# Mullock Creek Preserve

# Mini Management Plan

**2nd Edition**

Prepared by the Conservation Lands Staff
Lee County Department of Parks and Recreation

Approved by the Lee County Board of County Commissioners: 3-6-2018

## I. Summary

Mullock Creek Preserve (MCP) is located west of Tamiami Trail (US 41) in south Fort Myers, Florida, within Section 17, Township 46 South, Range 25 East. The preserve lies east of a tributary of Mullock Creek and north of a Lee County Utilities storage tanks and pump station site, near the Shadow Wood Preserve subdivision (Figure 1). The Preserve is 4.3 acres in size and was purchased in July 2007 as one parcel, nomination 303, through the Conservation 20/20 Program for $100,000. The STRAP number for the property is 17-46-25-00-00002.0080 (no access-lot split denied by Lee County Department of Community Development). It is adjacent to existing conservation easements in the Shadow Wood Preserve development to the west and to a conservation easement in the Creekside Preserve (FKA Rosarno), a residential development to the north.

During various land acquisition committee meetings, several issues were discussed concerning unique elements regarding this property. Specific elements identified and/or noted by county staff and committee members for nomination 303, included:

a). that it was part of an impaired flow way,
b). that it was highly significant for water resources as a portion of a flow way that joins the south fork of Mullock Creek on the property,
c). that the property offers potential for water quality enhancement of an impaired waterway,
d). that the property has Rare and Unique uplands and gopher tortoises (*Gopherus polyphemus*) and therefore, it would not be appropriate for the entire property to be turned into a filter marsh,
e). managing this small site in a highly developed urban area would be too difficult as the Florida Division of Forestry recommends a 100-foot fire break perimeter,
f). the property does not have suitable access; although, access could be obtained through Utilities property, but for staff only,
g). that public access would not be allowed due to Homeland Security issues.

## II. Natural Resources Description

Elevations for the site were estimated by using onsite observations and Light Detection and Ranging (LiDAR) imagery, an optical remote sensing technology similar to sonar that measures properties of scattered light to identify information about a distant target. The change in color gradient visually demonstrates the changes from the lower elevations around the creek in the western portion of the preserve up to the higher points in the southeastern portion of the preserve (Figure 2). The LiDAR data used in this map were collected in 2007 and represent the published five foot digital elevation model.

There are three soil types found on the preserve, with over 70% coverage of these soils classified in wetland areas. The three soil types are Cocoa Fine sand, Copeland Sandy Loam, Depressional and Pompano Fine Sand, Depressional (Figure 3).

The entire preserve lies within Lee County's Mullock Creek Watershed and Archaeological "Sensitivity Level 2." This sensitivity level is based on the Lee County Archaeological Sensitivity Map that was created with a site-predictive model. Sensitivity Level 2 applies to areas in which there is a high likelihood that unrecorded sites of potential significance are present and/or areas which contain known archaeological sites that have not been assessed for significance.

Mullock Creek is located within the Estero Bay Basin and the Mullock Creek subbasin of the South Florida Water Management District's Lower West Coast Region. The creek runs along the western portion of the preserve, with a tributary/wetland slough in the northern portion of the preserve (Figure 4).

MCP contains six plant communities including wetland forested mixed (630), temperate hardwood (425), xeric oak (421), pine-mesic oak (414), freshwater marsh (641), disturbed lands (740), and a portion of the creek's tributary (510) (Figure 5). These community descriptions are based on the Florida Land Use and Cover Form Classification System (FLUCFCS) (FDOT 1999).

Protection of native plants across the landscape will enhance the overall biodiversity of the preserve. Many species of animals not only inhabit, but also frequently visit the preserve. For management purposes, all plants and animals listed by the United States Fish and Wildlife Service (USFWS), Florida Fish and Wildlife Conservation Commission (FWC), Florida Department of Agriculture and Consumer Services (FDACS), the Institute for Regional Conservation (IRC) and FNAI will be given special consideration. Currently 108 plant species (23 exotic) and 71 animal species (5 exotic) have been documented. Seventeen of the 23 exotic plant species (74 percent) are on the Florida Exotic Pest Plant Council's 2017 List of Invasive Species (FLEPPC 2017).

Mullock Creek has another spelling associated with it: Mulloch. Recorded documents for the drainage district in San Carlos Park call the district the East Mulloch Drainage District and East Mulloch Water Control District. "Mulloch Creek" is an Outstanding Florida Water discharging into Estero Bay, Florida's first Aquatic Preserve, and has been identified by the Florida Department of Environmental Protection as an impaired water body for bacteria and dissolved oxygen and for Iron (LCNR 2006, FDEP 2017). Several projects have been proposed to provide solutions for reducing pollutant loading to Estero Bay.

Although Land Management staff has not performed a complete historical aerial review for the property, staff believes that the site remained virtually untouched until the 1950s and then again when Tamiami Trail (US 41) was improved and storm water drainage alterations were performed on land adjacent to and on the property (Figures 6 – 9). Lee County Division of Natural Resources performed hydrological restoration work in the Estero Watershed Basin and incorporated some of the preserve's property into their plans. The project was funded by the South Florida Water Management District and was considered a water quality restoration project. On April 10, 2008, invasive exotic vegetation was treated from the existing “depressional swale” (an approximately 100’ by 350’ corridor) that conveys offsite storm water through the property into Mullock Creek and approximately 500 linear feet along the creek. The swale and creek bank was then re-planted on September 1, 2008 with native littoral plantings in an effort to improve water quality prior to its outfall into the creek (Figure 10). Approximately 525 plants were planted including leather fern (*Acrostichum danaeifolium)*, cordgrass (*Spartina* sp.), swamp lily *(Crinum americanum)*, pickerelweed (*Pontederia cordata)*, buttonbush (*Cephalanthus occidentalis)*, and cypress (*Taxodium ascendens)*. As part of the project, a mowed trail was installed in order to provide access for the restoration work. The path minimized impacts to native vegetation and gopher tortoise burrows. Staff continues to maintain the path in order to provide access for land management activities.

The site may provide the opportunity for future water quality improvement projects with the understanding that it is paramount to protect listed species including the gopher tortoise, giant airplant (*Tillandsia utriculata*), and butterfly orchid *(Encyclia tampensis)*.

Approximately 1.3 acres of palmetto and shrubs was mechanically reduced in the southern portion of the site twice, once in 2011 and again in 2017. Both times, staff noted diversity in the native understory return. For example, in 2016, butterfly milkweed *(Asclepias tuberosa)* and procession flower *(Polygala incarnate)* were recorded for the first time, both of which are considered ‘rare’ by the Institute for Regional Conservation. However, the mechanical reduction also resulted in some soil disturbance which benefited such exotic species as cogon grass *(Imperata cylindrica)*, rosary pea (*Abrus precatorius)*, and caesarweed (*Urena lobata)*, resulting in several follow up in house exotic spot treatments.

In October 2007, a burrow survey was conducted in which six potentially active and two potential inactive burrows were observed in the southeast portion of site. In 2011, the first sighting of a gopher tortoise was documented after a mechanical reduction in palmetto/shrub height. In 2017, the palmetto was reduced again and an updated gopher tortoise burrow survey was conducted. Five potentially active and four potentially inactive burrows were noted in the same general area that the tortoises were noted in 2007. Please see attached map indicating the location of the burrows (Figure 11). Staff has noted additional burrows on the adjacent undeveloped parcel and the utilities property.

The existing land uses for the preserve are “Conservation Lands Upland” & “Conservation Lands Wetland.” MCP is zoned as residential planned development “RPD” for the western portion and residential multiple family “RM-2” for the eastern portion (Figure 12). Staff will coordinate with LCDCD staff to update the zoning designation of MCP. The zoning categories will be changed to “Environmentally Critical” from “Multi-Family” and “Single Family/Duplex”.

## III. Factors Influencing Management

The principle management constraints for land management activities at MCP is lack of access and surrounding land use. Ideally, the upland habitats onsite would be managed with prescribed fire, especially the southeastern portion occupied by gopher tortoises. However, the adjacent Utility parcel and the surrounding current (and potential future) residential development make mechanical reduction of vegetation the only feasible method to maintain suitable tortoise habitat. Currently, Land Management staff cannot access the preserve through the Utilities parcel, because there is a tall chain link fence surrounding the water facility’s perimeter. Once the parcel to the east and northeast are developed or fenced off by private land owners/developers, Land Management staff will need to work with the Utilities staff to make appropriate access modifications for granting staff future access through their property.

Due to the lack of access to the site, and Homeland Security concerns, no public recreational amenities are feasible for this preserve. Resource based recreational opportunities occur at state managed facilities such as Koreshan State Historic Site and Estero Bay Preserve State Park, which are within three miles driving distance of MCP (Figure 1).

Land Management staff is conducting tri-annual site inspections and has posted boundary signs along with preserve’s perimeter. Since the infestation of invasive exotic plants (i.e. melaleuca (*Melaleuca quinquenervia*), Brazilian pepper (*Schinus terebinthifolius*), Java plum (*Syzygium cumini*), earleaf acacia (*Acacia auriculiformis*) is at a maintenance level for exotics, defined by land managers as having less than 5% invasive exotic plant coverage, staff will be performing follow up exotic plant control efforts. Due to the size of the preserve, the need for contracted exotic treatments is not anticipated. The southern boundary adjacent to the utilities property consists of disturbed/transitional habitat, and contains the highest extent of infestation by various exotics. In 2017, staff worked with Utilities staff to remove a mature carrotwood tree inside the security fence adjacent to the preserve in order to minimize future carrotwood infestation. The feral hog is an exotic species that has the potential to disturb native plant communities and spread exotic plant species. Due to the size of the preserve and the lack of access, the site is difficult for a contracted hog trapper to work. Preserve plant communities will continue to be monitored for signs of the animals foraging at the

preserve and efforts will be taken to remove the animals if a population becomes established.

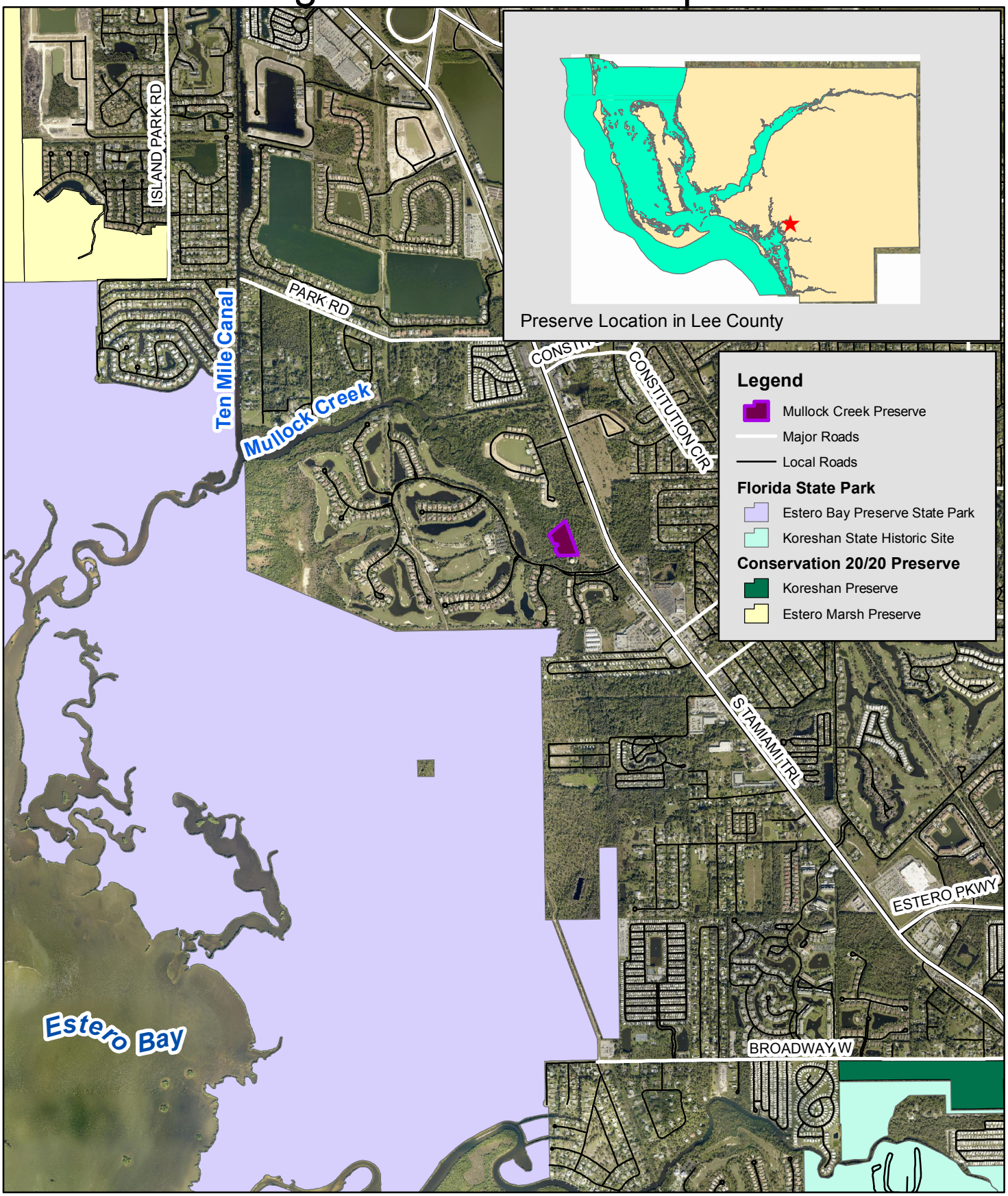
Since the preserve is not directly adjacent to a roadway, very little trash ever accumulates. Tire debris along the south boundary found buried under the palmetto has been removed. During site inspections, small objects that are encountered will be removed. Conservation 20/20 Rangers will also assist with removing small items when they are on patrol at the preserve.

| **Management Work Summary (2007-2017)** | |
|---|---|
| Natural Resource Management | |
| ✓ | Invasive exotic plant species have been treated throughout the preserve, which is now at maintenance level. |
| ✓ | Palmetto height in the southern portion of preserve has been mechanically reduced in 2011 and in 2017. |
| ✓ | Gopher tortoise burrow survey in 2007 and 2017. |
| Overall Protection | |
| ✓ | Small debris has been removed from the preserve. |
| ✓ | Perimeter boundary signs replaced as needed. |
| ✓ | Tri-annual site inspections have been conducted. |
| ✓ | Management trail maintained. |

## IV. Appendices

Updated plant and wildlife species lists and projected cost and funding sources were generated for MCP and are included in this Mini Management Plan.

# Figure 1: Location Map




## Mullock Creek Preserve

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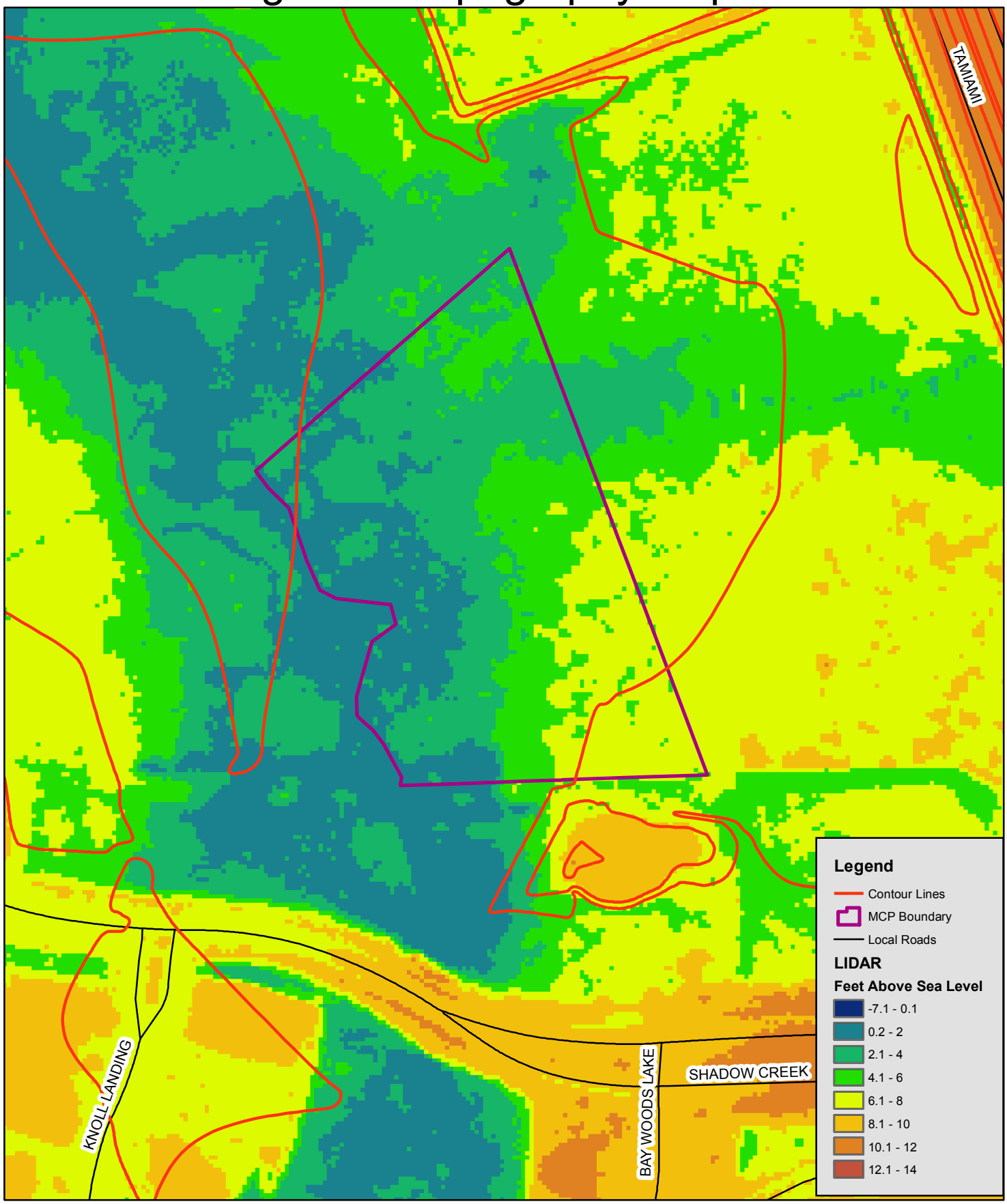
This is not a survey. Land Stewardship Staff has prepared this map for informational and planning purposes.

# Figure 2: Topography Map

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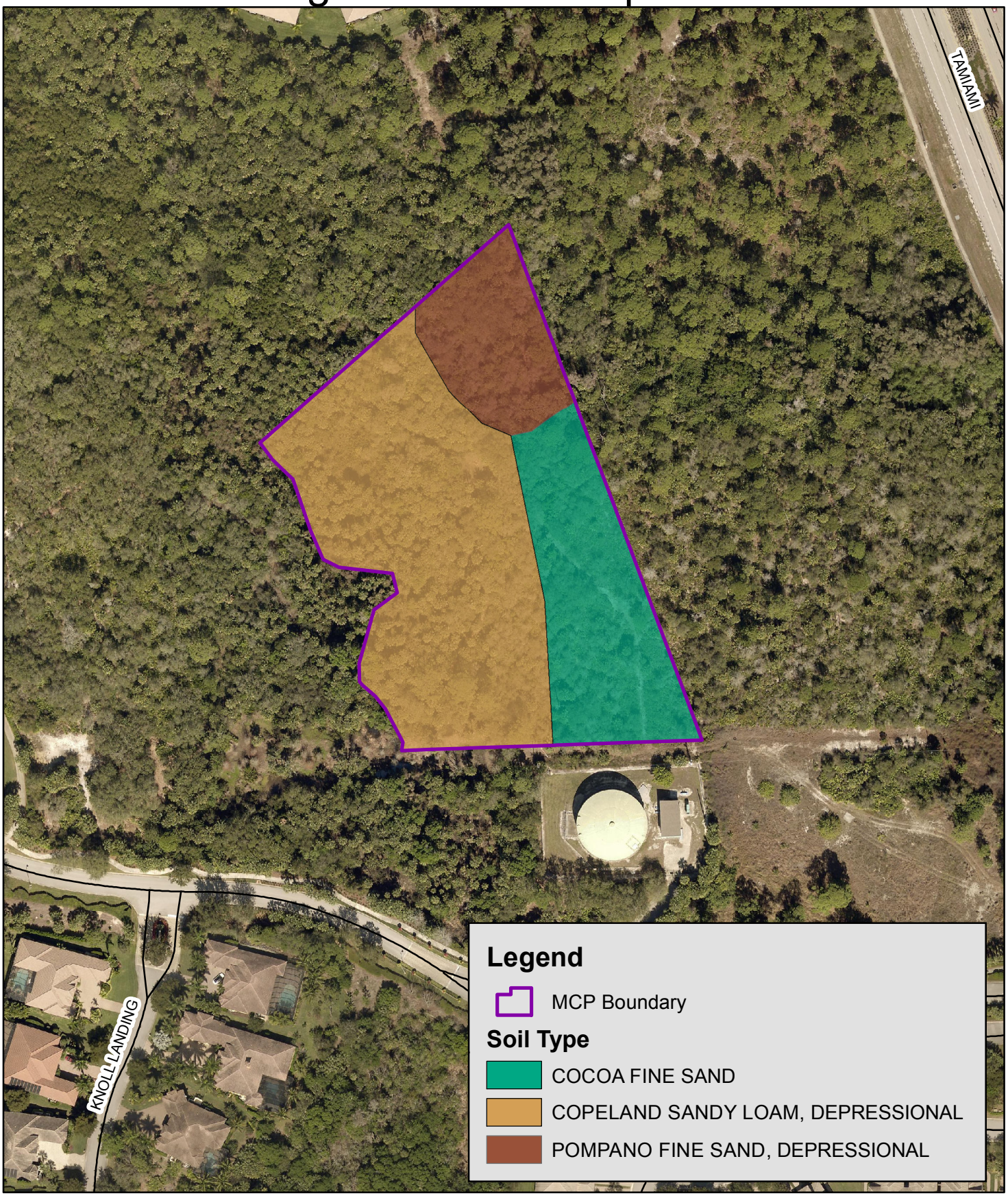
# Figure 3: Soils Map

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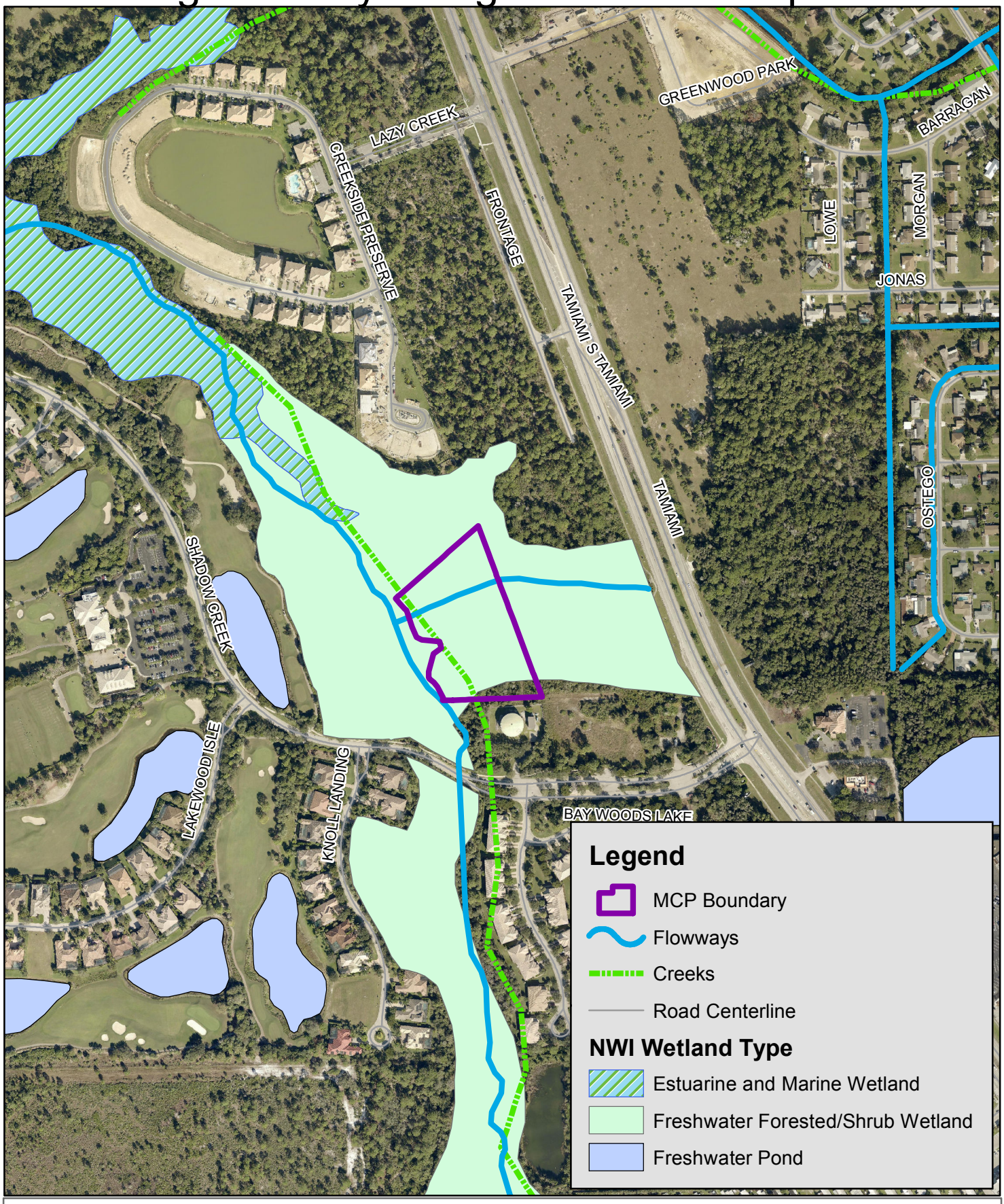
# Figure 4: Hydrologic Features Map

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# Figure 5: Plant Communities Map


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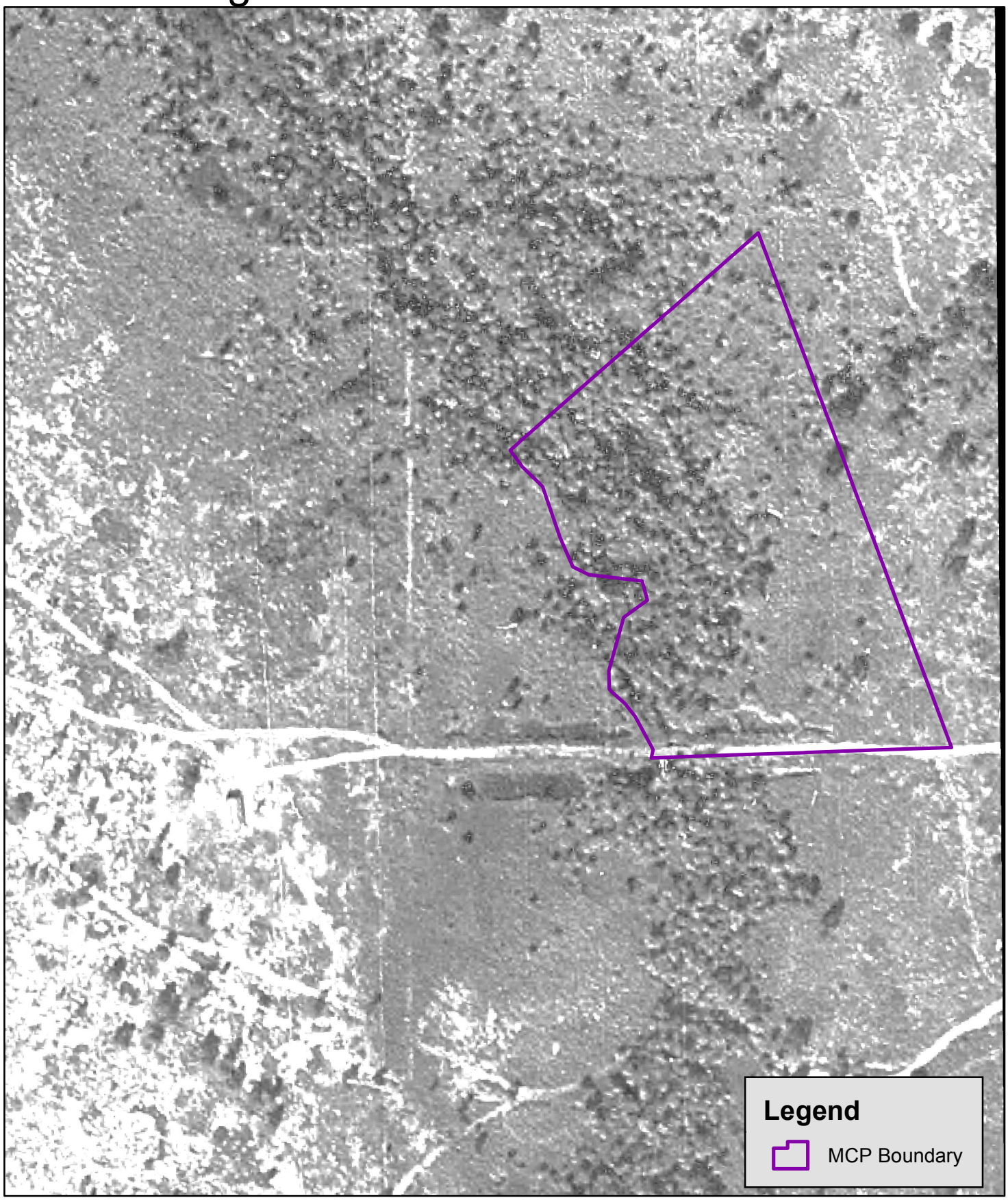
# Figure 6: 1953 Historical Aerial

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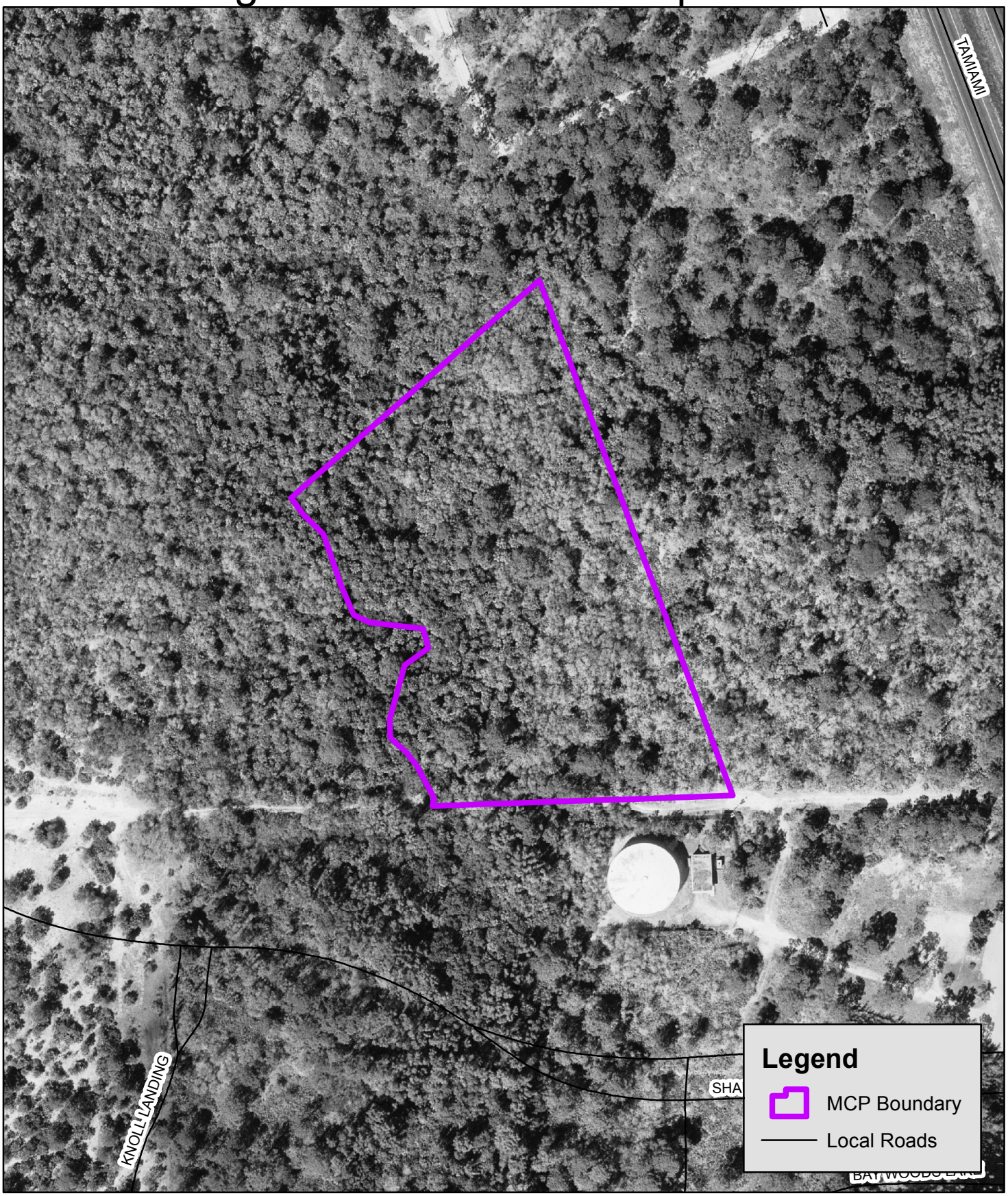
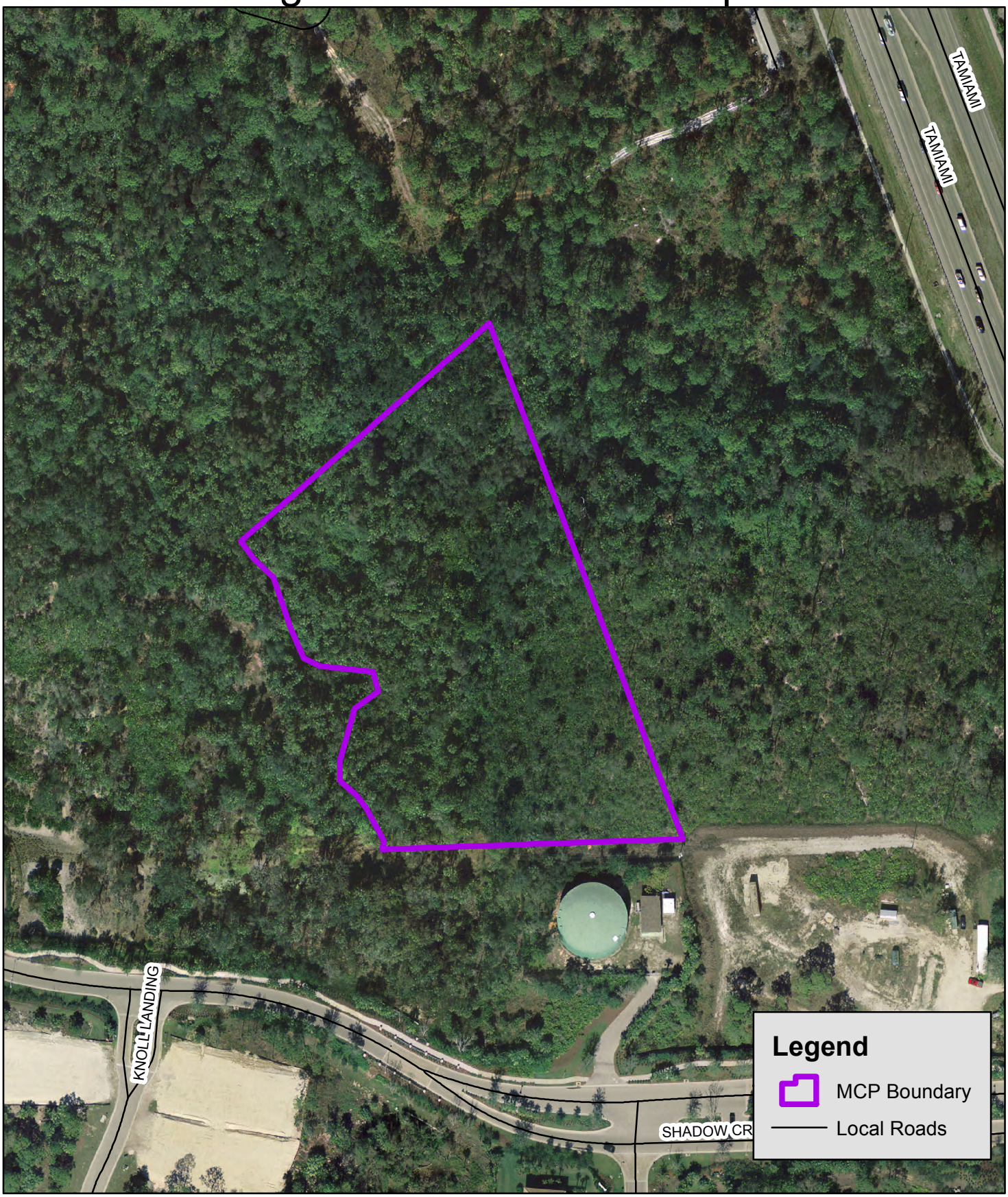
# Figure 7: 1998 Aerial Map



# Figure 8: 2005 Aerial Map

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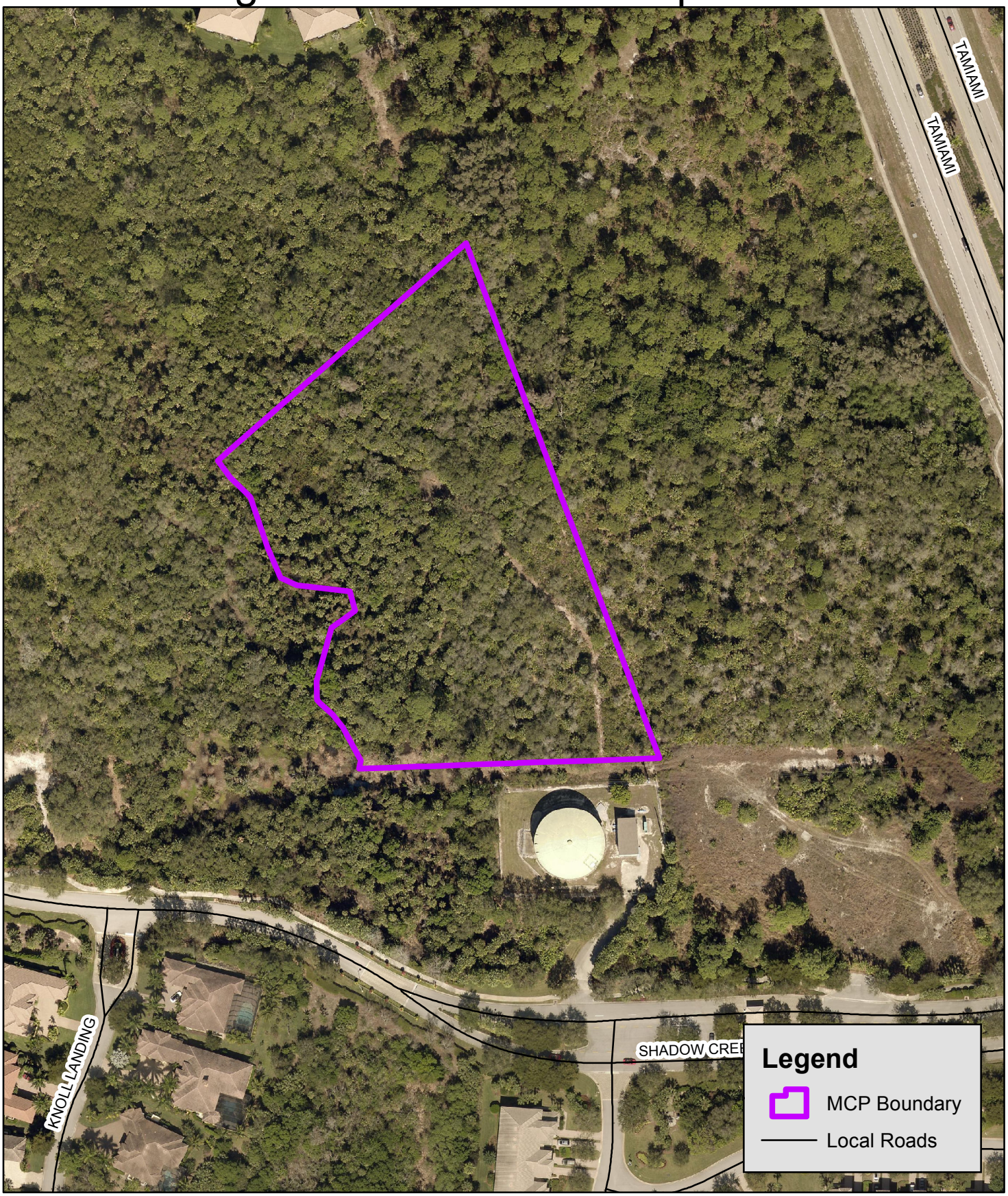
# Figure 9: 2017 Aerial Map

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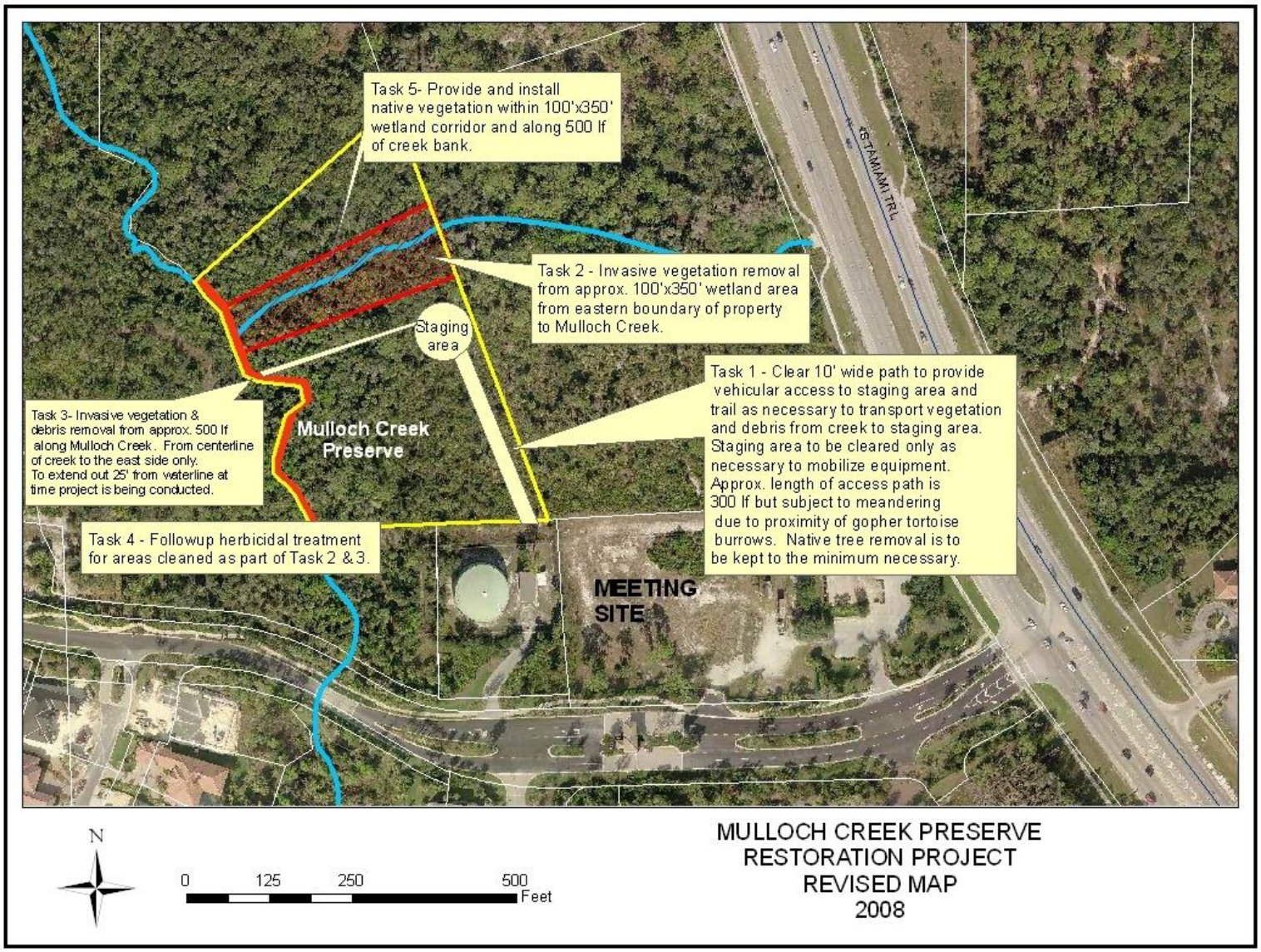
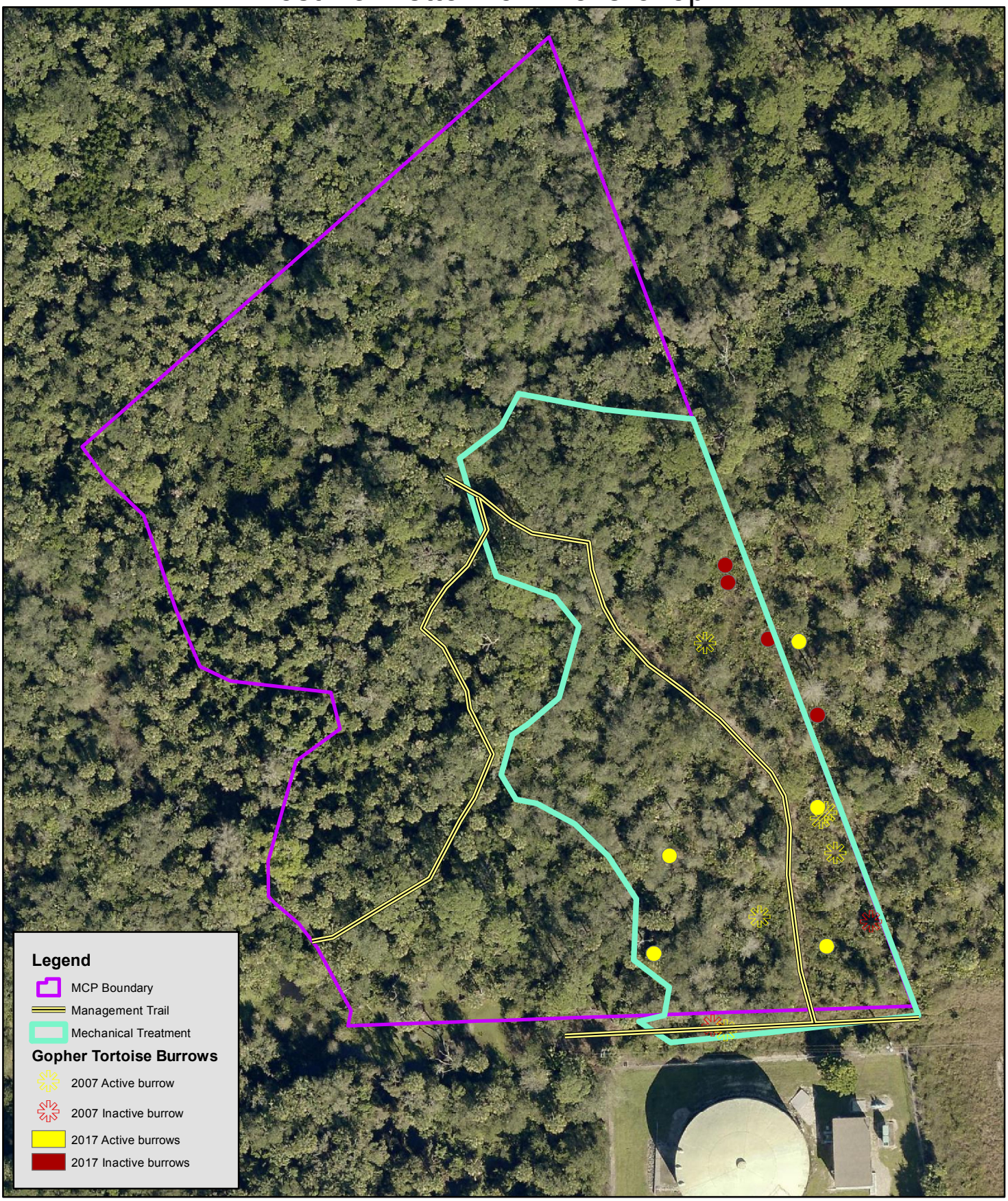
# Figure 10: Lee County Division of Natural Resources Project Map



# Figure 11: Gopher Tortoise Burrows
# Post Palmetto Mow/Rollerchop

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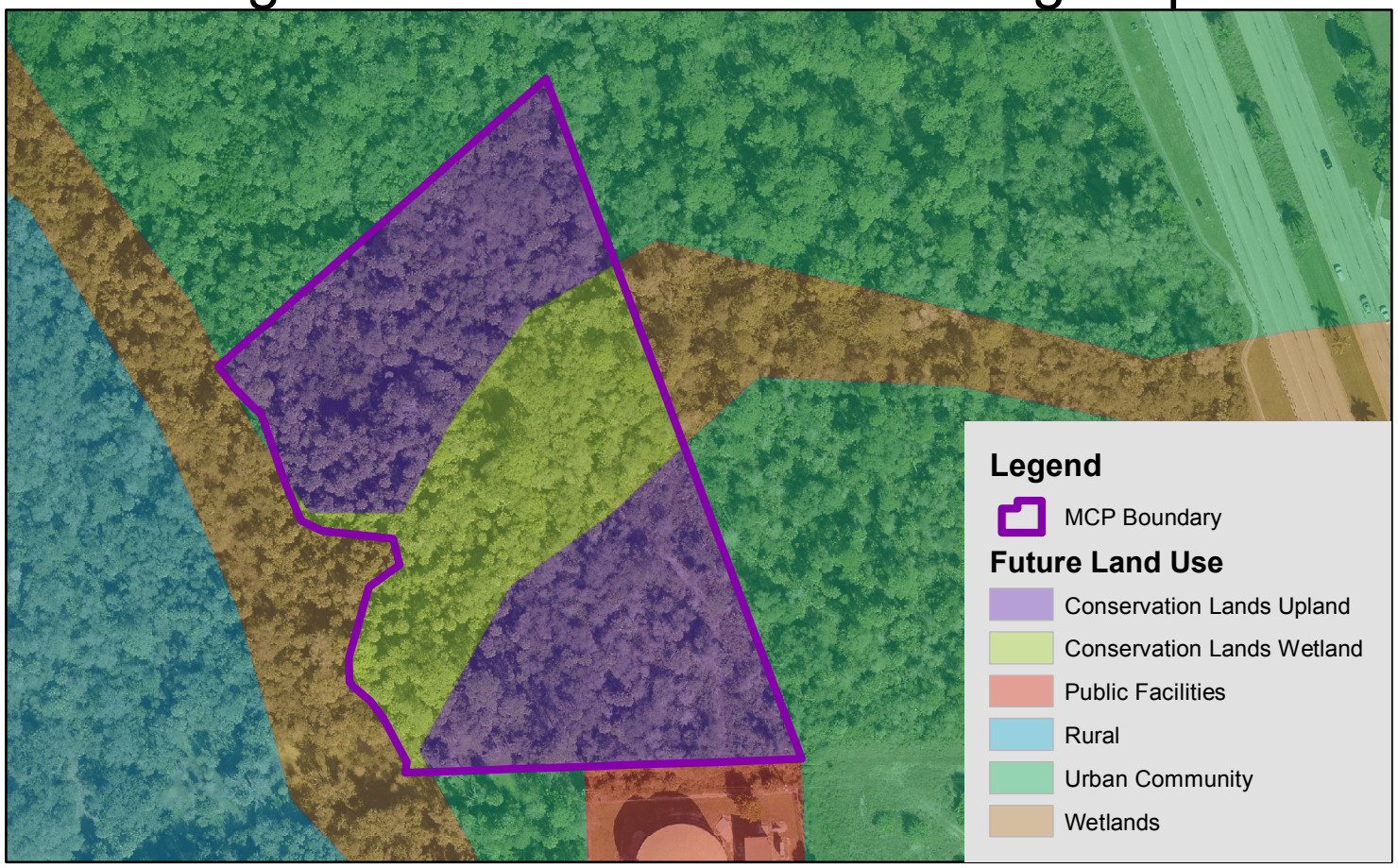
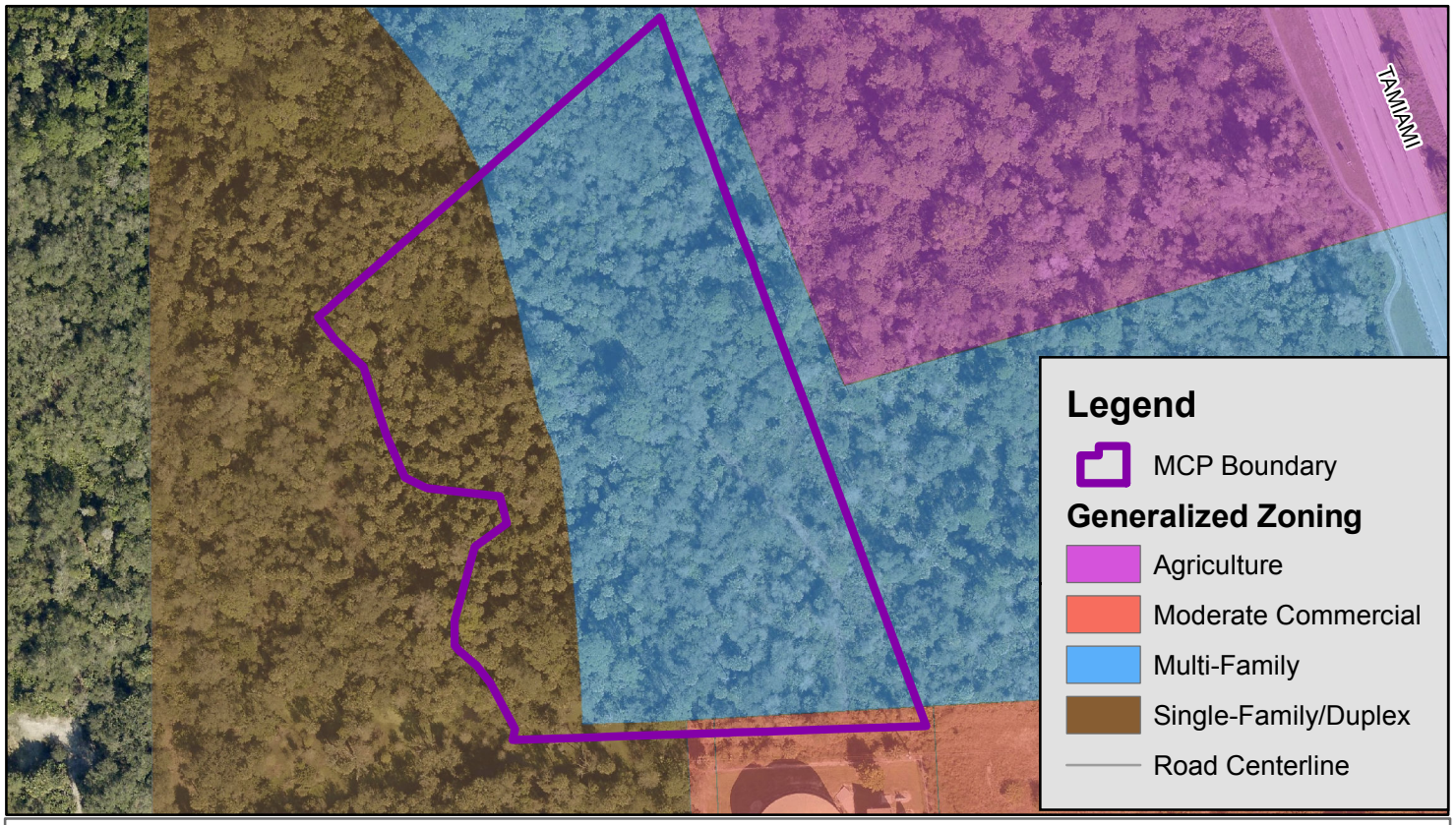
# Figure 12: Land Use and Zoning Map

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## Mullock Creek Preserve

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## LITERATURE CITED


Cowardin LM, Carter V, Golet FC, LaRoe ET (Department of the Interior). 1979 December. Fish and Wildlife Service, Office of Biological Services. Classification of Wetlands and Deepwater Habitats of the United States. Washington, D.C.: DOI. 131 p. Available from: Superintendent of Documents, U.S. Government Printing Office, Washington, D.C.; FWS/OBS-79/31.

[FDEP] Florida Department of Environmental Protection. 2017 November. Waters Not Attaining Standards, Water Quality Assessments, WBID 3258C4 [Internet]. Available from: https://floridadep.gov/dear/watershed-assessment-section/content/assessment-lists

[FDOT] Florida Department of Transportation. 1999 January. Florida Land Use, Cover and Forms Classification System. (3rd ed). Tallahassee: DOT, Surveying and Mapping Office.

[FLEPPC] Florida Exotic Pest Plant Council [Internet]. Ft. Lauderdale (FL): 2017 List of Florida's Invasive Species; 2017. Available from: http://www.fleppc.org/list/list.htm

[FNAI] Florida Natural Areas Inventory. Guide to the Natural Communities of Florida. [Internet]. 2010 [cited 2016 June 22]. Available from: http://www.fnai.org/PDF/FNAI-Natural-Community-Classification-Guide-2010_20150218.pdf.

Henderson WG Jr. 1984. Soil Survey of Lee County, Florida. USDA Soil Conservation Service.

[LCNR] Lee County Natural Resources. Community Budget Issue Requests – Tracking ID #506. Mulloch Creek Pollutant Loading Reduction Project. 2006 [Internet]. [cited 2008 Mar 11]. Available from: http://www.myfloridahouse.us/FileStores/Adhoc/Appropriations/CBIRS/cbirs-house2007/HSEReq506FY0607.htm

Wunderlin RP, Hansen BF. 2003. Guide to the Vascular Plants of Florida. Second Edition. Gainesville, FL: University Press of Florida.

## Plant Species List for Mullock Creek Preserve

Scientific and Common names from this list were obtained from Wunderlin 2003.

| Scientific Name | Common Name | Native/Exotic | FDACS | FNAI | IRC | EPPC |
|---|---|---|---|---|---|---|
| ***Family: Asparagaceae (asparagus)*** | | | | | | |
| *Asparagus aethiopicus* | Sprenger's asparagus-fern | Exotic | | | | I |
| ***Family: Blechnaceae*** | | | | | | |
| *Blechnum serrulatum* | swamp fern | Native | | | | |
| ***Family: Dennstaedtiaceae (cuplet fern)*** | | | | | | |
| *Pteridium aquilinum* | bracken fern | Native | | | | |
| ***Family: Polypodiaceae (polypody)*** | | | | | | |
| *Phlebodium aureum* | golden polypody | Native | | | | |
| *Pleopeltis polypodioides* | resurrection fern | Native | | | | |
| ***Family: Pteridaceae (brake fern)*** | | | | | | |
| *Acrostichum danaeifolium* | giant leather fern | Native | | | | |
| *Ceratopteris thalictroides* | watersprite | Exotic | | | | |
| ***Family: Vittariaceae (shoestring fern)*** | | | | | | |
| *Vittaria lineata* | shoestring fern | Native | | | | |
| ***Family: Cupressaceae (cedar)*** | | | | | | |
| *Taxodium ascendens* | pond cypress | Native | | | | |
| ***Family: Pinaceae (pine)*** | | | | | | |
| *Pinus elliottii* var. *densa* | south Florida slash pine | Native | | | | |
| ***Family: Amaryllidaceae (amaryllis)*** | | | | | | |
| *Crinum americanum* | string lily | Native | | | | |
| ***Family: Araceae (arum)*** | | | | | | |
| *Lemna spp* | duckweed | Native | | | | |
| ***Family: Arecaceae (palm)*** | | | | | | |
| *Roystonea regia* | royal palm | Native | | | | |
| *Sabal palmetto* | cabbage palm | Native | | | | |
| *Serenoa repens* | saw palmetto | Native | | | | |
| ***Family: Bromeliaceae (pineapple)*** | | | | | | |
| *Tillandsia balbisiana* | northern needleleaf | Native | T | | | |
| *Tillandsia fasciculata* | cardinal airplant | Native | | | | |
| *Tillandsia recurvata* | ballmoss | Native | | | | |
| *Tillandsia usneoides* | Spanish moss | Native | | | | |
| *Tillandsia utriculata* | giant airplant | Native | E | | | |
| ***Family: Commelinaceae (spiderwort)*** | | | | | | |
| *Commelina erecta* | whitemouth dayflower | Native | | | | |
| ***Family: Cyperaceae (sedge)*** | | | | | | |
| *Scirpus tabernaemontani* | softstem bulrush | Native | | | R | |
| ***Family: Orchidaceae (orchid)*** | | | | | | |
| *Encyclia tampensis* | Florida butterfly orchid | Native | CE | | | |
| ***Family: Poaceae (grass)*** | | | | | | |
| *Andropogon glomeratus* var. *pumilus* | bushy broom grass | Native | | | | |
| *Andropogon virginicus* var. *glaucus* | chalky bluestem | Native | | | R | |
| *Dactyloctenium aegyptium* | Durban crowfootgrass | Exotic | | | | II |
| *Eustachys glauca* | saltmarsh fingergrass | Native | | | | |
| *Imperata cylindrica* | cogon grass | Exotic | | | | I |
| *Neyraudia reynaudiana* | Burmareed | Exotic | | | | I |
| *Rhynchelytrum repens* | rose natalgrass | Exotic | | | | I |
| *Sorghastrum secundum* | lopsided Indiangrass | Native | | | | |
| *Spartina patens* | cordgrass | Native | | | | |
| *Sporobolus indicus* | smutgrass | Exotic | | | | |
| ***Family: Pontederiaceae (pickerelweed)*** | | | | | | |
| *Pontederia cordata* | pickerelweed | Native | | | | |

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| Scientific Name | Common Name | Native/Exotic | FDACS | FNAI | IRC | EPPC |
|---|---|---|---|---|---|---|
| ***Family: Smilacaceae (smilax)*** | | | | | | |
| *Smilax auriculata* | earleaf greenbriar | Native | | | | |
| *Smilax bona-nox* | saw greenbriar | Native | | | R | |
| *Smilax glauca* | cat greenbriar | Native | | | | |
| ***Family: Anacardiaceae (cashew)*** | | | | | | |
| *Rhus copallinum* | winged sumac | Native | | | | |
| *Schinus terebinthifolius* | Brazilian pepper | Exotic | | | | I |
| *Toxicodendron radicans* | poison ivy | Native | | | | |
| ***Family: Annonaceae (custard-apple)*** | | | | | | |
| *Annona glarbra* | pond apple | Native | | | | |
| ***Family: Apocynaceae (dogbane)*** | | | | | | |
| *Asclepias tuberosa* | butterfly milkweed | Native | | | R | |
| *Sarcostemma clausum* | white twinevine | Native | | | | |
| ***Family: Aquifoliaceae (holly)*** | | | | | | |
| *Ilex cassine* | dahoon | Native | | | | |
| *Ilex glabra* | gallberry | Native | | | | |
| ***Family: Asteraceae (aster)*** | | | | | | |
| *Ageratina jucunda* | hammock snakeroot | Native | | | R | |
| *Ambrosia artemisiifolia* | common ragweed | Native | | | | |
| *Baccharis spp* | falsewillow | Native | | | | |
| *Bidens alba* | beggarticks | Native | | | | |
| *Carphephorus corymbosus* | Florida paintbrush | Native | | | R | |
| *Emilia fosbergii* | Florida tasselflower | Exotic | | | | |
| *Eupatorium capillifolium* | dog fennel | Native | | | | |
| *Eupatorium serotinum* | lateflowering thoroughwort | Native | | | R | |
| *Liatris spp* | gayfeather | Native | | | | |
| *Mikania scandens* | climbing hempvine | Native | | | | |
| *Pityopsis graminifolia* | narrowleaf silkgrass | Native | | | | |
| *Pluchea odorata* | sweetscent | Native | | | | |
| *Pluchea rosea* | rosy camphorweed | Native | | | | |
| *Solidago fistulosa* | pinebarren goldenrod | Native | | | | |
| *Symphyotrichum carolinianum* | climbing aster | Native | | | R | |
| ***Family: Cactaceae (cactus)*** | | | | | | |
| *Opuntia stricta* | erect pricklypear | Native | T | | R | |
| ***Family: Chrysobalanaceae (coco plum)*** | | | | | | |
| *Licania michauxii* | gopher apple | Native | | | | |
| ***Family: Convulvulaceae (morning-glory)*** | | | | | | |
| *Ipomoea alba* | moonflower | Native | | | | |
| ***Family: Ebenaceae (ebony)*** | | | | | | |
| *Diospyros virginiana* | common persimmon | Native | | | R | |
| ***Family: Ericaceae (heath)*** | | | | | | |
| *Lyonia fruticosa* | coastalplain staggerbush | Native | | | | |
| ***Family: Euphorbiaceae (spurge)*** | | | | | | |
| *Bischofia javanica* | bishopwood | Exotic | | | | I |
| *Sapium sebiferum* | Chinese tallowtree | Exotic | | | | I |
| *Vaccinium myrsinites* | shiny blueberry | Native | | | | |
| ***Family: Fabaceae (pea)*** | | | | | | |
| *Abrus precatorius* | rosary pea | Exotic | | | | I |
| *Acacia auriculiformis* | earleaf acacia | Exotic | | | | I |
| *Chamaecrista fasciculata* | partidge pea | Native | | | | |

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Scientific and Common names from this list were obtained from Wunderlin 2003.

| Scientific Name | Common Name | Native/Exotic | FDACS | FNAI | IRC | EPPC |
|---|---|---|---|---|---|---|
| *Crotalaria pallida* | smooth rattlebox | Exotic | | | | |
| *Dalbergia ecastaphyllum* | coinvine | Native | | | | |
| *Dalbergia sissoo* | Indian rosewood | Exotic | | | | II |
| *Desmodium tortuosum* | dixie ticktrefoil | Exotic | | | | |
| *Erythrina herbacea* | coralbean | Native | | | | |
| *Galactia elliottii* | Elliott's milkpea | Native | | | R | |
| *Indigofera hirsuta* | hairy indigo | Exotic | | | | |
| ***Family: Fagaceae (beech)*** | | | | | | |
| *Quercus elliottii* | running oak | Native | | | R | |
| *Quercus minima* | dwarf live oak | Native | | | R | |
| *Quercus geminata* | sand live oak | Native | | | | |
| *Quercus laurifolia* | laurel oak | Native | | | | |
| *Quercus virginiana* | live oak | Native | | | | |
| ***Family: Lamiaceae (mint)*** | | | | | | |
| *Callicarpa americana* | American beautyberry | Native | | | | |
| ***Family: Lauraceae (laurel)*** | | | | | | |
| *Cassytha filiformis* | love vine | Native | | | | |
| *Persea palustris* | swamp bay | Native | | | | |
| ***Family: Malvaceae (mallow)*** | | | | | | |
| *Urena lobata* | caesarweed | Exotic | | | | I |
| ***Family: Myricaceae (bayberry)*** | | | | | | |
| *Myrica cerifera* | wax myrtle | Native | | | | |
| ***Family: Myrsinaceae (myrsine)*** | | | | | | |
| *Rapanea punctata* | myrsine | Native | | | | |
| ***Family: Myrtaceae (myrtle)*** | | | | | | |
| *Eugenia axillaris* | white stopper | Native | | | | |
| *Melaleuca quinquenervia* | punktree | Exotic | | | | I |
| *Rhodomyrtus tomentosa* | rose myrtle | Exotic | | | | I |
| *Syzygium cumini* | Java plum | Exotic | | | | I |
| ***Family: Olacaceae (olax)*** | | | | | | |
| *Ximenia americana* | hog plum | Native | | | | |
| ***Family: Oleaceae (olive)*** | | | | | | |
| *Fraxinus caroliniana* | pop ash | Native | | | R | |
| ***Family: Onagraceae (eveningprimrose)*** | | | | | | |
| *Ludwigia octovalvis* | Mexican primrosewillow | Native | | | | |
| ***Family: Polygalaceae*** | | | | | | |
| *Polygala incarnata* | procession flower | Native | | | R | |
| ***Family: Rubiaceae (madder)*** | | | | | | |
| *Cephalanthus occidentalis* | common buttonbush | Native | | | | |
| *Psychotria nervosa* | wild coffee | Native | | | | |
| *Psychotria sulzneri* | shortleaf wild coffee | Native | | | | |
| *Randia aculeata* | white indigoberry | Native | | | | |
| ***Family: Salicaceae (willow)*** | | | | | | |
| *Salix caroliniana* | Carolina willow | Native | | | | |
| ***Family: Sapindaceae (soapberry)*** | | | | | | |
| *Cupaniopsis anacardioides* | carrotwood | Exotic | | | | I |
| ***Family: Sapotaceae (sapodilla)*** | | | | | | |
| *Sideroxylon celastrinum* | saffron plum | Native | | | | |
| ***Family: Verbenaceae (vervain)*** | | | | | | |
| *Lantana camara* | lantana | Exotic | | | | I |

## Plant Species List for Mullock Creek Preserve

Scientific and Common names from this list were obtained from Wunderlin 2003.

| Scientific Name | Common Name | Native/Exotic | FDACS | FNAI | IRC | EPPC |
|---|---|---|---|---|---|---|
| ***Family: Veronicaceae (speedwell)*** | | | | | | |
| *Bacopa caroliniana* | lemon bacopa | Native | | | | |
| ***Family: Vitaceae (grape)*** | | | | | | |
| *Ampelopsis arborea* | peppervine | Native | | | | |
| *Vitus aestivalis* | summer grape | Native | | | I | |
| *Vitis rotundifolia* | muscadine (wild grape vine) | Native | | | | |

**Key**

**Florida EPPC Status**

I = species that are invading and disrupting native plant communities

II = species that have shown a potential to disrupt native plant communities

**FDACS (Florida Department of Agriculture and Consumer Services)**

E = Endangered

T = Threatened

CE = Commercially Exploited

**IRC (Institute for Regional Conservation)**

CI = Critically Imperiled

I = Imperiled

R = Rare

**FNAI (Florida Natural Areas Inventory)**

G= Global Status

T= Threatened

CE= Commercially Exploited

1= Critically imperiled because of extreme rarity (5 or fewer occurrences or less than 1000 individuals) or because of extreme vulnerbility to extinction due to some natural or man-made factor.

2= Imperiled because of rarity (6 to 20 occurrences or less than 3000 individuals) or because of vulnerbility to extinction due to some natural or man-made factor.

3= Either very rare and local throughout its range (21-200 occurences or less than 10,000 individuals) or found locally in a restricted range or vulnerable to extinction from other factors.

4= Apparently secure

## Wildlife Species List for Mullock Creek Preserve

| | | Designated Status | | |
|---|---|---|---|---|
| **Scientific Name** | **Common Name** | **FWC** | **FWS** | **FNAI** |
| **MAMMALS** | | | | |
| ***Family: Dasypodidae (armadillos)*** | | | | |
| *Dasypus novemcinctus* | nine-banded armadillo * | | | |
| ***Family: Felidae (cats)*** | | | | |
| *Lynx rufus* | bobcat | | | |
| ***Family: Procyonidae (raccoons)*** | | | | |
| *Procyon lotor* | raccoon | | | |
| ***Family: Mustelidae (weasels, otters and relatives)*** | | | | |
| *Lutra canadensis* | northern river otter | | | |
| ***Family: Suidae (old world swine)*** | | | | |
| *Sus scrofa* | feral hog * | | | |
| ***Family: Sciuridae (squirrels and their allies)*** | | | | |
| *Sciurus carolinensis* | eastern gray squirrel | | | |
| **BIRDS** | | | | |
| ***Family: Phasianidae (pheasant, grouse, turkeys and their allies)*** | | | | |
| ***Subfamily: Meleagridinae (turkeys)*** | | | | |
| *Meleagris gallopavo* | wild turkey | | | |
| ***Family: Anhingidae (anhingas)*** | | | | |
| *Anhinga anhinga* | anhinga | | | |
| ***Family: Pelecanidae (pelicans)*** | | | | |
| *Pelecanus erythrorhynchos* | American white pelican | | | |
| ***Family: Ardeidae (herons, egrets, bitterns)*** | | | | |
| *Ardea herodius* | great blue heron | | | |
| *Ardea alba* | great egret | | | |
| ***Family: Cathartidae (new world vultures)*** | | | | |
| *Coragyps atratus* | black vulture | | | |
| *Cathartes aura* | turkey vulture | | | |
| ***Family: Pandionidae (ospreys)*** | | | | |
| *Pandion haliaetus* | osprey | | | |
| ***Family: Accipitridae (hawks, kites, accipiters, harriers, eagles)*** | | | | |
| *Elanoides forficatus* | swallow-tailed kite | | | G5/S2 |
| *Hailaeetus leucocephalus* | bald eagle | T | | G5/S3 |
| *Buteo lineatus* | red-shouldered hawk | | | |
| ***Family: Columbidae (pigeons and doves)*** | | | | |
| *Zenaida macroura* | mourning dove | | | |
| *Columbina passerina* | common ground-dove | | | |
| ***Family: Alcedinidae (kingfishers)*** | | | | |
| *Ceryle alcyon* | belted kingfisher | | | |
| ***Family: Picidae (woodpeckers)*** | | | | |
| ***Subfamily: Picinae*** | | | | |
| *Melanerpes carolinus* | red-bellied woodpecker | | | |
| *Picoides pubescens* | downy woodpecker | | | |
| *Dryocopus pileatus* | pileated woodpecker | | | |
| ***Family: Falconidae (falcons)*** | | | | |
| ***Subfamily: Falconinae (falcons)*** | | | | |
| *Falco sparverius* | American kestrel | | | |
| ***Family: Tyrannidae (tyrant flycatchers)*** | | | | |
| ***Subfamily: Fluvicolinae*** | | | | |
| *Sayornis phoebe* | eastern phoebe | | | |
| *Myiarchus crinicensis* | great-crested flycatcher | | | |
| ***Family: Laniidae (shrikes)*** | | | | |
| *Lanius ludovicianus* | loggerhead shrike | | | |
| ***Family: Vireonidae (vireos)*** | | | | |
| *Vireo griseus* | white-eyed vireo | | | |
| *Vireo solitarius* | blue-headed vireo | | | |

## Wildlife Species List for Mullock Creek Preserve

| | | Designated Status | | |
|---|---|---|---|---|
| **Scientific Name** | **Common Name** | **FWC** | **FWS** | **FNAI** |
| ***Family: Corvidae (crows, jays, etc.)*** | | | | |
| *Cyanocitta cristata* | blue jay | | | |
| *Corvus ossifragus* | fish crow | | | |
| ***Family: Hirundinidae (swallows)*** | | | | |
| ***Subfamily: Hirundinidae*** | | | | |
| *Tachycineta bicolor* | tree swallow | | | |
| ***Family: Troglodytidae (wrens)*** | | | | |
| *Troglodytes aedon* | house wren | | | |
| *Thryothorus ludovicianus* | Carolina wren | | | |
| ***Family: Polioptilidae*** | | | | |
| *Polioptila caerulea* | blue-gray gnatcatcher | | | |
| ***Family: Turdidae (thrushes)*** | | | | |
| *Catharus guttatus* | hermit thrush | | | |
| ***Family: Mimidae (mockingbirds and thrashers)*** | | | | |
| *Dumetella carolinensis* | gray catbird | | | |
| *Mimus polyglottos* | northern mockingbird | | | |
| ***Family: Parulidae (wood-warblers)*** | | | | |
| *Seiurus aurocapillus* | ovenbird | | | |
| *Geothlypis tristis* | common yellowthroat | | | |
| *Setophaga ruticilla* | American redstart | | | |
| *Parula americana* | northern parula | | | |
| *Setophaga palmarum* | palm warbler | | | |
| *Setophaga coronata* | yellow-rumped warbler | | | |
| *Setophaga dominica* | yellow-throated warbler | | | |
| ***Family: Cardinalidae (cardinals, some grosbeaks, new world buntings, etc.)*** | | | | |
| *Cardinalis cardinalis* | northern cardinal | | | |
| *Pheucticus ludovicianus* | rose-breasted grosbeak | | | |
| ***Family: Icteridae (blackbirds, orioles, etc.)*** | | | | |
| *Quiscalus quiscula* | common grackle | | | |
| **REPTILES** | | | | |
| ***Family: Alligatoridae (alligator and caiman)*** | | | | |
| *Alligator mississippiensis* | American alligator | FT | T(SA) | G5/S4 |
| ***Family: Emydidae (box and water turtles)*** | | | | |
| *Pseudemys floridana peninsularis* | peninsula cooter | | | |
| *Pseudemys nelsoni* | Florida redbelly turtle | | | |
| ***Family: Testudinidae (gopher tortoises)*** | | | | |
| *Gopherus polyphemus* | gopher tortoise | T | | G3/S3 |
| ***Family: Polychridae (anoles)*** | | | | |
| *Anolis sagrei* | brown anole * | | | |
| ***Family: Colubridae (harmless egg-laying snakes)*** | | | | |
| *Coluber constrictor priapus* | southern black racer | | | |
| *Pantherophis guttatus* | eastern corn snake | | | |
| **AMPHIBIANS** | | | | |
| ***Family: Ranidae (true frogs)*** | | | | |
| *Rana utricularia* | southern leopard frog | | | |
| **FISHES** | | | | |
| ***Family: Gerreidae (mojarras)*** | | | | |
| *Eugerres spp., Gerres spp.* | mojarra spp. | | | |
| ***Family: Centropomidae (snooks)*** | | | | |
| *Centropomus undecimalis* | common snook | | | |
| ***Family: Centrarchidae (sunfishes and basses)*** | | | | |
| *Micropterus salmoides* | largemouth bass | | | |
| ***Family: Cichlidae (cichlids)*** | | | | |
| *Cichlasoma urophthalmus* | Mayan cichlid * | | | |

## Wildlife Species List for Mullock Creek Preserve

| | | Designated Status | | |
|---|---|---|---|---|
| **Scientific Name** | **Common Name** | **FWC** | **FWS** | **FNAI** |
| **INSECTS** | | | | |
| ***Family: Libellulidae (skimmer dragonflies)*** | | | | |
| *Crocothermis servilia* | scarlet skimmer | | | |
| *Pachydiplax longipennis* | blue dasher | | | |
| *Perithemis tenera* | eastern amberwing dragonfly | | | |
| ***Family: Romaleidae (lubber grasshoppers)*** | | | | |
| *Romalea microptera* | eastern lubber grasshopper | | | |
| ***Family: Pieridae (whites and sulphurs)*** | | | | |
| ***Subfamily: Coliadinae (sulphurs)*** | | | | |
| *Colias eurytheme* | alfalfa butterfly | | | |
| *Phoebis sennae* | cloudless sulphur | | | |
| ***Family: Nymphalidae (brushfoots)*** | | | | |
| ***Subfamily: Heliconiinae (longwings)*** | | | | |
| *Agraulis vanillae* | gulf fritillary | | | |
| *Heliconius charitonius* | zebra | | | |
| ***Subfamily: Nymphalinae (brushfoots)*** | | | | |
| *Anartia jatrophae* | white peacock | | | |
| **GASTROPODS** | | | | |
| ***Family: Ampullariidae (apple snails)*** | | | | |
| *Marisa cornuarietis* | giant ram's horn snail * | | | |
| *Pomaceae paludosa* | Florida apple snail | | | |

## KEY:

**FWC = Florida Fish & Wildlife Conservation Commission**
**FWS = U.S. Fish & Wildlife Service**
E - Endangered
T - Threatened
SSC - Species of Special Concern

**FNAI = Florida Natural Areas Inventory**
G - Global rarity of the species
S - State rarity of the species
T - Subspecies of special population
1 - Critically imperiled
2 - Imperiled
3 - Rare, restricted or otherwise vulnerable to extinction
4 - Apparently secure
5 - Demonstratebly secure

*** = Non-native**

## *Expended Costs 2007-2017*

| **Natural Resource Management** | | |
|---|---|---|
| Item | Funding Source | Costs |
| Exotic Plant Treatments | C20/20 | In House |
| Exotic Plant Treatments/Native Planting | Grants (SFWMD) | $14,900.00 |
| Mechanical Brush Reduction | C20/20 | $1,000.00 |
| Management Trail Maintenance/Mowing | C20/20 | $1,000.00 |
| | **Total** | **$16,900.00** |

| **Overall Protection** | | |
|---|---|---|
| Item | Funding Source | Costs |
| Boundary Signs | C20/20 | $100.00 |
| Debris Removal | C20/20 | $100.00 |
| | **Total** | **$200.00** |

| **MCP Preserve Total Expended Cost To Date** | **$17,100.00** |
|---|---|

## *Projected Cost Formulas*

| **Natural Resource Management** | | | |
|---|---|---|---|
| Item | Funding Source | Costs | Occurrences |
| Exotic Plant Treatments | C20/20 | In House | 10 |
| Exotic Animal/Hog Removal | C20/20 | $300.00 | 3 |
| Mowing Access Trail | C20/20 | $500.00 | 5 |
| Mechanical Brush Reduction (In House) | C20/20 | $500.00 | 3 |

| **Overall Protection** | | | |
|---|---|---|---|
| Item | Funding Source | Costs | Occurrences |
| Boundary Sign Replacement | C20/20 | $10.00 | 5 |
| Fencing | C20/20 | $13,914.00 | 1 |
| Gate (south boundary at utilities) | C20/20 | $1,000.00 | 1 |
| Debris Removal | C20/20 | $150.00 | 2 |

**Due to the timeframe of this management report, all associated management expenses have been projected over 10 years.**

Total costs have been distributed evenly across a 10 year timeframe to generate a projected annual management expense of **$2,021 per year**.

Total projected annual management expense will be **$20,214 over 10 years.**

Total projected restoration expense to occur within the timeframe of this plan will be **$0.**