



United States Department of the Interior

U. S. FISH AND WILDLIFE SERVICE

7915 BAYMEADOWS WAY, SUITE 200
JACKSONVILLE, FLORIDA 32256-7517

IN REPLY REFER TO:

FWS Log. No 04EF1000-2014-F-0149

August 8, 2014

Colonel Alan M. Dodd, District Engineer,
U.S. Army Corps of Engineers
Jacksonville District
Regulatory Division, North Permits Branch
Cocoa Regulatory Office
400 High Point Drive, Suite 600
Cocoa, Florida 32926
(Attn: Lauren E. Carroll)

RE: Biological Opinion for U.S. Army Corps of Engineers Permit Application No. SAJ-2013-02728 (SP-LEC), for Sunbay, LLC (Glen Ridge), Melbourne, Brevard County, Florida

Dear Colonel Dodd:

This document transmits the U.S. Fish and Wildlife Service's (Service) biological opinion (BO) to the U.S. Army Corps of Engineers (Corps) for the development of the proposed 22.5±-acre Glen Ridge tract residential subdivision located in Melbourne, Brevard County, Florida, and its effects on the Florida scrub-jay (*Aphelocoma coerulescens*) (hereafter referenced as scrub-jay) in accordance with Section 7 of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.). We received your letter requesting formal consultation (dated February 24, 2014) on February 25, 2014 via email.

This biological opinion (BO) is based on information contained in the correspondence received from the applicant (Sunbay, LLC) and the Corps via email on February 25, 2014; (letter dated February 24, 2014), requesting formal consultation ; a scrub-jay survey report (dated April 18, 2013), and a compensation plan to offset unavoidable impacts (dated March 26, 2014) prepared by Atlantic Environmental Solutions, Inc., along with email and telephone conversations with Project Manager Jon Shepherd and Corps Project Manager Lauren Carroll; field investigations; and other sources of information. A complete administrative record of this consultation is on file in the North Florida Ecological Services Field Office, Jacksonville, Florida.

The Service concurs with the Corps final determination of "may affect, but not likely to adversely affect" for the federally-endangered wood stork (*Mycteria americana*) as discussed below; and for the federally-threatened eastern indigo snake (*Drymarchon coraiscouperi*) based on the *Wood Stork Effect Determination Key* (dated September 2008) and the *Eastern Indigo Snake Effect Determination Key* (dated January 25, 2010; August 13, 2013 Addendum).

Wood Stork

Based on the Applicant's submitted information, including the SFH compensation proposal, and in accordance with the Wood Stork Effect Determination Key provided to the Corps of Engineers, Jacksonville District by the U.S. Fish and Wildlife Service, Jacksonville Ecological Services Field Office for Central and North Peninsular, dated September 2008, the Corps determined that the key sequence for the proposed project is A>B>C>D>E> "may affect, not likely to adversely affect" the Wood Stork, and the Service has subsequently concurred with that finding.

Eastern Indigo Snake

In accordance with all the preceding information to date, the Corps and the Service have concluded that the proposed residential development project "may affect, not likely to adversely affect" the threatened Eastern indigo snake as long as the Applicant subsequently implements the Standard Protection Measures for the Eastern Indigo Snake, as revised August 12, 2013. **If at any time an eastern indigo snake is encountered during clearing and construction activities for this project, the Permittee shall immediately cease activities and notify the U.S Fish and Wildlife Service North Florida Ecological Office within one (1) business day, at telephone number 904-731-3336, in order to obtain further guidance relative to this consultation.**

Audubon's Crested Caracara

The Service also concurs with the Corps final determination of "no effect" for the Audubon's crested caracara (*Polyborus plancus audubonii*). Based on the information provided, the project is within the Audubon's crested caracara's consultation area but outside of the primary and secondary protection zones of known nests for this species; suitable nesting habitat does not occur in the project vicinity and Audubon's crested caracara have not been observed nesting on the project site or in the vicinity.

Scrub-Jay

The Applicant's scrub-jay survey report, *Florida Scrub-Jay Survey Report for the Glen Ridge 22.5 ±Acre Site*, dated April 2013, is provided in Appendix A. This report indicates that a 3.40±-acre portion of the subject 22.5±-acre development site is occupied by one (1) scrub-jay family consisting of two (2) individuals. The occupied territory of this scrub-jay family was documented to include areas to the north and northeast of the site. Therefore, the total habitat area estimated to be occupied by the subject scrub-jay family is 3.40±acres, all of which is proposed to be eliminated for the development of this project. The Corps made a "May affect likely to adversely affect" determination with concurrence from the Service. The applicant proposes to minimize the impacts of taking scrub-jays through the restoration and management plan (Appendix B) identified in the Reasonable and Prudent Measures and Terms and Conditions, in addition to the translocation of scrub-jays as stipulated in the Conservation Recommendations of this BO.

Consultation History

April 18, 2013 – A scrub-jay survey was conducted by Atlantic Environmental Solutions (AES) on the project site and one family (2 individuals) was confirmed.

February 24, 2014 - The Service received a request from the Corps to initiate formal consultation for the Glen Ridge subdivision based on the above-referenced scrub-jay discussion which led to our concurrence with a “may affect, likely to adversely affect” determination for scrub-jays by the Corps.

March 26, 2014 – The Service received the applicants Glen Ridge scrub-jay compensation plan to offset unavoidable impacts.

August 19, 2014 - The Service transmitted the final BO for Glen Ridge to the Corps.

BIOLOGICAL OPINION

DESCRIPTION OF PROPOSED ACTION

The proposed 22.5±-acre project site is located north of Preserve Drive, south of Constellation Drive and west of North Wickham Road in Section 36, Township 26 South, Range 36 East, Melbourne, Brevard County, Florida (Figure 2).

The proposed activity is the construction of a single-family residential subdivision with infrastructure on 22.5± acres, with a proposed 1.50± acre of direct impacts to “water of the United States,” as described in the new Public Notice prepared by AES, received by the Service and the Corps on February 24, 2014. The 1.50± acres of direct impacts are associated with fill activities in Wetlands 1 (Attachment 1). As part of the wetland avoidance and minimization regulatory procedures, the Applicant is purchasing credits from a federally approved mitigation bank.

The habitats and community types occupying the site were designated by AES using the Florida Land Use, Cover and Forms Classification System (FLUCFCS) (FDOT1999) as a guideline. Specific land uses/communities identified within the project site with approximate acreages are: 1) Pine Flatwoods (411) - 16.02 acres; the most dominant community; 2) Scrubby Pine Flatwoods (416) – 2.50 acres; located in the northwest corner of property contains slash pine and scattered occurrences of oak species, saw palmetto understory, rusty lyonia and wiregrass; 3) Brazilian Pepper (422) - 0.15 acres; eastern side of the property surrounding the north boundary is a sliver of Brazilian pepper with scattered occurrences of wax myrtle; 5) Wetland Shrub (631) – 1.82 acres; a topographic depression predominantly vegetated in dahoon holly, wax myrtle, red maple and saltbush with bushy bluestem, Sugarcane plume grass and Virginia chain fern in the groundcover; 6) Vegetated Non-Forested Wetlands (640) – 0.30 acres; western project boundary consist of a subcanopy of fetterbush underlain by Virginia chain fern, bushy bluestem, roadgrass, Sphagnum moss, coinwort, redroot; 7) Freshwater Marsh (641) – 1.70 acres; southwest corner of the property contains a 1.50 acre of Freshwater Marsh and two isolated marshes totaling 0.20 acres; vegetated by bushy bluestem, Virginia chain fern, red ludwigia, sawgrass, roadgrass, coinwort, redroot and muscadine. The locations of these communities are depicted in Figure 3 in the attached consultation letter.

AES first conducted a scrub-jay survey from April 3, 5, 8, 10 and 11, 2013, which revealed that one scrub-jay family, consisting of two (2) individuals, was defending a 3.4±-acres of the Glen Ridge site as a portion of their territory, as well as areas to the north and northeast of the site. Scrub-jays were noted on or just off-site of the Glen Ridge site on three of the five survey dates. On the remaining two survey dates the jays were heard to the east-northeast of the project site as depicted in the attached Scrub-Jay Survey Report.

The entire 22.5±-acre parcel is located within the boundaries of the South Brevard scrub-jay metapopulation polygon, as delineated in the U.S. Fish and Wildlife Service's (Service) *Florida Scrub-Jay Umbrella Habitat Conservation Plan and Environmental Assessment*, dated November 2007.

Since the above referenced 3.4± acres of occupied scrub-jay habitat is within the 22.5±-acre parcel and will be subject to direct impacts from development related activities associated with the project, the Service anticipates that the entire described project will impact 3.4±-acres of occupied scrub-jay habitat.

As such, the Applicant shall minimize and offset impacts to the scrub-jay population by restoring and managing a total of 13.8±-acres of overgrown scrub habitat located offsite within the 550±-acre Malabar Scrub Sanctuary West. The Applicant will provide initial management and fund long term management of scrub-jay habitat within the 550± acre western portion of Malabar Scrub Sanctuary West in Malabar, Florida (Appendix B). Within this area, the applicant shall contract with a habitat management specialist as approved by the Brevard County Environmentally Endangered Lands (EELs) program to restore and manage habitat for scrub-jays. This management will consist primarily of the felling and burning of pines (excluding longleaf pines), and roller-chopping of dense scrub vegetation and will provide for the longterm survival and recruitment of scrub-jays.

The applicant will also donate additional funds (\$16,560) sufficient to EELs in support of the long-term management of the 13.8 acres for 25 years. The details of the -compensation plan to offset unavoidable impacts will be secured under a Memorandum of Agreement (MOA) between the Applicant and the Board of County Commissioners of Brevard County and are included in the Terms and Conditions of this BO.

This above-referenced compensation plan reflects the best available commercial and scientific information and is consistent with the recommended goals and objectives discussed more recently by researchers involved with scrub-jay conservation at Archbold Biological Station in a report entitled "State wide assessment of Florida Scrub-Jays on managed areas: A comparison of current populations to the results of the 1992-93 survey" (2011 State wide Assessment) that was submitted to the Service in May 9, 2011 (R. Boughton and R. Bowman, 2011).

ACTION AREA

Stith (1999) defined 21 metapopulations for the remaining scrub-jays suggesting that they are demographically isolated from each other. Metapopulations are defined as collections of relatively

discrete demographic populations distributed over a landscape. These populations are connected within the metapopulations through dispersal or migration (National Research Council 1995). Utilizing Stith's (1999) boundaries, this project falls within the Central Brevard metapopulation. Since the time of Stith's work, however, Breininger *et al.* (2001, 2003) conducted additional studies within Brevard County. Dispersal data, improved habitat mapping, and new buffering results provide reasonable evidence that the South Brevard and Central Brevard metapopulations, as defined by Stith (1999), show greater connectivity, through observed Florida scrub-jay dispersals, than was previously evident. Therefore, South Brevard and Central Brevard can now be treated as one "South Brevard" metapopulation. As such, the action area for this BO is defined as the South Brevard Florida scrub-jay metapopulation located in central and south Brevard County, Florida and includes Indian River and North St. Lucie Counties.

STATUS OF THE SPECIES/CRITICAL HABITAT

This section summarizes scrub-jay biology and ecology as well as information regarding the status and trends of the scrub-jay throughout its entire range. We use this information to assess whether a federal action is likely to jeopardize the continued existence of the species. The "Environmental Baseline" section summarizes information on status and trends of the scrub-jay specifically within the action area. These summaries provide the foundation for our assessment of the effects of the proposed action, as presented in the "Effects of the Action" section.

Species/Critical Habitat Description

Scrub-jays are about 10 to 12 inches long and weigh about three ounces. They are similar in size and shape to blue jays (*Cyanocitta cristata*), but differ significantly in coloration (Woolfenden and Fitzpatrick 1996a). Unlike the blue jay, the scrub-jay lacks a crest. It also lacks the conspicuous white-tipped wing and tail feathers, black barring, and bridle of the blue jay. The scrub-jay's head, nape, wings, and tail are pale blue, and its body is pale gray on its back and belly. Its throat and upper breast are lightly striped and bordered by a pale blue-gray "bib" (Woolfenden and Fitzpatrick 1996a). Scrub-jay sexes are not distinguishable by plumage (Woolfenden and Fitzpatrick 1984), and males, on the average are only slightly larger than females (Woolfenden 1978). The sexes may be identified by a distinct "hiccup" call made only by females (Woolfenden and Fitzpatrick 1984, 1986). Scrub-jays that are less than about five months of age are easily distinguishable from adults; their plumage is smoky gray on the head and back, and they lack the blue crown and nape of adults. Molting occurs between early June and late November and peaks between mid-July and late September (Bancroft and Woolfenden 1982). During late summer and early fall, when the first basic molt is nearly done, fledgling scrub-jays may be indistinguishable from adults in the field (Woolfenden and Fitzpatrick 1984). The wide variety of vocalizations of scrub-jays is described in Woolfenden and Fitzpatrick (1996b).

Scrub-jays are in the order Passeriformes and the family Corvidae. They have been called a "superspecies complex" and described in four groups that differ in geographic distribution within the United States and Mexico: *A. californica*, from southwestern Washington through Baja California; *A. insularis*, on Santa Cruz in the Channel Islands, California; *A. woodhousii*, from southeastern Oregon and the Rocky Mountains and Great Plains to Oaxaca, Mexico; and *A. coerulescens* in peninsular Florida (American Ornithological Union [AOU] 1983). Other jays of the same genus include the Mexican jay or

gray-breasted jay (*A. ultramarina*) and the unicolored jay (*A. unicolor*) of Central America and southwest North America (Woolfenden and Fitzpatrick 1996b).

The Florida scrub-jay, which was originally named *Corvuscoerulescens* by Bosc in 1795, was transferred to the genus *Aphelocoma* in 1851 by Cabanis. In 1858, Baird made *coerulescens* the type species for the genus and it has been considered a subspecies (*A. c. coerulescens*) for the past several decades (AOU 1957). It recently regained recognition as a full species (Florida scrub-jay, *Aphelocomacoerulescens*) from the AOU (AOU 1995) because of genetic, morphological, and behavioral differences from other members of this group: the western scrub-jay (*A. californica*) and the island scrub-jay (*A. insularis*). The group name is retained for species in this complex; however, it is now hyphenated to "scrub-jay" (AOU 1995).

The Florida scrub-jay species account references the full species name, *A. coerulescens*, as listed in the most recent Service Federal Register notice of Endangered and Threatened Wildlife and Plants (50 Code of Federal Regulations [CFR] §§ [sections] 17.11 and 17.12).

No critical habitat has been designated for this species; therefore, none will be affected.

Life History/Population Dynamics

The Florida scrub-jay has specific habitat needs. It is endemic to peninsular Florida's ancient dune ecosystems or scrubs, which occur on well-drained to excessively well-drained sandy soils (Laessle 1958, 1968; Myers 1990). This relict oak-dominated scrub, or xeric oak scrub, is essential habitat to the scrub-jay. This community type is adapted to nutrient-poor soils, periodic drought, and frequent fires (Abrahamson 1984). Xeric oak scrub on the Lake Wales Ridge is predominantly made up of four species of stunted, low-growing oaks: sand live oak (*Quercusgeminata*), Chapman oak (*Q. chapmanii*), myrtle oak (*Q. myrtifolia*), and scrub oak (*Q. inopina*) (Myers 1990). In optimal habitat for scrub-jays on the Lake Wales Ridge, these oaks are 3 to 10 feet high, interspersed with 10 to 50 percent unvegetated, sandy openings, and a sand pine (*Pinusclausa*) canopy of less than 20 percent (Woolfenden and Fitzpatrick 1991). Trees and dense herbaceous vegetation is rare. Other vegetation noted along with the oaks includes saw palmetto (*Serenoarepens*) and scrub palmetto (*Sabaletonia*), as well as woody shrubs such as Florida rosemary (*Ceratiolaericoides*) and rusty lyonia (*Lyoniaferruginea*).

Scrub-jays are also documented to occupy areas exhibiting less scrub oak cover and fewer openings along the Atlantic Coastal Ridge, the Merritt Island/Cape Canaveral Complex and in southwest Florida, than typical of xeric oak scrub habitat on the Lake Wales Ridge (Schmalzer and Hinkle 1992b; Breininger et al. 1995; Thaxton and Hingtgen 1996). The predominant communities within these regions are oak scrub and scrubby flatwoods. Scrubby flatwoods differ from scrub by occurring on poorly-drained soils and having a sparse canopy of slash pine (*P. elliotii*); sand pines are rare. Shrub species mentioned above are common, except for scrub oak and scrub palmetto, which are restricted to the Lake Wales Ridge. Runner oak (*Q. minima*), turkey oak (*Q. laevis*), bluejack oak (*Q. incana*), and longleaf pine (*P. palustris*) also have been reported. Kennedy Space Center (KSC), located on Merritt Island and Cape Canaveral in Brevard County, supports one of the largest contiguous populations of Florida scrub-jays. Studies conducted at KSC provide good descriptions of suitable scrub-jay habitat representative of this region (Schmalzer and Hinkle 1992b).

Human interference with natural fire regimes continues to play a major role in the decline of the Florida scrub-jay population due to declining habitat suitability, and at present, may exceed habitat loss as the single most important limiting factor (Woolfenden and Fitzpatrick 1991, 1996a; Fitzpatrick *et al.* 1994). Lightning strikes cause virtually all naturally-occurring fires in Florida scrub habitat (Abrahamson 1984; Hofstetter 1984; Woolfenden and Fitzpatrick 1990). Fire has been noted to be important in maintenance of scrub habitat for decades (Nash 1895; Harper 1927; Webber 1935; Davis 1943; Laessle 1968; Abrahamson *et al.* 1984). Human efforts to prevent and/or control natural fires have allowed scrub to become too dense and tall to support populations of scrub-jays, resulting in the decline of local populations of scrub-jays throughout the state (Fernald 1989; Fitzpatrick *et al.* 1994, unpubl. data; Percival *et al.* 1995; Stith *et al.* 1996; Thaxton and Hingtgen 1996; Woolfenden and Fitzpatrick 1990, 1996a; Toland 1999).

Optimal scrub-jay habitat occurs as patches with the following attributes: (1) oak cover: greater than 50 percent of the shrub layer made up of scrub oaks; (2) open space: mosaic of sand open spaces among oaks; (3) forest height: patches of oak scrubs that occur in optimal height (approx. 4 to 6 feet) without patches of tall scrub (greater than 6 feet) in patches greater than 1-acre; (4) tree cover: less than 15 percent canopy cover; and (5) greater than 984 feet from a forest (Breininger *et al.* 1998, 2003). Much potential scrub-jay habitat occurs as patches of oak scrub within a matrix of little-used habitat of saw palmetto and herbaceous swale marshes (Breininger *et al.* 1991, 1995). These native matrix habitats supply prey for scrub-jays and habitat for other species of conservation concern. The flammability of native matrix habitats is important for spreading fires into oak scrub (Breininger *et al.* 1995, 2002). Degradation or replacement of native matrix habitats with habitat fragments and industrial areas attract predators of scrub-jays, such as fish crows, that are rare in most regularly burned native matrix habitats (Breininger and Schmalzer 1990; Woolfenden and Fitzpatrick 1991). Matrix habitats often develop into woodlands and forests when there is a disruption of fire regimes. These woodlands and forests are not suitable for use by scrub-jays, decrease the habitat suitability of nearby scrub, attract predators, and further disrupt fire patterns.

Florida scrub-jays have a social structure that involves cooperative breeding, a trait that is not exhibited in the other North American species of scrub-jays (Woolfenden and Fitzpatrick 1984, 1990). Florida scrub-jays live in families ranging from two birds (a single mated pair) to extended families of eight adults (Woolfenden and Fitzpatrick 1984) and one to four juveniles. Fledgling scrub-jays stay with the breeding pair in their natal territory as "helpers," forming a closely-knit, cooperative family group. Pre-breeding numbers are generally reduced to either a pair with no helpers or families of three or four individuals (a pair plus one or two helpers) (Woolfenden and Fitzpatrick 1996a).

Florida scrub-jays have a well-developed intra-familial dominance hierarchy with breeder males most dominant, followed by helper males, breeder females, and, finally, female helpers (Woolfenden and Fitzpatrick 1977, 1984). Helpers take part in sentinel duties (Woolfenden and Fitzpatrick 1984; McGowan and Woolfenden 1989), territorial defense (Woolfenden and Fitzpatrick 1984), predator-mobbing, and the feeding of both nestlings (Stallcup and Woolfenden 1978) and fledglings (Woolfenden and Fitzpatrick 1984; McGowan and Woolfenden 1990). The well-developed sentinel system involves having one individual occupying an exposed perch watching for predators or territory intruders. When a predator is seen, the sentinel scrub-jay gives a distinctive warning call (McGowan and Woolfenden

1989, 1990), and all family members seek cover in dense shrub vegetation (Fitzpatrick *et al.* 1991).

Scrub-jay pairs occupy year-round, multi-purpose territories (Woolfenden and Fitzpatrick 1978, 1984; Fitzpatrick *et al.* 1991). Territory size averages 22 to 25 acres (Woolfenden and Fitzpatrick 1990; Fitzpatrick *et al.* 1991), with a minimum size of about 12 acres (Woolfenden and Fitzpatrick 1984; Fitzpatrick *et al.* 1991). The availability of territories is a limiting factor for scrub-jay populations (Woolfenden and Fitzpatrick 1984). Because of this limitation, non-breeding adult males may stay at the natal territory as helpers for up to six years, waiting for either a mate or territory to become available (Woolfenden and Fitzpatrick 1984). Scrub-jays may become breeders in several ways: (1) by replacing a lost breeder on a non-natal territory (Woolfenden and Fitzpatrick 1984); (2) through "territorial budding," where a helper male becomes a breeder in a segment of its natal territory (Woolfenden and Fitzpatrick 1978); (3) by inheriting a natal territory following the death of a breeder; (4) by establishing a new territory between existing territories (Woolfenden and Fitzpatrick 1984); or (5) through "adoption" of an unrelated helper by a neighboring family followed by resident mate replacement (Woolfenden and Fitzpatrick 1984). Territories also can be created by restoring habitat through effective habitat management efforts in areas that are overgrown (Thaxton and Hingtgen 1994).

To become a breeder, a scrub-jay must find a territory and a mate. Evidence presented by Woolfenden and Fitzpatrick (1984) suggests that scrub-jays are monogamous. The pair retains ownership and sole breeding privileges in its particular territory year after year. Courtship to form the pair is lengthy and ritualized and involves posturing and vocalizations made by the male to the female (Woolfenden and Fitzpatrick 1996b). Copulation between the pair is generally out of sight of other scrub-jays (Woolfenden and Fitzpatrick 1984). These authors also reported never observing copulation between unpaired scrub-jays or courtship behavior between a female and a scrub-jay other than her mate. Age at first breeding in the scrub-jay varies from 1 to 7 years, although most individuals become breeders between 2 and 4 years of age (Fitzpatrick and Woolfenden 1988). Persistent breeding populations of scrub-jays exist only where there are scrub oaks in sufficient quantity and form to provide an ample winter acorn supply, cover from predators, and nest sites during the spring (Woolfenden and Fitzpatrick 1996b).

Scrub-jay nests are typically constructed in shrubby oaks, at a height of 1.6 to 8.2 feet (Woolfenden 1974). Sand live oak and scrub oak are the preferred shrub on the Lake Wales Ridge (Woolfenden and Fitzpatrick 1996b), and myrtle oak is favored on the Atlantic Coastal Ridge (Toland 1991) and southern Gulf coast (J. Thaxton, Uplands, Inc., pers. comm. 1998). In suburban areas, scrub-jays nest in the same evergreen oak species, as well as in introduced or exotic trees; however, they build their nests in a significantly higher position within this developed landscape as compared with natural scrub habitat (Bowman *et al.* 1996). Scrub-jay nests are an open cup, about 7 to 8 inches outside diameter and 3 to 4 inches inside diameter. The outer basket is bulky and built of course twigs from oaks and other vegetation, and the inside is lined with tightly wound palmetto or cabbage palm fibers. There is no foreign material as may be present in a blue jay nest (Woolfenden and Fitzpatrick 1996b).

Nesting is synchronous, normally occurring from 1 March through 30 June (Woolfenden and Fitzpatrick 1984). On the Atlantic Coastal Ridge and southern Gulf coast, nesting may be protracted through the end of July (B. Toland, Service, pers. comm. 1996; J. Thaxton, Uplands, Inc., pers. comm. 1998). In

suburban habitats, nesting is consistently started earlier (March) than in natural scrub habitat (Fleischer 1996), although the reason for this is unknown.

Clutch size ranges from one to five eggs, but is typically three or four eggs (Woolfenden and Fitzpatrick 1990). Clutch size is generally larger in suburban habitats, and the birds try to rear more broods per year (Fleischer 1996). Double brooding by as much as 20 percent has been documented on the Atlantic Coastal Ridge and in suburban habitat within the southern Gulf coast, compared to about 2 percent on the Lake Wales Ridge (B. Toland, Service, pers. comm. 1996; J. Thaxton, Uplands, Inc., pers. comm. 1998). Scrub-jay eggs measure 1.1 inches x 0.8 inches (length x breadth) (Woolfenden and Fitzpatrick 1996b), and coloration "varies from pea green to pale glaucous green... blotched and spotted with irregularly shaped markings of cinnamon rufous and vinaceous cinnamon, these being generally heaviest about the larger end" (Bendire *in* Bent 1946). Eggs are incubated for 17 to 19 days (Woolfenden 1974), and fledging occurs 15 to 21 days after hatching (Woolfenden 1978; Fitzpatrick *et al.* unpubl. data). Only the breeding female incubates and brood eggs and nestlings (Woolfenden and Fitzpatrick 1984). Average production of young is two fledglings per pair, per year (Woolfenden and Fitzpatrick 1990; Fitzpatrick *et al.* 1991), and the presence of helpers improves fledging success (Woolfenden and Fitzpatrick 1990; Mumme 1992). Annual productivity must average at least two young fledged per pair for a population of scrub-jays to support long-term stability (Fitzpatrick *et al.* 1991).

Fledglings depend upon adults for food for about ten weeks, during which time they are fed by both breeders and helpers (Woolfenden 1975; McGowan and Woolfenden 1990). Survival of scrub-jay fledglings to yearling age class averages about 35 percent in optimal scrub, while annual survival of both adult males and females averages around 80 percent (Fitzpatrick *et al.* unpubl. data). Data from Archbold Biological Station located in Highlands County, Florida, however, suggest that survival and reproductive success of scrub-jays in sub-optimal habitat is lower (Woolfenden and Fitzpatrick 1991). These data help explain why local populations inhabiting unburned, late successional habitats become extirpated. Similarly, data from Indian River County show that mean annual productivity declines significantly in suburban areas where Toland (1991) reported that productivity averaged 2.2 young fledged per pair in contiguous optimal scrub, 1.8 young fledged per pair in fragmented moderately-developed scrub, and 1.2 young per pair fledged in very fragmented suboptimal scrub. The longest observed lifespan of a scrub-jay is 15.5 years at Archbold Biological Station. (Woolfenden and Fitzpatrick 1996b).

Scrub-jays are non-migratory and permanently territorial. Juveniles stay in their natal territory for up to six years before dispersing to become breeders (Woolfenden and Fitzpatrick 1984, 1986). Once a scrub-jay pair becomes breeders, generally within two territories of their natal territory, they stay on their breeding territory until death. In suitable habitat, fewer than 5 percent of scrub-jays disperse more than 5 miles (Fitzpatrick *et al.* unpubl. data). All documented long-distance dispersals have been in unsuitable habitat such as woodland, pasture, or suburban plantations. Scrub-jay dispersal behavior is affected by the intervening land uses. Protected scrub habitats will most effectively sustain scrub-jay populations if they are located within surrounding habitat types that can be used and traversed by scrub-jays. Brushy pastures, scrubby corridors along railway and road rights-of-way, and open burned flatwoods offer links for colonization among scrub-jay populations. Breininger (1999) reported in Brevard County a maximum natal dispersal distance for females to be 9.3 miles; males, 1.0 mile; and mean of 3.5 miles for females and 0.7 miles for males. Mean dispersal from territories in suburban areas was females: 5.0

miles, males: 1.2 miles, while unfragmented areas for females was 0.6 miles, and males: 0.2 miles.

Scrub-jays forage mostly on or near the ground, often along the edges of natural or man-made openings. They visually search for food by hopping or running along the ground beneath the scrub or by jumping from shrub to shrub. Insects, particularly orthopterans (e.g., locusts, crickets, grasshoppers, beetles) and lepidopteran (e.g., butterfly and moth) larvae form most of the animal diet throughout most of the year (Woolfenden and Fitzpatrick 1984). Small vertebrates are eaten when encountered, including frogs and toads (*Hyla femoralis*, *H. squirella*, rarely *Bufo quercicus*, and unidentified tadpoles, lizards (*Anolis carolinensis*, *Chamaeleo sexlineatus*, *Sceloporus woodi*, *Eumeces inexpectatus*, *Neoseps reynoldsi*, *Ophisaurus compressus*, *O. ventralis*), small snakes (*Thamnophis sauritus*, *Opheodrys aestivus*, *Diadophis punctatus*), small rodents (*Sigmodon hispidus*, *Peromyscus polionotus*, *Rattus rattus* young), downy chicks of the bobwhite (*Colinus virginianus*), and fledgling common yellowthroat (*Geothlypis trichas*). In suburban areas, scrub-jays will accept supplemental foods once they have learned about them (Woolfenden and Fitzpatrick 1984).

Acorns are the principal plant food (Woolfenden and Fitzpatrick 1984; Fitzpatrick *et al.* 1991). From August to November each year, scrub-jays may harvest and cache 6,500 to 8,000 oak (*Quercus* spp.) acorns throughout their territory. Acorns are typically buried beneath the surface of bare sand patches in the scrub during fall, and retrieved and consumed year-round, though most are consumed in fall and winter (DeGange *et al.* 1989). On the Atlantic Coastal Ridge, acorns are often cached in pine trees, either in forks of branches, in distal pine boughs, under bark, or on epiphytic plants, between one to 30 feet in height (B. Toland, Service, pers. comm. 1996). Other small nuts, fruits, and seeds also are eaten (Woolfenden and Fitzpatrick 1984).

Many scrub-jays occur in poor habitat conditions due to habitat fragmentation and fire suppression. Although they may be present in these areas, their long-term persistence is threatened (Swain *et al.* 1995; Stith *et al.* 1996; Root 1998; Breininger *et al.* 2001). A primary cause for scrub-jay population decline is poor demographic success associated with reductions in fire frequency (Woolfenden and Fitzpatrick 1984, 1991; Schaub *et al.* 1992; Stith *et al.* 1996; Breininger *et al.* 1999). The reduction in fire frequency is associated with increases in shrub height, decreases in open space, increases in tree densities, and the replacement of scrub and marshes by forests (Duncan and Breininger 1998; Schmalzer and Boyle 1998; Duncan *et al.* 1999). These habitat trajectories result in declines in habitat use and demographic success (Woolfenden and Fitzpatrick 1984, 1991). As a result, mean family size declines, and eventually the number of breeding pairs can decline by 50 % every 5 to 10 years (Woolfenden and Fitzpatrick 1991; Breininger *et al.* 1999, 2001).

Status and Distribution

The Florida scrub-jay was federally listed as threatened in 1987 primarily because of habitat fragmentation, degradation, and loss (52 FR 20719).

Historically, oak scrub occurred as numerous isolated patches in peninsular Florida. These patches were concentrated along both the Atlantic and Gulf coasts and on the central ridges of the peninsula (Davis 1967). Probably until as recently as the 1950s, scrub-jay populations occurred in the scrub habitats of 39 of the 40 counties south of, and including Levy, Gilchrist, Alachua, Clay, and Duval Counties. Historically, most of these counties would have contained hundreds or even thousands of breeding pairs (Fitzpatrick *et al.* 1994). Only the southernmost county, Monroe, lacked scrub-jays (Woolfenden and Fitzpatrick 1996a). Although scrub-jay numbers probably began to decline when European settlement began in Florida (Cox 1987), the decline was first noted in the literature by Byrd (1928). After 40 years of personal observation of the Etonia scrub (now known as Ocala National Forest), Webber (1935) observed many changes to the previously-undisturbed scrub habitat found there, noting that “The advent of man has created a new environmental complex.”

A state-wide scrub-jay census was conducted in 1992-1993, at which time there were an estimated 4,000 pairs of scrub-jays left in Florida (Fitzpatrick *et al.* 1994). At that time, the scrub-jay was considered extirpated in ten counties (Alachua, Broward, Clay, Duval, Gilchrist, Hernando, Hendry, Pinellas, and St. Johns), and were considered functionally extinct in an additional five counties (Flagler, Hardee, Levy, Orange, and Putnam), where ten or fewer pairs remained. Recent information indicates that there are at least 12 to 14 breeding pairs of scrub-jays located within Levy County, higher than previously thought (K. Miller, FWC, in lit.), and there is at least one breeding pair of scrub-jays remaining in Clay County (K. Miller, FWC, in lit.). One scrub-jay was documented in St. Johns County in 2003 (J.B. Miller, FDEP, in lit.) however, no sightings have been reported since. Populations are close to becoming extirpated in Gulf coast counties (from Levy south to Collier) (Woolfenden and Fitzpatrick 1996a). In 1992-1993, population numbers in 21 of the counties were below 30 or fewer breeding pairs (Fitzpatrick *et al.* 1994). Based on the amount of destroyed scrub habitat, scrub-jay population loss along the Lake Wales Ridge is 80 percent or more since pre-European settlement (Fitzpatrick *et al.* 1991). Since the early 1980s, Fitzpatrick *et al.* (1994) estimated that in the northern third of the species' range, the scrub-jay declined somewhere between 25 and 50 percent. In 1996, Stith *et al.* reported that the species may have declined by as much as 25 to 50 percent in the past decade.

Even though no further comprehensive state wide surveys have been completed since 1992-93 on both private and public lands, considerable evidence exists that populations have continued to decline, especially in unmanaged and suburban areas (Fitzpatrick *et al.* 1991; Woolfenden and Fitzpatrick 1996; Bowman 1998; Bowman and Pruett 2009; Breininger *et al.* 2003; Boughton and Bowman 2011). However, steps to reverse this decline have occurred through the acquisition and protection of nearly 280,000 acres of scrub habitat (USFWS 2007), and management of scrub habitat is continuing in many areas of Florida (Boughton and Bowman 2011); also in part due to more recently funded regulatory compensatory measures requested in Service biological opinions.

Best estimates of the 2009-2010 range-wide population of scrub-jays on 198 different managed lands were 1,253 groups; where in 1992-93 on 178 of those sites, the total scrub-jay population was 1,495 groups reflecting a decline of 17%. However, it was reported likely that the actual population in 1992-93 was larger than 1,495 because 20 of the sites surveyed in 2009-2010 were not surveyed in 1992-93, so a direct comparison excluding the non-surveyed areas from 1992-93 shows a 26% decline by 2009-2010 for the remaining 178 sites (Boughton and Bowman 2011). Also contributing to this decline is the economic downturn starting around 2007-2008, causing public agencies to suffer severe budget cuts that

reduced their ability to manage their lands for scrub-jays.

Stith (1999) utilized a spatially explicit individual-based population model developed specifically for the scrub-jay to complete a metapopulation viability analysis for each of the 21 metapopulations that he had defined. A series of simulations were run for each of the 21 metapopulations based on different scenarios of reserve design ranging from the minimal configuration consisting of only currently protected patches of scrub (no acquisition option) to the maximum configuration, where all remaining significant scrub patches were acquired for protection (complete acquisition option) (Stith 1999). The assumption was made that all areas that were protected were also restored and properly managed.

Results from Stith's (1999) simulation model included estimates of extinction, quasi-extinction (the probability of a scrub-jay metapopulation falling below 10 pairs), and percent population decline. These were then used to rank the different state-wide metapopulations by vulnerability. The model predicted that five metapopulations (NE Lake, Martin, Merritt Island, Ocala National Forest, and Lake Wales Ridge) have low risk of quasi-extinction. Two of the five (Martin and NE Lake), however, experienced significant population declines under the "no acquisition" option; the probability for survival of both of these metapopulations could be improved with more acquisitions. Eleven of the remaining 21 metapopulations were shown to be highly vulnerable to quasi-extinction if more habitats were not acquired (Central Brevard, N Brevard, Central Charlotte, NW Charlotte, Citrus, Lee, Levy, Manatee, Pasco, St. Lucie, and W Volusia). The model predicted that the risk of quasi-extinction would be greatly reduced for 7 of the 11 metapopulations (Central Brevard, N Brevard, Central Charlotte, NW Charlotte, Levy, St. Lucie, and W Volusia) by acquiring all or most of the remaining scrub habitat. The model predicted that the remaining four metapopulations (Citrus, Lee, Manatee, and Pasco) would moderately benefit if more acquisitions were made.

Stith (1999) classified two metapopulations (South Brevard and Sarasota) as moderately vulnerable with a moderate potential for improvement; they both had one or more fairly stable subpopulations of scrub-jays under protection, but the model predicted population declines. The rest of the metapopulations could collapse without further acquisitions, making the protected subpopulations there vulnerable to epidemics or other catastrophes.

Three of the metapopulations evaluated by Stith (1999) (Flagler, Central Lake, and S Palm Beach) were classified as highly vulnerable to quasi-extinction and had low potential for improvement, since little or no habitat is available to acquire or restore.

Finally, the spatial structure in Stith's model (1999) was more recently confirmed by genetic analyses that suggest at least 11 distinct genetic units exist (Coulon et al. 2008). The metapopulation structure conforms to these genetic units; although several previously described metapopulations could comprise a single genetic unit (Coulon et al. 2008). Recent research contained in the Statewide Assessment (2011) describes 10 genetically differentiated groups of scrub-jays throughout their extant range as summarized in a table by population trends with genetic units labeled A through K, Total Carrying Capacity, Managed Areas with Populations (1992-93 Compared to 2009-2010), Total Groups and Percent (%) Carrying Capacity.

Current Threats

Research and monitoring of Florida scrub-jays has revealed more information about threats to this species since the time the first recovery plan was approved in 1990. The following discussion is intended to give an up-to-date analysis based on the Service's 2007 Five-Year Review for the Florida Scrub-Jay (USFWS 2007):

The Present or Threatened Destruction, Modification, or Curtailment of its Habitat or Range: Scrub habitats have continued to decline throughout peninsular Florida since listing occurred, and habitat destruction continues to be one of the main threats to the scrub-jay. Eighty percent or more of the scrub habitats have been destroyed along the Lake Wales Ridge since pre-European settlement (Fitzpatrick *et al.* 1991). Fernald (1989), Fitzpatrick *et al.* (1991), and Woolfenden and Fitzpatrick (1996a) noted that habitat losses due to agriculture, silviculture, and commercial and residential development have continued to play a role in the decline in numbers of scrub-jays throughout the state. State-wide, estimates of scrub habitat loss range from 70 to 90 percent (Woolfenden and Fitzpatrick 1996a; Fitzpatrick *et al.* unpubl. data). Various populations of scrub-jays within the species' range have been monitored closely, and more precise estimates of habitat loss in these locations are available (USFWS 2007).

Toland (1999) estimated that about 70 to 78 percent of pre-European settlement scrub habitats had been converted to other uses in Brevard County. This is due mainly to development activity and citrus conversion, which were the most important factors that contributed to the scrub-jay decline between 1940 and 1990. A total of only 10,656 acres of scrub and scrubby flatwoods remain in Brevard County (excluding federal ownership), of which only 1,600 acres (15 percent) is in public ownership for the purposes of conservation. Less than 1,977 acre of an estimated pre-settlement of 14,826 acres of scrubby flatwoods habitat remain in Sarasota County, mostly occurring in patches averaging less than 2.5 acres in size (Thaxton and Hingtgen 1996).

Habitat destruction not only reduces the amount of area scrub-jays can occupy, but also increases fragmentation of habitat. As more scrub habitat is altered, suitable habitat is cut into smaller and smaller pieces, separated from other patches by larger distances; such fragmentation increases the probability of inbreeding and genetic isolation, which is likely to increase extinction probability (Fitzpatrick *et al.* 1991; Woolfenden and Fitzpatrick 1991; Stith *et al.* 1996; Thaxton and Hingtgen 1996). As discussed above, dispersal distances of scrub-jays in fragmented habitat are further than in optimal unfragmented habitats, and demographic success is poor (Thaxton and Hingtgen 1996; Breininger 1999).

Overutilization for Commercial, Recreational, Scientific, or Educational Purposes:

At the time of listing, shooting of scrub-jays and their collection as pets were identified as threats. Since the time of listing, known incidences of scrub-jay shootings have been rare and have not substantially impacted the species. Research on scrub-jays over the past 20 years has increased, and numerous scientific research permits have been issued. To date, we are aware of one scrub-jay mortality resulting from permitted research. This factor does not pose a risk to scrub-jays.

Disease or Predation: At the time of listing, disease and predation were not believed to be major threats. However, most scrub-jay mortality probably is from predation (Woolfenden and Fitzpatrick 1996b). The second most frequent cause of mortality may be disease, or predation on disease-weakened scrub-jays

(Woolfenden and Fitzpatrick 1996b). Known native predators of scrub-jays are numerous (see Woolfenden and Fitzpatrick 1990; Fitzpatrick *et al.* 1991; Schaubet *al.* 1992; Woolfenden and Fitzpatrick 1996a, 1996b; Breininger 1999; K. Miller FWC, in litt. 2004; Franzreb and Puschock 2004). Scrub-jays are also vulnerable to predation by feral and free-ranging domestic cats (Fitzpatrick *et al.* 1991; Bowman and Averill 1993; Bergen 1994; Breininger *et al.* 1995, 2001; Woolfenden and Fitzpatrick 1996a, 1996b; Breininger 1999; Toland 1999; Christman 2000). Woolfenden and Fitzpatrick (1996b) state that in suburban habitats, house cats are “important” predators to young and adult scrub-jays. Fitzpatrick *et al.* (1991) suspected that domestic cats supported by human food offerings could eliminate a small local population of scrub-jays. However, the impact of cat predation on scrub-jays has not been quantitatively assessed.

Woolfenden and Fitzpatrick (1996b) noted three episodes of elevated mortality (especially among juveniles) in 26 years at Archbold Biological Station. During the most severe of these presumed epidemics (August 1979 through March 1980), all but one of the juvenile cohorts and almost half of the breeding adults died (Woolfenden and Fitzpatrick 1984, 1990). The 1979-1980 incidents coincided with an outbreak of eastern equine encephalitis among domestic birds in central Florida (J. Day pers. comm., cited in Woolfenden and Fitzpatrick 1996b). From the fall of 1997 through the spring of 1998, the continuing population decline of scrub-jays along the Atlantic coast and in central Florida may have been augmented by an epidemic of unknown origin (Breininger 1999).

The scrub-jay hosts two protozoan blood parasites (M. Garvin pers. comm., cited in Woolfenden and Fitzpatrick 1996b) and 15 species of intestinal parasitic fauna have been documented (Kinsella 1974). Fly larvae (Woolfenden and Fitzpatrick 1996b), chewing lice (R. Price pers. comm., cited in Woolfenden and Fitzpatrick 1996b), wing-feather mites, chiggers, fleas (J. Kinsella pers. comm., cited in Woolfenden and Fitzpatrick 1996b), and tick nymphs and larvae (L. Durden and J. Keirans pers. comm., cited in Woolfenden and Fitzpatrick 1996b) are known to occur on scrub-jays. These naturally-occurring parasites are not believed to have a negative impact on scrub-jay populations.

West Nile virus was first documented in Florida during 2001 (G. Wallace, FWC, in litt. 2001; Stark and Kazanis 2001). West Nile’s appearance caused concern initially because of the scrub-jay’s close familial relationship to other bird species that have been negatively impacted by this virus (CDC undated). It has not yet been confirmed that scrub-jays have been affected in Florida (Stark and Kazanis 2001; Collins *et al.* 2002, 2003; Rivers *et al.* 2004). There have been local die-offs of scrub-jays reported since the arrival of West Nile virus in Florida, but no confirmation that West Nile virus was responsible (Breininger *et al.* 2001, 2003).

Large scrub-jay populations are at lower risk of extinction due to disease outbreaks than small populations (Breininger *et al.* 1999). Long-term monitoring of large populations in Brevard County and the southern Lake Wales Ridge indicated that most large populations recovered from a suspected 1997 epizootic outbreak (Breininger *et al.* 2003). Furthermore, Breininger *et al.* (2003) suggests that some large populations in high quality habitat may not have shown reductions in breeding population size because surviving helpers represent a surplus of potential breeders in these situations. Thus, having many large scrub-jay populations may act to buffer scrub-jays from possible epidemics that may impact scrub-jays and appear to be patchy in distribution. Maintaining large, contiguous parcels of high quality scrub-jay habitat may reduce the impacts of disease in the future (Breininger *et al.* 2003).

In summary, disease has been periodic and patchy, affecting some scrub-jay populations. Research of scrub-jay diseases has not been extensive, but at present disease does not appear to be a significant risk factor to scrub-jays. Predation has been reported in many scrub-jay populations and is reported to be higher in urban landscapes. In urban areas, predation, in combination with other effects related to habitat fragmentation and degradation, contribute to poor scrub-jay demographic performance. However, predation alone is not a significant risk factor to scrub-jays.

The Inadequacy of Existing Regulatory Mechanisms: Scrub-jays (including their eggs and young) (collectively referred to as “individuals” below) and/or their habitat are protected by the following regulatory mechanisms: Federal Migratory Bird Treaty Act of 1918 (16 U.S.C. 703 *et seq.*) – individuals throughout range, except on Department of Defense property during military readiness training. National Wildlife Refuge System Administration Act of 1966 – individuals and habitat on national wildlife refuges. Referenced under State Chapter 68A-27.004, Florida Administrative Code – individuals throughout range; and Chapter 68A-15.004, Florida Administrative Code - individuals and habitat on State wildlife management areas.

At the time of listing, the Migratory Bird Treaty Act of 1918 (16 U.S.C. 703 *et seq.*) protected individual scrub-jays from take throughout their range, but did not protect their habitat. Regulations finalized in February 2007 authorize incidental take of migratory birds, including scrub-jays, for military readiness training.

The National Wildlife Refuge System Administration Act (NWRAA) represents organic legislation that set up the administration of a national network of lands and water for the conservation, management, and restoration of fish, wildlife, and plant resources and their habitats for the benefit of the American people. Amendment of the NWRAA in 1997 required the refuge system to ensure that the biological integrity, diversity, and environmental health of refuges be maintained. The ability to meet these statutory requirements on Merritt Island National Wildlife Refuge is complicated by competing operational constraints on Cape Canaveral Air Force Station, which owns most of the refuge property.

The scrub-jay is listed in the State of Florida as a threatened species. Florida State Law (Chapter 68A-27.004, Florida Administrative Code) prohibits taking of individuals of state listed threatened species, or parts thereof, or their nests or eggs, except as authorized; however, the statute does not prohibit destruction or modification of habitat occupied by threatened species. To date, the FWC has not developed a regulatory program that ensures compliance with this State statute. Instead, the FWC relies on Service implementation of the ESA through sections 7 and 10 to permit regulated destruction or modification of occupied habitat and enforcement of illegal taking violations of occupied habitat through section 9.

On State wildlife management areas, regulations protect individual scrub-jays because they are not listed as a game bird and therefore have no legal seasons established for taking. Wildlife management area regulations prohibit destruction or modification of habitat, except for management and restoration activities.

Although there are no local regulations protecting scrub-jays or their habitat, Florida’s State

Comprehensive Plan and Growth Management Act of 1985 requires each county to develop local comprehensive planning documents. Comprehensive plans contain policy statements and natural resource protection objectives, including protection of state and federally listed species, but they are only effective if counties develop, implement, and enforce ordinances. Many county governments have developed protective ordinances, but all such ordinances are based on compliance with the ESA rather than local laws and therefore provide no additional protection. Within the current range of the scrub-jay, five counties and one municipality have provisions for reviewing all development proposals for impacts to scrub and/or scrub-jays and for referring projects that may potentially impact scrub-jays to the Service for ESA compliance (Service staff, personal observation). Four counties occasionally invoke threatened and endangered species screening, depending on the level of controversy surrounding pending developments. The remaining counties do not have environmental resource staff dedicated to habitat protection and/or have not developed protective ordinances.

In summary, Federal laws currently protect individual birds on both private and most public lands and ensure protection and management of individuals and their habitat on national wildlife refuges. State statute exists to ensure protection of individuals on public and private property, but regulatory processes are not currently in place to implement this law in regard to destruction or modification of occupied habitat. However, State regulations protect individuals and habitat on FWC wildlife management areas. In combination, these local and State regulatory mechanisms adequately protect individual scrub-jays but not their habitat.

Other Natural or Manmade Factors Affecting its Continued Existence:

Fire Suppression - Fire suppression, and resulting habitat degradation, reduces habitat quality and scrub-jay demographic success (Woolfenden and Fitzpatrick 1984, 1991; Schaubet *et al.* 1992; Duncan *et al.* 1995; Breininger 1999; Breininger *et al.* 1995, 1996, 1998, 2006) and is likely responsible for declines and local extirpations of scrub-jays throughout Florida (Miller and Stith 2002). Fire suppression and its adverse effects on scrub-jays have been discussed by many authors: Breininger 1998, 1999; Breininger and Carter 2003; Breininger and Oddy 2004; Breininger *et al.* 1996, 2006 (Central Brevard, South Brevard-Indian River County-St. Lucie and Merritt Island-Cape Canaveral metapopulations); Bowman and Fleischer 1998; Bowman and Woolfenden 2001; Schoech and Bowman 2001; Woolfenden and Fitzpatrick 1984, 1991 (Lake Wales Ridge metapopulation) and Thaxton and Hingten 1994, 1996 (Sarasota-West Charlotte metapopulation).

Stith *et al.* (1996) estimated that at least 2,100 breeding pairs of scrub-jays were living in overgrown habitat statewide. Toland (1999) and Brevard County Natural Resources Management Office (2002) reported that most of Brevard County's remaining scrub is overgrown due to fire suppression. Population declines of scrub-jays within Brevard County between 1991 and 1999 were attributed mainly to habitat degradation resulting from fire exclusion and resulting vegetative overgrowth of remaining habitat patches (Breininger *et al.* 2001). Overgrowth of scrub results not only in the decline of species diversity and abundance but also a reduction in the percentage of open sandy patches (Fernald 1989; Woolfenden and Fitzpatrick 1996b). In the northern third of the scrub-jay's range, fire suppression was likely responsible for the decline of the scrub-jay (Fitzpatrick *et al.* 1994).

Habitat degradation due to fire suppression may exceed habitat destruction as the single most important limiting factor (Woolfenden and Fitzpatrick 1991, 1996a; Fitzpatrick *et al.* 1994). Fire is important in

the cyclical maintenance of scrub habitat (Nash 1895; Harper 1927; Webber 1935; Davis 1943; Laessle 1968; Abrahamson *et al.* 1984). Under natural fire regimes, late successional scrub habitats would have burned periodically to create early succession habitats (those with no or few canopy trees). Prevention and/or control of natural fires essentially lock scrub habitats into late successional stage vegetative communities that are not occupied by scrub-jays. Fire suppression is likely to continue on private lands and result in further declines of scrub-jays in these areas (Fernald 1989; Fitzpatrick *et al.* 1994, unpublished data; Percival *et al.* 1995; Stith *et al.* 1996; Thaxton and Hingtgen 1996; Woolfenden and Fitzpatrick 1990, 1996a; Toland 1999).

Natural fire regimes are mimicked through the application of prescribed fires on many public lands that contain scrub-jay habitat. Generally, use of prescribed fire is viewed as an effective tool in the management of scrub-jay habitat. Research in various portions of the scrub-jay's range identifies the need for fire management in scrub habitats. Experimental data at Archbold Biological Station (Fitzpatrick *et al.* unpublished data) show that fire-return intervals varying between 5 and 15 years are optimal for long-term maintenance of productive scrub-jay populations in central Florida. These intervals also correspond with those yielding healthy populations of rare and federally listed scrub plants (Menges and Kohfeldt 1995; Menges and Hawkes 1998). Optimal fire-return intervals may, however, be shorter in coastal scrub habitats (Schmalzer and Hinkle 1992a, 1992b).

Breiner and colleagues have combined GIS techniques with field studies to document the ecology and habitat use of color-banded scrub-jays since 1980 at Merritt Island National Wildlife Refuge and Kennedy Space Center, in Brevard County (Breiner *et al.* 1991; Breiner 1992; Breiner *et al.* 1995, 1996, 1998, 2001, 2003; 2006). Breiner's model for habitat characteristics in coastal scrub and scrubby flatwoods demonstrates the importance of an open habitat structure containing no more than 15 percent pine canopy cover and a mixture of low (less than four feet) and medium-height (four to five and one half feet) scrub oaks interspersed with bare sandy soil (Breiner 2006). These habitat conditions can only be maintained with use of periodic prescribed fire at intervals which may vary from 3 to 10 years depending on matrix vegetation and adjacent habitats (D. Breiner, personal communication, avian ecologist, Dynamac Corporation, February 21, 2007).

Woolfenden and Fitzpatrick (1996a) cautioned that prescribed fire applied too often to scrub habitat can result in local extirpations of scrub-jays. Similarly, Breiner (2006) found that aggressive prescribed burning creates oak scrub habitats that are structurally too short for scrub-jays. Demographic performance in extensively burned scrub is poorer than in optimal scrub (Breiner 2006).

Many public lands are not burned during the growing season or are ignited on a much smaller scale than would have occurred under natural fire regimes. Questions remain about the ecological effects of prescribed burning (during the non-growing season) on scrub-jays and their habitat. However, Foster and Schmalzer (2003) suggested that winter burning may not have significant biological impacts on the reestablishment of scrub vegetative communities.

More recently, some researchers have focused on development of adaptive fire management models (Breiner 2004, Johnson *et al.* 2004), recognizing that fire return intervals should be established based on ecological responses rather than a fixed burn schedule. This approach may be particularly useful

where scrub vegetative communities occur within a matrix of other vegetative communities that naturally burned more frequently.

Many land managers are currently confronted with urban interface issues that preclude or limit use of prescribed fire (Service 2006a). Smoke management and fire containment are often cited as concerns that affect decisions on when and where to use prescribed fire on public lands. With an anticipated increase in the human population in Florida, these constraints are likely to increase in the future.

The beneficial effects of habitat restoration and subsequent maintenance burning are obvious. Scrub-jays were absent from Blue Springs State Park in Volusia County in 1989, when a 30-acre tract of overgrown scrub was clearcut and burned. Another 100 acres were mechanically cleared in 1997. In the last five years, a total of 266 acres have been treated within park boundaries. Demographic monitoring and color-banding of scrub-jays in the region documented a rebound to 22 scrub-jays in 6 families as of 2006 (M. Keserauskis, in litt. 2006). Similar increases in scrub-jays have been noted following restoration and management actions at Oscar Scherer State Park in Sarasota County (Thaxton and Hingtgen 1994), Lyonia Preserve in Volusia County (Noss 2006), and Halpata Tastanaki Preserve in Marion County (Gordon 2005).

Fitzpatrick *et al.* (1991, 1994) and Woolfenden and Fitzpatrick (1996a) expressed concern for the management practices taking place on Federal lands at Ocala National Forest, Merritt Island National Wildlife Refuge/Kennedy Space Center, and Cape Canaveral Air Force Station, all supporting large contiguous populations of scrub-jays. They predicted that fire suppression and/or too frequent fires (on the latter two) and silvicultural activities involving the cultivation of sand pine on Ocala National Forest would be responsible for declines of scrub-jays in these large contiguous areas of scrub. Monitoring of scrub-jay populations (Kennedy Space Center), demography (Kennedy Space Center, Ocala National Forest), and nesting success (Kennedy Space Center, Ocala National Forest) is ongoing to assess the effectiveness of management practices.

Road Mortality - Scrub-jays forage along roadsides and are susceptible to being killed by passing cars. Mumme *et al.* (2000) indicated that scrub-jay territories found next to a two-lane road experienced adult mortality that was higher than recruitment. Such demographics would typically result in the extirpation of affected family groups unless other scrub-jays immigrated into the roadside family groups. Scrub-jay road mortality has been reported within the Federal land complex on Merritt Island (Dreschel *et al.* 1990), Ocala National Forest (U.S. Forest Service 2006), and adjacent to Archbold Biological Station (Mumme *et al.* 2000). Road mortality is a known mortality source but current data are insufficient to assess its impact on overall population viability. Nonetheless, it presents a growing management problem throughout the remaining range of the scrub-jay (Dreschel *et al.* 1990; Mumme *et al.* 2000), and proximity to high-speed paved roads needs to be considered when designing scrub preserves (Woolfenden and Fitzpatrick 1996a).

Suburban Settings- Scrub-jays may persist locally in otherwise marginal or unsuitable areas in or adjacent to suburban areas because they can obtain supplemental food from bird feeders (R. Bowman unpublished data, cited in Woolfenden and Fitzpatrick 1996a; Bowman 1998). However, recruitment in these scrub-jay populations appears to be lower than in populations occupying native habitat. Local densities of scrub-jays during nonbreeding seasons are sometimes elevated by supplemental food, even

though breeding densities may not be elevated. Therefore, artificial feeding may cause certain areas to act as population sinks. Such a result could have long-term implications for managing wild populations close to residential development (R. Bowman unpublished data, cited in Woolfenden and Fitzpatrick 1996a; Bowman 1998). In suburban areas where supplemental food was present, territory size was half that recorded in natural areas (Bowman 1998). In addition, suburban scrub-jays bred earlier, laid larger clutches, and attempted more nest starts per pair and more true second broods after successful first attempts than did scrub-jays in natural scrub. Despite these apparent benefits associated with supplemental food, annual recruitment of juveniles was 50 percent lower in suburban populations (Bowman 1998). Additionally, even though scrub-jays will preferentially supply natural food to their young, natural food availability is lower in suburban areas than in natural scrub. As a result, scrub-jays in suburban areas may be forced to switch to human-provided foods when feeding nestlings. Human-provided foods potentially result in reduced growth and survival of young (Sauteret *al.* 2006).

Scrub-jays in suburban settings often nest high in tall shrubbery. During March, these nests tend to be susceptible to destruction by seasonal wind storms (R. Bowman and G.E. Woolfenden unpublished data, cited in Woolfenden and Fitzpatrick 1996b; Bowman 1998). In addition, daily ambient temperatures differ between suburban and wildland sites in south central Florida (Aldredge *et al.* 2005). The higher ambient temperatures in suburban sites decrease the viability of first-laid scrub-jay eggs.

Stochastic Events - Hurricanes pose a potential risk for scrub-jays, although the impact of such catastrophic events is largely unknown. Breininger *et al.* (1999) modeled the effects of hurricanes on coastal and inland scrub-jay populations and found that small (< 20 pair) coastal populations were at risk of extirpation due to storm surge. Hurricane Charley (a category 4 storm) passed directly over the Deep Creek study area in Charlotte County on August 13, 2004. Miller (2006) reported extensive scrub-jay habitat modification. Short-term impacts may include reduced acorn production and less nesting and sheltering habitat due to vegetative windfall. However, one year after the hurricane, the number of family groups in the population remained near pre-hurricane levels (Miller 2006).

Several hurricanes impacted east-central Florida in 2004 and 2005. Subsequent site visits by Service biologists found scrub-jays in areas that were previously heavily canopied and unsuitable for scrub-jays. Sand pine scrub in western Volusia County was substantially altered by these storms. In many areas, pine canopy cover was greatly reduced, resulting in a more oak dominated scrub. Scrub-jays appear to have colonized areas where pine canopy damage was greatest (Service biologists, personal observations).

Exotic Plants and Animals - The invasion of some scrub habitat within Indian River, St. Lucie, and Martin counties by exotic plants and animals, including Brazilian pepper (*Schinusterebinthifolius*), cypress pine (*Callitris* sp.), and Australian pine (*Casuarinaequisetifolia*), has degraded scrub-jay habitat locally. Exotic vegetation typically out competes native vegetation and results in a reduction or elimination of native food resources and sheltering and nesting habitat. Other human-induced impacts identified by Fernald (1989) include the introduction of domestic dogs (*Canis familiaris*) and cats, black rats (*Rattus rattus*), greenhouse frogs (*Eleutherodactylus planirostris*), giant toads (*Bufo marinus*), Cuban tree frogs (*Osteopilus septentrionalis*), brown anoles (*Anolis sagrei*), and other exotic animal species. These exotic species may compete with scrub-jays for both space and food, although scrub-jays opportunistically feed on small exotic vertebrates.

Although road mortality, supplemental food, changes in habitat, stochastic events, and exotic plants and animals all pose risks to some scrub-jay populations, fire suppression, and the resulting degradation in habitat, represents the most significant and widespread manmade threat affecting the scrub-jay's continued existence. As previously discussed at the beginning of this section, current data indicate that declining scrub-jay numbers are likely due to habitat degradation resulting from lack of management or lack of territory-scale management.

Analysis of the Species/Critical Habitat Likely to be Affected

The scrub-jay's status since its listing in 1987 has not improved. The status and trends that we discussed above, clearly shows what two items are essential for recovery of this species: (1) restoration and management of publicly-owned scrub lands already under preservation; and (2) additional purchase of scrub lands for preservation in key areas. The summary discussion in the 2011 Statewide Assessment (Boughton and Bowman, 2011) suggested that recovery may be feasible for scrub-jays using a goal to increase populations of on currently managed lands from the present 1253 groups closer to their carrying capacity of over 3000 groups. On non-managed private lands, especially suburban populations, it was suggested that managers need to use their knowledge of local land use patterns and the size, number, and distribution of extant jay populations to quickly develop regional strategies (by the genetic unit) to increase core populations on managed sites in each of the 10 genetic units; and improve regional connectivity by facilitating movements among core populations and smaller satellite populations.

ENVIRONMENTAL BASELINE

Status of the Species in the Action Area

Scrub-Jay Habitat Quality on Glen Ridge Project Site

Generally, scrub-jays prefer a habitat which consists of oak shrubs between 3 and 10 feet tall, with coverage of about 50-75 percent of the area. Also the oak cover should be interspersed with bare ground or vegetation less than 6 inches tall covering 10-30 percent of the area, and no more than 20 percent canopy cover (Cox, J.A. 1987). Scrub-jay habitat suitability is typically broken down into three levels- **Type I Habitat** - an upland plant community, assessed in one-acre plots, with greater than or equal to 15 percent cover of scrub oak species; **Type II Habitat** - an upland plant community, assessed in one-acre plots, with percent cover of scrub oak species greater than zero but less than 15 percent; and **Type III Habitat** - native or improved uplands and seasonally dry wetlands within 1/4 mile of Type I or Type II habitat (Fitzpatrick *et al.* 1991).

In the Florida Scrub-Jay Survey Report for the property AES analyzed a variety of factors for scrub-jay habitat suitability, including the occurrence of scrub oak species, the height and density of dominant vegetation, the percent cover of canopy species, the presence of open sandy/herbaceous areas, the proximity of human activities and development, the presence of adequate sentinel trees and snags, and the potential effects of the recent on-site wildfire. Based on the above descriptions and on-site observations, Type I habitat was present on the project site, this was determined to be the best representative of suitable scrub-jay habitat on the project site. A portion of the site about 16.02 acres of Pine Flatwoods was also determined to be potential suitable habitat for scrub-jay. The remainder of the

property with the exception of the Freshwater Marsh and Brazilian Pepper communities, qualified as Type III habitat.

The scrub-jay habitat impacts associated with the project consist of 3.40±-acres of Scrubby Pine Flatwoods (FLUCFCS 416) and Pine Flatwoods (FLUCFCS 411) communities containing slash pine along with scrub oaks and longleaf pine - Type I and Type II scrub-jay habitat. The extent of potentially suitable scrub-jay habitat defined on and adjacent to Glen Ridge project site is delineated in Figure 3 of the AES scrub-jay survey (Appendix A).

While these habitats support scrub-jay occupation, the habitat size, fragmentation, and lack of management are becoming limiting factors for long term survival of the resident scrub-jay family. No active management has taken place on the proposed project site to maintain the scrub.

Scrub-Jay Utilization of the Project Site

The Applicant's consultant, AES, conducted surveys for five days beginning on April 3,5,8,10,and 11, 2013, to determine the presence and approximate territory boundaries of scrub-jays within the project boundaries. During those surveys, one family of scrub-jays consisting of two (2) individuals was observed within the project site, and heard to the east-northeast of the project site. The scrub-jays inhabiting the project site are part of a larger South Brevard metapopulation of scrub-jays that persist in the central and southern Brevard County and extend south into northern Indian River counties (Stith, 1999).

Relationship of the Site to the Action Area

Breiner *et al.* (2001) defined patches of potential habitat for scrub-jays that are large enough to support at least one territory as Potential Reserve Units (PRUs). PRUs can be compared to critical habitat polygons used by Stith (1999) by excluding habitat fragments categorized as "suburban territories." Breiner *et al.* (2001) used major roads to separate PRUs, land ownerships, and major land use patterns. Within the PRUs are "territory clusters" or polygons that have been used to describe scrub-jay populations, which are areas of contiguous suitable habitat in areas occupied by scrub-jays and not areas contiguously occupied (Breiner *et al.* 2001). Suitable habitat was not restricted to oak and palmetto-oak and could include palmetto-lyonia, rural, and marshes that would have been included within their territories (Breiner *et al.* 1995, 1998). The potential scrub-jay habitat on the Glen Ridge project site is located within PRU 41 of the Wickham Road territory cluster (PRU's 37-48). Breiner *et al.* (2001) recognized that these habitat fragments were being rapidly lost to development. The project site areas unoccupied by scrub-jays cannot be regulated under the Act and may be developed with no coordination from the Service; therefore they may ultimately be developed rather than preserved.

As previously discussed, Stith (1999) classified South Brevard metapopulation as moderately vulnerable with a moderate potential for improvement since one or more fairly stable subpopulations of scrub-jays are under protection.

In 2002 at least 160 breeding pairs of scrub-jays were estimated to be within the South Brevard metapopulation; and when combined with the Central Brevard metapopulation it was 219 breeding

(Table 1) (Breininger *et al.* 2003); however, more updated information is needed. According to Fitzpatrick *et al.* 1994, a metapopulation consisting of more than 100 pairs has less than 10 percent probability of extinction within 100 years.

Through the compilation of data contained in the 2011 State wide Assessment and Coulonet. al. (2008), roughly 100 groups have been reported to occur on managed lands in Genetic Unit A, which includes Volusia, mainland Brevard, Indian River and North St. Lucie Counties.

The proposed action will result in the incidental take of one extended family of scrub-jays (2 individuals) in the South Brevard metapopulation. The compensatory restoration of +/-13.8-acres of potentially suitable scrub-jay habitat located off-site at the Malabar Scrub Sanctuary West and management for optimal scrub-jay habitat quality conditions, as defined in Breininger *et al.* 2003 (Exhibit 2), by the Brevard County EELs Program over a 25-year period will serve to minimize the impacts to the scrub-jays population within the action area. This compensatory action, as proposed, will be an important step towards the regional goal of restoring and managing enough scrub habitat to sustain the maximum number of scrub-jay breeding pairs to ensure long-term survival of the South Brevard metapopulation.

Table 1. Summary of Metapopulation Sizes (Breininger *et al.* 2003)

Metapopulation	Breeding Pairs		
	1992	2002	Potential ^a
Central Brevard	50	59	104
South Brevard-Indian River-St. Lucie	255 ^b	160	410
Combined	305	219	514

^a Includes unoccupied PRUs that could be restored to enhance connectivity.

^b Assumes that 1992 population sizes for Fox Lake, Carson Platt, and Coracii were at least as great as in 2002. None of these areas were surveyed in 1992.

Factors Affecting the Species Environment Within the Action Area

Scrub-jays evolved in a landscape matrix of nearly contiguous habitat patches that shifted in size and distribution in response to natural fire events. Habitat quality and the location of suitable habitat patches were dependent on periodic fires that retarded vegetative succession. Natural fire events created temporal, optimal, early stage xeric vegetative communities that were exploited by scrub-jays.

Over the last 100 years, human occupation of Florida resulted in direct habitat loss through land clearing, habitat fragmentation, and habitat degradation through fire suppression. The distribution and numbers of scrub-jays likely declined in response to these increasing urban pressures. These same factors continue to threaten the long-term viability of the scrub-jay population in Florida. As scrub-jay populations become smaller and more isolated, the adverse demographic effects of urbanization influences may be magnified and small populations are more susceptible to extinction than larger

populations.

Numerous federal actions have taken place within the action area that impacted scrub-jays. These projects resulted in incidental take through sections 7 and 10 of the Act. The impacts associated with these projects resulted in the loss of occupied scrub-jay habitat within the action area, and further fragmented the scrub habitat. However, the adverse effects of all these projects were offset through onsite preservation and/or offsite purchase and management of occupied scrub habitat, resulting in a net increase in scrub habitat under active management. A summary of impacts and minimization and/or compensation actions is provided in Table 2 below.

As of August 8, 2014 through projects evaluated under section 7 and section 10 of the Act, the acquisition and management of 1338.76± acres has occurred in Brevard County. This land has been acquired to minimize or mitigate for impacts to scrub-jays throughout Brevard County. Most of these properties have been turned over to the Brevard County EELs Program, who has assumed management responsibilities. By acquiring these properties, we have provided more potential scrub habitat to support scrub-jays long-term throughout Brevard County. The Service supports both acquisition and land management to help provide a corridor between the mainland metapopulations. There are management endowments associated with all acquisitions to provide for the restoration and management of these properties in perpetuity. Since many of these sites have been acquired, management has taken place and the sites are occupied by scrub-jays. Most of these sites are located adjacent to or within large tracts of conservation land already under public ownership. An additional 1,620 acres of scrub habitat have already been purchased (outside federal ownership) for preservation by Brevard County EELs Program, St. Johns Water Management District (SJWMD), and Florida Department of Environmental Protection (FDEP) (Toland 1999).

Table 2.List of Section 7 Projects in Brevard County from 1993 to 2014

Project Number (FWS Log No.)	Occupied scrub-jay habitat impacted(acres)	Occupied scrub-jay habitat acquired and managed(acres)
93-343	4	9
93-416	none (avoided scrub habitat)	2.34 (on-site)
94-202	none (avoided scrub habitat)	6 (on-site)
94-414	none (avoided scrub habitat)	14.64 (on-site)
95-222	27.8	69.2
95-275	25.0	50.0
95-398	205.0	411.0 (on-site)
96-053	1.91	8.28
96-539	4.26	10.9
97-540	14.72	58.58
97-551	5.2	21.4

Project Number (FWS Log No.)	Occupied scrub-jay habitat impacted(acres)	Occupied scrub-jay habitat acquired and managed(acres)
98-522	4.11	4.55 (on-site) and 9 (off-site)
98-689	0.25	0.55
98-818	17.06	54.41
99-303	17.46	60.0
00-350	2.72	4.5
00-370	37.58	101.66
00-664	2.16	4.32
01-379	1.5	3.0
01-513	none (avoided scrub habitat)	7.0
01-335	5.25	21.07
01-337	16.30	32.48
01-379	1.5	3.0
02-473	28	56
03-1204	2.3	9.97
03-375	2.3	5.0
04-1706.01	1.0	2.0
05-802.01	12.35	57.2
06-265	24.72	99.71
06-399	7.48	15.0
11-0319	12.7	26.0
14-0010	23.7	110.0
Total	508.33	1338.76

Climate Change

Based on the present level of available information concerning the effects of global climate change on the status of the Florida Scrub-Jay, the FWS acknowledges the potential for changes to occur in the action area, but presently has no basis to evaluate if or how these changes are affecting the Florida Scrub-Jay. Nor does our present knowledge allow the FWS to project what the future effects from global climate change may be or the magnitude of these potential effects.

EFFECTS OF THE ACTION

This section includes an analysis of the direct and indirect effects of the proposed action on the species and critical habitat and its interrelated and interdependent activities. To determine whether the proposed action is likely to jeopardize the continued existence of threatened or endangered species in the action area, we focus on consequences of the proposed action that affect rates of birth, death, immigration, and emigration because the probability of extinction in plant and animal populations is most sensitive to changes in these rates.

Factors to be Considered

The effects of the proposed Glen Ridge development project on the scrub-jay may occur as direct and indirect effects.

Direct Effects -The construction of the referenced residential development project may result in the direct "take" through harm and/or harassment of one scrub-jay family from the loss of 3.40±-acres of occupied habitat. The family occupying the project site is comprised of two (2) individuals. The probability of direct incidental take is dependent upon the number of scrub-jays in the region, their dispersal abilities, and the amount and distribution of available, suitable habitat.

Another significant threat to scrub-jay recovery is fire suppression and/or lack of management in scrub habitat (Woolfenden and Fitzpatrick 1984, 1991; Schaubet *al.* 1992; Stithet *al.* 1996; Breininger *et al.* 1999). While the project site was not being managed for scrub-jays, a portion of the site had been burned between January and November of 2007, which affected the majority of the Scrubby Pine Flatwoods habitat types.

Indirect Effects -Indirect effects are caused by or result from the proposed action, are later in time, and are reasonably certain to occur. Indirect effects may occur outside of the area directly affected by the action, and may include other Federal actions that have not undergone section 7 consultations, but will result from the action under consideration.

The indirect effects will occur from loss of scrub habitat on the project site that may interrupt dispersal corridors between areas occupied by scrub-jays within the South Brevard metapopulation. Dreschel *et al.* (1990), Fitzpatrick *et al.* (1991), and Mumme *et al.* (2000) provide the best scientific and commercial data on the likelihood of incidental take as the result of scrub-jays being killed by the vehicles. The only scientific documentation of road-kill mortality in scrub-jays are from scrub-jays living in a territory immediately adjacent to a road, not from dispersing some unknown distance across a road to a new territory. The proposed project will most likely increase the amount of traffic, which could further increase the potential for scrub-jay fatalities due to vehicle strikes.

The proposed project will result in habitat destruction which reduces the amount of area for scrub-jays to occupy, and consequently increases fragmentation of habitat. As more scrub habitat is altered the habitat is cut into smaller pieces separated from other patches by larger distances. Such fragmentation increases the probability of genetic isolation, which is likely to increase extinction probability (Fitzpatrick *et al.*

1991; Woolfenden and Fitzpatrick 1991; Snodgrass *et al.* 1993; Stith *et al.* 1996; Thaxton and Hingten 1996). Dispersal distances of scrub-jays in fragmented habitat are further than in optimal unfragmented habitats (Thaxton and Hingten 1996; Breininger 1999).

CUMULATIVE EFFECTS

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

All development projects that may affect occupied scrub-jay habitat in the action area require federal review pursuant to either section 7 or section 10 of the Act. However, we have no jurisdiction over activities that unintentionally resulted in the loss of unoccupied, but potentially suitable, habitat. Without continual management, occupied habitat will continue to become overgrown to the point that it no longer supports scrub-jays, and potentially suitable unoccupied habitat will be converted to other uses, precluding future management and occupation by scrub-jays. The extent to which this has historically occurred in Brevard County and throughout the range of the scrub-jay has been discussed previously. Habitat loss often results in habitat fragmentation which can have a greater impact than the amount destroyed by limiting or precluding the ability to effectively manage the remaining habitat. The extent to which it is likely to occur in the future is unknown.

For the purposes of this discussion we have assumed a worst-case scenario that all current potentially suitable unoccupied habitat will be converted to other land uses, and that all occupied habitat on private lands not under active management will eventually become unsuitable and unoccupied. We note that these assumptions for our worst-case scenario are very likely false because several agencies are actively pursuing opportunities to acquire and manage additional scrub-jay habitat, and that the rate of development in Brevard County has slowed considerably from earlier years as a result of poor economic growth conditions experienced throughout Florida. Nonetheless, under this scenario we would eventually see scrub-jay distribution limited to primarily public lands currently under active management. It is likely that under such a scenario that scrub-jay populations would decline from current numbers; however, it is also likely that scrub-jays would continue to persist in several viable metapopulations. Further, it must be noted that the proposed project with its offsite habitat restoration and management components works to counteract the effects contributing to further losses from the South Brevard metapopulation.

CONCLUSION

This proposed project will result in the direct, permanent loss of a total of 3.40±-acres of habitat occupied by scrub-jays. However, impacts to the species will be offset and minimized by the conservation measures proposed and carried out by the Applicant for the restoration and long-term management of 13.8±acres of overgrown scrub habitat located offsite at the previously referenced Malabar Scrub Sanctuary West managed by the Brevard County EEL Program.

From the information presented above, the following pertinent facts are apparent: 1) scrub-jays are dependent on continuous human management of scrub habitat; 2) scrub-jay recovery depends on

additional purchase of scrub lands in key areas, and effective restoration and ongoing management of those protected lands; 3) succession of unmanaged scrub habitat is as important a factor in the decline of scrub-jay populations as is loss of habitat to competing land uses; and 4) with respect to the action area for this project, restoration, management, and acquisition of important areas in North and South Brevard County would enhance the potential for interchange between these metapopulations; improving chances for their long-term persistence. When comparing the proposed project to these facts, we find: 1) the 3.40±-acres of habitat currently occupied by scrub-jays on the project site are unmanaged and unlikely to sustain scrub-jays long-term; and 2) the compensatory restoration proposal will result in a 25-year commitment for restoration and management of 13.8± acres of scrub habitat offsite (Malabar Scrub Sanctuary West) that will facilitate recruitment of more scrub-jay territories, thus enhancing the long-term viability of this South Brevard scrub-jay metapopulation.

After reviewing the current status of the scrub-jay, the environmental baseline for the action area, the effects of the proposed action and the cumulative effects, it is the Service's opinion that the proposed project is not likely to jeopardize the continued existence of the Florida scrub-jay. No critical habitat has been designated for this species; therefore, none will be affected.

INCIDENTAL TAKE STATEMENT

Sections 4(d) and 9 of the Act, as amended, prohibit taking (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect or to attempt to engage in any such conduct) of listed species of fish or wildlife without a special exemption. "Harm" and "harass" are further defined in Service regulations (50 CFR 17.3). "Harm" is defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, or sheltering. "Harass" is defined as an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavior patterns, which include, but are not limited to, breeding, feeding or sheltering. Under the terms of sections 7(b)(4) and 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered a prohibited taking provided that such taking is in compliance with the terms and conditions of this incidental take statement.

The reasonable and prudent measures described below are non-discretionary, and must be implemented by the agency and/or the Applicant, as appropriate. As part of the permit, the Service recommends the reasonable and prudent measures become binding conditions of any grant or permit issued to the Applicant, as appropriate, in order for the exemption in section 7(o)(2) to apply. The Federal agency has a continuing responsibility to regulate the activity that is covered by this incidental take statement. If the agency (1) fails to require the Applicant to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, or (2) fail to retain oversight to ensure compliance with these terms and conditions, the protective coverage of section 7(o)(2) may lapse. Similarly, the Applicant's protective coverage of section 7(o)(2) may lapse if they do not remain in compliance with the reasonable and prudent measures that they are required to execute.

Section 7(b) (4) and 7(o) (2) of the Act do not apply to the incidental take of listed plant species. However, protection of listed plants is provided to the extent that the Act requires a Federal permit for removal or reduction to possession of endangered plants from areas under Federal jurisdiction, or for

any act that would remove, cut, dig up, or damage or destroy any such species on any State or in the course of any violation of a State criminal trespass law.

AMOUNT OR EXTENT OF TAKE ANTICIPATED

The Service has reviewed the biological information for the scrub-jay presented by the Corps Project Manager (Lauren E. Carroll) and the Applicant's consultant (AES), and other available information relevant to this action. Based on our review, incidental take is anticipated to include 3.40± acres of scrub-jay habitat occupied by one family (2 individuals) of scrub-jays.

EFFECT OF THE TAKE

In the accompanying biological opinion, the Service determined that this level of anticipated take is not likely to result in jeopardy to the species or destruction or adverse modification of critical habitat.

REASONABLE AND PRUDENT MEASURES

When providing an incidental take statement, the Service is required to give non-discretionary reasonable and prudent measures it considers necessary or appropriate to minimize the take along with terms and conditions that must be complied with, to implement the reasonable and prudent measures. Furthermore, the Service must also specify procedures to be used to handle or dispose of any individuals taken. The Service believes the following reasonable and prudent measures are necessary and appropriate to minimize take:

The Applicant (Mr. Chad Genoni.) has agreed to minimize impacts to the scrub-jay population by restoring and managing 13.8-acres (4:1 ratio) of overgrown potential scrub-jay habitat located offsite at the Malabar Scrub Sanctuary West, owned by the State of Florida and managed by the Brevard County EELs Program. For further discussion purposes of all conservation measures and terms and conditions, this location will be referred to herein as the 'Restoration Sites'.

To accomplish this compensatory measure, the Applicant will directly contract with EELs Program-approved land management personnel to conduct the initial restoration effort, consisting of removal of pines and tall oaks and reduction in profile of midstory vegetation. The Applicant will also provide funding to the EELs Program to support the long-term management and prescribed burning of the 'Restoration Sites' over the course of 25 years for the purpose of managing optimal scrub-jay habitat quality conditions, as defined in Breininger *et al.* 2003, to recruit new scrub-jay territories on the Restoration Sites.

The proposed scrub habitat restoration and management plan, referred to herein as Florida Scrub-Jay Habitat Restoration Plan (Restoration Plan) attached as Appendix B of the original EA Letter, was prepared in coordination with the EELs Program's South Management Region Land Manager, Chris O'Hara. This plan presented herein reflects our understanding of the proposed actions that meet the EEL Program's management goals for the Malabar Scrub Sanctuary West. The Service and the Corps have agreed that the proposed plan should successfully offset the proposed impacts to the scrub-jay territory on the Glen Ridge project site, and provide the appropriate compensation response to support the long-

term survival of the scrub-jay metapopulation in South Brevard County. As such, the Applicant agrees to the following conservation measures:

1. The Applicant will execute a Memorandum of Agreement (MOA) with Brevard County (draft provided as Exhibit 1 separately attached from BO) which allows the Applicant to conduct scrub habitat restoration actions, as described below in Terms and Conditions, on the referenced 13.8±acre Restoration Site located within the South Brevard scrub-jay metapopulation;
2. The Restoration Plan will be secured under the MOA between the Applicant and the Board of County Commissioners of Brevard County **prior to implementation of any site clearing for the Glen Ridge residential development project site**. The general scope of the agreement will be similar to that shown on the attached sample MOA. The MOA will serve as a binding contract to insure that the scrub habitat restoration and management actions are completed according to the Restoration Plan, and funded in the long term for 25 years.
3. The Applicant will donate funding in the amount of \$1,200 per managed acre (13.8 x \$1200 = \$16,560) to the Brevard County EELs Program to support scrub habitat management activities on the Restoration Site for 25 years.
4. The Brevard County EEL Program will provide the Applicant access to the Restoration Site for 25 years for the purpose of preparing monitoring reports to be submitted to the Corps and Service documenting the management activities conducted on the site, the recruitment of scrub-jays to the Restoration Sites, and providing photo documentation of site conditions.

TERMS AND CONDITIONS

In order to be exempt from prohibitions in section 9 of the Act, the Corps, in conjunction with the Service, shall ensure that the Applicant complies with the following terms and conditions which implement the reasonable and prudent measures described above. These terms and conditions are non-discretionary.

1. **Execution of Memorandum of Agreement (MOA) Between Applicant and Brevard County:**
The Applicant shall execute an MOA, based on the separately attached draft Exhibit 1, with Brevard County prior to the implementation of any site clearing at the Glen Ridge development site.
2. **Scrub Habitat Restoration Actions:**

The Applicant shall offset impacts to the scrub-jay population by restoring and managing 13.8 acres of overgrown scrub habitat within the 550±-acre Malabar Scrub Sanctuary West, located in Section 35, Township 28 South, Range 37 East, Brevard County, Florida. The sanctuary is owned by the State of Florida (Division of State Lands, c/o the Florida Department of Environmental Protection), and consists of Parcel No's 28-37-35-00-00006.0, 28-37-35-00-00007.0, and 28-37-35-00-00500.0 and managed by the Brevard County EEL Program. Location Maps for the Restoration Site are provided in Figure 1 of the Florida Scrub-Jay Habitat Restoration Plan, Appendix B of the original EA Letter.

In accordance with the Restoration Plan, the Applicant shall implement the following scrub habitat restoration actions within the 13.8-acre Restoration Site at Malabar Scrub Sanctuary West, as described below. **The Service and the Corps shall be notified (via email) when restoration activities are scheduled to begin (including an approximate completion time), as these activities shall be initiated to run concurrently with the initiation of the site clearing for the Glen Ridge Project.**

- a. Scrub habitat restoration actions will be completed on the 13.8±acres Restoration Site as referenced in the Restoration Plan (see Figure 3).
- b. Cabbage palms will not be targeted for cutting, burning, or removal, unless this canopy coverage is determined to degrade the restoration of optimal habitat quality conditions for scrub-jay recruitment;
- c. All sand pines and slash pines are to be felled and burned in piles.
- d. All pines located within 10-feet of the top of the banks of the stream systems are required to be removed by hand. No work shall occur below the top of bank of the stream systems;
- e. Pines that are proximal to residential areas are to be felled and relocated at least 300 feet away from the nearest residence before burning;
- f. If longleaf pines are found, they are to be allowed to remain at a density of no more than 2-3 per acre. Any excess will be cut and pile burned along with the other pines;
- g. All dead pine and oak snags are to be felled and pile burned;
- h. All oaks taller than 8-feet are to be roller chopped per the Florida Scrub-Jay Habitat Restoration Plan;
- i. All palmetto, lyonia, gallberry, and other midstory vegetation taller than 6-feet is to be roller chopped;
- j. All recreational trails are to be left completely undisturbed. All oaks located within 25-feet to 10-feet of the on-site recreational trails shall be removed by hand to prevent the creation of tall, linear vegetative “curtains”, which degrade the restoration of optimal habitat quality conditions for scrub-jay recruitment by increasing scrub-jay predator efficacy. If after hand removal of these trees a “curtain” still exists, then the EELs Program will remove such trees as part of the long term management of the Restoration Site;
- k. After tree felling and roller chopping is complete, prescribed burning within the Restoration Site management cells is recommended. The Applicant's direct restoration obligation is to cut and pile burn targeted pines and oaks and roller chop tall understory vegetation. The EEL program will be responsible for administering prescribed burning of the entire management cells when deemed appropriate;
- l. All initial management work will be completed by an EELs Program-approved, experienced land management contractor.

3. **Long-term Scrub Habitat Management:**

The Applicant shall provide the one-time lump sum conservation contribution in the amount of \$1,200 per managed acre (13.8 x \$1200 = \$16,560) per year for 25 years to the Brevard County EELs Program for long term management of the Restoration Site. **This conservation contribution shall be provided to the Brevard County EEL Program within (30) days after issuance of the Corps Permit with this BO, in order to allow enough time for the**

translocation of the scrub-jays prior to the initiation of clearing for the Glen Ridge residential development project site. The Service and the Corps Project Manager shall be notified, via email, when this transfer of funds occurs.

Controlled burns or roller chopping will be conducted by the Brevard County EEL Program on a five-year rotation or as needed for up to 25 years to optimize habitat quality conditions for scrub-jays, as defined in Breininger *et al.* 2003 (Exhibit 2). Brevard County EEL Program will designate the funds in their accounting system to be used only for the positive benefit of scrub-jay management on the 13.8±acre delineated Restoration Site at Malabar Scrub Sanctuary West. Brevard County EEL Program will use a tracking method to document how and when the money was used for management activities on the Malabar Scrub Sanctuary West Restoration Site and provides records to the Service, if requested. Such funds are to be used exclusively for management of the total 13.8± acres of delineated area of the Restoration Site, and should not be used in any manner to reduce other management funds available for scrub-jay management within the Brevard County EEL Program.

4. **Monitoring and Reporting:**

The Applicant shall provide the following monitoring and reporting:

- a. **BASELINE REPORT:** Establishes vegetative sampling protocol for evaluating, initially at a three-year term and five-year term, and thereafter, every five-years for the 25-year term, successful restoration of optimal scrub-jay habitat quality conditions, as defined in Breininger *et al.* 2003. This vegetative sampling protocol shall employ both qualitative and quantitative methodology. At a minimum, four (4) permanent sampling plots per management "cell" shall be established to provide photographic and quantitative documentation of the state of the scrub-jay habitat quality, as defined in Breininger *et al.* 2003. The sampling protocol shall be approved by the Service prior to initiation of the baseline survey.

In addition, the baseline report shall document the presence and number, if applicable, of scrub-jays on the delineated ±13.8-acre Restoration Site prior to the initiation of required scrub restoration activities. This baseline scrub-jay survey and subsequent surveys shall be conducted in accordance with the Service's most current version of the Florida Scrub-Jay Survey General Guidelines and Protocol. This survey guidance is published on the Service's website located at www.fws.gov/northflorida/.

- b. **THREE-YEAR AND FIRST FIVE-YEAR REPORTS:** A three-year and a five-year monitoring report, starting from the date of completion of the scrub habitat restoration action identified above in Item 2 and based on the vegetative sampling/scrub-jay survey protocol set forth under the Baseline Report above, shall be provided to the Service. In addition to evaluating the state of scrub-jay habitat quality, as defined in Breininger *et al.* 2003, and the level of scrub-jay recruitment (number of territories/individuals), these reports shall provide a discussion on management activities conducted by the EEL Program on the Restoration Site during each term and any passive observations of scrub-jay use from the EEL Program manager.

- c. **FIVE-YEAR REPORTS TO 25-YEAR TERM:** After the submittal of the first five-year monitoring report, subsequent reports shall be submitted at five (5) year intervals and shall contain the results of scrub-jay habitat quality and scrub-jay recruitment surveys, in accordance with the above specified protocol, for the remaining duration of this 25-year commitment. This monitoring and reporting is required to allow the Service to evaluate the effectiveness of the scrub habitat restoration and long-term management activities in recruiting new scrub-jay territories at the Malabar Scrub West Sanctuary, and to assist with ongoing recovery evaluations of the South Brevard metapopulation.
- d. **REPORTING ADDRESS:** The monitoring reports shall be submitted within 60-days from the date of completion of the scrub habitat restoration action identified above in Item 2. The Service should be contacted for specific guidance relative to the duration of these surveys, transmittal of information needed, and the current point of contact within the Jacksonville Field Office to receive the survey results.

5. **Actions to Minimize Impacts to Scrub-Jays During Land Development/Habitat Restoration:**

If clearing for either land development at the Glen Ridge project site or for habitat restoration at the Restoration Site is required within potential scrub-jay habitat during the nesting season, typically March 1 through June 30, then the entire area to be cleared shall be systematically surveyed prior to clearing to determine if any active scrub-jay nests are present within the vegetation. The results of this survey shall be provided in a letter report format documenting the survey dates, methodology, and findings to the Service and Corps Project Manager **prior** to initiation of any clearing actions to receive concurrence with reported findings. If an active scrub-jay nest is located, and upon Service and Corps concurrence, clearing activities shall not take place within 300-feet of the nest site until nestlings have fledged or until it has been determined that the nest has failed.

6. **Unauthorized Take:**

Unauthorized take of Florida scrub-jays associated with the proposed development activity shall be reported immediately by calling the Service North Florida Jacksonville Field Office at (904)731-3336. If a dead scrub-jay is found on the project site, the specimen should be thoroughly soaked in water and frozen for later analysis of cause of death or injury.

CONSERVATION RECOMMENDATIONS

Section 7(a) (1) of the Act directs Federal agencies to use their authority to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help carry out recovery plans, or to develop information.

The Applicant has agreed to allow the Brevard Zoo, and its associates, to translocate scrub-jay individuals from the project area to a managed conservation area in accordance with the joint USFWS –

FWC Florida Scrub-jay Translocation Guidelines (dated June 6, 2011). Trap-training and trapping activities will occur on the project area prior to land clearing activities. Any trapped scrub-jays will be translocated to a managed conservation area determined by the USFWS scrub-jay Recovery Lead and the FWC, in coordination with the Brevard Zoo and the lead agency responsible for the managed area.

REINITIATION OF SECTION 7 CONSULTATION

This concludes formal consultation on the actions outlined in the request. As provided in 50 CFR §402.16, reinitiation of formal consultation is required when discretionary Federal agency involvement or control over the action has been retained and if: (1) information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this biological opinion; (2) the Corps' action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this biological opinion; or (3) a new species is listed or critical habitat designated that may be effected by the action. Should you have any questions regarding this Biological Opinion, please contact Zakia Williams of my staff at (904) 731-3142.

Sincerely,



for

Jay B. Herrington
Field Supervisor

cc: Todd Mecklenborg, ES, Jacksonville

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Development Plan

CONSTRUCTION PLANS

for

GLEN RIDGE SUBDIVISION

in

City of Melbourne, Florida

September 2013

INDEX OF SHEETS

- C1. TITLE SHEET
- C2. SITE PLAN
- C3. CONSTRUCTION NOTES
- C4. EXISTING CONDITIONS/EROSION CONTROL PLAN
- C5. HORIZONTAL CONTROL PLAN - A
- C6. HORIZONTAL CONTROL PLAN - B
- C7. DRAINAGE & UTILITIES PLAN - A
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- C11. CROSS SECTIONS
- C12. ROADWAY & SEWER PROFILES
- C13. CONSTRUCTION DETAILS
- C14. UTILITY DETAILS

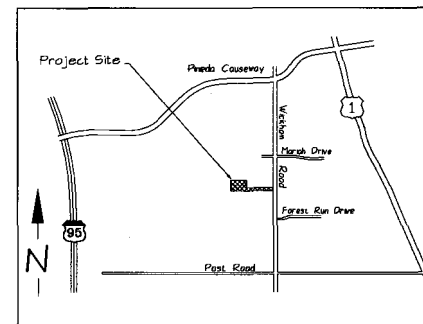
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VICINITY MAP (NOT TO SCALE)



OWNER / APPLICANT

SUNBAY, LLC.
4760 NORTH US HIGHWAY 1, SUITE 201
MELBOURNE, FLORIDA 32935
TEL. (321) 255-7601 EMAIL: qemblue00@live.com

ENGINEER

MASTELLER AND MOLER, INC.
1655 27TH STREET, SUITE 2
VERO BEACH, FLORIDA 32960
Phone: (772) 567-5300
Fax: (772) 794-1106
mastmolr@bellsouth.net

UTILITIES

Locations of Utilities shown on these Plans are Plotted from Information Provided by Utility Companies and are Approximate Only. Contractor is to Contact Owner with and Verify Conditions on Site. Contractor shall make diligent inquiry at the Office of the Utility Companies and Request Assistance to Determine the Exact Location of Utility Structures. The Contractor shall identify in Writing, the Utility Companies, Responsibilities and Owners involved in the Utility and Scope of the Project, and of the Operations that Affect Their Facilities or Property.

Call 48 hours before you dig in Florida



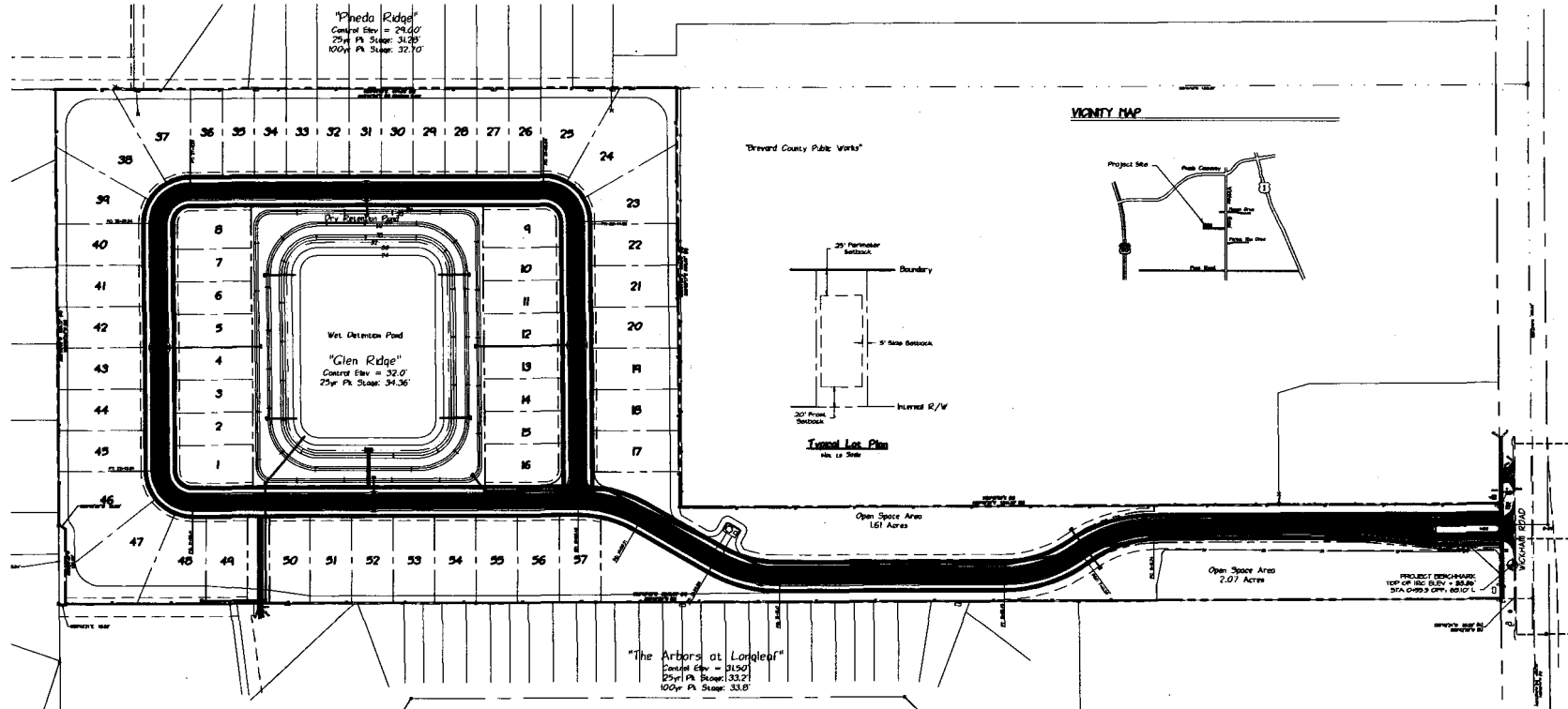
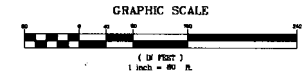
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GLEN RIDGE SUBDIVISION

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1655 27th STREET - SUITE 2, VERO BEACH, FLORIDA 32960
(772) 567-5300 / FAX (772) 794-1106
Certificate of Authorization #204

9/27/2013

JOHN M. BOYER, P.E. FL #57970



1. GENERAL STATEMENT

THE PROPOSED SUBDIVISION WILL INCLUDE THE DEVELOPMENT OF A 22.44-ACRE SITE WITH "SO-USE" PRIVATELY-MAINTAINED ROADWAYS & SIDEWALKS WITH WALKWAYS/ACCESS DRAG AT THE EAST END OF THE SITE ON WICHAMM ROAD. THE WATER SYSTEM WILL CONNECT TO AN EXISTING CITY OF FELDBOURNE WATER MAIN THAT CROSSES THE SITE ALONG THE NORTH AND EAST BOUNDARIES. SANITARY SEWER WILL BE COLLECTED IN A COUNTY SYSTEM AND ROUTED TO A PROPOSED LIFT STATION WHICH WILL CONNECT TO EXISTING VERDANT COUNTY FACILITIES ALONG WICHAMM ROAD. TREATMENT AND ATTENUATION OF STEGMATEDER WILL BE PROVIDED BY AN ON-SITE (BY RETENTION AND WET DETENTION TREATMENT TANK SYSTEM) AREAS SHALL INCLUDE A CLUBHOUSE WITH SWIMMING POOL.

2. OWNER

FLOREN POWER & LIGHT CO
700 WINDSOR BLVD
LAND BEACH, FLORIDA 32940

ENGINEER

MASTELLER & MOLER, INC.
JOHN M. BOYER, P.E.
400 27TH STREET, SUITE 2
VERO BEACH, FL 32902
TEL: (772) 967-5300 - FAX: (772) 794-1106
E-MAIL: jboyer@masteller.com

APPLICANT

SUNBAY, LLC
4902 ADELPHI RD HIGHWAY 1 SUITE 201
FELDBOURNE, FLORIDA 32909
TEL: (772) 790-7601 FAX: info@sunbay.com

SURVEYOR

MASTELLER, POLK, KROG & TAYLOR, INC.
897 57TH STREET, SUITE 2
VERO BEACH, FL 32909
TEL: (772) 967-5300 - FAX: (772) 794-1106
E-MAIL: info@masteller.com

3. SITE DATA

TOTL TO A: 20-30-30-00-000010-0000 00
SECTION 30, TOWNSHIP 28S, RANGE 18E
GROSS AREA: 22.44 - ACRES
FLOOD ZONE: "A" and "AE" ARE WITH DEVELOPMENT, "AE" IS IN
PROPOSED LOTS: 57 BUNDLES HAVE 1 LOT
LOT SIZE: 0.396 # (AVERAGE)

EXISTING (Verdant County)	PROPOSED (City of Melbourne)
ZONING: AU	R1-B
LAND USE: RES-1	RES

Zoning Criteria (R1-B)

REQUIRE	PROPOSED
DEVELOPMENT SIZE: 10 Acres (Min)	22.44 Acres
MINIMUM OPEN SPACE: 1,000 SF	4,850 SF
MINIMUM LOT AREA: 50'	30'
MINIMUM LOT WIDTH: 50'	30'
MINIMUM FRONT SETBACK: 20' From City	30' From City
MINIMUM SIDE SETBACK: 5' (SEE COMMENTS)	7'
MINIMUM REAR SETBACK: 5' (SEE COMMENTS)	7'
MINIMUM FRONT SETBACK: 25 FT	25 FT
MINIMUM SIDE SETBACK: 10 FT	10 FT (SEE COMMENTS)

4. NOTES

PROPOSED DENSITY:
TOTAL UNITS = 57 Units / 22.44 ACRES = 2.52 UNITS / ACRE

5. SUBDIVISION REQUIREMENTS

DEVELOPMENT REQUIREMENTS: RECREATIONAL OPEN SPACE SHALL INCLUDE WETLAND PRESERVATION, CLUBHOUSE & POOL, FITNESS, AND ACTIVE OPEN COBBLE SPACE. ALL RECREATIONAL OPEN SPACE SHALL BE DESIGNATED TO THE HOMEOWNERS ASSOCIATION (HOA).
CONSTRUCTION SCHEDULE: CONSTRUCTION SHALL COMMENCE IMMEDIATELY UPON RECEIPT OF ALL APPROVALS AND ADDITIONAL PERMITS. CONSTRUCTION DURATION IS ESTIMATED AT 1 YEAR.

MASTER PLAN

**CONSTRUCTION PLANS
"GLEN RIDGE" SUBDIVISION
SUNBAY, LLC.**

FLORIDA

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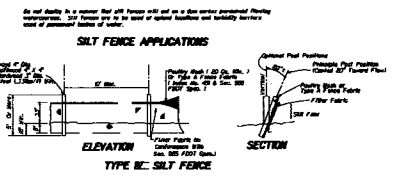
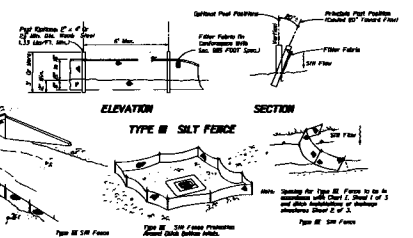
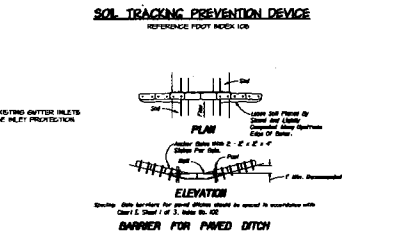
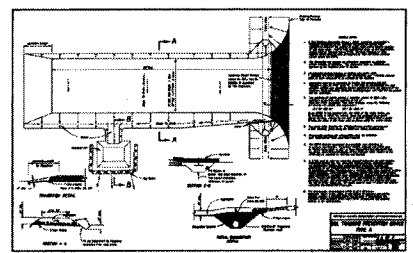
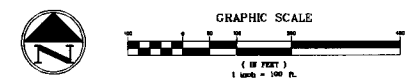
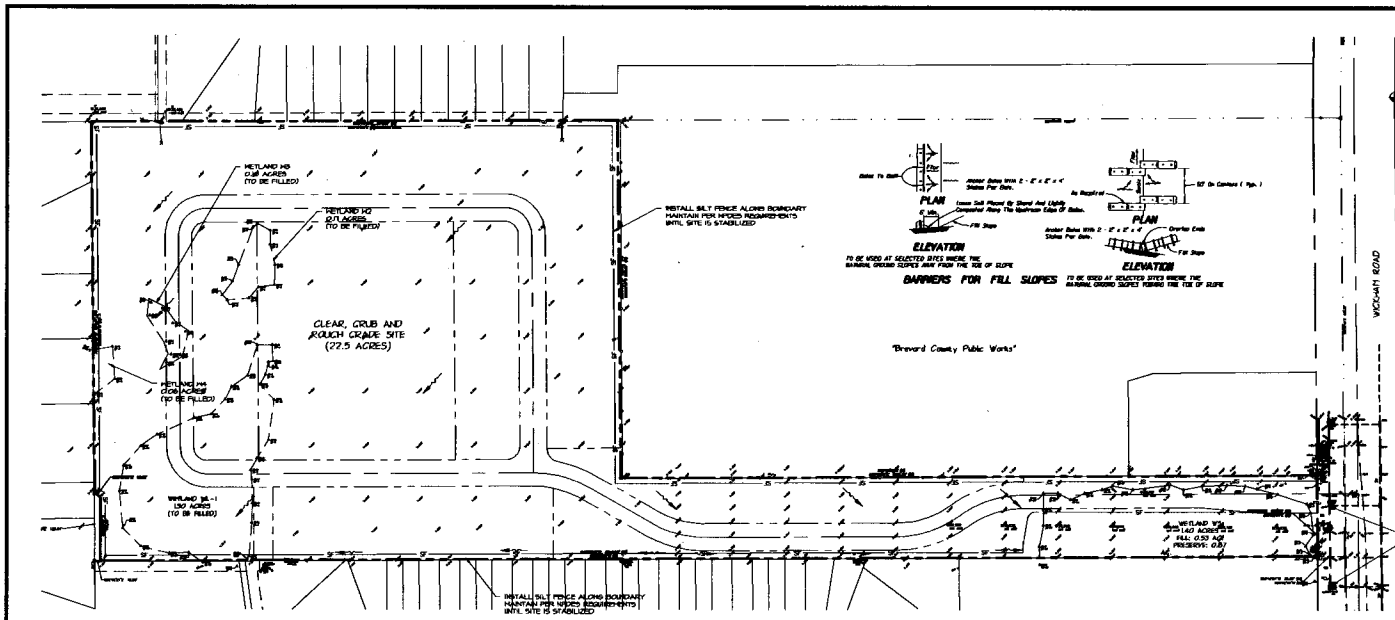
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CONSULTING ENGINEERS
1655 27th STREET - SUITE 2, VERO BEACH, FLORIDA 32960
(772) 967-5300 / FAX (772) 794-1106
CERTIFICATE OF AUTHORIZATION #4204

CITY OF FELDBOURNE



NOTES NOTES

NOTES TO CONTRACTORS:
 THIS PROJECT IS REQUIRED TO COMPLY WITH THE REQUIREMENTS OF THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) AS ADMINISTERED BY THE FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION (FDEP).

THE CONTRACTOR SHALL THEREFORE COMPLY WITH THE REQUIREMENTS OF FDEP'S "GENERIC PERMIT FOR STORMWATER DISCHARGE FROM LARGE AND SMALL CONSTRUCTION ACTIVITIES" PER FDEP DOCUMENT NUMBER 62-821.300(4) (A). IT IS THE CONTRACTOR'S RESPONSIBILITY TO INSTALL AND MAINTAIN BMP'S AT THE SITE IN ACCORDANCE WITH THE CONDITIONS OF THE "GENERIC PERMIT". THE CONTRACTOR SHALL BE CONSIDERED TO BE THE "OPERATOR" AS DEFINED HEREIN.

THE OPERATOR IS DEFINED AS: THE LEGAL ENTITY THAT OWNS OR OPERATES THE CONSTRUCTION ACTIVITY AND THAT HAS THE AUTHORITY TO CONTROL THOSE ACTIVITIES AT THE PROJECT NECESSARY TO ENSURE COMPLIANCE WITH THE TERMS AND CONDITIONS OF THE PERMIT. THE OPERATOR'S RESPONSIBILITIES ARE AS A MINIMUM AS FOLLOWS:

1. PREPARE STORMWATER POLLUTION PREVENTION PLAN AND MAINTAIN THE SITE IN ACCORDANCE WITH THAT PLAN.
2. FILE A "NOTICE OF INTENT" (OEP FORM 62-821.300(4) (D)), INCLUDING APPLICABLE PERMIT PROCESSING FEES. PRIOR OR NO LATER THAN 10 BUSINESS DAYS PRIOR TO PRE-CONSTRUCTION MEETING. A COPY OF THE "NOI" OR A LETTER FROM THE FDEP CONFIRMING COVERAGE UNDER THE PERMIT SHALL BE POSTED ON SITE FOR PUBLIC VIEWING.
3. PROVIDE A QUALIFIED INSPECTOR TO FURNISH THE REQUIRED INSPECTIONS, REPORTING, AND OTHER DOCUMENTATION IN ACCORDANCE WITH THE STATE OF FLORIDA GENERIC PERMIT FOR STORMWATER DISCHARGE FROM LARGE AND SMALL CONSTRUCTION ACTIVITIES, DEP DOC # 62-821(4) (A).
4. BEFORE CONDUCTING ANY PROJECT ACTIVITIES THE OPERATOR AND ALL SUBCONTRACTORS SHALL SIGN AND PROVIDE TO THE FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION, THE OWNER/DEVELOPER AND THE ENGINEER A COPY OF THE FOLLOWING:

7. CERTIFY UNDER PENALTY OF LAW THAT I UNDERSTAND AND SHALL COMPLY WITH THE TERMS AND CONDITIONS OF THE "STATE OF FLORIDA GENERIC PERMIT FOR STORMWATER DISCHARGE FROM LARGE AND SMALL CONSTRUCTION ACTIVITIES" (DEP DOC #62-821-300(4) (A)) AND THE STORM WATER POLLUTION PREVENTION PLAN.

THE CERTIFICATION MUST INCLUDE THE NAME AND TITLE OF THE PERSON PROVIDING THE SIGNATURE, THE NAME, ADDRESS, AND TELEPHONE NUMBER OF THE CONTRACTING FIRM, AND THE DATE THE CERTIFICATION IS MADE.

5. WITHIN 14 DAYS OF A DIFFERENT OPERATOR TAKING RESPONSIBILITY OF THE CONSTRUCTION ACTIVITIES A "NOTICE OF TERMINATION" (OEP FORM 62-821-300(4) (I)) SHALL BE SUBMITTED. IF A "NOI" IS SUBMITTED DUE TO A CHANGE OF OPERATOR WITHIN 48 HOURS BEFORE ASSUMING CONTROL OF THE CONSTRUCTION ACTIVITIES, THE NEW OPERATOR SHALL FILE A "NOI" IN ACCORDANCE WITH THIS PERMIT.
6. WITHIN 14 DAYS OF THE FINAL STABILIZATION OF THE SITE, OPERATOR SHALL FILE A "NOTICE OF TERMINATION" (OEP FORM 62-821-300(4) (I)), TO THE F.D.E.P. WITH COPIES TO THE OWNER AND ENGINEER.

EROSION CONTROL NOTES

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR EROSION CONTROL, USING BEST MANAGEMENT PRACTICES FOR THE EXTENSION OF THE PROJECT LIMITS, SUCH TIME AS THE PROJECT HAS BEEN CERTIFIED AS COMPLETE.
2. ATTENTION IS DIRECTED TO THE FACT THAT BMP'S ARE PERFORMANCE-BASED. IN THE EVENT THAT INSTALLED BMP'S FAIL TO CONTROL, EROSION AND/OR STORM WATER POLLUTION ADDITIONAL BMP'S WILL BE REQUIRED.
3. SILT FENCES SHALL BE INSTALLED ALONG LIMITS OF CONSTRUCTION.
4. SILT FENCES SHALL BE INSPECTED AFTER EACH RAINFALL AND REPAIRED IMMEDIATELY IF DAMAGED.
5. THE CONTRACTOR SHALL SEED & MULCH OR SOO ALL OPEN SPACE AREAS TO BE GRASSED IMMEDIATELY FOLLOWING FINAL GRADING AND COMPLETION OF ALL UNDERGROUND UTILITIES.
6. ALL SIDE SLOPES OF STORMWATER MANAGEMENT AREAS SHALL BE SOODED WITHIN 7 DAYS OF FINAL GRADING. ROUGH GRADING LEFT, OR INTENDED TO BE LEFT, FOR MORE THAN 7 DAYS SHALL RECEIVE TEMPORARY STABILIZATION.
7. ALL INLETS SHALL BE PROTECTED FROM COLLECTION OF ERODED MATERIALS BY INSTALLATION OF TEMPORARY FILTER FABRIC AND/OR WAY BAYS/BOXES.
8. FLOWING TURBIDITY BARRIERS SHALL BE INSTALLED WITHIN ALL WATER BODIES DOWNSTREAM OF CONSTRUCTION ACTIVITIES WHERE PROTECTION AGAINST TURBID WATERS DISCHARGE MAY OCCUR.
9. THE CONTRACTOR SHALL PROVIDE DUST CONTROL, SUCH AS AN ONSITE WATER TRUCK.

LAND CLEARING AND ENVIRONMENTAL NOTES

GRUBBING, TREE REMOVAL, AND LAND CLEARING SHALL BE CONDUCTED UNDER THE PROJECT'S ENVIRONMENTAL RESOURCE PERMIT AND LOCAL LAND CLEARING & TREE REMOVAL PERMIT. THE CONTRACTOR SHALL MAINTAIN A COPY OF THE PERMITS AT THE SITE DURING LAND CLEARING AND TREE REMOVAL OPERATIONS.

PRIOR TO COMMENCING LAND CLEARING OPERATIONS THE ENGINEER, OWNER, AND CONTRACTOR SHALL INSPECT THE SITE TO IDENTIFY PRESERVATION TREES AND OTHER RESOURCES. CONTRACTOR SHALL INSTALL BMP'S PRIOR TO COMMENCEMENT.

PRESERVED/LISTED SPECIES
 PRIOR TO COMMENCEMENT OF LAND CLEARING THE OWNER SHALL CONDUCT A LISTED SPECIES SURVEY AND REMOVE ANY LISTED SPECIES FROM THE CONSTRUCTION AREA. THE CONTRACTOR SHALL COMPLY WITH THE CONDITIONS OF ALL ENVIRONMENTAL PERMITS.

PRESERVATION TREES
 IF PROTECTED/LISTED SPECIES ARE ENCOUNTERED IN THE DEVELOPMENT AREA AT ANY TIME DURING CONSTRUCTION THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER.

PRESERVATION TREES
 EXISTING NATIVE VEGETATION TO BE SAVED IS INTENDED TO BE INCORPORATED INTO THE LANDSCAPE PLAN. PROTECTIVE BARRIERS SHALL BE INSTALLED PRIOR TO LAND CLEARING TO PREVENT DAMAGE TO VEGETATION TO BE SAVED.

SPECIMEN TREES
 SPECIMEN TREES (E. LARGO OAK TREES, ETC) SHALL NOT BE DISTURBED OR DAMAGED. CONTRACTOR SHALL BE LIABLE FOR FINES, MITIGATION AND OTHER PENALTIES INCURRED BY DAMAGE TO SPECIMEN TREES.

PROHIBITED AND UNDESIRABLE EXOTIC VEGETATION
 ALL PROHIBITED AND UNDESIRABLE EXOTIC VEGETATION MUST BE REMOVED AT THE TIME OF CLEARING. PROHIBITED AND UNDESIRABLE EXOTIC VEGETATION SHALL NOT BE USED TO MEET THE TREE OR LANDSCAPING REQUIREMENTS OF THE LAND DEVELOPMENT CODE.

STORMWATER POLLUTION PREVENTION PLAN

NATURE OF CONSTRUCTION ACTIVITY: CONSTRUCTION OF COMMERCIAL SITE

SEQUENCE OF CONSTRUCTION EVENTS:
 1. INSTALL SILT FENCE AND OTHER EROSION CONTROL DEVICES.
 2. LAND CLEARING AND DEMOLITION OF EXISTING IMPROVEMENTS.
 3. SOOLED GRADING.
 4. CONSTRUCT UNDERGROUND UTILITIES.
 5. CONSTRUCT STORMWATER MANAGEMENT SYSTEM.
 6. CONSTRUCT PAVEMENT, SIDEWALKS AND BUILDING.

TOTAL AREAS OF THE SITE: 22.46 ACRES
 AREAS TO BE DISTURBED: 22.49 ACRES
 SOIL DESCRIPTION: N/A
 DRAINAGE AREA SIZE: 22.49 ACRES

BEST MANAGEMENT PRACTICES (BMP'S)
 INLET PROTECTION, SILT FENCE (IF NECESSARY), CONSTRUCTION SEQUENCE MINIMIZED THE POTENTIAL EROSION.

PERMANENT STORMWATER CONTROLS:
 EXISTING WET DETENTION POND SYSTEM WILL BE USED TO TREAT AND ATTENDABLE STORMWATER RUNOFF.

POTENTIAL POLLUTANTS: PORTABLE TOILET CHEMICALS WILL BE PROPERLY HANDLED AND STORED.

PETROLEUM PRODUCTS (E. LUBRICATIONS, FUELS) SHALL BE HANDLED AND STORED IN SUCH A MANNER TO MINIMIZE IMPACTS FROM SPILLS.

INSPECTIONS: SITE WILL BE INSPECTED FOR EROSION PROBLEMS DAILY AND AFTER EACH RAINFALL EVENT GREATER THAN 0.2 INCHES. A RAIN GAGE SHALL BE INSTALLED ON SITE TO MONITOR RAINFALL.

CONTRACTOR IS RESPONSIBLE FOR INSTALLING ADDITIONAL EROSION CONTROL AS NECESSARY TO MEET STATE AND LOCAL REQUIREMENTS.

RESPONSIBLE AUTHORITY: (CONTRACTOR - 150)

EXISTING CONDITIONS/LAND CLEARING PLAN

NO.	DATE	DESCRIPTION	BY/APP

M M MASTELLER & MOLER, INC.
 CONSULTING ENGINEERS
 1655 27th STREET - SUITE 2, VERO BEACH, FLORIDA 32960
 (772) 567-5300 / FAX (772) 794-106
 CERTIFICATE OF AUTHORIZATION #4204

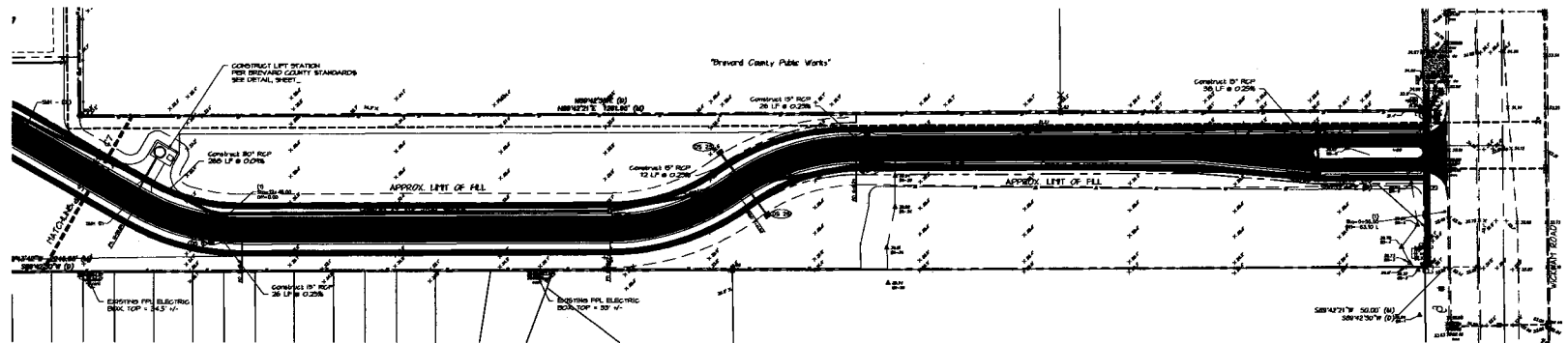
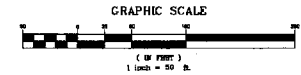
CONSTRUCTION PLANS
"GLEN RIDGE" SUBDIVISION
SUNBAY, LLC.

CITY OF MELBOURNE
 FLORIDA

DATE	DESCRIPTION	BY

DATE: 9/27/2013
 SHEET: C-3 OF 207
 PROJECT NO.: U24

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STORM STRUCTURE TABLE

STRUCTURE	STATION	DEPTH	TYPE	TOP/RISE ELEVATION	INVERT ELEVATION
DS-1	1+23.0	12.0 R	TYPE "C" MANHOLE	35.32'	S. 32.80'
DS-2	1+23.0	24.0 L	TYPE "C" MANHOLE	35.32'	N. 30.90', E. 32.00'
DS-3	8+00.0	12.0 R	TYPE "C" MANHOLE	35.23'	S. 32.20'
DS-4	8+00.0	12.0 L	TYPE "C" MANHOLE	35.23'	N. 32.60', E. 31.20', W. 30.70'
DS-5	8+58.5	17.0 R	TYPE "C" MANHOLE	35.20'	E. 35.45'
DS-6	12+48.0	12.0 L	TYPE "C" MANHOLE	35.15'	N. 32.40'
DS-7	12+48.0	12.0 R	TYPE "C" MANHOLE	35.15'	S. 32.80', E. 30.00', W. 29.30'
DS-20	7+32.5	36.0 R	TYPE "C" MANHOLE	33.00'	S. 28.2'
DS-28	7+27.5	36.0 L	TYPE "C" MANHOLE	33.00'	N. 28.20'

DRAINAGE & UTILITIES - A

**CONSTRUCTION PLANS
"GLEN RIDGE" SUBDIVISION
SUNBAY, L.L.C.**

M M MASTELLER & MOLER, INC.
CONSULTING ENGINEERS
1655 27th STREET - SUITE 2, VERO BEACH, FLORIDA 32960
(772) 567-5300 / FAX (772) 704-1106
CERTIFICATE OF AUTHORIZATION #1024

CITY OF FOLBOURNE

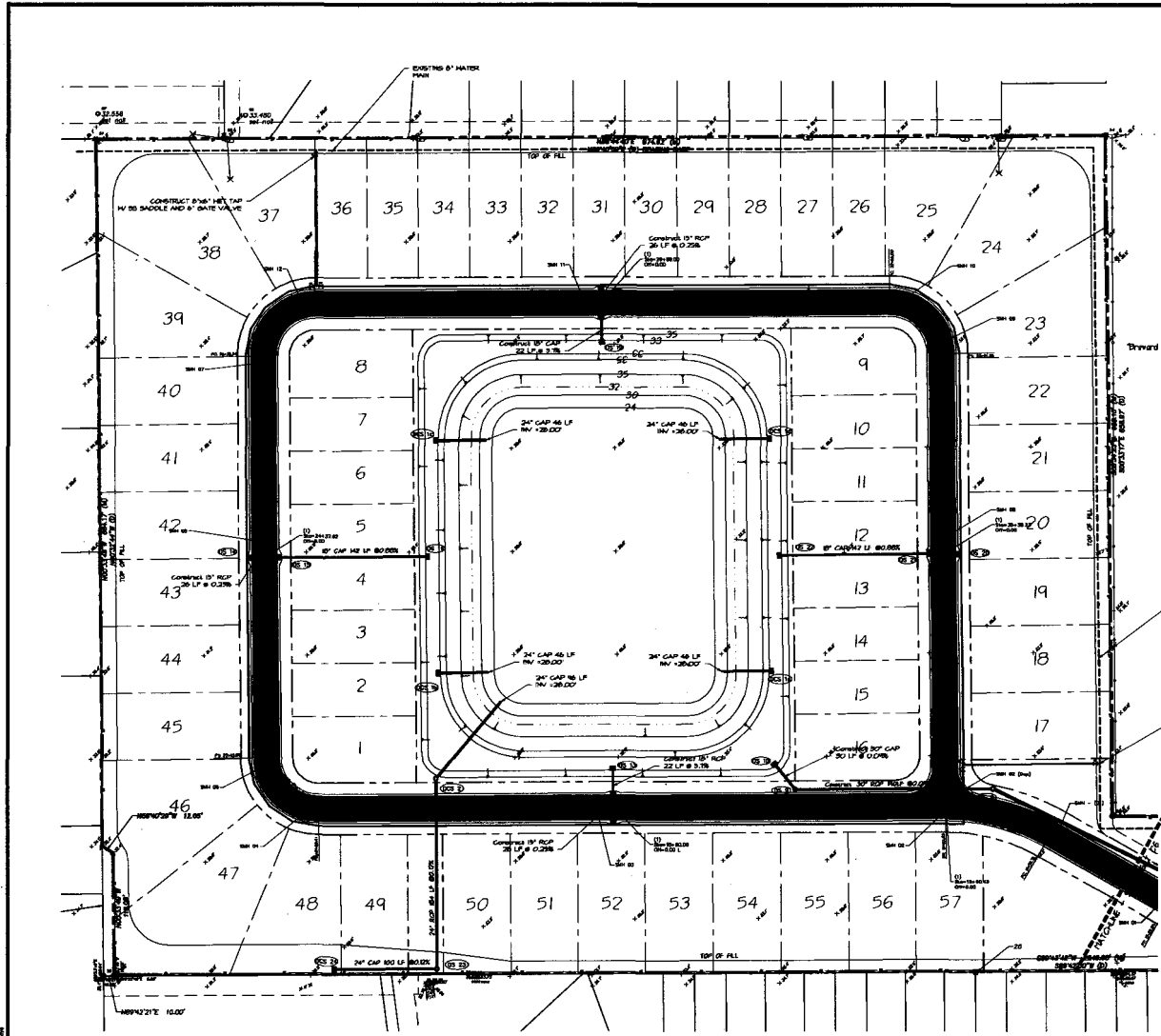
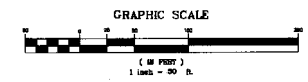
FLORIDA

This is to certify that the plans herein were prepared by Masteller & Moler, Inc. a duly licensed Professional Engineering Firm, in accordance with the laws of the State of Florida, and that the undersigned, JOHN M. BOYER, is a duly licensed Professional Engineer in the State of Florida, and is authorized to sign and seal these plans.

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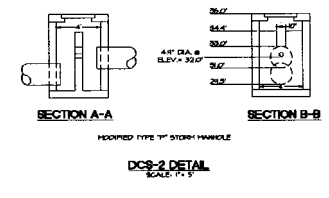
DATE: 8/23/2013
SCALE: 1" = 50'
SHEET: C 6 OF -
DRAWING NO: 024

NO.	DATE	DESCRIPTION	BY/APP.
REVISIONS			



STORM STRUCTURE TABLE

STRUCTURE	STATION	OFFSET	TYPE	TOP/INLET ELEVATION	INVERT ELEVATION
DS-8	18+18.0	17.0 R	TYPE "Y" MANHOLE	33.24	E. 31.25
DS-9	17+26.4	17.0 R	TYPE "Y" MANHOLE	33.80	E. 31.25
DS-10	17+24.2	40.0 R	TYPE "Y" INLET	33.00	E. 31.25
DS-11	18+80.0	12.0 L	TYPE "Y" INLET	33.00	E. 31.25
DS-12	18+80.0	12.0 R	TYPE "Y" INLET	33.00	E. 31.24; N. 31.74
DS-13	18+80.0	38.0 R	TYPE "Y" INLET	33.00	E. 31.25
DS-14	24+27.8	12.0 L	TYPE "Y" INLET	33.00	E. 31.25
DS-15	24+27.8	12.0 R	TYPE "Y" INLET	33.00	E. 31.24; E. 31.74
DS-16	24+27.8	176.0 R	TYPE "Y" INLET	33.00	E. 31.25
DS-17	28+28.0	12.0 L	TYPE "Y" INLET	33.00	E. 31.25
DS-18	28+28.0	12.0 R	TYPE "Y" INLET	33.00	E. 31.24; E. 31.74
DS-19	28+28.0	38.0 R	TYPE "Y" INLET	33.00	E. 31.25
DS-20	28+28.0	112.0 R	TYPE "Y" INLET	33.00	E. 31.25
DS-21	28+28.0	12.0 R	TYPE "Y" INLET	33.00	E. 31.24; E. 31.74
DS-22	28+28.0	38.0 R	TYPE "Y" INLET	33.00	E. 31.25
DS-23	28+28.0	112.0 R	TYPE "Y" INLET	33.00	E. 31.25
DS-24	28+28.0	158.0 L	TYPE "Y" INLET	33.00	E. 31.25
DS-25	28+28.0	158.0 R	TYPE "Y" INLET	33.00	E. 31.25
DS-26	28+28.0	192.0 R	TYPE "Y" INLET	33.00	E. 31.25
DS-27	28+28.0	192.0 R	TYPE "Y" INLET	33.00	E. 31.25
DS-28	28+28.0	192.0 R	TYPE "Y" INLET	33.00	E. 31.25
DS-29	28+28.0	192.0 R	TYPE "Y" INLET	33.00	E. 31.25
DS-30	28+28.0	192.0 R	TYPE "Y" INLET	33.00	E. 31.25
DS-31	28+28.0	192.0 R	TYPE "Y" INLET	33.00	E. 31.25
DS-32	28+28.0	192.0 R	TYPE "Y" INLET	33.00	E. 31.25
DS-33	28+28.0	192.0 R	TYPE "Y" INLET	33.00	E. 31.25
DS-34	28+28.0	192.0 R	TYPE "Y" INLET	33.00	E. 31.25
DS-35	28+28.0	192.0 R	TYPE "Y" INLET	33.00	E. 31.25
DS-36	28+28.0	192.0 R	TYPE "Y" INLET	33.00	E. 31.25
DS-37	28+28.0	192.0 R	TYPE "Y" INLET	33.00	E. 31.25
DS-38	28+28.0	192.0 R	TYPE "Y" INLET	33.00	E. 31.25
DS-39	28+28.0	192.0 R	TYPE "Y" INLET	33.00	E. 31.25
DS-40	28+28.0	192.0 R	TYPE "Y" INLET	33.00	E. 31.25
DS-41	28+28.0	192.0 R	TYPE "Y" INLET	33.00	E. 31.25
DS-42	28+28.0	192.0 R	TYPE "Y" INLET	33.00	E. 31.25
DS-43	28+28.0	192.0 R	TYPE "Y" INLET	33.00	E. 31.25
DS-44	28+28.0	192.0 R	TYPE "Y" INLET	33.00	E. 31.25
DS-45	28+28.0	192.0 R	TYPE "Y" INLET	33.00	E. 31.25
DS-46	28+28.0	192.0 R	TYPE "Y" INLET	33.00	E. 31.25
DS-47	28+28.0	192.0 R	TYPE "Y" INLET	33.00	E. 31.25
DS-48	28+28.0	192.0 R	TYPE "Y" INLET	33.00	E. 31.25
DS-49	28+28.0	192.0 R	TYPE "Y" INLET	33.00	E. 31.25
DS-50	28+28.0	192.0 R	TYPE "Y" INLET	33.00	E. 31.25
DS-51	28+28.0	192.0 R	TYPE "Y" INLET	33.00	E. 31.25
DS-52	28+28.0	192.0 R	TYPE "Y" INLET	33.00	E. 31.25
DS-53	28+28.0	192.0 R	TYPE "Y" INLET	33.00	E. 31.25
DS-54	28+28.0	192.0 R	TYPE "Y" INLET	33.00	E. 31.25
DS-55	28+28.0	192.0 R	TYPE "Y" INLET	33.00	E. 31.25
DS-56	28+28.0	192.0 R	TYPE "Y" INLET	33.00	E. 31.25
DS-57	28+28.0	192.0 R	TYPE "Y" INLET	33.00	E. 31.25
DS-58	28+28.0	192.0 R	TYPE "Y" INLET	33.00	E. 31.25



DS-2 DETAIL
SCALE: 1" = 5'

DRAINAGE & UTILITIES - B

**CONSTRUCTION PLANS
"GLEN RIDGE" SUBDIVISION
SUNBAY, LLC.**

M M MASTELLER & MOLER, INC.
CONSULTING ENGINEERS
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(772) 567-5300 / FAX (772) 794-1106
CERTIFICATE OF AUTHORIZATION #2404

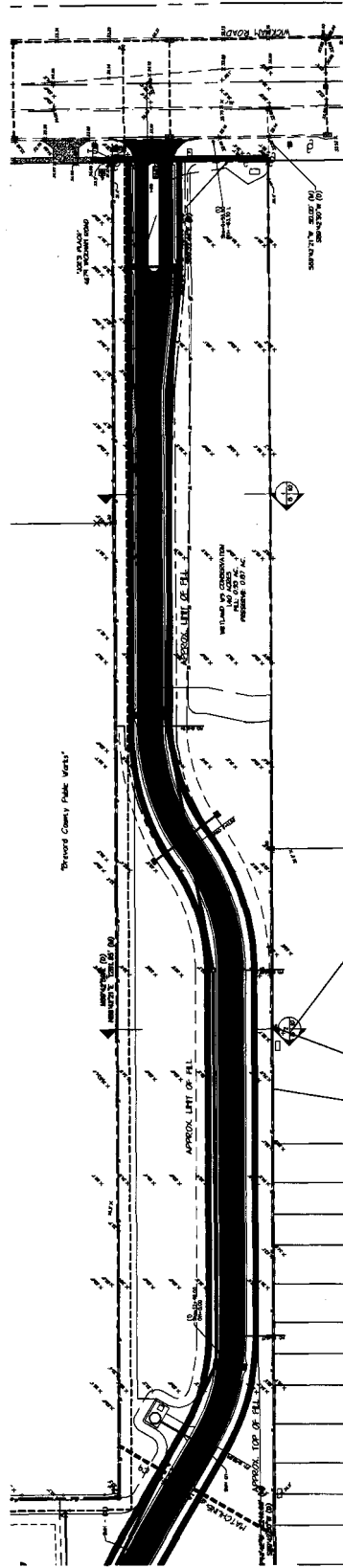
NO.	DATE	DESCRIPTION	BY/APP

THIS IS AN INSTRUMENT WHICH HAS THE APPROVAL OF THE BOARD OF COUNTY COMMISSIONERS OF ST. LUCIE COUNTY, FLORIDA. IT IS A PUBLIC RECORD AND IS FILED IN THE PUBLIC RECORDS OF ST. LUCIE COUNTY, FLORIDA. ANY INSTRUMENT WHICH IS NOT A PUBLIC RECORD AND IS NOT FILED IN THE PUBLIC RECORDS OF ST. LUCIE COUNTY, FLORIDA, IS VOID AND OF NO EFFECT.

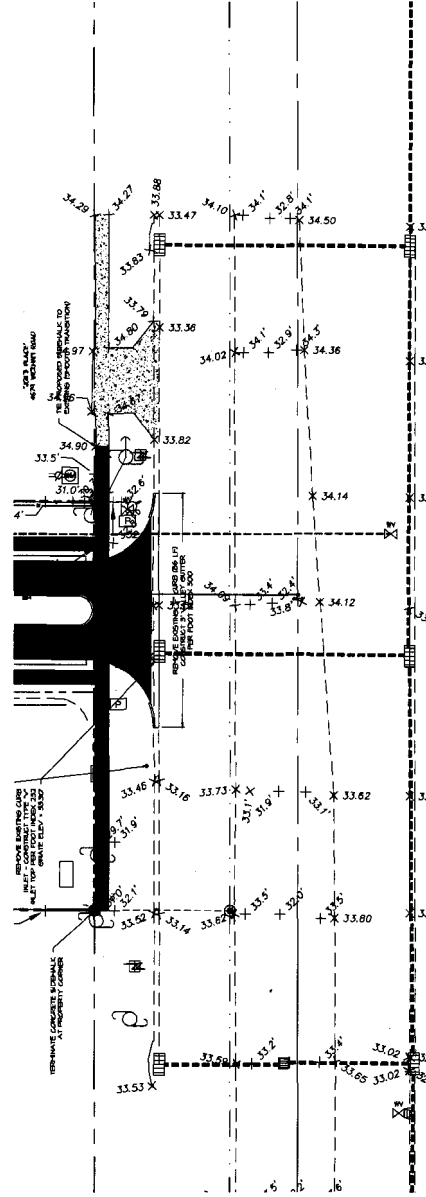
DATE: 8/23/2015
SCALE: 1" = 50'
SHEET: C 7 OF 10
PROJECT NO: 1524

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GRAPHIC SCALE
1" = 20' HORIZ.
1" = 4' VERT.



GRAPHIC SCALE
1" = 20' HORIZ.
1" = 4' VERT.



PAVING & GRADING - A
CONSTRUCTION PLANS
GLEN RIDGE[®] SUBDIVISION
SUNBAY, LLC.

M M
MASTELLER & MOLER, INC.
 CONSULTING ENGINEERS
 865 27th STREET - SUITE 2, VERO BEACH, FLORIDA 33780
 (772) 367-5300 / FAX (772) 794-1106
 CERTIFICATE OF PROFESSIONAL ENGINEER

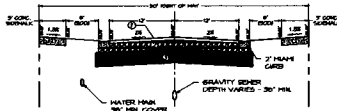
REVISIONS

NO.	DATE	DESCRIPTION	BY/APP

NO.	DATE	DESCRIPTION	BY/APP

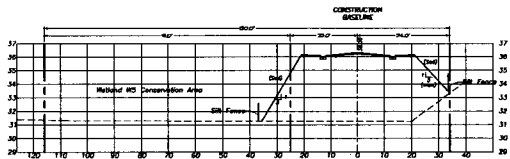
JOHN M. BOYER, P.E. FL #57970
 8/27/2013
 027/2013
 JOHN M. BOYER, P.E. FL #57970

CITY OF VERO BEACH
 FLORIDA
 JOHN M. BOYER, P.E. FL #57970

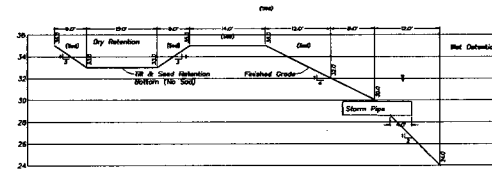


TYPICAL ROADWAY SECTION
SCALE: HORIZ. 1"=10'
VERT. 1"=4'

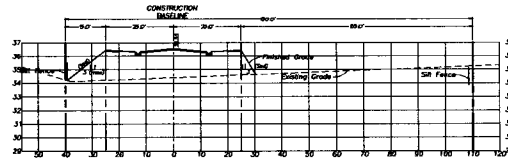
- ① ASPHALT COURSE: 1.5" 5-M OF SP 9.5
- ② BASE COURSE: 6-INCHES CEMENTED COOLIMA ROCK (LBR 100) OR LIME ROCK AND COMPACTED TO 98 PERCENT OF ITS MODIFIED DRY PROCTOR VALUE (AASH10 T-180).
- ③ STABILIZED SUBGRADE: 8-INCHES CLAYED SOIL HAVING A LIMESTOCK BEARING RATIO (LBR) OF 40 (FBV=750#) AND COMPACTED TO 95 PERCENT OF ITS MODIFIED DRY PROCTOR VALUE (AASH10 T-180).



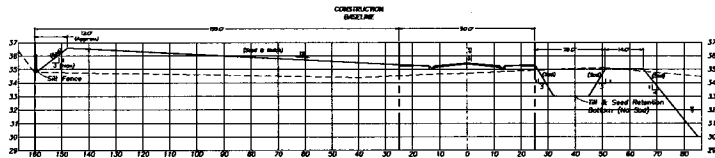
CROSS SECTION - ENTRANCE ROAD STA 3+00
SCALE: HORIZ. 1"=20'
VERT. 1"=4'



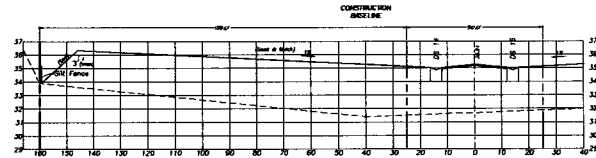
TYPICAL STORMWATER TRACT SECTION
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VERT. 1"=4'



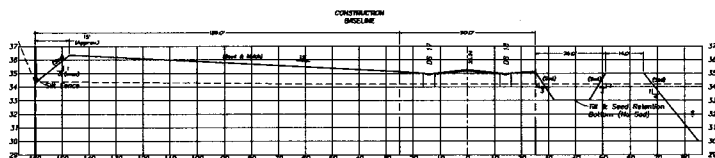
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VERT. 1"=4'



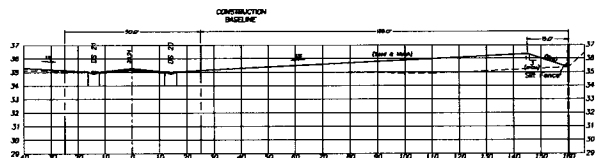
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SCALE: HORIZ. 1"=20'
VERT. 1"=4'



CROSS SECTION - WEST BOUNDARY TO ROAD
SCALE: HORIZ. 1"=20'
VERT. 1"=4'



CROSS SECTION - NORTH BOUNDARY TO SWMS
SCALE: HORIZ. 1"=20'
VERT. 1"=4'



CROSS SECTION - EAST BOUNDARY TO ROAD
SCALE: HORIZ. 1"=20'
VERT. 1"=4'

CROSS SECTIONS

CONSTRUCTION PLANS
"GLEN RIDGE" SUBDIVISION
SUNBAY, LLC.

NO.	DATE	DESCRIPTION	BY/APP

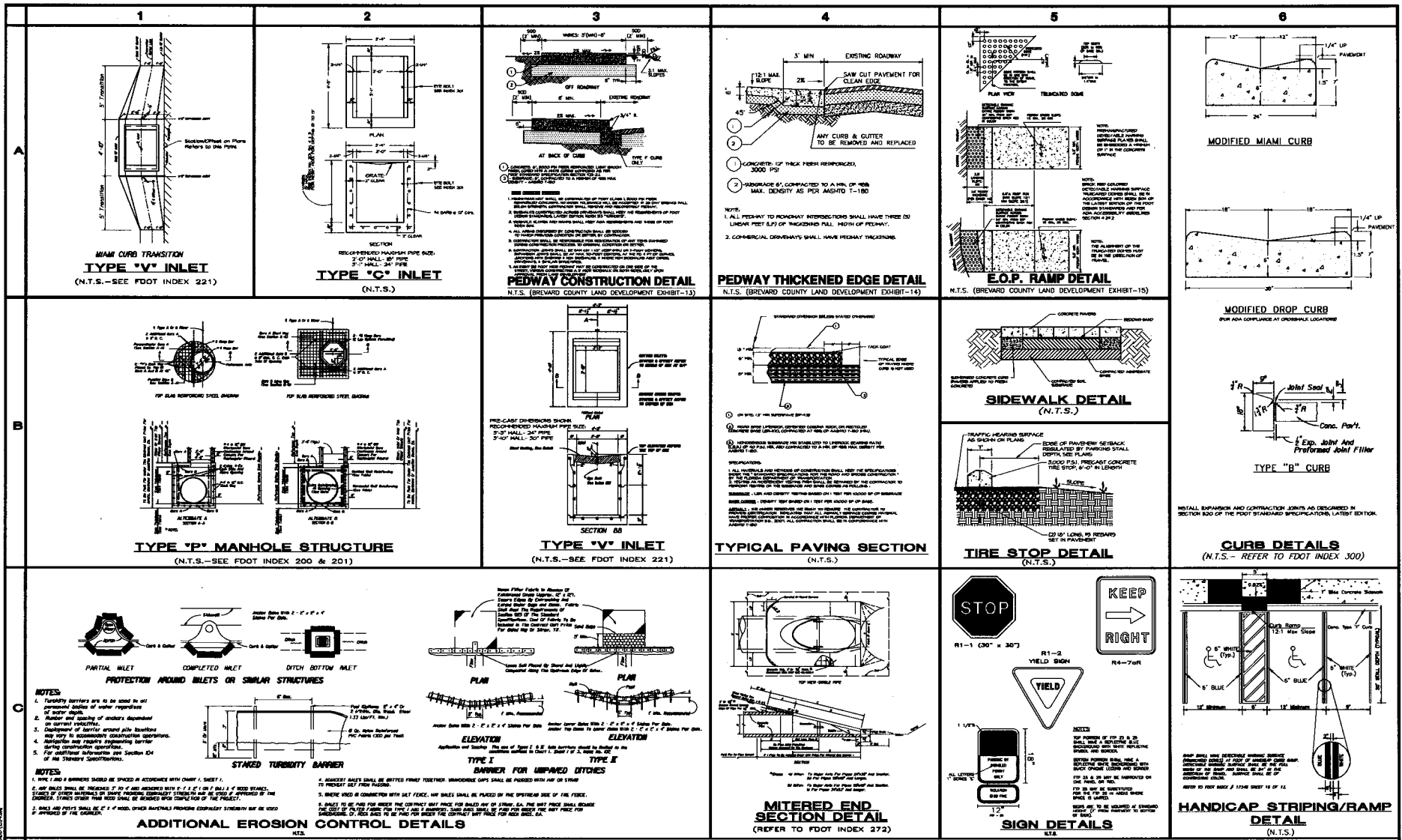
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1655 27th STREET - SUITE 2, VERO BEACH, FLORIDA 32960
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CITY OF MELBOURNE

FLORIDA

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DATE: JFD
DRAWN: JFD
CHECKED: SERI
DATE: 6/23/2013
SCALE: AS NOTED
DATE: 9/27/2013
SCALE: AS NOTED
DATE: 9/27/2013
PROJECT NO.: 1324



CONSTRUCTION DETAILS

**CONSTRUCTION PLANS
"GLEN RIDGE" SUBDIVISION
SUNBAY, LLC.**

NO.	DATE	DESCRIPTION	DR/APP

M M MASTELLER & MOLER, INC.
CONSULTING ENGINEERS
 1655 27th STREET - SUITE 2, VERO BEACH, FLORIDA 32960
 (772) 567-5300 / FAX (772) 794-106
 CERTIFICATE OF PROFESSIONAL ENGINEER

CITY OF PELICOURNE
 FLORIDA

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DATE: 08/21/2013
 SCALE: AS NOTED
 DRAWN BY: C12
 CHECKED BY: JMB
 PROJECT NO.: 1224

DATE: 08/21/2013
 SCALE: AS NOTED
 DRAWN BY: C12
 CHECKED BY: JMB
 PROJECT NO.: 1224

Exhibit 2 **Definitions of Florida Scrub Jay habitat features within scrub-polygons**
 (Breininger et al 2003)

Feature	Description	Habitat Quality
Oak Cover:		
Oak scrub	Scrub with > 50 % oak cover.	Optimal
Palmetto-oak	Palmetto-lyonia with 5 – 49 % oak cover.	Suboptimal
Palmetto	Palmetto-lyonia without oaks (< 5% oak cover).	Suboptimal
Open space:		
Present	Mosaic of open sandy areas among oaks.	Optimal
Absent	Continuous shrubs or dense grass > 15 cm tall	Suboptimal
Tree cover:		
Savanna	0 – 15 % tree canopy cover.	Optimal
Woodland	16 – 65 % tree canopy cover.	Suboptimal
Forest	> 65 % tree canopy cover.	Suboptimal
Height categories:		
Short	Large areas (> 10 ha) completely burned (< 120 cm tall) within the last 3 - 5 years.	Suboptimal
Optimal mosaic	Patches of scrub oaks at optimal height (120 – 170 cm) without patches of tall scrub (> 170 cm) greater than 0.4 ha.	Optimal
Tall	Tall scrub or a mosaic of other height categories that include tall scrub patches > 0.4 ha.	Suboptimal

Exhibit 1 (MOA with Applicant and Brevard County)

THIS MEMORANDUM OF AGREEMENT, hereinafter referred to as "MOA", is hereby made and entered into by and between the Board of County Commissioners of Brevard County, Florida, hereinafter referred to as "COUNTY", and Sunbay, LLC., hereinafter referred to as "SUNBAY".

WITNESSETH

WHEREAS, COUNTY owns the Malabar Scrub Sanctuary located at 951 Briar Creek Blvd, Malabar, FL, hereinafter referred to as the "Property", and manages the Property through the Brevard County Environmentally Endangered Lands (EEL) Program and the Malabar Scrub Sanctuary Management Plan; and

WHEREAS, SUNBAY is required, as a condition of Permit #SAJ-2013-02728 issued by the Army Corps of Engineers (ACOE) to construct an on offsite mitigation project ("Project") to compensate for scrub impacts anticipated in the development of Glen Ridge Subdivision; and

WHEREAS, the proposed Project will enhance scrub function on the Property and is consistent with the goals of the Malabar Scrub Sanctuary Management Plan; and

WHEREAS, COUNTY agrees to allow SUNBAY access to the Property for the purposes of constructing the Project as, more particularly described in Exhibit "A".

NOW THEREFORE, in consideration of the faithful and timely performance of and compliance with all the terms and conditions stated herein, the COUNTY does hereby grant to SUNBAY, the right to use the Property subject to the following terms and conditions:

1. SCOPE OF AGREEMENT: This MOA covers the use of the Property for the purposes of constructing the Scrub Mitigation Plan required by ACOE Nationwide Permit #SAJ-2013-02728, and the US fish and Wildlife Service Biological Opinion, hereinafter referred to as the USFWS BO. A copy of the Scrub Mitigation Plan is attached as Exhibit "A". The terms and requirements of the USFWS BO are adopted and incorporated into this MOA by reference.

2. TERM: This MOA is for a period of Twenty-five (25) years, commencing on the effective date of this MOA, unless sooner terminated by COUNTY or otherwise extended in writing by both parties to this MOA to coincide with the requirements of the USFWS BO.

3. UNDUE WASTE: SUNBAY shall not commit undue waste to the premises. SUNBAY shall restore landscape features damaged during construction to the satisfaction of the property's Environmentally Endangered Lands Program Land Manager, at hereinafter referred to as Land Manager.

4. RIGHT OF INSPECTION: COUNTY or its duly authorized agent shall have the right at any time to inspect the works and operation of SUNBAY pertaining to this MOA.

5. PROPERTY RIGHTS: This MOA constitutes permissive use only, and the placing of permanent facilities or related structures upon the premises pursuant to this MOA is prohibited. SUNBAY agrees that it does not and shall not claim at any time any interest or estate of any kind or extent whatsoever in the premises, by virtue of this MOA or its occupancy or use hereunder.

6. USE OF PROPERTY: This MOA shall be non-exclusive. COUNTY, or its duly authorized agents, shall retain the right to enter the premises or to engage in management activities not inconsistent with the use herein provided for, and COUNTY shall retain the right to grant compatible uses of the Property, subject to this MOA, to third parties during the term of this MOA.

7. PROHIBITIONS: In order to preserve and protect the project, COUNTY and SUNBAY agree that, except for enhancement activities permitted by this MOA, the following activities shall be prohibited within the Property:

7.1. Construction or placing of buildings, roads, signs, billboards or other advertising, utilities or other structure on or above the ground.

7.2. Dumping or placing of soil or other substances or materials as landfill or dumping or placing of trash, waste or unsightly or offensive material.

7.3. Removal or destruction of trees, shrubs, or other vegetation (other than exotics) except that vegetation in the Project area; Diking or any other activities detrimental to drainage, flood control, water conservation, erosion control, soil conservation or fish and wildlife habitat preservation.

8. MAINTENANCE OF PROJECT: Upon completion of the Project or termination of this MOA, whichever comes first, maintenance shall become the responsibility of COUNTY. COUNTY agrees to maintain the Project enhancements in accordance with the Sanctuary management Plan and EEL Program policies. SUNBAY agrees to pay the COUNTY, and the COUNTY agrees to accept, a one-time maintenance fee of \$16,560.00 upon completion of the restoration described in Exhibit A to the USFWS permit standards. COUNTY agrees to maintain the Property in a manner that would not adversely impact the improved vegetative, hydrologic, and open condition of the Property. Further for up to 25 years, COUNTY agrees to implement management actions as

necessary to maintain the property as suitable scrub-jay habitat as described in Exhibit A.

9. LIABILITY: SUNBAY agrees to indemnify and hold harmless COUNTY from all claims, losses and expenses, arising out of or resulting from its performance of the Project, caused in whole or in part by any negligent act or omission of SUNBAY, any of SUNBAY'S contractors, subcontractors, or any of employees, agents or representatives. SUNBAY agrees that it will pay the costs of the COUNTY's legal defense, including fees of attorneys, as may be selected by COUNTY and shall defend, satisfy, pay any judgments which may be rendered against COUNTY in connection with the above hold harmless agreement. SUNBAY shall be solely responsible for any liability, damages, costs, fines and administrative or criminal enforcement actions resulting from the relocation of any endangered or protected species required to implement the Project. SUNBAY shall be responsible to the COUNTY for the acts and omissions of SUNBAY'S employees, Subcontractors and Sub- subcontractors, suppliers, their agents and employees, and other persons performing any of the work and for their compliance with each and every requirement of the Project, in the same manner as if they were directly employed by SUNBAY. SUNBAY acknowledges specific consideration has been received for this hold harmless/indemnification provision. The duties and responsibilities established in this paragraph shall survive expiration or termination of this MOA.

10. APPLICABLE LAW AND VENUE: This MOA shall be interpreted and construed in accordance with and governed by the laws and ordinances of Brevard County and the State of Florida. Venue for any legal action brought by any party to this MOA to interpret, construe or enforce this agreement shall be in a court of competent jurisdiction in and for Brevard County, Florida, and any trial shall be non-jury.

11. ATTORNEY'S FEES: In the event of any legal action to enforce the terms of this MOA, each party shall bear its own attorney's fees and costs.

12. AMENDMENTS: No modification, amendment, or alteration in the terms or conditions contained herein shall be effective unless contained in a written document prepared with the same or similar formality as this MOA and executed by COUNTY and SUNBAY.

13. ENTIRE AGREEMENT: This MOA incorporates and includes all prior negotiations, correspondence, conversations, agreements, and understandings applicable to the matters contained herein and the parties agree that there are no commitments, agreements or understandings concerning the subject matter of this MOA that are not contained in the MOA. Accordingly, the parties agree that no deviation from the terms hereof shall be predicated upon any prior representations or agreements, whether oral or written. It is further agreed that no modification, amendment or alteration in the terms and conditions contained

herein shall be effective unless contained in a written document in accordance with paragraph 12 above.

14. SUCCESSION OF AGREEMENT: This MOA and the rights and obligations contained herein shall insure to the benefit of and be binding upon the parties hereto and their respective successors and assigns.

15. ASSIGNMENT: This MOA is personal to SUNBAY and may not be transferred or assigned without the prior written approval of COUNTY, however; COUNTY and SUNBAY recognize and agree that some or all of the activities permitted under this MOA may be performed by SUNBAY or SUNBAY'S contractor under separate agreement with SUNBAY. Such performance by SUNBAY's contractor does not create or impose any duty or responsibility between COUNTY and SUNBAY's contractor, nor does it relieve SUNBAY of any duty, responsibility, or liability under this MOA. **In the event SUNBAY transfers, sells, conveys or assigns its interest or partial interest in the land, or the entitlements, rights, contract or obligations in the land known as the Glen Ridge subdivision, then this MOA shall be freely assignable to that person or entity. (Added by Consultant)**

16. REMOVAL OF DEBRIS: On a daily basis, SUNBAY shall clear, remove and pick up all of SUNBAY's and its contractor's debris including but not limited to mud containers, oil containers, papers, discarded tools and trash foreign to the work locations and dispose of the same offsite in such a manner as to leave work locations clean and free of any such debris.

17. TRIPPLICATE ORIGINALS: This MOA is executed in triplicate originals each of which for all purposes shall be considered an original.

18. COMPLIANCE WITH LAWS: This MOA is contingent upon and subject to SUNBAY obtaining all applicable permits, regulations, ordinances, rules, and laws of the State of Florida, the United States or of any political subdivision or agency thereof.

19. RESPONSIBILITY FOR COMPLIANCE: The parties hereto contemplate the performance of all or a part of the activities authorized herein by SUNBAY. Notwithstanding the foregoing, SUNBAY shall bear the full and ultimate responsibility and liability to COUNTY for the faithful and timely compliance with the terms and conditions set forth herein.

20. DAMAGE: SUNBAY shall not damage the premises, or unduly interfere with public or private rights therein.

21. TERMINATION:

- 21.1. This MOA will terminate automatically without further action by either Party in the event that the USFWS permit expires prior to commencement of Project construction.
- 21.2. This MOA may be terminated by COUNTY for cause. Termination pursuant this section shall include, but not be limited to, failure to suitably perform the work or failure to continuously perform the work in a manner calculated to meet or accomplish the objectives of COUNTY as set forth in the MOA, or in the event it is determined that termination is necessary to protect the public health, safety or welfare.
- 21.3. SUNBAY, by acceptance of the MOA, binds itself, its successors and assigns, to abide by the provisions and conditions shall be deemed covenants of SUNBAY, its successors and assigns. In the event SUNBAY fails or refuses to comply with the provisions and conditions herein set forth or in the event SUNBAY violates any of the provisions and conditions herein, COUNTY, shall give notice to SUNBAY that curative action must be completed within a thirty (30) day curative period. COUNTY may elect to terminate this MOA by means of a letter of termination. In the event this MOA is terminated by COUNTY, all rights inuring to SUNBAY or its successors shall cease upon the effective date of the letter of termination with the exception of those activities necessary to demobilize and remove personnel and equipment. SUNBAY'S obligations and responsibilities under paragraphs 9 and 25 of this MOA shall survive termination.
22. All notices given under this MOA shall be in writing and shall be served by certified mail to the last address of the party to whom notice is to be given, as designated by such party in writing. COUNTY and SUNBAY hereby designate their address as follows:

"SUNBAY": SUNBAY, LLC.
 C/O Chad Genoni
 4760 North Harbor City Blvd., Suite 201
 Melbourne, FL 32935

 Atlantic Environmental Solutions
 C/O Jon Shepherd
 657 Montreal Avenue
 Melbourne, FL 32935

COUNTY: Brevard County Parks & Recreation
Environmentally Endangered Lands Program
91 East Drive
Melbourne, Florida 32904
Attn: Program Manager

23. REMOVAL OF EQUIPMENT: Upon termination or expiration of the MOA, the removable equipment and removable improvements placed on the premises by SUNBAY that have not become a permanent part of the premises and are not desired by COUNTY, shall be removed by SUNBAY, at its sole cost and expense, within thirty (30) days after the termination or expiration of this MOA. SUNBAY'S failure to remove said items within the thirty (30) day time period shall constitute abandonment and all rights there to shall be considered forfeited. Further, SUNBAY shall restore the premises to substantially the same or better condition it was upon the effective date of MOA.

24. ENFORCEMENT OF PROVISIONS: No failure, or successive failures on the part of COUNTY to enforce any provision nor any waiver or successive waivers on its part of any provision herein, shall operate as a discharge thereof or render the same inoperative or impair the right to COUNTY to enforce the same upon any extension thereof or in the event of subsequent breach or breaches.

25. PROHIBITIONS AGAINST LIENS OR OTHER ENCUMBRANCES: Fee title to the premises is held by COUNTY. SUNBAY shall not do or permit anything to be done which purports to create a lien or encumbrance of any nature against the real property contained in the premises including, but not limited to, mortgages or construction liens against the premises or against any interest of COUNTY.

26. SEVERABILITY: If any term, covenant, condition or provision of this MOA shall be ruled by a court of competent jurisdiction to be invalid, void, or unenforceable, the remainder shall remain in full force and effect and shall in no way be affected, impaired or invalidated.

27. SPECIAL CONDITIONS: SUNBAY shall comply with the following conditions which are in addition to the Scrub Mitigation Plan and a part of this MOA:

27.1. SUNBAY shall coordinate with and obtain prior written approval of the Land Manager, including approval of proposed contractors and subcontractors, which shall not be unreasonably withheld, before undertaking any construction, maintenance, or repair activity on the Property. Such approval shall not alter SUNBAY's liability as set forth in Paragraph 9.

- 27.2. It is understood and agreed that the Land Manager shall have the authority to direct SUNBAY or SUNBAY'S contractor or subcontractor's onsite to cease construction of the Project in cases where public safety is at risk or for the failure to meet all permit specifications.
- 27.3. SUNBAY shall not remove or destroy any trees, shrubs, or other vegetation, other than exotics, outside of the restoration site where the mitigation project will take place.
- 27.4. SUNBAY must obtain a "Notice to Proceed" from the Land Manager prior to initiating any onsite construction activities.
- 27.5. Final approval of construction activities must be obtained from the Land Manager to be in compliance with the USFWS Permit.
- 27.6. A person or affiliate who has been placed on the convicted vendor list following a conviction for a public entity crime may not submit a bid/quote/proposal on a contract to provide goods or services to a public entity, may not submit a bid/quote/proposal on a contract with a public entity for construction or repair of a public building or public work, may not submit bids/quotes/proposals on leases of rental property to a public entity, may not be awarded or perform work as a contractor, supplier, subcontractor, or consultant under a contract with any public entity, and may not transact business with any public entity in excess of threshold amount provided in Section 287.017 for CATEGORY TWO (\$25,000) for a period of 36 months from date of being placed on convicted vendor list. SUNBAY agrees to not propose any contractors or subcontractors who would be disqualified by the preceding statement.
- 27.7. SUNBAY shall make available to each proposed contractor or subcontractor, prior to the execution of an agreement, copies of this Memorandum of Agreement and Exhibits and identify to the contractor or subcontractor any terms and conditions of the proposed agreement which may be at variance with this Agreement.
28. INSURANCE: SUNBAY shall purchase and maintain in companies properly licensed and qualified to do business in the State of Florida, and acceptable to the COUNTY, such insurance as will protect SUNBAY, and the COUNTY, and their agents, representatives, and employees from claims which may arise out of or result from SUNBAY'S operations under this Agreement, whether such operations be by the contractor or by any subcontractor or by

anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable.

SUNBAY, at its own expense, shall provide proof before beginning any work and keep in force at all times and maintain during the term of this MOA the following coverage:

- 28.1. **WORKER'S COMPENSATION AND EMPLOYERS LIABILITY INSURANCE** covering all persons conducting operations on County's Property or on behalf of County.
- 28.2. **GENERAL LIABILITY INSURANCE** policy with a \$1,000,000 combined single limit for each occurrence to include the following coverages: operations, products and completed operations, personal injury, contractual liability covering this Contract, and "X-C-U" hazards.
- 28.3. **AUTO LIABILITY INSURANCE** which includes coverage for all owned, non-owned and rented vehicles with a \$1,000,000 combined single limit for each occurrence.
- 28.4. The General Liability and Auto Liability certificates of insurance shall indicate that the policies have been endorsed to cover County as an additional insured and that these policies may not be canceled or modified without thirty (30) days prior written notice to County.
- 28.5. SUNBAY shall provide the COUNTY with Certificate(s) of Insurance on all policies of insurance and renewals thereof in a form acceptable to the COUNTY. Said Liability Policies shall provide that the COUNTY be additional insured. The COUNTY shall be notified in writing of any reduction, cancellation or substantial change of policy or policies at least thirty (30) days prior to the effective date of said action. All insurance policies shall be issued by responsible companies who are acceptable to the COUNTY and licensed and authorized under the laws of State of Florida.
- 28.6. The insurance coverages enumerated above constitute the *minimum* requirements and shall in no way lessen or limit the liability of SUNBAY under the terms of the Contract. Subcontractor's insurance shall be the responsibility of SUNBAY.

29. INDEPENDENT CONTRACTOR: SUNBAY shall perform the services under this MOA as an independent contractor and nothing contained herein shall be construed to be inconsistent with this relationship or status. Nothing in this agreement shall be interpreted or construed to constitute SUNBAY or any of its agents or employees to be the agent, employee or representative of COUNTY.

30. RIGHT TO AUDIT RECORDS: In the performance of this MOA, SUNBAY shall keep books, records, and accounts of all activities, related to this MOA, in compliance with generally accepted accounting procedures. Books, records and accounts related to the performance of this MOA shall be open to inspection during regular business hours by an authorized representative of COUNTY and shall be retained by SUNBAY for a period of three (3) years after termination of this MOA. All records, books and accounts related to the performance of this MOA shall be subject to the applicable provisions of the Florida Public Records Act, Chapter 119, Florida Statutes.

31. EFFECTIVE DATE. This MOA or any modification, amendment or alteration thereto, shall not be effective or binding upon any of the parties hereto until the latest date of execution of the parties.

ATTEST:

BREVARD COUNTY

BOARD OF COUNTY
COMMISSIONERS OF BREVARD,
COUNTY, FLORIDA

Scott Ellis, Clerk of Court

By: _____

Mary Bolin Lewis, Chairperson

As approved by the Board on: _____

Reviewed for legal form and content:

Christine Lepore, Assistant County Attorney

Date: _____

SUNBAY, LLC.

By: _____

Its: _____

DRAFT

EXHIBIT "A"

Exhibit 1- Location of the Malabar Scrub Sanctuary:

Exhibit 2- Project Area (2 MAPS):

Exhibit 3- Scope of Work

Exhibit 4- USFWS BO

DRAFT

Exhibit 3 Scope of Work

The project area consists of 13.8 acres, located within Malabar Scrub Sanctuary. Malabar Scrub Sanctuary is located at 951 Briar Creek Blvd, Malabar FL 32950. (Exhibits 1&2) Within the project area the scrub and scubby flatwoods has become overgrown due to lack of fire for over 30 years, this has allowed the sand pines, saw palmetto and oaks to become overgrown. The restoration efforts of this project are to enhance the habitat of the Florida Scrub Jay, by reducing the vegetation height, removing hardwoods and providing increased open sandy areas. The restoration that will be provided through this project will be removal of all sand pines, oak trees over 8 feet tall, rollerchopping of the understory and a prescribed burn to be completed within one year of the rollerchopping.

The vegetation throughout the project area is extremely overgrown. The understory vegetation must be roller chopped. In addition, sand pines in the area will need to be removed or burned on site at an approved area(s), in preparation of the prescribed burn. The project is intended to improve wildlife habitat by reducing vegetation height and density followed by a prescribed fire that will reduce fuel loads and provide open sandy areas for the Florida Scrub Jay. The reduced vegetation height will allow the Florida Scrub Jay better protection from predators such as the Cooper's Hawk. This project will allow for the potential for Florida Scrub Jays to use of this area and possible translocation in the future.

The project goals are to remove 100% of the sand pines and larger oak trees (over 8 feet in height). All downed trees dbh of 4 inches or greater should be removed as well, to reduce the potential smoke issues associated with prescribed fire. To preserve the longleaf and slash pines that are to remain rollerchopping should not take place with fifteen feet drip line of the tree. Drip line is defined as the circle that could be drawn in the soil that outlines the outer most tips of the trees branches.

In order to conduct a prescribed fire the burner must be a Certified Prescribed Burner with the Florida Forest Service. To conduct burns to remove debris the contractor must be a Certified Pile Burner with the Florida Forest Service. The EEL Program must be notified one day prior to any prescribed burn or pile burn. The EEL program must approve the fire prescription prior to the prescribed burn. The EEL Fire Manager or approved staff member must be present during the prescribed burn for observation purposes. Debris piles for burning must be approved by EEL staff.

EEL Program staff will meet with contractors prior to the beginning of the project to ensure that all aspects of the project are clearly identified. The contractor will use existing roads and firelines throughout the project area. The contractor will avoid all areas flagged by EEL staff.

Mechanical Vegetation Reduction:

Mechanical reductions must be completed with in the areas shown in Exhibits 1 & 2. **Also, no mechanical reduction is permitted with 25' of existing trails as marked on the Exhibits. No oak trees will be removed from this buffer as well.**

Vegetation height and density on the work site must be reduced in preparation for prescribed burning. The contractor shall provide all equipment and labor. Vegetative reduction will be done in such a way as to accomplish effective chopping while minimizing soil disturbance and avoid killing saw palmetto (*Serenoa repens*). Vegetation will be reduced to 12" or less throughout the project area. Prior to reduction, EEL Program staff may indicate sensitive natural areas to be avoided. The EEL program will provide maps to the contractor and flag areas that must not be treated.

If using a roller chopper or renovator, the amount of water in each drum must be approved by the Land Manager or the Assistant Land Manager prior to the start of the project. The amount of water in each drum might change during the project depending on vegetation type and weather condition. The Land Manager or Assistant Land Manager reserves the right to change the water level in each drum at any time during the project to prevent unnecessary soil disturbance.

Rubber tracked vehicles are required to pull the roller chopper or renovator during mechanical reduction. Tracked vehicles may be used during the pine removal stage of the project. All equipment to be used must be approved by the Land Manager.

Tree Removal

- 1) All conditions of the USFWS Biological Opinion must be met.
- 2) All standing sand pines and oak trees larger than 8 feet are to be removed from the project area. Any downed (DBH larger than 4 inches) or dead standing are to be removed as well. Some dead standing trees may be left of environmental purposes. All slash and long leaf pine are to remain.
- 3) Access by equipment and designation of staging areas must be done a way to minimize soil disturbance. Repairs of damaged roads, firebreaks and fences shall be the responsibility of the contractor. The EEL Program and the contractor will determine staging sites prior to the project starting.
- 4) Disturbance to wetlands must be avoided, any damages to wetlands will be the responsibility of the contractor to repair.
- 5) The vegetative debris resulting for the timbering shall be burned on site or removed from the property. It is understood that if the timber has no market value. EEL staff will **NOT** be responsible for the burning of debris piles or removal.
- 6) Due care shall be exercised against the starting and spreading of wildfires during the projects duration. The contractor shall be held liable for all damages caused by such fires. All permits must be obtained prior to any burn activity on site.
- 7) Contractor should list all equipment to be used.
- 8) The Mitigant and any contractor or subcontractor agrees to cut and remove said timber in accordance with the following conditions:
 - a. Any damage caused by the contractor or subcontractor to fences, roads, culverts, or any other improvements on site, shall be repair by the contractor.
 - b. Contractor shall cut stumps so as to cause the least possible waste and not higher than six inches above the ground.
 - c. If used, all proposed skid trails must be approved by EEL staff.
 - d. The contractor will remove all trash weekly.
 - e. Contractor agrees to comply with all applicable government (municipality) regulations, rules and applicable laws in connection with this project.
- 9) In the case of removal of pines outside the designated project area, the County reserves the right to shut down the project and or MOA. In such a situation the Mitigation and/or contractor is responsible to mitigate the damages.
- 10) During tree removal every precaution must be taken not to disturb the trail, if heavy equipment needs to enter the 25 foot buffer Land Manager must approve before entering the area.
- 11) No oak trees will be removed from within the 25 foot buffer of the trail regardless of height.

General conditions:

- 1) The contractor shall be responsible for any lost material or damaged equipment staged on site. The contractor shall be responsible for damages to existing EEL Program fencing or to adjacent properties.
- 2) **It shall be the responsibility of the Contractor to keep gates closed and locked at all times, including while working on site and upon leaving the project site.**
- 3) There shall be no earthwork or excavation of soils, unless authorized in writing by a EEL Program representative. Such authorization, or failure to authorize, shall not constitute a change in contract price or time.
- 4) Soil disturbance within the Sanctuary during equipment loading and unloading shall be avoided. If soil rutting does occur during equipment turn-around, the contractor, to the County's satisfaction, shall repair the damage.
- 5) The contractor shall be responsible for identifying (locating) all utilities within the project area. Utilities damaged by contractor shall be the responsibility of the contractor.
- 6) All equipment shall be cleaned prior to entering the Sanctuary and prior to commencement of work and shall be free of potential exotic species to avoid transference to the project site. EEL Program staff reserve the right to inspect the equipment prior to commencement of the project.
- 7) Any trash brought on site shall be removed at the completion of the project. All spills of oil, fuel, or grease from machinery or during refueling and maintenance of equipment will immediately be contained, cleaned up by the Contractor and removed from the site in strict compliance with all State and Federal laws.
- 8) The contractor and any hired subcontractors shall have a printed copy of these Technical Specifications in their possession when working on the Sanctuary.

Draft



Sources: Esri, DeLorme, NAVTEQ, USGS, Intermap, iPC, NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, 2013

Project: Glen Ridge Subdivision

Figure 1: Mitigation Location Map

0 0.5 1 2 Miles

Brevard County, Florida



AES Proj #: 1332



Project: Glen Ridge Subdivision

Figure 3: Restoration Plan Map



2012 Aerial, Brevard County, Florida



AES Proj #: 1332

Attachment 1
(Original EA Letter for Glen Ridge with Appendices A and B)

2014-F-0179



DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT CORPS OF ENGINEERS
COCOA REGULATORY OFFICE
400 HIGH POINT DRIVE, SUITE 600
COCOA, FLORIDA 32926

REPLY TO
ATTENTION OF:

February 24, 2014

Regulatory Division
North Branch
Cocoa Permits Section
SAJ-2013-02728 (SP-LEC)

Mr. Jay Herrington
U.S. Fish and Wildlife Service
7915 Baymeadows Way, Suite 200
Jacksonville, Florida 32256-7517

Dear Mr. Herrington:

The Sunbay, LLC., has applied for a Department of the Army permit to construct a single-family subdivision with associated infrastructure. The Glen Ridge project proposes approximately 1.50 acres of wetland impact associated with fill activities. The project is located north of State Road 429, south of Constellation Drive and west of North Wickham Road in Section 36, Township 26 south, Range 36 east, Brevard County, Florida. The U.S. Army Corps of Engineers (Corps) has determined the proposed project may effect Florida scrub jay (*Aphelocoma coerulescens*), may affect but is not likely to adversely affect Eastern indigo snake (*Drymarchon corais couperi*) and wood stork (*Mycteria americana*) and will have no affect on Audubon's crested caracara (*Polyborus plancus audubonii*) or their designated critical habitat. The Corps hereby requests initiation of formal consultation pursuant to Section 7 of the Endangered Species Act.

In accordance with guidance provided in the Endangered Species Consultation Handbook, the Corps requests that you initiate consultation upon receipt of this request or provide a response within 30 days of receipt of this request stating what information is necessary to meet the requirements of 50 CFR §402.14(c). Upon your initiation of formal consultation, please provide this office with an expected completion date so that we may inform the applicant of the associated timeframes. The following information is provided in accordance with 50 CFR §402.14(c):

Description of the activity: The applicant seeks authorization to construct a single family subdivision and associated infrastructure. The applicant proposed to clear and impact the entire project site including 1.50 acre of direct impact to waters of the United States.

a. Area affected: The project will affect the entire 22.50 acre project site which consists of Pine Flatwoods (16 acres), Scrubby Pine Flatwoods (2.5 acres), Brazilian Pepper (~1.0 acre), wetland shrub (1 acre), vegetated non-forested wetlands (0.3 acre) and freshwater marsh (1.5 acres).

b. Listed species affected: The Corps determined that the proposed project may affect the Florida scrub-jay, may affect but is not likely to adversely affect eastern indigo snake and wood stork and will have no effect on Audubon's crested caracara or their designated critical habitat.

c. Analysis:

Florida Scrub-jay

The project site contains confirmed Florida scrub-jay occupied habitat. A Florida scrub jay survey was conducted by Atlantic Environmental Solutions (AES) on April 3, 5, 8, 10 and 11, 2013 and documented in a subsequent report (attached). During this survey, at least two scrub jays were observed utilizing approximately 3.4 acres of habitat within the scrubby flatwoods portion of the project site. By letter dated January 28 2014, the Florida Fish and Wildlife Conservation Commission indicated that during a discussion with the environmental consultant (John Shepherd of AES) on January 21, 2014, the applicant would consider scrub-jay translocations in addition to all minimization and mitigation requirements. The applicant proposes to mitigate the impacts of the taking by implementing an individual Habitat Conservation Plan. This plan, as proposed, involves the protection and enhancement of suitable, occupied scrub-jay habitat at a minimum 2:1 ratio to compensate for the 3.40 acres of impacts to the active scrub-jay territory which would equate to 6.80 acres to be protected and enhanced along with a monetary endowment to allow maintenance in perpetuity.

Eastern Indigo Snake

Based on the *Eastern Indigo Snake Effect Determination Key* (dated January 25, 2010; August 13, 2013 Addendum), the Corps determination sequence was A>B>C>D>E = "not likely to adversely affect." The applicant will be required to comply with the U.S. Fish and Wildlife Service's "Standard Protection Measures for the Eastern Indigo Snake," (dated August 12, 2013) by special conditions of the permit. Programmatic consultation was performed for the eastern indigo snake, pursuant to the above-referenced determination key. While written concurrence is not required from the USFWS for the "not likely to adversely affect" determination, this information is provided for your use.

Wood Stork

The project impacts Suitable Foraging Habitat (SFH) within the Core Foraging Area of a colony site. Based upon review of the Corps of Engineers (Corps), Jacksonville District and Service *Wood Stork Effect Determination Key* dated September 2008, the proposed project resulted in the following sequential determination: A > B > C > D > E > "Not likely to adversely affect" the wood stork. This determination is based on the project providing SFH compensation within the service area of a service-approved wetland mitigation bank. Programmatic consultation was performed for the wood stork, pursuant to the above-referenced determination key. While written concurrence is not required from the USFWS for the "not likely to adversely affect" determination, this information is provided for your use.

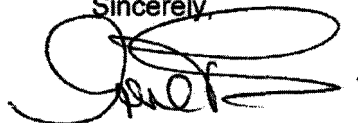
Audubon's Crested Caracara

The project is within the Audubon's crested caracara consultation area but outside of the primary and secondary protection zones of known nests for this species; suitable nesting habitat does not occur in the project vicinity and no nesting Audubon's crested caracara have been observed on the project site or in the vicinity. Based on this information, and the urbanized setting, the Corps determined the project would have no effect on Audubon's crested caracara. While written concurrence is not required from the USFWS for the "no effect" determination, this information is provided for your use.

d. Relevant reports: Please see the attached public notice, the Atlantic Environmental Solutions Scrub Jay Survey Report dated April 18, 2013 and the Florida Fish and Wildlife Conservation Commission letter dated January 28, 2014.

If you have any questions regarding this correspondence, please contact Lauren Wyckoff Carroll at the letterhead address, by telephone at (321)-504-3771 ex 15, or by email at Lauren.E.Carroll@usace.army.mil.

Sincerely,



for
Donald Kinard
Chief Regulatory Division

Enclosures

Jon Shepherd, Atlantic Environmental Solutions Inc., jshep@cfl.rr.com



REPLY TO
ATTENTION OF

**DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT CORPS OF ENGINEERS
COCOA PERMITS SECTION
400 HIGH POINT DRIVE, SUITE 600
COCOA, FLORIDA 32926**

January 9, 2013

Regulatory Division
North Branch
Cocoa Permits Section

PUBLIC NOTICE

Permit Application Number SAJ-2013-02728 (SP-LEC)

TO WHOM IT MAY CONCERN: The Jacksonville District of the U.S. Army Corps of Engineers (Corps) has received an application for a Department of the Army permit pursuant to Section 404 of the Clean Water Act (33 U.S.C. §1344) as described below:

APPLICANT: Mr. Chad Genoni
4760 North Harbor City Blvd
Melbourne, FL 32935

WATERWAY AND LOCATION: The project would affect waters of the United States associated with the St. Johns River (Hydrologic Unit Code 030801010604). The project is located west of North Wickham Road, north of State Road 429 and south of Constellation Drive, in Section 36, Township 26 South, Range 36 East, Brevard County, Florida.

Directions to the site are as follows: From Interstate 95 take exit 188 for Florida 404/Pineda Causeway Extension and head east on Pineda Causeway for approximately 2.5 miles. Turn right onto County Road 509/N. Wickham Road, travel for approximately 1.1 miles and the project site will be on your right.

APPROXIMATE CENTRAL COORDINATES:

Latitude 28.185163
Longitude -80.677763

PROJECT PURPOSE:

Basic: Residential Development.

Overall: Construction of a single family subdivision and associated infrastructure in Palm Shores, Florida.

EXISTING CONDITIONS: The area surrounding the Glen Ridge Project is composed of residential development and undeveloped natural lands. The project site is undeveloped, naturally vegetated and consists of the following Florida Land Use, Cover and Forms Classification System community types: Pine Flatwoods (411), Scrubby Pine Flatwoods (416), Brazilian Pepper (422), Exotic Wetland Hardwoods (619), Wetland Shrub (631), Vegetated Non-Forested Wetlands (640), Freshwater Marsh (641).

The majority of the project site is composed of Pine Flatwoods (411). The vegetation within this community is dominated by a variably dense canopy of longleaf pine (*Pinus palustris*) and slash pine (*Pinus elliottii*) with an understory of saw palmetto (*Serenoa repens*), rusty lyonia (*Lyonia ferruginea*) and gallberry (*Ilex glabra*).

The northwest corner of the property is classified as Scrubby Pine Flatwoods (416). Most of the slash pine canopy that was previously dominating this upland community burned in recent years and is slowly regenerating. This sparse canopy also contains scattered occurrences of oak species and is underlain by saw palmetto, rusty lyonia and wiregrass (*Aristida stricta*).

On the eastern side of the property, surrounding the north boundary of Wetland 5, is a sliver of Brazilian Pepper (422) and Exotic Wetland Hardwoods (619). The Brazilian Pepper community is densely dominated by Brazilian Pepper (*Schinus terebinthifolius*) with scattered occurrences of wax myrtle (*Myrica cerifera*). The Exotic Wetland Hardwood community is dominated by Brazilian pepper with an understory of herbaceous wetland vegetation such as Virginia chain fern (*Woodwardia virginica*) and red ludwigia (*Ludwigia repens*).

On the eastern project boundary, Wetland 5 is characterized as Wetland Shrub (631). This area is a topographic depression predominantly vegetated in dahoon holly (*Ilex cassine*), wax myrtle, red maple (*Acer rubrum*) and saltbush (*Baccharis halimifolia*) with bushy bluestem (*Andropogon glomeratus*), Sugarcane plume grass (*Saccharum giganteum*) and Virginia chain fern in the groundcover.

On the western project boundary, Wetlands 2, 3 and 4 are considered Vegetated, Non-Forested Wetlands (640). Vegetative species identified within these areas consist of a subcanopy of fetterbush (*Lyonia lucida*) underlain by Virginia chain fern, bushy bluestem, roadgrass (*Eleocharis baldwinii*), Sphagnum moss (*Sphagnum* sp.), coinwort (*Centella asiatica*) and redroot (*Lachnanthes caroliniana*).

The southwest corner of the property contains the 1.50 acre Freshwater Marsh (641), Wetland 1. This high quality marsh is vegetated in bushy bluestem, Virginia chain fern, red ludwigia, sawgrass (*Cladium jamaicense*), roadgrass, coinwort, redroot and muscadine (*Vitis rotundifolia*).

PROPOSED WORK: The applicant seeks authorization to construct a single family subdivision and associated infrastructure, and proposes 1.50 acre of direct impact in waters of the United States. The 1.50 acre of direct impacts are associated with fill activities in Wetlands 1.

AVOIDANCE AND MINIMIZATION INFORMATION: The applicant has provided the following information in support of efforts to avoid and/or minimize impacts to the aquatic environment:

The parcel is relatively surrounded by development and impacts to the ACOE jurisdictional wetland cannot be avoided due to the configuration/size of the parcel. The site is designed to treat all stormwater run-off on-site and to minimize and avoid any impacts to off-site waters of the United States. Wetland impacts have been minimized to the greatest extent practicable. Due to the location of the wetlands, wetland impacts are unavoidable. The long-term ecological value of the proposed mitigation is greater than the long-term ecological value of the on-site wetlands to be filled.

COMPENSATORY MITIGATION: The applicant has offered the following compensatory mitigation plan to offset unavoidable functional loss to the aquatic environment:

The proposed activities will require 1.50 acre of fill activity in waters of the United States. The proposed impacts will be offset through the purchase of credits from a federally approved Mitigation Bank.

CULTURAL RESOURCES: The Corps is not aware of any known historic properties within the permit area. By copy of this public notice, the Corps is providing information for review. Our final determination relative to historic resource impacts is subject to review by and coordination with the State Historic Preservation Officer and those federally recognized tribes with concerns in Florida and the Permit Area.

ENDANGERED SPECIES: The Corps has determined the proposed project may affect, but is not likely to adversely affect the eastern indigo snake or its designated critical habitat. Based upon review of the Corps and US Fish and Wildlife Service (USFWS) *Programmatic Effect Determination Key for the Eastern Indigo Snake* (dated January 25, 2010), the proposed project resulted in the following sequential determination: A > B > C > D > E = "not likely to adversely affect" for the Eastern indigo snake. There are gopher tortoise burrows, holes, cavities, or other refugia where a snake could be buried or trapped and injured during project activities. The permit will be conditioned for use of the *Standard Protection Measures for the Eastern Indigo Snake*, dated August 12, 2013, during site preparation and project construction.

The Corps has determined the proposed project may affect, but is not likely to adversely affect the wood stork or its designated critical habitat. Based upon review of the Corps and USFWS *Effect Determination Key for the Wood Stork* dated September 2008, the proposed project resulted in the following sequential determination: A > B > C > D > E = "not likely to adversely affect" for the wood stork. Project provides suitable foraging habitat compensation within the Service Area of a Service-approved wetland mitigation bank.

The Corps has determined the proposed project may affect the scrub-jay or its designated critical habitat. It has been determined that a family of scrub-jays, incorporating at least 2 individual birds, is utilizing the northern 3.40 acres of the property as a portion of their territory, as well as areas to the north and southeast of the site. Further consultation with USFWS is necessary.

The Corps reviewed geospatial data and other available information. The Corps has not received or discovered any information that the project site is utilized by, or contains habitat critical to, any other federally listed threatened or endangered species.

ESSENTIAL FISH HABITAT (EFH): This notice initiates consultation with the National Marine Fisheries Service on EFH as required by the Magnuson-Stevens Fishery Conservation and Management Act 1996. The proposal would not impact estuarine or marine habitat. Our initial determination is that the proposed action would not have an adverse impact on EFH or federally managed fisheries in the downstream systems. Our final determination relative to project impacts and the need for mitigation measures is subject to review by and coordination with the National Marine Fisheries Service.

NOTE: This public notice is being issued based on information furnished by the applicant. This information has not been verified or evaluated to ensure compliance with laws and regulation governing the regulatory program. The jurisdictional line has been verified by Corps personnel.

AUTHORIZATION FROM OTHER AGENCIES: Water Quality Certification may be required from the Florida Department of Environmental Protection and/or one of the state Water Management Districts.

COMMENTS regarding the potential authorization of the work proposed should be submitted in writing to the attention of the District Engineer through the Cocoa Permits Section, 400 High Point Road, Suite 600, Cocoa, Florida 32926, within twenty-one days from the date of this notice.

The decision whether to issue or deny this permit application will be based on the information received from this public notice and the evaluation of the probable impact to the associated wetlands. This is based on an analysis of the applicant's avoidance and minimization efforts for the project, as well as the compensatory mitigation proposed.

QUESTIONS concerning this application should be directed to the project manager, Lauren Wyckoff Carroll, in writing at the Cocoa Permits Section, 400 High Point Drive, Suite 600, Cocoa, Florida 32926, by electronic mail at Lauren.E.Carroll@usace.army.mil, by fax at (321) 504-3803, or by telephone at (321) 504-3771 ext 15.

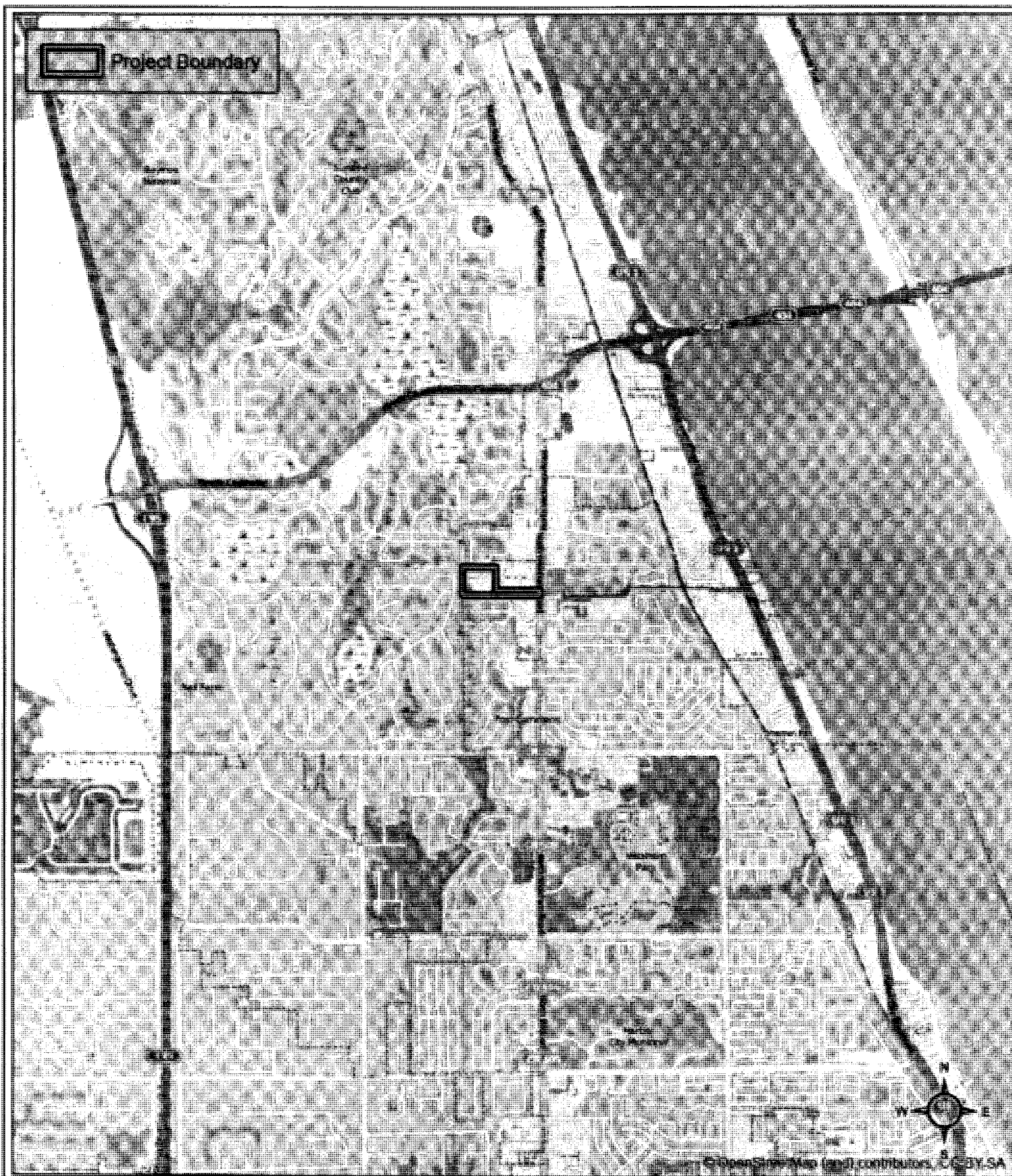
IMPACT ON NATURAL RESOURCES: Preliminary review of this application indicates that an Environmental Impact Statement will not be required. Coordination with USFWS, Environmental Protection Agency (EPA), the National Marine Fisheries Services, and other Federal, State, and local agencies, environmental groups, and concerned citizens generally yields pertinent environmental information that is instrumental in determining the impact the proposed action will have on the natural resources of the area. By means of this notice, we are soliciting comments on the potential effects of the project on threatened or endangered species or their habitat

EVALUATION: The decision whether to issue a permit will be based on an evaluation of the probable impact including cumulative impacts of the proposed activity on the public interest. That decision will reflect the national concern for both protection and utilization of important resources. The benefits, which reasonably may be expected to accrue from the proposal, must be balanced against its reasonably foreseeable detriments. All factors which may be relevant to the proposal will be considered including cumulative impacts thereof; among these are conservation, economics, esthetics, general environmental concerns, wetlands, historical properties, fish and wildlife values, flood hazards, floodplain values, land use, navigation, shoreline erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food, and fiber production, mineral needs, considerations of property ownership, and in general, the needs and welfare of the people. Evaluation of the impact of the activity on the public interest will also include application of the guidelines promulgated by the Administrator, EPA, under authority of Section 404(b) of the Clean Water Act of the criteria established under authority of Section 102(a) of the Marine Protection Research and Sanctuaries Act of 1972. A permit will be granted unless its issuance is found to be contrary to the public interest.

The US Army Corps of Engineers (Corps) is soliciting comments from the public; Federal, State, and local agencies and officials; Indian Tribes; and other Interested parties in order to consider and evaluate the impacts of this proposed activity. Any comments received will be considered by the Corps to determine whether to issue, modify, condition, or deny a permit for this proposal. To make this decision, comments are used to assess impacts on endangered species, historic properties, water quality, general environmental effects, and the other public interest factors listed above. Comments are used in the preparation of an Environmental Assessment and/or an Environmental Impact Statement pursuant to the National Environmental Policy Act comments are also used to determine the need for a public hearing and to determine the overall public interest of the proposed activity.

COASTAL ZONE MANAGEMENT CONSISTENCY: In Florida, the State approval constitutes compliance with the approved Coastal Zone Management Plan. In Puerto Rico, a Coastal Zone Management Consistency Concurrence is required from the Puerto Rico Planning Board, in the Virgin Islands, the Department of Planning and Natural Resources permit constitutes compliance with the Coastal Zone Management Plan.

REQUEST FOR PUBLIC HEARING: Any person may request a public hearing. The request must be submitted in writing to the District Engineer within the designated comment period of the notice and must state the specific reasons for requesting the public hearing.



Project: Glen Ridge Subdivision

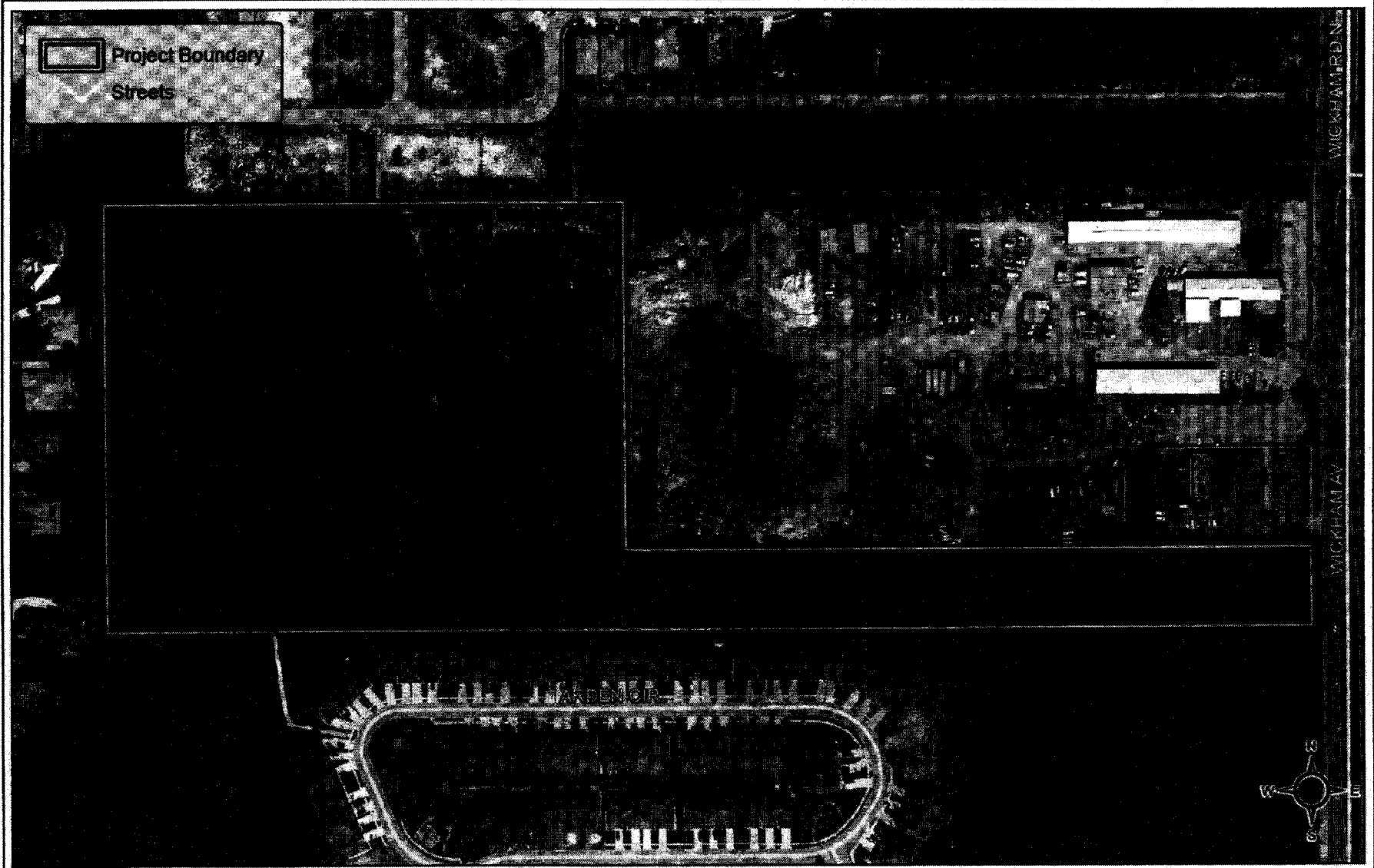
Figure 1: Location Map

0 0.25 0.5 1
 Miles

Brevard County, Florida

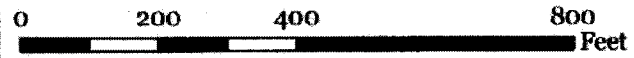


AES Proj #: 1332



Project: Glen Ridge Subdivision

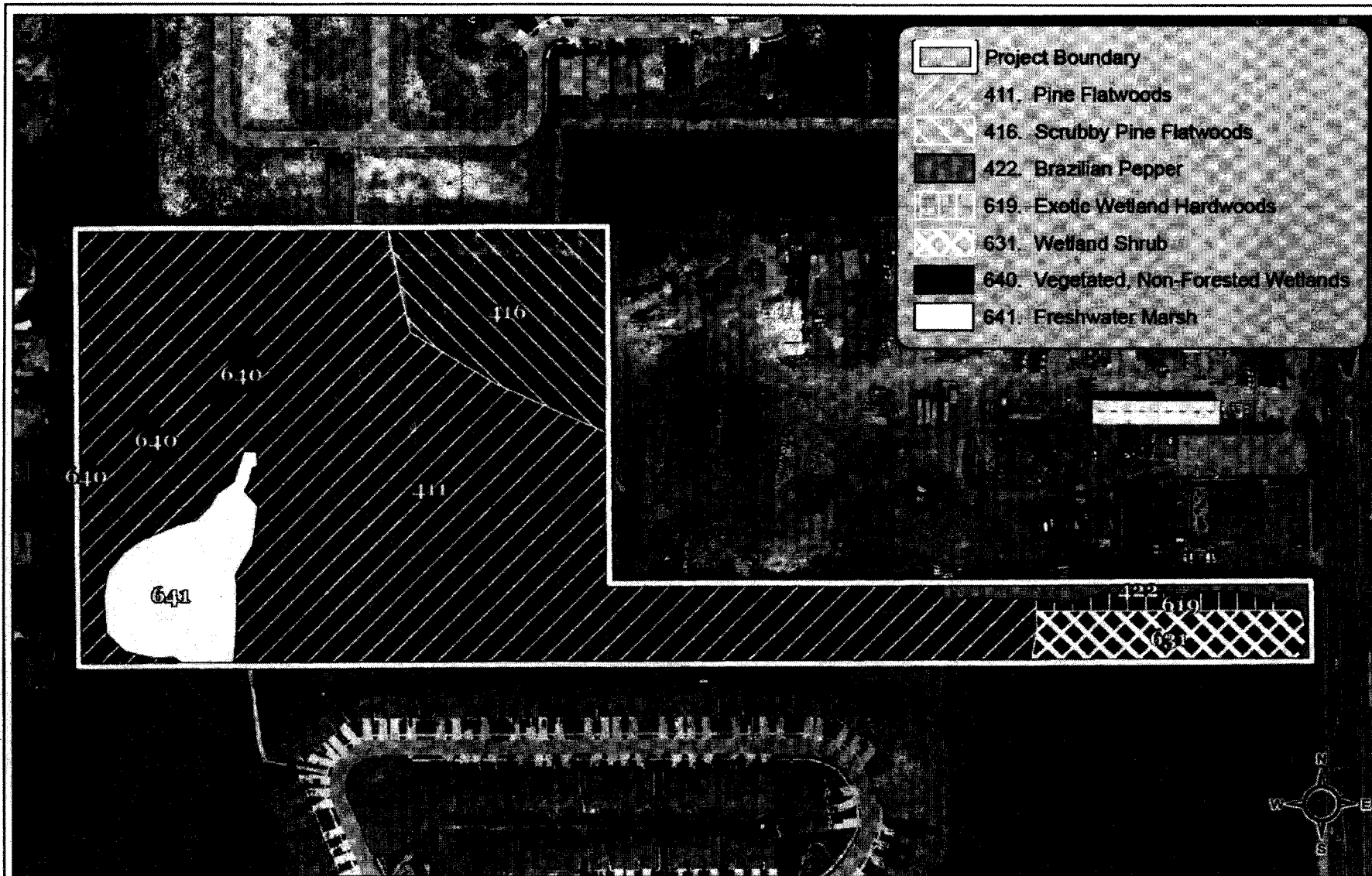
Figure 2: Aerial Map



2012 Aerial, Brevard County, Florida



AES Proj #: 1332



Project: Glen Ridge Subdivision

Figure 3: Land Use (FLUCFCS) Map

0 200 400 800 Feet

2012 Aerial, Brevard County, Florida



AES Proj #: 1332



Project Boundary

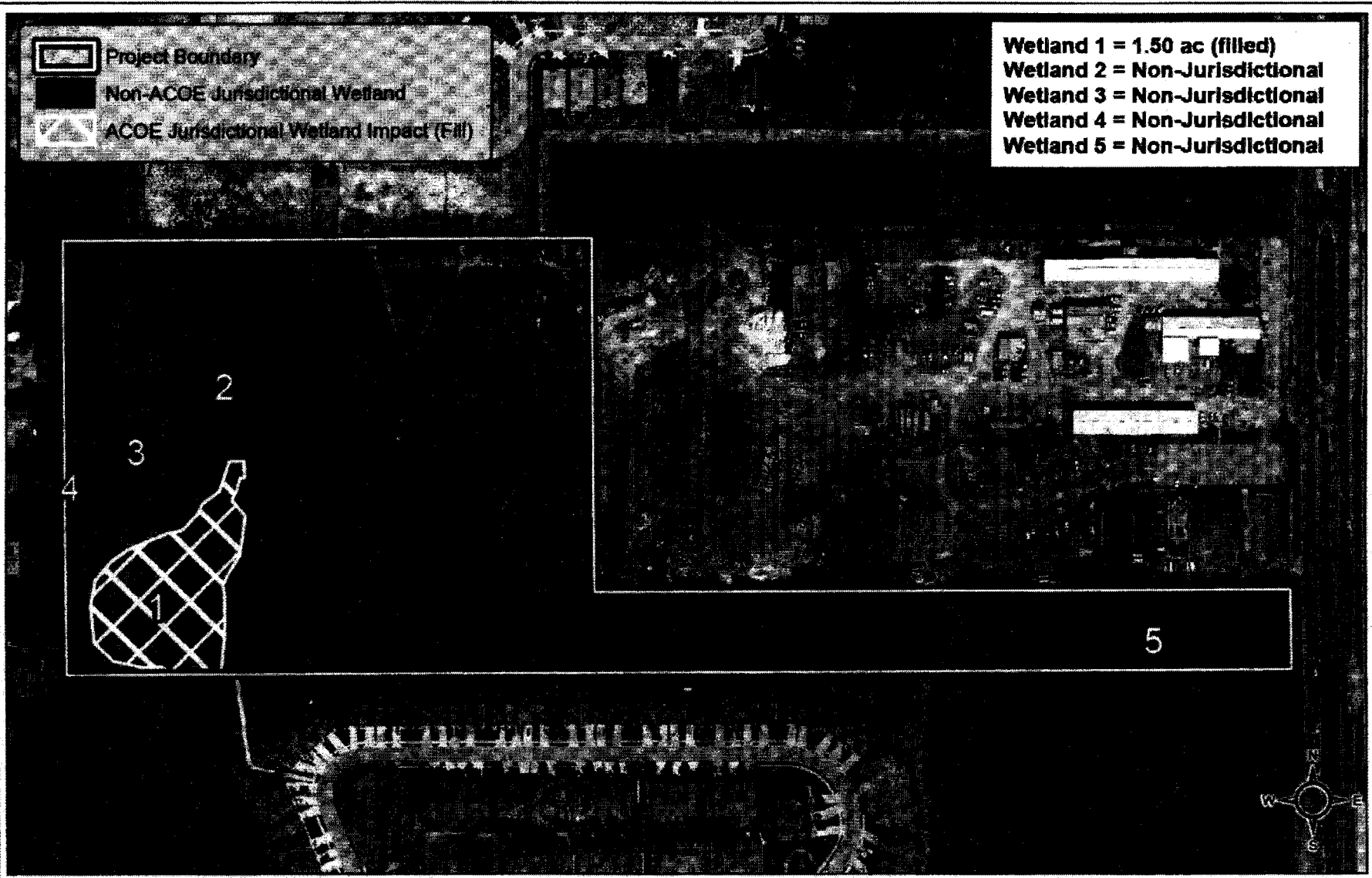
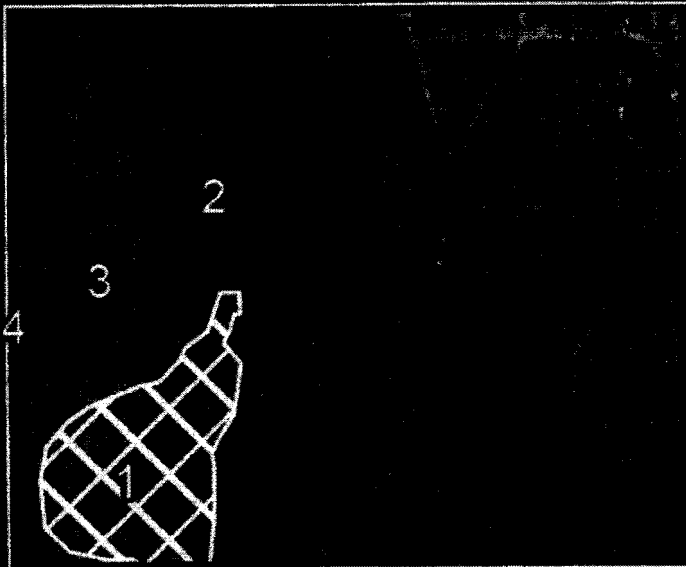


Non-ACOE Jurisdictional Wetland



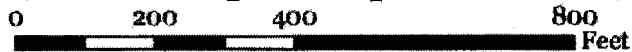
ACOE Jurisdictional Wetland Impact (Fill)

Wetland 1 = 1.50 ac (filled)
 Wetland 2 = Non-Jurisdictional
 Wetland 3 = Non-Jurisdictional
 Wetland 4 = Non-Jurisdictional
 Wetland 5 = Non-Jurisdictional



Project: Glen Ridge Subdivision

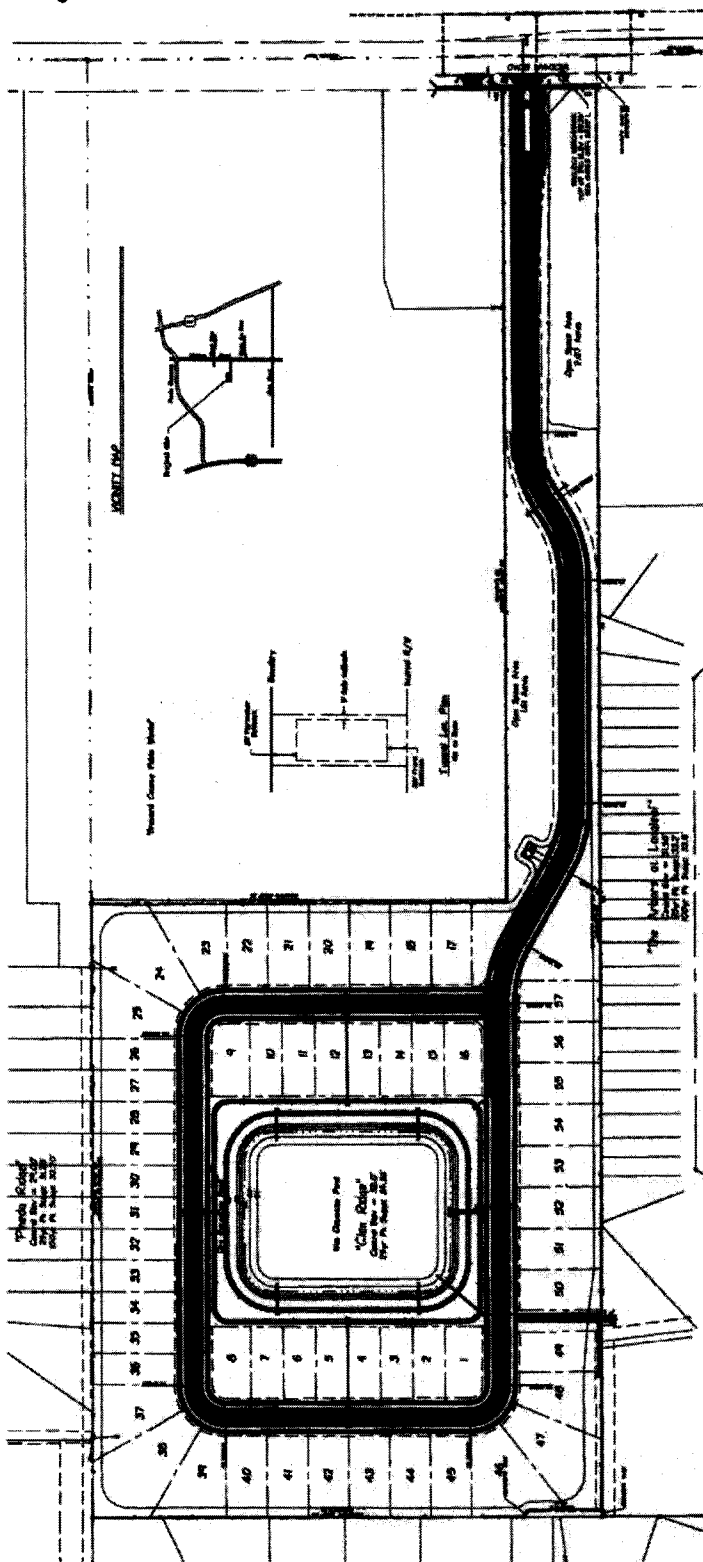
Wetland Impact Map



2012 Aerial, Brevard County, Florida



AES Proj #: 1332



1. GENERAL STATEMENT
 This plan shows the proposed construction of the City Ridge project, consisting of a 45-unit residential building and a parking lot. The project is located on the east side of Sunbay, LLC property, bounded by [Street Name] to the north and [Street Name] to the south. The project is shown in relation to the surrounding streets and property lines. The project is shown in relation to the surrounding streets and property lines.

2. OWNER
 Sunbay, LLC
 1000 [Address]
 [City, State, Zip]

3. ARCHITECT
 Masteller & Moler, Inc.
 4000 [Address]
 [City, State, Zip]

4. ENGINEER
 John H. Boyer, P.E.
 1000 [Address]
 [City, State, Zip]

5. SITE DATA
 The site is located on the east side of Sunbay, LLC property, bounded by [Street Name] to the north and [Street Name] to the south. The project is shown in relation to the surrounding streets and property lines.

6. NOTES
 1. THE PROJECT IS SUBJECT TO THE CITY OF MIAMI'S ZONING ORDINANCES AND THE CITY OF MIAMI'S SUBDIVISION REGULATIONS.
 2. THE PROJECT IS SUBJECT TO THE CITY OF MIAMI'S SUBDIVISION REGULATIONS.
 3. THE PROJECT IS SUBJECT TO THE CITY OF MIAMI'S SUBDIVISION REGULATIONS.

7. REVISIONS

NO.	DATE	DESCRIPTION

M M
MASTELLER & MOLER, INC.
 CONSULTING ENGINEERS
 4000 27th STREET - SUITE 2, MIAMI BEACH, FLORIDA 33130
 (772) 367-8800 / FAX (772) 374-4006
 CONTRACTS IN PROGRESS

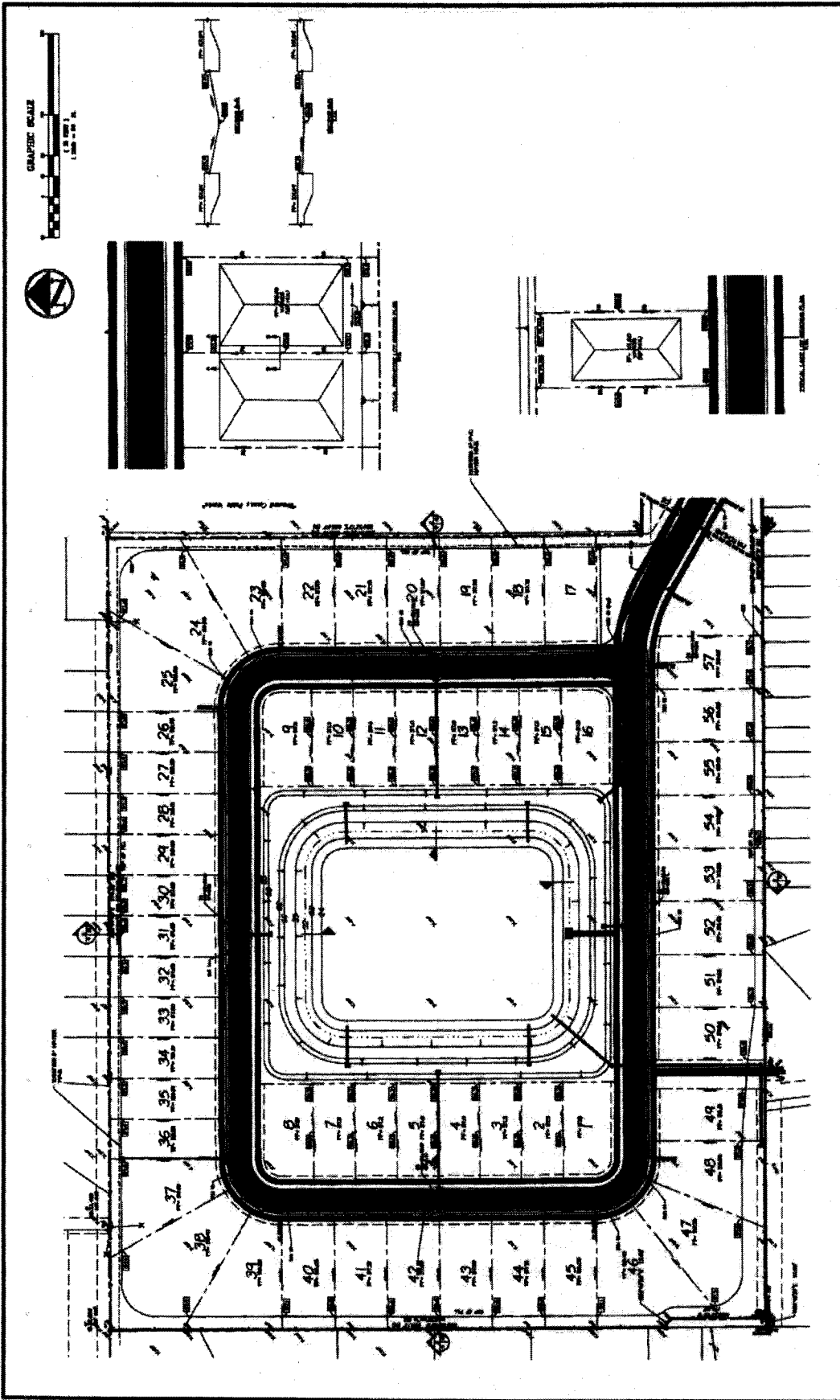
CONSTRUCTION PLANS
"GLEN RIDGE" SUBDIVISION
SUNBAY, LLC.

CITY OF MIAMI

JOHN H. BOYER, P.E. #57470

FLORIDA

NO.	DATE	DESCRIPTION



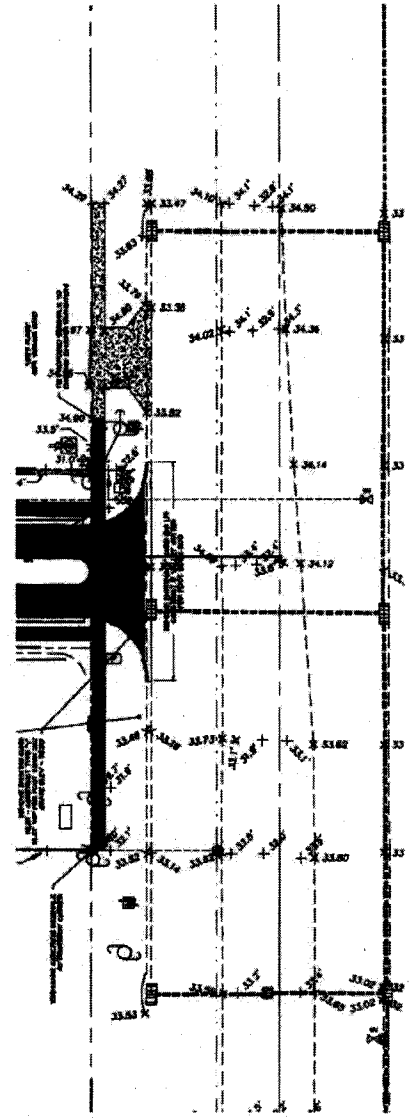
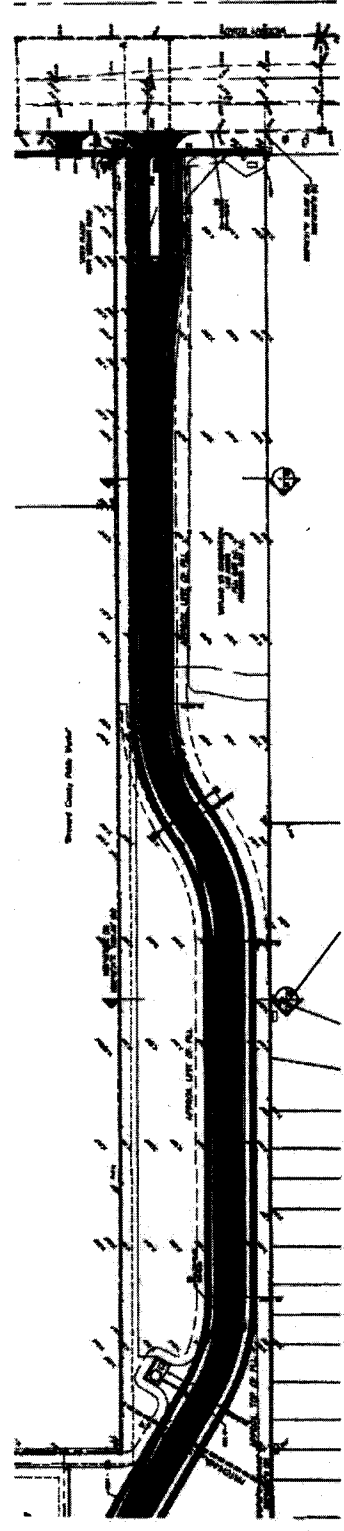
PAVING & GRADING - B
CONSTRUCTION PLANS
GLEN RIDGE SUBDIVISION
SUNBAY, LLC.

H M
MASTELLER & MOLER, INC.
 CONSULTING ENGINEERS
 855 274 STREET - SUITE 2, NEW BACH FLORIDA 32840
 (772) 387-4500 / FAX (772) 744-3000
 OFFICE OF PROFESSIONAL ENGINEERS

NO.	DATE	REVISIONS

DATE	
BY	
CHECKED	
SCALE	
PROJECT NO.	
DATE OF P.L.C.	
DATE OF P.L.C.	

FLORIDA
 JOHN T. BOYER, P.E. FL #27470



PAVING & GRADING - A
CONSTRUCTION PLANS
GLEN RIDGE SUBDIVISION
SUNBAY, LLC.

M **MASSELLER & MOLER, INC.**
 CONSULTING ENGINEERS
 605 7th Street - Suite 2, West Mank, Florida 33603
 (772) 347-3000 / Fax (772) 794-1006
 CONTRACTORS OF SUBDIVISION PLANS

REVISIONS

NO.	DATE	DESCRIPTION

DATE: 02/20/13
 DRAWN BY: JMB
 CHECKED BY: JMB
 PROJECT NO.: 13-0001
 SHEET NO.: 13-0001-01
 TOTAL SHEETS: 01
 SCALE: AS SHOWN
 CITY OF WELLSBORO
 PLANNER

JOHN M. BOYER, P.E. FL #57970



1301 W. Eau Gallie Blvd., Ste. 98 • Melbourne, FL 32935
ph 321.676.1505 fx 321.676.1730

April 18, 2013

Ms. Erin Gawera
U.S. Fish and Wildlife Service
7915 Baymeadows Way, Suite 200
Jacksonville, FL 32256-7517

Re: Florida Scrub-jay Survey results for the Sunbay, LLC Property
Tax Parcel 26-36-36-00-00007.0-0000.00 in Brevard County, Florida
AES File No. 0332

Dear Ms. Gawera:

Attached please find the Florida Scrub-jay report outlining the results of the recently completed formal 5-day scrub-jay survey completed by Atlantic Environmental Solutions, Inc. (AES) on the above-referenced property in Melbourne, Florida. AES is currently working on behalf of a buyer that is interested in purchasing this property and has the property under contract. As a part of his due diligence the buyer has requested this survey and would like to have some assurance from US Fish and Wildlife Service that this agency corroborates the results from our survey, specifically the acreage of occupied territory within the boundaries of the property. For this reason, we ask that you review our report and provide us any comments you may have. We would be glad to meet you on-site if you would like to see the site conditions and jay activity there. Please feel free to call with any questions or if you would like to set up a site visit. Thanks for your help and we look forward to working with you on this project.

Sincerely,

A handwritten signature in black ink, appearing to read "Jon Shepherd", written over a horizontal line.

Jon H. Shepherd, MS, PWS
President/Ecologist



FLORIDA SCRUB-JAY SURVEY REPORT

**On the
Sunbay, LLC Property**

**±22.49 Acres
Tax Parcel 26-36-36-00-00007.0-0000.00
Section 36, Township 26 South, Range 36 East
Brevard County, Florida**

Conducted For

**Mr. Chad Genoni
Sunbay, LLC
4760 North US Highway 1, Suite 201
Melbourne, Florida 32935**

Conducted by

**Atlantic Environmental Solutions, Inc.
1301 W. Eau Gallie Boulevard, Suite 98
Melbourne, Florida 32935**

April 18, 2013



J14 1332 SJ.Rpt

1301 W. Eau Gallie Blvd., Sta. 98 • Melbourne, FL 32935

**ph 321.676.1505 fx 321.676.1730
www.environmentalpermitting.com**



1301 W. Eau Gallie Blvd., Ste. 98 Melbourne, FL 32935
ph 321.676.1505 fx 321.676.1730

April 18, 2013

Mr. Chad Genoni
Sunbay, LLC
4760 North US Highway 1, Suite 201
Melbourne, Florida 32935

Re: Florida Scrub-jay Survey results for the Sunbay, LLC Property
Tax Parcel 26-36-36-00-00007.0-0000.00 in Brevard County, Florida
AES File No. 0332

Dear Mr. Genoni:

Atlantic Environmental Solutions, Inc. (AES) has completed a formal five-day Florida scrub-jay (*Aphelocoma coerulescens*) survey on the above-referenced site. The subject property is an approximately 22.49 acre "flag lot" located on the west side of Wickham Road in Melbourne, Florida. The site consists of Tax Parcel 26-36-36-00-00007.0-0000.00. Although portions of the site have been disturbed in the past, the site, for the most part, is undeveloped and naturally vegetated.

Enclosed please find our report, which provides a description of all on-site ecological communities and summarizes the results of the Florida scrub-jay survey. Our survey resulted in the determination that one family of scrub-jays, consisting of at least two individuals, is currently occupying approximately 3.40 acres of the site.

Should you have any questions on the enclosed report, please contact our office. We look forward to working with you further on this project.

Sincerely,

Jon H. Shepherd, MS, PWS
President/Ecologist

FLORIDA SCRUB-JAY SURVEY REPORT
Tax Parcel 26-36-36-00-00007.0-0000.00
Brevard County, Florida

April 2013

INTRODUCTION

This report describes the methodology and results of a five-day survey for Florida scrub-jays (*Aphelocoma coerulescens*) on Tax Parcel 26-36-36-00-00007.0-0000.00, located on the west side of Wickham Road in Melbourne, Florida. The survey and report were completed by Atlantic Environmental Solutions, Inc. (AES). Included with this report is a description of all on-site communities, habitat suitability for scrub-jays, survey date weather data, and applicable recommendations. The survey was conducted on April 3, 5, 8, 10, and 11, 2013. Scrub-jays were noted on or just off-site the subject site during three of the five survey dates. On the remaining two survey dates jays were heard to the east-northeast of the project site.

DESCRIPTION AND LOCATION OF PROJECT SITE

The subject property consists of an approximately 22.49 acre "flag lot" located immediately west of Wickham Road, in Melbourne, Florida (Figure 1). The property is located within Section 36, Township 26 South, Range 36 East. Although portions of the site have been disturbed in the past, the site, for the most part, is undeveloped and naturally vegetated.

ECOLOGICAL COMMUNITIES

Land uses and common vegetative associations are classified into ecological units known as "communities". The communities occupying the surveyed area were designated by AES using the Florida Land Use, Cover and Forms Classification System (FLUCFCS) (FDOT 1985) as a guideline. It should be noted that variations between these FLUCFCS community descriptions and the actually occurring on-site communities might exist; consequently, the classifications which come closest to the observed on-site communities were chosen, but may not match precisely.

Specific communities identified within the project site are: Pine Flatwoods (FLUCFCS Code Number 411), Scrubby Pine Flatwoods (416), Brazilian pepper (422), Wetland Shrub (631), Vegetated, Non Forested Wetlands (640), and Freshwater Marsh (641). Following are brief descriptions of these communities, as they exist on the subject property. The location of these communities are depicted on Figure 2 and are based on aerial photo interpretation with groundtruthing for verification. Land use/community boundaries on the aerial photograph are not distinct; consequently, boundaries shown and acreages estimated are approximate.

Pine Flatwoods

A majority (\pm 16.02 acres) of the subject site is comprised of this upland land use classification. Vegetation within this community is dominated by a variably dense canopy of slash pine (*Pinus elliottii*) and longleaf pine (*Pinus palustris*) over saw palmetto (*Serenoa repens*), rusty lyonia (*Lyonia ferruginea*), gallberry (*Ilex glabra*), and

dwarf live oak (*Quercus minima*).

Scrubby Pine Flatwoods

The northeast corner of the site contains this uplands classification, totaling approximately 2.50 acres. A majority of the pine canopy burned within this area in recent years past and is slowly recovering. Vegetation within this community is dominated by sparse slash pine along with scrub oaks (*Quercus* spp.), saw palmetto, rusty lyonia, gallberry, and wiregrass (*Aristida stricta*).

Brazilian Pepper

As the name implies, this area (± 0.15 acres) is dominated by dense Brazilian pepper (*Schinus terebinthifolius*). Additional species include wax myrtle (*Myrica cerifera*) and other opportunistic species. This area is located along the northern disturbed edge of the flag stem.

Wetland Shrub

Approximately 1.82 acres of the eastern half of the flag stem portion of the site that connects to Wickham Road is comprised of this land use classification. This wetland extends off-site to the south and is dominated by wax myrtle, dahoon holly (*Ilex cassine*), chalky bluestem (*Andropogon virginicus* var. *glaucus*), redroot (*Lachnanthes caroliniana*), Virginia chain fern (*Woodwardia virginica*), and maidencane (*Panicum hemitomon*).

Vegetated, Non Forested Wetlands

Two small isolated wetlands totaling 0.30 acres are located within the western portion of the subject site. These wetlands are dominated by Virginia chain fern, chalky bluestem, roadgrass (*Eleocharis baldwinii*), and coinwort (*Centella asiatica*).

Freshwater Marsh

A ± 1.70 acre freshwater marsh is located within the southwest portion of the site, extending off-site to the south. This wetland is dominated by sawgrass (*Cladium jamaicense*), Virginia chain fern, redroot, roadgrass, chalky blue stem, and cinnamon fern (*Osmunda cinnamomea*).

SCRUB-JAY HABITAT SUITABILITY

Generally, scrub-jays prefer a habitat which consists of oak shrubs between three (3) and 10 feet tall, covering 50-75 percent of the area. Also critical to Florida scrub-jays, the oak cover must be interspersed with bare ground or vegetation less than six (6) inches tall covering 10-30 percent of the area, and no more than 20 percent canopy cover (Status and Distribution of the Florida Scrub Jay, Florida Ornithological Society Special Publication No. 3, 1987). Scrub-jay habitat suitability is typically broken down into three (3) levels:

TYPE I HABITAT - an upland plant community, assessed in one-acre plots, with greater than or equal to 15 percent cover of scrub oak species.

TYPE II HABITAT - an upland plant community, assessed in one-acre plots, with percent cover of scrub oak species greater than zero but less than 15 percent.

TYPE III HABITAT - native or improved uplands and seasonally dry wetlands within 1/4 mile of Type I or Type II habitat.

Based on the above descriptions and on-site observations, the following scrub-jay habitat designations apply for natural communities found on or near the project site:

<u>Community</u>	<u>Habitat Type</u>
Pine Flatwoods	Type II
Scrubby Flatwoods	Type I
Brazilian Pepper	N/A
Wetland Shrub	Type III
Vegetated, Non-forested Wetland	Type III
Freshwater Marsh	Type III

In terms of actual habitat suitability, the Scrubby Pine Flatwoods community, that area lacking a dense pine canopy in the northeastern corner of the site, appears quite suitable for jay occupancy.

The remaining on-site Pine Flatwoods community has been fire deprived for some time now, lacks patches of open ground, and supports a fairly dense canopy of pine. These factors decrease the likelihood that jays might use this area. The remaining on-site communities are unsuitable for jay occupancy.

SURVEY METHODOLOGY

A five-day survey was conducted to determine the presence and extent of Florida scrub-jays on the site. Surveys were conducted on April 3, 5, 8, 10, and 11, 2013, generally between the hours of 7:00 a.m. and 9:30 a.m. The survey methodology followed the procedures outlined by the Florida Game and Fresh Water Fish Commission (FGFWFC) in their publication, Ecology and Development-Related Habitat Requirements of the Florida Scrub Jay (Nongame Wildlife Program Technical Report No. 8), and approved by the U.S. Fish and Wildlife Service (USFWS). Specific procedures used included:

- A. Traversing the subject site on foot between call stations. Call stations were mapped within the property so that all on-site potentially suitable habitat was represented.
- B. A high quality tape recording of Florida scrub-jay territorial scolding (obtained from Archbold Biological Station, Lake Placid, Florida) was used in an attempt to attract the jays. This recording included clear examples of all typical territorial scolds, including the female "hiccup" call.
- C. The sites were traversed and the calls broadcast at numerous playback stations. All calls were broadcast for approximately one (1) minute in all four (4) directions around each station, emphasizing the direction in which low-growing oak scrub was the predominant vegetation.

- D. When scrub-jays were sighted or responded to the played calls, their flight patterns were recorded on an aerial photograph of the site. Whenever possible, attempts were made to draw or flush the birds further from their known territory. The points at which the birds consistently ceased pursuit of the call or flew back to where they had come were identified as the likely boundaries of their territory. The cumulative pattern of observed flight paths and territorial responses was compiled, and a contour was drawn around the overall pattern, taking into account the extent of suitable habitat (see Figure 3).

WEATHER CONDITIONS

Florida scrub-jay activity is often qualified by meteorological conditions. Excessive heat, rain, wind, or fog can inhibit active flight and territorial responses, making observation by surveyors difficult. In order to establish that suitable weather conditions were present during the survey, weather data was recorded for the dates and times of the survey. This data was provided by the National Oceanic and Atmospheric Administration (NOAA), and reflects the conditions at the Melbourne International Airport, the official weather station nearest to the subject site. Following is a listing, per survey date, of average weather conditions during the times of survey.

SURVEY #1

Date: 4/3/13

Time: Start 7:00 am
Finish 9:00 am

Weather: Avg. Temperature: 73° F
Avg. Wind Speed: 6 mph
Wind Direction: Southeast
Conditions: Clear

SURVEY #2

Date: 4/5/13

Time: Start 7:00 am
Finish 9:00 am

Weather: Avg. Temperature: 66° F
Avg. Wind Speed: 3 mph
Wind Direction: South
Conditions: Partly Cloudy

SURVEY #3

Date: 4/8/13
Time: Start 7:30 am
Finish 9:30 am
Weather: Avg. Temperature: 68° F
Avg. Wind Speed: 1 mph
Wind Direction: West
Conditions: Clear

SURVEY #4

Date: 4/10/13
Time: Start 7:00 am
Finish 9:00 am
Weather: Avg. Temperature: 65° F
Avg. Wind Speed: 0 mph
Wind Direction: N/A
Conditions: Clear

SURVEY #5

Date: 4/11/13
Time: Start 7:00 am
Finish 8:30 am
Weather: Avg. Temperature: 74° F
Avg. Wind Speed: 12 mph*
Wind Direction: Southeast
Conditions: Partly Cloudy

* = Please note that although the wind speeds at the Melbourne Airport were recorded during this time period as 12 mph, wind speeds at the subject site appeared well under 8 mph during our survey, a day in which two families of scrub-jays were noted performing territorial displays just north of the subject site.

RESULTS

The survey resulted in the determination that a family of scrub-jays, incorporating at least 2 individual birds, is currently incorporating the northern 3.4 acres of the subject site as a portion of their territory, as well as areas to the north and northeast of the site. Figure 3 depicts the cumulative pattern of observed scrub-jay flight paths, and identifies the estimated boundary of their territory within the subject site. Scrub-jays were noted on or just off-site the subject site during three of the five survey dates. On the remaining two survey dates jays were heard to the east-northeast of the project site. On all three of the survey dates in which the jays were noted on or just north of the subject property, the jays could not be called any further south or west than depicted on Figure 3. This behavior, in combination with the fairly abrupt vegetative change in this portion of the site, led AES to delineate the jay occupancy polygon as depicted on Figure 3.

Based on the current on-site conditions and our observations over the course of the survey, we are confident that the mapped scrub-jay territory is a reasonably accurate representation of the extent of occupied scrub-jay habitat on the subject site.

As can be seen on Figure 4, the subject site falls within a relatively large scrub-jay polygon. On the last day of surveying, AES noted an additional family of scrub-jays, containing at least 3 individuals, to the north of the subject site. The family of jays utilizing the subject site and the other family were observed in a territorial dispute just north of the stormwater pond located north of the on-site occupied territory.

SUMMARY AND RECOMMENDATIONS

Florida scrub-jays are federally classified as a threatened species (50 CFR 17.11) and are protected by the USFWS in accordance with the Endangered Species Act of 1973 (ESA), as amended, and are further protected by the Federal Migratory Bird Treaty Act. This species is also protected by the Florida Fish and Wildlife Conservation Commission (FWC) in accordance with the Wildlife Code of the State of Florida (Chapter 39, F.A.C.), where it is also classified as a threatened species. Collectively, these laws prohibit the "taking" of a protected species, their eggs, nests, young, or habitat. "Take" is defined as harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct (Section 3, (18), ESA). Locally, Brevard County has mapped scrub-jay territories within the County and designated areas within the County that are desired for preservation of Florida scrub-jays.

Since scrub-jay activity on the site was observed during the survey, the site's potential inclusion within Brevard County's Ecosystem Initiative Map was explored. Maps showing the locations of scrub-jay families and potential alternatives for scrub reserve designs show that the subject property falls within mapped jay habitat and within a scrub-jay polygon that supports scrub jays (see Figure 4).

USFWS outlines basically two alternatives available to individuals desiring to develop land containing habitat for Florida scrub-jays. The first is to implement a development plan that prevents a Section 9 (ESA) "taking" of this federally protected species. This can be accomplished by preservation of contiguous suitable scrub-jay habitat on the subject property in post-

development conditions. USFWS approval of an on-site preservation plan is most easily procured through the Section 7 (Interagency Cooperation, 50 CFR Part 402) consultation process. This is when another federal agency, such as the U.S. Army Corps of Engineers (ACOE), is involved in the project.

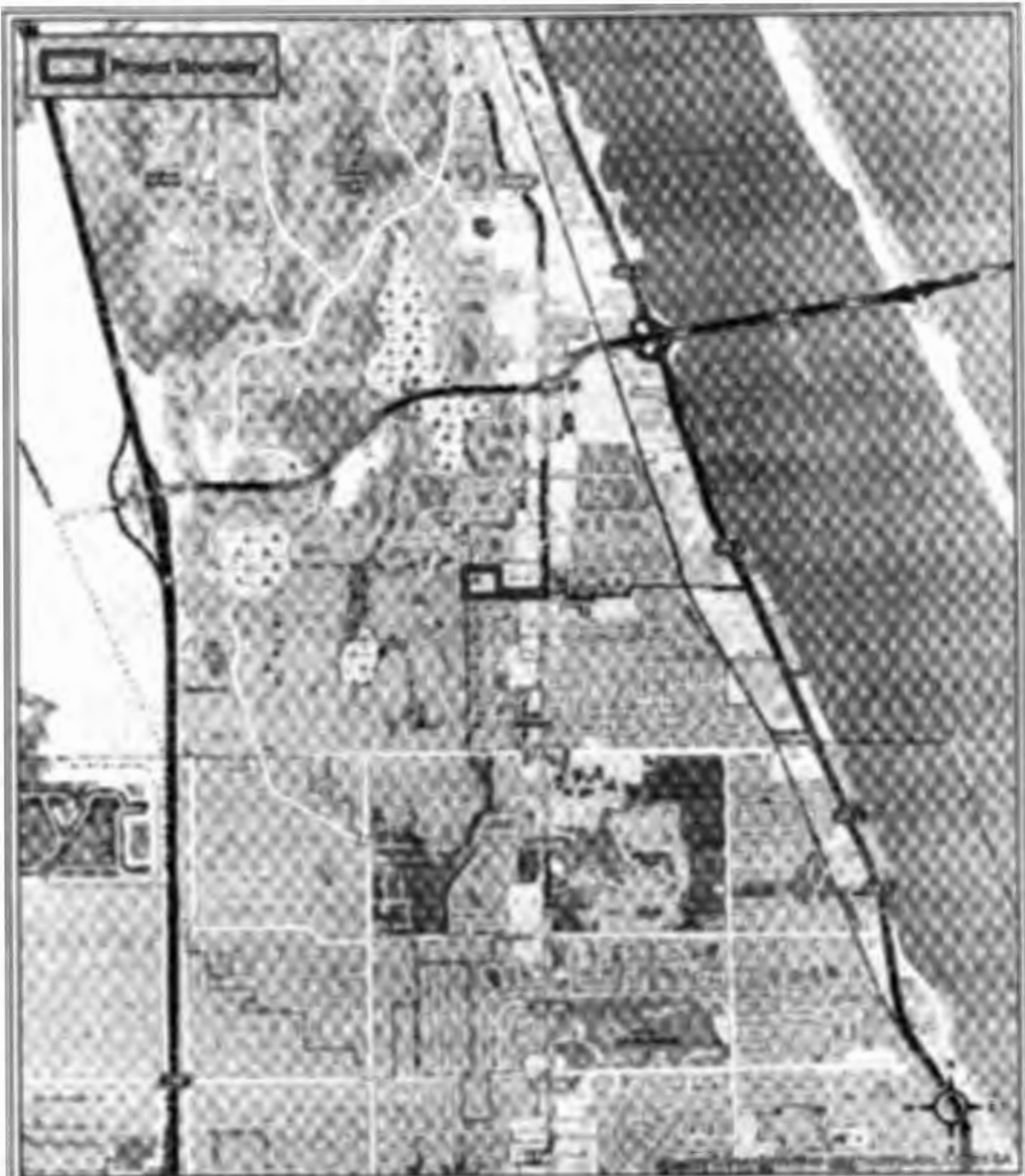
USFWS approval of this type of on-site preservation plan may also be obtained through direct informal consultation with USFWS, if a Section 7 avenue is not available. A letter of agreement, from this agency, stating that the proposed development plan should not result in a Section 9 "take" of the Florida scrub-jay, will be issued by the USFWS based on a development plan that shows preservation of the subject scrub-jay territorial area.

A second alternative requires procurement of an Incidental Take Permit (ITP) from the USFWS pursuant to the criteria set forth in Section 10(a)1(B) of the ESA. This is accomplished by permit issuance either through a Section 7 consultation process or through the Section 10(a)1(B) permit process when another federal agency is not involved in the project, as it does not appear to be in this case. Authorization of an ITP requires the applicant to mitigate the impacts of the taking by implementing an individual Habitat Conservation Plan (HCP). An individual HCP typically involves the protection and enhancement of suitable, occupied scrub-jay habitat at a minimum 2:1 ratio (acres protected to acres impacted) to compensate for impacts to active scrub-jay territory.

For this project, should the ± 3.40 acres of occupied habitat be impacted, and the minimum ratio applied, the maximum estimate of land to be protected and enhanced would be ± 6.80 acres, along with a monetary endowment to allow maintenance in perpetuity. AES recommends coordinating with USFWS to ensure this agency concurs with our on-site findings and then opening a dialog with this agency to secure approved mitigation within Brevard County Environmentally Endangered Lands Program-owned occupied scrub-jay habitat.

In conclusion, it appears that approximately 3.40 acres of the subject site is occupied by a family of at least 2 scrub-jays. It does not appear as though ACOE will be involved in this project and therefore a Section 7 avenue is not available. For this reason, a Habitat Conservation Plan will have to be written and approved in order to impact jay habitat on this site. It is estimated that permit issuance from USFWS will take approximately 6 to 9 months.

As the next step in the development process, AES recommends developing site plans that demonstrate the desired impacts to scrub-jay habitat. Please keep in mind that if a developer were to choose not to impact jay habitat on this property no permits or mitigation would be required from USFWS.



Project: Genoni Wickham Parcel

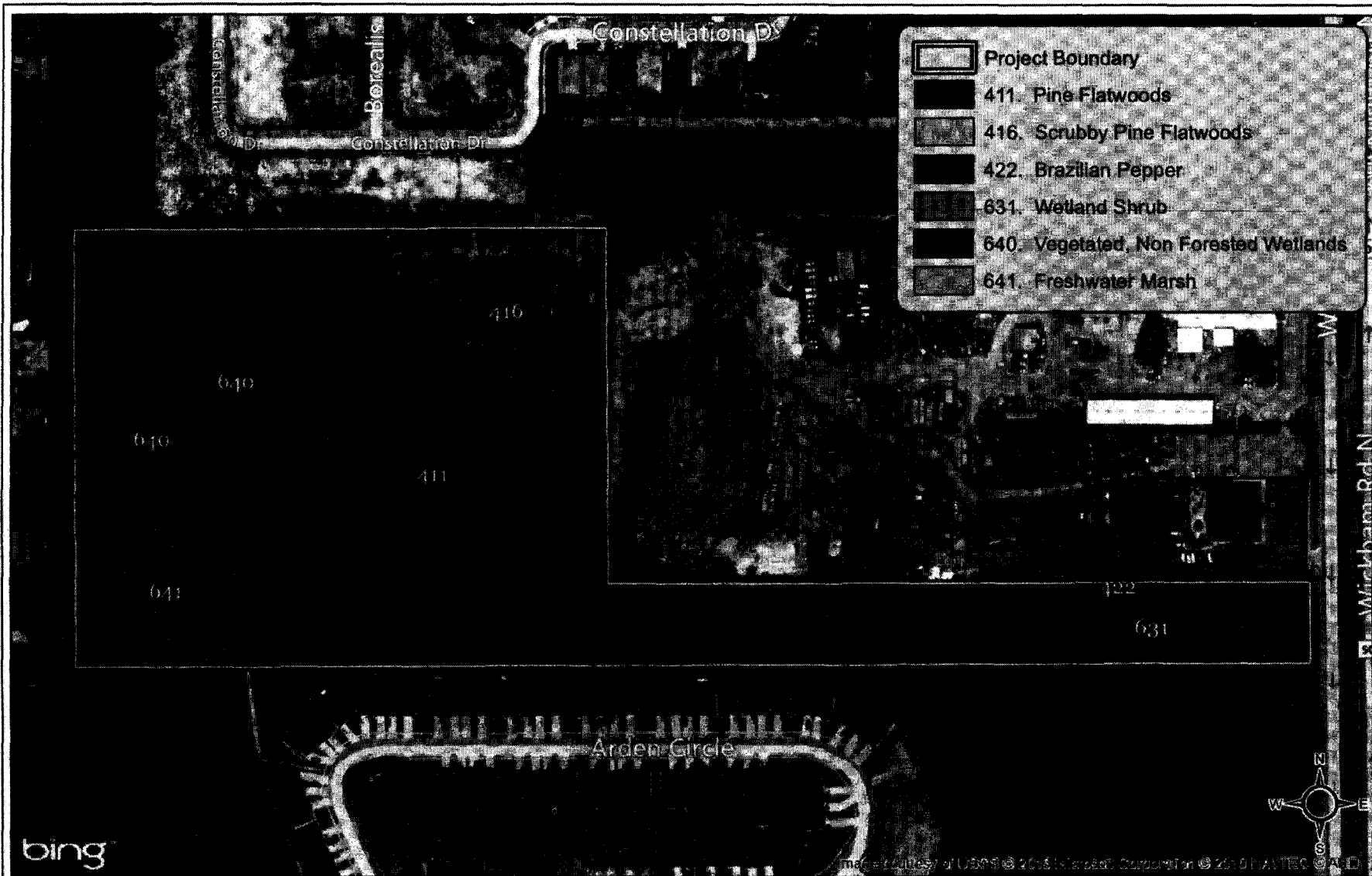
Figure 1: Location Map

0 0.25 0.5 1
Miles

Brevard County, Florida



AES Proj # 1338



Project: Genoni Wickham Parcel

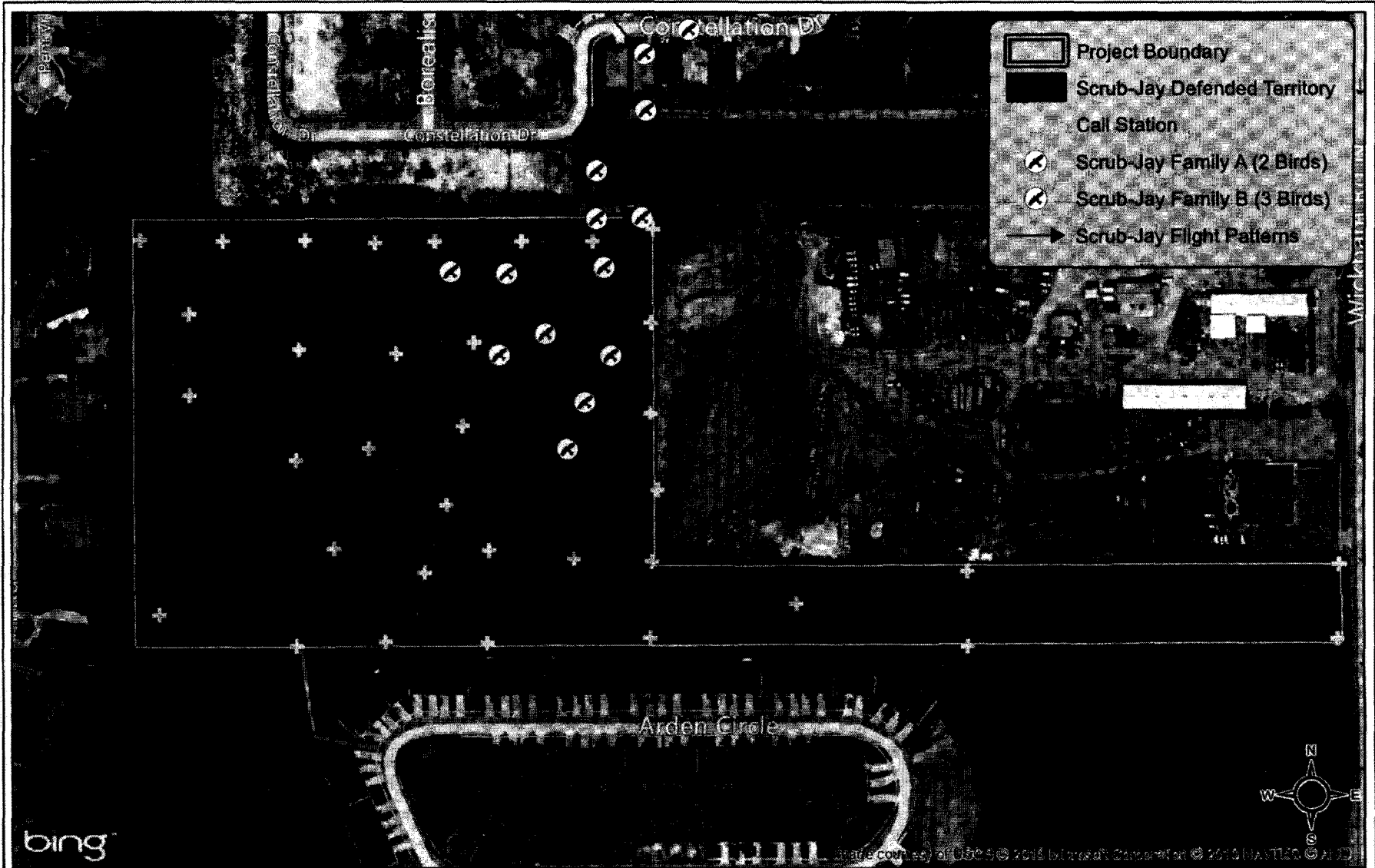
Figure 2: Land Use (FLUCFCS) Map

0 200 400 800 Feet

2011 Aerial, Brevard County, Florida

ATLANTIC
 ENVIRONMENTAL SOLUTIONS
 ENVIRONMENTAL PERMITTING & MITIGATION

AES Proj #: 1332



Project: Genoni Wickham Parcel

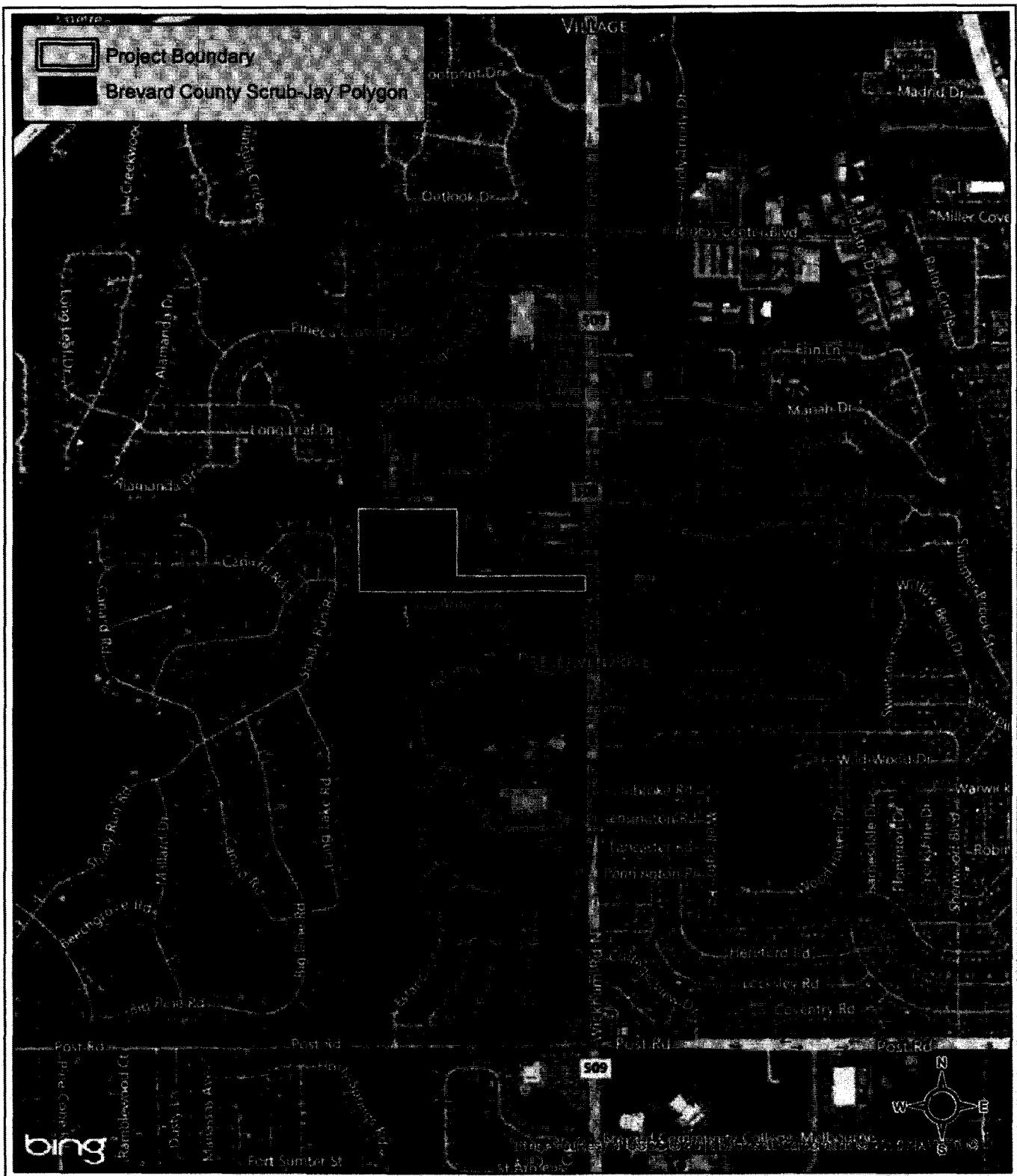
Figure 3: Scrub-Jay Survey Map

0 100 200 400
 Feet

2011 Aerial, Brevard County, Florida



AES Proj #: 1332



Project: Genoni Wickham Parcel

Figure 4: Scrub-Jay Polygon Map

0 500 1,000 2,000
 Feet

2011 Aerial, Brevard County, Florida



AES Proj #: 1332



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MyFWC.com

January 28, 2014

Lauren Carroll
U.S. Army Corps of Engineers
400 High Point Drive, Suite 600
Cocoa, FL 32926
Lauren.E.Carroll@usace.army.mil

RE: U.S. Army Corps of Engineers, Permit Application SAJ-2013-02728 (SP-LEC), Glen Ridge Subdivision, Brevard County

Dear Ms. Carroll:

Florida Fish and Wildlife Conservation Commission (FWC) staff has reviewed the referenced permit application. We provide the following comments and recommendations for your consideration in accordance with Chapter 379, Florida Statutes and the Fish and Wildlife Coordination Act.

Project Description

The applicant seeks to build a residential development and associated infrastructure on approximately 22 acres in Palm Shores, south of the Pinola Causeway and directly west of North Wickham Road. The subject property includes habitats such as pine flatwoods (16 acres), scrubby pine flatwoods (2.5 acres), freshwater marsh (1.5 acres), wetland shrub (1 acre), vegetated, non-forested wetlands (0.3 acres), and exotic hardwood wetlands (0.3 acres). Based on the proposed site plan, the applicant intends to fill the freshwater marsh and parts of the other onsite wetlands. The purchase of credits from a federally approved mitigation bank is proposed as compensatory wetland mitigation.

Potentially Affected Resources

FWC staff conducted a geographic information system (GIS) analysis of the project area. Based on this analysis, the project area is located within or adjacent to:

- Five U.S. Fish and Wildlife Service (USFWS) wood stork nesting colony core foraging areas. The U.S. Army Corps of Engineers (USACE) has determined that the proposed project is not likely to adversely affect the wood stork.
- Potential habitat for the eastern indigo snake. The USACE has determined that the proposed project is not likely to adversely affect the eastern indigo snake.
- Florida Natural Areas Inventory elemental occurrence for the Florida scrub-jay. The USACE has determined the proposed project may affect the scrub-jay or its designated critical habitat.

In a letter dated September 30, 2013, Atlantic Environmental Solutions, Inc. provided information to the St. Johns River Water Management District in partial fulfillment of an Environmental Resource Permit application (No. 134825). This letter states that two listed species, the Florida scrub-jay and gopher tortoise, have been observed on the subject property.

Comments and Recommendations

Please be aware, FWC amended the *Gopher Tortoise Permitting Guidelines* (<http://myfwc.com/media/1410274/GTPermittingGuidelines.pdf>) to include a section on interim guidance for handling commensal species. The interim guidance only applies to listed and non-listed commensals that are incidentally captured during permitted gopher tortoise relocation activities. Please refer to Appendix 9 of the Gopher Tortoise Permitting Guidelines for more information on the interim guidelines on handling of priority commensal species during permitted relocations.

A formal Florida scrub-jay survey was conducted in April 2013. During this survey, at least two scrub-jays were observed utilizing approximately 3.4 acres of habitat within the scrubby flatwoods portion of the subject property. The applicant intends to obtain an Incidental Take Permit for the scrub-jays prior to development activity. We recognize that an Incidental Take Permit is necessary for this project and would fulfill the obligations for proposed impacts to occupied scrub-jay habitat; however, we would also highlight the joint federal and State of Florida scrub-jay translocation guidelines (http://www.fws.gov/northflorida/scrub-jays/Docs/20110606_gd_Scrubjay_translocation_guidelines.pdf) as a post-regulatory activity to conserve scrub-jay individuals. After speaking with Jon Shepherd of Atlantic Environmental Solutions on January 21, 2014, it is our understanding the applicant may consider scrub-jay translocations in addition to all minimization and mitigation requirements. Please refer to the link above for additional information on scrub-jay translocation guidelines. Specific questions on these guidelines can be directed to Craig Faulhaber, FWC Scrub-Jay Conservation Coordinator. Mr. Faulhaber can be reached at (352) 732-1225.

We appreciate the opportunity to provide input on this project. If you need any further assistance, please do not hesitate to contact Jane Chabre either by phone at (850) 410-5367 or at FWCConservationPlanningServices@MyFWC.com. If you have specific technical questions regarding the content of this letter, please contact Ben Shepherd at (407) 858-6170 or by email at Ben.Shepherd@MyFWC.com.

Sincerely,



Jennifer D. Goff
Land Use Planning Program Administrator
Office of Conservation Planning Services

jdj/bs

ENV 1-5-2

Glen Ridge Subdivision, 18586, 012814

cc: Jon Shepherd, Atlantic Environmental Solutions, jsherp@cfl.r.com
Kris Hebert, SJRWMD, khebert@sjrwmd.com
Candace Martino, USFWS, candace_martino@fws.gov

March 26, 2014

Ms. Lauren Wyckoff Carroll
U.S. Army Corps of Engineers
400 High Point Drive, Suite 600
Cocoa, FL 32926

Re: Glen Ridge Subdivision
 ACOE Application No. SAJ-2013-02728
 Scrub-Jay Mitigation Plan
 AES File No. 1332

Dear Ms. Carroll:

The applicant, Sunbay, LLC, is proposing the following mitigation plan to compensate for the proposed impacts to 3.4 acres of occupied Florida scrub-jay territory as part of the development of the Glen Ridge Subdivision. Off-site mitigation is proposed within the Malabar Scrub Sanctuary and involves the restoration and management of 13.8 acres (greater than a 4:1 ratio) of scrub habitat which should allow for the expansion of the existing scrub-jay population in the area. Details of the mitigation plan are found below.

Mitigation Location and Information

The proposed mitigation will occur within the western tract of the ±550 acre Malabar Scrub Sanctuary located in Section 35, Township 28 South, Range 37 East, Brevard County, Florida (Figures 1 and 2). The Malabar Scrub Sanctuary is owned by the State of Florida and managed by the Brevard County Environmentally Endangered Lands (EEL) program.

The compensatory restoration of this 13.8 acres of potentially suitable scrub-jay habitat and management for optimal scrub-jay habitat quality conditions will help to provide a corridor between the mainland scrub-jay metapopulations. This compensatory action, as proposed, will be an important step towards the regional goal of restoring and managing enough scrub habitat to sustain the maximum number of scrub-jay breeding pairs to ensure long-term survival of the South Brevard metapopulation.

AES met with the Florida Fish and Wildlife Conservation Commission's Florida Scrub-Jay Conservation Coordinator, Mr. Craig Faulhaber, on the mitigation parcel to review the potential for restoration. Mr. Faulhaber agreed with AES that the mitigation plan will benefit scrub-jays and that the removal of the existing sand pine, followed by prescribed fire, would increase the usable space for scrub-jays within the Malabar Scrub Sanctuary.

The entire area (13.8 acres) proposed for scrub habitat restoration is comprised of overgrown, fire suppressed, scrubby pine flatwoods. This area has a fairly dense (±50%) canopy of sand pine intermixed with overgrown scrub oak, saw palmetto,

lyonia, tarflower, and false rosemary. Currently the mitigation area is used for passive recreation such as hiking and cycling. An EEL managed trail bisects the southern portion of the mitigation area and maintained fire breaks are located on the south and west sides of the proposed mitigation parcel. A natural stream system, a tributary of Turkey Creek, is located just off-site to the north and east and is flanked by fairly steep banks.

Mitigation Plan

AES met with the southern Brevard County EEL land manager, Mr. Chris O'Hara, who agreed to the following mitigation plan to restore the 13.8 acre scrub habitat.

1. Scrub habitat restoration will be completed within the 13.8 acres in the attached figure (Figure 3).
2. Cabbage palms will not be targeted for cutting, burning, or removal, unless this canopy coverage is determined to degrade the restoration of optimal habitat quality conditions for scrub-jay recruitment.
3. All sand pines and slash pines are to be felled and moved into piles to be burned as part of the subsequent prescribed burn.
4. All sand and slash pines located within 10-feet of the top of banks of the stream system are required to be removed by hand. No work shall occur below the top of bank of the stream systems.
5. Pines that are proximal to residential areas are to be felled and relocated at least 300 feet away from the nearest residence before burning.
6. If longleaf pines are found, they are to be allowed to remain at a density of no more than 2-3 per acre. Any excess will be cut and placed in the piles of other pines to be burned during the prescribed burn.
7. All dead pine and oak snags are to be felled and burned during the prescribed burn.
8. All oaks taller than 8 feet are to be roller chopped per the Florida Scrub-Jay Habitat Restoration Plan.
9. All palmetto, lyonia, gallberry, and other midstory vegetation taller than 6-feet is to be roller chopped.
10. All recreational trails are to be left completely undisturbed. All oaks located within 25-feet to 10-feet of the on-site recreational trails shall be removed by hand to prevent the creation of tall, linear vegetative "curtains", which degrade the restoration of optimal habitat quality conditions for scrub-jay recruitment by increasing scrub-jay predator efficacy. If after hand removal of these trees a "curtain" still exists, then the EEL Program will remove such trees as part of the long term management of the Restoration Site.

11. After tree felling and roller chopping is complete, prescribed burning will be conducted by an EEL approved certified prescribed burn manager within the 13.8 acre restoration area. Timing of the prescribed burn will be coordinated with the EEL Land Manager. The Applicant's direct restoration obligation is to cut and pile targeted pines and oaks, roller chop tall understory vegetation, and conduct a prescribed burn throughout the restoration area.
12. All initial management work will be completed by an EEL Program-approved, experienced land management contractor.
13. The permittee will donate funding in the amount of \$1,200 per managed acre to EEL to support burning/maintenance activities on the mitigation site for 25 years. The total will be \$16,560 (13.8 acres x \$1,200).
14. The mitigation plan will be secured under a Memorandum of Agreement (MOA) between the mitigant and the Board of County Commissioners of Brevard County. The MOA will serve as a binding contract to insure that the mitigation work is completed according to plan, and funded in the long term for 25 years.

Conclusion

The proposed enhancement and long-term management of a 13.8 acre area of Malabar Scrub West is expected to restore suitable scrub-jay habitat for the use of the nearby expanding population of scrub-jays, as well as provide a corridor between the mainland scrub-jay metapopulations. The applicant will directly contract with an EEL approved land management company to conduct the initial management effort, consisting of removal of pines and tall oaks, reduction in profile of midstory vegetation, and initial prescribed burning. The applicant will also provide funding to EEL to support the long-term management and prescribed burning of the mitigation site over the course of 25 years. All work will be agreed to under the terms of the MOA in coordination with EEL personnel. This mitigation plan should successfully offset the proposed impacts to occupied scrub-jay territory at the Glen Ridge Subdivision project site, and provide support for the long-term survival of the Florida scrub-jay population in Brevard County.

If additional information is necessary, please contact our office at your earliest convenience.

Sincerely,



David G. Purkerson, MS, PWS
Project Manager/Biologist



Jon H. Shepherd, MS, PWS
President/Ecologist

Dist: Mr. Chad Genoni – Sunbay, LLC
Ms. Zakia Williams - FWS



Project: Glen Ridge Subdivison

Figure 1: Mitigation Location Map



Brevard County, Florida



AES Proj #: 1332



Project: Glen Ridge Subdivision

Figure 2: Scrub-Jay Mitigation Map

0 500 1,000 2,000
 Feet

2012 Aerial, Brevard County, Florida



AES Proj #: 1332



Project: Glen Ridge Subdivision

Figure 3: Restoration Plan Map

0 100 200 400 Feet

2012 Aerial, Brevard County, Florida



AES Proj #: 1332