ARBORIST REPORT

HALLETT PARK FOR: THE TOWN OF BELLEAIR

Prepared by: Richard Peterika, FL-5893B & Dalton Smith, FL-9314A 12/22/2022

> Dark Moss 308 E 7th Ave Tampa, Florida 33602



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Introduction

Background

On October 27th, 2022, I was advised by Robert Yevich, Director of Parks & Recreation for the Town of Belleair (CLIENT), that the town governmental bodies had authorized Dark Moss to complete a tree inventory at Hallett Park. The scope of the tree inventory was based on an early meeting with Mr. Yevich and Ryan Womack, who met Ricky Peterika of Dark Moss onsite on October 4th, 2022.

During November and December 2022, multiple site visits were conducted by Dark Moss staff to collect tree inventory information. Participating staff included Mr. Peterika, ISA Board Certified Master Arborist, Dalton Smith, ISA Certified Arborist, and Biróg Levin, inventory technician.

Assignment

Dark Moss was asked to inventory and assess all of the protected and nuisance trees along the topside of the bluff and to estimate trees and tree areas along the bluff embankment.

The Dark Moss team met with the Client to discuss the initial findings of the inventory in early December 2022, and two additional assignments were discussed:

- The first supplemental assignment was to delineate the top of bank of the bluff to categorize trees as waterward or landward of this line.
- The second supplemental assignment was to identify areas where vegetation obstructed views to the horizon line from Bayview Drive.

This report was prepared to assist the Town of Belleair's citizens and staff in making communityvalue-based decisions on vegetation management along the bluff. This report aims to convey the composition and categorization of forest health along the bluff to guide management priorities in the future.

Limits of Assignment

This report is not intended to be a tree risk assessment, geotechnical report, tree appraisal, or anything else not explicitly described in the Assignment.

A Level 1 Tree Risk was not part of the assignment and was not performed. Tree structure was only assessed as a function of the condition rating determination.

Nothing in this report should be construed as an opinion of bluff erosion susceptibility. A geotechnical review was not part of the assignment, and Dark Moss is not qualified to attempt or complete one.

Unless expressed otherwise, the information in this report covers only those items that were examined and reflects the condition of those items at the time of inspection. The inspection was limited to the visual examination of accessible items without dissection, excavation, probing, or coring.

There is no warranty or guarantee, expressed or implied, that problems or deficiencies of the plants or property in question may not arise in the future.

Not all defects or conditions that predispose a tree or tree part to failure are detectable, nor are all failures predictable.

This inventory is not intended to establish a risk rating for every inventoried tree or tree part, evaluate risk mitigation options or recommendations, provide recommendations for additional assessments, determine residual risk following mitigation, or provide recommendations for monitoring or follow-up.

It is impossible to maintain trees free of risk. Some level of risk must be accepted to experience trees' benefits.

Methodology

Tree survey data was imported to a data collection field tablet. The tablet was used to collect observations and photographs as needed. No physical notes were taken. If individual trees not captured on the survey were found, they were added to the digital record by generally locating each tree using a Dual XGPS160 SkyPro GPS unit combined with aerial photograph interpretation.

Upon arrival at the site, we employed the following field review techniques to gather data:

- Trunk diameter at breast height (dbh) or 54 inches above the ground, taken with a diameter tape. For trees with more than one trunk (stem) originating at or near ground level (less than 36 inches high), the dbh of each stem was measured at 54 inches, and the cross-sectional area of each stem was summed to derive an equivalent single trunk representative dbh.
- Photographs, taken with a field tablet.

Accessible protected trees were tagged with a circular metal tag on the waterward side of the tree. Inaccessible trees were not tagged, so tree numbers and tree tags do not correspond. Both numbers will be referred to in this report.

When overgrowth or obstructions restricted the collection of measurements, the applicable data element was omitted or approximated. No soil, water, or tissue tests were conducted unless otherwise noted. Assessments were one-sided, ground-based, and generally followed ANSI A300 (Part 9)-2017 guidance.

When typically single-trunked trees are fused at or near the ground, a pith test is performed to determine whether the tree grouping is separate or a single tree. The pith test is based on a technique discussed in the American Forests Champion Trees Measuring Guidelines Handbook (2019).

To tailor the inventory to jurisdictional requirements, data elements collected varied by tree classification:

- Protected and specimen trees (not palms): species, dbh, and condition rating
- Palms: species and overall condition rating.
- Invasive trees: species only.

We used a Trimble Catalyst DA2 receiver on a 30cm plan (submeter) to conduct the top of bank delineation. The findings of this bank delineation our for tree identification purposes only and should not be used for any other determination.

To assess the viewshed obstruction, we used a tablet and data collector to locate points along the Bayview Drive western curb where visual obstructions began and ended. To identify these points, the assessor walked along the back of curb to a point where the horizon could no longer be seen from a standing position looking perpendicular from the curvature of the curb (standing at the curb and looking across the harbor). Trunks of single trees were excluded from this method.

Once an area of obstruction was identified, obstruction opacity was estimated using a visual guide and recorded as a percentage. Opacity is the percentage of light visibility blocked by branches,

foliage, and reproductive structures of the live crown in a tree. Once the opacity and vegetative cover composition was determined, the assessor moved to a point where the horizon was no longer obstructed and recorded a termination point.

The vegetation composition was determined to make recommendations based on each type of vegetative obstruction. The composition includes information relative to what type of tree or vegetation is obstructing the view and the pruning recommendations that may or may not be appropriate based on the composition of the vegetation obstruction.

Investigation Methods - Tree Inventory

The inventory was conducted by tagging and inventorying all trees protected by the Town of Belleair Tree Ordinance. Trees are regulated in Section 74-381 of the Town of Belleair Land Development Code (LDC). The LDC categorizes trees into two categories:

- 1) Protected Trees
 - a. Defined as any non-exempt tree that measures more than four inches in diameter at breast height (DBH), all mangroves, and all palms with at least 4.5 feet of clear trunk height.
- 2) Nuisance Trees
 - a. Two species of trees are exempt from tree protection requirements: Brazilian Pepper (*Schinus terebinthifolia*) and Melaleuca (*Melaleuca quinquenervia*).

The inventory was limited to trees that were reasonably accessible. Many portions of the bluff had inaccessible areas on the bluff slope where smaller trees, invasive trees, and mangrove communities reside; these were not included in the inventory.

Trees were rated using a modified version of the City of Clearwater's tree grading criteria, noted below. Half-point values were used to adjust the point values when necessary.

Grade	Evaluation Criteria
0	Dead; removal recommended
1	Poor; (nearly dead, major decline)
2	Below average (declining, diseased, poor structure, major dieback)
3	Average (minor problems, minor decline, minor tip dieback, minor inclusion) problems can be corrected or mitigated.
4	Above Average (a healthy tree with only minor problems)
5	Outstanding

Photographic examples of Poor, Below Average, and Average trees can be found in the exhibit section.

Field Observations

Hallett Park is located between Bayview Drive and Clearwater Harbor in the Town of Belleair. This 5.42-acre park features mostly greenspace and is unique because it features a bluff along the waterfront edge of the park. During each assessment, the weather was sunny and clear.

Bayview Drive is designated by the Town of Belleair's Tree Ordinance as a "tree-lined and canopy road," whereas every tree within 50 feet of the road is considered a protected tree.

Tree Inventory Observations

The Tree Inventory yielded the following observations:

- 246 trees were individually assessed.
- The two most abundant species, Cabbage Palm (*Sabal palmetto*) and Southern Live Oak (*Quercus virginiana*), made up 78% of all assessed trees.
- 92 trees were assessed uphill of the top of bank line

Row Labels	# Downhill	# Uphill	Grand Total
Cabbage Palm	87	15	102
Southern Live Oak	26	64	90
Banana	16		16
Washington Palm	11		11
Pignut Hickory	7	3	10
Slash Pine	2	7	9
Laurel Oak	2	3	5
Camphor	1		1
Wax Myrtle	1		1
American Elm	1		1
Grand Total	154	92	246

• 154 were assessed or estimated below the top of bank line

All Sand Live Oaks (*Quercus geminata*) and planted Live Oaks were classified as "*Quercus virginiana*" for this inventory. In a windblown environment, a Live Oaks' form and structure would look similar to that of a Sand Live Oak. Of the native trees on site, most of the smaller shrubby oaks on the slope of the bluff are Sand Live Oaks, whereas the planted oaks in the park are Southern Live Oaks.

The site is subject to onshore winds, so the naturalized trees have adjusted to being in these conditions and therefore have irregular and swept forms due to the wind. Many large live oaks have limbs that sweep down and away from the bluff and touch the ground. There are specimen trees that are located on the bluff ledge with larger exposed roots that are on the bank of the bluff. Native tree species consist of scrubby, coastal dune species on the bluff and bluff bank, and mangrove communities at the tidal zone. There is also a large presence of invasive species within the bluff bank intermixed with native species and mangroves.

These inaccessible areas along the bluff bank were designated as invasive or mangrove communities by aerial delineation and confirmation with onsite species identification. These delineations are presented as areas on the inventory rather than by individual trees.



0 0.04 0.07 0.15 Miles

Figure 1 - Species Location Map

Hallett Park Tree Inventory By Dark Moss

Condition Rating versus Risk Rating

The condition rating methodology used in this assessment is for trees in an urban setting (where conflicts with people and infrastructure occur regularly). It is not particularly adaptable for trees in a park-like, natural setting.

Most trees (excluding palms) in the inventory were rated 'average' or lower because they departed from their natural form and structure. The trees 'below average' were rated based on their poor health, form, and structure. Decisions to remove trees should not be made based on the condition rating alone; rather, a risk assessment should be the determination for any action that is to be recommended for the trees inventoried in Hallett Park.

Maintenance decisions should be made based on a tree's risk and the Town's tolerance for acceptable risk. Most of the trees in the inventory would be rated low risk even at the condition of "below average" or "poor" because of the low occupancy rate. Occupancy rate is the time a target is present within one and a half times a tree's height. Since Hallett Park is utilized for leisure activities, most of the time, there is no target for a failing part of a tree to impact.

Recommendations

Trees Recommended for Removal

One tree is recommended for removal in the inventory: Tree #98, tag #398. The condition of this tree was rated "poor," and the risk of whole tree failure cannot be lowered by any risk mitigation methods other than full removal.

NUM	TAG	DBH	SYM	Scientific Name	Common Name	CR
98	398	20	QV	Quercus virginiana	Southern Live Oak	1

The data elements above function as follows:

- NUM: tree number, an arbitrary number based on assessment order,
- TAG: tag number, only reasonably accessible trees were tagged,
- DBH: diameter at breast height,
- SYM: shorthand reference for plan view exhibits,
- Scientific and Common Name: Tree species identification, and
- CR: Condition Rating.

Trees to Prune

Pruning is recommended for any trees adjacent to the benches within Hallett Park and with dead or dying branches that pose a risk to public safety.

The pruning is recommended for trees to mitigate the risk of dead and dying tree branches failing at each of the following bench locations:

NUM	TAG	DBH	SYM	Scientific Name	Common Name	CR
21	321	28	QV	Quercus virginiana	Southern Live Oak	2.5
39	339	25	QV	Quercus virginiana	Southern Live Oak	3

44	344	22	QV	Quercus virginiana	Southern Live Oak	2
63	363	26	QV	Quercus virginiana	Southern Live Oak	2.5
64	364	29	QV	Quercus virginiana	Southern Live Oak	2.5
69	369	26	QV	Quercus virginiana	Southern Live Oak	2.5
74	374	27	QV	Quercus virginiana	Southern Live Oak	2.5
 76	376	48	QV	Quercus virginiana	Southern Live Oak	3

Pruning is not recommended on the mature live oak branches with the growth habit that has spread out and are touching the ground throughout the park. This branching structure is common in this setting and can increase the support and anchorage of the whole tree. Removing these limbs may cause irreversible harm to the entire tree and increase the likelihood of failure.

Trees to Monitor

Several trees were in stages of decline. Symptoms include tip die-back in the canopy and thinning of foliage in the canopy. No soil or nutrient tests were performed as part of this inventory; however, environmental conditions may be causing the decline observed in the trees in Hallett Park.

NUM	TAG	DBH	SYM	Scientific Name	Common Name	CR
2	302	16	QV	Quercus virginiana	Southern Live Oak	2.5
4	304	36	QV	Quercus virginiana	Southern Live Oak	2
7	307	12	QV	Quercus virginiana	Southern Live Oak	2
9	309	13	QV	Quercus virginiana	Southern Live Oak	2
12	312	26	PE	Pinus elliottii var densa	Slash Pine	2
16	316	26	QV	Quercus virginiana	Southern Live Oak	2.5
18	318	31	CG	Carya glabra	Pignut Hickory	1
19	319	16	QV	Quercus virginiana	Southern Live Oak	2.5
20	320	23	QV	Quercus virginiana	Southern Live Oak	2.5
26	326	20	QV	Quercus virginiana	Southern Live Oak	2
27	327	14	QV	Quercus virginiana	Southern Live Oak	2.5
49	349	20	QV	Quercus virginiana	Southern Live Oak	2.5
55	355	26	QL	Quercus laurifolia	Laurel Oak	2
70	370	17	QV	Quercus virginiana	Southern Live Oak	2.5
73	373	34	QL	Quercus laurifolia	Laurel Oak	2
85	385	34	QV	Quercus virginiana	Southern Live Oak	2.5
92	392	18	QV	Quercus virginiana	Southern Live Oak	2.5
94	394	40	QV	Quercus virginiana	Southern Live Oak	2.5
96	396	57	QV	Quercus virginiana	Southern Live Oak	2.5
97	397	9	CG	Carya glabra	Pignut Hickory	2
99	399	18	QV	Quercus virginiana	Southern Live Oak	2.5
106		43	QV	Quercus virginiana	Southern Live Oak	2.5
111		19	CG	Carya glabra	Pignut Hickory	2.5
112		18	CG	Carya glabra	Pignut Hickory	2.5
113		24	CG	Carya glabra	Pignut Hickory	2.5
153		12	QV	Quercus virginiana	Southern Live Oak	2

155	8	QV	Quercus virginiana	Southern Live Oak	2.5
158	8	MC	Morella cerifera	Wax Myrtle	2.5
162		SP	Sabal palmetto	Cabbage Palm	2
163	6	QL	Quercus laurifolia	Laurel Oak	2
165	5	QV	Quercus virginiana	Southern Live Oak	2.5
190		SP	Sabal palmetto	Cabbage Palm	2
196		SP	Sabal palmetto	Cabbage Palm	2
198	16	CG	Carya glabra	Pignut Hickory	2
202		SP	Sabal palmetto	Cabbage Palm	2
203		SP	Sabal palmetto	Cabbage Palm	2
204	14	CG	Carya glabra	Pignut Hickory	2
225		SP	Sabal palmetto	Cabbage Palm	2.5
226		SP	Sabal palmetto	Cabbage Palm	2.5
244	8	QL	Quercus laurifolia	Laurel Oak	2.5

Changes in condition over time may warrant additional mitigation methods or vitality assessments on overall tree health within the park. An additional recommendation would be to provide an overall tree health care assessment to determine if vitality is affected by environmental conditions and mitigation strategies to resolve further decline.

Erosion and Tree Removal

The larger oaks on the bluff slopes were observed and assessed for any changes in the root structure and anchorage that might warrant removal during the inventory. When the root flare could be easily observed on the oaks, there was evidence that erosion was occurring based on root architecture. Voids under major lateral roots and tap roots are evidence of soil loss surrounding or underneath the trees' root systems. Trees do not naturally grow with this root structure; this result could occur from the deposition of soil down the slope over time and the responsive and adaptive growth of the tree.

It is not recommended that any trees be completely removed on the slope due to root systems' role in slope stabilization and soil erosion control. Research has shown that roots contribute mechanically and hydrologically to slope stabilization and have decreased slope failures when an extensive root is present. (Nutalaya, 1999), (Cohen, 2017)



Figure 2 - Management Recommendations Map

Hallett Park Tree Inventory By Dark Moss

Supplemental Assignments

The Dark Moss team was privileged to conduct a tree inventory on such a picturesque property. The view across Clearwater Harbor towards Bellair Beach to the west was unforgettable.



Figure 3 - Viewshed Area (Obstructions shown in White)

Hallett Park Tree Inventory By Dark Moss 12/21/2022 Page 13 of 19 During a meeting with Town Parks staff to discuss the preliminary findings of the inventory, we discussed the relationship between bluff vegetation and the bluff viewshed. To explore this discussion, we added two new assignments to our scope:

- 1) Delineate the bluff top of bank, which has been discussed already in this report, and
- 2) Quantify and characterize the vegetation obstructing the view across the harbor.

Viewshed Analysis

The assessment of the sight obstruction was conducted in December 2022. Deciduous and semideciduous species may have been in the process of leaf drop, which would decrease the opacity of any sight obstructions in the assessment.

		Oaks		Vir	nes	Inva	sives	Hic	kory	Pa	ms	Mang	roves
Area	Opacity	Found?	Prune?										
1	70	X										Х	Х
2	10							Х	X				
3	60			X	X			X		X			
4	90			Х	X				•	Х			
5	80	Х						Х		Х			
6	5 0	Х											
7	60	Х				Х	X					X	Х
8	80	Х		Х	X	X	Х						
9	90	Х		X	X	X	Х						
10	90	Х		X	X	X	Х			X			
11	80	Х				X	Х						
12	50	Х		X	X	Х	Х						
13	60	X											
14	70							Х		Х			
15	50	X										Х	Х

The data elements above function as follows:

- Area: area number, ascending from south to north,
- Opacity: approximate visual viewshed obstruction, as a percentage,
- Found?: Binary indicator displaying whether a species was present in the viewshed area,
- Prune?: Binary indicator displaying whether Dark Moss recommends that a pruning specification be prepared for that species.

Recommendations by Species

Due to the overall health and vitality of the oak trees in Hallett Park, it is not recommended to thin or remove any live foliage. Pruning may lead to further stress on the trees and adversely affect their health.

Hallett Park Tree Inventory By Dark Moss No pruning is recommended for the smaller diameter sand live oaks growing on the bluff slope obstructing the viewshed. Most view obstructions result from the canopy of these smaller trees, and topping would not be an appropriate pruning method for this species.

Sabal Palms growing on the bluff slope contribute to sight obstructions. Rather than prune the palm, we recommend that they be allowed to grow so that their crowns exist above the viewshed horizon line.

Brazillian Pepper (*Schinus terebinthifolia*) and Carrotwood (*Cupaniopsis anacardioides*) are the two most prominent invasive species that make up the sight obstructions. These two species may be pruned or cut back to a height not exceeding 50% of live foliage without adverse effects on the health of the trees. Removal is not recommended because the root systems may contribute to soil stabilization along the bluff.

Vine management may be an appropriate action that can be taken to remove sight obstructions where they are present. Muscadine Grape (*Vitis rotundifolia*) and Virginia Creeper (*Parthenocissus quinquefolia*) are the most prominent vine species growing in the canopies along the bluff slope.

Mangroves only cause a few viewshed obstructions. However, pruning may be an appropriate action where they occur when conducted by the standards set in The Mangrove Trimming and Preservation Act.

Using aerial photograph approximation and ground-based verification, each of the invasive species and mangrove areas was quantified as follows:

- 1) Invasive Species: ~71,500 square feet, or 1.64 acres, and
- 2) Mangroves: ~36,500 square feet, or 0.84 acres.

Mangroves

The Mangrove Trimming and Preservation Act in Florida was created to protect Florida's native mangrove forests. Part of that Act involved the delegation of authority of the Mangrove Trimming and Preservation Act to local government agencies. Pinellas County is one of the authorized agencies responsible for permitting and regulating the Act.

Per the definition of The Mangrove Trimming and Preservation Act, trimming of mangroves is defined as cutting mangrove branches, twigs, limbs, and foliage. Still, it does not mean removing, defoliating, or destroying the mangroves. Alteration of mangroves is anything other than trimming of mangroves, including removal, destruction, or defoliation. Defoliation is defined as the removal of leaves by cutting or other means to the degree that the plant's natural functions have been severely diminished or which results in the death of all or part of the tree.

As a local municipal agent, the Town of Belleair is exempt from the permitting requirements as it refers to any activity deemed as trimming mangroves. Any activity outside the definition of trimming mangroves may be considered an alteration, in which case it would not be exempt from permitting. Any alteration of mangroves requires a permit and does not qualify as an exemption.

Under The Mangrove Trimming and Preservation Act, an authorization of a mangrove trimming permit will be accepted, provided the trimming is consistent with the following technical trimming practices:

- The mangroves subject to trimming do not extend more than 500 feet waterward as measured from the trunk of the most landward mangrove tree in a direction perpendicular to the shoreline.
- No more than 65 percent of the area (footprint) of mangroves at the subject site will be trimmed. Also, at least 25 percent of the mangroves in the trimmed area over 16 feet in pre-trimmed height may not be reduced. These trees, however, may be laterally trimmed, provided that no portion of their canopies above 12 feet from the substrate is trimmed.
- No mangrove will be trimmed so that the overall height of any mangrove is reduced to less than six feet as measured from the substrate.
- No herbicide or other chemical will be used to remove a mangrove's leaves.
- The trimming does not result in the removal, destruction, or defoliation of the mangroves.
- All trimming of mangroves over 16 feet in height must be conducted in stages so that no more than 25 percent of the pretrimmed foliage or height of the trees is removed annually. Regrowth from the previous year's trimming may be trimmed in addition to the 25 percent.
- Trimming may only be conducted from March 1 through November 30.
- All trimmed branches and trunks are removed from the wetlands.

Any practice outside of the permittable trimming criteria could be interpreted as falling out of the practice of mangrove trimming and may be considered an alteration of mangroves, thereby would not fall under an exemption of permitting of a local government agency.

Mangrove trimming specifications are not part of our assignment and have not been included in this report.



Figure 4 - Estimated Species Composition Map

Invasive Species

A significant number of invasive species are present on the slope of the bluff. Brazilian Pepper and Carrotwood (*Cupaniopsis anacardioides*) make up the majority of invasive species that compose the vegetation on the bluff. Although these species are listed as Category 1 Invasive species in the 2019 Florida Invasive Species Council (f.k.a. FLEPPC), this does not mean that it is appropriate in all situations to remove these trees as part of a management plan. This list was intended to support natural resource management and environmental education programs (Langeland).

Most invasive species along the slope of the bluff may contribute to soil stabilization. Nonselective removal of all invasive species could adversely affect slope stability. The benefit of invasive species preservation may outweigh the cost of environmental impact in this specific scenario.

End of Report

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© 325°NW (T) ● 27°55'55"N, 82°48'57"W ±16ft ▲ 22ft





© 228°SW (T) ● 27°55'53"N, 82°48'57"W ±114ft ▲ 39ft



Tree Condition - Below Average Dark Moss Hallett Park 16 Dec 2022, 10:08:50





© 303°NW (T) ● 27°56'1"N, 82°48'56"W ±16ft ▲ 8ft







© 44°NE (T) ● 27°56'6"N, 82°48'52"W ±16ft ▲ 13ft

Branch Architecture Dark Moss Hallett Park 16 Dec 2022, 11:34:46



© 285°W (T) ● 27°56'8"N, 82°48'49"W ±16ft ▲ 41ft









Viewshed Obstruction Area 1

Viewshed Obstruction Area 3





Viewshed Obstruction Area 4





Viewshed Obstruction Area 5

Viewshed Obstruction Area 7





Viewshed Obstruction Area 8





Viewshed Obstruction Area 11





Viewshed Obstruction Area 12





Viewshed Obstruction Area 13

Viewshed Obstruction Area 15



CERTIFICATION OF PERFORMANCE

I, Richard Peterika, certify that:

- The assessment was conducted by qualified staff under my supervision or me.
- I have no current or prospective interest in the vegetation or the property that is the subject of this inventory and have no personal interest or bias with respect to the parties involved.
- The analysis, opinions, and conclusions stated herein are my own and are based on current scientific procedures and facts.
- My analysis, opinions, and conclusions were developed and prepared according to commonly accepted arboricultural practices.
- No one provided significant professional assistance to me except as indicated within the report.
- My compensation is not contingent upon reporting a predetermined conclusion that favors the cause of the client or any other party nor upon the assessment results, the attainment of stipulated results, or the occurrence of any subsequent events.

I further certify that I am a member in good standing of the American Society of Consulting Arborists and the International Society of Arboriculture. I am licensed by the Florida Department of Business and Professional Regulation as a Landscape Architect. I have been involved in the fields of Landscape Architecture and Arboriculture in a full-time capacity since 2009.

This document has been digitally signed and sealed by: RICHARD F. PETERIKA.

Printed copies of this document are not considered signed and sealed. The signature must be verified on the electronic documents.

Dark Moss LLC, 308 E 7th Ave Tampa, Florida 33602 Richard Peterika, ASLA, AICP, RCA #641, ISA-FL #5893B

