Exhibit D-7-T

CORKSCREW WOODS
LEE COUNTY PROTECTED SPECIES SURVEY

November 2011

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COMMUNITY DEVELOPMENT
DOS2013-00034

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Project No. 11CPL2065

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INTRODUCTION

Passarella & Associates, Inc. (PAI) conducted a protected species survey on Corkscrew Woods (Project) on September 16 and 19, 2011. The survey was conducted to meet the Lee County Land Development Code (LDC) Chapter 10, Article III, Division 8 (Protection of Habitat) Standards.

The Project totals 722.12± acres and is located in Sections 21 and 28, Township 46 South, Range 26 East, Lee County (Figure 1). The site is located immediately south of Corkscrew Road, approximately 0.3 mile west of the intersection of Corkscrew Road and Alico Road. The surrounding land uses include Corkscrew Road to the north, residential development to the west, South Florida Water Management District (SFWMD) preservation lands to the east and southeast, and Lee County preservation lands to the south (Appendix A).

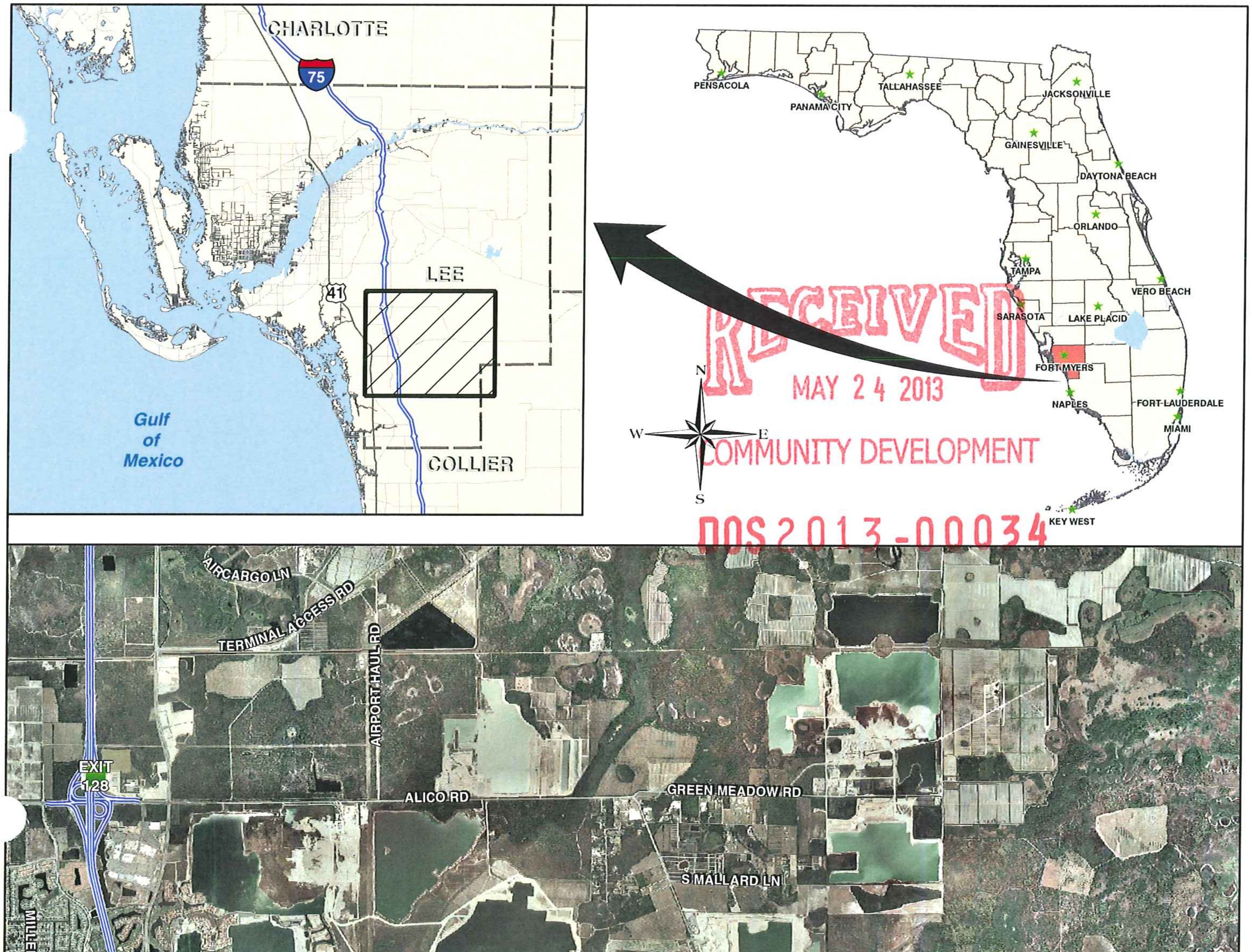
The property consists primarily of a rock quarry and disturbed land with forested wetlands, herbaceous wetlands, and forested uplands located on the south and east sides of the Project. The rock quarry consists of 214.20± acres and the disturbed land includes 285.37± acres, together comprising approximately 70 percent of the total Project area.

LAND USES AND VEGETATION ASSOCIATIONS

The vegetation mapping for the Project was conducted using 2011 Lee County rectified aerials (Scale: 1" = 300'). Groundtruthing to map the vegetative communities was conducted on September 16 and 20, 2011 utilizing the Florida Land Use, Cover and Forms Classification System (FLUCFCS), Levels III and IV (Florida Department of Transportation 1999). Level IV FLUCFCS was utilized to denote hydrological conditions and disturbance. "E" codes were used to identify levels of exotic infestation (i.e., melaleuca (*Melaleuca quinquenervia*) and Brazilian pepper (*Schinus terebinthifolius*)). AutoCAD Map 3D 2011 software was used to determine the acreage of each mapping area, produce summaries, and generate the FLUCFCS map (Figure 2). A total of 24 vegetative associations and land uses (i.e., FLUCFCS codes) were identified on the property. Table 1 provides the breakdown of the FLUCFCS codes by acreage, while a description of each classification follows.

Table 1. Existing Land Use and Cover Summary

FLUCFCS Code	Description	Acreage	Percent of Total
163	Rock Quarry	214.20	29.7
3209 E1	Shrub and Brushland, Disturbed (0-24% Exotics)	0.27	<0.1
3209 E2	Shrub and Brushland, Disturbed (25-49% Exotics)	2.76	0.4
3209 E4	Shrub and Brushland, Disturbed (76-100% Exotics)	1.56	0.2
3219 E1	Palmetto Prairie, Disturbed (0-24% Exotics)	1.88	0.3
4119 E1	Pine Flatwoods, Disturbed (0-24% Exotics)	50.59	7.0
4159 E1	Pine, Disturbed (0-24% Exotics)	1.97	0.3
4279 E1	Live Oak, Disturbed (0-24% Exotics)	2.90	0.4



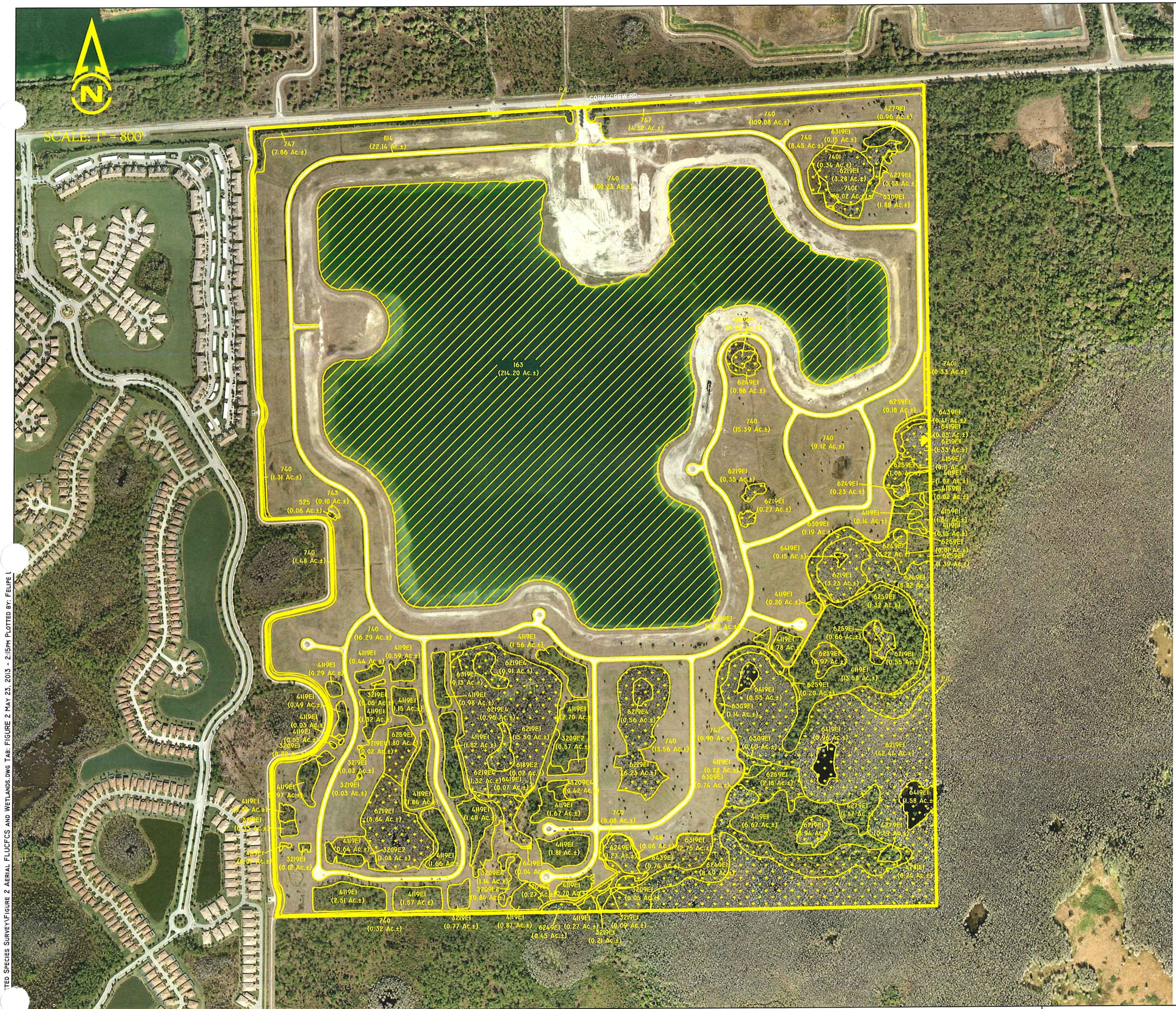
PROJECT LOCATION
SEC 21,28, TWP 46 S, RNG 26 E

FIGURE 1. PROJECT LOCATION MAP
CORKSCREW WOODS

DRAWN BY	DATE
D.B.	9/19/11
REVIEWED BY	DATE
S.J.	9/19/11
REVISED	DATE

PASSARELLA & ASSOCIATES INC
Consulting Ecologists

J:\2011\11CPL2065\GIS\...e Co Comprehensive Plan Amendment\Figures\Figure 1 Project Location Map.mxd - 5/23/2013 @ 2:12:52 PM



LEGEND:

⁘	SFWMD WETLANDS (125.04 Ac.±)
▨	SFWMD "OTHER SURFACE WATERS" (214.26 Ac.±)

FLUCFCS CODES	DESCRIPTIONS	ACREAGE	% OF TOTAL
163	ROCK QUARRY	214.20 Ac.±	29.7%
3209 E1	SHRUB AND BRUSHLAND, DISTURBED (0-24% EXOTICS)	0.27 Ac.±	0.0%
3209 E2	SHRUB AND BRUSHLAND, DISTURBED (25-49% EXOTICS)	2.76 Ac.±	0.4%
3209 E4	SHRUB AND BRUSHLAND, DISTURBED (76-100% EXOTICS)	1.56 Ac.±	0.2%
3219 E1	PALMETTO PRAIRIE, DISTURBED (0-24% EXOTICS)	1.88 Ac.±	0.3%
4119 E1	PINE FLATWOODS, DISTURBED (0-24% EXOTICS)	50.59 Ac.±	7.0%
4159 E1	PINE, DISTURBED (0-24% EXTOTICS)	1.97 Ac.±	0.3%
4279 E1	LIVE OAK, DISTURBED (0-24% EXOTICS)	2.90 Ac.±	0.4%
4281 E1	CABBAGE PALM, HYDRIC, DISTURBED (0-24% EXOTICS)	0.24 Ac.±	0.0%
525	SHALLOW POND	0.06 Ac.±	0.0%
6189 E2	WILLOW, DISTURBED (25-49% EXOTICS)	0.02 Ac.±	0.0%
6219 E1	CYPRESS, DISTURBED (0-24% EXOTICS)	80.32 Ac.±	11.1%
6219 E4	CYPRESS, DISTURBED (76-100% EXOTICS)	3.75 Ac.±	0.5%
6249 E1	CYPRESS/PINE/CABBAGE PALM, DISTURBED (0-24% EXOTICS)	17.34 Ac.±	2.4%
6259 E1	HYDRIC PINE, DISTURBED (0-24% EXOTICS)	9.77 Ac.±	1.4%
6309 E1	WETLAND FOREST MIXED, DISTURBED (0-24% EXOTICS)	5.35 Ac.±	0.7%
6319 E1	WETLAND SHRUB, DISTURBED (0-24% EXOTICS)	3.03 Ac.±	0.4%
6419 E1	FRESHWATER MARSH, DISTURBED (0-24% EXOTICS)	3.38 Ac.±	0.5%
6439 E1	WET PRAIRIE, DISTURBED (0-24% EXOTICS)	1.15 Ac.±	0.2%
740	DISTURBED LAND	285.37 Ac.±	39.5%
7401	DISTURBED LAND, HYDRIC	0.69 Ac.±	0.1%
743	SPOIL AREAS	0.10 Ac.±	0.0%
747	BERM	13.28 Ac.±	1.8%
814	ROAD	22.14 Ac.±	3.1%
	TOTAL	722.12 Ac.±	100.0%

NOTES:

AERIAL PHOTOGRAPHS WERE ACQUIRED THROUGH THE LEE COUNTY PROPERTY APPRAISER'S OFFICE WITH FLIGHT DATES OF FEBRUARY - MARCH 2011.

PROPERTY BOUNDARY PER MORRIS-DEPEW DRAWING No. 11066 CONSERVATION AREAS EXHIBIT.DWG DATED SEPTEMBER 20, 2011.

FLUCFCS LINES ESTIMATED FROM 1"=300' AERIAL PHOTOGRAPHS AND LOCATIONS APPROXIMATED.

FLUCFCS PER FLORIDA LAND USE, COVER AND FORMS CLASSIFICATION SYSTEM (FLUCFCS) (FDOT 1999).

UPLAND/WETLAND LIMITS ARE GENERALLY DEPICTED PER SOUTH FLORIDA WATER MANAGEMENT DISTRICT (SFWMD) APPLICATION NO. 080827-7.

J:\2011\11CPL2065\2011 …TED SPECIES SURVEY\FIGURE 2 AERIAL FLUCFCS AND WETLANDS.DWG TAB: FIGURE 2 MAY 23, 2013 - 2:15PM PLOTTED BY: FELIPE L

REVISIONS	DATE

	DATE
DRAWN BY D.B.	9/23/11
DESIGNED BY S.J.	9/23/11
REVIEWED BY S.J.	9/23/11

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PASSARELLA & ASSOCIATES INC
Consulting Ecologists

CORKSCREW WOODS
AERIAL WITH FLUCFCS AND WETLANDS MAP

DRAWING No.
11CPL2065

SHEET No.
FIGURE 2

Table 1. (Continued)

FLUCFCS Code	Description	Acreage	Percent of Total
4281 E1	Cabbage Palm, Hydric, Disturbed (0-24% Exotics)	0.24	<0.1
525	Shallow Pond	0.06	<0.1
6189 E2	Willow, Disturbed (25-49% Exotics)	0.02	<0.1
6219 E1	Cypress, Disturbed (0-24% Exotics)	80.32	11.1
6219 E4	Cypress, Disturbed (75-100 % Exotics)	3.75	0.5
6249 E1	Cypress/Pine/Cabbage Palm, Disturbed (0-24% Exotics)	17.34	2.4
6259 E1	Hydric Pine, Disturbed (0-24% Exotics)	9.77	1.4
6309 E1	Wetland Forest Mixed, Disturbed (0-24% Exotics)	5.35	0.7
6319 E1	Wetland Shrub, Disturbed (0-24% Exotics)	3.03	0.4
6419 E1	Freshwater Marsh, Disturbed (0-24% Exotics)	3.38	0.5
6439 E1	Wet Prairie, Disturbed (0-24% Exotics)	1.15	0.2
740	Disturbed Land	285.37	39.5
7401	Disturbed Land, Hydric	0.69	0.1
743	Spoil Areas	0.10	<0.1
747	Berm	13.28	1.8
814	Road	22.14	3.1
Total		**722.12**	**100.0**

Rock Quarry (FLUCFCS Code 163)
This land use includes unvegetated open water.

Shrub and Brushland, Disturbed (0-24% Exotics) (FLUCFCS Code 3209 E1)
This upland community contains an open canopy with scattered slash pine (*Pinus elliottii*), melaleuca, and cabbage palm (*Sabal palmetto*). The sub-canopy consists of slash pine, wax myrtle (*Myrica cerifera*), dahoon holly (*Ilex cassine*), and myrsine (*Rapanea punctata*). The ground cover includes bahiagrass (*Paspalum notatum*), wiregrass (*Aristida stricta*), chalky bluestem (*Andropogon virginicus*), and saw palmetto (*Serenoa repens*).

Shrub and Brushland, Disturbed (25-49% Exotics) (FLUCFCS Code 3209 E2)
This upland community is similar to FLUCFCS Code 3209 E1 except with a higher percentage of melaleuca and Peruvian primrose willow (*Ludwigia peruviana*) in the sub-canopy.

Shrub and Brushland, Disturbed (76-100% Exotics) (FLUCFCS Code 3209 E4)
This upland community is similar to FLUCFCS Code 3209 E2 except with a higher percentage of melaleuca and Peruvian primrose willow in the sub-canopy.

Palmetto Prairie, Disturbed (0-24% Exotics) (FLUCFCS Code 3219 E1)
The canopy and sub-canopy of this upland community contain scattered slash pine, wax myrtle, and saltbush (*Baccharis halimifolia*). The ground cover is dominated by saw palmetto.

Pine Flatwoods, Disturbed (0-24% Exotics) (FLUCFCS Code 4119 E1)
This upland community has a canopy that is dominated by slash pine, with scattered melaleuca and cabbage palm. The sub-canopy consists of slash pine, dahoon holly, Brazilian pepper, melaleuca, and myrsine. The ground cover is dominated by saw palmetto with wiregrass, chalky bluestem, grapevine (*Vitis rotundifolia*), and greenbriar (*Smilax auriculata*).

Pine, Disturbed (0-24% Exotics) (FLUCFCS Code 4159 E1)
The canopy vegetation of this upland community includes slash pine, cabbage palm, and melaleuca. The sub-canopy includes melaleuca, wax myrtle, and Brazilian pepper. The ground cover includes dog fennel (*Eupatorium capillifolium*), flat-topped goldenrod (*Euthamia caroliniana*), and wiregrass.

Live Oak, Disturbed (0-24% Exotics) (FLUCFCS Code 4279 E1)
This upland habitat has a canopy of live oak (*Quercus virginiana*) and scattered cabbage palm. The sub-canopy vegetation is sparse, but includes wax myrtle and dahoon holly. The ground cover is predominantly saw palmetto with scattered grapevine.

Cabbage Palm, Hydric, Disturbed (0-24% Exotics) (FLUCFCS Code 4281 E1)
This wetland community type contains a canopy dominated by cabbage palm with scattered slash pine. The sub-canopy includes cabbage palm and myrsine. The ground cover includes swamp fern (*Blechnum serrulatum*) and sawgrass (*Cladium jamaicensis*).

Shallow Pond (FLUCFCS Code 525)
This land use includes unvegetated open water with scattered waterlily (*Nymphaea* sp.)

Willow, Disturbed (25-49% Exotics) (FLUCFCS Code 6189 E2)
This wetland plant community contains Carolina willow (*Salix caroliniana*) in the canopy. The sub-canopy includes Carolina willow and Peruvian primrose willow. The ground cover includes swamp fern, sawgrass, and Asiatic pennywort (*Centella asiatica*).

Cypress, Disturbed (0-24% Exotics) (FLUCFCS Code 6219 E1)
This wetland community type has a canopy dominated by cypress (*Taxodium distichum*). The sub-canopy contains cypress, Brazilian pepper, cabbage palm, myrsine, and wax myrtle. The ground cover includes swamp fern, leather fern (*Acrostichum danaeifolium*), Boston fern (*Nephrolepis* sp.), sawgrass, maidencane (*Panicum hemitomon*), and scattered West Indian marsh grass (*Hymenachne amplexicaulis*).

Cypress, Disturbed (76-100% Exotics) (FLUCFCS Code 6219 E4)
This wetland community type is similar to FLUCFCS Code 6219 E1, with a much higher percentage of West Indian marsh grass in the ground cover.

Cypress/Pine/Cabbage Palm, Disturbed (0-24% Exotics) (FLUCFCS Code 6249 E1)
This wetland habitat type contains cypress and slash pine in the canopy. The sub-canopy contains cypress, slash pine, melaleuca, myrsine, Brazilian pepper, and cabbage palm. The ground cover includes myrsine, Brazilian pepper, cabbage palm, climbing hempvine (*Mikania scandens*), caesarweed (*Urena lobata*), swamp fern, and maidencane.

Hydric Pine, Disturbed (0-24% Exotics) (FLUCFCS Code 6259 E1)

This wetland community contains slash pine and scattered melaleuca in the canopy. The sub-canopy consists of slash pine, melaleuca, and wax myrtle. The ground cover includes corkwood (*Stillingia aquatica*), bushy bluestem (*Andropogon glomeratus*), beakrush (*Rhynchospora microcarpa*), inundated beakrush (*Rhynchospora inundata*), and bog-button (*Lachnocaulon* sp.).

Wetland Forest Mixed, Disturbed (0-24% Exotics) (FLUCFCS Code 6309 E1)

This wetland habitat includes laurel oak (*Quercus laurifolia*), slash pine, cabbage palm, and cypress in the canopy. The sub-canopy includes scattered wax myrtle and Brazilian pepper. The ground cover contains swamp fern with scattered maidencane and sawgrass.

Wetland Shrub, Disturbed (0-24% Exotics) (FLUCFCS Code 6319 E1)

This wetland community includes scattered red maple (*Acer rubrum*), slash pine, laurel oak, and cabbage palm in the canopy. The sub-canopy includes wax myrtle, saltbush, red maple, cabbage palm, dahoon holly, and scattered Peruvian primrose willow. The ground cover includes swamp fern, Boston fern, sawgrass, beaksedge (*Rhynchospora* sp.), maidencane, and scattered West Indian marsh grass.

Freshwater Marsh, Disturbed (0-24% Exotics) (FLUCFCS Code 6419 E1)

This herbaceous wetland community has an open canopy and sub-canopy. The ground cover vegetation includes maidencane, sandweed (*Hypericum fasciculatum*), pickerelweed (*Pontederia cordata*), arrowhead (*Sagittaria lancifolia*), beaksedge, alligator flag (*Thalia geniculata*), rush fuirena (*Fuirena scirpoides*), with scattered torpedograss (*Panicum repens*) and West Indian marsh grass.

Wet Prairie, Disturbed (0-24% Exotics) (FLUCFCS Code 6439 E1)

This wetland habitat has an open canopy and sub-canopy. The ground cover vegetation includes gulfdune paspalum (*Paspalum monostachyum*), beaksedge, sandweed, rush fuirena, and maidencane.

Disturbed Land (FLUCFCS Code 740)

This upland plant community has an open canopy and sub-canopy with scattered cabbage palm. The ground cover includes dog fennel, ragweed (*Ambrosia artemisiifolia*), sandspur (*Cenchrus* sp.), caesarweed, knotroot foxtail (*Setaria parviflora*), shrubby false buttonweed (*Spermacoce verticillata*), torpedograss, smutgrass (*Sporobolus indicus*), hairy beggar-ticks (*Bidens pilosa*), cogongrass (*Imperata cylindrica*), and bahiagrass (*Paspalum notatum*).

Disturbed Land, Hydric (FLUCFCS Code 7401)

The wetland plant community has an open canopy and sub-canopy. The ground cover includes bushy bluestem, torpedograss, musky mint (*Hyptis alata*), knotroot foxtail, and maidencane.

Spoil Areas (FLUCFCS Code 743)

The canopy and sub-canopy of this land use are open. The ground cover includes dog fennel, ragweed, shrubby false buttonweed, and bahiagrass.

Berm (FLUCFCS Code 747)
The canopy and sub-canopy are primarily open with some areas containing planted Atlantic white cedar (*Chamaecyparis thyoides*). The ground cover includes dog fennel, shrubby false buttonweed, smutgrass, and bahiagrass.

Road (FLUCFCS Code 814)
This land use includes an unvegetated gravel road.

METHODOLOGY AND DISCUSSION

Surveys for Lee County protected species are based on the presence of specific vegetation associations and habitat types as outlined in the LDC. The frequency of transects performed in these habitats was designed to meet the 80 percent minimum coverage requirement. Cursory surveys were also conducted in those habitats not technically required to be surveyed per the LDC. However, based on past experience and conversations with Lee County Division of Environmental Sciences staff, these areas were reviewed for certain protected species as a precautionary measure. Table 2 outlines those protected species that may inhabit or utilize a particular vegetation association.

Table 2. Potential Lee County Protected Species by Habitat Type

FLUCFCS Code	Description	Potential Protected Species
163*	Rock Quarry	N/A
3209 E1 3209 E2 3209 E4*	Shrub and Brushland, Disturbed (0-100% Exotics)	Eastern Indigo Snake (*Drymarchon corais couperi*)
		Gopher Tortoise (*Gopherus polyphemus*)
		Gopher Frog (*Rana capito*)
		Curtis Milkweed (*Asclepias curtissii*)
		Fakahatchee Burmannia (*Burmannia flava*)
		Florida Coontie (*Zamia floridana*)
3219 E1	Palmetto Prairie, Disturbed (0-24% Exotics)	Eastern Indigo Snake (*Drymarchon corais couperi*)
		Gopher Tortoise (*Gopherus polyphemus*)
		Gopher Frog (*Rana capito*)
		Crested Caracara (*Caracara cheriway*)
		Florida Sandhill Crane (*Grus canadensis pratensis*)[1]
		Southeastern American Kestrel (*Falco sparverius paulus*)
		Florida Black Bear (*Ursus americanus floridanus*)
		Beautiful Pawpaw (*Deeringothamnus pulchellus*)
		Curtis Milkweed (*Asclepias curtissii*)
		Fakahatchee Burmannia (*Burmannia flava*)
		Florida Coontie (*Zamia floridana*)

Table 2. (Continued)

FLUCFCS Code	Description	Potential Protected Species
4119 E1	Pine Flatwoods, Disturbed (0-24% Exotics)	Eastern Indigo Snake (*Drymarchon corais couperi*)
		Gopher Tortoise (*Gopherus polyphemus*)[2]
		Gopher Frog (*Rana capito*)
		Southeastern American Kestrel (*Falco sparverius paulus*)
		Red-Cockaded Woodpecker (*Picoides borealis*)
		Florida Panther (*Puma concolor coryi*)
		Big Cypress Fox Squirrel (*Sciurus niger avicennia*)
		Florida Black Bear (*Ursus americanus floridanus*)
		Fakahatchee Burmannia (*Burmannia flava*)
		Satinleaf (*Crysophyllum olivaeforme*)
		Beautiful Pawpaw (*Deeringothamnus pulchellus*)
		Florida Coontie (*Zamia floridana*)
4159 E1	Pine, Disturbed (0-24% Exotics)	Eastern Indigo Snake (*Drymarchon corais couperi*)
		Gopher Tortoise (*Gopherus polyphemus*)[2]
		Gopher Frog (*Rana capito*)
		Southeastern American Kestrel (*Falco sparverius paulus*)
		Red-Cockaded Woodpecker (*Picoides borealis*)
		Florida Panther (*Puma concolor coryi*)
		Big Cypress Fox Squirrel (*Sciurus niger avicennia*)
		Florida Black Bear (*Ursus americanus floridanus*)
		Fakahatchee Burmannia (*Burmannia flava*)
		Satinleaf (*Crysophyllum olivaeforme*)
		Beautiful Pawpaw (*Deeringothamnus pulchellus*)
		Florida Coontie (*Zamia floridana*)
4279 E1	Live Oak, Disturbed (0-24% Exotics)	Eastern Indigo Snake (*Drymarchon corais couperi*)
		Gopher Tortoise (*Gopherus polyphemus*)
		Florida Panther (*Puma concolor coryi*)
		Florida Black Bear (*Ursus americanus floridanus*)
		Simpson's Stopper (*Myrcianthes fragrans* var. *simpsonii*)
		Hand Adder's Tongue Fern (*Ophioglossum palmatum*)
		Twisted Air Plant (*Tillandsia flexuosa*)

Table 2. (Continued)

FLUCFCS Code	Description	Potential Protected Species
4281 E1	Cabbage Palm, Hydric, Disturbed (0-24% Exotics)	Eastern Indigo Snake (*Drymarchon corais couperi*)
		Crested Caracara (*Caracara cheriway*)
		Florida Panther (*Puma concolor coryi*)
		Florida Black Bear (*Ursus americanus floridanus*)
		Simpson's Stopper (*Myrcianthes fragrans* var. *simpsonii*)
525	Shallow Pond	American Alligator (*Alligator mississippiensis*)
		Limpkin (*Aramus guarauna*)
		Little Blue Heron (*Egretta caerulea*)
		Reddish Egret (*Egretta rufescens*)
		Roseate Spoonbill (*Ajaia ajaja*)
		Snowy Egret (*Egretta thula*)
		Tri-Colored Heron (*Egretta tricolor*)
		Everglades Mink (*Mustela vison evergladensis*)
6189 E2	Willow, Disturbed (25-49 % Exotics)	American Alligator (*Alligator mississippiensis*)
		Little Blue Heron (*Egretta caerulea*)
		Tri-Colored Heron (*Egretta tricolor*)
		Snowy Egret (*Egretta thula*)
6219 E1 6219 E4*	Cypress, Disturbed (0-100% Exotics)	American Alligator (*Alligator mississippiensis*)
		Little Blue Heron (*Egretta caerulea*)
		Tri-Colored Heron (*Egretta tricolor*)
		Snowy Egret (*Egretta thula*)
		Arctic Peregrine Falcon (*Falco peregrinus tundrius*)
		Wood Stork (*Mycteria americana*)
		Everglades Mink (*Mustela vison evergladensis*)
		Big Cypress Fox Squirrel (*Sciurus niger avicennia*)
		Florida Panther (*Puma concolor coryi*)
		Gopher Frog (*Rana capito*)
		Limpkin (*Aramus guarauna*)
		Florida Black Bear (*Ursus americanus floridanus*)
6249 E1	Cypress/Pine/Cabbage Palm, Disturbed (0-24% Exotics)	Gopher Frog (*Rana capito*)
		Arctic Peregrine Falcon (*Falco peregrinus tundrius*)
		Little Blue Heron (*Egretta caerulea*)
		Tri-Colored Heron (*Egretta tricolor*)
		Snowy Egret (*Egretta thula*)
		Red-Cockaded Woodpecker (*Picoides borealis*)

Table 2. (Continued)

FLUCFCS Code	Description	Potential Protected Species
6249 El	Cypress/Pine/Cabbage Palm, Disturbed (0-24% Exotics) (Continued)	Snowy Egret (*Egretta thula*)
		Big Cypress Fox Squirrel (*Sciurus niger avicennia*)
		Everglades Mink (*Mustela vison evergladensis*)
		Florida Black Bear (*Ursus americanus floridanus*)
		Florida Panther (*Puma concolor coryi*)
6259 E1	Hydric Pine, Disturbed (0-24% Exotics)	Gopher Frog (*Rana capito*)
		Arctic Peregrine Falcon (*Falco peregrinus tundrius*)
		Red-Cockaded Woodpecker (*Picoides borealis*)
		Little Blue Heron (*Egretta caerulea*)
		Tri-Colored Heron (*Egretta tricolor*)
		Snowy Egret (*Egretta thula*)
		Everglades Mink (*Mustela vison evergladensis*)
		Big Cypress Fox Squirrel (*Sciurus niger avicennia*)
6309 E1	Wetland Forest Mixed, Disturbed (0-24% Exotics)	American Alligator (*Alligator mississippiensis*)
		Gopher Frog (*Rana capito*)
		Limpkin (*Aramus guarauna*)
		Little Blue Heron (*Egretta caerulea*)
		Snowy Egret (*Egretta thula*)
		Tri-Colored Heron (*Egretta tricolor*)
6319 E1	Wetland Shrub, Disturbed (0-24 % Exotics)	Limpkin (*Aramus guarauna*)
		Little Blue Heron (*Egretta caerulea*)
		Snowy Egret (*Egretta thula*)
		Tri-Colored Heron (*Egretta tricolor*)
		Wood Stork (*Mycteria americana*)
		Florida Panther (*Puma concolor coryi*)
		Everglades Mink (*Mustela vison evergladensis*)
		Florida Black Bear (*Ursus americanus floridanus*)
6419 E1	Freshwater Marsh, Disturbed (0-24% Exotics)	American Alligator (*Alligator mississippiensis*)
		Little Blue Heron (*Egretta caerulea*)
		Tri-Colored Heron (*Egretta tricolor*)
		Snowy Egret (*Egretta thula*)
		Wood Stork (*Mycteria americana*)
		Reddish Egret (*Egretta rufescens*)
		Limpkin (*Aramus guarauna*)

Table 2. (Continued)

FLUCFCS Code	Description	Potential Protected Species
6419 E1	Freshwater Marsh, Disturbed (0-24% Exotics) (Continued)	Snail Kite (*Rhostramus sociobilis*)
		Florida Sandhill Crane (*Grus canadensis pratensis*)
		Everglades Mink (*Mustela vison evergladensis*)
6439 E1	Wet Prairie, Disturbed (0-24% Exotics)	Limpkin (*Aramus guarauna*)
		Little Blue Heron (*Egretta caerulea*)
		Tri-Colored Heron (*Egretta tricolor*)
		Snowy Egret (*Egretta thula*)
		Wood Stork (*Mycteria americana*)
		Reddish Egret (*Egretta rufescens*)
		Snail Kite (*Rhostramus sociobilis*)
		Everglades Mink (*Mustela vison evergladensis*)
740	Disturbed Land	Gopher Tortoise (*Gopherus polyphemus*)
7401*	Disturbed Land, Hydric	Florida Sandhill Crane (*Grus canadensis pratensis*)[2]
		Florida Panther (*Puma concolor coryi*)[3]
743	Spoil Areas	Gopher Tortoise (*Gopherus polyphemus*)
747*	Berm	Gopher Tortoise (*Gopherus polyphemus*)
814	Road	N/A

*Habitat surveyed for the species noted, although not required per the LDC.
[1] Only when associated with vegetated non-forested wetlands.
[2] Mesic and Xeric 411 only.
[3] Only when associated with large adjacent woodlands.

The protected species survey was conducted by PAI on September 16 and 19, 2011. This type of survey utilized meandering pedestrian transects, per WilsonMiller, Inc. methodology previously approved by Lee County. The survey was conducted between 9:00 a.m. and 4:00 p.m. and the weather was clear and calm with temperatures in the low to mid 90's on all days.

Visibility in the surveyed habitats varied due to the density of vegetation. A summary of the limits of visibility, number, length of transects walked, and percent of coverage by habitat type is provided in Table 3. These summaries are not provided for habitats not technically required to be surveyed per the LDC, unless a Lee County protected species was observed within that habitat.

Table 3. **Summary of Habitat Coverage**

FLUCFCS Code	Description	Total Area (Acres)	Transect Length (Feet)	Average Visibility (Feet) [1]	Percent Coverage
163*	Rock Quarry	214.20	--	--	--
3209 E1	Shrub and Brushland, Disturbed (0-24% Exotics)	0.27	50	100	85
3209 E2	Shrub and Brushland, Disturbed (25-49% Exotics)	2.76	511	100	85
3209 E4*	Shrub and Brushland, Disturbed (76-100% Exotics)	1.56	--	--	--
3219 E1	Palmetto Prairie, Disturbed (0-24% Exotics)	1.88	348	100	85
4119 E1	Pine Flatwoods, Disturbed (0-24% Exotics)	50.59	12,488	75	85
4159 E1	Pine, Disturbed (0-24% Exotics)	1.97	365	100	85
4279 E1	Live Oak, Disturbed (0-24% Exotics)	2.90	537	100	85
4281 E1	Cabbage Palm, Hydric, Disturbed (0-24% Exotics)	0.24	44	100	85
525	Shallow Pond	0.06	11	100	85
6189 E2	Willow, Disturbed (25-49% Exotics)	0.02	5	75	85
6219 E1	Cypress, Disturbed (0-24% Exotics)	80.32	16,994	100	85
6219 E4*	Cypress, Disturbed (75-100% Exotics)	3.75	--	--	--
6249 E1	Cypress/Pine/Cabbage Palm, Disturbed (0-24% Exotics)	17.34	3,210	100	85
6259 E1	Hydric Pine, Disturbed (0-24% Exotics)	9.77	1,809	100	85
6309 E1	Wetland Forest Mixed, Disturbed (0-24% Exotics)	5.35	990	100	85
6319 E1	Wetland Shrub, Disturbed (0-24% Exotics)	3.03	561	100	85
6419 E1	Freshwater Marsh, Disturbed (0-24% Exotics)	3.38	626	100	85
6439 E1	Wet Prairie, Disturbed (0-24% Exotics)	1.15	213	100	85
740	Disturbed Land	285.37	200	100	80
7401*	Disturbed Land, Hydric	0.69	--	--	--
743	Spoil Areas	0.10	128	100	85
747*	Berm	13.28	--	--	--

Table 3. (Continued)

FLUCFCS Code	Description	Total Area (Acres)	Transect Length (Feet)	Average Visibility (Feet)[1]	Percent Coverage
814*	Road	22.14	--	--	--

[1]Average visibility to one side of transect.
*Habitat surveyed as a precautionary measure, although not required per the LDC.

SURVEY RESULTS

Four Lee County protected species were documented during the September 2011 survey. One American alligator (*Alligator mississippiensis*), one little blue heron (*Egretta caerulea*), one Florida black bear (*Ursus americanus floridanus*), and two Big Cypress fox squirrels (*Sciurus niger avicennia*) were observed on the property. The American alligator was observed in the Freshwater Marsh, Disturbed (0-24% Exotics) (FLUCFCS Code 6419 E1) community, located on the east property boundary. The black bear was observed in the Pine Flatwoods, Disturbed (0-24% Exotics) (FLUCFCS Code 4119 E1) community in the southeastern portion of the property. Black bear scat and a scratch tree were observed in the southwestern portion of the property. The Big Cypress fox squirrels were observed in the Cypress/Pine/Cabbage Palm, Disturbed (0-24% Exotics) (FLUCFCS Code 6249 E1) and Pine Flatwoods, Disturbed (0-24% Exotics) (FLUCFCS Code 4119 E1) communities near the south-central potion of the parcel. A 2010 aerial photograph with the protected species locations and survey transects is provided as Appendix A.

One bald eagle (*Haliaeetus leucocephalus*) was observed on-site perched in a pine tree in the southern portion of the property. The bald eagle was removed from Lee County's Protected Species List; however, it is still protected by Lee County Ordinance No. 08-25 and is federally protected under the Bald and Golden Eagle Act and the Migratory Bird Treaty Act. No bald eagle nests or signs of nesting activity were observed in or around the Project site during the September 2011 protected species survey. The nearest documented bald eagle nest is located approximately 7.3 miles west of the Project site

Table 4. Lee County Protected Species Abundance Calculations

Protected Species Density:

$$= \{n/[L_1(W_1+W_2)]\}(43,560 \text{ ft}^2/\text{ac.})$$

where n = Number of individuals observed
L_1 = Length of transect (feet)
W_1 = Distance of visibility to the right of transect (feet)
W_2 = Distance of visibility to the left of transect (feet)

American Alligator

FLUCFCS Code 6419 E1

= {1 / [(626 ft.) (100 ft. + 100 ft.)]}(43,560)
= {1 / 125,200}(43,560)
= {7.99 x 10^{-6}}(43,560)
= 0.34 American alligators / acre

Little Blue Heron

FLUCFCS Code 6219 E1

= {1 / [(14,870 ft.) (100 ft. + 100 ft.)]}(43,560)
= {1 / 2,974,000}(43,560)
= {3.36 x 10^{-7}}(43,560)
= 0.01 Little blue herons / acre

Florida Black Bear

FLUCFCS Code 4119 E1

= {1 / [(12,488 ft.) (75 ft. + 75 ft.)]}(43,560)
= {1 / 1,873,200}(43,560)
= {5.34 x 10^{-7}}(43,560)
= 0.02 Florida black bears / acre

Big Cypress Fox Squirrel

FLUCFCS Code 4119 E1

= {1 / [(12,488 ft.) (75 ft. + 75 ft.)]}(43,560)
= {1 / 1,873,200}(43,560)
= {5.34 x 10^{-7}}(43,560)
= 0.02 Big Cypress fox squirrels / acre

FLUCFCS Code 6249 E1

= {1 / [(3,210 ft.) (100 ft. + 100 ft.)]}(43,560)
= {1 / 642,000}(43,560)
= {1.56 x 10^{-6}}(43,560)
= 0.07 Big Cypress fox squirrels / acre

Table 5. Lee County Protected Species Survey Summary

Protected Species	FLUCFCS Code/Area	Percent Area Surveyed	Individuals Present	Individuals Absent	Density (Per Acre)
Reptiles					
American Alligator (*Alligator mississippiensis*)	525	85		X	
	6189 E1	85		X	
	6219 E1	85		X	
	6219 E4*	-		X	
	6309 E1	85		X	
	6419 E1	85	X		0.34
Eastern Indigo Snake (*Drymarchon corais couperi*)	3209 E1	85		X	
	3209 E2	85		X	
	3209 E4*	-		X	
	3219 E1	85		X	
	4119 E1	85		X	
	4159 E1	85		X	
	4279 E1	85		X	
	4281 E1	85		X	
Gopher Frog (*Rana capito*)	3209 E1	85		X	
	3209 E2	85		X	
	3209 E4*	-		X	
	3219 E1	85		X	
	4119 E1	85		X	
	4159 E1	85		X	
	6219 E1	85		X	
	6219 E4*	-		X	
	6249 E1	85		X	
	6259 E1	85		X	
	6309 E1	85		X	
Gopher Tortoise (*Gopherus polyphemus*)	3209 E1	85		X	
	3209 E2	85		X	
	3209 E4*	-		X	
	3219 E1	85		X	
	4119 E1	85		X	
	4159 E1	85		X	
	4279 E1	85		X	
	740	80		X	
	743	85		X	

Table 5. (Continued)

Protected Species	FLUCFCS Code/Area	Percent Area Surveyed	Individuals Present	Individuals Absent	Density (Per Acre)
Birds					
Arctic Peregrine Falcon (*Falco peregrinus tundrius*)	6219 E1	85		X	
	6219 E4*	-		X	
	6249 E1	85		X	
	6259 E1	85		X	
Florida Sandhill Crane (*Grus canadensis pratensis*)	3219 E1	85		X	
	6419 E1	85		X	
	7401*	-		X	
Limpkin (*Aramus guarauna*)	525	85		X	
	6219 E1	85		X	
	6219 E4*	-		X	
	6309 E1	85		X	
	6419 E1	85		X	
	6439 E1	85		X	
Little Blue Heron (*Egretta caerulea*)	525	85		X	
	6189 E1	85		X	
	6219 E1	85	X		0.01
	6219 E4*	-		X	
	6249 E1	85		X	
	6259 E1	85		X	
	6309 E1	85		X	
	6319 E1	85		X	
	6419 E1	85		X	
	6439 E1	85		X	
Red-Cockaded Woodpecker (*Picoides borealis*)	4119 E1	85		X	
	4159 E1	85		X	
	6259 E1	85		X	
Reddish Egret (*Egretta rufescens*)	525	85		X	
	6419 E1	85		X	
	6439 E1	85		X	
Snail Kite (*Rhostramus sociobilis*)	525	85		X	
	6419 E1	85		X	
	6439 E1	85		X	

Table 5. (Continued)

Protected Species	FLUCFCS Code/Area	Percent Area Surveyed	Individuals Present	Individuals Absent	Density (Per Acre)
Birds (Continued)					
Snowy Egret (*Egretta thula*)	525	85		X	
	6189 E1	85		X	
	6219 E1	85		X	
	6219 E4*	-		X	
	6249 E1	85		X	
	6259 E1	85		X	
	6309 E1	85		X	
	6319 E1	85		X	
	6419 E1	85		X	
	6439 E1	85		X	
Southeastern American Kestrel (*Falco sparverius paulus*)	3219 E1	85		X	
	4119 E1	85		X	
	4159 E1	85		X	
Tri-Colored Heron (*Egretta tricolor*)	525	85		X	
	6189 E1	85		X	
	6219 E1	85		X	
	6219 E4*	-		X	
	6249 E1	85		X	
	6259 E1	85		X	
	6309 E1	85		X	
	6319 E1	85		X	
	6419 E1	85		X	
	6439 E1	85		X	
Wood Stork (*Mycteria americana*)	6219 E1	85		X	
	6219 E4*	-		X	
	6309 E1	85		X	
	6419 E1	85		X	
	6439 E1	85		X	
Mammals					
Big Cypress Fox Squirrel (*Sciurus niger avicennia*)	4119 E1	85	X		0.02
	4159 E1	85		X	
	6219 E1	85		X	
	6219 E4*	-		X	

Table 5. (Continued)

Protected Species	FLUCFCS Code/Area	Percent Area Surveyed	Individuals Present	Individuals Absent	Density (Per Acre)
Mammals (Continued)					
Big Cypress Fox Squirrel (*Sciurus niger avicennia*) (Continued)	6249 E1	85	X		0.07
	6259 E1	85		X	
Everglades Mink (*Mustela vison evergladensis*)	525	85		X	
	6219 E1	85		X	
	6219 E4*	-		X	
	6249 E1	85		X	
	6259 E1	85		X	
	6309 E1	85		X	
	6319 E1	85		X	
	6419 E1	85		X	
	6439 E1	85		X	
Florida Black Bear (*Ursus americanus floridanus*)	3219 E1	85		X	
	4119 E1	85	X		0.02
	4159 E1	85		X	
	4279 E1	85		X	
	4281 E1	85		X	
	6219 E1	85		X	
	6219 E4*	-		X	
	6249 E1	85		X	
	6309 E1	85		X	
	6319 E1	85		X	
Florida Panther (*Puma concolor coryi*)	4119 E1	85		X	
	4159 E1	85		X	
	4279 E1	85		X	
	4281 E1	85		X	
	6219 E1	85		X	
	6219 E4*	-		X	
	6249 E1	85		X	
	6309 E1	85		X	
	6319 E1	85		X	
Plants					
Beautiful Pawpaw (*Deeringothamnus pulchellus*)	3219 E1	85		X	
	4119 E1	85		X	
	4159 E1	85		X	

Table 5. (Continued)

Protected Species	FLUCFCS Code/Area	Percent Area Surveyed	Individuals Present	Individuals Absent	Density (Per Acre)
Plants (Continued)					
Curtis Milkweed (*Asclepias curtissii*)	3209 E1	85		X	
	3209 E2	85		X	
	3209 E4*	-		X	
	3219 E1	85		X	
Fakahatchee Burmannia (*Burmannia flava*)	3209 E1	85		X	
	3209 E2	85		X	
	3209 E4*	-		X	
	3219 E1	85		X	
	4119 E1	85		X	
	4159 E1	85		X	
Florida Coontie (*Zamia floridana*)	3209 E1	85		X	
	3209 E2	85		X	
	3209 E4*	-		X	
	3219 E1	85		X	
	4119 E1	85		X	
	4159 E1	85		X	
Hand Adder's Tongue Fern (*Ophioglossum palmatum*)	4279 E1	85		X	
Satinleaf (*Crysophyllum olivaeforme*)	4119 E1	85		X	
	4159 E1	85		X	
Simpson's Stopper (*Myrcianthes fragrans* var. *simpsonii*)	4279 E1	85		X	
	4281 E1	85		X	
Twisted Air Plant (*Tillandsia flexuosa*)	4279 E1	85		X	

*Habitat surveyed for the species noted, although not required per the LDC.

REFERENCES

Florida Department of Transportation. 1999. Florida Land Use, Cover and Forms Classification System. Procedure No. 550-010-001-a. Third Edition.

APPENDIX A

AERIAL WITH FLUCFCS, SURVEY TRANSECTS, AND SPECIES LOCATION MAP

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CORKSCREW SHORES
INDIGENOUS PRESERVE AND PROTECTED SPECIES MANAGEMENT PLAN

May 2013
Revised July 2013

Prepared For:

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1.0 INTRODUCTION

The following outlines the Lee County Indigenous Preserve and Protected Species Management Plan for Corkscrew Shores (f.k.a. Corkscrew Woods) (Project) located in Sections 21 and 28, Township 46 South, Range 26 East, Lee County. The total preserve area is 104.84± acres. The following is a breakdown of the preserve acreage:

- 53.78± acres of indigenous wetlands and uplands;
- 37.09± acres of indigenous restoration (existing disturbed uplands and roads);
- 5.31± acres of indigenous restoration (habitats with greater than 75 percent exotics);
- 2.17± acres of indigenous restoration (disturbed wetland); and
- 6.49± acres of additional upland preserve/ buffer that was not required by Lee County Zoning Resolution Z-12-021.

The Project preserves include 53.78± acres of indigenous wetlands and uplands with less than 75 percent exotic vegetation. The indigenous preserves will be enhanced through the removal of exotic vegetation. In addition to enhancing 53.78± acres of indigenous preserve, a total of 37.09± acres of disturbed uplands and roads will be restored to native wetland (16.00± acres) and upland (21.09± acres) habitat. Also, 5.31± acres of non-indigenous wetlands and uplands with greater than 75 percent exotic vegetation, and 2.17± acres of disturbed wetlands will be restored through exotic removal and supplemental plantings, if necessary. In addition, a total of 6.49± acres of upland preserve/buffer has been added to the Project since the zoning approval (Resolution No. Z-12-021). Thus, the total Project area subject to exotic removal as outlined in this plan is 104.84± acres.

As part of the preserve management plan, the preserve areas will be placed in a conservation easement. Approximately 41.32 acres of the Project preserves are already under a conservation easement as part of South Florida Water Management District (SFWMD) Permit No. 36-03254-P. The remaining 63.52± acres will be placed under a new conservation easement.

The indigenous wetland areas include willow, cypress, hydric pine, wetland forested mix, wetland shrub, and freshwater marsh habitats. The indigenous upland areas include shrub and brushland, palmetto prairie, and pine flatwoods habitats. Listed below are the Florida Land Use, Cover and Forms Classification System (FLUCFCS) (Florida Department Of Transportation 1999) descriptions of the indigenous areas proposed for preservation and restoration.

2.0 EXISTING HABITATS PROPOSED FOR INDIGENOUS VEGETATION PRESERVE

The following are the existing on-site wetland and upland habitats proposed for indigenous vegetation preserve.

2.1 Wetland Habitats

Willow, Disturbed (25-49% Exotics) (FLUCFCS Code 6189 E2)
This wetland plant community contains Carolina willow (*Salix caroliniana*) in the canopy. The sub-canopy includes Carolina willow and Peruvian primrose willow (*Ludwigia peruviana*). The ground cover includes swamp fern (*Blechnum serrulatum*), sawgrass (*Cladium jamaicensis*), and Asiatic pennywort (*Centella asiatica*).

Cypress, Disturbed (0-24% Exotics) (FLUCFCS Code 6219 E1)
This wetland community type has a canopy dominated by cypress (*Taxodium distichum*). The sub-canopy contains cypress, Brazilian pepper (*Schinus terebinthifolius*), cabbage palm (*Sabal palmetto*), myrsine (*Myrsine cubana*), and wax myrtle (*Myrica cerifera*). The ground cover includes swamp fern, leather fern (*Acrostichum danaeifolium*), Boston fern (*Nephrolepis* sp.), sawgrass, maidencane (*Panicum hemitomon*), and scattered West Indian marsh grass (*Hymenachne amplexicaulis*).

Hydric Pine, Disturbed (0-24% Exotics) (FLUCFCS Code 6259 E1)
This wetland community contains slash pine (*Pinus elliottii*) and scattered melaleuca (*Melaleuca quinquenervia*) in the canopy. The sub-canopy consists of slash pine, melaleuca, and wax myrtle. The ground cover includes corkwood (*Stillingia aquatica*), bushy bluestem (*Andropogon glomeratus*), beakrush (*Rhynchospora microcarpa*), inundated beakrush (*Rhynchospora inundata*), and bog-button (*Lachnocaulon* sp.).

Wetland Forest Mixed, Disturbed (0-24% Exotics) (FLUCFCS Code 6309 E1)
This wetland habitat includes laurel oak (*Quercus laurifolia*), slash pine, cabbage palm, and cypress in the canopy. The sub-canopy includes scattered wax myrtle and Brazilian pepper. The ground cover contains swamp fern with scattered maidencane and sawgrass.

Wetland Shrub, Disturbed (0-24% Exotics) (FLUCFCS Code 6319 E1)
This wetland community includes scattered red maple (*Acer rubrum*), slash pine, laurel oak, and cabbage palm in the canopy. The sub-canopy includes wax myrtle, saltbush (*Baccharis halimifolia*), red maple, cabbage palm, dahoon holly (*Ilex cassine*), and scattered Peruvian primrose willow. The ground cover includes swamp fern, Boston fern, sawgrass, beaksedge (*Rhynchospora* sp.), maidencane, and scattered West Indian marsh grass.

Freshwater Marsh, Disturbed (0-24% Exotics) (FLUCFCS Code 6419 E1)
This herbaceous wetland community has an open canopy and sub-canopy. The ground cover vegetation includes maidencane, sandweed (*Hypericum fasciculatum*), pickerelweed (*Pontederia cordata*), arrowhead (*Sagittaria lancifolia*), beaksedge, alligator flag (*Thalia geniculata*), and rush fuirena (*Fuirena scirpoides*) with scattered torpedograss (*Panicum repens*) and West Indian marsh grass.

2.2 Upland Habitats

Shrub and Brushland, Disturbed (0-24% Exotics) (FLUCFCS Code 3209 E1)
This upland community contains an open canopy with scattered slash pine, melaleuca, and cabbage palm. The sub-canopy consists of slash pine, wax myrtle, dahoon holly, and myrsine. The ground cover includes bahiagrass (*Paspalum notatum*), wiregrass (*Aristida stricta*), chalky bluestem (*Andropogon virginicus*), and saw palmetto (*Serenoa repens*).

Shrub and Brushland, Disturbed (25-49% Exotics) (FLUCFCS Code 3209 E2)
This upland community is similar to FLUCFCS Code 3209 E1 except with a higher percentage of melaleuca and Peruvian primrose willow in the sub-canopy.

Palmetto Prairie, Disturbed (0-24% Exotics) (FLUCFCS Code 3219 E1)
The canopy and sub-canopy of this upland community contain scattered slash pine, wax myrtle, and saltbush. The ground cover is dominated by saw palmetto.

Pine Flatwoods, Disturbed (0-24% Exotics) (FLUCFCS Code 4119 E1)
This upland community has a canopy that is dominated by slash pine with scattered melaleuca and cabbage palm. The sub-canopy consists of slash pine, dahoon holly, Brazilian pepper, melaleuca, and myrsine. The ground cover is dominated by saw palmetto with wiregrass, chalky bluestem, grapevine (*Vitis rotundifolia*), and greenbrier (*Smilax auriculata*).

3.0 EXISTING HABITATS PROPOSED FOR INDIGENOUS VEGETATION RESTORATION

The following are the existing on-site wetland and upland habitats proposed for indigenous vegetation restoration.

3.1 Wetland Habitats

Cypress, Disturbed (76-100% Exotics) (FLUCFCS Code 6219 E4)
This wetland community type is similar to FLUCFCS Code 6219 E1 except with a much higher percentage of West Indian marsh grass in the ground cover.

Disturbed Land, Hydric (FLUCFCS Code 7401)
This wetland plant community has an open canopy and sub-canopy. The ground cover includes bushy bluestem, torpedograss, musky mint (*Hyptis alata*), knotroot foxtail (*Setaria parviflora*), and maidencane.

3.2 Upland Habitats

Shrub and Brushland, Disturbed (76-100% Exotics) (FLUCFCS Code 3209 E4)
This upland community is similar to FLUCFCS Code 3209 E2 except with a higher percentage of melaleuca and Peruvian primrose willow in the sub-canopy.

Disturbed Land (FLUCFCS Code 740)
This upland plant community has an open canopy and sub-canopy with scattered cabbage palm. The ground cover includes dog fennel (*Eupatorium capillifolium*), ragweed (*Ambrosia artemisiifolia*), sandspur (*Cenchrus* sp.), caesarweed (*Urena lobata*), knotroot foxtail, shrubby false buttonweed (*Spermacoce verticillata*), torpedograss, smutgrass (*Sporobolus indicus*), hairy beggar-ticks (*Bidens pilosa*), cogongrass (*Imperata cylindrica*), and bahiagrass.

Road (FLUCFCS Code 814)
This land use includes an unvegetated gravel road.

4.0 METHOD AND FREQUENCY OF PRUNING AND TRIMMING

Exotic removal is scheduled to begin after the applicable permits and approvals have been attained. After the initial removal of exotics, semi-annual inspections of the preserves will occur for the first two years. During these inspections, the Project area will be traversed by a qualified ecologist. Locations of nuisance and/or exotic species will be identified for immediate treatment with an appropriate herbicide. Any additional potential problems will also be noted and corrective actions taken. Once exotic/nuisance species levels have been reduced to acceptable limits (i.e., less than five percent cover), inspections of the Project area will be conducted annually. Prior to any preserve maintenance, Lee County Division of Environmental Sciences (DES) staff will be notified.

5.0 METHODS TO REMOVE AND CONTROL EXOTIC AND NUISANCE PLANTS

Exotic and nuisance vegetation on the Project will be treated by hand methods. Exotics to be treated include, but are not limited to, melaleuca and Brazilian pepper. The preserves will be maintained free of invasive exotics listed in Table 1 in perpetuity. Access to the preserves will be through the development areas adjacent to the preserves.

Table 1. Prohibited Invasive Exotics

Common Name	Scientific Name
Air potato	*Dioscorea alata*
Australian pines	All *Casuarina* species
Bishopwood	*Bischofia javanic*
Brazilian pepper	*Schinus terebinthifolius*
Carrotwood	*Cupaniopsis anacardioides*
Chinese tallow	*Sapium sebiferum*
Cork tree	*Thespesia populnea*

Table 1. (Continued)

Common Name	Scientific Name
Cuban laurel fig	*Ficus microcarpa*
Downy rose myrtle	*Rhodomyrtus tomentosus*
Earleaf acacia	*Acacia auriculiformis*
Japanese climbing fern	*Lygodium japonicum*
Java plum	*Syzygium cumini*
Melaleuca	*Melaleuca quinquenervia*
Murray red gum	*Eucalyptus camaldulensis*
Old World climbing fern	*Lygodium micorphyllum*
Rose apple	*Syzygium jambos*
Rosewood	*Dalbergia sissoo*
Tropical soda apple	*Solanum viarum*
Wedelia	*Wedelia trilobata*
Weeping fig	*Ficus benjamina*
Woman's tongue	*Albizia lebbeck*

Hand treatment will be either felling of exotic trees, hand removal, and herbicide treatment of the stumps; or hand pulling. The hand treatment of exotic and nuisance vegetation will include one or more of the following methods: (1) cut exotics within 12 inches of ground elevation, hand remove cut vegetation, and treat remaining stump with approved herbicide; (2) girdle standing Brazilian pepper, melaleuca, and Australian pine (*Casuarina equisetifolia*) with diameter at breast height greater than 4 inches and apply approved herbicide to cambium; (3) foliar application of approved herbicide to Brazilian pepper, melaleuca saplings, Australian pine, and downy rose myrtle (*Rhodomyrtus tomentosa*); (4) foliar application of approved herbicide or hand pulling of exotic seedlings; and (5) foliar application of approved herbicide to nuisance grasses.

In areas where the density of exotic vegetation exceeds 50 percent, cuttings will either be removed from the site or stacked in piles at approximately 100 foot intervals. If left on the site, smaller cuttings will be stacked butt end to the ground into a nearly vertical position (i.e., teepee method). Larger cuttings will be cut and stacked side by side into an area approximately six feet on a side. Cuttings will be stacked perpendicular to the previous layer up to a height of approximately four feet (i.e., log cabin method).

6.0 DEBRIS REMOVAL

Debris will be hand removed from within the on-site preserves.

7.0 INDIGENOUS VEGETATION RESTORATION

Indigenous vegetation restoration will be conducted in areas not meeting indigenous vegetation requirements after exotic vegetation removal. Indigenous vegetation restoration areas are identified in Appendix A. Approximately 37.09 acres of disturbed uplands and roadways will be restored to indigenous habitats and will be planted per the specifications provided in Table 2. Plantings will be appropriate to the type of habitat being restored.

In addition to the 37.09± acres of disturbed land to be restored, there are 5.31± acres of native habitat types within the overall preserve area that contain greater than 75 percent coverage by exotic vegetation and 2.17± acres of disturbed wetlands that will be restored. Exotic vegetation will be removed in these areas and they will be allowed to naturally recruit with native plant species. If natural recruitment is not successful in these areas after two years, plantings will be installed in accordance with Table 2.

Within the disturbed upland and roadway areas to be restored (37.09± acres), uplands will comprise approximately 21.09 acres, with wetlands comprising the remaining 16.00± acres of the total restoration area. The restoration will be designed in concert with the Project's surface water management system and will help enhance the hydrology of the overall conservation area. The restoration design may also include a recreational trail system for use by the Project's residents. The recreational trail system may include boardwalks and pervious paths not to exceed eight feet in width. Material for the proposed preserve trail shall consist of pervious material (e.g. mulch, gravel, pervious concrete or similar). Final material type will be confirmed with Lee County DES staff prior to construction. The location of the proposed elevated boardwalk and pervious recreational trail is depicted on Appendix A.

The restoration activities will commence concurrent with the issuance of the first vegetation permit and must be completed within 18 months. Initially, the disturbed land and roads will be mechanically cleared and graded to match the elevation of adjacent natural areas. Once the grading activities are completed, native tree, shrub, and ground cover plantings will be installed in some areas while others will be allowed to naturally recruit. The goal of the restoration areas is to achieve native plant communities including, but not limited to, pine forest and freshwater marsh. The marsh areas will serve as foraging habitat for a variety of listed wading bird species including the wood stork (*Mycteria americana*). The proposed marsh areas will provide foraging habitat for listed wading birds and wood storks as water levels recede and concentrate prey items.

Table 2 includes a list of plants that will be utilized within the restoration areas. Plantings may be clustered throughout the restoration areas; however, the total number of species planted will remain consistent with the planting densities outlined in Table 2. Restoration plantings will be evaluated with Lee County DES staff after exotic vegetation removal.

For the upland restoration areas, tree plantings will include primarily slash pine; although, some live oak (*Quercus virginiana*) and laurel oak trees may be utilized. Shrub plantings will consist of a minimum of three of the species listed in Table 2. Ground cover plantings will include a minimum of four of the species listed in Table 2.

For the wetland restoration areas, tree plantings will include both species listed in Table 2. Ground cover plantings will include a minimum of five of the species listed in Table 2.

Table 2. Restoration Plantings

Common Name	Scientific Name	Minimum Height	Minimum Container Size	Planting Density (On Center)
Upland Restoration				
Trees[1]				
Slash pine	*Pinus elliottii*	4-5 to 6 ft.	3-7 gal.	15 ft.
Live oak	*Quercus virginiana*	4-5 to 6 ft.	3-7 gal.	15 ft.
Laurel oak	*Quercus laurifolia*	4-5 to 6 ft.	3-7 gal.	15 ft.
Shrubs				
Wax myrtle	*Myrica cerifera*	3 ft.	1 gal.	10 ft.
Myrsine	*Rapanea punctata*	3 ft.	1 gal.	10 ft.
Saltbush	*Baccharis halimifolia*	3 ft.	1 gal.	10 ft.
Saw palmetto	*Serenoa repens*	3 ft.	1 gal.	10 ft.
Gallberry	*Ilex glabra*	3 ft.	1 gal.	10 ft.
Ground Cover				
Gulfdune paspalum	*Paspalum monostachyum*	12 in.	1 gal.	3 ft.
Little blue maidencane	*Amphicarpum muhlenbergianum*	12 in.	1 gal.	3 ft.
Wiregrass	*Aristida stricta*	12 in.	1 gal.	3 ft.
Muhlygrass	*Muhlenbergia capillaris*	12 in.	1 gal.	5 ft.
Cordgrass	*Spartina bakeri*	12 in.	1 gal.	5 ft.
Wetland Restoration				
Trees[2]				
Bald cypress	*Taxodium distichum*	4-5 ft.	3 gal.	40 ft.
Red maple	*Acer rubrum*	4-5 ft.	3 gal.	40 ft.
Ground Cover				
Cordgrass	*Spartina bakeri*	12 in.	2 in.	5 ft.
Maidencane	*Panicum hemitomon*	12 in.	2 in.	5 ft.
Spikerush	*Eleocharis interstincta*	12 in.	2 in.	5 ft.
Soft-stem bulrush	*Scirpus validus*	12 in.	2 in.	5 ft.
Fireflag	*Thalia geniculata*	12 in.	2 in.	5 ft.
Pickerelweed	*Pontederia cordata*	12 in.	2 in.	5 ft.
Sagittaria	*Sagittaria lancifolia*	12 in.	2 in.	5 ft.

[1] Thirty percent of the upland restoration tree plantings will consist of six-foot high, seven gallon trees and 70 percent of the upland restoration tree plantings will consist of four- to five-foot high, three gallon trees.

[2] Wetland tree plantings will be clustered randomly along the edge of the wetland restoration area as to not preclude open foraging habitat for listed wading bird species.

Table 3 provides a breakdown of the total upland and wetland planting quantities.

Table 3. Restoration Planting Quantities[1]

Planting Stratum	Upland Restoration	Wetland Restoration
Trees	4,092[2]	162
Shrubs	9,195	-
Ground Cover	69,444[3]	27,878

[1] Planting quantities are based on planting 21.09± acres of upland restoration and 16.00± acres of wetland restoration.

[2] Includes 1,228 six-foot high, seven gallon trees and 2,864 four- to five-foot high, three gallon trees.

[3] Per the minimum selection criteria of four ground cover species, planting quantity is based on two species planted on three-foot centers (51,062) and two species planted on five-foot centers (18,382).

Seeding to establish upland ground cover may be used as an alternative to installing ground cover plantings within the upland restoration areas. After the ground surface has been mechanically cleared and graded, one to two herbicide applications will be conducted to eliminate undesirable ground cover species. After the herbicide has been successfully applied, the ground surface will be prepared for seeding using a disking and rolling method. Once the ground surface has been fully prepared, seeding with native ground cover will occur in the upland restoration areas. The seed source will be obtained from and applied by a professional experienced with direct seeding as a method of upland restoration. The seed source will be harvested from a local area and will include a mixture of regionally-appropriate native graminoid species. The seed source mixture will include a variety of species to optimize ground cover diversity to the maximum extent possible. Upland tree and shrub species will be planted in accordance with Table 2 after seeding has established a native ground cover. Supplemental ground cover planting will be conducted in accordance with Table 2 in areas where the seeding does not establish appropriately.

8.0 MONITORING REPORTS

A monitoring report documenting the initial condition of the restoration areas will be submitted to DES staff prior to development order approval. A similar report will be submitted to DES staff after the initial restoration and exotic removal activities have been completed and prior to Certificate of Compliance approval. Reports will also include a brief description of anticipated maintenance work to be conducted over the next year. The results of quantitative vegetation monitoring conducted in the restored uplands and wetlands, as well as a list of observed wildlife species, will also be included.

The applicant will submit five annual monitoring reports describing the conditions of the restoration areas pursuant to Condition No. 19 of Resolution Z-12-021. The monitoring reports will include mortality, estimated causes of mortality, growth of the vegetation and other factors that demonstrate the functional health of the restored areas, and photo stations.

Periodic inspections will be conducted by Lee County DES staff to ensure the accuracy of the monitoring reports.

9.0 PROTECTED SPECIES MANAGEMENT PLAN

Passarella & Associates, Inc. conducted a Lee County protected species survey on the Project site on September 16 and 19, 2011. The survey was conducted to meet Lee County Land Development Code (LDC) Chapter 10, Article III, Division 8 (Protection of Habitat) standards.

Four Lee County protected species were documented during the September 2011 survey. One American alligator (*Alligator mississippiensis*), one little blue heron (*Egretta caerulea*), two Big Cypress fox squirrels (BCFS) (*Sciurus niger avicennia*), and one Florida black bear (*Ursus americanus floridanus*) were observed on the property. The American alligator was observed in the Freshwater Marsh, Disturbed (0-24% Exotics) (FLUCFCS Code 6419 E1) community, located on the east property boundary. The BCFSs were observed in the Cypress/Pine/Cabbage Palm, Disturbed (0-24% Exotics) (FLUCFCS Code 6249 E1) and Pine Flatwoods, Disturbed (0-24% Exotics) (FLUCFCS Code 4119 E1) communities near the south-central portion of the parcel. The black bear was observed in the Pine Flatwoods, Disturbed (0-24% Exotics) (FLUCFCS Code 4119 E1) community in the southeastern portion of the property. Black bear scat and a scratch tree were observed in the southwestern portion of the property.

The proposed management plan for the above species includes the preservation and enhancement of the on-site indigenous wetland habitat areas as outlined in this management plan.

9.1 American Alligator Management Plan

The following plan outlines the protection guidelines that will be implemented for the American alligator during the construction phases for the Project. The plan identifies the procedures taken, such as the use of signage to avoid the feeding or harassing of American alligators located on the mine property. The plan has been prepared following the guidelines established by Lee County for the protection of the American alligator and per Lee County LDC Section 10-474.

9.1.1 Biology

The American alligator is a reptile with an elongated, armored, lizard-like body with a muscular, flat tail. Adult alligators are dark with a pale underside while juveniles have bright yellow stripes and blotches. The average size for adults is 8.2 feet for females and 11.2 feet for males. The body weight can reach up to one-half ton.

American alligators inhabit all counties in the State of Florida and are most common in the major river drainage basins and large lakes in the central and southern portions of the state.

They also can be found in marshes, swamps, ponds, drainage canals, phosphate-mine settling ponds, and ditches. Alligators are tolerant of poor water quality and occasionally inhabit brackish marshes along the coast. A few even venture into salt water. Individuals are wide ranging and some males may utilize an area of two square miles or more. Individuals of both sexes are most likely to become more active and extend their ranges during the April to May courtship and breeding season. Prey may include frogs, snakes, birds, and small mammals, although alligators are opportunistic feeders and may prey on whatever is readily available. Larger individuals often prefer carrion to fresh meat.

The American alligator is listed as a Federally-Designated Threatened species (by similarity of appearance) by the State of Florida. Only representatives of the Florida Fish and Wildlife Conservation Commission (FWCC) are empowered to handle nuisance alligators.

9.1.2 American Alligator Management

High-quality American alligator habitat will be provided throughout the property through wetland preservation, enhancement, and restoration. The preserve areas contain wetlands that will serve as potential foraging and nesting habitats. Invasive exotic removal will result in wetland preserves that are more suitable as habitat, and provide suitable habitat for American alligator prey species. Littoral planting areas will be installed along lake edges and will provide additional foraging habitat. Lighting from the development portions of the Project will not directly illuminate the preserve habitats to ensure against disturbance. In addition, signs will be posted around the perimeter of the existing and proposed lakes. The signs will be posted to instruct on-site workers not to feed or harass the American alligator. The signs will indicate that the offense is punishable by law. The approximate locations of the signs are depicted on Appendix A and typical signage is attached as Appendix B.

9.2 Wading Bird Management Plan

This habitat management plan has been prepared for the purpose of addressing the conservation of potential wading bird habitat on the Project. One little blue heron was observed during the protected species surveys, and it is anticipated that wading birds such as the wood stork, snowy egret (*Egretta thula*), tri-colored heron (*Egretta tricolor*), white ibis (*Eudocimus albus*), limpkin (*Aramus guarauna*), roseate spoonbill (*Ajaia ajaja*), and Florida sandhill crane (*Grus canadensis pratensis*) may utilize the wetlands on the property.

Extensive foraging areas will be provided throughout the property through wetland preservation, enhancement, and restoration. The conservation areas contain wetlands that will serve as potential foraging and nesting habitats for wading birds. In addition, approximately six acres of littoral planted shelf will be created along the existing lake edge that will provide foraging opportunity for wading birds. Invasive exotic removal will result in upland and wetland preserves that are more suitable as foraging habitats, as well as making the wetlands better for roosting. Littoral planting areas will be installed along lake edges and will provide additional foraging habitat for protected wading birds. Lighting from the development portions of the Project will not directly illuminate the preserve habitats to ensure against disturbance.

9.3 Big Cypress Fox Squirrel Management Plan

The goal of the management plan is to protect active nest sites and maintain suitable BCFS habitat on-site after development. This will be accomplished through pre-construction surveys and the preservation and enhancement of existing suitable habitat. Preserves will incorporate both upland and wetland habitats. Long-term management will be implemented to ensure that the exotic vegetation does not reinvade the preserves and the BCFS habitat is maintained in open park-like conditions. Lighting from the development portions of the Project will not directly illuminate the preserve habitats to ensure against disturbance.

9.3.1 Biology

The BCFS lives and breeds in varied habitats in Southwest Florida including cypress swamps, pine flatwoods, tropical hardwood forests, live oak woods, mangrove forests, and suburban habitats including golf courses, city parks, and residential areas in native vegetation (Humphrey 1992). Dense cypress/hardwood swamps are avoided. This may be due to the competition for food and habitat with the gray squirrel (*Sciurus carolinensis*). Little data is available on the preferred forage habitat of the BCFS. BCFSs prefer to feed on the male and female cones of the slash pine. A smaller percentage of the diet may consist of seasonal fruits, berries, and seeds (Humphrey 1992).

BCFSs often form platform nests in pines and hardwoods and moss and stick nests in cypress (*Taxodium* sp.), tops of cabbage palms, and large clumps of bromeliads (*Tillandsia* sp.). Cabbage palms and bromeliads are especially important because they can provide immediate shelter which allows the squirrel to travel over large areas without requiring a daily return to a permanent nesting facility (Humphrey 1992).

BCFSs are solitary animals. Interaction between animals occurs primarily during mating season. Mating chases occur frequently throughout the months of May through August. During the non-mating season, interactions are infrequent and often occur around food sources (Humphrey 1992).

9.3.2 Pre-Construction Surveys

A qualified ecologist will be on-site to supervise BCFS management and monitoring activities as detailed in this plan. Prior to commencement of clearing activities, a survey will be conducted in areas to be cleared to identify potential BCFS nests. If potential nests are identified within the clearing limits, observations will be conducted for five consecutive days to determine if the nests are being utilized by BCFSs. Clearing near an active BCFS nest tree will occur no closer than 125 feet. No clearing will occur within the established buffer of an active BCFS nest tree.

After nesting is complete and observations document that juvenile squirrels have left the nest, a written request to remove the nest shall be made to the FWCC. After receipt of the written authorization from the FWCC, the nest tree and buffer can then be cleared.

9.4 Florida Black Bear and Florida Panther Management Plan

The preserve areas within the Project boundary will be restored, enhanced and preserved. Enhancement activities will provide higher quality habitat for the Florida black bear than exist in the currently degraded condition. The large preserve area in the south and southeastern portion of the site is contiguous to off-site habitats and will provide a potential corridor for the Florida black bear. Additionally, the management activities associated with the Florida black bear will also benefit the Florida panther (*Puma concolor coryi*) similarly, due to the location of the Project within Florida panther habitat range.

9.4.1 Florida Black Bear Management

Habitat within the Project preserves will be managed for the Florida black bear through the enhancement, restoration, and preservation of uplands and wetlands to provide quality habitat and wildlife corridors for the Florida black bear and associated prey species. Lighting from the development portions of the Project will not directly illuminate the preserve habitats to ensure against disturbance.

9.4.2 Florida Panther Management

The preserve areas will be restored, enhanced and preserved to provide quality habitat and wildlife corridors for the Florida panther and associated prey species in the same manner as the management plan for the Florida black bear. Lighting from the development portions of the Project will not directly illuminate the preserve habitats to ensure against disturbance.

10.0 HUMAN-WILDLIFE COEXISTENCE PLAN

10.1 American Alligator Human-Wildlife Coexistence Plan

Signs will be posted on the subject property to instruct on-site workers not to feed or harass the American alligator. The signs will indicate that the offense is punishable by law. The approximate locations of the signs are depicted on Appendix A and typical signage is attached as Appendix B.

The attached FWCC educational brochure entitled "A Guide to Living with Alligators" (Appendix C) will be provided to homeowners and maintenance staff. The brochure can be found at http://myfwc.com/media/152524/Alligator_Brochure.pdf.

Construction personnel will be instructed that in the event there is a problem with a persistent nuisance alligator, they will need to contact the FWCC, as that is the only agency empowered to handle nuisance alligators.

10.2 Wading Bird Human-Wildlife Coexistence Plan

A brochure prepared by Passarella & Associates, Inc. entitled "Wading Bird Informational Pamphlet" (Appendix D) will be provided to homeowners and maintenance staff. The brochure provides wading bird information and methods to prevent human-wading bird interactions.

10.3 Big Cypress Fox Squirrel Human-Wildlife Coexistence Plan

Problematic encounters between future residents and BCFSs are not anticipated. Restricted resident access to the preserves through signage, as well as the typical nest location high within the tree canopy, will ensure against disturbance to fox squirrel nests.

10.4 Florida Black Bear Human-Wildlife Coexistence Plan

The attached FWCC educational brochure entitled "A Guide to Living in Bear Country" (Appendix E) will be provided to homeowners and maintenance staff. This brochure may be found at http://myfwc.com/wildlifehabitats/managed/bear/brochures/.

In addition, bear-proof dumpsters will be used in areas where communal garbage is collected. Attached is a list of companies obtained from the FWCC that provide bear-proof garbage containers for commercial and residential use (Appendix F). Bear proof receptacles will be required for each residential unit. Please note that Lee County Ordinance No. 11-27 requires individual trash receptacles for residential units of 40 gallons or less in size. In consultation with the local waste disposal company, bear-proof dumpsters will be purchased from one of the listed companies or another company that is able to provide bear-proof dumpsters which are compatible with local equipment.

10.5 Florida Panther Human-Wildlife Coexistence Plan

The attached educational brochure entitled "A Guide to Living with Florida Panthers" (Appendix G), prepared by the FWCC and the U.S. Fish and Wildlife Service, will be provided to homeowners and maintenance staff. This brochure provides safety tips and instructions for panther encounters. The brochure may be found on the FWCC website located at http://myfwc.com/conservation/you-conserve/wildlife/panthers/.

11.0 PRESERVE SIGNAGE

Signage shall be placed around preserve areas to identify and protect the preserves during construction. The signs shall be no closer than ten feet from residential property lines, be limited to a maximum height of four feet and a maximum size of two square feet, and otherwise comply with Section 5.06.00 of the LDC. Maximum sign spacing shall be 300 feet. Signs identifying the preserve as a "nature preserve area" will be installed along the boundary of the preserve. The signage should include language stating, "No dumping allowed." The approximate locations of the preserve signs are depicted on Appendix A and a typical preserve sign is attached as Appendix B.

12.0 REFERENCES

Florida Department of Transportation. 1999. Florida Land Use, Cover and Forms Classification System. Procedure No. 550-010-001-a. Third Edition.

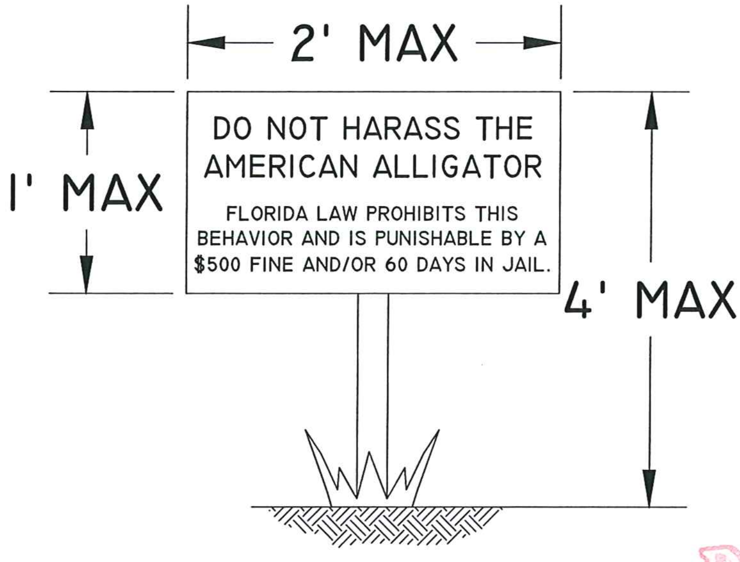
Humphrey, S.R. 1992. Rare and Endangered Biota of Florida. Volume 1. Mammals. University Press of Florida, Gainesville, Florida.

APPENDIX A

INDIGENOUS PRESERVE MAP

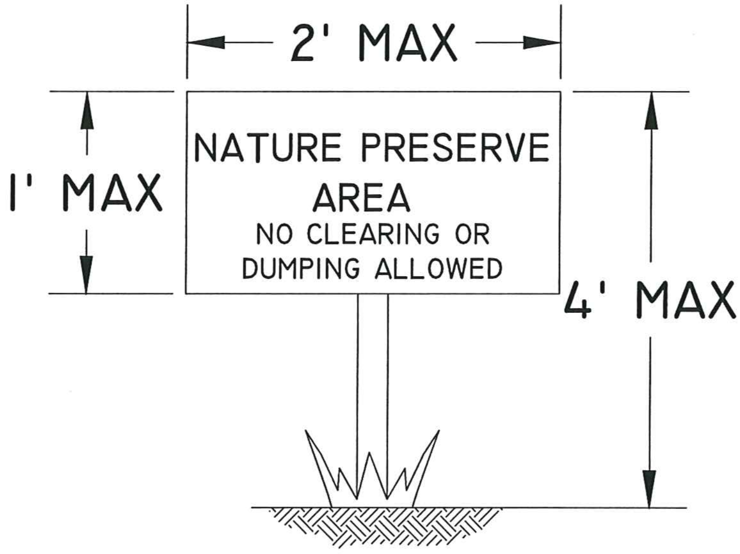
APPENDIX B

AMERICAN ALLIGATOR MANAGEMENT AND PRESERVE SIGNAGE



TYPICAL AMERICAN ALLIGATOR SIGNAGE

N.T.S.



TYPICAL PRESERVE SIGNAGE

N.T.S.

APPENDIX B. AMERICAN ALLIGATOR MANAGEMENT AND
PRESERVE SIGNAGE
CORKSCREW SHORES

DRAWN BY	DATE
H.H.	5/21/13
REVIEWED BY	DATE
S.J.	5/21/13
REVISED	DATE

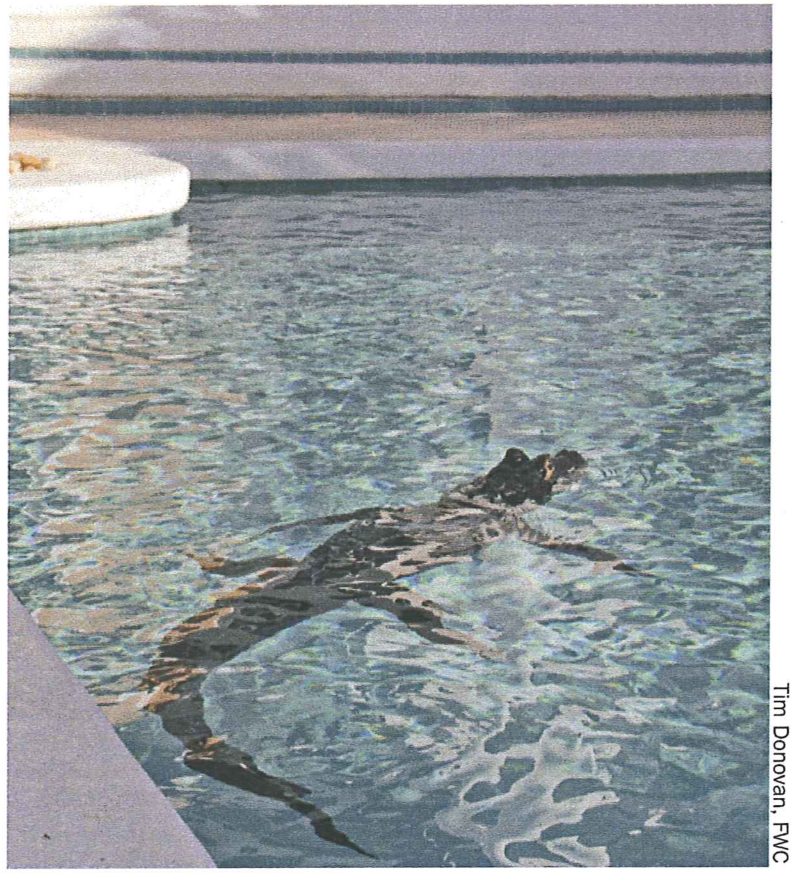
Consulting Ecologists
PASSARELLA & ASSOCIATES INC

J:\2011\11CPL2065\2013\ERP\APPENDIX B ALLIGATIOR AND PRESERVE SIGNAGE.DWG TAB: 8X11-M MAY 23, 2013 - 1:59PM PLOTTED BY: FELIPE LEMUS

APPENDIX C

AMERICAN ALLIGATOR
INFORMATIONAL PAMPHLET

- Never feed alligators – it's dangerous and illegal. When fed, alligators can overcome their natural wariness and learn to associate people with food. When this happens, some of these alligators have to be removed and killed.
- Dispose of fish scraps in garbage cans at boat ramps and fish camps. Do not throw them into the water. Although you are not intentionally feeding alligators when you do this, the result can be the same.
- Seek immediate medical attention if you are bitten by an alligator. Alligator bites can result in serious infections.
- Observe and photograph alligators only from a distance. Remember, they're an important part of Florida's natural history as well as an integral component of aquatic ecosystems.


Tim Donovan, FWC

Call 866-FWC-GATOR (392-4286) to report nuisance alligators.


Janice Plain

To report nuisance alligators call **866-FWC-GATOR (866-392-4286).**

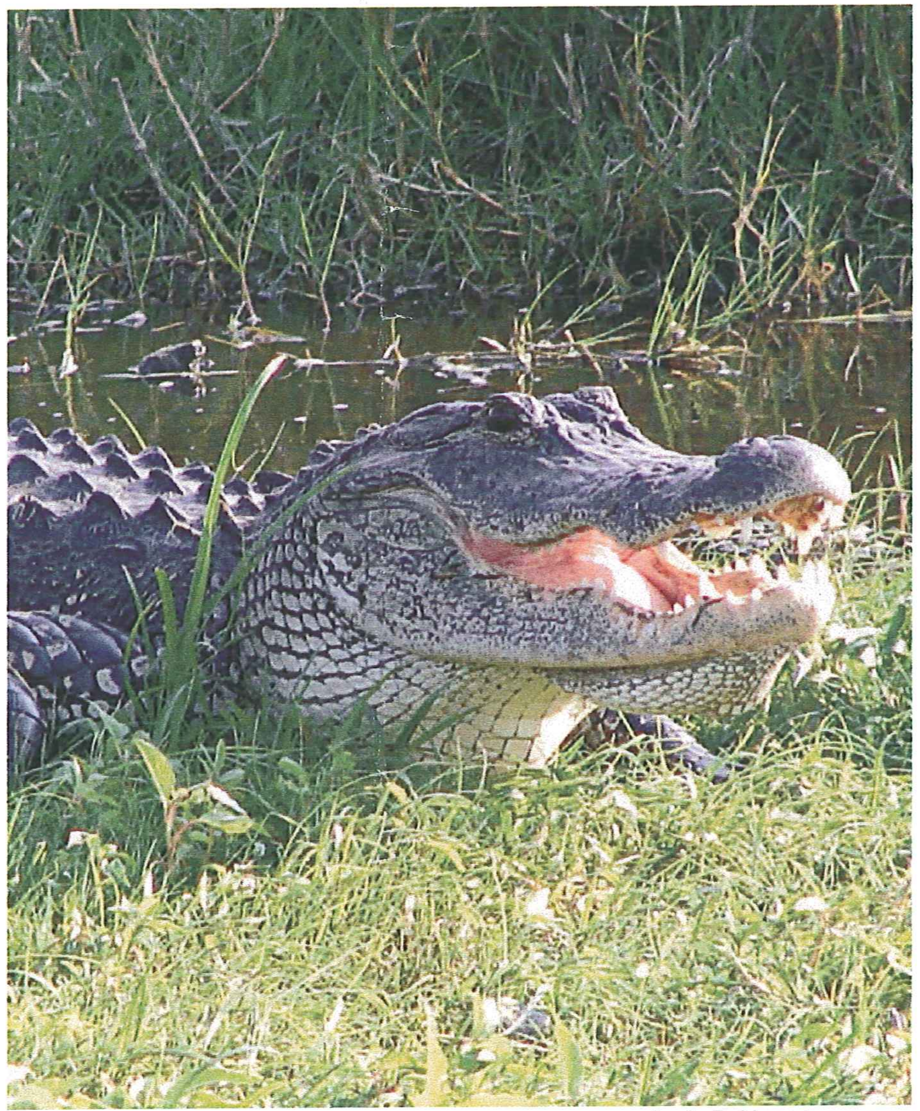
MyFWC.com/Alligator

REWARD
Report Fish & Wildlife Violations
1-888-404-3922

♻ Printed on recycled content.

02/2012

A Guide to Living with **Alligators**


Jamie Feddersen

Florida Fish and Wildlife Conservation Commission
MyFWC.com

Lizabeth West, FWC

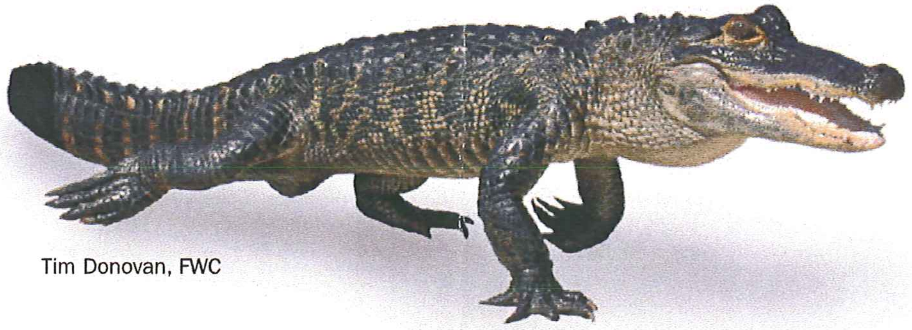
Do not swim outside of posted swimming areas or in waters that may be inhabited by alligators.

Living with Alligators

In Florida, the growing number of people living and recreating near water has led to a steady rise in the number of alligator-related complaints. The majority of these complaints relate to alligators being where they simply aren't wanted. Because of these complaints, the Florida Fish and Wildlife Conservation Commission's Statewide Nuisance Alligator Program permits the killing of approximately 7,000 nuisance alligators each year. Using this approach, and through increased public awareness, the rate of alligator bites on people has remained constant despite the increased potential for alligator-human interactions as Florida's human population has grown.

Alligators are an important part of Florida's landscape and play a valuable role in the ecology of our state's wetlands. Alligators are predators and help keep other aquatic animal populations in balance. A better understanding of the facts and information presented in this brochure will help ensure that people and alligators can continue to coexist.

Visit MyFWC.com/Gators for more information about alligators and the latest nuisance alligator program statistics.



Tim Donovan, FWC

Alligators and People

Alligators are a fundamental part of Florida's wetlands, swamps, rivers and lakes, and they are found in all 67 counties. Florida continues to experience human population growth. Many new residents seek waterfront homes, resulting in increased interactions between people and alligators.

Although most Floridians understand that we have alligators living in our state, the potential for conflict exists. Because of their predatory nature, alligators may target pets and livestock as prey. Unfortunately, people also are occasionally bitten. Since 1948, Florida has averaged about five unprovoked bites per year. During that period, a little more than 300 unprovoked bites to people have been documented in Florida, with 22 resulting in deaths.

In the past 10 years, the Florida Fish and Wildlife Conservation Commission has received an average of nearly 16,000 alligator-related complaints per year. Most of these complaints deal with alligators occurring in places such as backyard ponds, canals, ditches and streams, but other conflicts occur when alligators wander into garages, swimming pools and golf course ponds. Sometimes, alligators come out of the water to bask in the sun or move between wetlands. In many cases, if left alone, these alligators will eventually move on to areas away from people.

Safety Tips

- Generally, alligators less than four feet in length are not large enough to be dangerous unless handled. However, if you encounter any alligator that you believe poses a threat to people, pets or property, call the Nuisance Alligator Hotline at 866-FWC-GATOR (866-392-4286). Please be aware, nuisance alligators are killed, not relocated.

- Be aware of the possibility of alligators when you are in or near fresh or brackish water. Bites may occur when people do not pay close enough attention to their surroundings when working or recreating near water.

- Do not swim outside of posted swimming areas or in waters that might be inhabited by large alligators.

- Alligators are most active between dusk and dawn. Therefore, avoid swimming at night.

- Dogs and cats are similar in size to the natural prey of alligators. Don't allow pets to swim, exercise or drink in or near waters that may contain alligators. Dogs often attract an alligator's interest, so do not swim with your dog.

- Leave alligators alone. State law prohibits killing, harassing or possessing alligators. Handling even small alligators can result in injury.

Tim Donovan, FWC

A young alligator wanders onto a porch in a residential neighborhood.

APPENDIX D

WADING BIRD INFORMATIONAL PAMPHLET

Action to be taken if you observe someone harassing a wading bird:

Promptly notify the FWCC
1-888-404-FWCC

Tips for living with wading birds

- Do not feed wading birds.
- Keep out of vegetated areas, surrounding lakes and marshes.
- Keep pets leashed to avoid coming into contact with wading birds.
- Properly dispose of fishing line to avoid bird entanglement.

Prepared By:
PASSARELLA & ASSOCIATES INC
Consulting Ecologists
13620 Metropolis Avenue, Suite 200
Fort Myers, Florida 33912
(239) 274-0067

WADING BIRD INFORMATIONAL PAMPHLET

CORKSCREW SHORES

Description:

Wading birds are a diverse group of birds which utilize shallow marsh areas as foraging and breeding habitats. They are typically characterized as having long necks, legs and bills, which allows them to feed in shallow water. Wading birds can be found in Florida year round. Examples of wading birds include: great egrets, great blue herons, white ibis', little blue herons and snowy egrets.

Habitat:

Wading birds inhabit all counties in the state of Florida and are most common in the shallow marsh or wetland areas throughout the state. They can also be found in both coastal and inland areas, salt marshes, swamps, ponds, drainage canals, and ditches. Wading birds breed and nest in colonies which consist of various species of other wading birds. Breeding generally occurs just prior to or during the wet season. Stick nests are built in trees or bushes near wetland areas and above the water line.

Wading birds feed in shallow water areas where prey is most concentrated. They feed by spearing prey with their bills or by straining small species out of the water and sediment. Prey may include small fish, invertebrates or other aquatic organisms. Wading birds have also been known to consume snakes, frogs and small rodents.

Protection:

Most wading birds are listed as species of special concern by the State of Florida. Some species such as wood storks are listed as endangered by both the State of Florida and the U.S. Fish and Wildlife Service. It is unlawful for anyone to disturb or take nests or eggs, feed, injure, harm, harass, or kill any wading birds species. Persons who knowingly violate the law may be subject to fines and/or jail time.

APPENDIX E

FLORIDA BLACK BEAR INFORMATIONAL PAMPHLET

Milt Fox

Discouraging bears at home

Properly storing or securing residential garbage and other attractants is a proven method of discouraging bears and preventing bear problems around homes, farms and neighborhoods.

The following items attract bears and should be protected by an electric fence, wildlife resistant containers or stored in a secure place, such as a garage or sturdy shed:

- Trash and recycling containers
- Bird and squirrel feeders
- Game feeders
- Pet foods and bowls
- Barbeque grills and smokers
- Pets and small livestock
- Livestock feed
- Compost piles
- Beehives
- Fruit and nut-bearing trees and shrubs

Help conserve black bears by purchasing a Conserve Wildlife license plate at your local tax collector's office or online at BuyAPlate.com.

Secure common bear attractants

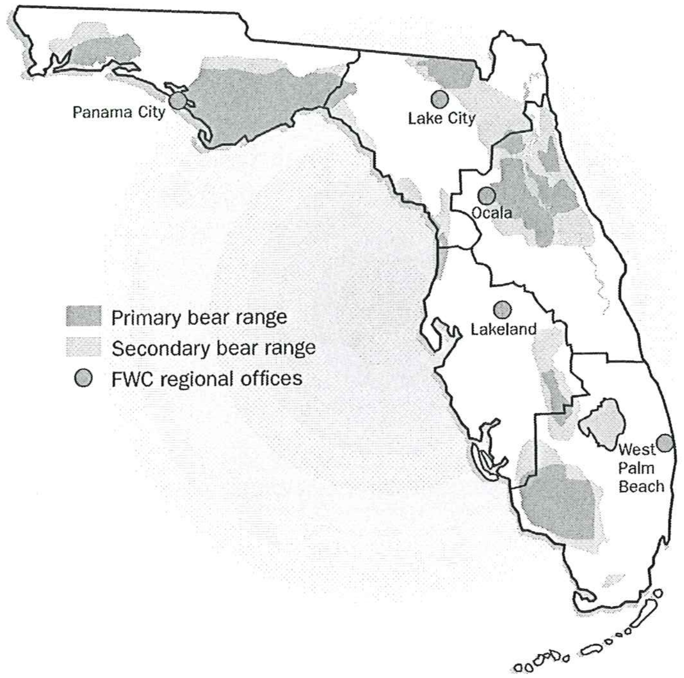
- Use electric fencing to protect gardens, compost piles, apiaries and livestock.
- Store garbage and recyclables in bear-resistant containers or in a secure area until morning of pick up.
- Feed pets indoors or bring food dishes inside before dark. Store pet and livestock feed in bear-resistant containers.
- Remove bird and wildlife feeders. Ensure the area is free of all seed, corn or other wild animal feed.
- Keep orchards and gardens tidy. Remove rotten fruit and harvest all nuts, fruits and vegetables when ripe.
- Clean meat smokers and barbeque grills with a degreasing detergent. Properly dispose of food remnants after each use.

Learn more about black bears with the Florida Black Bear Curriculum Guide. The guide is designed to educate teachers and students in grades 3-8 and offers a comprehensive series of lessons on Florida's black bear.

To learn more about black bears and for tips on how to reduce bear attractants, as well as instructions for electric fencing, suggestions for bear-resistant containers, information about the Conserve Wildlife license tag or the curriculum guide, visit MyFWC.com/bear.

Jessica Tice

Bear ranges in Florida



If you are experiencing bear problems, please contact the nearest FWC regional office.

North Central, Lake City	386-758-0525
Northeast, Ocala	352-732-1225
Northwest, Panama City	850-265-3676
South, West Palm Beach	561-625-5122
Southwest, Lakeland	863-648-3200

If you suspect illegal activity, call FWC's Wildlife Alert Hotline at 1-888-404-3922.

Cover photo by Ashley Hockenberry

Florida Fish and Wildlife
Conservation Commission

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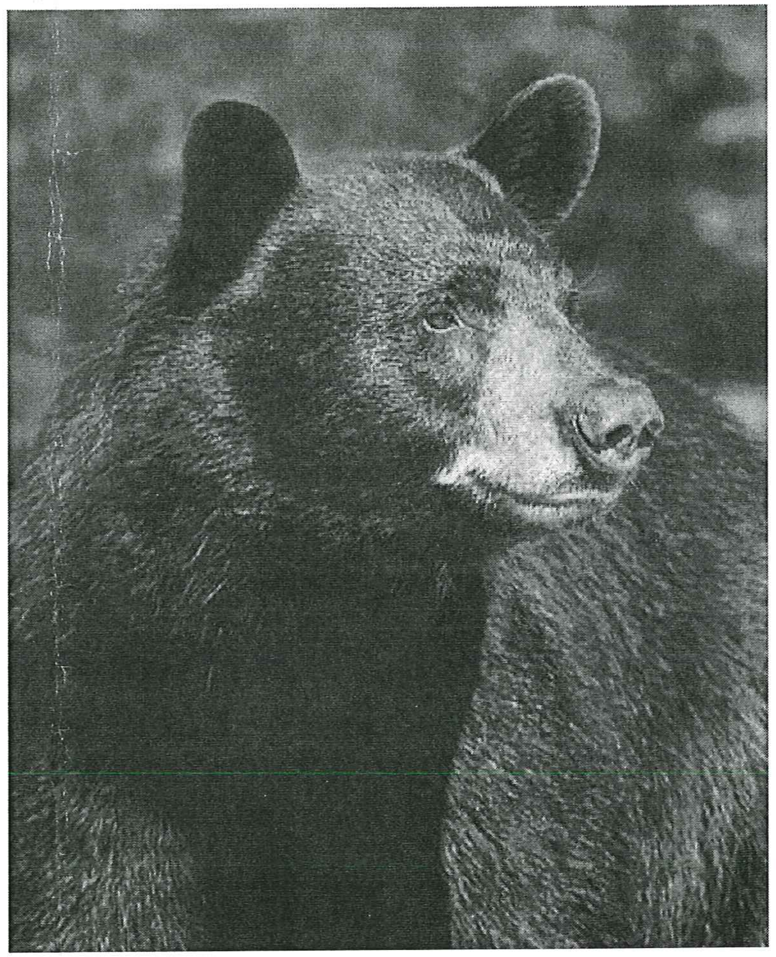
A guide to living in
bear country



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COMMUNITY DEVELOPMENT

Ashley Hockenberry

If you live in Florida, you should know

Black bears are at a crossroads in the Sunshine State. Since the 1980s, Florida's bear population has been increasing in most areas of the state while the human population is rapidly expanding. As a result, bears and humans are encountering each other more than ever.

Calls to the Florida Fish and Wildlife Conservation Commission (FWC) about black bear and human encounters have increased from 1,000 in 2001 to over 2,500 in 2008. The most common calls refer to bear sightings and bears in garbage.

The mere presence of a black bear does not represent a problem. In fact, living in bear country can provide unique and rewarding experiences for residents.

However, when black bears have access to pet food, garbage, birdseed, livestock feed or other sources of food, they quickly learn to associate people with food. Bears often are fed by humans, either intentionally or unintentionally. Once they become more comfortable around people, that familiarity may become a problem for both people and bears. Those bears are often killed, either by vehicle collisions, illegal shooting or as a result of bear management actions.

People ask why problem bears can't simply be relocated to a "wilderness area where they won't bother anyone." Unfortunately, areas that are large and remote enough for bears to avoid people are rare in Florida. Relocated bears typically leave the new area, either to return to their original home or to leave an area already occupied by other bears. Some bears will wander through unfamiliar areas and cross busy roads, creating a danger to the bear and to motorists. In addition, bears that do remain in the relocation area often exhibit the same behavior, which just shifts the problem to a new location. As a result, relocation is not a desirable or effective solution to bear conflicts. Wildlife biologists can provide technical advice to residents who live in bear country to help them take actions that will discourage bears from becoming a problem. The FWC is committed to ensuring the long-term well-being of the black bear, while addressing the property damage and safety concerns of residents and visitors.

Charles Towne

Ashley Hockenberry

If a bear comes into your yard

If you encounter a bear at close range, remain standing upright, back up slowly and speak to the bear in a calm, assertive voice.

- Do not intentionally feed or attract bears. If a bear is eating something on your property, take note of what it is and secure it after the bear has left the area.
- Never approach or surprise a bear. Keep as much distance between you and the bear as possible.
- Make sure you are in a secure area, and the bear has a clear escape route to leave the area; then yell, bang pots and pans or use an air horn to scare the bear away.
- Do not turn your back, play dead, or run from the bear. Back away slowly into a house, car or building.
- Report any bear that is threatening the safety of humans, pets or livestock, or causing property damage, to the FWC (see back panel).

Climbing trees is a bear's natural escape route. If the bear climbs a tree, keep people and pets away. When things quiet down, the bear will come down the tree and leave. This usually happens after dark, when the bear feels safe.

It is illegal to intentionally place food or garbage out that attracts bears and causes conflicts. Anything that attracts dogs, cats or raccoons also will attract bears!

Did you know?

Black bears are shy animals and generally not agressive towards people. When a bear stands on its hind legs, it is merely trying to get a better view, rather than acting in a threatening way. A bear may huff, snap its jaws and swat the ground if it feels threatened.

Black bears might "bluff charge" when cornered, threatened or stealing food. Stand your ground and then slowly back away. Always respect bears – they are large and powerful wild animals.

The bear facts

Black bears are the only species of bear in Florida and they once roamed the state's entire 34.5 million acres.

- FWC biologists estimate there are 2,500-3,000 black bears in Florida.
- Florida bears are black with a brown muzzle and may have a white chest marking called a blaze.
- Adult black bears weigh 150-400 pounds; males are usually larger than females. The largest male bear on record in Florida weighed 624 pounds; the largest female weighed 342 pounds.
- Female bears have their first litter at about 3½ years of age and generally have one to three cubs every other year.
- In Florida the breeding season runs from June to August and cubs are born about seven months later, in late January or early February.
- Bears of all ages are excellent climbers and will climb trees when they are frightened.
- About 80 percent of a black bear's diet comes from plants (e.g., fruits, nuts, berries), 15 percent from insects and 5 percent from meat.

Ashley Hockenberry

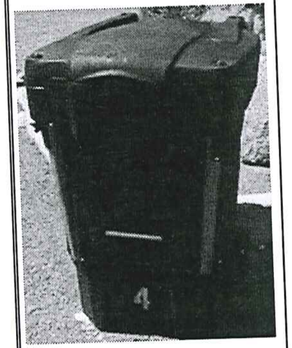
APPENDIX F

FWCC LIST OF BEAR-PROOF GARBAGE CONTAINERS

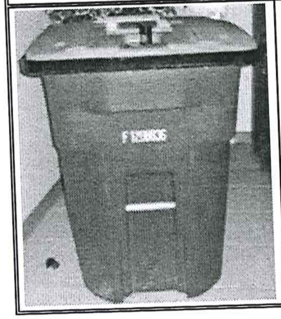
BEAR RESISTANT TRASH CONTAINERS (Updated October 2012)

Bear Management Program

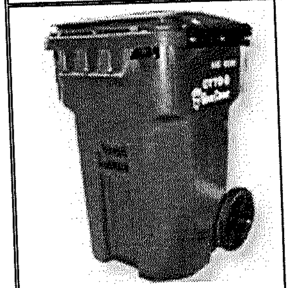
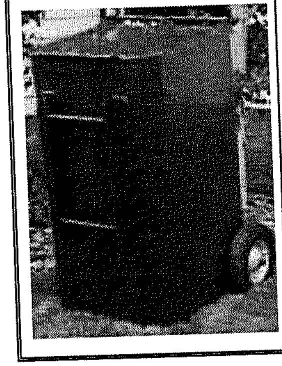
Residential Poly Carts *WITH* automatic locking lids *AND* designed for fully-automated waste pick-up

	Company	Contact Info/ Testing Status	Size	Minimum order	Price *per* container without shipping	Shipping *To Tallahassee, FL	Estimated Cost per Container[a]
	Kodiak Products	1-800-519-1172 Info@Kodiak-Products.com http://www.kodiak-products.com/ Passed IGBT[a]	96 gallon	1	Contact Kodiak Products	Contact Kodiak Products	$270.00
			96 gallon	300	Contact Kodiak Products	Contact Kodiak Products	$237.00

Residential Poly Carts and Cans *WITH* automatic locking lids

	Company	Contact Info/ Testing Status	Size	Minimum order	Price *per* container without shipping	Shipping *To Tallahassee, FL	Estimated Cost per Container[a]
	Toter, Inc	Statesville, NC 1-800-424-0422 toter@toter.com http://www.toter.com Passed IGBT[a]	96 gallon	50	$197	$750 (for minimum 50 cans order)	$212.00

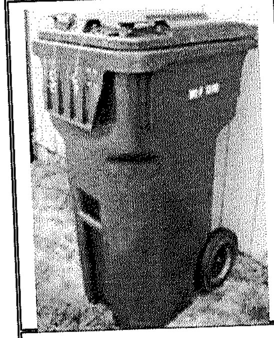
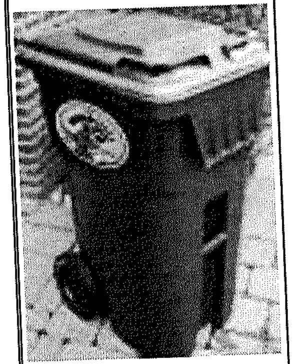
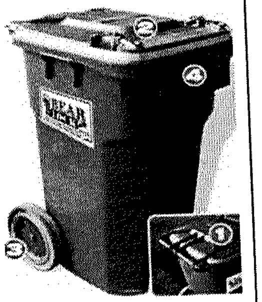
Residential Poly Carts and Cans *WITH* automatic locking lids

	Company	Contact Info/ Testing Status	Size	Minimum order	Price *per* container without shipping	Shipping *To Tallahassee, FL	Estimated Cost per Container [a]
	BearSaver	1-800-851-3887 Fax: 909-605-7780 sales@bearsaver.com http://www.bearsaver.com Passed IGBT [a]	32 gallon	20	Contact BearSaver	Contact BearSaver	Contact BearSaver
			65 gallon	20	$159	$473	$182.65
			96 gallon	24	$170	$863	$205.96
	BearProof Inc	234 S. Golden Dr. Silt, CO 81652 970-309-2460 Fax: 970-876-0420 Info@BearProofInc.com http://www.bearproofinc.com	32 gallon	1	$663 each (for 1-4 cans) $638 each (for 5+ cans)	$291.59	$954.59 – 929.59 [b]
			65 gallon	1	$404 each (for 1-4 cans) $379 each (for 5+ cans)	$237.97	$641.97 – 616.97 [b]
			96 gallon	1	$416 each (for 1-4 cans) $391 each (for 5+ cans)	$265.90	$947.80 – 656.90 [b]

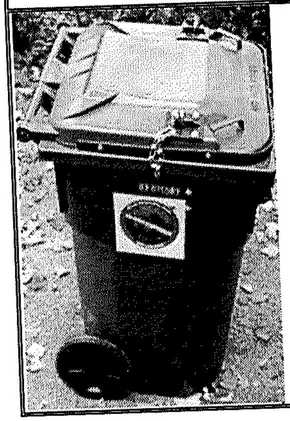
Residential Poly Carts and Cans *WITHOUT* automatic locking lids

	Company	Contact Info/ Testing Status	Size	Minimum order	Price *per* container without shipping	Shipping *To Tallahassee, FL	Estimated Cost per Container [a]
	The Growler	Sanford, FL 407-519-0766 dennisbooth@cfl.rr.com http://www.thegrowlercan.com Passed IGBTP [a]	32 gallon	1	$179 (Discounts if buying >3)	Free in central FL or $34	$189 in central FL or $221
			64 gallon	1	$189 (Discounts if buying >3)	Free in central FL or $85	$189 in central FL or $274
			95 gallon	1	$209 (Discounts if buying >3)	Free in central FL or $100	$209 in central FL or $309

Residential Poly Carts and Cans *WITHOUT* automatic locking lids

	Company	Contact Info/ Testing Status	Size	Minimum order	Price *per* container without shipping	Shipping* *To Tallahassee, FL	Estimated Cost per Container [b]
	Solid Waste Systems	7855 E. Lark Dr. Parker, CO 80138 Phone: 303-840-3390/ 1-800-944-7973 Fax: 303-840-3460 solidws@comcast.net http://www.bearproofsystems.com/ Passed IGBTP [a]	65 gallon	1	$172	$128	$300
			95 gallon	1	$190	$200	$390
	BEARicuda Bins	1-877-232-7428 Fax: 860-540-0611 kevin@bearicuda.com http://www.bearicuda.com	32 gallon	1	$189 each (for 1-3 cans) $185 each (for 4+ cans)	$75	$226.50 – 222.50 [b]
			64 gallon	1	$199 each (for 1-3 cans) $165 each (for 4+ cans)	Contact BEARicuda Bins	Contact BEARicuda Bins
			95 gallon	1	$219 each (for 1-3 cans) $209 each (for 4+ cans)	$169	$303 - $251.25 [b]
	DAWG, Inc.	25 Lassy Court Terryville, CT 06786 1-800-935-3294 bgalvin@dawginc.com http://www.dawginc.com Passed IGBTP [a]	32 gallon	1	$183	$67.50 (for 1 can) $412 (for 16 cans)	$250.50 - $208.75 [c]
			64 gallon	1	$192	$158 (for 1 can) $439 (for 12 cans)	$350 – 228.60 [c]
			95 gallon	1	$208	$186 (for 1 can) $382 (for 8 cans)	$394 – $255.75 [c]

Residential Poly Carts and Cans *WITHOUT* automatic locking lids

	Company	**Contact Info/ Testing Status**	**Size**	**Minimum order**	**Price *per* container** without shipping	**Shipping*** *To Tallahassee, FL	**Estimated Cost per Container**[b]
	Bear Proofing-R-US	Phone: 704-435-8297/ 704-466-8010 bearproofing.r.us@gmail.com http://bearproofingr-us.com/	96 gallon	1	$132	$333 if pre-assembled $282 with hardware kit	$465 – 414[d]

[a] Product has passed the Interagency Grizzly Bear Committee Testing Program (IGBTP) with captive bears at the Living with Wildlife Foundation.

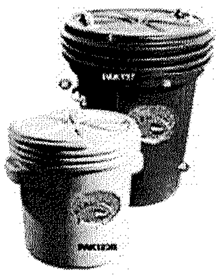
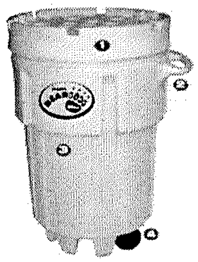
[b] The " Estimated Cost per Container" column is showing = amount for shipping divided by (÷) the minimum amount that has to be purchased plus (+) the price per container. Therefore, it is showing the cost of *one* can. Each company has their own minimum order of cans that has to be purchased. Hence, the price provided in the last column is NOT the total cost of the full order.

[c] Costs depend on the amount of cans being purchased (shipping costs decreases the more cans purchased)

[d] Costs depend on the "type" of order you place (assembled or with hardware kit)

NOTE: all final prices depend on the amount of cans bought, price of gas at the moment of shipping, and the area where it is being shipped.

Residential Poly Carts and Cans WITH screw on lids

	Company	Contact Info	Size	Minimum order	Price *per* container without shipping	Shipping* *To Tallahassee, FL	Estimated Cost per Container [a]
	DAWG, Inc.	25 Lassy Court Terryville, CT 06786 Phone: 800-935-3294 bgalvin@dawginc.com http://www.dawginc.com	20 gallon	1	$38	Contact DAWG, Inc.	Contact DAWG, Inc.
			30 gallon	1	$62	$65 (for 1 can) $461.50 (for 24 cans)	$124 - $78.22 [b]
	BEARicuda Bins	Phone: 877-232-7428 Fax: 860-540-0611 kevin@bearicuda.com http://www.bearicuda.com	50 gallon	1	$235 (for 1-5 cans) $225 (for 6+ cans)	Contact BEARicuda Bins	Contact BEARicuda Bins
			95 gallon	1	$265 (for 1-5 cans) $239 (for 6+ cans)	Contact BEARicuda Bins	Contact BEARicuda Bins
	BEARier Bins	John Burpee 1-888-433-6920 Fax 888-778-5869 info@bearierbins.com	30 gallon	1	$65	Contact BEARier Bins	Contact BEARier Bins

[a] The " Estimated Cost per Container" column is showing = amount for shipping divided by (÷) the minimum amount that has to be purchased plus (+) the price per container. Therefore, it is showing the cost of *one* can.

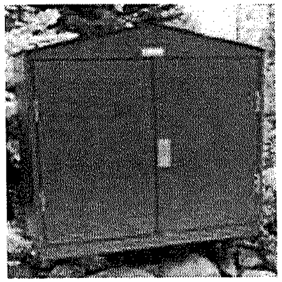
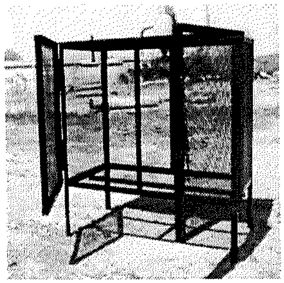
→ Each company has their own minimum order of cans that has to be purchased. Hence, the price provided in the last column is NOT the total cost of the full order.

NOTE: all final prices depend on the amount of cans bought, price of gas at the moment of shipping, and the area where it is being shipped.

Other Recreational / Residential Trash Storage Containers

See the following companies (listed above) for more options: BearSaver, Bear Proof Inc., Bear Proofing-R-US, Bear Proof Systems

*For shipping costs contact the corresponding company

	Company	Contact Info/ Testing Status	Description	Size	Price *per* container without shipping
	**BearGuard**	P.O. Box 89 Tahoe City, CA 96145 Phone/Fax: 530-581-2211 sales@bearguardinfo.com http://www.bearguardinfo.com Passed IGBTP [a]	Metal trashcan enclosure – internal lock with key *closed for the winter months	Holds two 32 gallon round cans	$1,099
				Holds two 32 gallon rectangular cans	$999
	**Haul-All Equipment Ltd.**	1-888-428-5255 Fax: 403-328-9956 sales@haulall.com http://www.haulall.com/contain.htm Passed IGBTP [a]	Metal trashcan enclosure – with automatic latching door	Holds two 32 gallon round cans	Contact company for pricing
	**Smoky Metal Works**	1014 Old Knoxville Hwy Sevierville, TN 37862 965-908-4248 sam@smokymetalworks.com www.smokymetalworks.com	Wire mesh metal - trashcan enclosure *with* clip or lock on door	Holds two 32 gallon round cans	$375

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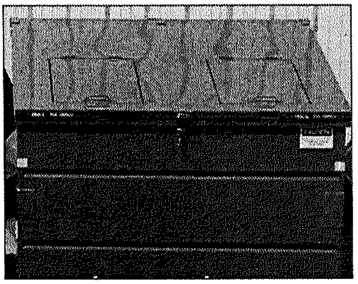
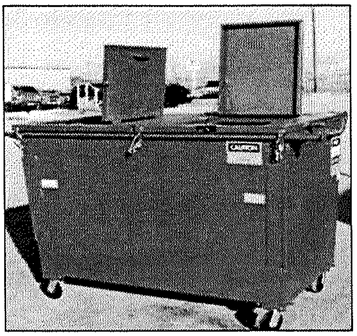
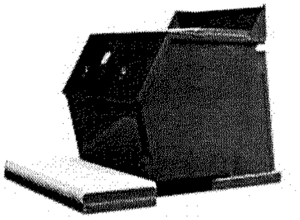
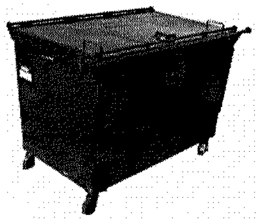
[a] Product has passed the Interagency Grizzly Bear Committee Testing (IGBT) Program with captive bears at the Living with Wildlife Foundation

Animal Resistant Dumpsters

There are many more companies who sell animal resistant dumpsters, this is just a sample.
All companies listed passed the Interagency Grizzly Bear Committee Testing Program with captive bears at the Living with Wildlife Foundation.
For shipping costs, please contact the corresponding company.

	Company	Contact Info/ Testing Status	Description	Design	Price *per* container without shipping
 	**Capital Industries, Inc.**	5801 Third Avenue South Seattle, WA 98108 1-800-967-8585 / 206-762-8585 Fax: 206-762-5455 sales@capitalind.com http://www.capitalind.com/main/	Metal Containers & Lids	Various - 2, 4, and 6 cubic yard	contact company for pricing
	**Haul-All Equipment Ltd.**	1-888-428-5255 Fax: 403-328-9956 sales@haulall.com http://www.haulall.com/contain.htm	Metal Containers & Lids	Various - 2, 4, and 6 cubic yard	contact company for pricing

	Company	Contact Info/ Testing Status	Description	Design	Price *per* container without shipping
	**Robertson Enterprises**	Robertson Enterprises P.O. Box 1711 Cody, WY 82414 307-587-2925 ext:12 http://robertsonenterprises.net/	Metal Containers & Lids	Various - 2, 4, and 6 cubic yard	contact company for pricing
	Colorado Correctional Industries	2862 S. Circle Dr. Colorado Springs, CO 80906 1-800-685-7891 http://www.coloradoci.com	Metal Containers & Lids	Various - 2, 4, and 6 cubic yard	contact company for pricing
	Jamestown Advanced	Jamestown Advanced Products Corporation 2855 Girts Rd. Jamestown, NY 14701 1-800-452-0639 http://www.jamestownadvanced.com/	Metal Containers & Lids	Various - 2, 4, and 6 cubic yard	contact company for pricing
	UltraTec.	7278 Justin Way Mentor, OH 44060 1-800-585-8723 http://www.industrialinterface.com/company/waste/987/ultratech-international-inc/	Metal Containers & Lids	Various - 2, 4, and 6 cubic yard	contact company for pricing
	Enterprise Sales	540 Southeast 9th Avenue Ontario, OR 97914-3866 541-889-5541	Metal Containers & Lids	Various - 2, 4, and 6 cubic yard	contact company for pricing

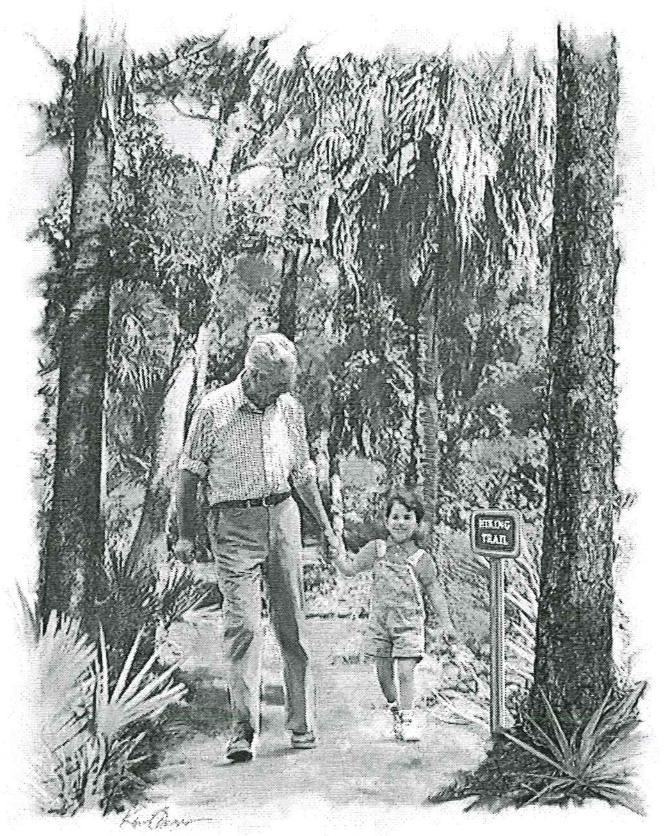
APPENDIX G

FLORIDA PANTHER INFORMATIONAL PAMPHLET

You live in Florida panther country

Florida panthers are reclusive and rarely seen by people. They normally live in remote, undeveloped areas. However, as the number of people in southern Florida grows, there is an increased chance of an encounter with a Florida panther.

This brochure contains some guidelines to help you live safely in Florida panther country.



Keep children within sight and close to you, especially outdoors between dusk and dawn.

If you feel threatened by a panther, or have lost pets or livestock to a panther, please call the Florida Fish and Wildlife Conservation Commission's Wildlife Alert Hotline at 1-888-404-FWCC (3922).

If you see a Florida panther

The Florida panther moves primarily at night. The chances of seeing a panther are slim. But if you live in Florida panther country, you need to know what to do if you see one.

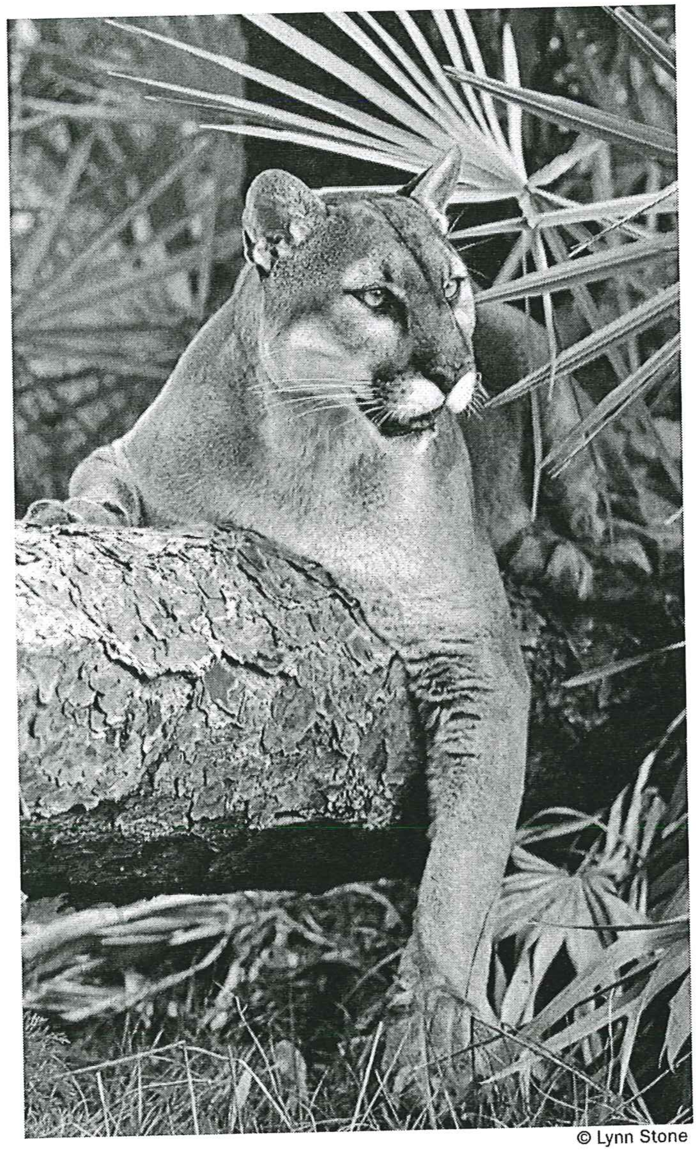
- **Keep children within sight and close to you.** Pick up any small children so they don't panic and run. Try to do this without bending over or turning away from the Florida panther.
- **Give them space.** Florida panthers typically will avoid a confrontation. Give them a way to escape.
- **Do not run.** Running may stimulate a panther's instinct to chase. Stand and face the animal. Make eye contact to let the panther know you are aware of its presence.
- **Avoid crouching or bending over.** Squatting or bending makes you look smaller, resembling a prey-sized animal.
- **Appear larger.** Make gestures that indicate you are not prey and that you may be a danger to the panther. Raise your arms. Open your jacket. Throw stones, branches or whatever you can reach without crouching or turning your back. Wave your arms slowly and speak firmly in a loud voice.
- **Fight back if attacked.** There has never been a reported panther attack in Florida. In western states, where attacks by cougars have occurred very rarely, potential victims have fought back successfully with rocks, sticks, caps, jackets, garden tools and their bare hands. Since large cats usually try to bite the head or neck, try to remain standing and face the animal.

Mark Lotz

printed on recycled paper

Florida Fish and Wildlife
Conservation Commission
620 S. Meridian Street
Tallahassee, FL 32399-1600
MyFWC.com/Panther

A guide to living with Florida Panthers



© Lynn Stone

MyFWC.com/Panther

7 ways to live safely in Florida panther country

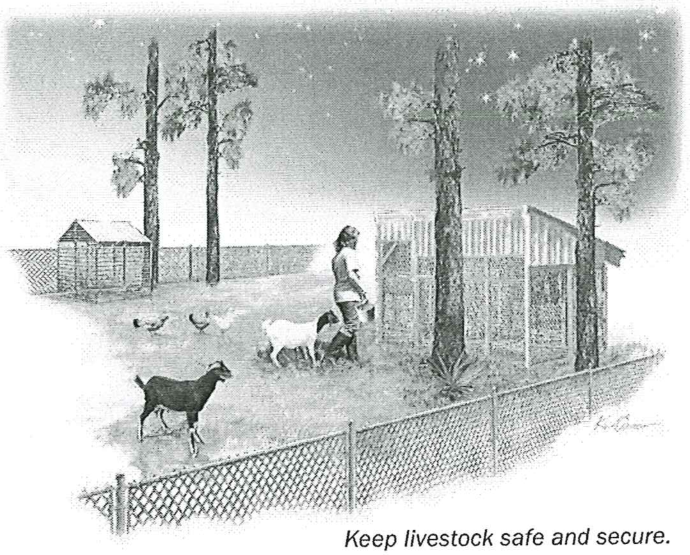
While these guidelines are meant to help you live safely in Florida panther habitat, they also apply to living with more commonly encountered wildlife, including raccoons, snakes, bears and alligators.

1. **Be alert from dusk 'til dawn (and whenever deer are active)**
   Florida panthers primarily are active at night. Exercise more caution at dawn, dusk or dark.

2. **Keep panther prey away**
   Deer, raccoons, rabbits, armadillos and wild hogs are prey for the Florida panther. By feeding deer or other wildlife, people inadvertently may attract panthers. Do not leave potential wildlife food outside, such as unsecured garbage or pet food. Consider fencing vegetable gardens.

3. **Keep pets secure**
   Free-roaming pets, or pets that are tethered and unfenced, are easy prey for predators, including panthers. Bring pets inside or keep them in a secure and covered kennel at night. Feeding pets outside also may attract raccoons and other panther prey; do not leave uneaten pet food available to wildlife.

Keep your pets safe and secure. Bring pets inside or keep them in a secure and covered kennel at night.



Keep livestock safe and secure.

4. **Keep domestic livestock secure**
   Where practical, place chickens, goats, hogs or other livestock in enclosed structures at night. Electric fencing can be an effective predator deterrent.

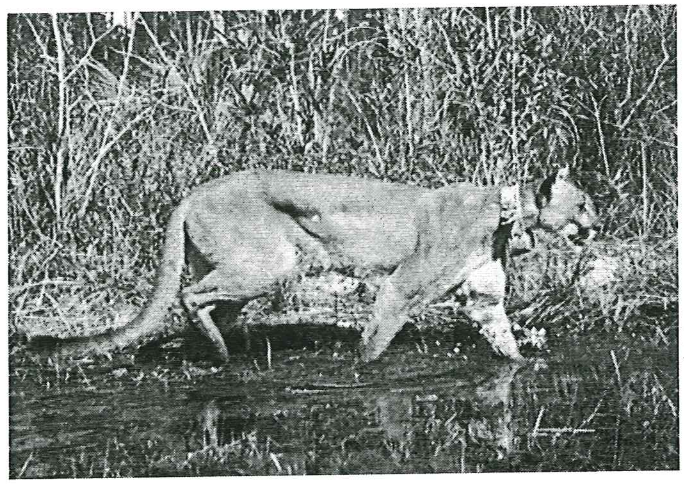
5. **Landscape for safety**
   Remove dense or low-lying vegetation that would provide hiding places for panthers and other predatory animals near your house.
   - Remove plants that deer like to eat.
   - Choose plants that do not attract deer or other panther prey species. For information on plants that deer do not like to eat, visit edis.ifas.ufl.edu/UW137.
   - Appropriate fencing will make your yard or play area uninviting to prey animals such as deer.

6. **Consider other deterrents**
   Outdoor lighting, motion sensors and electric fencing also may deter prey animals and panthers from entering your yard. Outdoor lighting also will make approaching prey and panthers more visible to you.

7. **Hike or bike with a friend**
   When recreating outdoors, it's a good practice to let friends or family know your whereabouts and when you expect to return. Better yet, take a friend with you!

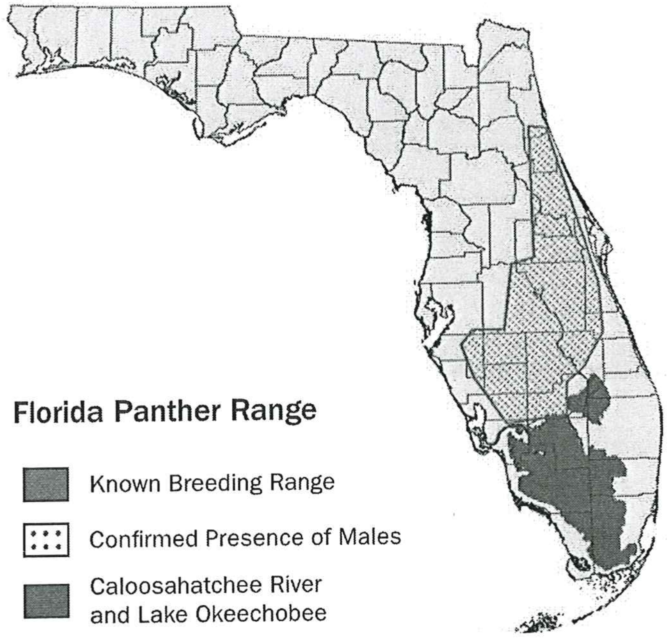
Florida panther facts

- The Florida panther is a subspecies of puma, also known as a mountain lion or cougar. It is the last subspecies still surviving in the eastern United States.
- Biologists estimate roughly 100-160 adult and subadult Florida panthers remain in the wild. Most panthers live in southwest Florida, south of the Caloosahatchee River, although some panthers have been documented traveling as far north as central Georgia.
- The Florida panther's decline occurred prior to 1950, when it still was legal to hunt panthers. It was listed as endangered in 1967 and is protected under federal and state laws.
- Florida panther numbers declined to roughly 30 cats by the early 1980s. Severe inbreeding resulted in many health and physical problems. A genetic restoration project in 1995 was successful in improving the genetic health and vigor of the panther population.
- Florida panthers are found primarily in the Big Cypress/Everglades ecosystem in Collier, Lee, Hendry, Monroe and Miami-Dade counties.
- Florida panthers' home range sizes vary by sex and by individual. Female home ranges are typically 60-75 square miles whereas males' are typically 160-200 square miles.



FWC panther team

- There is no record of a Florida panther attacking a person. Florida panthers are rarely seen.
- The biggest threat to the future of the Florida panther is habitat loss. A number of panthers also die each year due to vehicle strikes on roadways.
- The Florida panther was chosen as the State Animal of Florida in 1982 by a vote of elementary school students throughout the state.



Florida Panther Range

▩ Known Breeding Range

⁙ Confirmed Presence of Males

▩ Caloosahatchee River and Lake Okeechobee

This brochure was produced through a partnership of the Audubon Society of Florida, Conservancy of Southwest Florida, Defenders of Wildlife, Florida Fish and Wildlife Conservation Commission, Florida Wildlife Federation, Friends of the Florida Panther Refuge, Mountain Lion Foundation, National Park Service, National Wildlife Federation, Seminole Tribe of Florida, University of Florida and the U.S. Fish and Wildlife Service.

Funding provided by the Florida Fish and Wildlife Conservation Commission, Friends of the Florida Panther Refuge and the National Fish and Wildlife Foundation.

CORKSCREW SHORES
BASELINE VEGETATION MONITORING REPORT

July 2013

DOS 2013-00034

INTRODUCTION

This report documents the results of the baseline monitoring event for Corkscrew Shores (Project) located in Sections 21 and 28, Township 46 South, Range 26 East, Lee County (Figure 1). Baseline monitoring for the Project was conducted in July 2013. This report is being provided in accordance with Section 10-415(b)(4) of the Lee County Land Development Code.

MONITORING METHODOLOGY

Baseline vegetation monitoring was conducted for the Project in July 2013. There were 14 transects established in upland and wetland restoration, enhancement, and preservation areas on the property (Figure 2). Quantitative vegetation sampling was then conducted along each of these transects. In addition, 28 photograph stations were established, 1 at each end of each monitoring transect (Figure 2). A photograph was taken at each station to document the indigenous native vegetation and trees currently existing in these areas (Appendix A). The results of the qualitative vegetation monitoring conducted, as well as a list of observed wildlife species, are provided below.

RESULTS

Vegetation

Transect 1 – Wetland Preserve

The canopy consisted of swamp laurel oak (*Quercus laurifolia*) (30 percent), bald cypress (*Taxodium distichum*) (20 percent), and cabbage palm (*Sabal palmetto*) (5 percent). The sub-canopy consisted of wax myrtle (*Myrica cerifera*) (10 percent), saltbush (*Baccharis halimifolia*) (5 percent), slash pine (*Pinus elliottii*) (2 percent), myrsine (*Rapanea punctata*) (1 percent), and swamp laurel oak (1 percent). The dominant herbaceous species along this transect were caesarweed (*Urena lobata*) (29.1 percent), Asiatic pennywort (*Centella asiatica*) (12.0 percent), swamp fern (*Blechnum serrulatum*) (8.6 percent), and beaksedge (*Rhynchospora microcarpa*) (8.0 percent). The total ground cover was 70.9 percent. Bare ground accounted for the remaining 29.1 percent.

Transect 2 – Wetland Preserve

The canopy consisted of bald cypress (20 percent), cabbage palm (8 percent), slash pine (2 percent), and red maple (*Acer rubrum*) (2 percent). The sub-canopy consisted of wax myrtle (25 percent), Brazilian pepper (*Schinus terebinthifolius*) (10 percent), pond apple (*Annona glabra*)

(1 percent), and bald cypress (1 percent). The dominant herbaceous species along this transect were swamp fern (49.1 percent), musky mint (*Hyptis alata*) (13.1 percent), bog-hemp (*Boehmeria cylindrica*) (5.7 percent), and chain fern (*Woodwardia virginica*) (4.6 percent). The total ground cover was 76.6 percent. Bare ground accounted for the remaining 23.4 percent.

Transect 3 – Upland Restoration
This transect is located in an open area with no canopy or sub-canopy present. The dominant herbaceous species along this transect were spermacoce (*Spermacoce verticillata*) (18.3 percent), cogongrass (*Imperata cylindrical*) (13.1 percent), carpetweed (*Phyla nodiflora*) (13.1 percent), smutgrass (*Sporobolus indicus* var. *indicus*) (10.3 percent), and paspalum (*Paspalum* sp.) (8.6 percent). The total ground cover was 83.4 percent. Bare ground accounted for the remaining 16.6 percent.

Transect 4 – Upland Restoration/Wetland Preserve
This transect is located in an open area with no canopy or sub-canopy present. The dominant herbaceous species along this transect were common ragweed (*Ambrosia artemisiifolia*) (25.7 percent), cogongrass (14.3 percent), spermacoce (14.3 percent), bahiagrass (*Paspalum notatum*) (9.7 percent), carpetweed (7.4 percent), and torpedograss (*Panicum repens*) (5.7 percent). The total ground cover was 97.7 percent. Bare ground accounted for the remaining 2.3 percent.

Transect 5 – Upland Preserve/Restoration
The canopy consisted of slash pine (3 percent). The sub-canopy consisted of saw palmetto (*Serenoa repens*) (80 percent), Brazilian pepper (5 percent), slash pine (3 percent), swamp laurel oak (3 percent), melaleuca (*Melaleuca quinquenervia*) (2 percent), saltbush (2 percent), and wax myrtle (1 percent). The dominant herbaceous species along this transect were saw palmetto (16.7 percent), smutgrass (13.3 percent), and cogongrass (11.3 percent). The total ground cover was 50.7 percent. Bare ground accounted for the remaining 49.3 percent.

Transect 6 – Wetland Preserve/Restoration
The canopy consisted of bald cypress (75 percent), fig (*Ficus* sp.) (2 percent), and dahoon holly (*Ilex cassine*) (1 percent). The sub-canopy consisted of wax myrtle (10 percent), dahoon holly (8 percent), bald cypress (1 percent), fig (1 percent), and Brazilian pepper (1 percent). The dominant herbaceous species along this transect were swamp fern (26.3 percent), primrose willow (*Ludwigia peruviana*) (14.6 percent), and bog-hemp (10.3 percent).. The total ground cover was 52.6 percent. Bare ground accounted for the remaining 47.4 percent.

Transect 7 – Wetland Preserve/Restoration
The canopy consisted of bald cypress (20 percent) and cabbage palm (5 percent). The sub-canopy consisted of cabbage palm (10 percent), Brazilian pepper (5 percent), and guava (*Psidium* sp.) (3 percent). The dominant herbaceous species along this transect were caesarweed (43.4 percent), and dog fennel (*Eupatorium capillifolium*) (36.6 percent). The total ground cover was 80.0 percent. Bare ground accounted for the remaining 20.0 percent.

Transect 8 – Upland Preserve/Restoration

This transect is located in an open area with no canopy or sub-canopy present. The dominant herbaceous species along this transect were bahiagrass (62.3 percent), caesarweed (9.7 percent), and peewater leaf-flower (*Phyllanthus urinaria*) (4.0 percent). The total ground cover was 85.1 percent. Bare ground accounted for the remaining 14.9 percent.

Transect 9 – Upland Preserve/Restoration

The canopy consisted of slash pine (40 percent). The sub-canopy consisted of saw palmetto (40 percent), wax myrtle (5 percent), swamp laurel oak (2 percent), and slash pine (1 percent). The dominant herbaceous species along this transect were smutgrass (18.0 percent), bahiagrass (12.7 percent), broomsedge (*Andropogon virginicus*) (10.0 percent), spermacoce (10.0 percent), and chocolate weed (*Melochia corchorifolia*) (8.7 percent). The total ground cover was 70.7 percent. Bare ground accounted for the remaining 29.3 percent.

Transect 10 – Upland Preserve/Restoration

The canopy consisted of slash pine (20 percent). The sub-canopy consisted of saw palmetto (70 percent) and wax myrtle (5 percent). The dominant herbaceous species along this transect were little blue maidencane (*Amphicarpum muhlenbergianum*) (14.3 percent), bahiagrass (14.3 percent), cogongrass (13.1 percent), and Asiatic pennywort (11.4 percent). The total ground cover was 74.9 percent. Bare ground accounted for the remaining 25.1 percent.

Transect 11 – Wetland Preserve

The canopy consisted of bald cypress (15 percent). The sub-canopy consisted of wax myrtle (25 percent), bald cypress (10 percent), slash pine (4 percent), willow (*Salix caroliniana*) (1 percent), and Brazilian pepper (1 percent). The dominant herbaceous species along this transect were Asiatic pennywort (9.1 percent), maidencane (*Panicum hemitomon*) (7.4 percent), hyssop (*Bacopa monnieri*) (5.7 percent), and carpetweed (4.6 percent). The total ground cover was 44.0 percent. Bare ground accounted for the remaining 56.0 percent.

Transect 12 – Upland Restoration

This transect is located in an open area with no canopy or sub-canopy present. The dominant herbaceous species along this transect were spermacoce (26.9 percent), common ragweed (25.7 percent), smutgrass (16.6 percent), and carpetweed (15.4 percent). The total ground cover was 100.0 percent.

Transect 13 – Upland Restoration

The canopy is open. The sub-canopy consisted of wax myrtle (1 percent). The dominant herbaceous species along this transect were spermacoce (22.9 percent), carpetweed (16.6 percent), bahiagrass (10.3 percent), common ragweed (8.6 percent), broomsedge (7.4 percent), torpedograss (7.4 percent), and fingergrass (*Eustachys petraea*) (4.6 percent). The total ground cover was 86.9 percent. Bare ground accounted for the remaining 13.1 percent.

Transect 14 – Wetland Restoration

This transect is located in an open area with no canopy or sub-canopy present. The dominant herbaceous species along this transect were spermacoce (39.4 percent), bahiagrass (21.1 percent), cogongrass (9.1 percent), carpetweed (8.0 percent), primrose willow (5.7 percent), and torpedograss (3.4 percent). The total ground cover was 96.6 percent. Bare ground accounted for the remaining 3.4 percent.

Wildlife

Twelve bird, three mammal, and three amphibian species were observed during the baseline monitoring event. These species include; Eastern bluebird (*Sialia sialis*), great crested flycatcher (*Myiarchus crinitus*), great egret (*Ardea alba*), little blue heron (*Egretta caerulea*), loggerhead shrike (*Lanius ludovicianus*), Northern flicker (*Colaptes auratus*), Northern mockingbird (*Mimus polyglottos*), prairie warbler (*Setophaga discolor*), red-bellied woodpecker (*Melanerpes carolinus*), red-headed woodpecker (*Melanerpes erythrocephalus*), red-shouldered hawk (*Buteo lineatus*), swallow-tailed kite (*Elanoides forficatus*), coyote (*Canis latrans*), raccoon (*Procyon lotor*), white-tailed deer (*Odocoileus virginianus*), green tree frog (*Hyla cinerea*), pig frog (*Rana grylio*), and squirrel tree frog (*Hyla squirella*).

SUMMARY

Vegetation was quantitatively sampled along each of the 14 monitoring transects. Site conditions and vegetation were also qualitatively documented via a photograph taken at each of 28 photograph stations (Appendix A). Transects varied in their condition and amount of exotic vegetation cover. Several invasive plant species (Florida Exotic Pest Plant Council listed) were recorded during the monitoring event. These included Brazilian pepper, caesarweed, cogongrass, melaleuca, and torpedograss. Several of the transects are located in areas that will be be cleared, graded, and planted with native plant species (Figure 2). Thus, significant improvement to the vegetation in these areas are anticipated. The remaining areas are also expected to improve with the implementation of a routine exotic vegetation program.

Wildlife observations recorded during the baseline monitoring event included twelve bird, three mammal and three amphibian species. One little blue heron was observed, a state listed species of special concern.

The next monitoring event will be the post-construction event which will be conducted after the Project's management activities are completed. A post-construction monitoring report will be provided to Lee County Division of Environmental Sciences staff upon completion of these management activities.

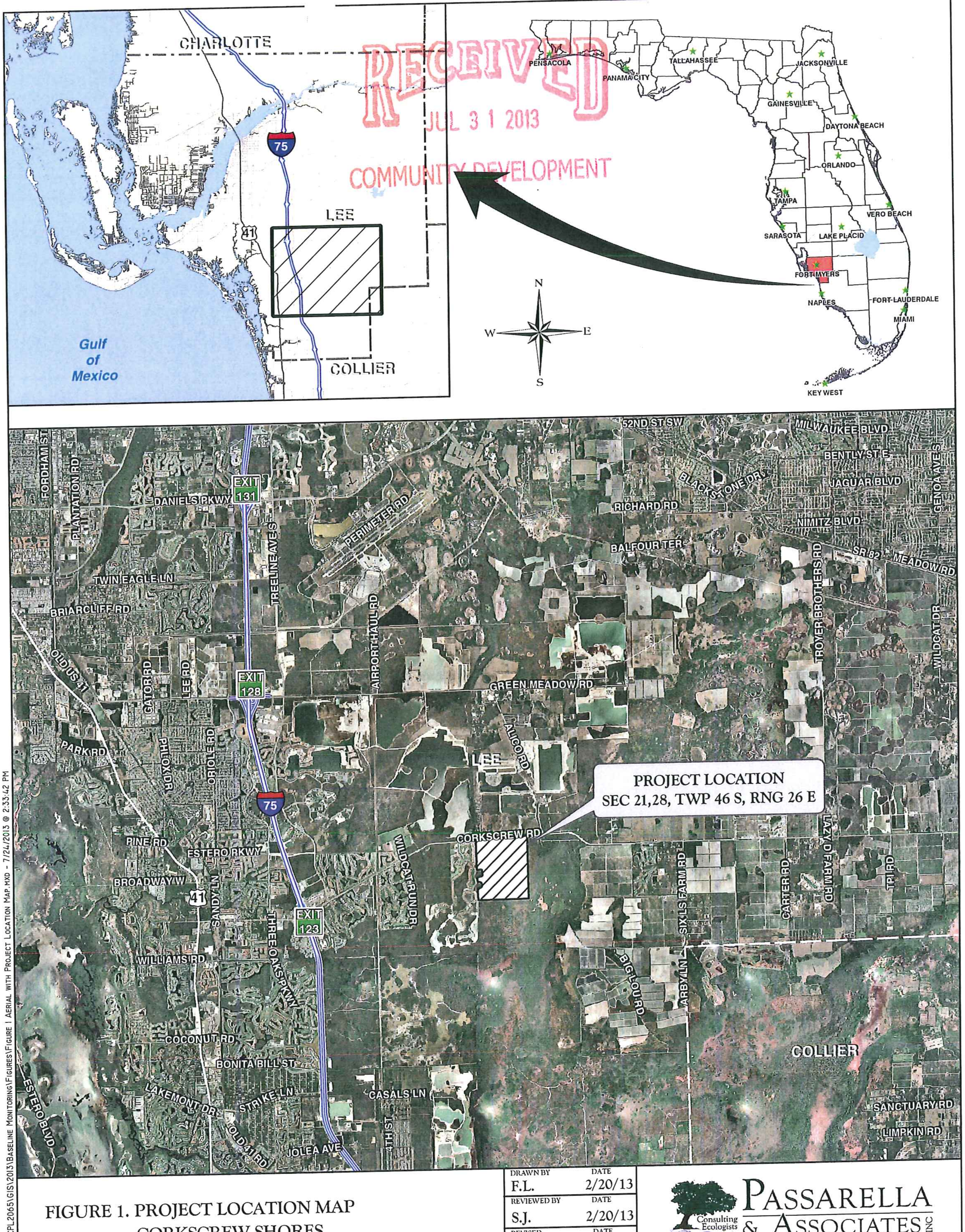


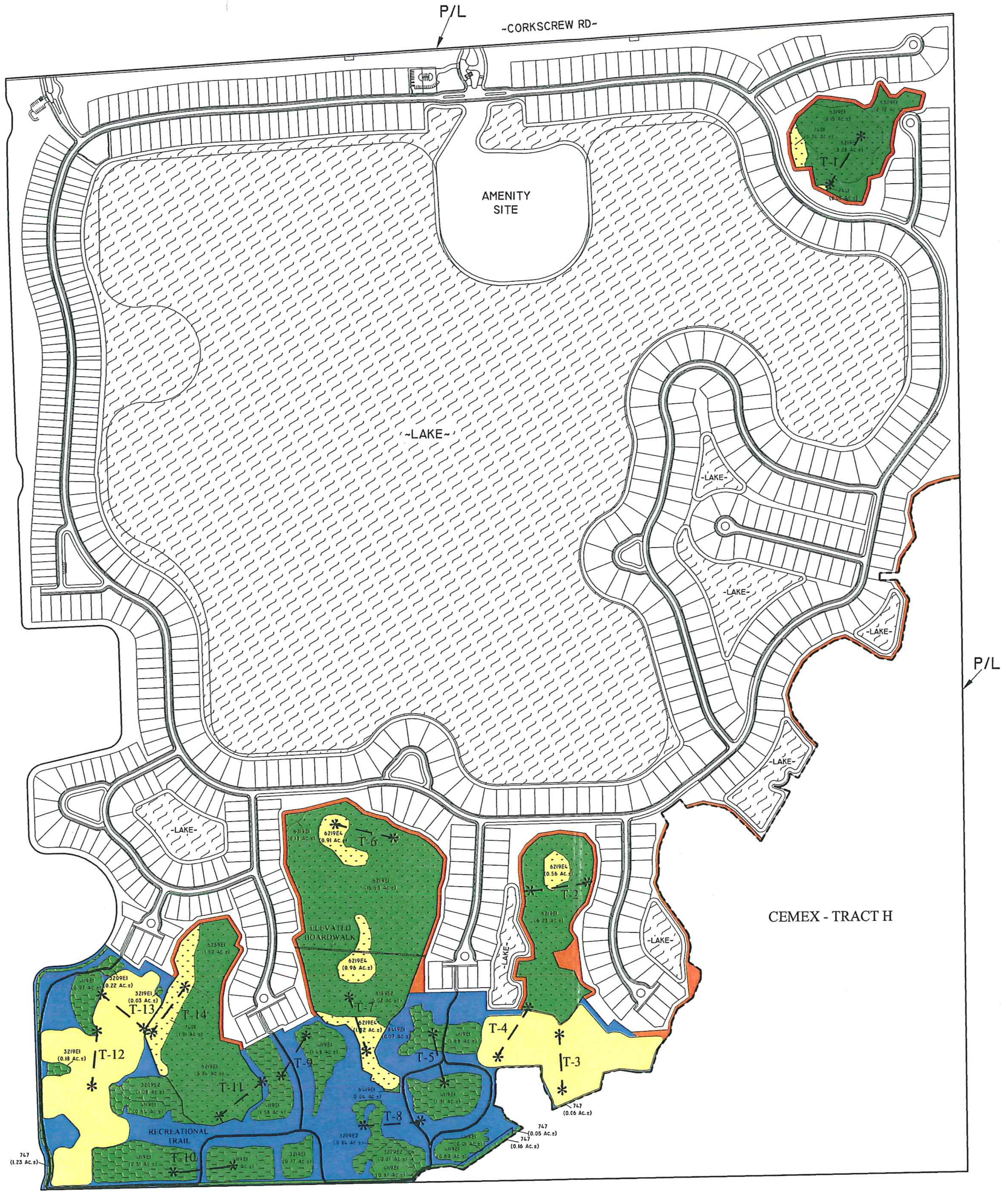
FIGURE 1. PROJECT LOCATION MAP
CORKSCREW SHORES

DRAWN BY	DATE
F.L.	2/20/13
REVIEWED BY	DATE
S.J.	2/20/13
REVISED	DATE

PASSARELLA & ASSOCIATES INC
Consulting Ecologists

J:\2011\1CPL2065\GIS\2013\Baseline Monitoring\Figures\Figure 1 Aerial with Project Location Map.mxd - 7/24/2013 @ 2:33:42 PM

SCALE: 1" = 700'



LEGEND:

▨	WETLAND PRESERVE (41.03 AC.±)
▨	UPLAND PRESERVE (20.37 AC.±)
🟩	INDIGENOUS VEGETATION PRESERVE (53.78 Ac.±)
🟦	INDIGENOUS UPLAND VEGETATION RESTORATION (22.64 Ac.±)
🟨	INDIGENOUS WETLAND VEGETATION RESTORATION (21.93 Ac.±)
🟧	ADDITIONAL UPLAND PRESERVE / BUFFER NOT REQUIRED BY LEE COUNTY ZONING RESOLUTION NO.Z-12-021 (6.49 Ac.±)
⁄\⁄	EXISTING AREA UNDER CONSERVATION EASEMENT - PER SFWMD PERMIT NO.36-03254-P (41.32 Ac.±)
-----	TRACT H BOUNDARY
〰	ELEVATED BOARDWALK
〰	RECREATIONAL TRAIL
— — —	MONITORING TRANSECT
T-1	TRANSECT NUMBER
*	PHOTO-STATION

DOS 2013-00034

RECEIVED
JUL 31 2013
Roi
COMMUNITY DEVELOPMENT

NOTES:

PROPERTY BOUNDARY PER BANKS ENGINEERING, INC
DRAWING No.11CORKSCREW-WOODS-SITE-PLAN-06-13-12
DATED JUNE 28, 2012.

SITE PLAN PER EVANS ENGINEERING, INC. DRAWING
NO.CORKSCREW SHORES BASE 2013-06-14.DWG
DATED JUNE 14, 2013.

FLUCFCS LINES ESTIMATED FROM 1"=200' AERIAL
PHOTOGRAPHS AND LOCATIONS APPROXIMATED.

FLUCFCS PER FLORIDA LAND USE, COVER AND FORMS
CLASSIFICATION SYSTEM (FLUCFCS) (FDOT 1999).

REVISIONS	DATE		
		DRAWN BY F.L.	DATE 7/17/13
		DESIGNED BY S.J.	DATE 7/17/13
		REVIEWED BY K.C.P.	DATE 7/17/13

13620 Metropolis Avenue
Suite 200
Fort Myers, Florida 33912
Phone (239) 274-0067
Fax (239) 274-0069

Consulting Ecologists
PASSARELLA & ASSOCIATES INC

CORKSCREW SHORES
MONITORING PLAN

DRAWING No.
11CPL2065

SHEET No.
FIGURE 2

J:\2011\11CPL2065\2013\BASELINE MONITORING\FIGURE 2 MONITORING PLAN 7-17-13.DWG TAB: 17X11-C TB JUL 24, 2013 - 2:35PM PLOTTED BY: FELIPE LEMUS

Transect No. 1 Start, looking northeast (30°), July 2013

Transect No. 1 End, looking southwest (210°), July 2013

APPENDIX A
MONITORING PHOTOGRAPHS

Transect No. 3 Start, looking north (0°), July 2013

Transect No. 3 End, looking south (180°), July 2013

Transect No. 2 Start, looking southwest (250°), July 2013

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Transect No. 2 End, looking northeast (70°), July 2013

Transect No. 4 Start, looking northeast (40°), July 2013

Transect No. 4 End, looking southwest (220°), July 2013

Transect No. 5 Start, looking northwest (345°), July 2013

Transect No. 5 End, looking southeast (165°), July 2013

Transect No. 6 Start, looking northwest (290°), July 2013

Transect No. 6 End, looking southeast (110°), July 2013

Transect No. 7 Start, looking northwest (350°), July 2013

Transect No. 7 End, looking southeast (170°), July 2013

Transect No. 8 Start, looking west (270°), July 2013

Transect No. 8 End, looking east, (90°), July 2013

Transect No. 9 Start, looking northeast (40°), July 2013

Transect No. 9 End, looking southwest (220°), July 2013

Transect No. 10 Start, looking east (90°), July 2013

Transect No. 10 End, looking west (270°), July 2013

Transect No. 11 Start, looking southwest (250°), July 2013

Transect No. 11 End, looking northeast (70°), July 2013

DOS2013-00034

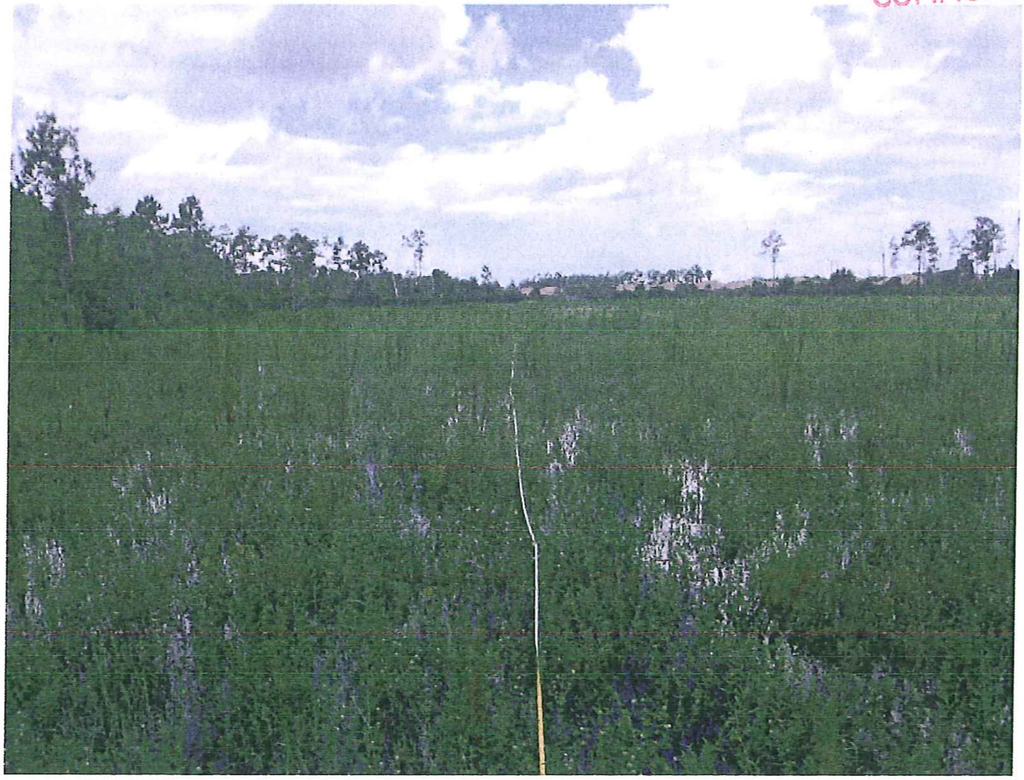
Transcect No. 12 Start, looking southwest (190°), July 2013

Transect No. 12 End, looking northeast (10°), July 2013

Transect No. 13 Start, looking southeast (130°), July 2013

Transect No. 13 End, looking northwest (310°), July 2013

Transect No. 14 Start, looking northeast (40°), July 2013



Transect No. 14 End, looking southwest (220°), July 2013