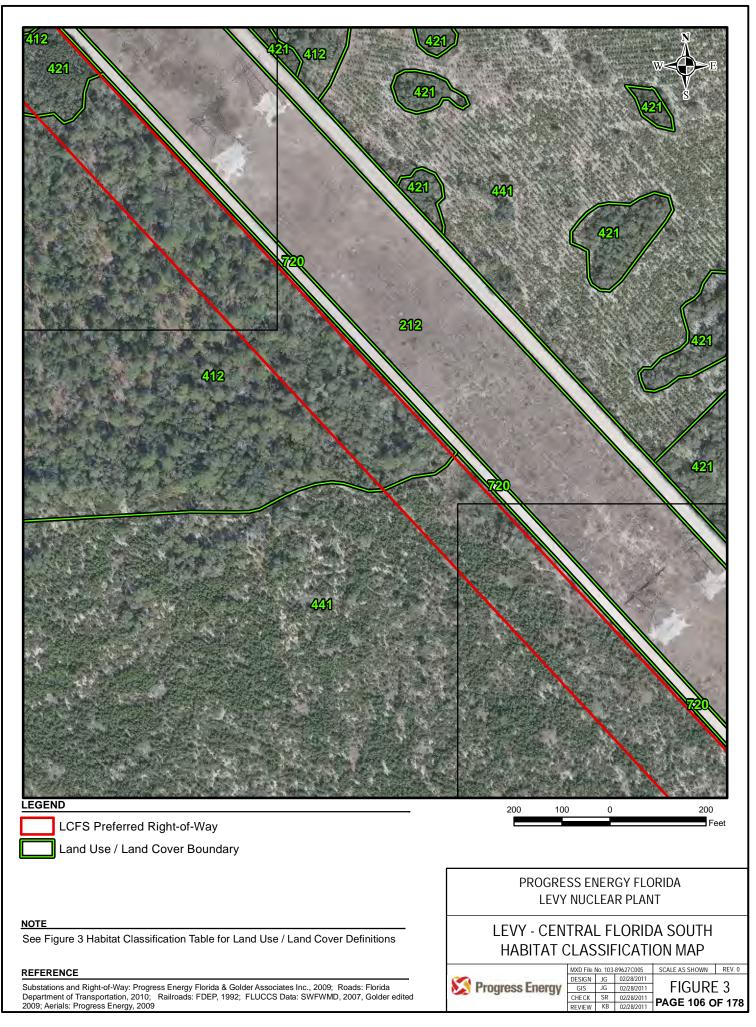


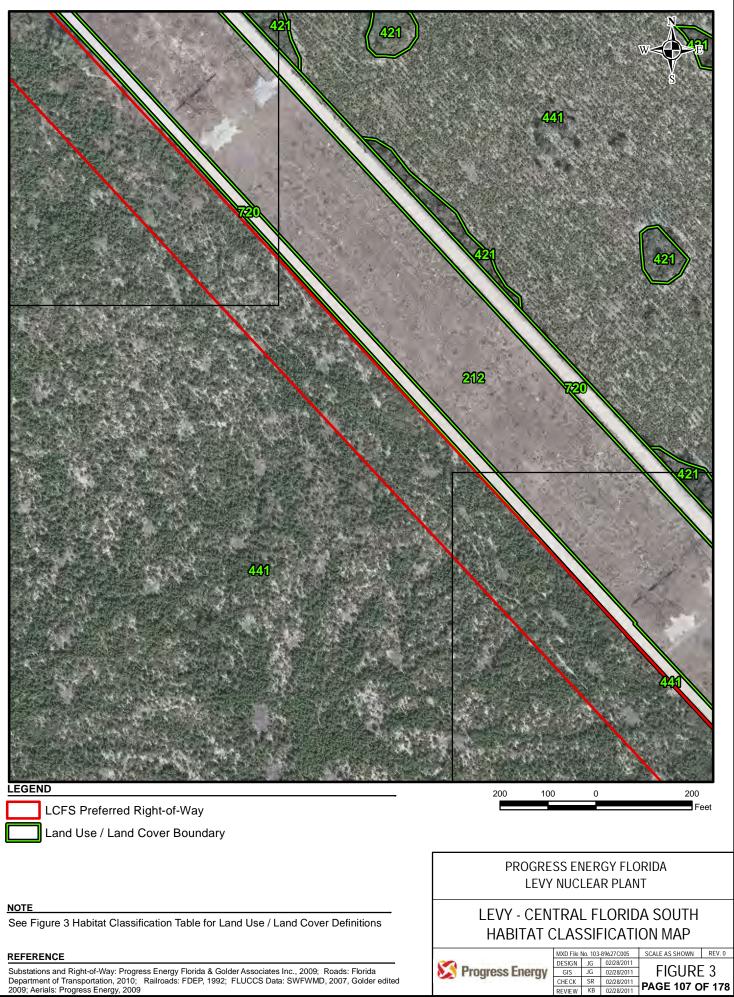


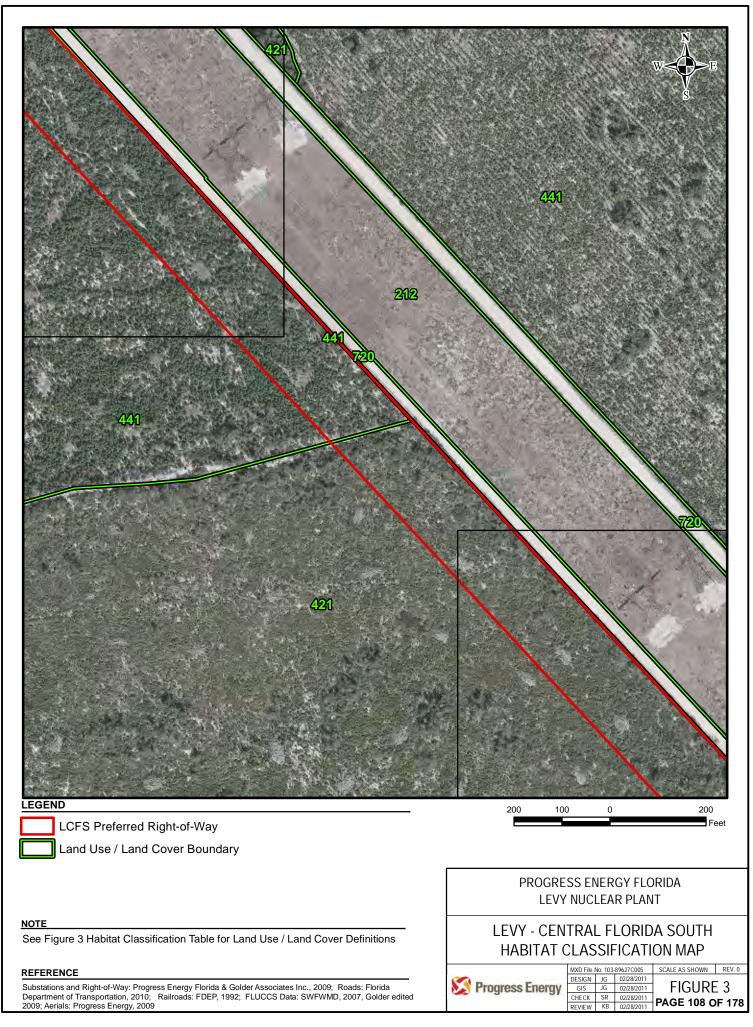


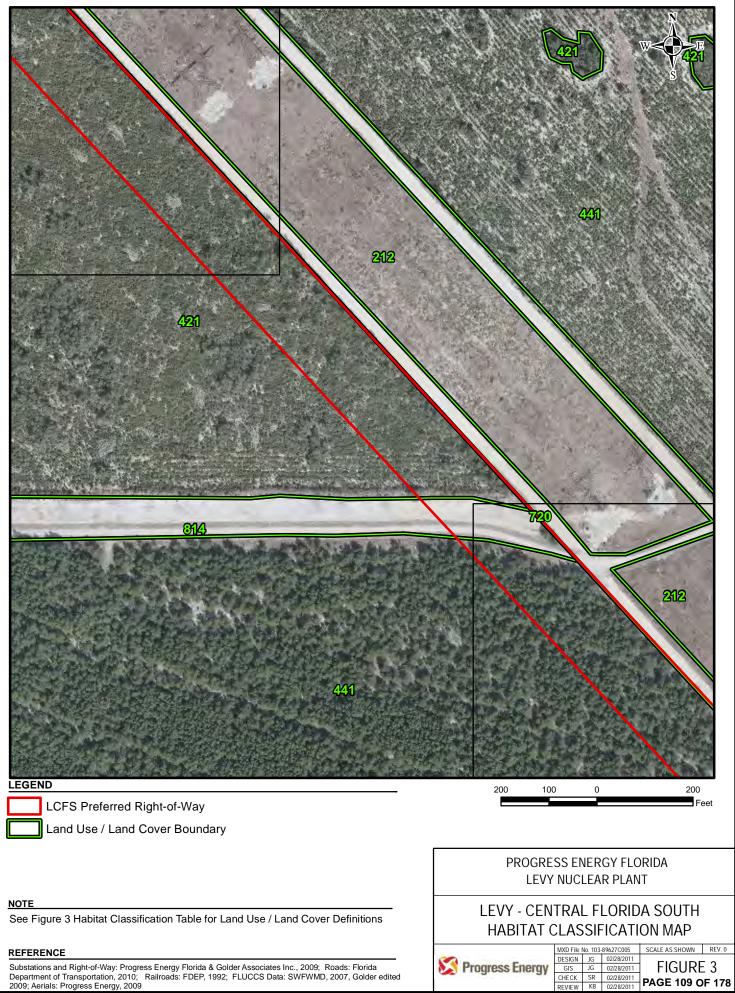


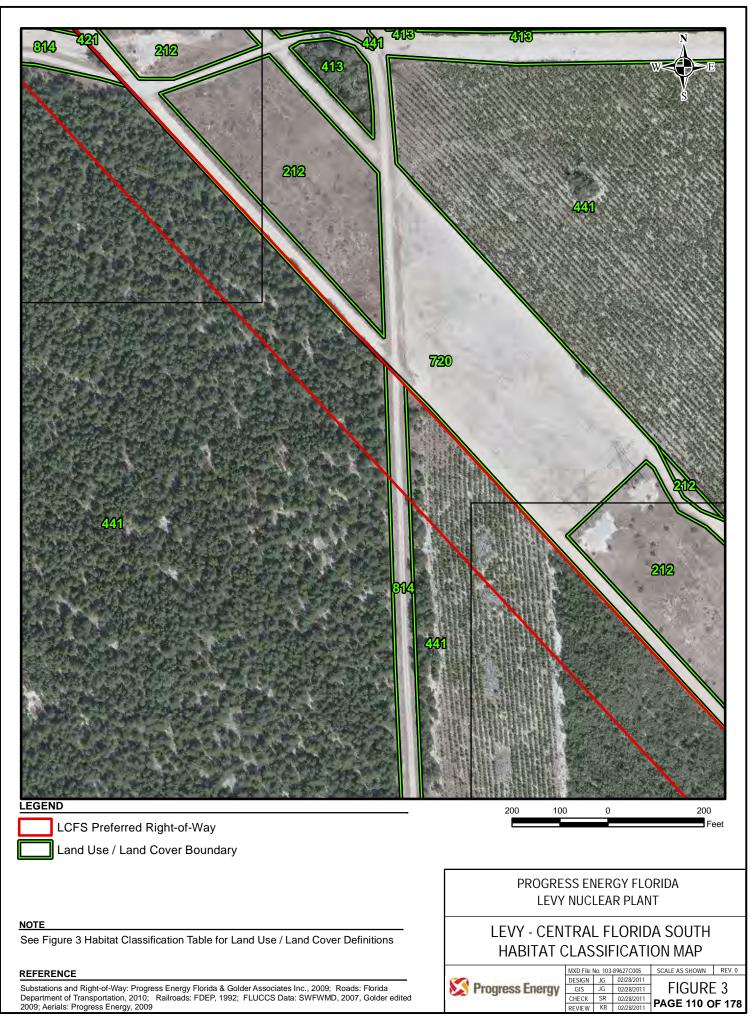


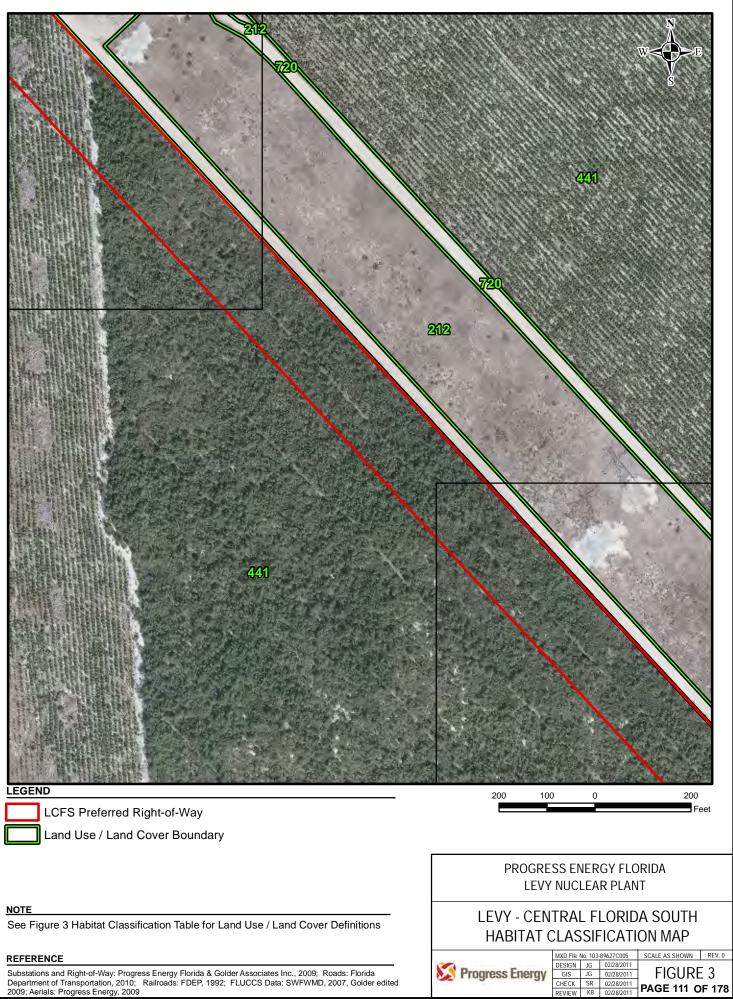


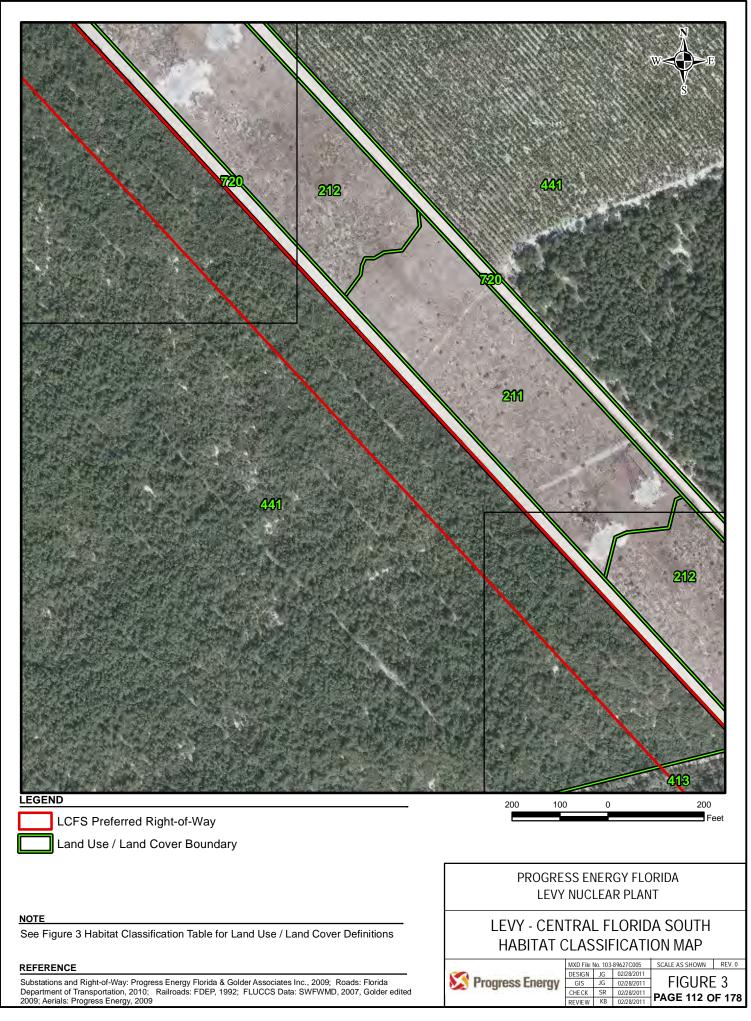


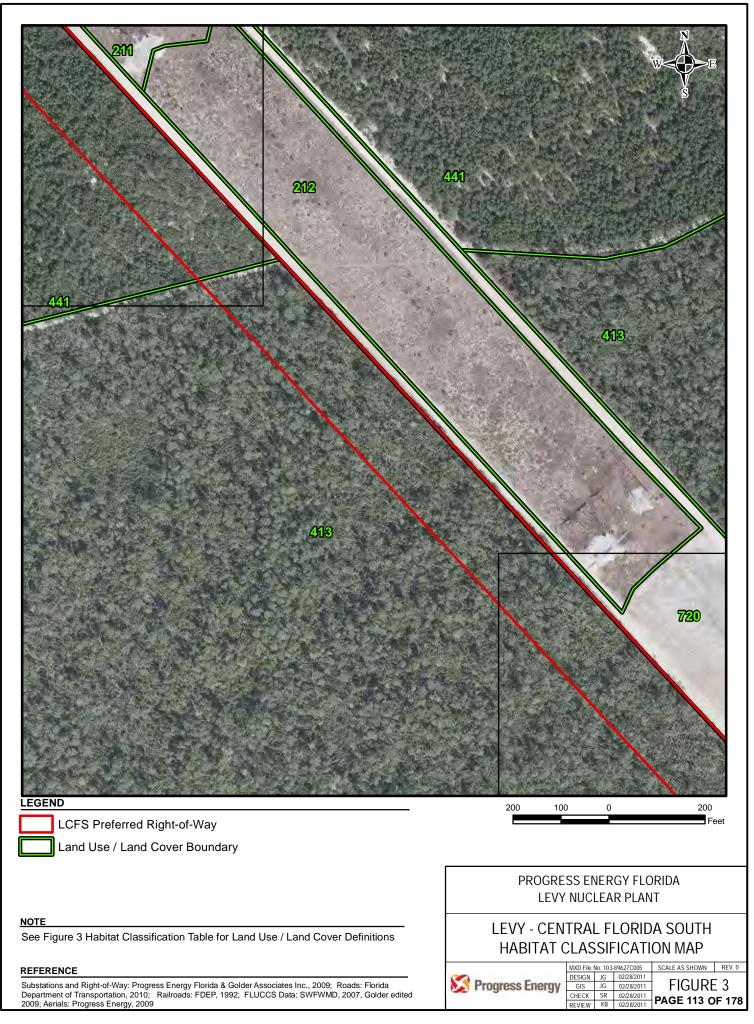


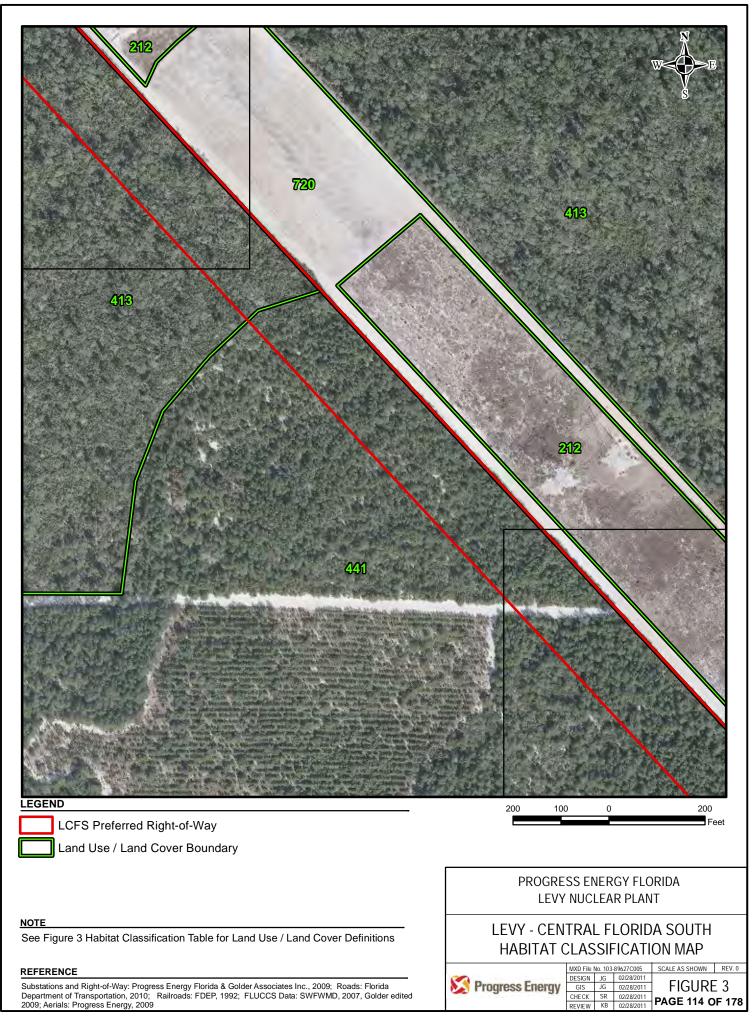


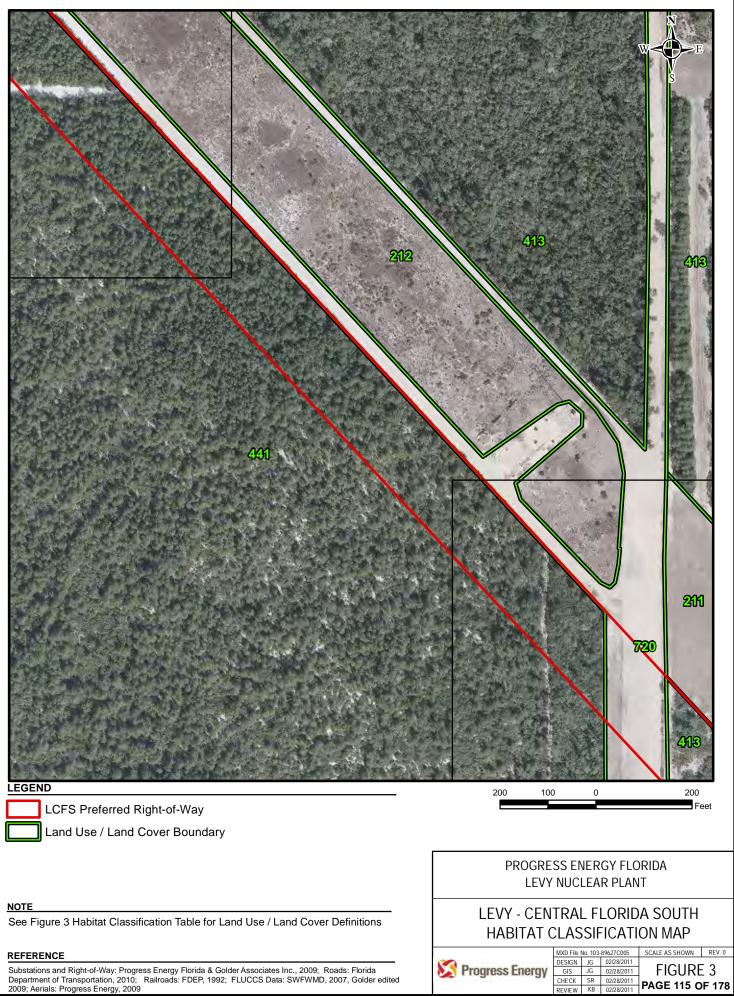


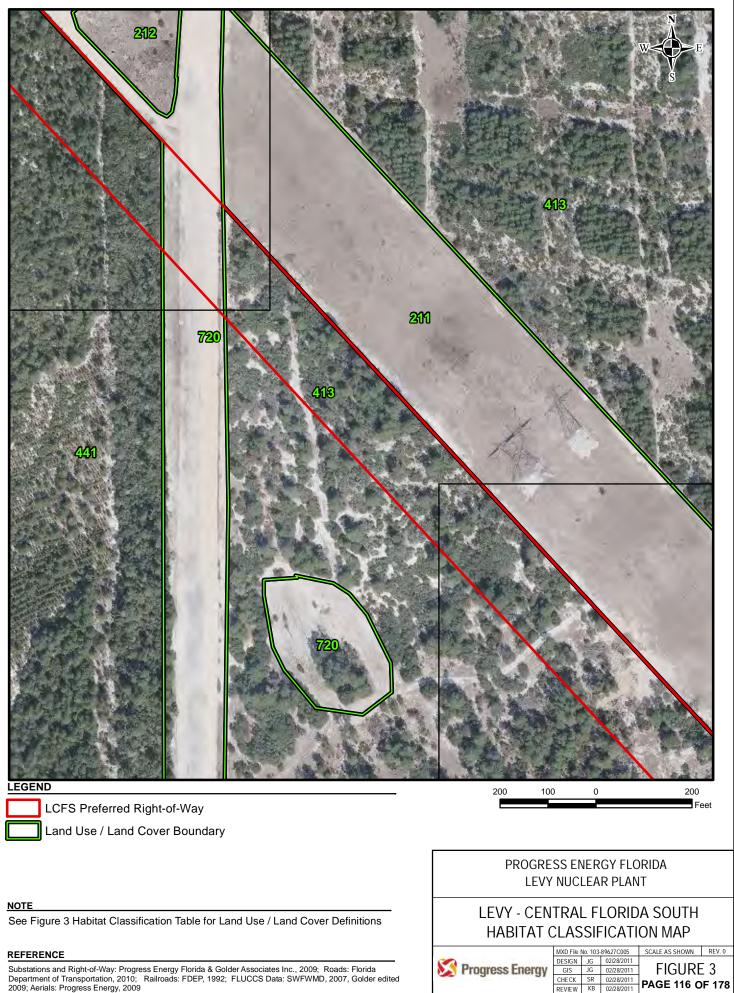






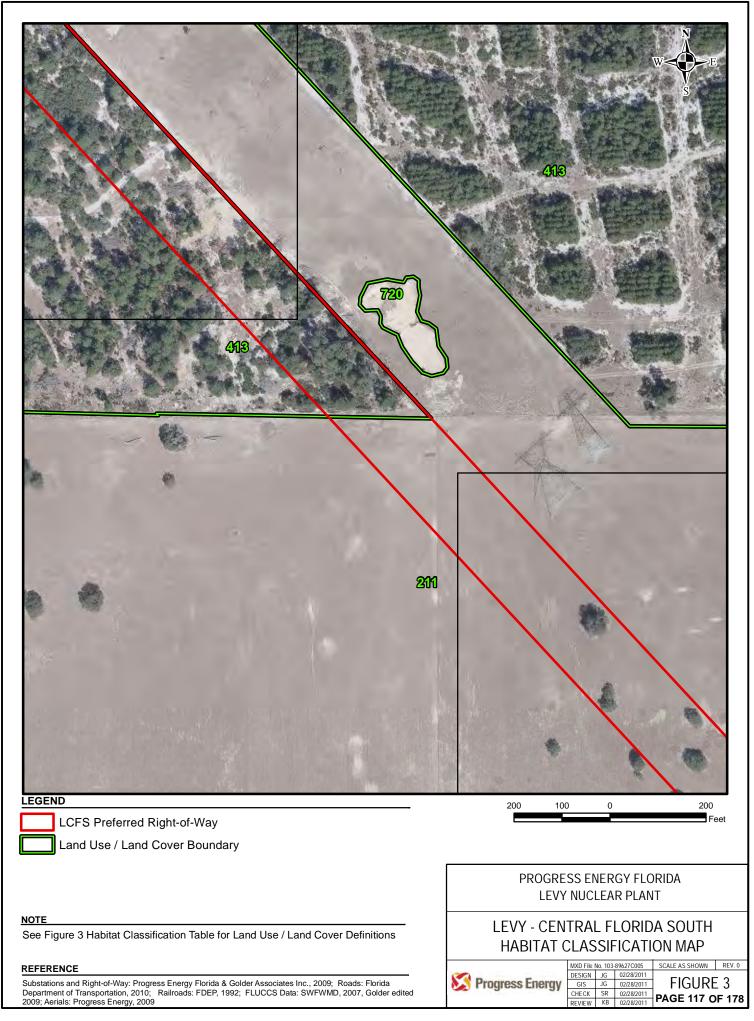


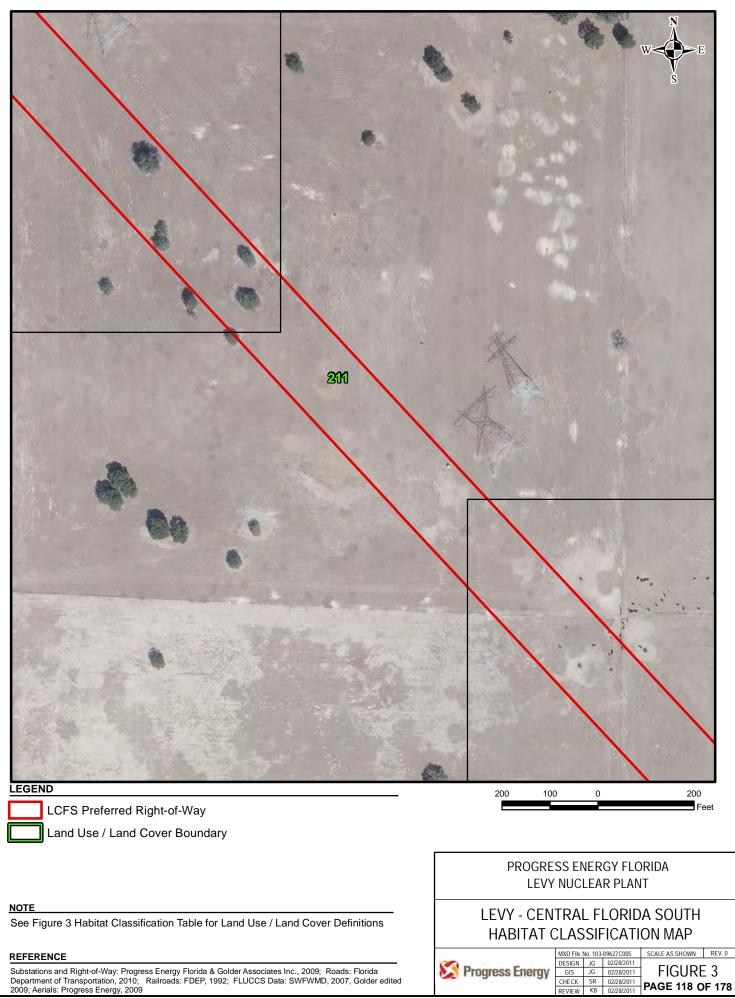


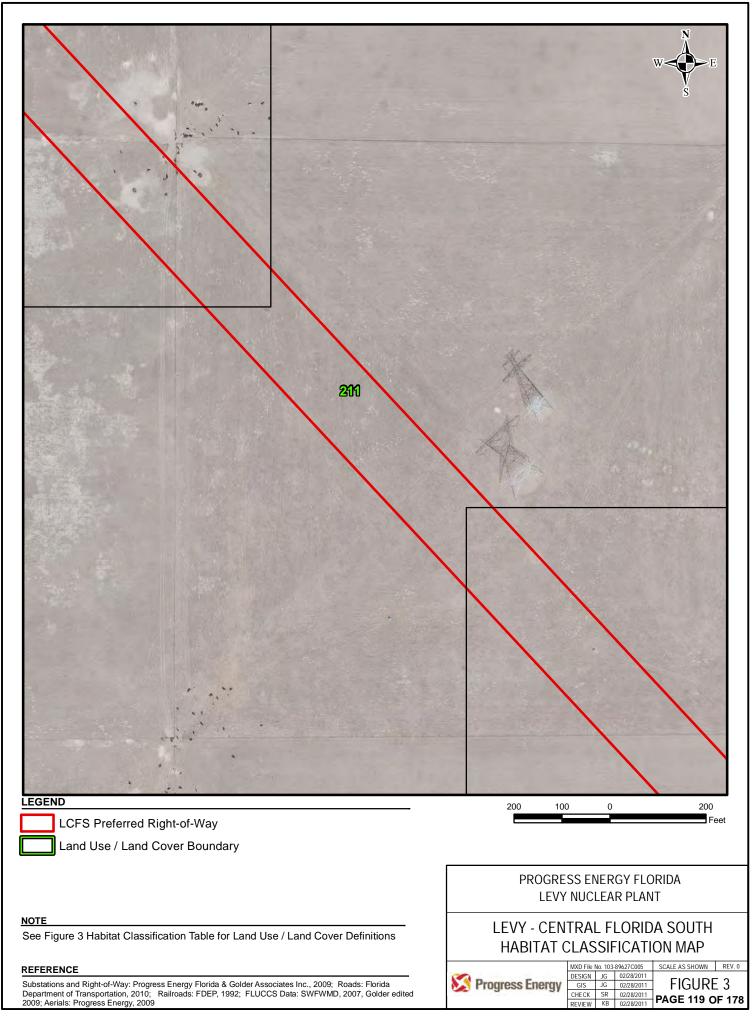


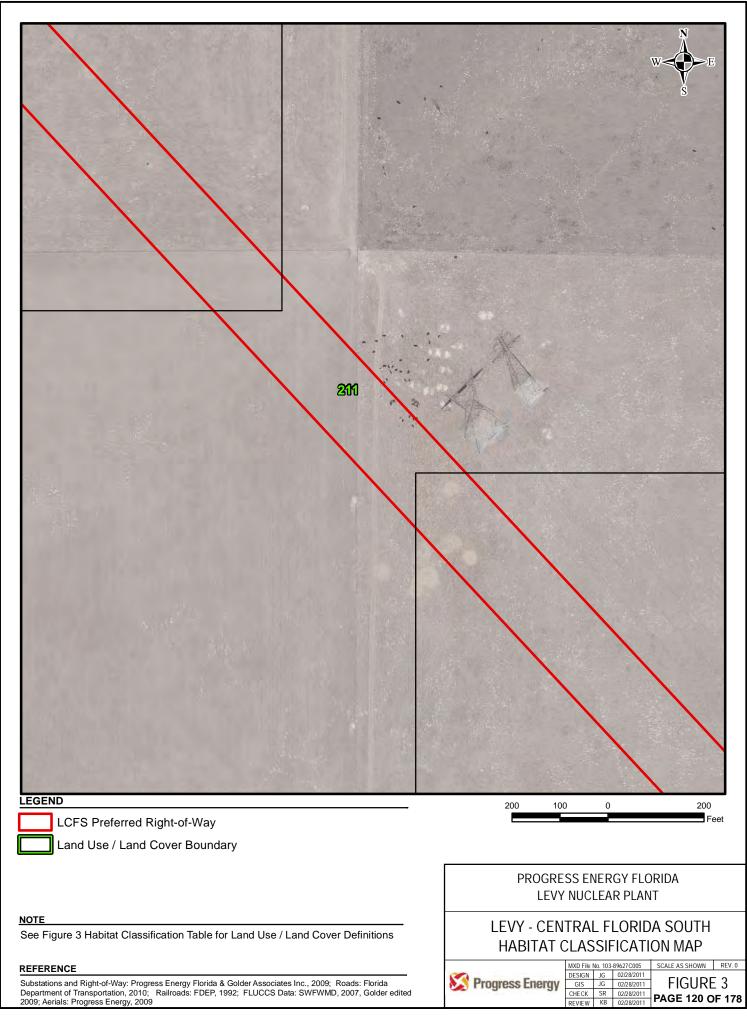
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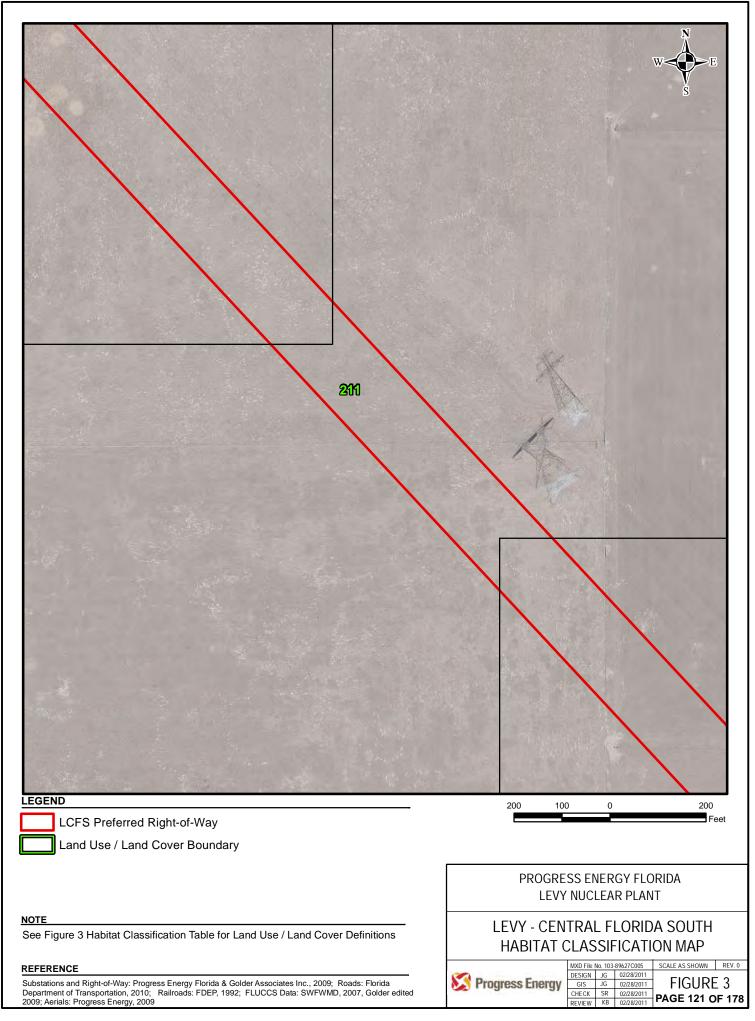
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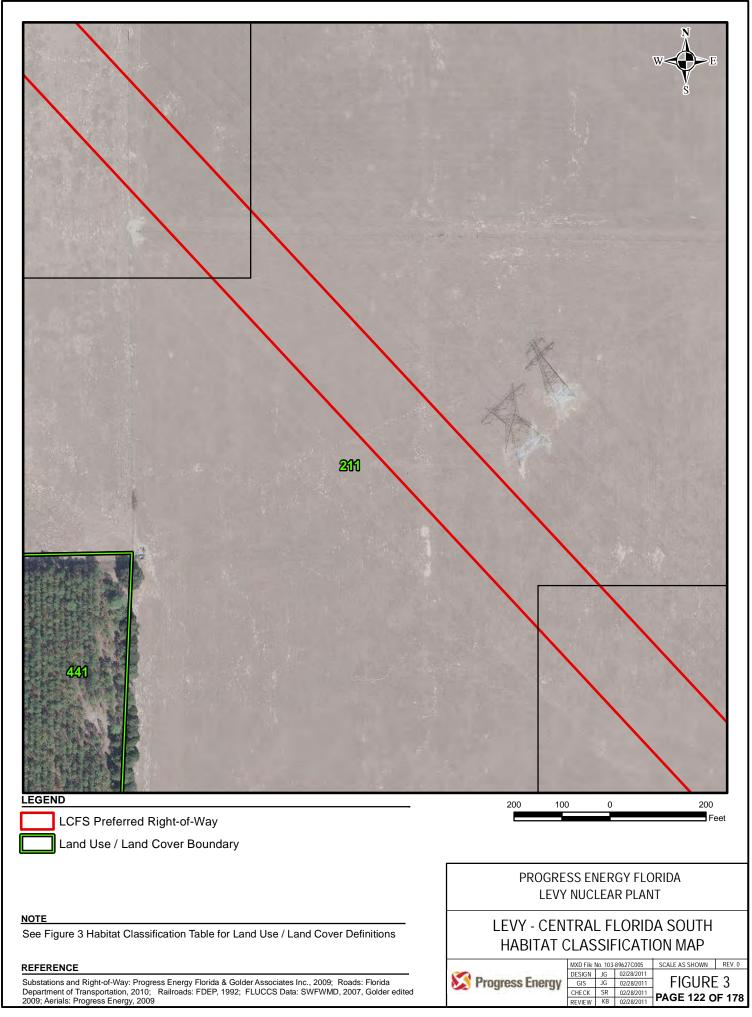


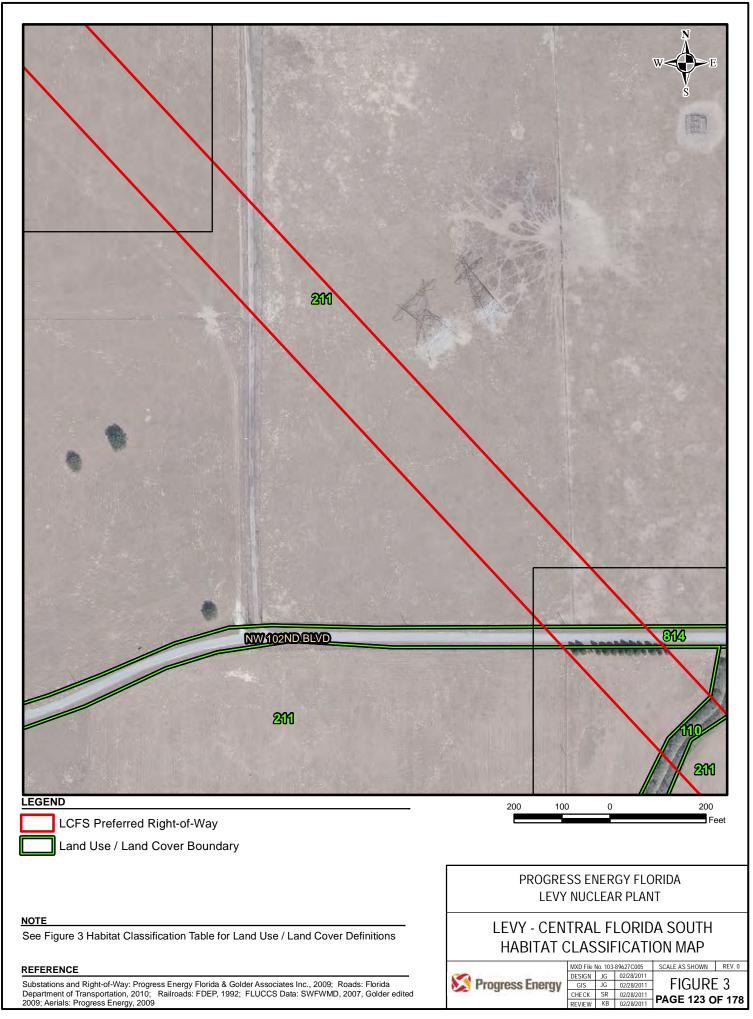


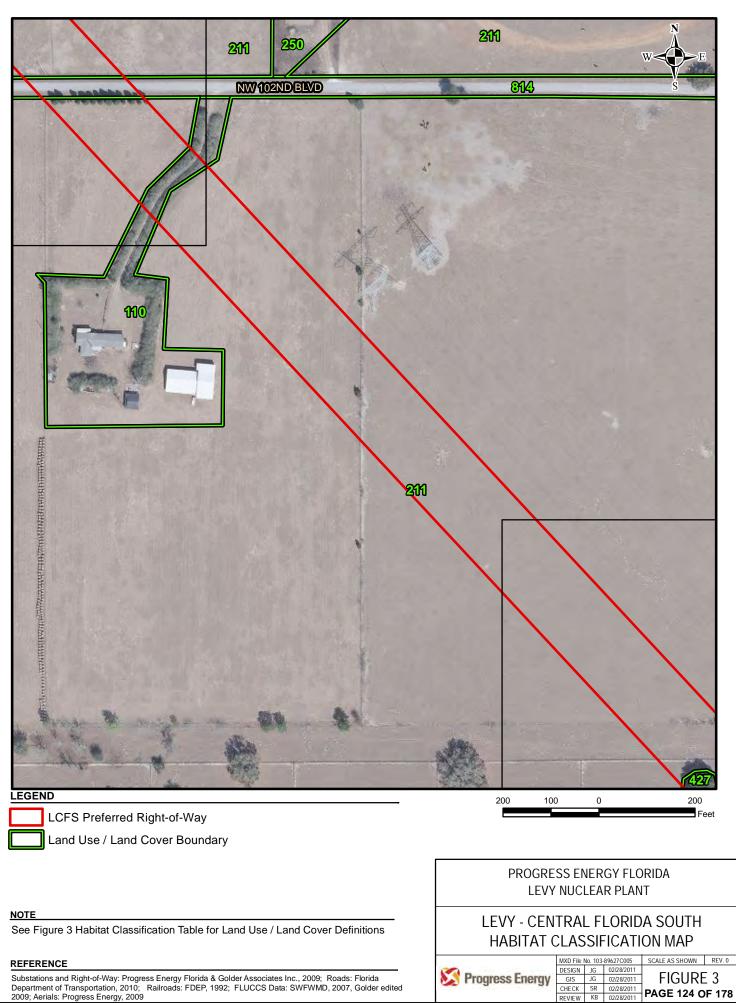


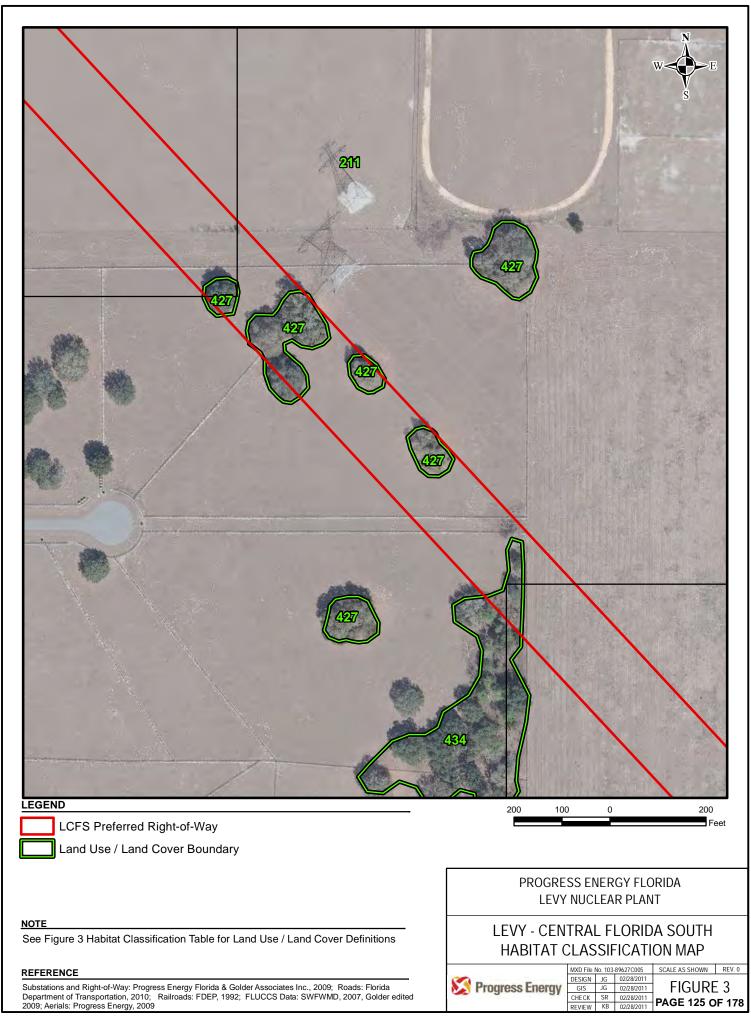


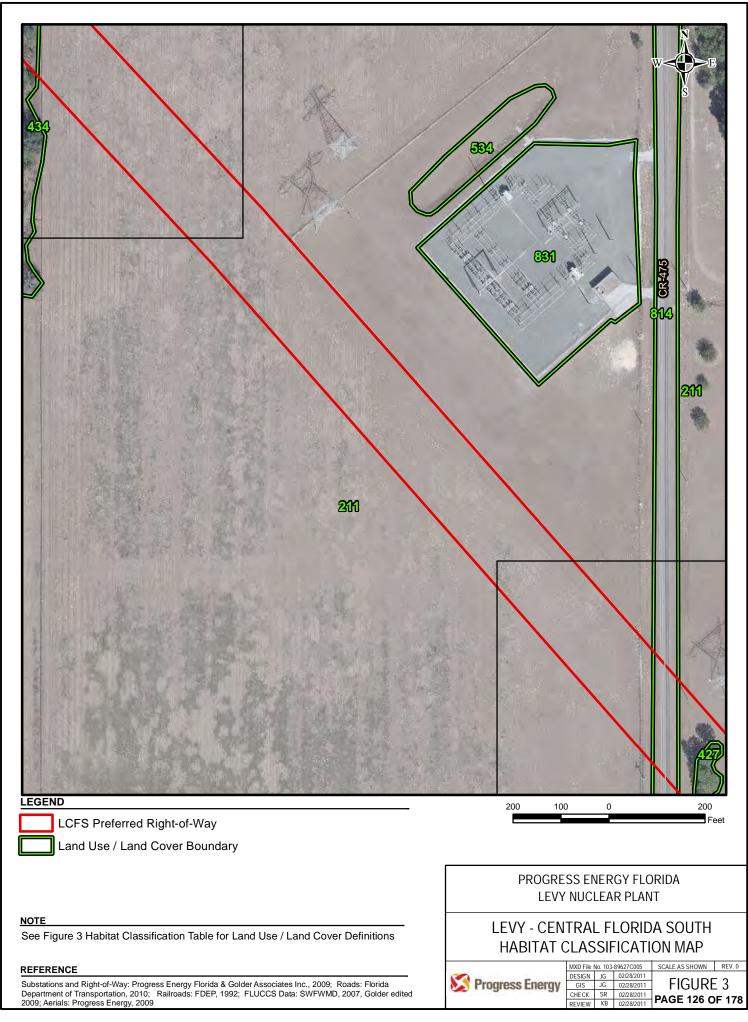


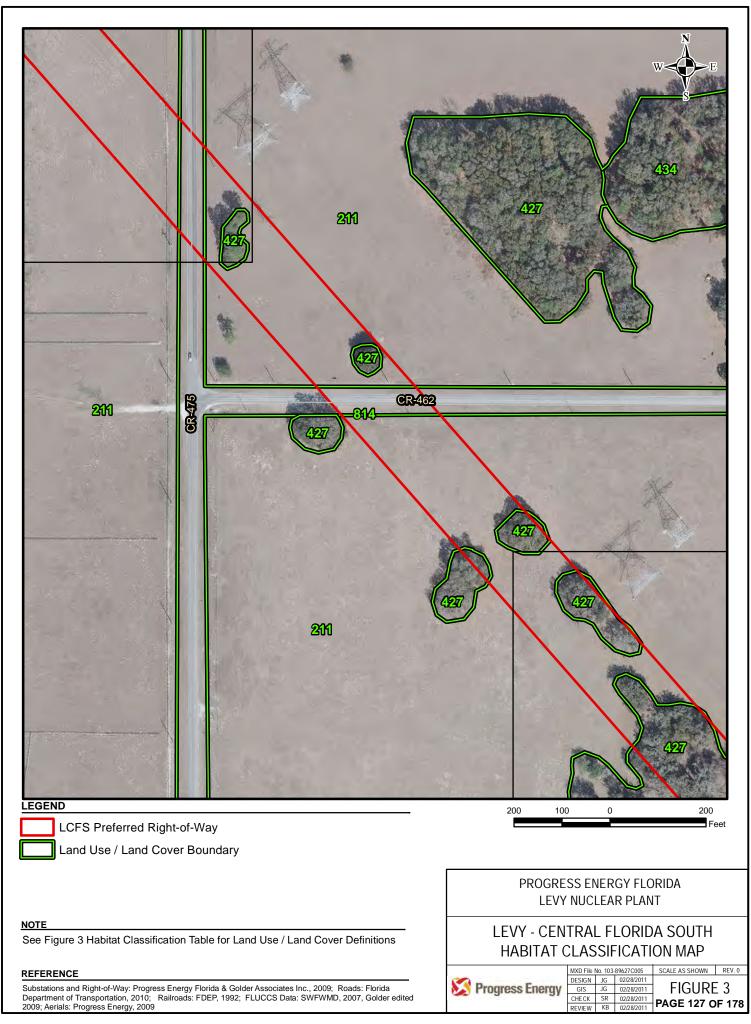


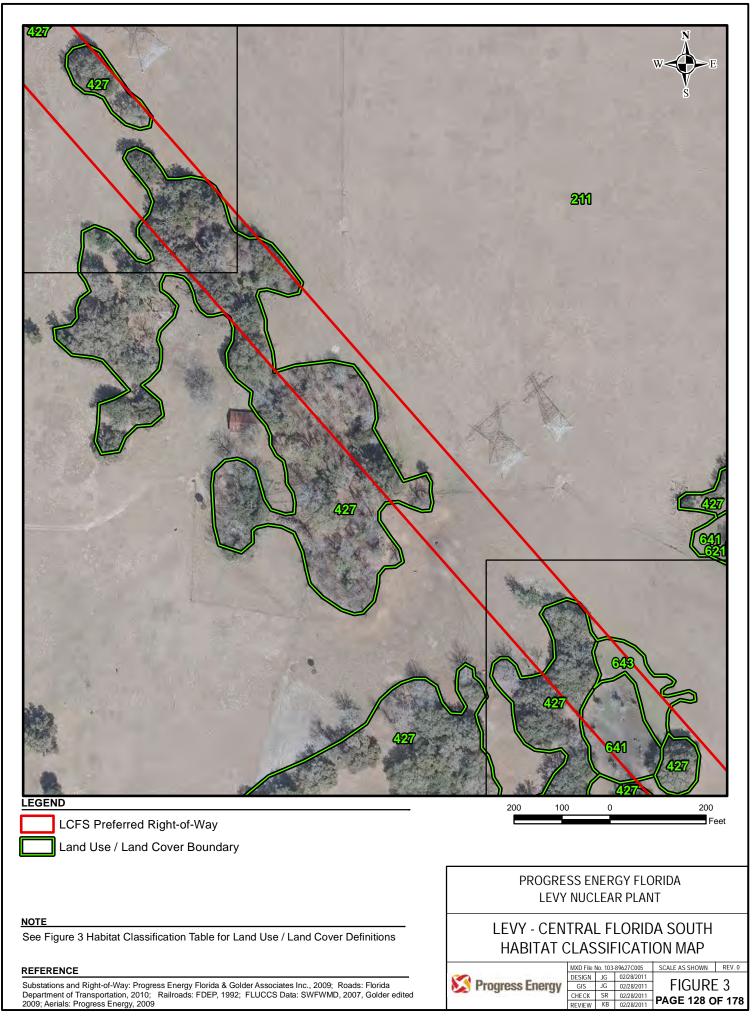


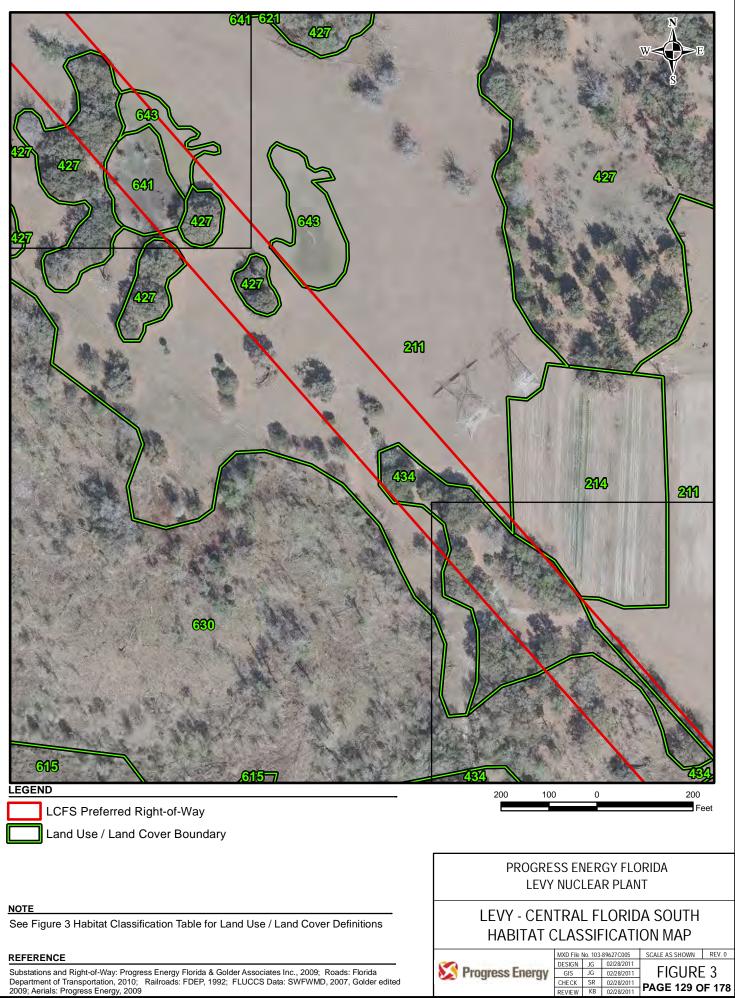


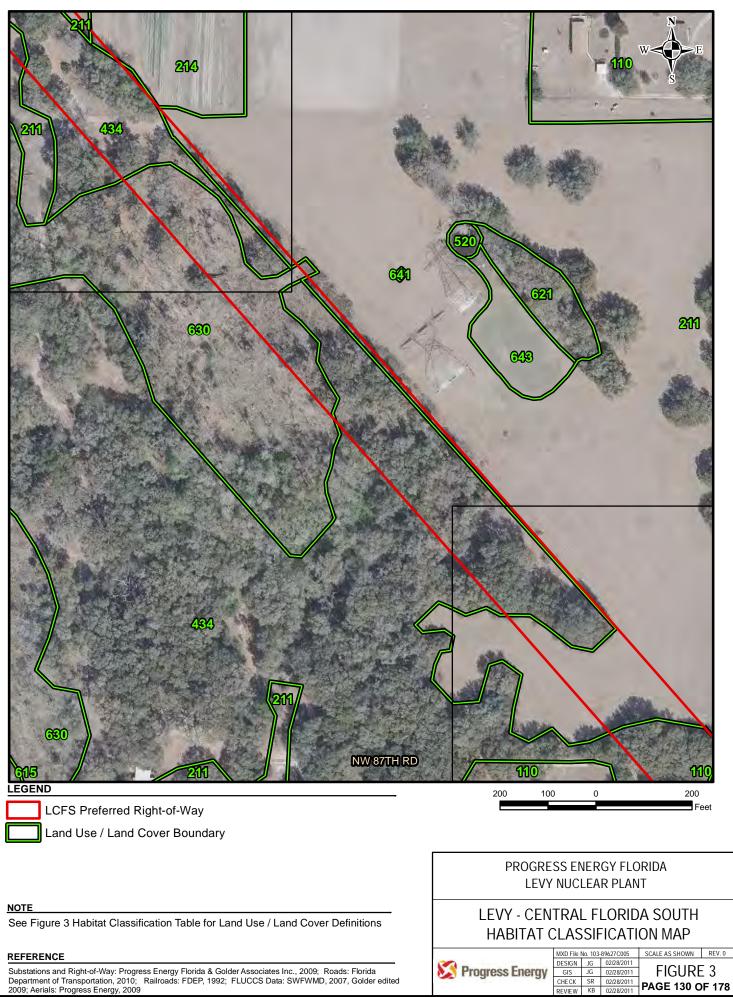


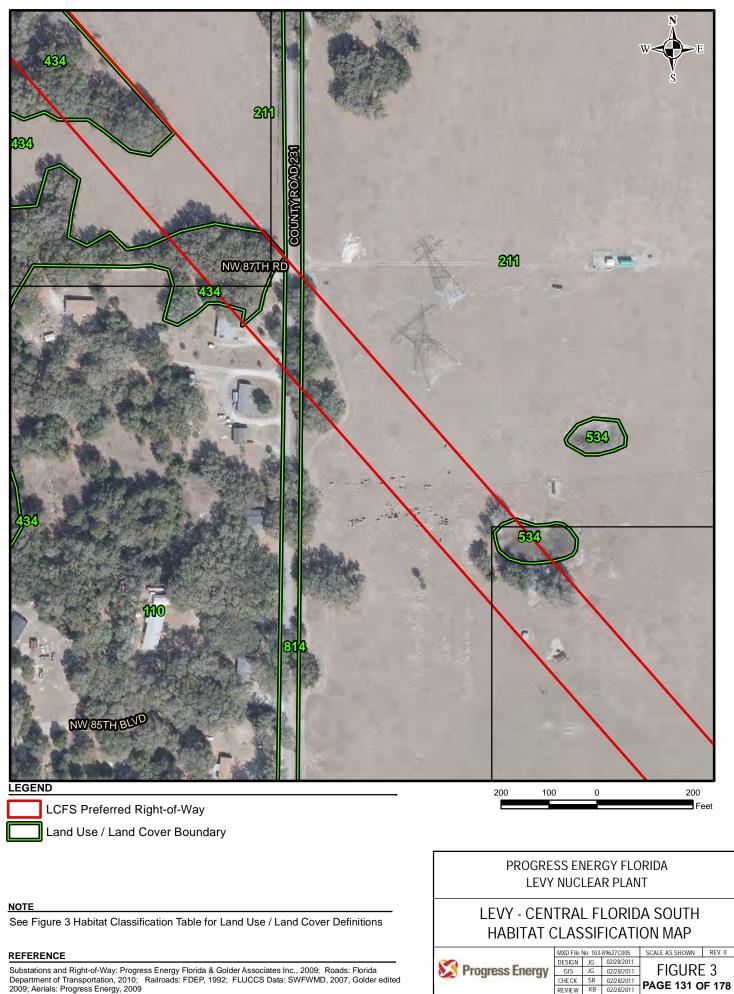


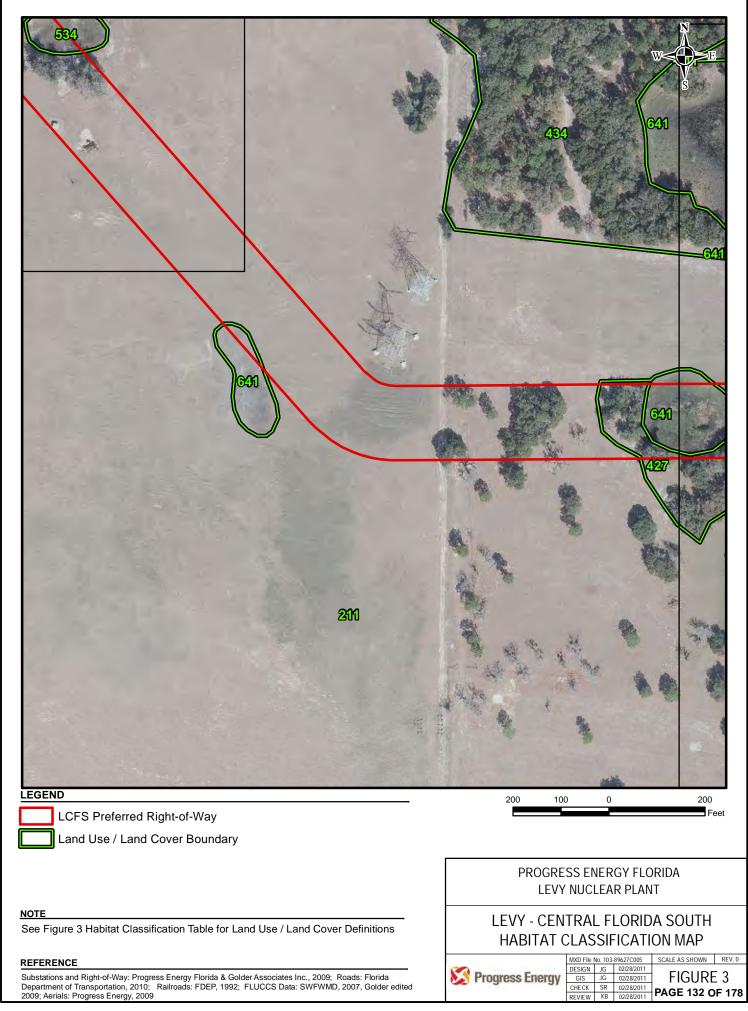


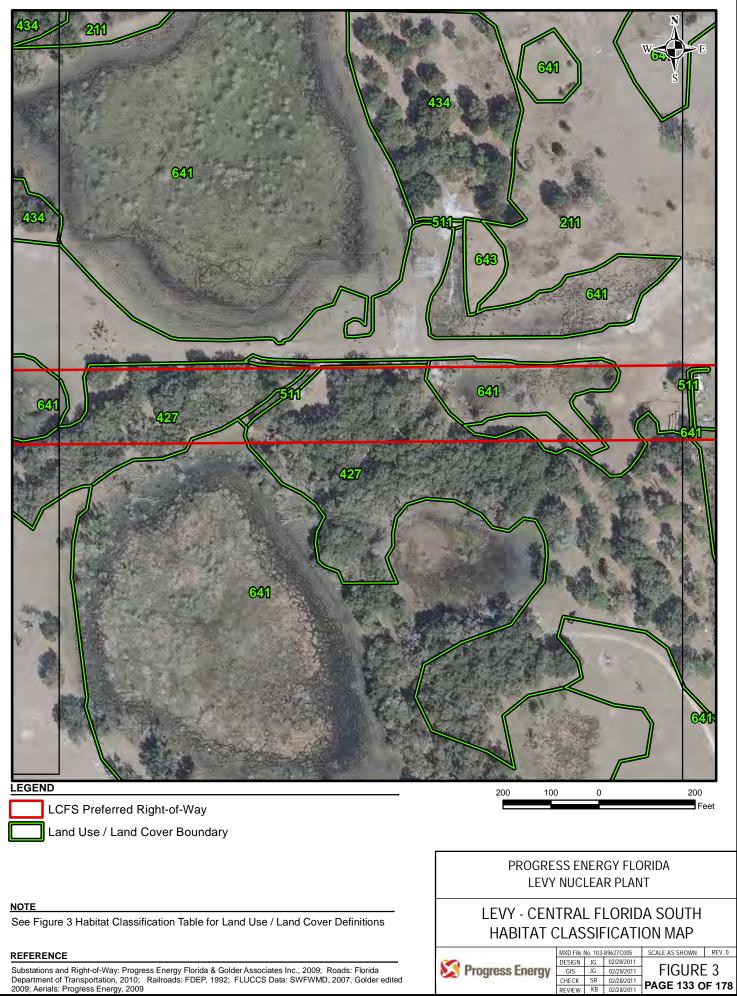


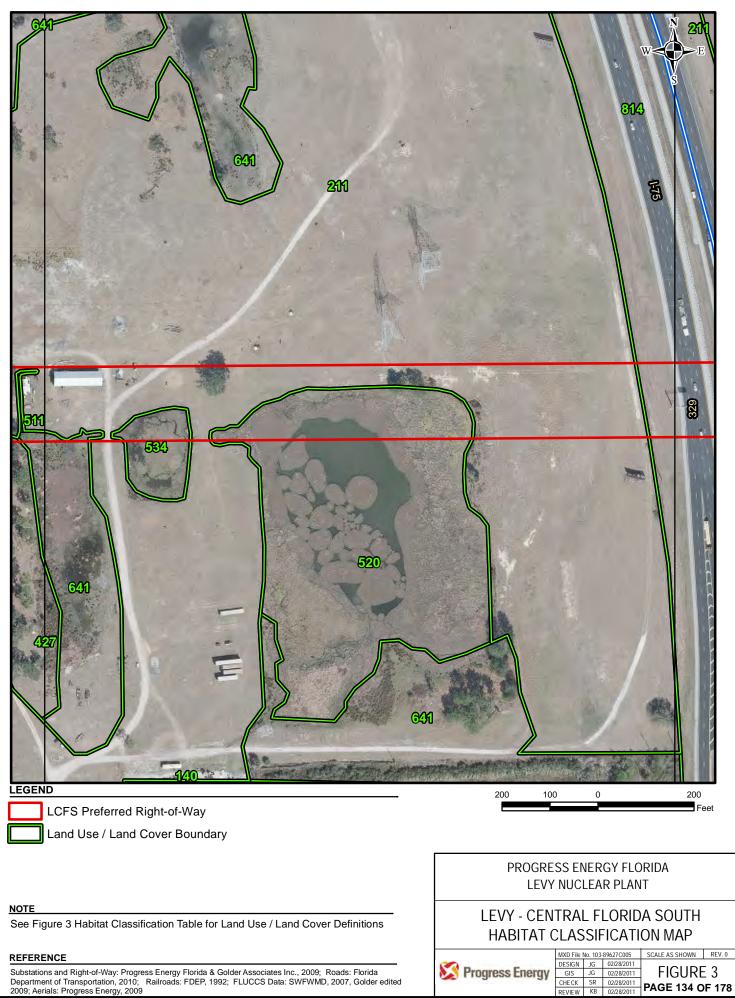


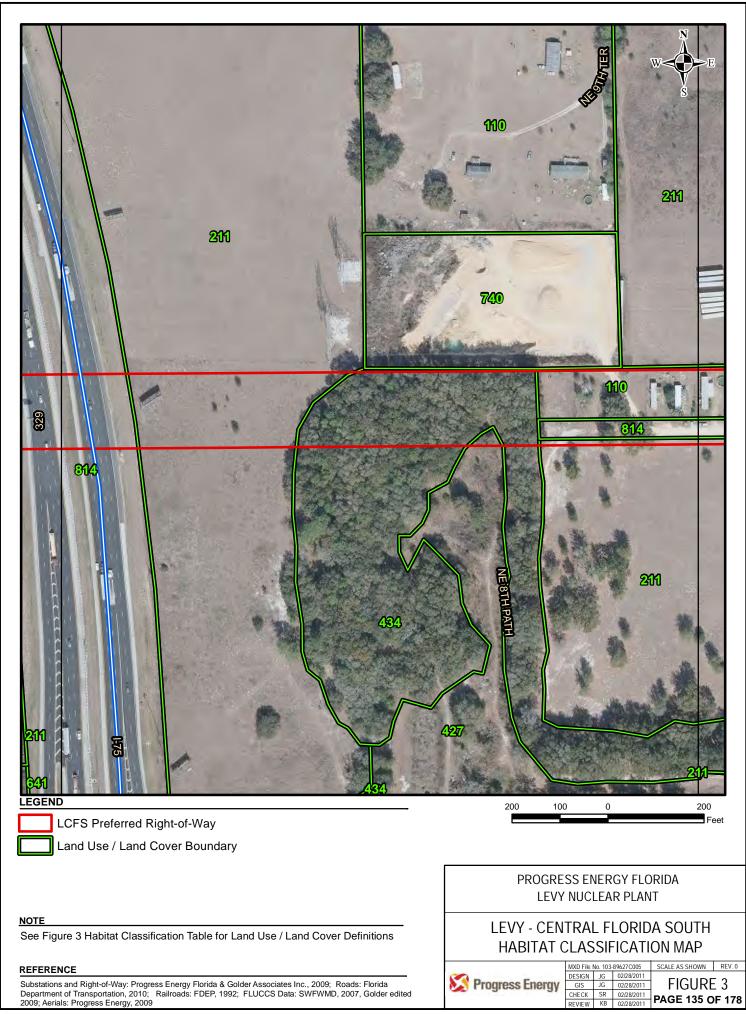


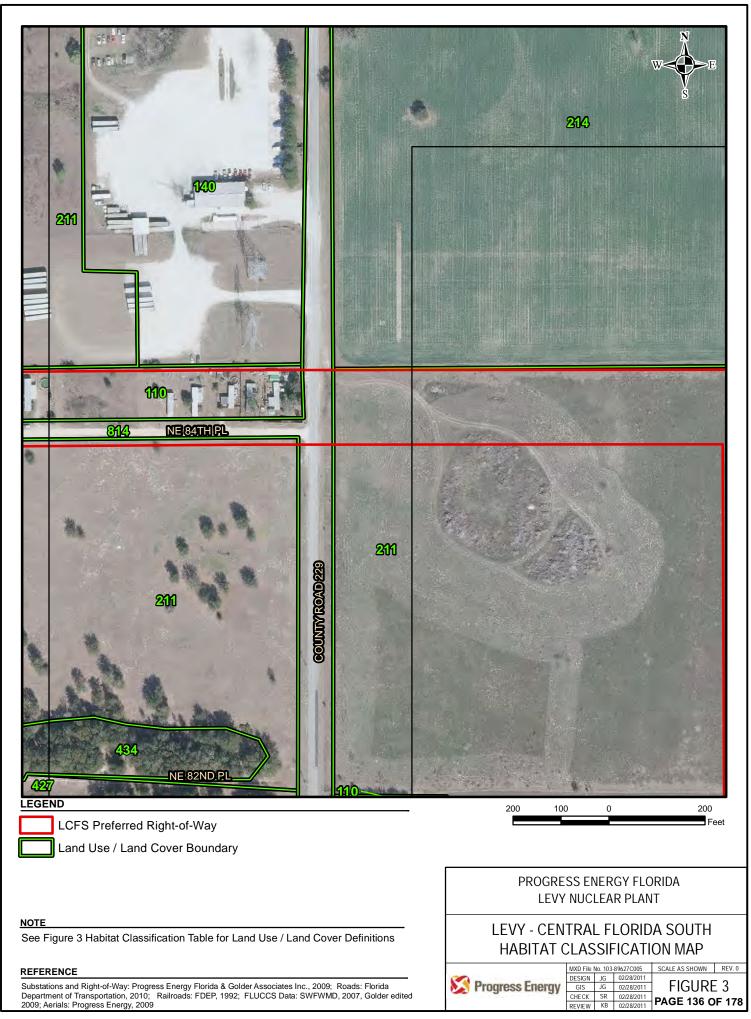


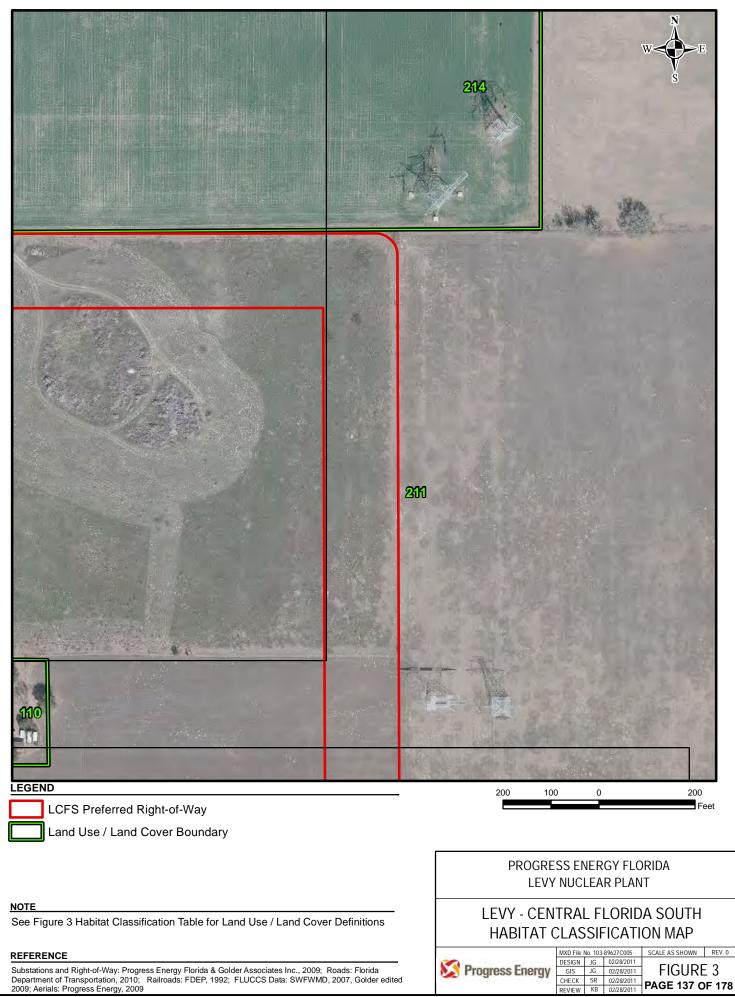


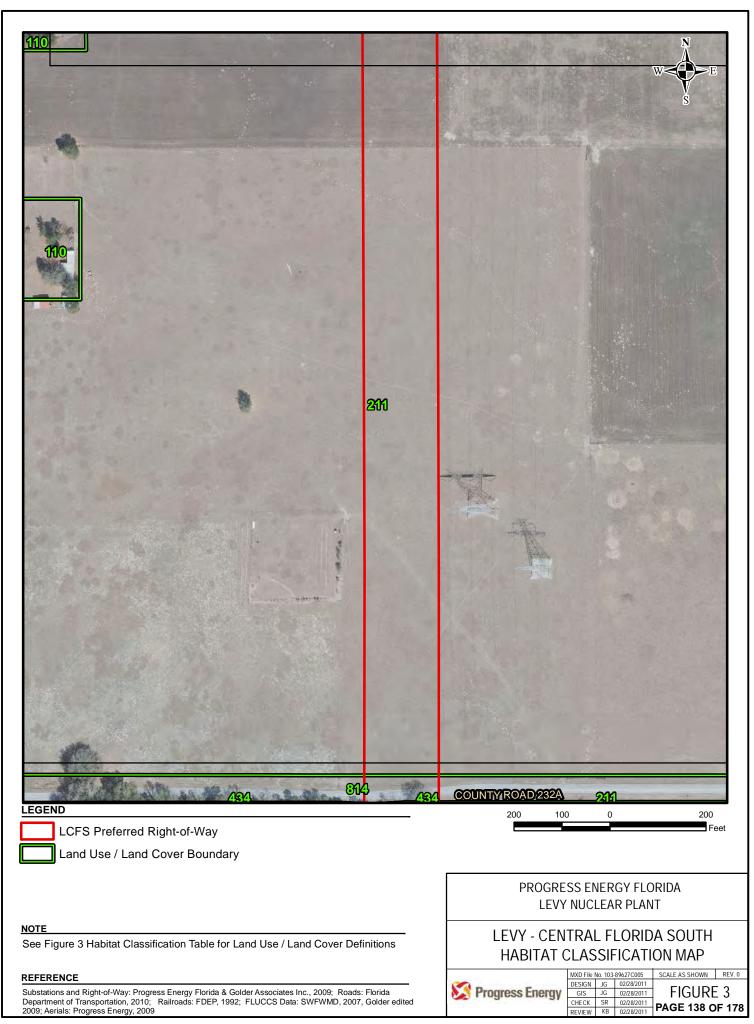


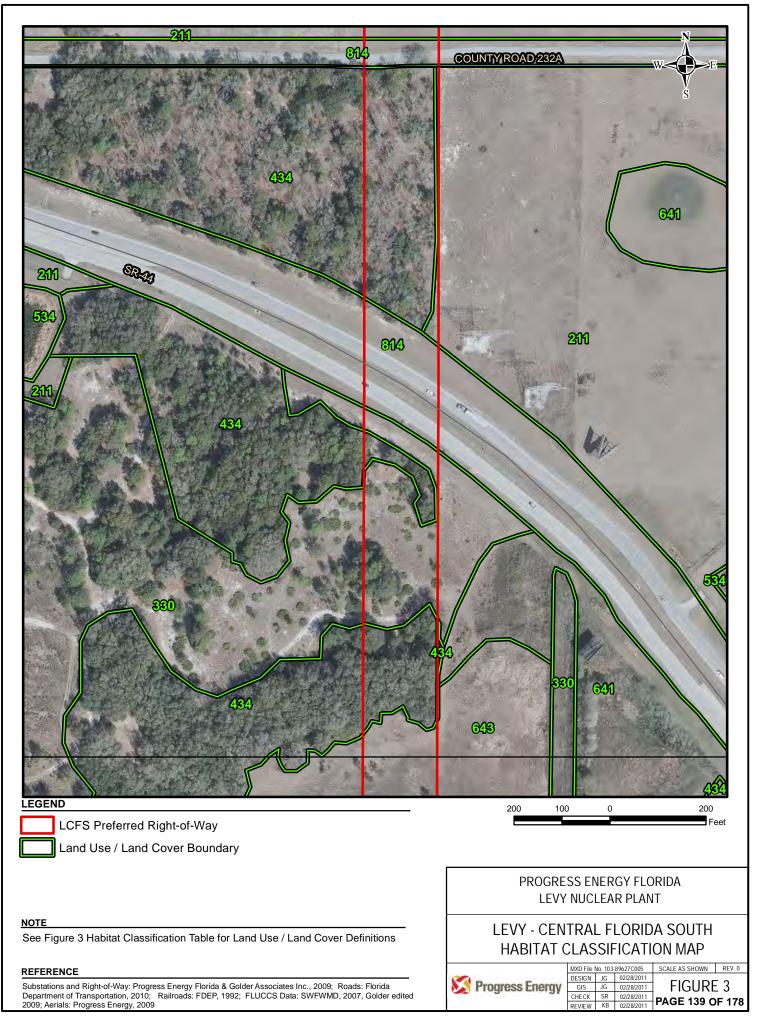




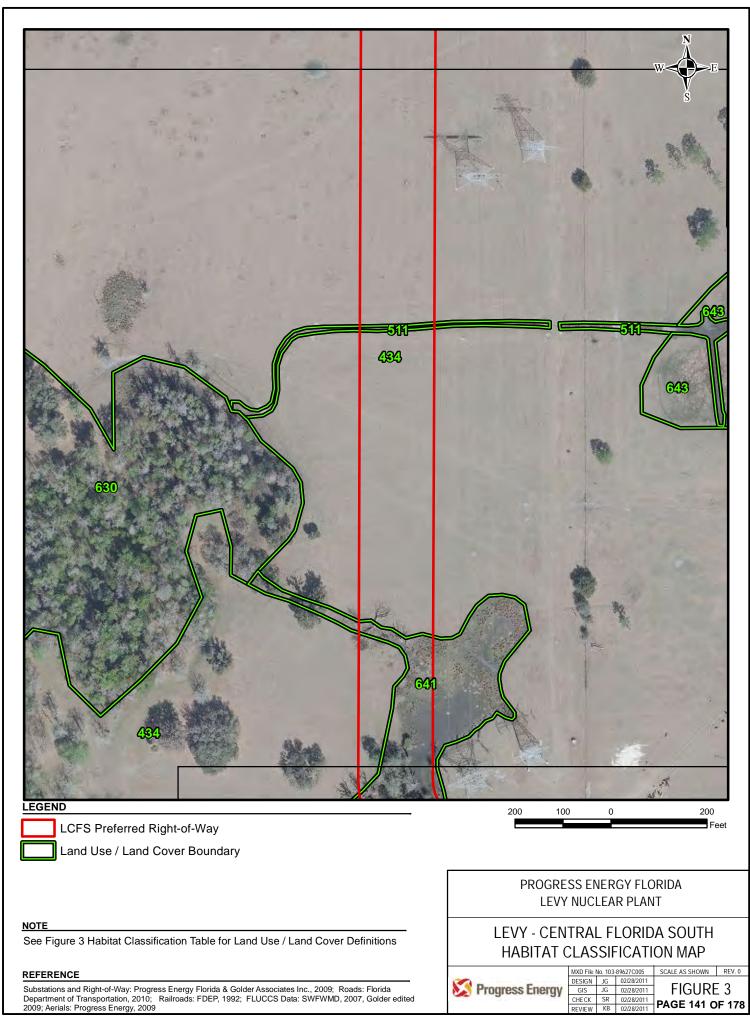


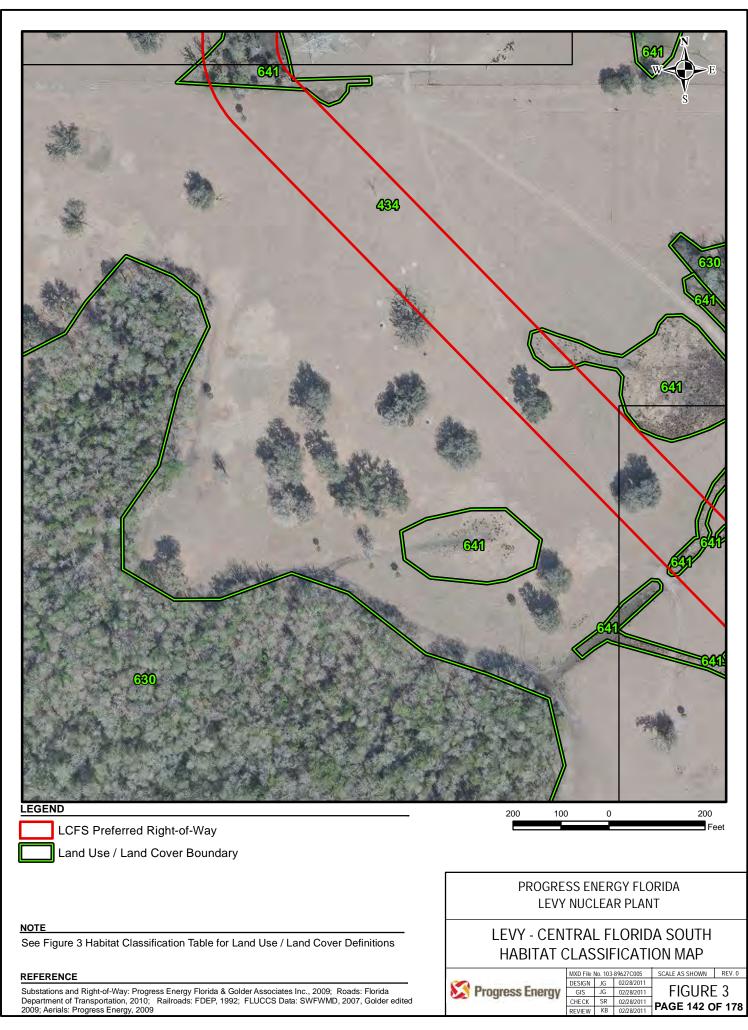


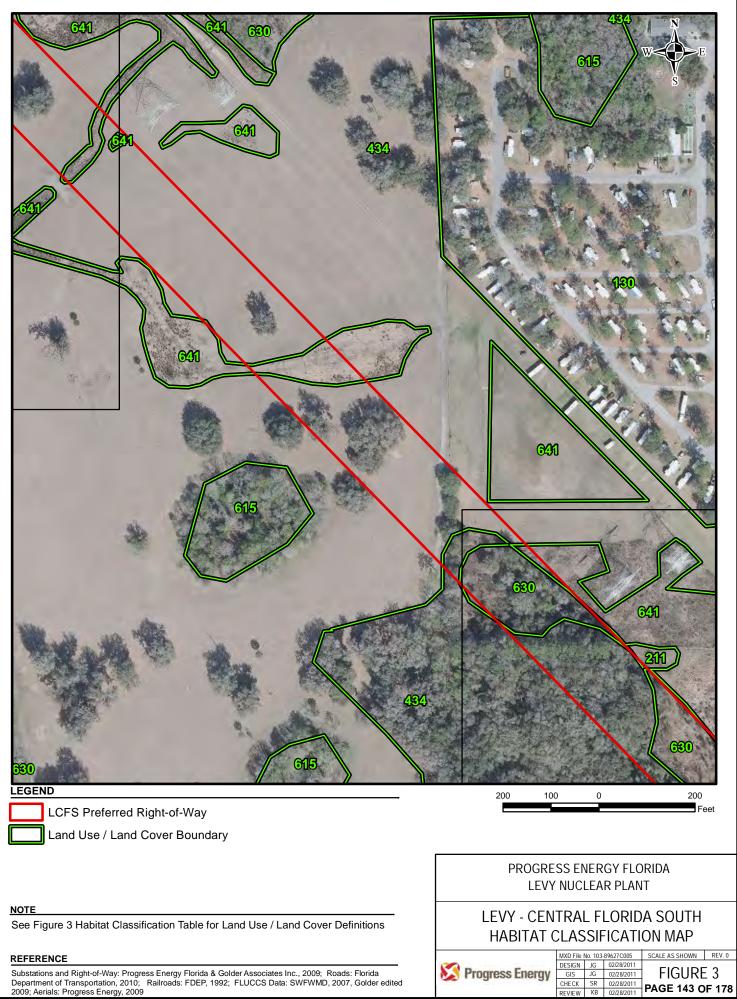


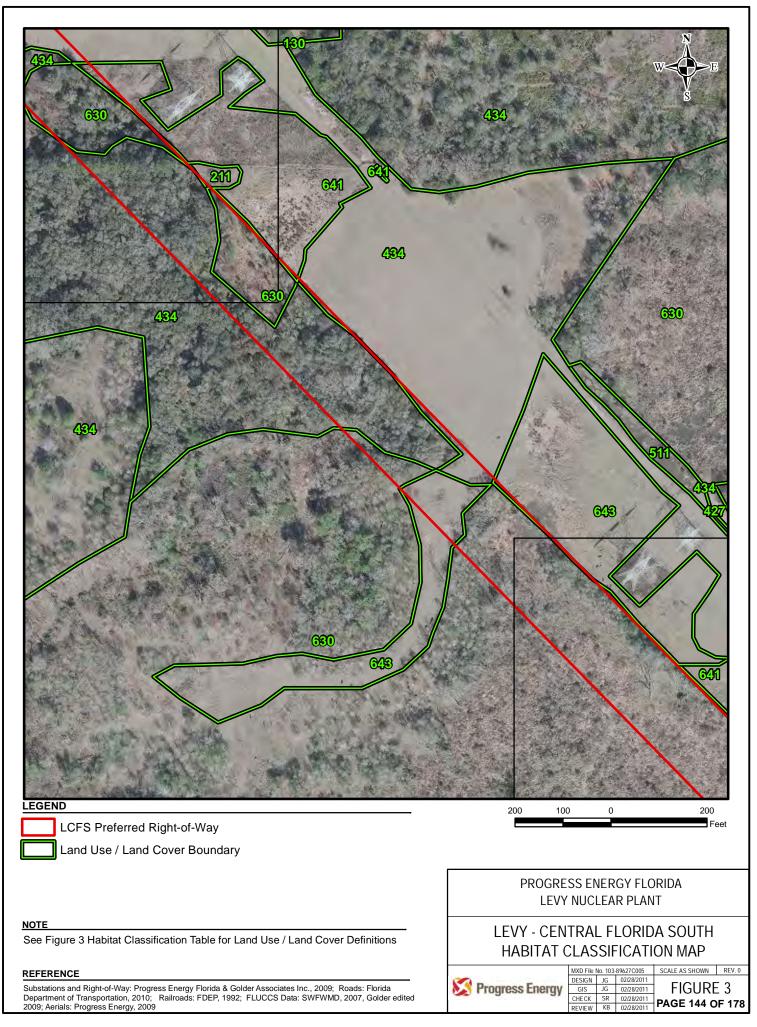


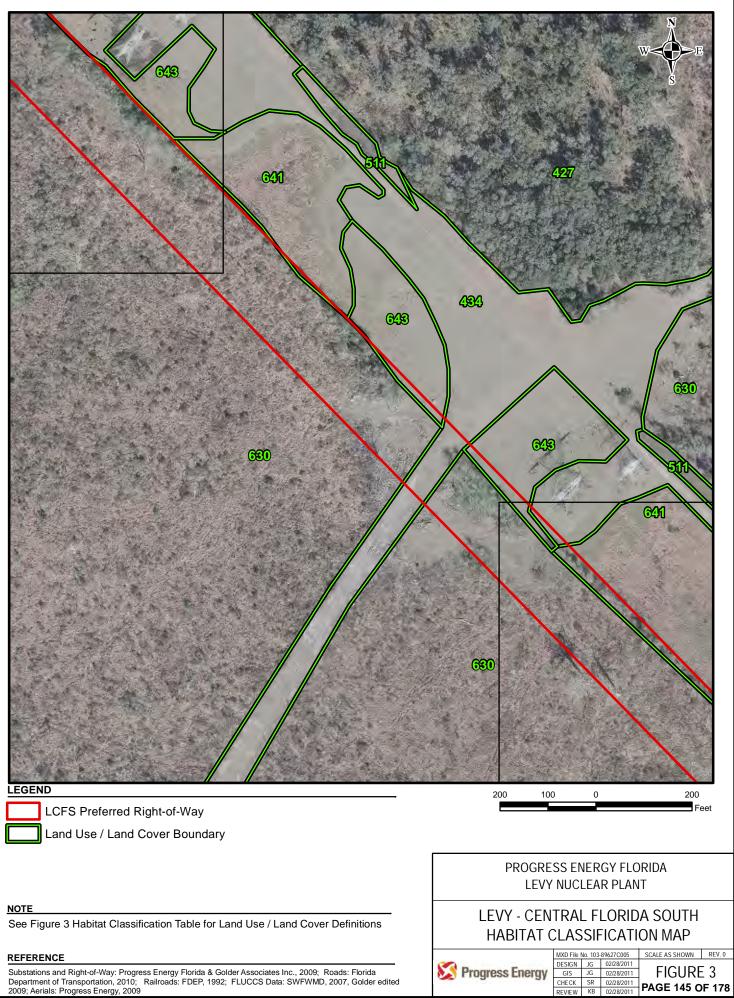


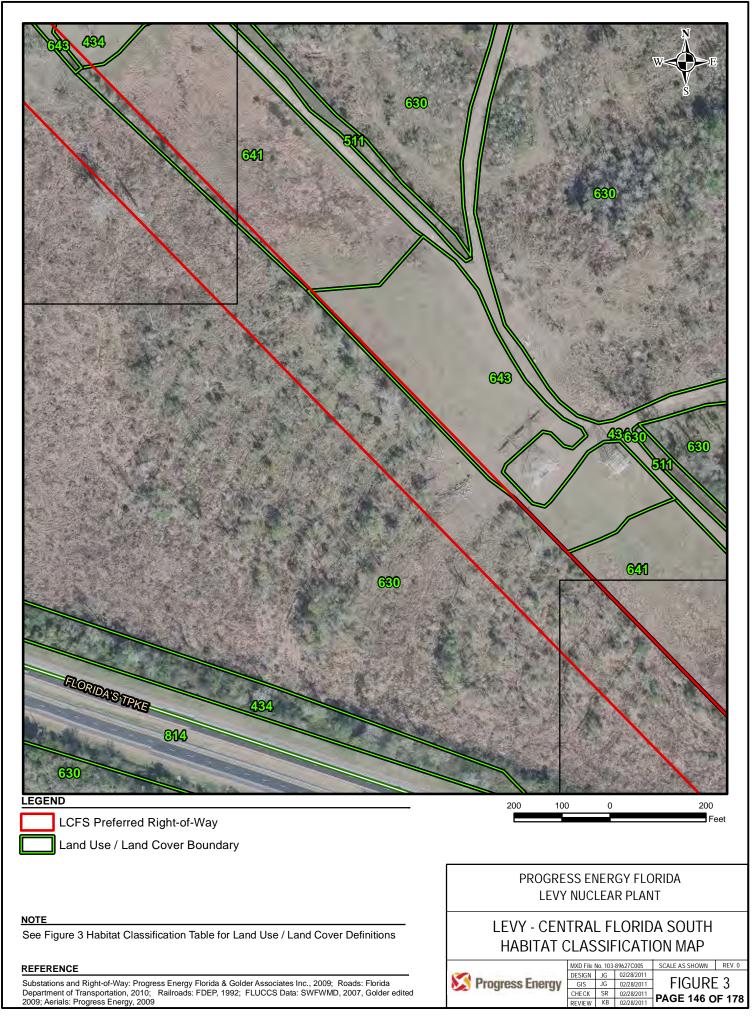


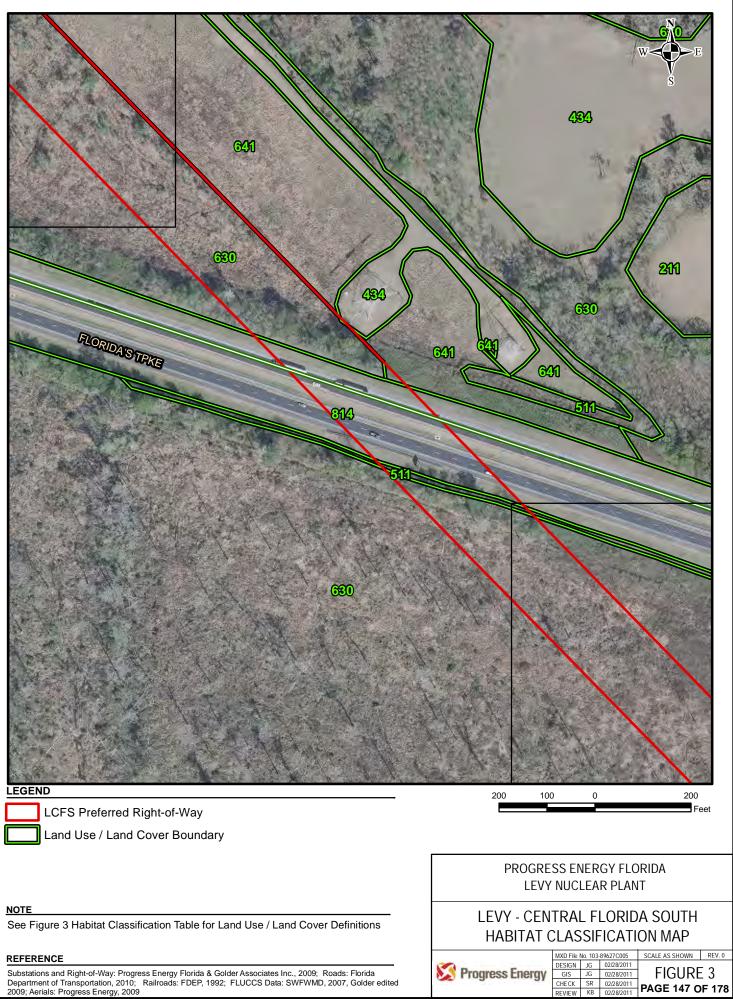


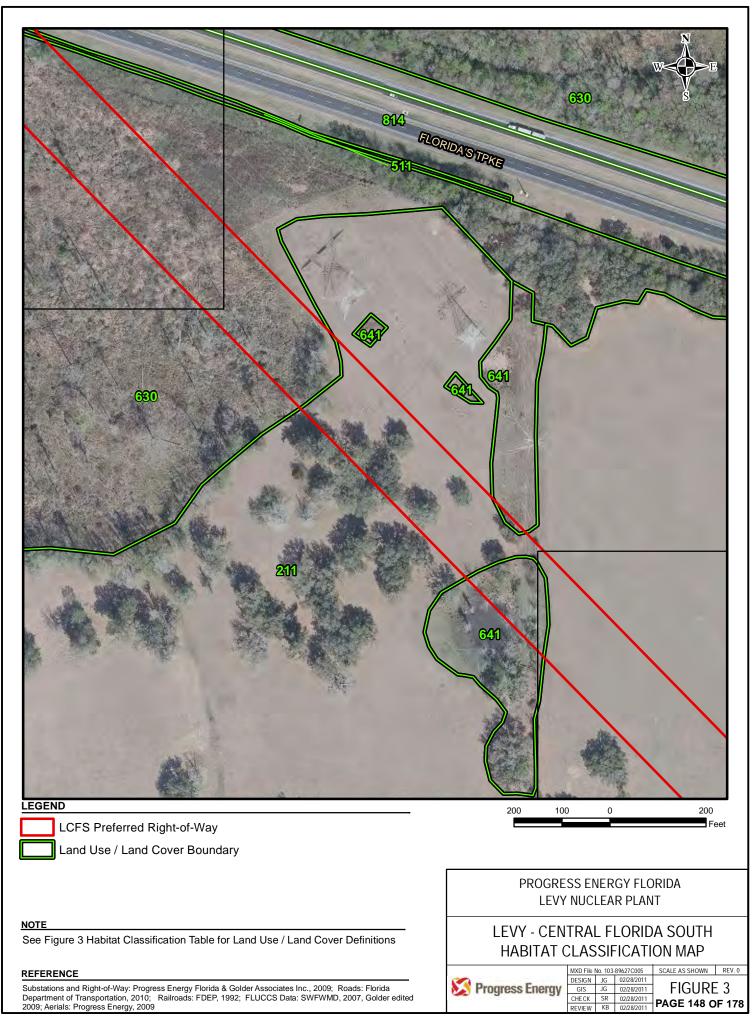


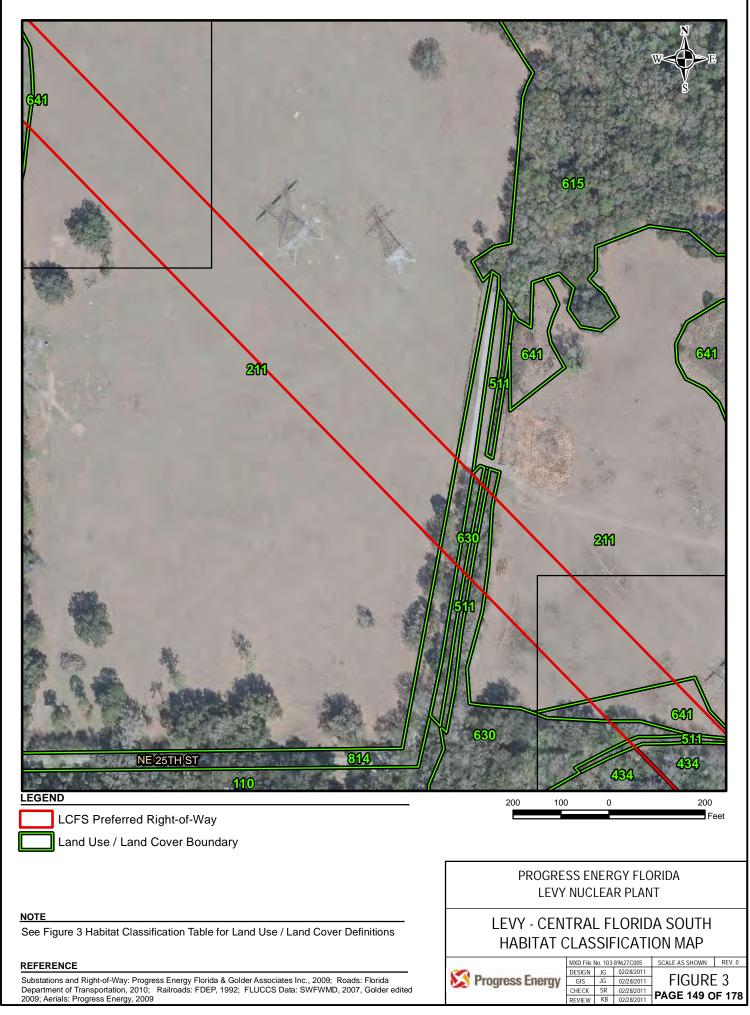


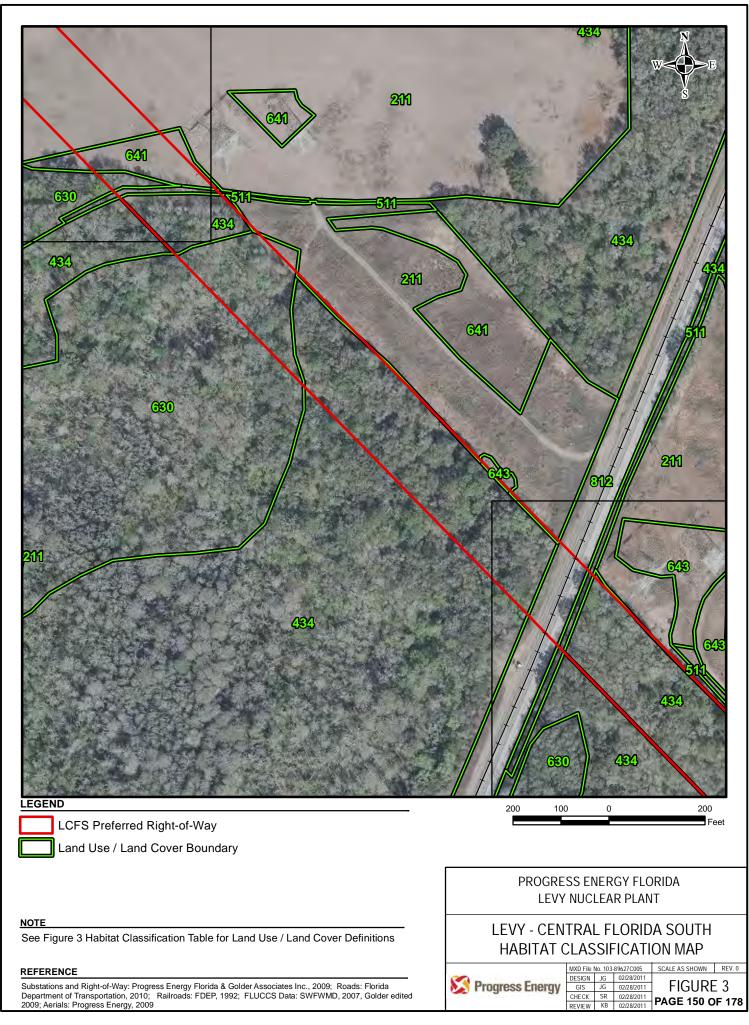


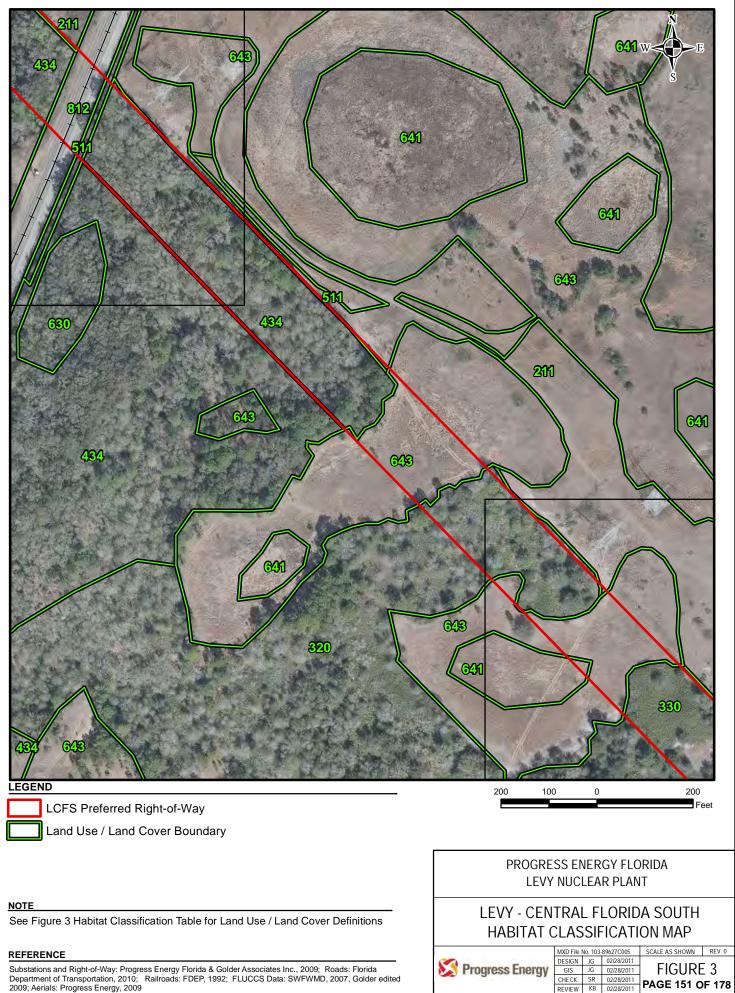


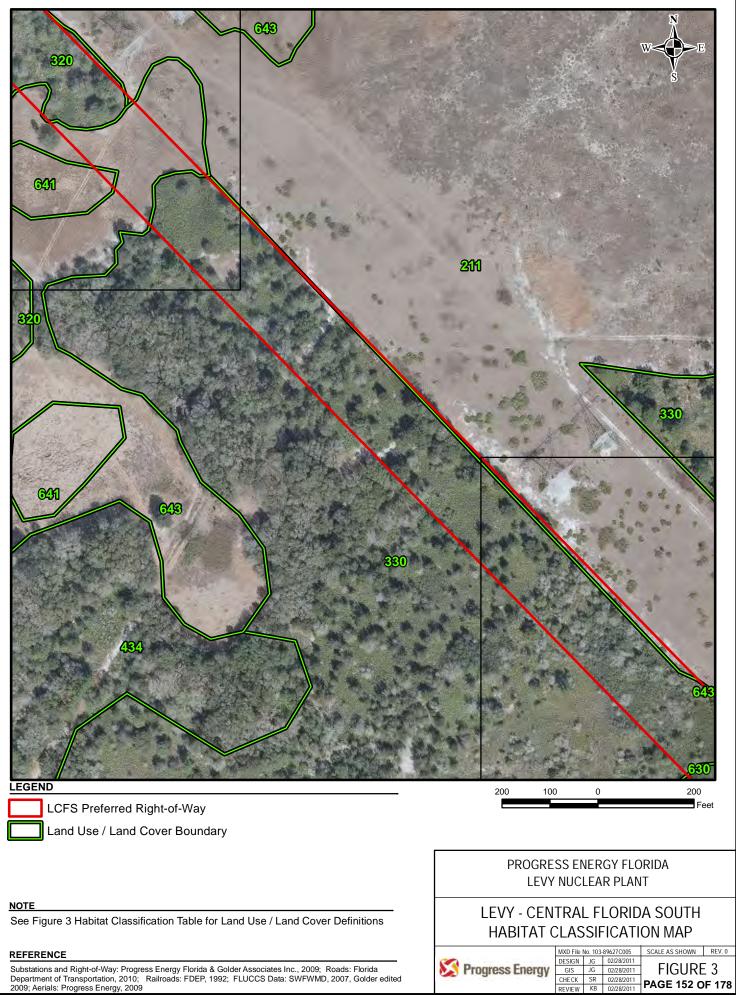


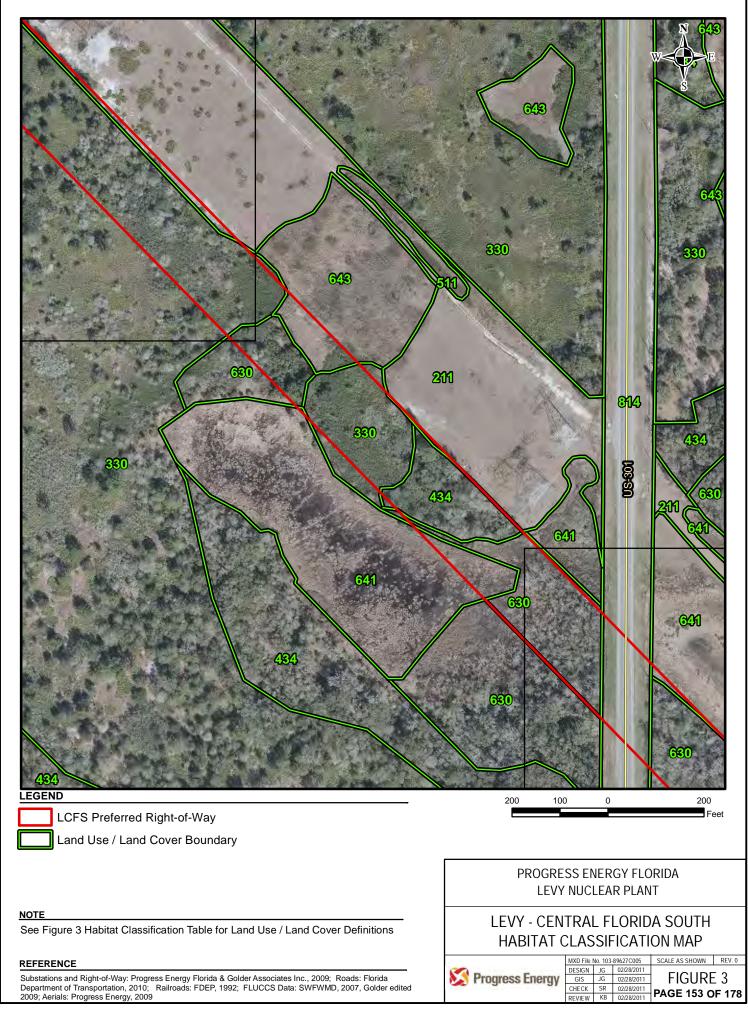




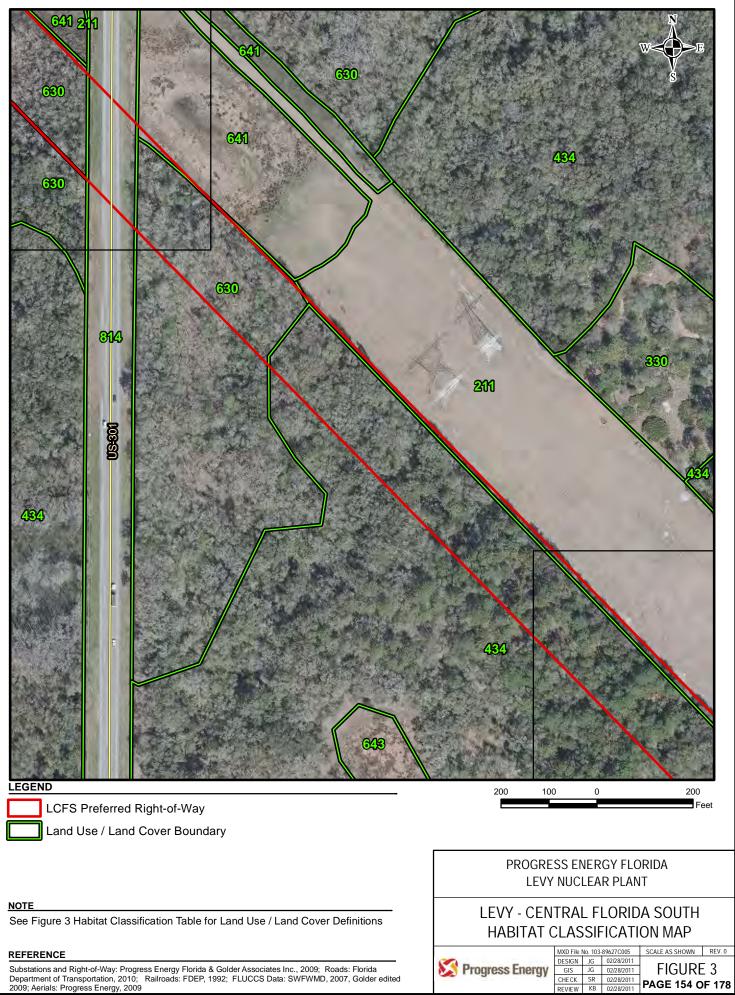


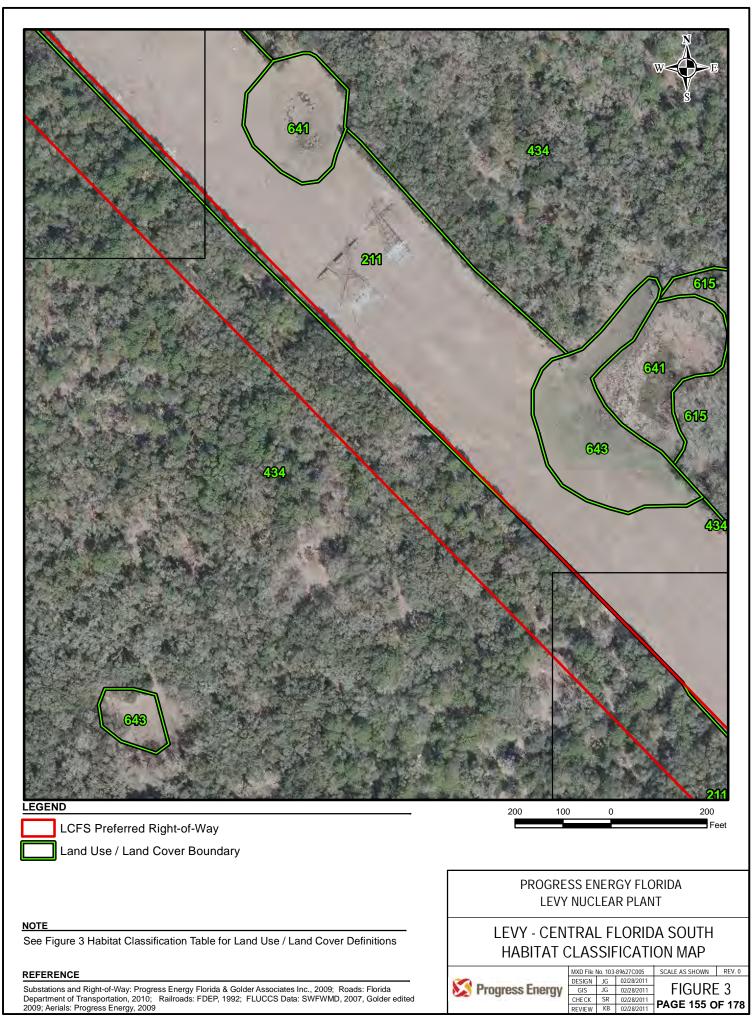


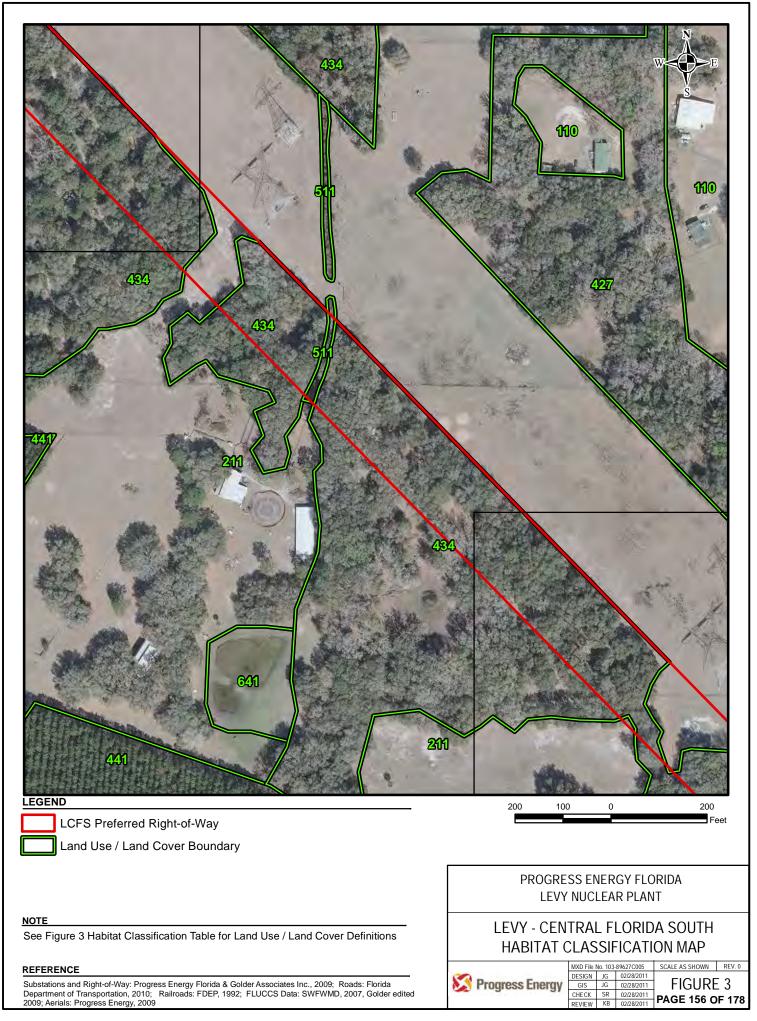


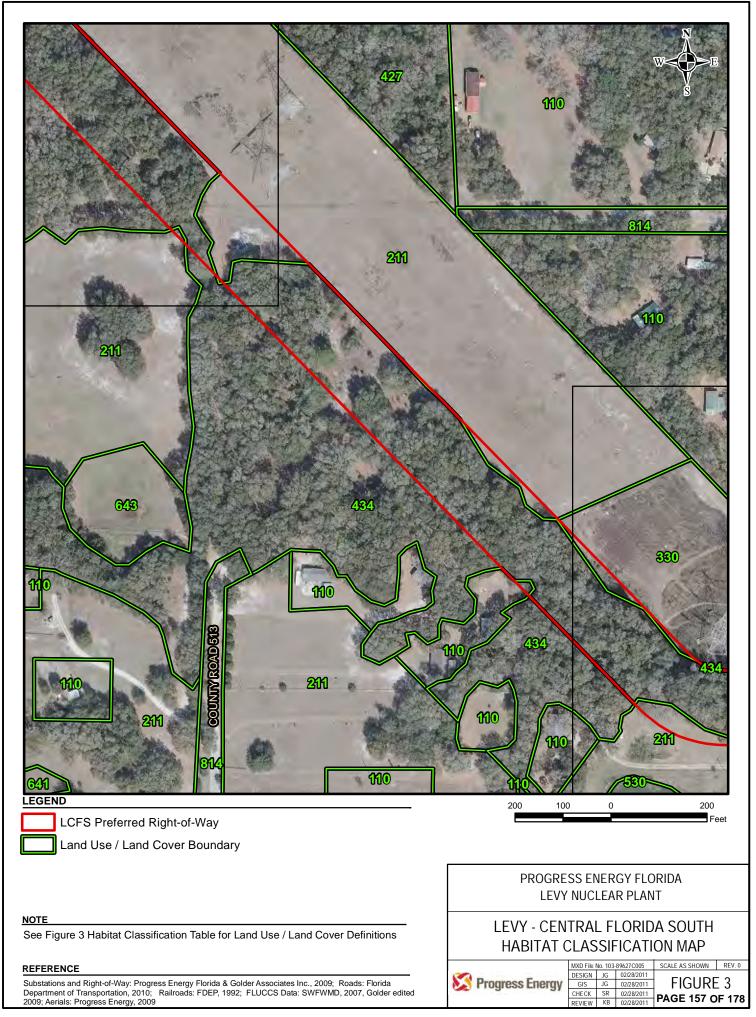


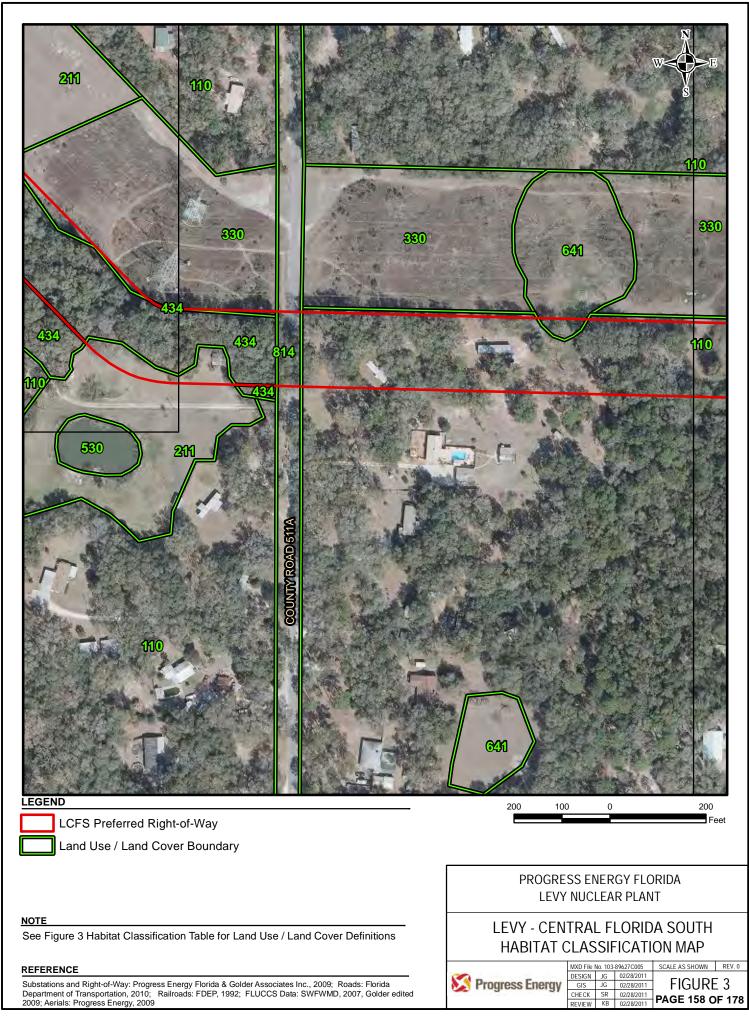
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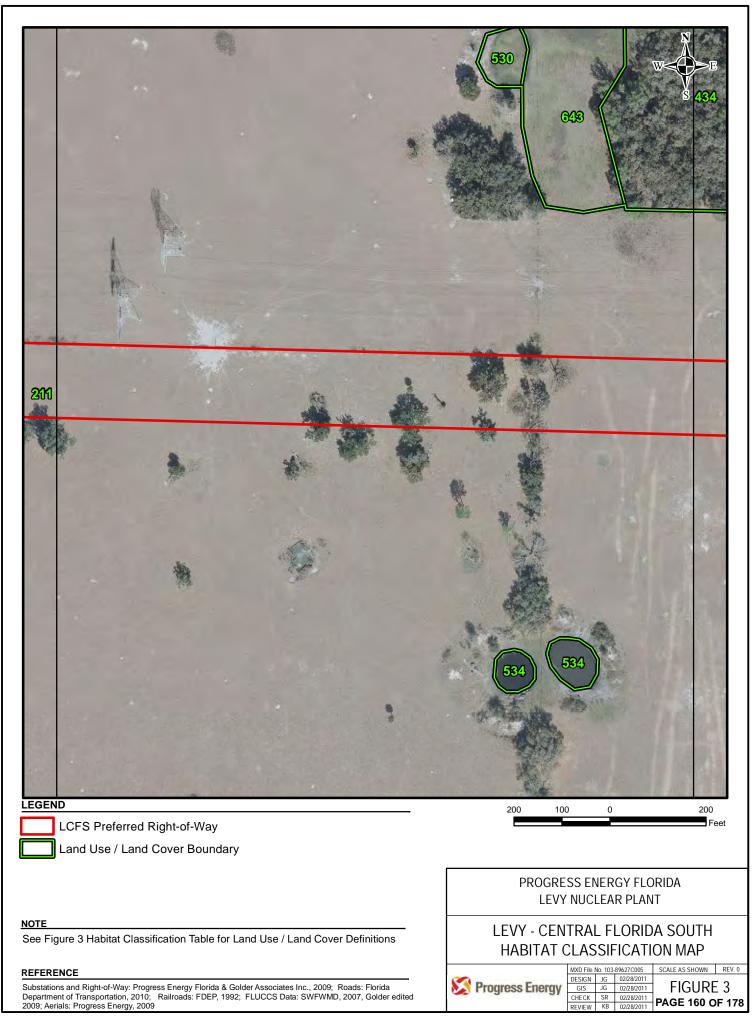


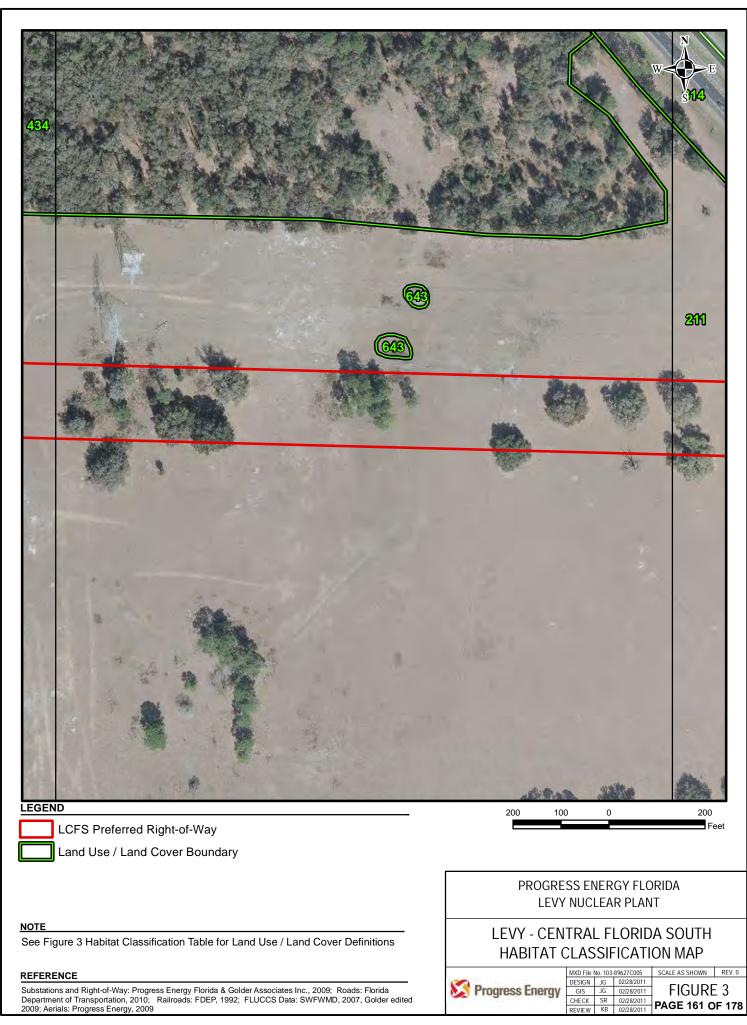


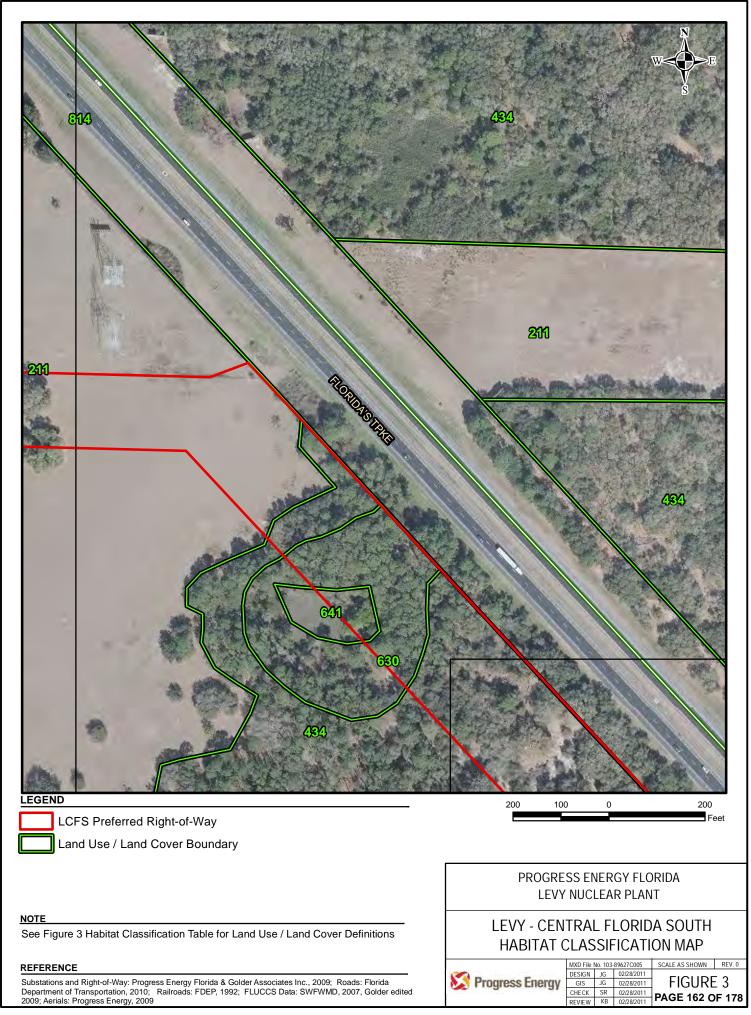


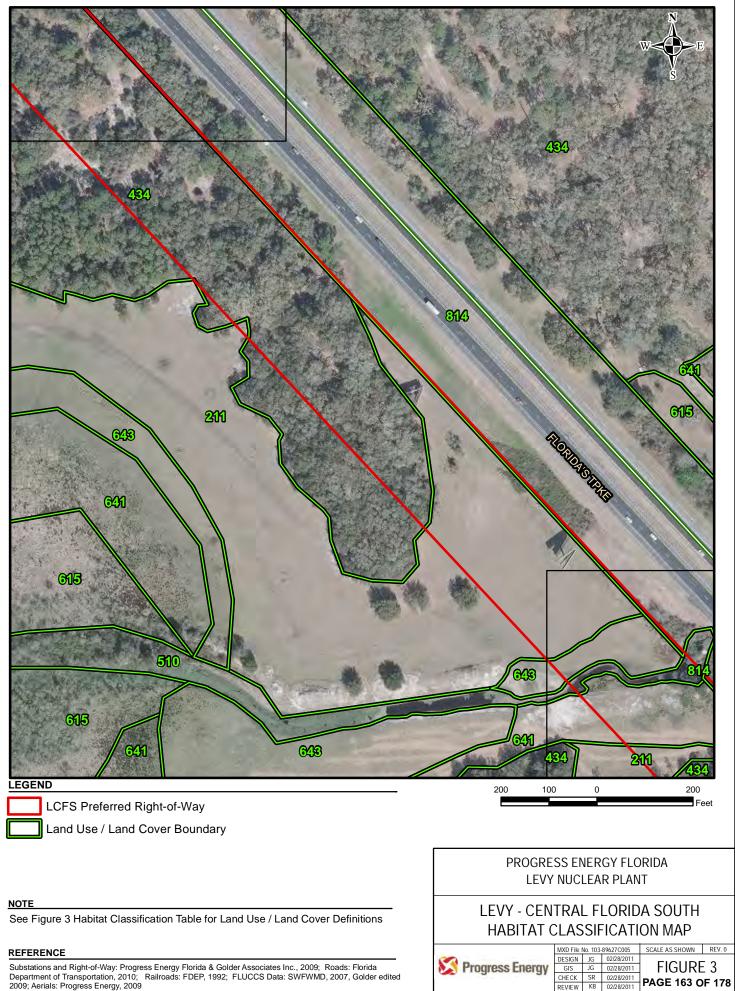




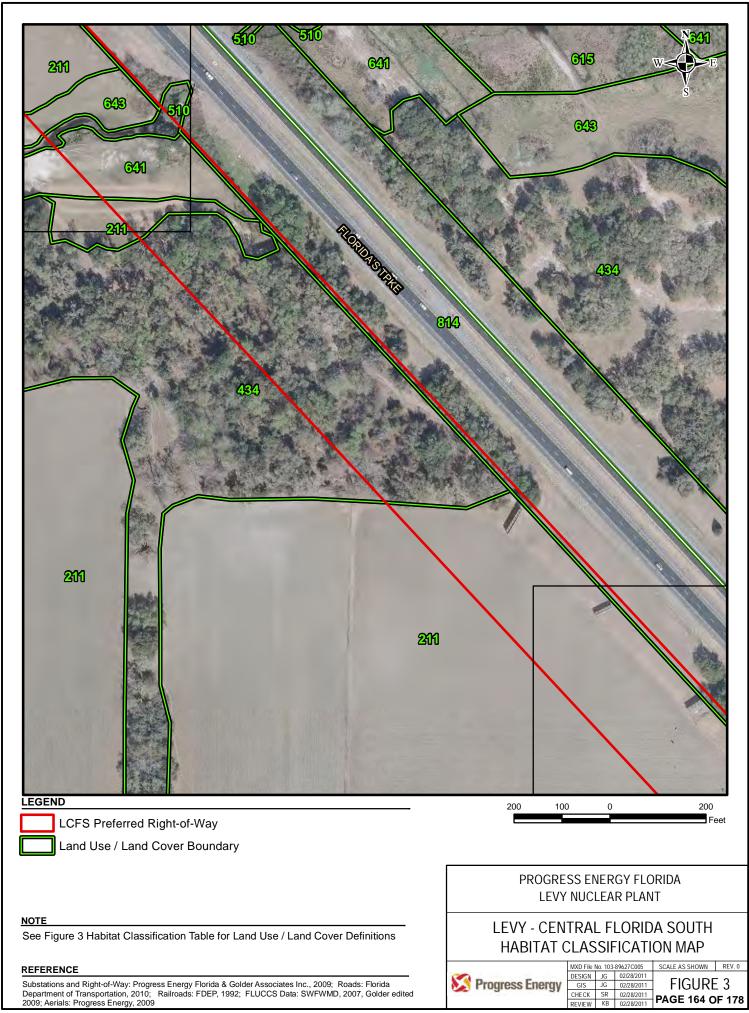


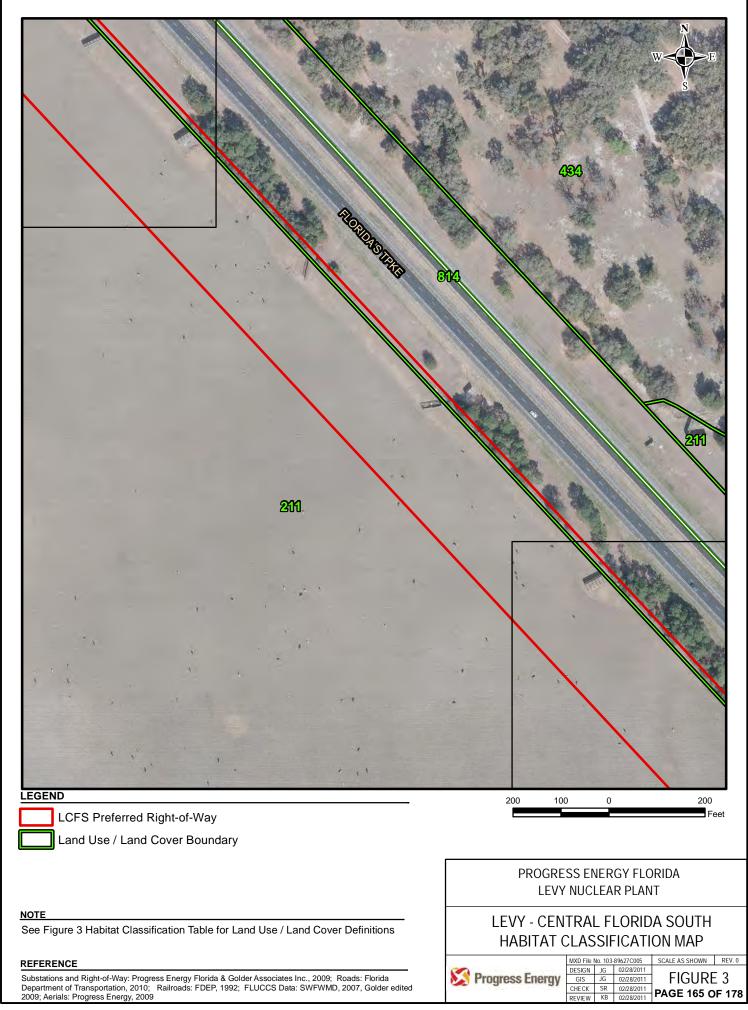


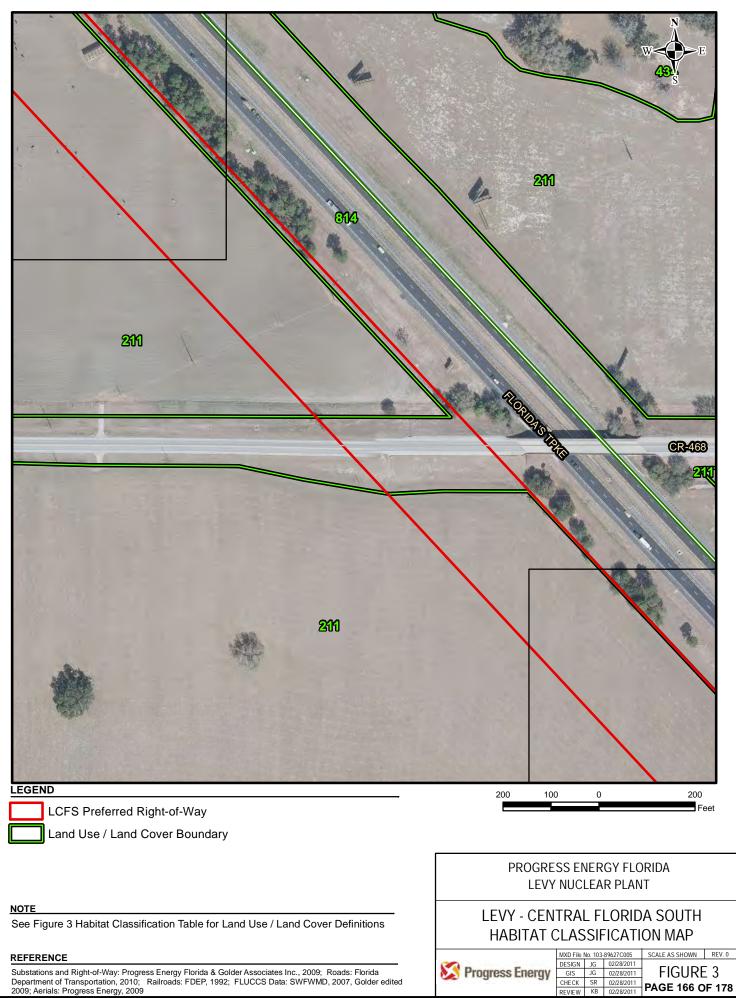


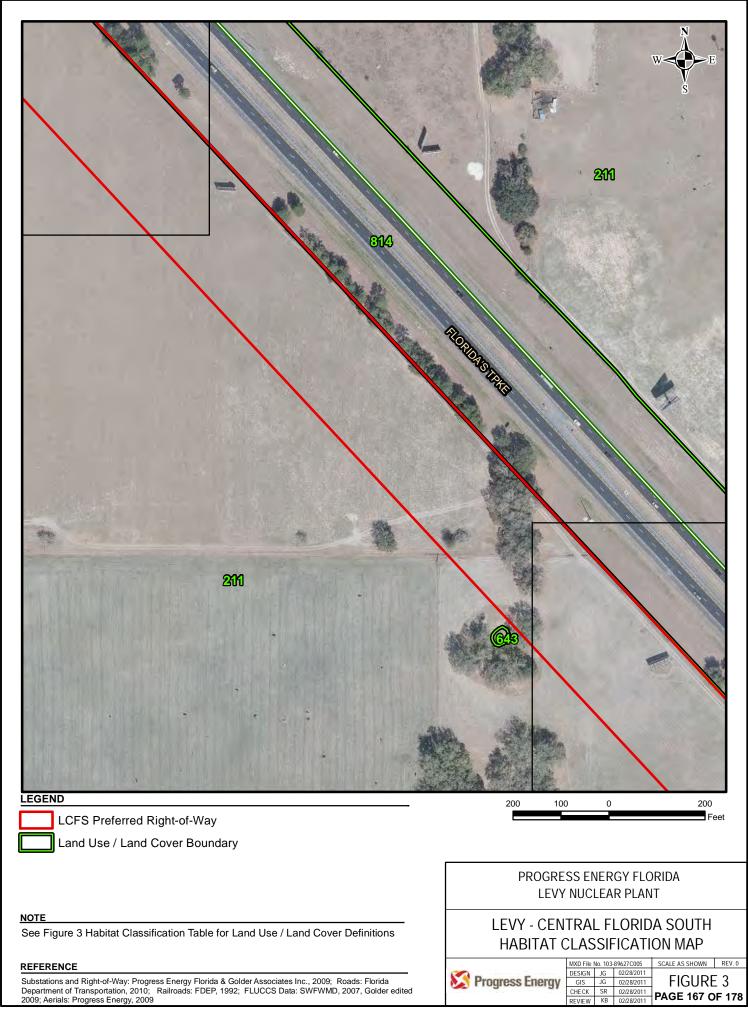


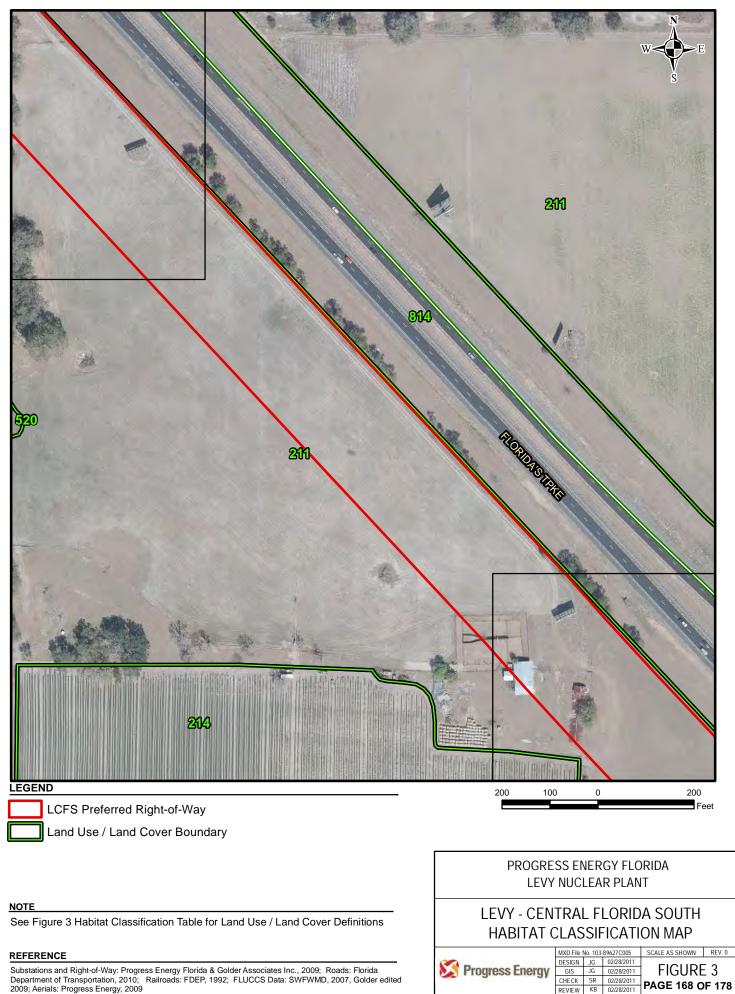
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