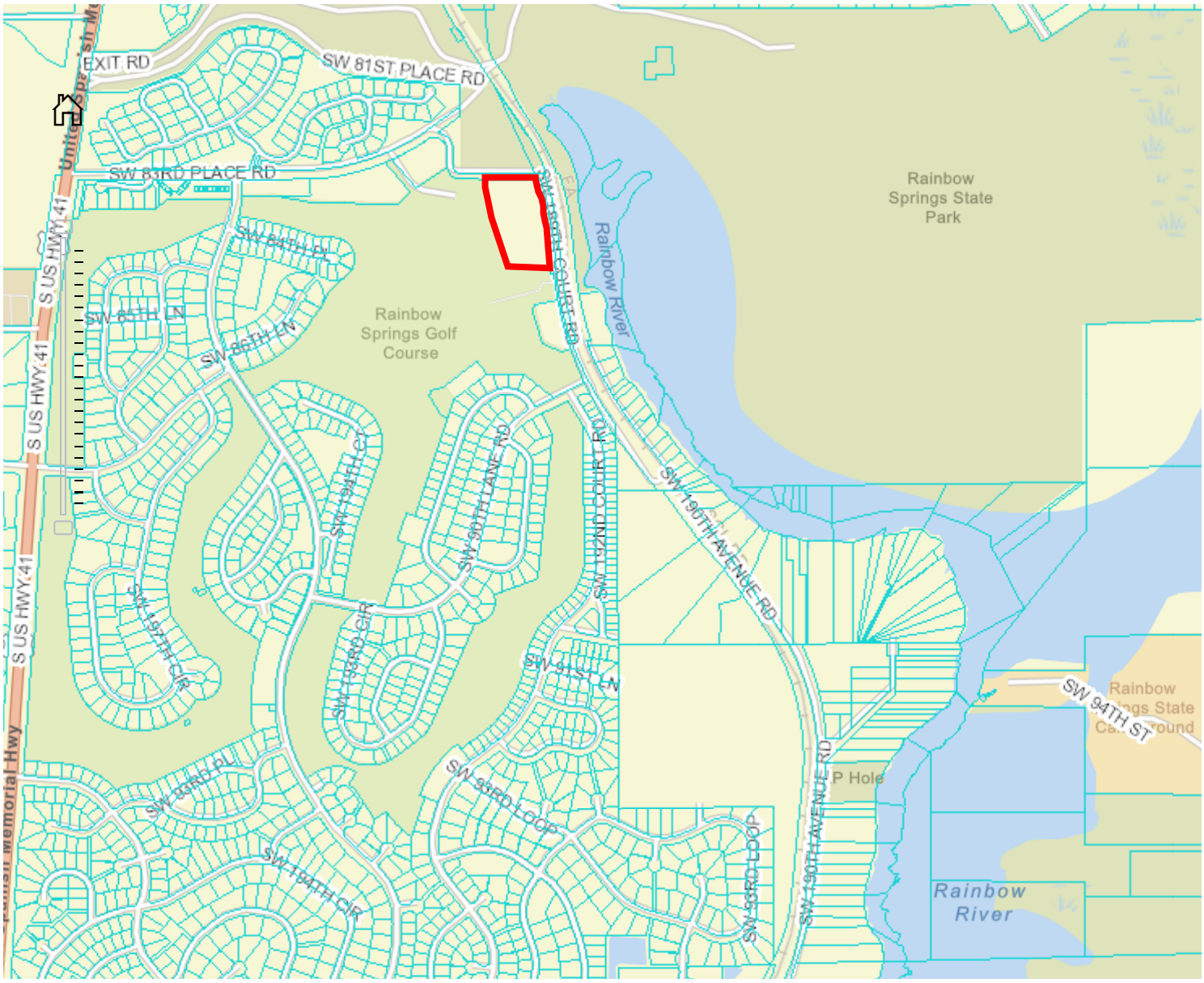
Jimmy H. Cowan, Jr., CFA
Marion County Property Appraiser -
Beta Map It+

New Hours of Operation beginning Monday, January 3, 2023 8:00 am - 4:00 pm



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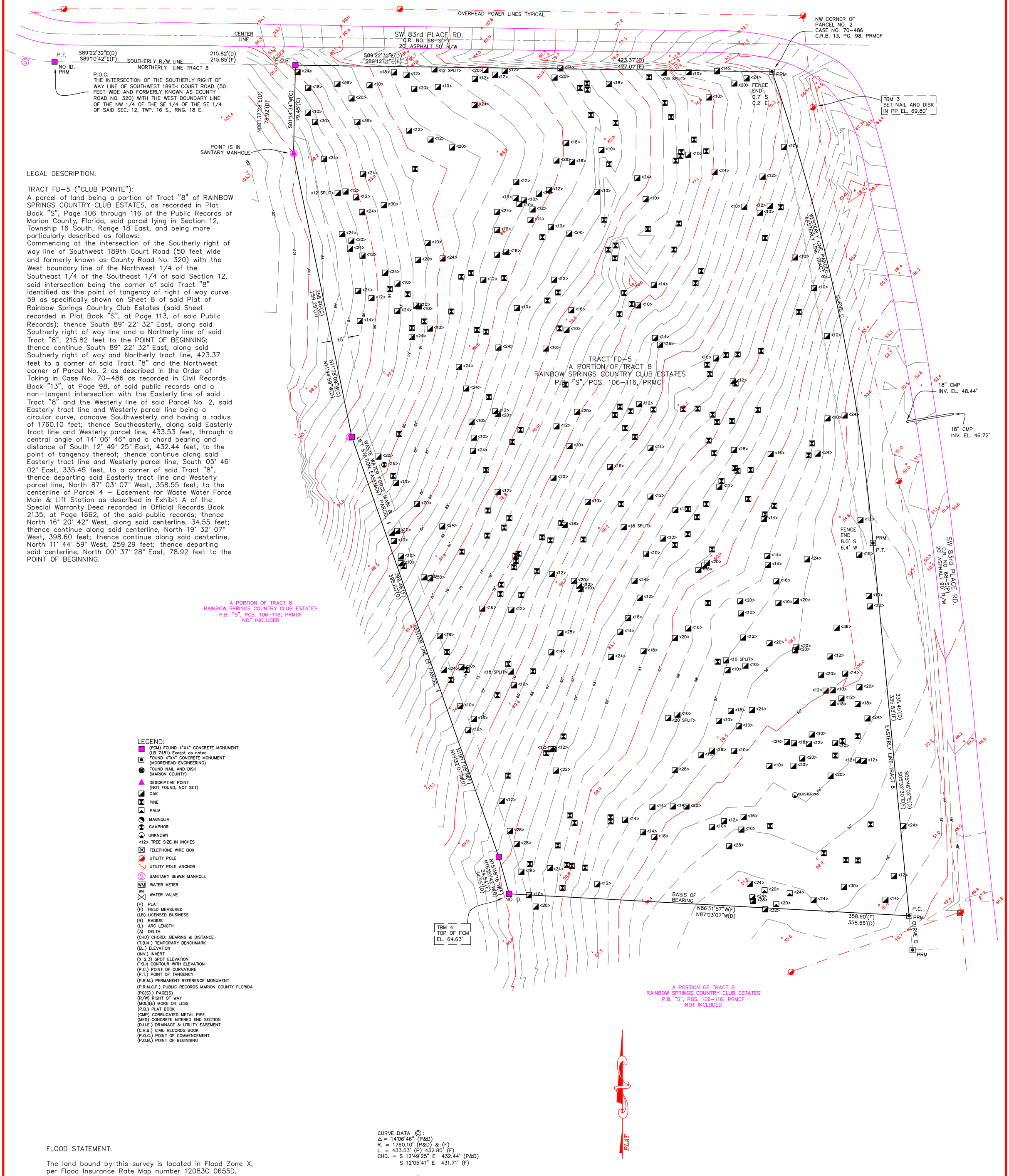
Click here for Legal Disclaimer



LEGAL DESCRIPTION:

TRACT FD-5 ("CLUB POINTE"):
A parcel of land being a portion of Tract "8" of RAINBOW SPRINGS COUNTRY CLUB ESTATES, as recorded in Plat Book "S", Page 106 through 116 of the Public Records of Marion County, Florida, said parcel lying in Section 12, Township 16 South, Range 18 East, and being more particularly described as follows:
Commencing at the intersection of the Southerly right of way line of Southwest 189th Court Road (50 feet wide and formerly known as County Road No. 320) with the West boundary line of the Northwest 1/4 of the Southeast 1/4 of the Southeast 1/4 of said Section 12, said intersection being the corner of said Tract "8" identified as the point of tangency of right of way curve 59 as specifically shown on Sheet 8 of said Plat of Rainbow Springs Country Club Estates (said Sheet recorded in Plat Book "S", at Page 113, of said Public Records); thence South 89° 22' 32" East, along said Southerly right of way line and a Northerly line of said Tract "8", 215.82 feet to the POINT OF BEGINNING; thence continue South 89° 22' 32" East, along said Southerly right of way and Northerly tract line, 423.37 feet to a corner of said Tract "8" and the Northwest corner of Parcel No. 2 as described in the Order of Taking in Case No. 70-486 as recorded in Civil Records Book "13", at Page 98, of said public records and a non-tangent intersection with the Easterly line of said Tract "8" and the Westerly line of said Parcel No. 2, said Easterly tract line and Westerly parcel line being a circular curve, concave Southwesterly and having a radius of 1760.10 feet; thence Southeasterly, along said Easterly tract line and Westerly parcel line, 433.53 feet, through a central angle of 14° 06' 46" and a chord bearing and distance of South 12° 49' 25" East, 432.44 feet, to the point of tangency thereof; thence continue along said Easterly tract line and Westerly parcel line, South 05° 46' 02" East, 335.45 feet, to a corner of said Tract "8", thence departing said Easterly tract line and Westerly parcel line, North 87° 03' 07" West, 358.55 feet, to the centerline of Parcel 4 – Easement for Waste Water Force Main & Lift Station as described in Exhibit A of the Special Warranty Deed recorded in Official Records Book 2135, at Page 1662, of the said public records; thence North 16° 20' 42" West, along said centerline, 34.55 feet; thence continue along said centerline, North 19° 32' 07" West, 398.60 feet; thence continue along said centerline, North 11° 44' 59" West, 259.29 feet; thence departing said centerline, North 00° 37' 28" East, 78.92 feet to the POINT OF BEGINNING.

LEGEND:
- (FCM) FOUND 4"X4" CONCRETE MONUMENT (LB 7481) Except as noted.
- FOUND 4"X4" CONCRETE MONUMENT (MOOREHEAD ENGINEERING)
- FOUND NAIL AND DISK (MARION COUNTY)
- DESCRIPTIVE POINT (NOT FOUND, NOT SET)
- OAK
- PINE
- PALM
- MAGNOLIA
- CAMPHOR
- UNKNOWN
- <12> TREE SIZE IN INCHES
- TELEPHONE WIRE BOX
- UTILITY POLE
- UTILITY POLE ANCHOR
- SANITARY SEWER MANHOLE
- WM WATER METER
- WV WATER VALVE
- (P) PLAT
- (F) FIELD MEASURED
- (LB) LICENSED BUSINESS
- (R) RADIUS
- (L) ARC LENGTH
- (Δ) DELTA
- (CHD) CHORD: BEARING & DISTANCE
- (T.B.M.) TEMPORARY BENCHMARK
- (EL.) ELEVATION
- (INV.) INVERT
- (X 2.3) SPOT ELEVATION
- (~3~) CONTOUR WITH ELEVATION
- (P.C.) POINT OF CURVATURE
- (P.T.) POINT OF TANGENCY
- (P.R.M.) PERMANENT REFERENCE MONUMENT
- (P.R.M.C.F.) PUBLIC RECORDS MARION COUNTY FLORIDA
- (PG(S).) PAGE(S)
- (R/W) RIGHT OF WAY
- (MOL)(±) MORE OR LESS
- (P.B.) PLAT BOOK
- (CMP) CORRUGATED METAL PIPE
- (MES) CONCRETE MITERED END SECTION
- (D.U.E.) DRAINAGE & UTILITY EASEMENT
- (C.R.B.) CIVIL RECORDS BOOK
- (P.O.C.) POINT OF COMMENCEMENT
- (P.O.B.) POINT OF BEGINNING

CURVE DATA (C):
Δ = 14°06'46" (P&D)
R. = 1760.10' (P&D) & (F)
L. = 433.53' (P) 432.80' (F)
CHD. = S 12°49'25" E 432.44' (P&D)
S 12°05'41" E 431.71' (F)

CURVE DATA (D):
Δ = 00°35'10" (P)
R. =3014.93' (P) & (F)
L. = 30.83' (P) 30.82' (F)
CHD. = S 06°03'36" E 30.83' (P)
S 05°44'47" E 30.82' (F)

GRAPHIC SCALE
40 0 20 40
(IN FEET)
1 inch = 40 ft.

FLOOD STATEMENT:

The land bound by this survey is located in Flood Zone X, per Flood Insurance Rate Map number 12083C 0655D, EFFECTIVE DATE: 08-28-2008

Wallace L. Higgins, P.S.M. for GulfWest Surveying, Inc.
Florida Surveyor and Mapper registration no. 5832
Florida licensed business number 7314
This Survey Map and Report or the copies thereof are not valid without the original signature and seal of a Florida licensed surveyor and mapper.

SURVEYORS NOTES:

1. The bearings shown hereon are based on G.P.S.(Global Positioning System) observation with the bearing of N 86°51'57" W along the Southerly line of Tract FD-5.
2. This survey is not intended to locate any underground foundations, underground encroachments or underground improvements including utilities, except as shown. Additional sub-surface utilities or structures may exist.
3. No instrument of record reflecting easements, rights of way and/or ownership were furnished to the surveyor except as shown hereon. No title opinion is expressed or implied.
4. The land bound by this survey may be subject to other recorded or unrecorded easements, right of ways, conveyances, restrictions and reservations other than shown hereon.
5. The elevations shown hereon are based on G.P.S.(Global Positioning System) observation and are in NAVD 88.

BOUNDARY AND TOPOGRAPHIC SURVEY FOR BH HOMES, LLC

MARION COUNTY, **FLORIDA**

Project No.: 22460B	Field Book: See File	DRAWN BY: CEB
Scale: 1"= 40'	Field Date: 02-09-2023	Sheet: 1 of 1

DATE:	REVISION

GulfWest Surveying, Inc.
Professional Surveyors and Mappers
9469 W. Green Bay Lane
Crystal River, Florida 34428
Ph: 352.563.1252 Fax: 352.563.1253

ENVIRONMENTAL ASSESSMENT FOR LISTED SPECIES

SW 83rd Place Road
Parcel # 3296-000-008
7.3 Acres (MOL) Located in
Section 12 T16S R18E, Dunnellon,
Marion County, Florida

Prepared for:
BH Homes
3805 N Florida Ave
Hollywood, FL 33021

Prepared by:
Michael G. Czerwinski, P.A.
Environmental Consultants
2716 South Lecanto Hwy
Lecanto, Florida 34461
(352) 249-1012
www.mgcenv.com

February 2023

2716 S. Lecanto Highway, Lecanto, Florida 34461
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Environmental Assessment for Listed Species
SW 83rd Place Road (Parcel # 3296-000-008)
February 2023

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Environmental Assessment for Listed Species

SW 83rd Place Road (Parcel# 3296-000-008)

7.3 Acres (MOL) Located in
Section 12 T16S R18E, Dunnellon,
Marion County, Florida
February 2023

Introduction:

BH Homes (Developer) contracted with **MICHAEL G. CZERWINSKI, P.A., ENVIRONMENTAL CONSULTANTS (MGC)** to perform an Environmental Assessment for Listed Species (EALS) for the proposed multi-unit residential development (Subject Site) in Rainbow Springs Country Club Estates, Dunnellon, Marion County, Florida. According to Marion County Property Appraiser's records, the project area consists of a single vacant multi-family residential parcel comprising 7.3 acres (MOL) in Dunnellon, Marion County, Florida (parcel prime key # 4016112). The subject site is located in the Rainbow Springs Country Club Estates development, in Southwestern Marion County, Florida, approximately 3.7 miles northeast of the Town of Dunnellon and approximately 1.0 miles southeast of the intersection of US Highway 41 and CR 40. This subject site is directly accessible via SW 83rd Place Road in Dunnellon, approximately 0.5 miles east of the intersection of SW 83rd Place Road and U.S. Highway 41. Rainbow Springs State Park is located approximately 50' to the north (across SW 189th Court Road) and the entrance to the park is located approximately 0.7 miles to the northwest of the subject site. It is our understanding that proposed project plans are anticipated to result in development of the majority of existing habitat currently present on-site.

The purpose of this EALS study is to document the presence of listed species, wetlands, surface waters or other environmentally sensitive areas within / adjacent to the project limits in advance of proposed construction activities and to address potential impacts to those resources (Division 5, Section 6.5, Marion County Land Development Code). Listed species, for the purposes of this assessment, are those plants and animals that are formally listed as Endangered, Threatened, or Species of Special Concern, or as a commercially exploited plant by the US Department of the Interior, Fish and Wildlife Service (USWFS) (50 CFR 17.11-12), the Florida Fish and Wildlife Conservation Commission (FFWCC) (Chapter 68A-27 FAC) or the Florida Department of Agriculture and Consumer Services (FDACS) (Section 581 F.S.). Results maps and photo documentation for this investigation are provided at the end of this report. Wetlands and their limits are defined in Chapter 62-340, Florida Administrative Code (F.A.C.) and the U.S. Army Corps of Engineers (USACOE) Wetland Delineation Manual (1987). Wetlands, for the purpose of this assessment are defined as "those areas that are inundated or saturated by surface water or ground water at a frequency and a duration sufficient to support, and under normal circumstances do support, a

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prevalence of vegetation typically adapted for life in saturated soils" (Chapter 62-340 F.A.C). Notably, MGC has previously conducted similar assessments throughout Marion County for other similar sites, and therefore are very familiar with the habitats and listed species likely to be encountered on and near the project area. In this respect, it is noted that Michael G. Czerwinski has a long history of providing environmental assessments in this locale including but not limited to a contributing author on the Rainbow River Management Plan (Henigar & Ray Inc.), providing assessment for the original purchase of the State Park and subsequent state acquisitions along the Rainbow River and assessing various tuber takeout locations all for the FDEP, serving on the Springs TAC for the Rainbow River (SWFWMD), conducting submerged aquatic vegetation (SAV) transect surveys along the Rainbow River, assisting the Villages of Rainbow Springs Park with vegetation and erosion control, and conducting numerous biologic surveys for projects and developments within the Villages of Rainbow Springs, including Grand Park North.

Ultimately, no listed threatened / endangered species or their habitat were present on-site or are likely to occur on-site based upon the results of this assessment. The subject site is located within the USFWS consultation range for the Federally endangered red-cockaded woodpecker, Federally Threatened sand skink and Florida scrub jay, though no evidence of occurrence of these species was documented on-site. Several species of nuisance and non-native vegetative species were noted on site including Camphortree, Cogon Grass and Coral Ardisia.

No wetlands or other surface water features were identified on-site. Notably, the site is located within the Springshed of the Rainbow River, a designated Outstanding Florida Water, Aquatic Preserve and a designated Environmentally Sensitive Overlay Zone (ESOZ) by Marion County. The Rainbow River is located approximately 330' to the east of the project area and is separated from the watershed of the river by SW 189th Court Road and a railroad grade. In addition, all habitat on-site is comprised of dense, mature Upland Hardwood-Coniferous Mix, which is of limited use to most wetland dependent species and not typically associated with providing habitat for upland listed species. Therefore, proposed development activities will not impact wetlands, and are unlikely to adversely impact wetland dependent wildlife species.

Methodology:

This environmental assessment was conducted in the field by an environmental scientist with MGC on February 7, 2023 in accordance with USFWS and FWC survey requirements. The subject site was surveyed via pedestrian transects covering approximately 100% of the area. Locations (latitude/longitude) of points of interest were recorded with a Garmin Model GPSmap 64sc™ Global

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Positioning System (GPS) receiver for the purpose of creating a distribution map of identified features.

Prior to conducting the field assessment, the following data resources were queried for the purposes of identifying potential habitat of the site and surrounding areas or actual documented occurrences of listed species:

- Southwest Florida Water Management District (SWFWMD) 2020 Land Use / Land Cover (Florida Department of Transportation "Florida Land Use, Cover and Forms Classifications System", 1999)
- Florida Fish and Wildlife Conservation Commission's (FFWCC)/ Florida Wildlife Research Institute (FWRI) Listed Species Occurrence Databases
- U.S. Fish and Wildlife Service's Listed Species Occurrence Databases
- FFWCC Black Bear Nuisance, Roadkill, Range, and Telemetry Databases
- USFWS Online Critical Habitat Map for Federally Endangered and Threatened Species
- FFWCC Imperiled Species Protection Measures and Management Plans
- USFWS Listed Species Status Plans, Protection Measures and Survey Guidelines

The following listed wildlife species are noted as occurring within Marion County based upon combined Florida Natural Areas Inventory (FNAI), USFWS, and FFWCC tracking lists. A list of federally protected species protected by the USFWS is provided in Appendix C. A list of rare / listed plant species tracked by the FNAI Inventory is presented in Appendix D.

Marion Country Threatened / Endangered Wildlife Species List

Common Name	Scientific Name	Federal Listing	State Listing
American alligator	*Alligator mississippiensis*	Threatened	Threatened
American bald eagle	*Haliaeetus leucocephalus*	None (Managed)	None (Managed)
Florida Black Bear	*Ursus americanus floridanus*	None	None (Managed)
Florida Burrowing Owl	*Athene cunicularia floridana*	None	Threatened
Florida Pine Snake	*Pituophis melanoleucus mugitius*	None	Threatened
Florida Sandhill Crane	*Grus canadensis pratensis*	None	Threatened
Florida Scrub Jay	*Aphelocoma coerulescens*	Threatened	Threatened
Frosted Flatwoods Salamander	*Ambystoma cingulatum*	Threatened	Threatened
Gopher Tortoise	*Gopherus polyphemus*	None (in Florida)	Threatened
Indigo Snake	*Drymarchon corais couperi*	Threatened	Threatened
Little Blue Heron	*Egretta caerulea*	None	Threatened
Red-Cockaded Woodpecker	*Picoides borealis*	Endangered	Endangered
Sand Skink	*Plestiodon reynoldsi*	Threatened	Threatened
Short-Tailed Snake	*Stilosoma extenuatum*	None	Threatened
Snail Kite	*Rostrhamus sociabilis*	Endangered	Endangered
Southeastern American Kestrel	*Falco sparveriuspaulus*	None	Threatened
Tricolored heron	*Egretta tricolor*	None	Threatened

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West Indian Manatee	*Trichechus manatus*	Threatened	Threatened
Wood Stork	*Mycteria americana*	Threatened	Threatened

A large number of these species are restricted to specific habitats which are not represented on-site (such as listed wading birds and aquatic species); listed species observed or with the potential to be present based on habitats identified on-site are discussed further in the results section of this report.

Although the American bald eagle (*Haliaeetus leucocephalus*) is no longer federally or state listed as an endangered / threatened species, it continues to be protected under the Bald and Golden Eagle Protection Act and the Migratory Bird Protection act and is therefore addressed in this report. Similarly, the Florida black bear is no longer considered a threatened species within the state but is afforded protections under the state's Black Bear Management Plan and addressed in this report.

Physical Setting:

The project area is located within the eastern limits of the Brooksville Ridge physiographic province (White 1970), approximately 50' west of the Western Valley province (White, 1970)[1]. The Brooksville Ridge, a linear, positive-relief topographic ridge feature extends from northern Citrus County, through Hernando County, and into southern Pasco County. The Western Valley is a linear topographic valley feature that includes the Tsala Apopka Plain, Both the Brooksville Ridge and Western Valley typically have elevations of 50-100' (White, 1970)[1]. Elevations in the project area (based upon Marion County Lidar Data) range from approximately 50-100' (NAVD88) and appear to generally increase to the north and west within the project site limits. The topography onsite can be described as a moderate downward slope from the northwestern portions of the property towards the southeast. Based on a review of the USGS Quadrangle Map, the subject site lies within the large residential development of Rainbow Springs with a developed road pattern. The town / railroad stop of Romeo is located approximately 7.2 miles to the north-northwest.

According to Federal Emergency Management Agency (FEMA) 2021 updated coastal flood zone mapping, the entire site falls within Zone X – Area of Minimal Flood Hazard. According to the USDA / National Resource Conservation Service (NRCS) Online Soil Survey, the entire project area is underlain by three soil mapping units: Arredondo Fine Sand (5 to 8 Percent Slopes), Arredondo Fine Sand (0 to 5 Percent Slopes), and Tavares Fine Sand (0 to 5 Percent Slopes). The Arredondo Fine Sands are located in the northern portion of the site comprising 95% aerial coverage and are described as well-drained upland soils with a water table 80" or more below the surface throughout most years. Tavares Fine Sands are a minor aerial coverage located in the southern portion of the

[1] White, W.A. (1970). The Geomorphology of the Florida Peninsula. State of Florida Department of Natural Resources Bureau of Geology Geological Bulletin. 51. 1 – 172.

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site and are characterized as moderately well-drained upland soils with a water table 42-60" below the surface throughout most years. Table 2 below summarizes the soil descriptions of each soil type found on-site:

Table 2. Soils within Project Area

Soil Name	Percent of Total Project Area	Hydrologic Group	Drainage Class	Runoff Class	Depth to Seasonal High-Water Table
Arredondo Fine Sand (5 to 8 Percent Slopes)	77%	A	Well Drained	Low	More than 80 inches
Arredondo Fine Sand (0 to 5 Percent Slopes)	18%	A	Well Drained	Very Low	More than 80 inches
Tavares Fine Sand (0 to 5 Percent Slopes)	5%	A	Moderately Well Drained	Negligible	42-60 inches

According to SWFWMD Land Use / Land Cover classifications (2020), the entire subject site is classified as Upland Hardwood-Coniferous Mix (FLUCFCS 4340) land use, with the exception of a small area (<0.1 Acres MOL) along the western property limits classified as Open Land (FLUCFCS 1900). Adjacent land uses include additional Upland Hardwood Coniferous Mix (FLUCFCS 4340) to the north, south and east, and Open Land (FLUCFCS 1900) to the west.

Results:

MGC staff conducted a field inspection of the subject site on February 7, 2023. The assessment included a 100% transect cover pedestrian survey of the project area and directly adjacent (within 25') habitats. The SWFWMD Land Use / Land Cover (LULC) classification of Upland Hardwood-Coniferous Mix habitat is generally consistent with observed conditions on the day of the field inspection, however the small area (<0.1 acres MOL) along the western property limits classified as Open Land would be better described as additional Upland Hardwood-Coniferous Mix habitat. The field inspection revealed that the site is bordered by SW 189th Court Road to the immediate north and east, the golf course, clubhouse, and tennis courts of the Rainbow Springs Club to the west, and what appears to be a warehouse or storage facility associated with the Rainbow Springs Club to the south. The site was not gated and was fenced along only the eastern boundary. No wetlands were present on site.

The field inspection revealed the entirety of the subject site is comprised of upland hardwood-coniferous mix habitat, including a canopy dominated by laurel oak (*Quercus laurifolia*) and live oak (*Quercus virginiana*); Additional canopy species include longleaf pine (*Pinus palustris*), slash pine (*Pinus elliottii*), southern magnolia (*Magnolia grandiflora*), common persimmon (*Diospyros virginiana*), cabbage palm (*Sabal palmetto*), and black cherry (*Prunus serotina*). Ground cover and

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shrubs identified on-site include coral ardisia (*Ardisia crenata*), tuberous sword fern (*Nephrolepis cordifolia*), sawtooth blackberry (*Rubus pensilvanicus*), cogongrass (*Imperata cylindrica*), beautyberry (*Callicarpa americana*), sparkleberry (*Vaccinium arboreum*), fourpetal St. John's-wort (*Hypericum tetrapetalum*), broomsedge bluestem (*Andropogon virginicus*), devil's walkingstick (*Aralia spinosa*) horrid thistle (*Cirsium horridulum*), beggarticks (*Bidens alba*), Florida hedgenettle (*Stachys floridana*), and muscadine grape (*Vitis rotundifolia*).

Evidence of wildlife species observed during the February 7 field inspection include black racer (*Coluber constrictor*), Northern cardinal (*Cardinalis cardinalis*), American crow (*Corvus brachyrhynchos*), tufted titmouse (*Baeolophus bicolor*), yellow-rumped warbler (*Setophaga coronata*), white-tailed deer (*Odocoileus virginianus*), red-bellied woodpecker (*Melanerpes carolinus*), brown anole (*Anolis sagrei*), and southeastern pocket gopher (*Geomys pinetis*). Generally, the suitability of the site for use by many listed wildlife species is limited by the upland hardwood-coniferous mixed habitat on-site, as well as habitat fragmentation from surrounding development.

Observed Listed Species

Ultimately, no evidence of listed threatened / endangered species was observed on-site. Additional listed species with the potential to be present based on habitats identified on-site are discussed in the following section of the report (Other Listed Species).

Other Listed Species:

A review of the Florida Wildlife Research Institute (FWRI) and USFWS species GIS databases revealed no known wood stork colonies, scrub jay observations, or sand skink observations within a 5-mile radius of the project area. Additionally, the subject site is located within the USFWS consultation range for the Federally endangered red-cockaded woodpecker, and the Federally threatened sand skink and Florida scrub jay, though no evidence of occurrence of these species was documented on-site. Sand skinks and Florida scrub jays are discussed in further detail below.

One (1) documented bald eagle nest is located within 5 miles of the project area, approximately 3.9 miles to the south. Current FFWCC / USFWS regulations mandate a 660' buffer protection zone around eagle nests for most construction activities; as the site is substantially distant from any documented nests, the project should have no adverse effect on this species.

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Several listed wading bird species occur in Marion County, including the **little blue heron (*Egretta caerulea*), tri-colored heron (*Egretta tricolor*), and reddish egret (*Egretta rufescens*).** They are each listed as a **"Threatened" species** by the State of Florida. **No state or federally listed wading bird species were observed on-site or in directly adjacent habitat areas.** The closest documented wading bird rookery (non-wood stork) is located approximately 4.6 miles to the southeast of the subject site. **No wading bird rookeries or nest sites were observed in the project area limits.** Protections for state listed wading birds generally involve preventing the direct take (harm / harassment of birds and nests) and prevention of certain disruptive activities within setbacks (generally 400') from known / active rookery sites. Because no rookery / nest sites were documented or are historically known to be located in close proximity (within 400') to the project area, it is considered unlikely that the proposed development would significantly adversely affect these state-listed wading bird species.

The **Wood Stork (*Mycteria Americana*)** is listed as a federally endangered species by the USFWS. The nests and foraging habitat of the wood stork are protected principally through protection of rookery (colony nesting) sites and surrounding habitat areas. Most land disturbance / construction activities located within 2,500 ft of rookery sites are considered potential impacts to the species. In addition, in central Florida, certain lands within a 15 mile radius of a rookery site are considered "core foraging areas", and suitable foraging habitats (wetlands with a permanent or seasonal water depth between 2 and 15 inches) within core foraging areas are also protected[2]. The nearest documented wood stork colony is located over 41 miles to the southeast of the subject site. **The species was not noted within the project area, and no suitable wetland areas are located within the project area or in directly adjacent habitats.** Subsequently, proposed construction activities are not expected to adversely impact this species.

The Florida sandhill crane (*Antigone canadensis pratensis*) is listed as a "Threatened" species by the State of Florida. Although it is classified as a wading bird, the Florida sandhill crane does not "fish" and is an omnivorous feeder that spends a large portion of its time foraging in uplands, often in residential yards and other maintained areas. However, the Florida sandhill crane typically creates ground level nests in herbaceous wetlands. The nesting season for sandhill cranes in Florida is typically January through April. Sandhill cranes observed in Florida between October and March may be

[2] Projects that will impact more than ½ acre of suitable foraging habitat are considered a significant impact.

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migratory (non-listed) greater sandhill cranes (*Antigone canadensis tabida*), which are slightly larger but nearly indistinguishable from the resident population. **Sandhill cranes or sandhill crane nests were not observed within the project area or in adjacent habitat.** The FFWCC's recently approved species conservation measures and permitting guidelines recommend a 400' radius protection (no construction disturbance) buffer be maintained around active sandhill crane nests, and on sites where flightless young are present. Furthermore, land use conversion in suitable upland habitat within 1500 feet of the nest site should be delayed until after young are capable of sustained flight. In general, the habitat on-site is not suitable for foraging, and no wetlands were identified on-site. The subject site does not contain what are considered upland foraging habitat areas (improved pastures, prairies, open pine forests, croplands, golf courses, airports, and sod farms), and no suitable wetlands for sandhill crane nesting were identified on-site or in the immediately adjacent habitat: Therefore, consultation with FFWCC and additional surveys are not necessary and proposed development activities are unlikely to adversely affect the species.

The **gopher tortoise (*Gopherous polyphemous*)** is a state listed threatened wildlife species, and the tortoise and its burrow are protected by the Florida Fish and Wildlife Conservation Commission (FFWCC) under Chapter 68A-27.002-004, F.A.C. The gopher tortoise is the only native land tortoise in the southeastern United States and creates a crescent or half-moon shaped burrow in the sand. The gopher tortoise's preferred habitat is sandhill, oak scrub and other xeric (dry / nutrient poor) habitats. The gopher tortoise is crucial to the survival of a number of other listed species because its burrows provide important refuges for a much larger wildlife community (Speake 1981, Franz 1986). As gopher tortoise habitat decreases, so do many of the species that utilize their burrows. The Florida Fish and Wildlife Conservation Commission (FFWCC) requires gopher tortoise POBs be avoided by a minimum of 25' for most construction and clearing / grubbing activities; if burrows cannot be avoided by 25', a relocation permit must be obtained, and the tortoise(s) relocated in advance of clearing or construction activities proceeding. **No gopher tortoise burrows (potentially occupied or abandoned) were identified on-site. Additionally, the habitat on-site (Upland Hardwood-Coniferous Mix) is not a preferred habitat of gopher tortoises. Because no potentially occupied gopher tortoise burrows or gopher tortoise habitat were identified on-site, it is not expected that any gopher tortoises would be impacted by proposed construction activities and no permit would be required from FWC for proposed development and associated impacts.**

Because no potentially occupied gopher tortoise burrows were identified on-site, potential for listed burrow commensals such as the Eastern indigo snake (*Dymarchon corais couperi*) and Florida pine

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snake (*Plestiodon reynoldsi*) to be encountered is very low. Generally, on sites where a large number of gopher tortoise burrows (25 or more) or other denning sites will be impacted within suitable habitat areas, it is recommended that the US Fish and Wildlife Service Standard Protection Measures for the eastern indigo snake be incorporated into the project construction plan to properly educate contractors and other construction staff on identification and protection of this species. Because this project will not impact more than 25 gopher tortoise burrows within suitable habitat areas, these protection measures should not be necessary on-site.

The subject site is located within Marion County, which is a designated Consultation Area for the Florida **sand skink (*Neoseps reynoldsi*)**, a Federally threatened species, regulated by the US Fish and Wildlife Service. Sand skink habitat is generally considered those habitat areas within the Consultation Area with elevations above 82' NGVD, having well drained (hydrologic group "A") soils, and generally sandhill / scrub habitat with sandy exposed areas interspersed throughout. The database indicates the nearest historically documented population is over 43 miles from the subject site.

Elevations throughout approximately one-third (2.5 acres MOL) of the project area appears to be between 80-100' based upon USGS topographic quadrangle data and suitable soils (Arredondo Fine Sand / Tavares Fine Sand) are also noted throughout the entirety of the site. However, the subject site has a thick canopy cover and thick litter layer due to long term fire suppression and lacks exposed sandy areas and is therefore not habitat for and not likely to be utilized by sand skinks. Additionally, no signs of typical sinusoidal tracks left by the species were documented on-site. It is therefore very unlikely that proposed development activities will adversely affect this species.

The **Florida scrub-jay (FSJ) (*Aphelocoma coerulescens*)** is listed as a federally threatened species by the USFWS. The FSJ is the only bird species endemic to (only occurring within) the state of Florida. The species is typically only found in Florida scrub habitat, where nutrient poor, well drained soils establish low growing oaks and other shrub / tree species and open patches of ground required by the species for general foraging and acorn caching. However, the species is also known to colonize altered land uses such as citrus groves and

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other land uses that provide similar reduction of large canopy species and maintain open patches of ground. Habitat within and adjacent to the subject site is dominated by mixed hardwoods (non-scrub oaks) with very few open patches of ground and would generally not be considered suitable for the species. The FFWCC maintains a historic database of scrub jay documented occurrences from the 1992-1993 statewide survey. According to this database, the nearest colonies of scrub jay were observed approximately 7.1 miles to the east of the subject site. It is very unlikely that scrub jays currently utilize habitat on-site due to the extent of surrounding development and lack of suitable scrub / xeric oak habitat present. Therefore, although the subject lies within USFWS consultation range for the FSJ, the habitat on site is unsuitable for the FSJ and proposed development activities are unlikely to adversely affect this species.

The subject site lies within the United States Fish and Wildlife Service (USFWS) consultation range for the **red-cockaded woodpecker (*Picoides borealis*),** which is listed as a federally endangered species by the USFWS. The red-cockaded woodpecker typically creates its nest in living longleaf pine trees, although it is known to also use slash pines or cypress, especially in south Florida. The red-cockaded woodpecker is the only bird in the Southeastern U.S. that utilizes live trees for nesting cavity creation. The red-cockaded woodpecker prefers trees 80 years and older and typically with red-heart fungus disease, which softens the heartwood of the trees. **Very few mature longleaf pine trees of suitable age for nesting cavities were identified within or directly adjacent to the project limits; Additionally, none of the pine trees on-site were observed to possess the conspicuous nesting cavities (typically surrounded by excessive tree sap and barkless face plate) utilized by the species.** The FWRI maintains a database of red-cockaded woodpecker sightings – according to this database, one sighting was recorded within 5 miles of the subject site. The nearest sighting is approximately 4.8 miles to the northeast of the subject site. Red-cockaded woodpeckers prefer mature, open canopied pine forests with a diversity of natural groundcover. The habitat on-site is not considered suitable habitat for the species, and USFWS foraging habitat guidelines state suitable foraging habitats should generally be dominated by pines (50% or more of canopy stratum), and that many of the pines should be 60 years of age or older. Very few mature pines of suitable age are present on-site, and those that are present comprise a small portion of the canopy cover (approximately 10%). Additionally, habitat fragmentation by nearby roads and other commercial and residential development limits the likelihood of the species traveling between the subject site and the documented nest clusters, due to the lack of a continuous corridor of potential habitat areas. Therefore, development activities are unlikely to adversely affect this species.

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The **Southeastern American kestrel (*Falco sparverius paulus*)** is listed in the State of Florida as a **"Threatened"** species and is legally protected by the Florida Fish and Wildlife Conservation Commission (FFWCC). This species is similar in appearance to the non-listed, migratory American kestrel (*Falco sparverius*) and both are present in Florida from approximately October to March. Kestrels are secondary cavity nesters and typically use cavities previously excavated by woodpeckers for raising their young. However, they have also been noted to nest in the eaves of barns and metal sheds. Current technical regulations prevent the taking of an active (eggs or flightless young) Southeastern American kestrel (SAK) nest or (snag) tree or artificial nest site (such as a wooden utility pole) without obtaining a nest removal permit and require a protection of foraging grounds within a 450' radius of the nest. In addition, disturbance of the nest site area during the nesting season (March to August) is generally not allowed. **No kestrels were observed on or adjacent to the subject site.** A few snag (dead standing) trees suitable for nesting by kestrels were noted within or adjacent to the subject site, however the upland hardwood-coniferous mixed habitat on-site is not suitable for foraging or nesting use by kestrels and therefore development of the site is not likely to adversely affect this species.

The **Florida burrowing owl (*Athene cunicularia floridana*)** is a subspecies of burrowing owl protected by the FFWCC as a threatened species. The Florida burrowing owl can be found throughout peninsular Florida, although populations have become fragmented and patchy within the northern part of its range, including Marion County. The FWRI maintains a database of historic burrowing owl records online. **According to this database, known colonies of burrowing owls are present within the Marion County Airport located roughly 4.3 miles to the southeast of the subject site**. The field survey did not identify any burrowing owl burrows on the subject site, and the FWRI database does not indicate any known colonies in close proximity to the project area. The FFWCC currently has permitting guidelines and procedures for activities which may cause incidental take of burrowing owls. Disturbance activities within 10' of burrows outside nesting season, and activities within 33' of burrows during nesting season are expected to cause take. In addition, significant habitat alteration (loss of more than 50% of available habitat) within a 1,970' radius of potentially occupied burrowing owl burrows may cause take**. No burrowing owls or their nests were observed on-site during the field inspections. Additionally, the site is not located within 1,970' of any known burrowing owl burrows.**

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Therefore, the proposed development of the property is unlikely to adversely affect this species.

It is noted that the project area is located outside of FWC designated primary or secondary black bear range. The project area is approximately 18 miles west of the Ocala National Forest Primary Range and approximately 5.5 miles east of Chassahowitzka Secondary Range for the Florida Black Bear (*Ursus americanus floridanus*). The FWRI has documented twenty-seven (27) black bear nuisance calls within 5 miles from the project area, with the majority of them towards Ocala to the east of the subject site. One black bear nuisance call is noted within 1 mile to the southwest of the subject site and is most likely a result of a wandering bear. No black bear roadkill incidents or black bears observed by radio telemetry are documented within 5 miles of the subject site. Black bears were removed from the state list of threatened / endangered species; however, they are still afforded protection under a state approved Black Bear management plan. The subject site is not located within primary or secondary black bear range. Additionally, the habitat and land management practices on-site are not suitable for substantial use by black bears and no evidence (scat, rubs, downed palms, caches of palmetto berries, scratch trees, etc.) of black bears or black bear denning was observed during the field inspection. Therefore, it is unlikely the development of the subject site will have a significant impact on this species. However, due to the number of nuisance calls in the area the following is recommended: Contraction crews shall be advised of the potential for bear encounters and all trash (especially food related) generated by their activities shall be removed from the site daily.

Listed or Exotic Plant Species:

Cogongrass (*Imperata cylindrica*), tuberous sword fern (*Nephrolepis cordifolia*), camphortree (*Cinnamomum camphora*), and coral ardisia (*Ardisia crenata*) are invasive plant species present in multiple areas throughout the site and have been marked on the attached map exhibits below. Coral ardisia is particularly prevalent on-site, forming large dense patches. All four invasive plant species observed on site are classified as Category I invasive species, which alter native plant communities by displacing native plant species, changing community structures or ecological functions, or hybridizing with natives (FISC, 2019). Additionally, cogongrass and coral ardisia are regulated as Noxious Weeds by the Florida Department of Agriculture and Consumer Services (FDACS). Introduction, multiplication, possession, movement, or release of noxious weeds is unlawful (F.A.C. 5B-57.004). It is recommended the following actions be taken to prevent potential spread of these species on or off-site: Infested vegetation debris should be burned or disposed of off-site (at a facility

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not for mulching re-use), and vehicles and equipment should be cleaned thoroughly when mobilizing between the subject site and other sites. Short informational and identification pamphlets on these species are provided at the end of this report (Appendix E).

Table 3. Invasive/Exotic Species Observed

Species	FLEPPC Category	FDACS Prohibited Noxious Weed
Cogongrass (*Imperata cylindrica*)	I	Yes
Coral ardisia (*Ardisia crenata*)	I	Yes
Tuberous sword fern (*Nephrolepis cordifolia*)	I	No
Camphortree (*Cinnamomum camphora*)	I	No

Conclusions and Recommendations:

No threatened / endangered wildlife species were documented on-site, and proposed development activities are unlikely to adversely affect threatened / endangered wildlife or plant species. Cogongrass (*Imperata cylindrica*), coral ardisia (*Ardisia crenata*), camphortree (*Cinnamomum camphora*), and tuberous sword fern (*Nephrolepis cordifolia*) are invasive plant species documented on-site in large patches / individual clusters. Supplementary information regarding identification and management of these species is provided in Appendix E. It is recommended that land clearing contractors be provided the documents in Appendix E and that care be taken to prevent the further spread of this species on or off-site by either burning of infested vegetation debris or disposing of the debris at an appropriate landfill facility (not for re-mulching use).

Approximately ¾ of the subject site (5.7 Acres MOL) is located within the Rainbow River Environmentally Sensitive Overlay Zone (ESOZ); therefore, proposed development activities will need to comply with provisions of the Marion County Land Development Code regarding development in the ESOZ (Marion County Land Development Code – Article 5 Division 2). In general, The SWFWMD and Marion County will be required to review and approve development plans including stormwater management for the site which may require special consideration as the site lies in relatively close proximity to the Rainbow River, within its designated Springshed, and within its Environmentally Sensitive Overlay Zone (ESOZ).

In general, projects within the ESOZ must “protect the surface water and groundwater quality by providing stormwater management systems, buffers and enhanced setback for structures and septic systems” (Marion County LDC 5.2.1A) These considerations would most likely include an

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engineered design that provides additional treatment and maximization of the removal of nutrients in the stormwater stream, as well as adhering to the development density standards set forth in Article 5, Section 5.2.5A of the Marion County LDC. For properties within 1000' of the ESOZ waterbody, the density standards within the ESOZ restrict the minimum lot size to 1.0 acres (maximum 1 dwelling per acre) if using on-site waste treatment (septic systems). The minimum lot size is 0.5 acres (maximum 2 dwellings per acre) for properties over 1000' from the ESOZ waterbody when using on-site waste treatment. Densities within the ESOZ must still conform to the densities specified in the underlying land use category and underlying zoning classification and are subject to the discretion of the Marion County Board (Marion County LDC 5.2.5C). As the subject site is approximately 330' from the Rainbow River and within its associated ESOZ, it is recommended that a copy of this report is sent to the Marion County Zoning Division for confirmation of these and any additional requirements associated with the Environmentally Sensitive Overlay Zone.

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Appendix A

Maps and Exhibits

BH Homes
SW 83rd Place Road
(Parcel# 3296-000-008)
7.3 Acres (MOL) in Dunnellon,
Marion County, Florida
February 2023

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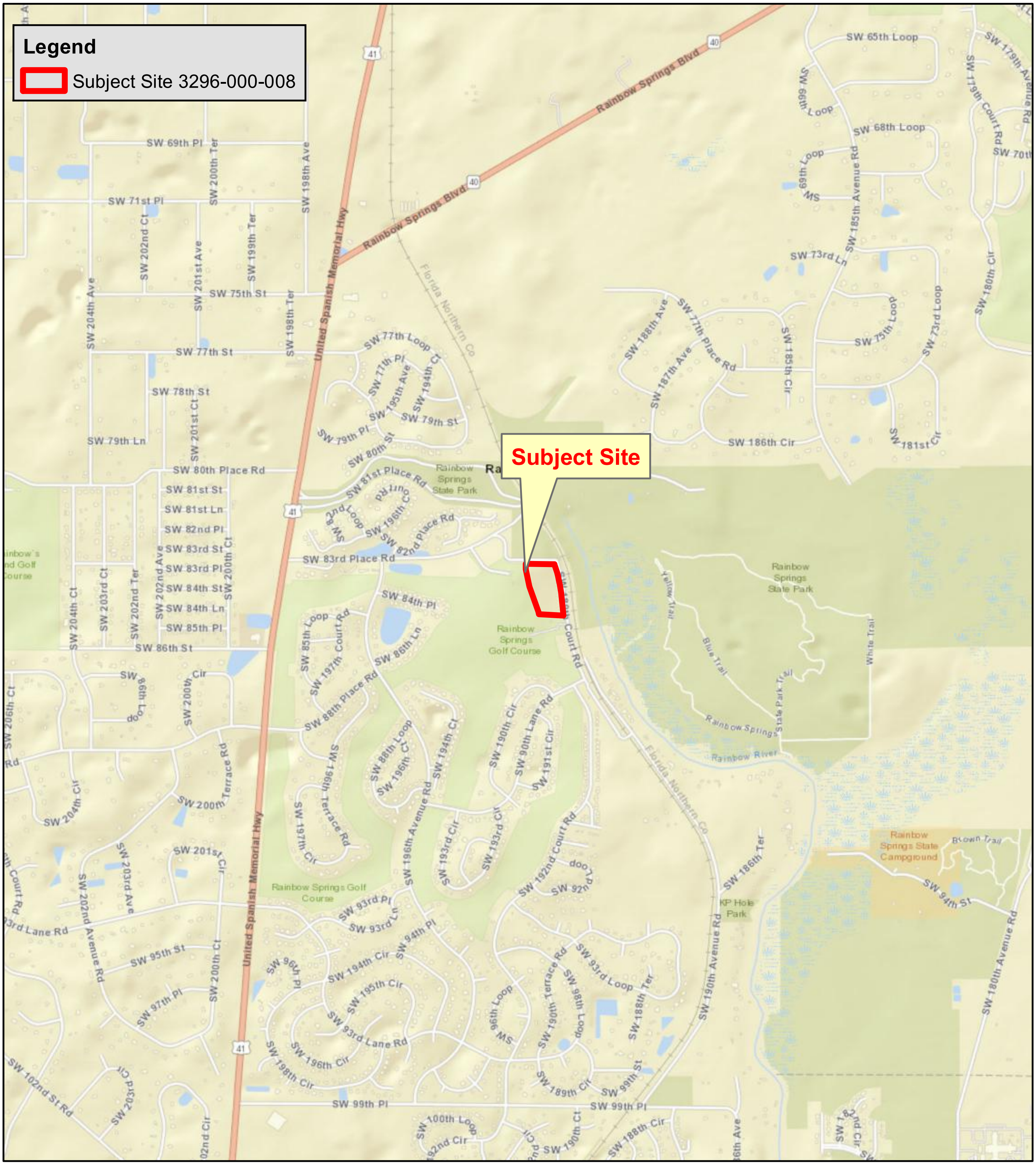
Location Map



SW 83rd Place Road (Parcel# 3296-000-008) for BH Homes

7.3 Acres (MOL) in Dunnellon,
Marion County, Florida

Data Source: ESRI, Marion County Property Appraiser, Field Results

Compiled By: SWM

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Michael G. Czerwinski, P.A.
ENVIRONMENTAL CONSULTANTS MGC

0 1,000 2,000 4,000
Feet

February 8, 2023

This map is for informational purposes only. This is not a survey. Boundaries are approximate.

True Color Aerial Imagery (2020)

SW 83rd Place Road (Parcel# 3296-000-008) for BH Homes

7.30 Acres (MOL) in Dunnellon, Marion County, Florida

Data Source: ESRI, Marion County Property Appraiser, Field Results

Compiled By: SWM

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February 8, 2023

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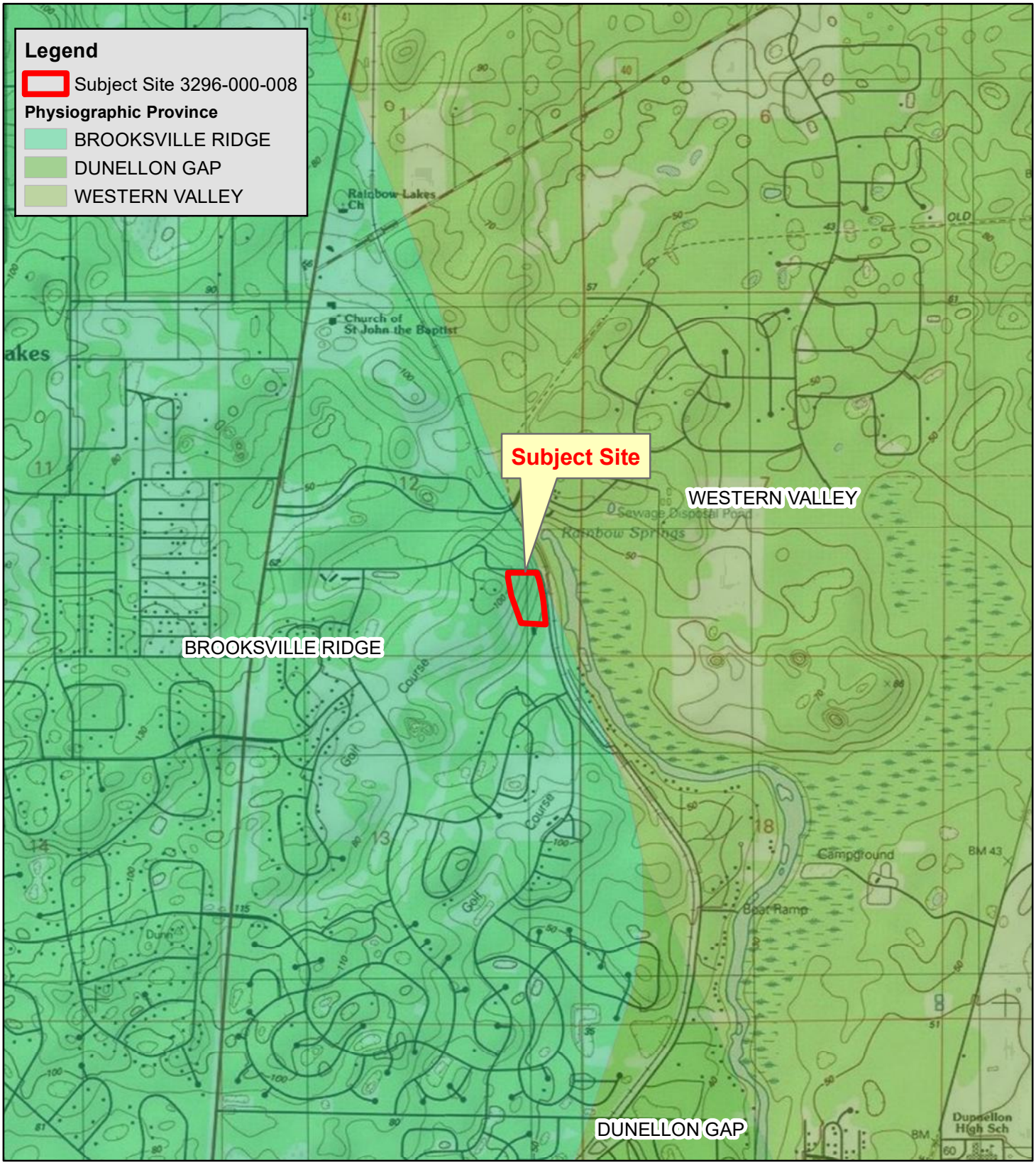
Physiographic Province



SW 83rd Place Road (Parcel# 3296-000-008) for BH Homes

7.3 Acres (MOL) in Dunnellon, Marion County, Florida

Data Source: ESRI, Marion County Property Appraiser, Field Results

Compiled By: SWM

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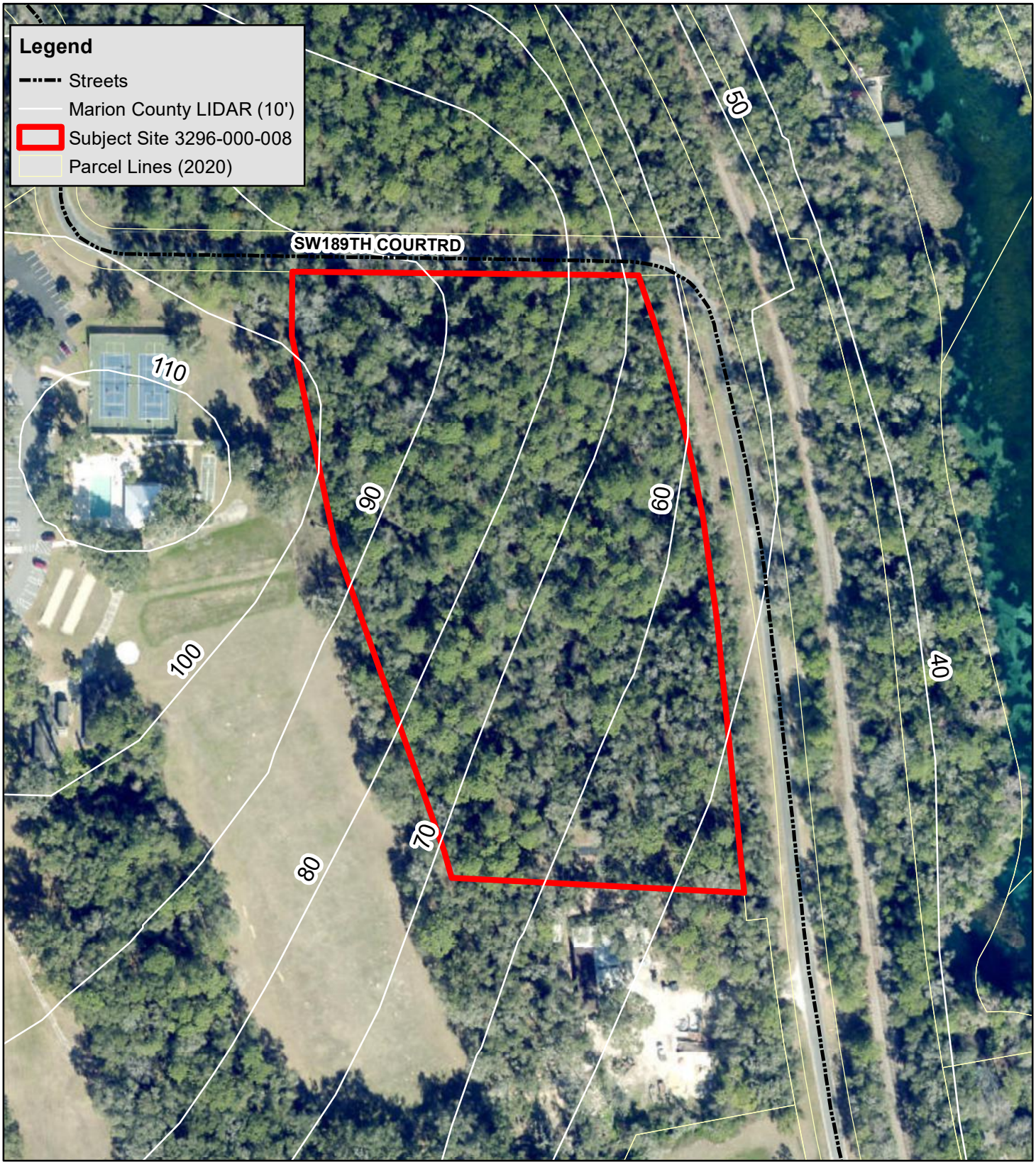
10' Contour Topography



SW 83rd Place Road (Parcel# 3296-000-008) for BH Homes

7.3 Acres (MOL) in Dunnellon, Marion County, Florida

Data Source: ESRI, Marion County Property Appraiser, Field Results

Compiled By: SWM

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Feet

February 8, 2023

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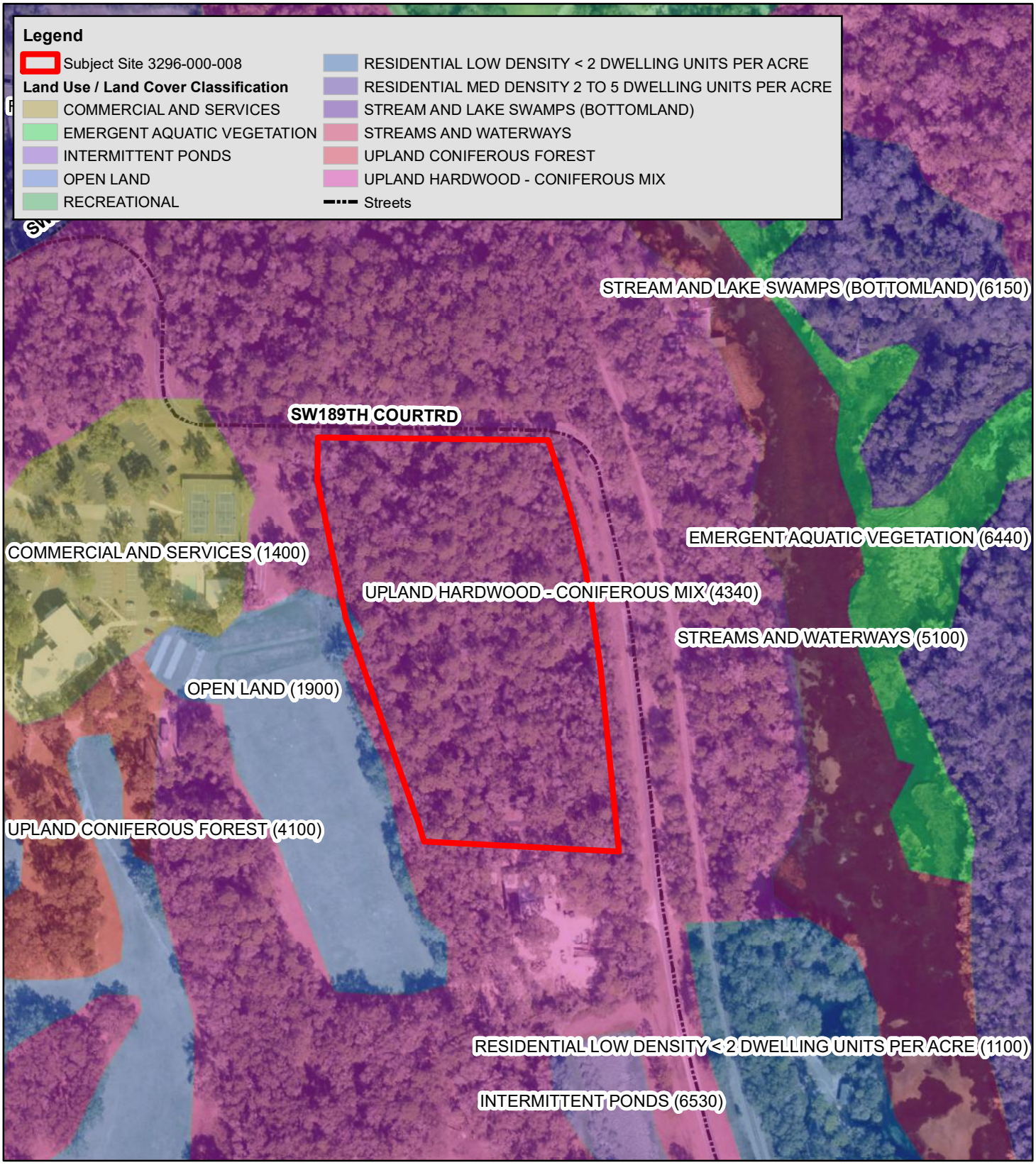
SWFWMD (2020) Land Use / Land Cover Classifications



SW 83rd Place Road (Parcel# 3296-000-008) for BH Homes

7.3 Acres (MOL) in Dunnellon, Marion County, Florida

Data Source: ESRI, MCPA, SWFWMD, Field Results

Compiled By: SWM

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February 8, 2023

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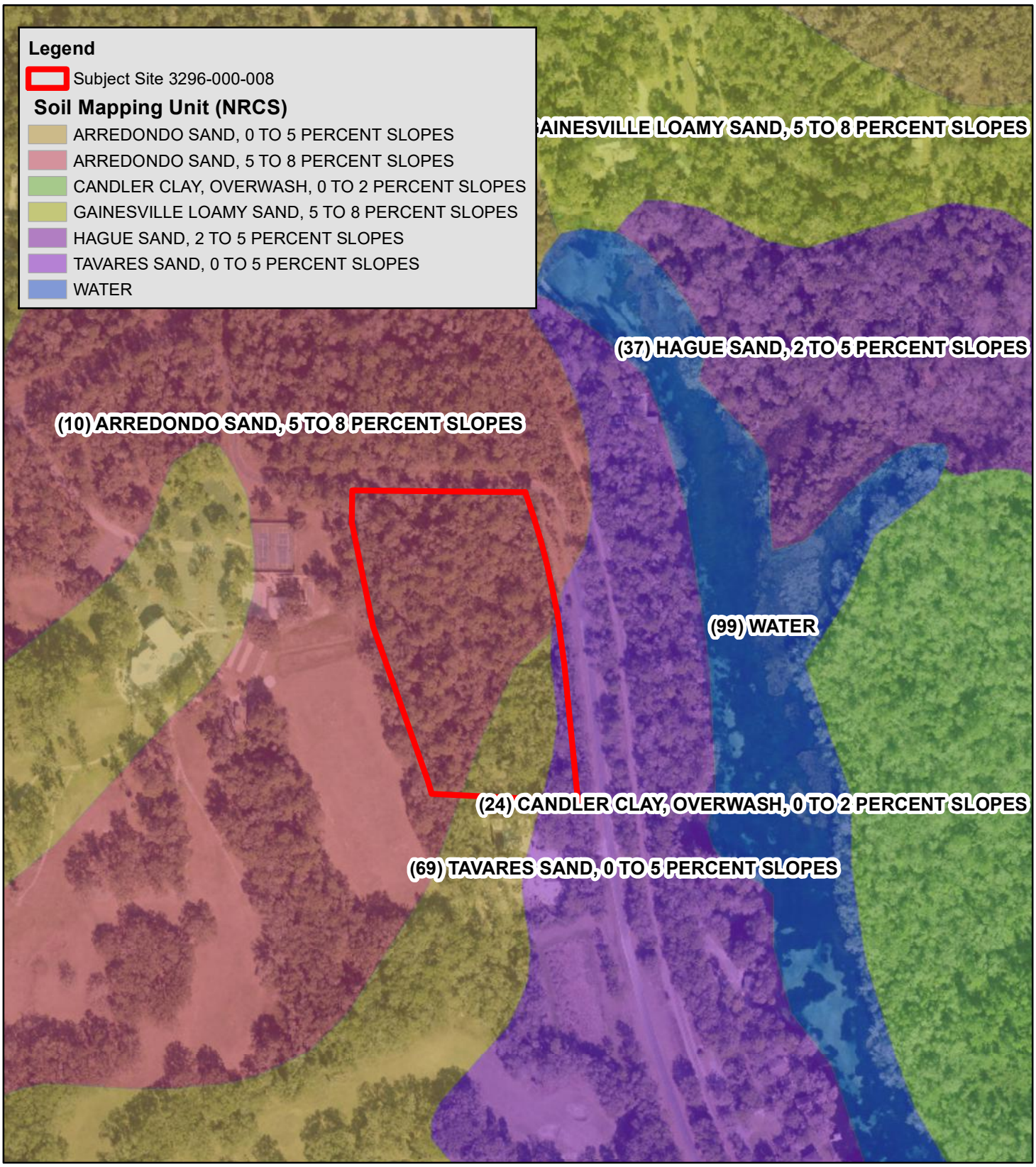
NRCS Soil Mapping Units



SW 83rd Place Road (Parcel# 3296-000-008) for BH Homes

7.3 Acres (MOL) in Dunnellon, Marion County, Florida

Data Source: ESRI, MCPA, USDA / NRCS, Field Results

Compiled By: SWM

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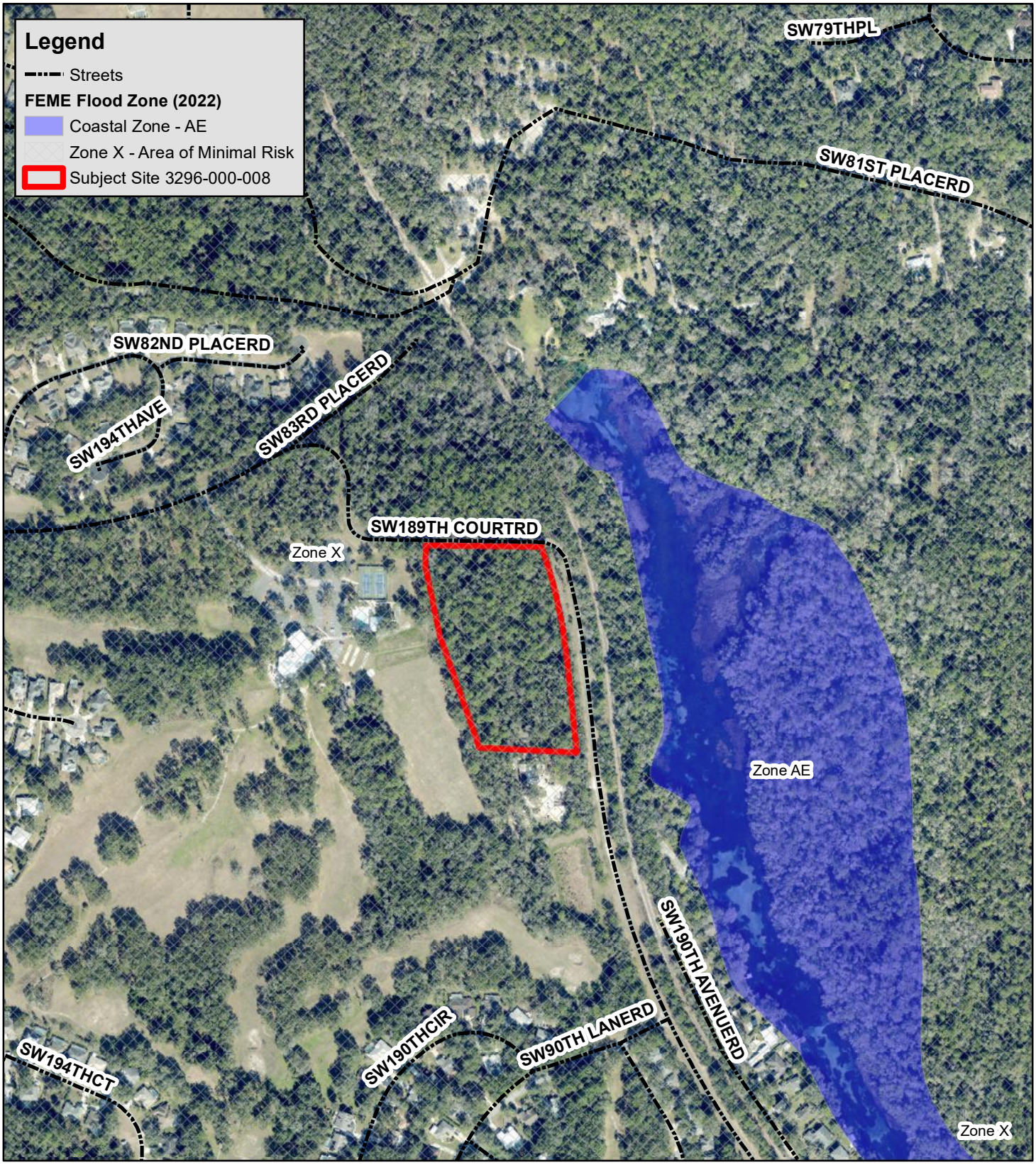
0 187.5 375 750 Feet

February 8, 2023

This map is for informational purposes only. This is not a survey. Boundaries are approximate.

FEMA (2022) Flood Zone(s)



SW 83rd Place Road (Parcel# 3296-000-008) for BH Homes

7.3 Acres (MOL) in Dunnellon, Marion County, Florida

Data Source: ESRI, MCPA, FEMA, Field Results

Compiled By: SWM

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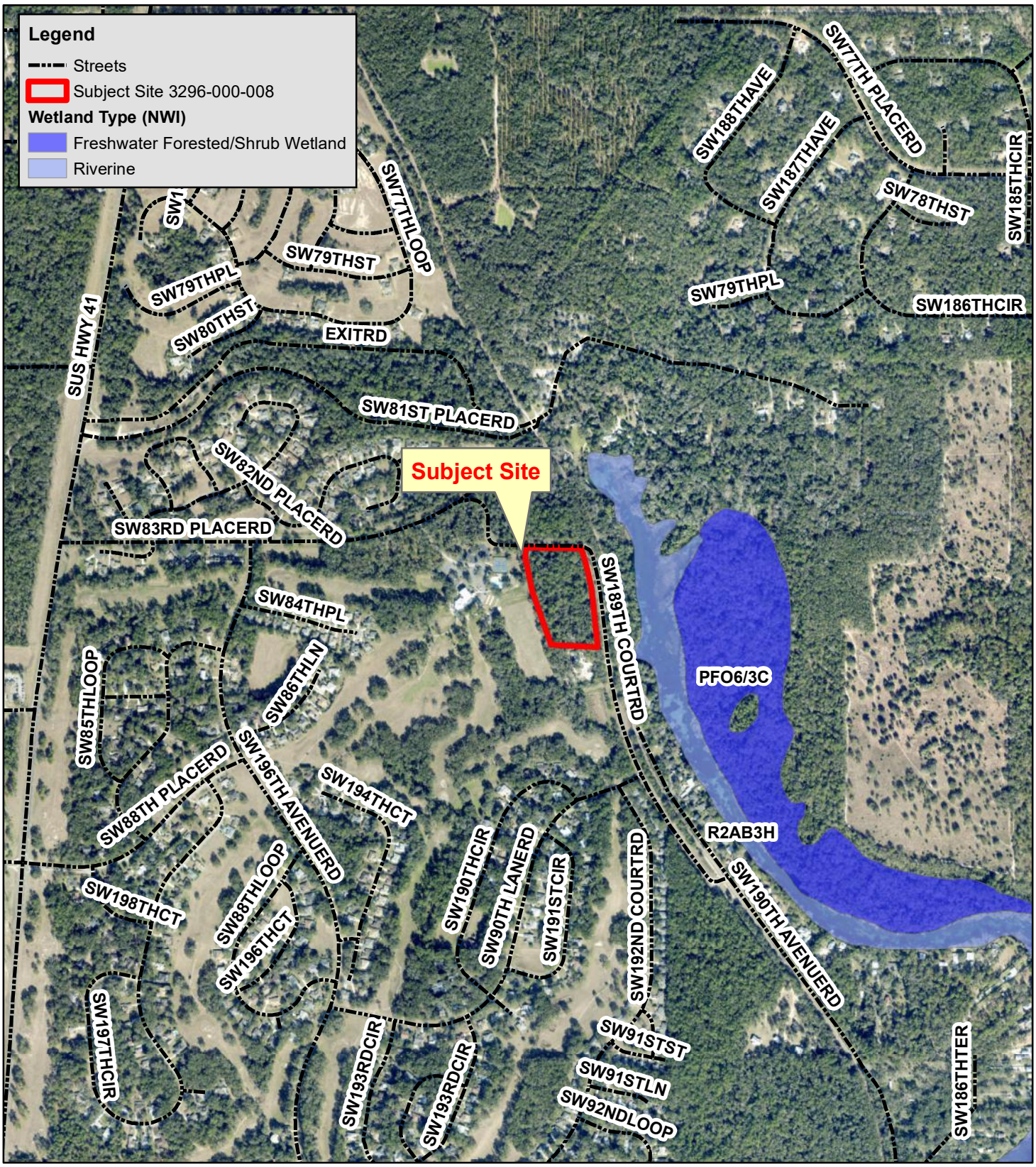
Feet

February 8, 2023

This map is for informational purposes only. This is not a survey. Boundaries are approximate.

National Wetland Inventory (NWI) Mapped Wetlands



SW 83rd Place Road (Parcel# 3296-000-008) for BH Homes

7.3 Acres (MOL) in Dunnellon, Marion County, Florida

Data Source: ESRI, MCPA, NWI, Field Results

Compiled By: SWM

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Michael G. Czerwinski, P.A.
ENVIRONMENTAL CONSULTANTS MGC

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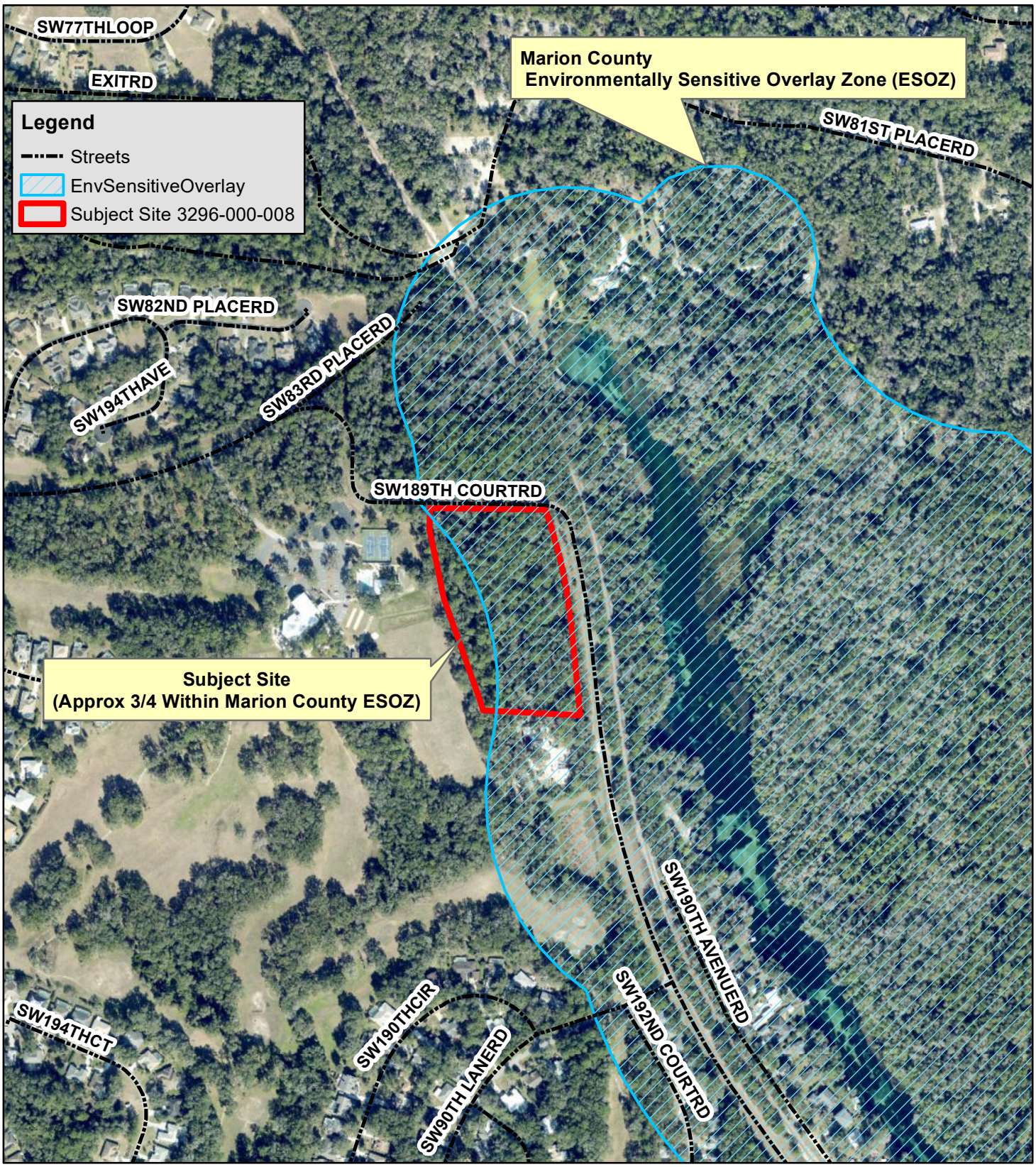
February 8, 2023

This map is for informational purposes only. This is not a survey. Boundaries are approximate.

Marion County Environmentally Sensitive Overlay Zone (ESOZ)



SW 83rd Place Road (Parcel# 3296-000-008) for BH Homes

7.3 Acres (MOL) in Dunnellon, Marion County, Florida

Data Source: ESRI, Marion County Property Appraiser, Field Results

Compiled By: SWM

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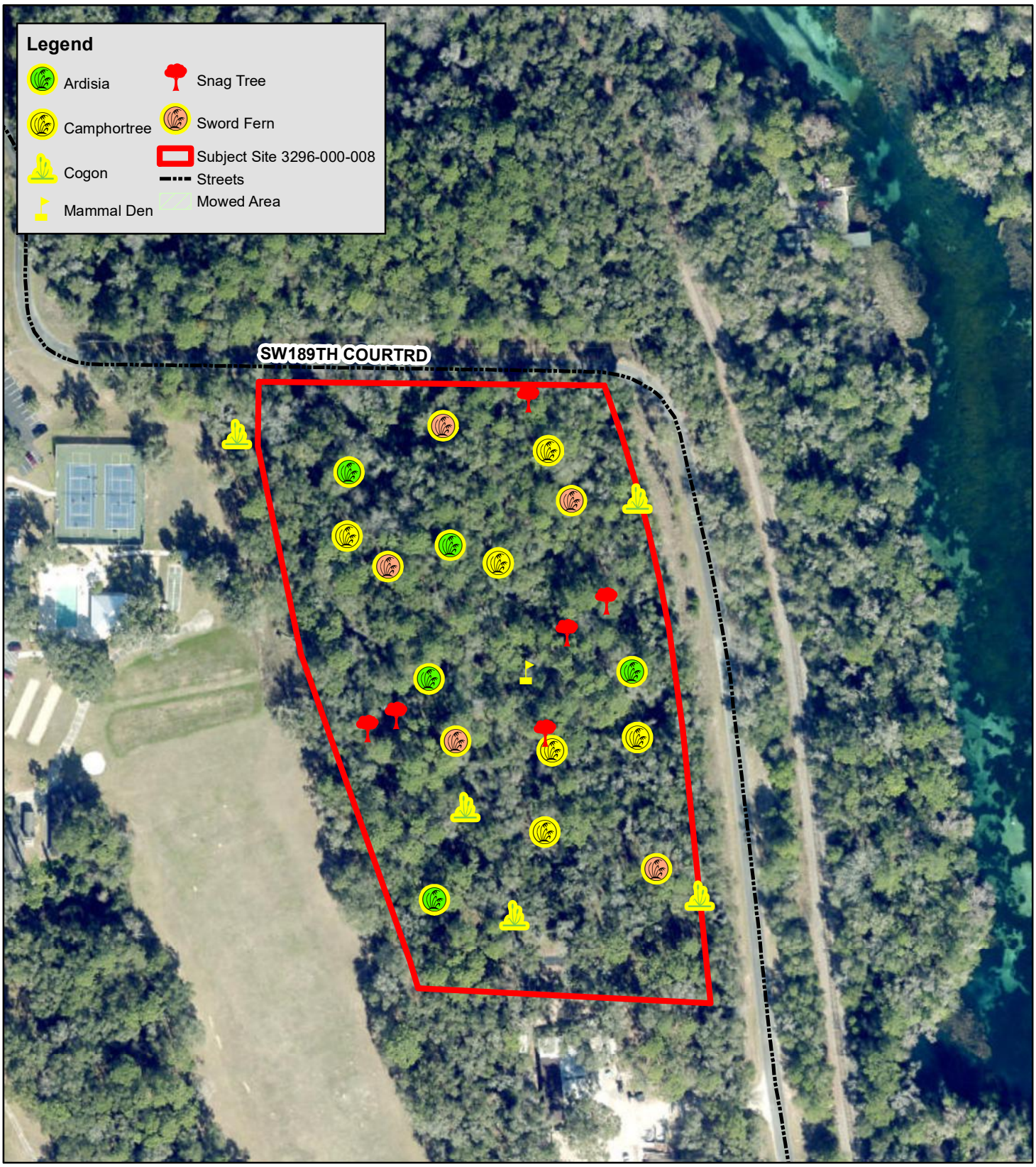
February 8, 2023

This map is for informational purposes only. This is not a survey. Boundaries are approximate.

Features and Results



SW 83rd Place Road (Parcel # 3296-000-008) for BH Homes

7.3 Acres (MOL) in Dunnellon, Marion County, Florida

Data Source: ESRI, MCPA, Field Results

Compiled By: SWM

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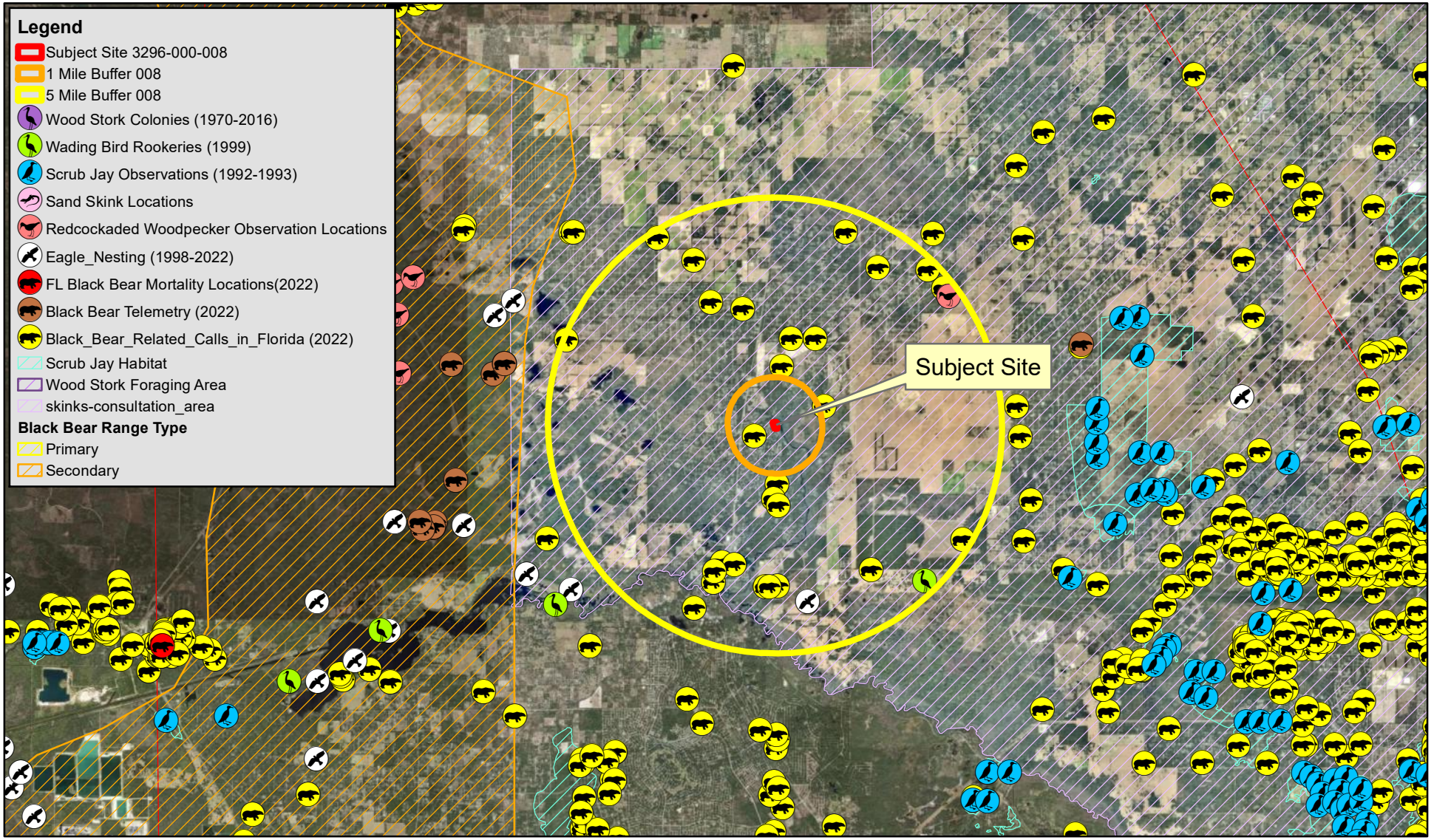
February 8, 2023

This map is for informational purposes only. This is not a survey. Boundaries are approximate.

USFWS/FWC Documented Wildlife Occurrences and Habitats



SW 83rd Place Rd (Parcel #3296-000-008) for BH Homes

7.3 Acres (MOL) in Dunnellon,
Marion County, Florida

Data Source: ESRI, Marion County Property Appraiser, Field Results, USFWS, FWC

Compiled By: SWM

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Michael G. Czerwinski, P.A.
ENVIRONMENTAL CONSULTANTS
MGC

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February 6, 2023

This map is for informational purposes only. This is not a survey. Boundaries are approximate.

Appendix B

Photo Documentation

BH Homes
SW 83rd Place Road
(Parcel# 3296-000-008)
7.3 Acres (MOL) in Dunnellon,
Marion County, Florida
February 2023

Photo 1. Photo of eastern property frontage viewing north.

Photo 2. Photo of upland hardwood-coniferous mixed habitat on-site, showing presence of invasive tuberous sword fern (*Nephrolepis cordifolia*).

Photo 3. Photo of alternate view of upland hardwood-coniferous mixed habitat on-site.

Photo 4. Photo of invasive plant species cogongrass (*Imperata cylindrica*) identified on-site.

Photo 5. Photo of invasive plant coral aridisa (Ardisia crenata) identified on-site.

Photo 6. Photo of camphortree (Cinnamomum camphora), an invasive plant species identified on-site.

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Appendix C

U.S. Fish and Wildlife Service – List of Threatened / Endangered Species for Marion County, FL

BH Homes
SW 83rd Place Road
(Parcel# 3296-000-008)
7.3 Acres (MOL) in Dunnellon,
Marion County, Florida
February 2023

Table 2. Federally Listed Species in Marion County, Florida

Category	Species Common Name	Species Scientific Name	Code
Mammals	West Indian (Florida) Manatee	*Trichechus manatus latirostris*	E/CH
Birds	Everglade Snail Kite	*Rostrhamus sociabilis plumbeus*	E
	Florida Scrub-jay	*Aphelocoma coeruluscens*	T
	Wood Stork	*Mycteria americana*	E
	Red-cockaded Woodpecker	*Picoides borealis*	E
Fish	None		
Reptiles	Gopher Tortoise	*Gopherus polyphemus*	C
	Sand Skink	*Neoseps reynoldsi*	T
	Eastern Indigo Snake	*Dymarchon corais couperi*	T
Amphibians	Striped Newt	*Notophthalmus perstriatus*	C
Mollusks	None		
Crustaceans	None		
Plants	Florida Bonamia	*Bonamia grandiflora*	T
	Longspurred Mint	*Dicerandra cornutissima*	E
	Lewton's Polygala	*Polygala lewtonii*	E
	Scrub Wild Buckwheat	*Eriogonum longifolium* var. *gnaphalifolium*	T

Appendix D

FNAI Tracking List of Listed / Ranked Floral Species in Marion County, FL

BH Homes
SW 83rd Place Road
(Parcel# 3296-000-008)
7.3 Acres (MOL) in Dunnellon,
Marion County, Florida
February 2023

Table 3. FNAI Tracking List of Listed / Ranked Floral Species in Marion County, FL

Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Status
Adiantum tenerum	brittle maidenhair fern	G5	S3		E
Agrimonia incisa	incised groove-bur	G3	S2		T
Asplenium pumilum	dwarf spleenwort	G5	S1		E
Asplenium x curtissii	Curtiss' spleenwort	GNA	S1		N
Asplenium x heteroresiliens	Morzenti's spleenwort	G2	S1		N
Bonamia grandiflora	Florida bonamia	G3	S3	T	E
Calamintha ashei	Ashe's savory	G3	S3		T
Carex chapmannii	Chapman's sedge	G3	S3		T
Centrosema arenicola	sand butterfly pea	G2Q	S2		E
Clitoria fragrans	scrub pigeon-wing	G3	S3	T	E
Coelorachis tuberculosa	Piedmont jointgrass	G3	S3		T
Dicerandra cornutissima	longspurred mint	G2	S2	E	E
Digitaria gracillima	longleaf fingergrass	G1	S1		N
Eriogonum longifolium var. gnaphalifolium	scrub buckwheat	G4T3	S3	T	E
Euphorbia commutata	wood spurge	G5	S2		E
Forestiera godfreyi	Godfrey's swampprivet	G2	S2		E
Hartwrightia floridana	hartwrightia	G2	S2		T
Illicium parviflorum	star anise	G2	S2		E
Litsea aestivalis	pondspice	G3?	S2		E
Matelea floridana	Florida spiny-pod	G2	S2		E
Monotropa hypopithys	pinesap	G5	S1		E
Monotropsis reynoldsiae	pygmy pipes	G1	S1		E
Najas filifolia	narrowleaf naiad	G1	S3		T
Nolina atopocarpa	Florida beargrass	G3	S3		T
Nolina brittoniana	Britton's beargrass	G3	S3	E	E
Parnassia grandifolia	large-leaved grass-of-parnassus	G3	S2		E
Pecluma dispersa	widespread polypody	G5	S2		E
Pecluma plumula	plume polypody	G5	S2		E
Pecluma ptilota var. bourgeauana	comb polypody	G5	S2		2
Polygala lewtonii	Lewton's polygala	G2G3	S2S3	E	E
Pteroglossaspis ecristata	giant orchid	G2G3	S2		T
Pycnanthemum floridanum	Florida mountain-mint	G3	S3		T
Salix floridana	Florida willow	G2	S2		E
Sideroxylon alachuense	silver buckthorn	G1	S1		E
Sideroxylon lycioides	buckthorn	G5	S2		E
Spigelia loganioides	pinkroot	G2Q	S2		E
Stylisma abdita	scrub stylisma	G3	S3		E
Thelypteris reptans	creeping maiden fern	G5	S2		E
Vicia ocalensis	Ocala vetch	G1	S1		E
Warea amplexifolia	clasping warea	G1	S1	E	E

Appendix E

Invasive Plant Reference Material

BH Homes
SW 83rd Place Road
(Parcel# 3296-000-008)
7.3 Acres (MOL) in Dunnellon,
Marion County, Florida
February 2023

2716 S. Lecanto Highway, Lecanto, Florida 34461
Phone (352) 249-1012 ♦ Fax (352) 249-1013 ♦ E mail: mczerwinski@mgcenvironmental.com

UF IFAS Extension UNIVERSITY of FLORIDA

SS AGR 276

Identification and Control of Coral Ardisia (*Ardisia crenata*): A Potentially Poisonous Plant.[1]

B. A. Sellers, S. F. Enloe, Patrick Minogue, and J. Walter[2]

Coral ardisia, also known as coral berry, spice berry, and scratchthroat, was introduced to Florida in the early 1900's for ornamental purposes (Figure 1). Since then, it has escaped cultivation, and it is found in hardwood hammocks and other moist, natural-wooded areas and grazing lands. Documented herbarium specimens, or preserved plants, have been collected from 19 western and south-central Florida counties (Wunderlin and Hansen 2004). Coral ardisia is considered invasive by the Florida Exotic Pest Plant Council (Category I) and the UF/IFAS Assessment of Non-native Plants (FLEPPC 2017; Anonymous 2017).

Figure 1. Coral ardisia in a hardwood hammock.
Credits: Michael Meisenburg

Identification

Coral ardisia is an evergreen, sub-shrub that reaches heights of 1.5 to 6 feet. It tends to grow in multi-stemmed clumps. The alternate, waxy leaves are about 8 inches long, and they are dark green above. They are also hairless, with scalloped margins and calluses in the margin notches (Figure 2). Flowers are typically pink to white in stalked axillary clusters, usually drooping below the foliage (Figure 3). The fruit is bright red, globular, and one-seeded, measuring about 0.25 inches in diameter (Figure 4). Berries tend to persist on the plant nearly year-round, and white-berried populations also exist.

Toxicity

Although there is no published literature supporting the theory that coral ardisia is toxic, it is suspected that the berries and/or foliage are poisonous to livestock, pets, and humans. In 2001, 2007, and 2012, the plant was the suspected causal agent for livestock deaths in Florida.

1. This document is SS AGR 276, one of a series of the Agronomy Department, UF/IFAS Extension. Original publication date July 2007. Revised November 2013 and December 2017. Visit the EDIS website at http://edis.ifas.ufl.edu.

2. B. A. Sellers, associate professor and associate director, UF/IFAS Range Cattle Research and Education Center; S. F. Enloe, associate professor, Center for Aquatic and Invasive Plants; Patrick Minogue, associate professor, UF/IFAS North Florida REC; and J. Walter, UF/IFAS Extension livestock/crops agent, UF/IFAS Extension Brevard County; UF/IFAS Extension, Gainesville, FL 32611.

Figure 2. Coral ardisia leaves are waxy with a bright, shiny appearance. The leaves may contain substances that are toxic to cattle and other livestock.
Credits: Brent Sellers, UF/IFAS

Figure 3. Coral ardisia has pink to white flowers in axillary stalks that tend to hang underneath the foliage.
Credits: Michael Meisenburg

Figure 4. Coral ardisia has bright red berries. It is thought that livestock died after consuming the berries in 2001 and 2007 in Florida.
Credits: Michael Meisenburg

Control

Coral ardisia can be suppressed by using foliar applications of 2.25% v/v (volume to volume) solution of triclopyr ester-containing products (Garlon 4 Ultra, Remedy Ultra, others), 3% triclopyr amine-containing products (Garlon 3A, others), or 1% imazapic-containing products (Impose, Panoramic, Plateau) (Table 1). Basal bark applications with an 18% v/v solution of Garlon 4 or Remedy Ultra in an oil carrier can also control the plant. Complete coverage is essential when using foliar applications. Do not apply more than 8 quarts of Remedy or Garlon 4 per acre. If applying greater than 2 quarts, then treat no more than 10% of the total grazed area. Since formulations can evaporate when temperatures exceed 85°F, use care when applying high rates of these herbicides. The herbicide imazapic has been shown to reduce seedling germination within 12 months after application. Regardless of the application method, retreatment will be necessary for complete control, as there will typically be a new flush of seedlings following most treatments. For more information on basal bark applications, visit http://edis.ifas.ufl.edu/AG245 to read the EDIS publication entitled *Herbicide Application Techniques for Woody Plant Control*.

References and Further Reading

Anonymous. 2017. "*Ardisia crenata*." UF/IFAS Assessment of Non-native Plants. Gainesville: University of Florida Institute of Food and Agricultural Sciences. https://assessment.ifas.ufl.edu/assessments/ardisia-crenata/ (December 2017)

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Wunderlin, R. P., and B. F. Hansen. 2004. *Atlas of Florida Vascular Plants* http://www.plantatlas.usf.edu/. [S. M. Landry and K. N. Campbell (application development), Florida for Community Design and Research.] Tampa, FL: Institute for Systematic Botany, University of South Florida.

Table 1. Control of mature and seedling coral ardisia with selected herbicides 12 months after treatment. Adapted from Hutchinson et al. 2011.

Active ingredient	Trade names	Rate (% v/v)	Mature plant control (%)	Seedling control (%)
Triclopyr ester	Garlon 4 Ultra, Remedy Ultra, others	2.25	96	76
Triclopyr amine	Garlon 3A, others	3	90	52
Imazapic	Impose, Panoramic, Plateau, others	1	99	93
Triclopyr amine + imazapic	Garlon 3 A + Plateau	3 + 1	99	96

CINNAMOMUM CAMPHORA (L.) J. PRESL

Lauraceae/Laurel Family

Common Name: Camphor tree
Synonymy: *Cinnamomum camphora* (L.) Nees & Eberm., *Camphora camphora* (L.) H. Karst.
Origin: Eastern Asia (China, Taiwan, Korea)

Botanical Description: Evergreen tree potentially to 20 m (65 ft). Twigs green or reddish green; all vegetative parts glabrous; cut stems and bruised leaves giving off a strong aroma of camphor. Leaves simple, alternate; blades entire but may have wavy margins, mostly ovate, 4-10 cm (1.5-4 in) long and 2-5 cm (0.8-2 in) broad, glossy green above, duller green below, with impressed glands below at major veins. Flowers small, greenish-white to cream, in loose panicles on branchlets of season; 6 petaloid parts; 12 stamen parts, usually 5-9 fertile stamens plus smaller sterile staminodes. Fruits small, subglobose drupes, black, seated on persistent floral tubes.

Ecological Significance: Occurs primarily in drier disturbed areas such as roadsides and fencerows, but has invaded natural areas such as mesic hammocks, upland pine woods, and scrubland (e.g., taking over space in Polk County scrub inhabited by the federally endangered native plant, *Ziziphus celata*, or Florida jujube). Reported by natural-area managers as infesting particular parks in 14 counties (EPPC 1996). Introduced to Florida in 1875 and later established in plantations to promote camphor production, but the venture proved unprofitable (Lakela and Wunderlin 1980). Still sold as a shade tree and for windbreaks.

Distribution: Most commonly naturalized in north and central Florida, but also escapes cultivation in southern peninsula (Godfrey 1988, Long and Lakela 1971, Wunderlin 1982). Naturalized also in Georgia and west to Texas (Small 1933). Cultivated as well in other southern states: Alabama, Mississippi, Georgia, and the Carolinas (Meyer *et al.* 1994), and in southern California (Bailey and Bailey 1976). By 1997, documented as locally common in the flora from Texas to the Carolinas (van der Werff 1997).

KAL

Leaf, mature fruit

Life History: Main trunk often stout with several secondary trunks arising from it, all supporting a dense evergreen canopy. National co-champion trees found in Florida (in cultivation), in Hardee and Pasco counties, with heights of 22 m (72 ft) and main trunk circumferences of about 9 m (31 ft) (NRBT 1994). Fruits normally abundant on mature trees, with birds often seen to "frolic and feast" on them particularly during late winter (Kurz and Godfrey 1962). For extraction of camphor (an ethereal oil), young shoots distilled; old trees felled, chipped, and the wood steam-distilled (Willis 1973). Wood also used for cabinetwork (Bailey and Bailey 1976).

KAL

In hammock, Lake Jessup conservation area

LCA

Flowers

IMPERATA CYLINDRICA (L.) RAEUSCHEL

Poaceae (Gramineae)/Grass Family

Common Name: Cogon grass
Synonymy: *Imperata cylindrica* (L.) Beauv.; *I. brasiliensis* Trinius misapplied
Origin: Southeast Asia

Botanical Description: Perennial grass, growing in loose or compact tufts, from stout, extensively creeping, scaly rhizomes with sharp-pointed tips. Leaf sheaths relatively short, glabrous or pubescent; ligule a membrane, 0.5-1 mm long. Leaf blades erect, narrow and pubescent at base, flat and glabrous above, to 1.2 m (4 ft) tall and to 2 cm (< 1 in) wide, with whitish midvein noticeably off-center; blade margins scabrous, blade tips sharp pointed. Inflorescence a narrow, dense terminal panicle, white silky and plume-like, to 21 cm (8 in) long and 3.5 cm (1.5 in) wide. Spikelets crowded, paired on unequal stalks, with each spikelet surrounded by long white hairs.

Ecological Significance: Considered one of the top 10 worst weeds in the world, reported by 73 countries as a pest in a total of 35 crops (Holm *et al.* 1977). Introduced to the United States in 1911 near Mobile, Alabama as packing material in a shipment of plants from Japan (Dickens 1974, Tabor 1949, Tabor 1952); and into Mississippi as a forage crop from the Philippines before 1920 (Dickens and Buchanan 1971, Patterson *et al.* 1979, Tabor 1949 and 1952, Tanner and Werner 1986). Replanted to Florida from Mississippi for forage and soil stabilization in Gainesville, Brooksville, and Withlacoochee (Hall 1983, Tabor 1949)—these areas now with high densities of naturalized populations (Dickens and Buchanan 1971, Willard 1988). By 1949, more than 405 ha (1,000 acres) of the grass established in central and northwest Florida (Dickens 1974). Now frequent along transportation and utility corridors throughout Florida. Has invaded dry to moist natural areas in over 20 counties (EPPC 1996), including habitats of federally listed endangered and threatened native plant species (K. C. Burks, Florida Department of Environmental Protection, 1997 personal communication).

SM

Leaf blade, off-center midvein

Distribution: Commonly found in humid tropics but has spread to warm temperate zones worldwide (Hubbard *et al.* 1944). Currently reported for all of Florida, plus parts of Alabama, Georgia, Louisiana, and Mississippi, along with an adventive (but perhaps not persistent) population in South Carolina (Allen and Thomas 1991, Elmore 1986, Bryson and Carter 1993).

Life History: Fast-growing; thrives in areas of minimal tillage, such as orchards, lawns, and roadsides (Patterson *et al.* 1979). Produces new rhizomes readily, facilitating the plant's spread at newly colonized sites; can propagate by rhizome fragments but does not survive well under regular deep tilling (Wilcut *et al.* 1988). Roots and rhizomes remarkably resistant to fire (Bryson and Carter 1993). Disperses over long distances into a variety of habitats by windborne seeds (Bryson and Carter 1993). Flowers in spring or fall, or year-round in central and south Florida (Willard 1988).

DJ

In Everglades National Park (foreground)

SM

Dense panicle

NEPHROLEPIS CORDIFOLIA (L.) PRESL

Dryopteridaceae/Wood Fern Family

Common Names: Erect sword fern, tuber sword fern, fish-bone fern, ladder fern, Boston fern

Synonymy: *Polypodium cordifolium* L., *Aspidium cordifolium* (L.) Swartz [also sometimes placed in Nephrolepidaceae, ladder fern family, or Davalliaceae, sword fern family]

Origin: Tropics, perhaps pantropical

Botanical Description: Epiphytic, epilithic (on rock), or terrestrial in habit. Rhizomes suberect, with spreading, orange-brown to pale brown linear scales, these with hairlike tips; wiry, straw colored, scaly stolons usually present in great numbers, often producing small, scaly underground tubers. Leaves (fronds) once pinnate, fertile and sterile fronds similar in shape and size, to 1 m (3 ft) long and 7 cm (2.8 in) wide; petioles to 20 cm (8 in) long, with spreading, pale-brown scales; leaflets (pinnae) many, 40-100 on each side of rachis (main stalk of frond); each leaflet (pinna) oblong-lanceolate with a deltoid lobe (auricle) on upper side of blade base that usually overlaps rachis; leaflet margins entire to slightly toothed; leaflet midvein glabrous above; rachis with two-toned (bicolored) scales above, pale brown with distinctly darker point of attachment. Sori numerous at ends of veinlets between leaflet midvein and margin, with kidney-shaped indusia (tissue covering the sporangia).

NOTE: May be confused with native *N. exaltata* (L.) Schott, which never bears tubers, has one-color rachis scales (sometimes obscurely bicolored), and has leaflet tips more sharply pointed than those of *N. cordifolia* (Coile 1996a). Other *Nephrolepis* species in Florida also with pointed leaflet tips and without the bicolored rachis scales of *N. cordifolia.*

KAL

Scaly tubers

KAL

Scaly rachis

Ecological Significance: Occurs most densely in partial or full shade of hammocks, as far north as Florida Panhandle (Clewell 1985). Also noted as naturalized in Georgia (Duncan and Kartesz 1981). Can spread aggressively in the landscape, tending to form dense stands that displace native ground cover (K. A. Langeland, University of Florida, personal observations). Said to thrive in common or even poor conditions and produce dense crowns of long, drooping leaves (Bailey and Bailey 1976). By 1981 (Nauman), noted as a widespread escapee from cultivation in central and south Florida. Reported from conservation areas of Dade, Palm Beach, Martin, Collier, and Pinellas counties, in pine rocklands, flatwoods, and marsh edges as well as in hammocks (EPPC 1996). Once thought by some writers (e.g., Wherry 1964) to be native to southernmost Florida, but many herbarium specimens of *N. exaltata* previously misidentified as *N. cordifolia* (Nauman 1981). *N. cordifolia* also not described for Florida in earlier works (e.g., Small 1918a, 1918b), and presently distributed in the state without conformity to natural boundaries such as the frost line (Nauman 1981). Natural populations in Old World found in areas as remote as northwest Himalayas (Gaur and Painuli 1993). Origin in New or Old World tropics still considered uncertain (Nauman 1993b).

Distribution: Most abundantly naturalized in peninsular Florida, from Gainesville south (Nauman 1981). Documented by herbarium specimens from 23 counties: Escambia, Leon, and Duval in north Florida, and on both coasts and in the interior from Citrus, Marion, and Volusia south to Dade and Collier (Wunderlin *et al.* 1995).

Life History: Fertile all year (Wunderlin 1982). Spread by natural dispersal of spores and by accidental movement of stolons, tubers, and rhizomes, particularly by dumping of yard refuse. Tuber production apparently limited to plants growing in humus (Nauman 1981). Fronds of plants north of the frost line overwintering in protected areas or dying back—the rhizomes, stolons, or tubers producing new fronds in spring.

KAL

Habit