

Photographic Monitoring Station  
Analysis  
Genius Reserve  
Winter Park, Florida  
Fall 2008 – Winter 2009

Dr. Bruce Stephenson  
Environmental Studies  
Rollins College

By  
Michelle Whitmer







# GENIUS RESERVE

## PHOTOGRAPHIC MONITORING STATION ANALYSIS WINTER PARK, FLORIDA

Fall 2008 – Winter 2009

Dr. Bruce Stephenson  
Rollins College  
Winter Park, Florida



*BY*

Michelle Whitmer

GENIUS RESERVE  
Winter Park, Florida

## MONITORING STATION PHOTOGRAPHIC ANALYSIS

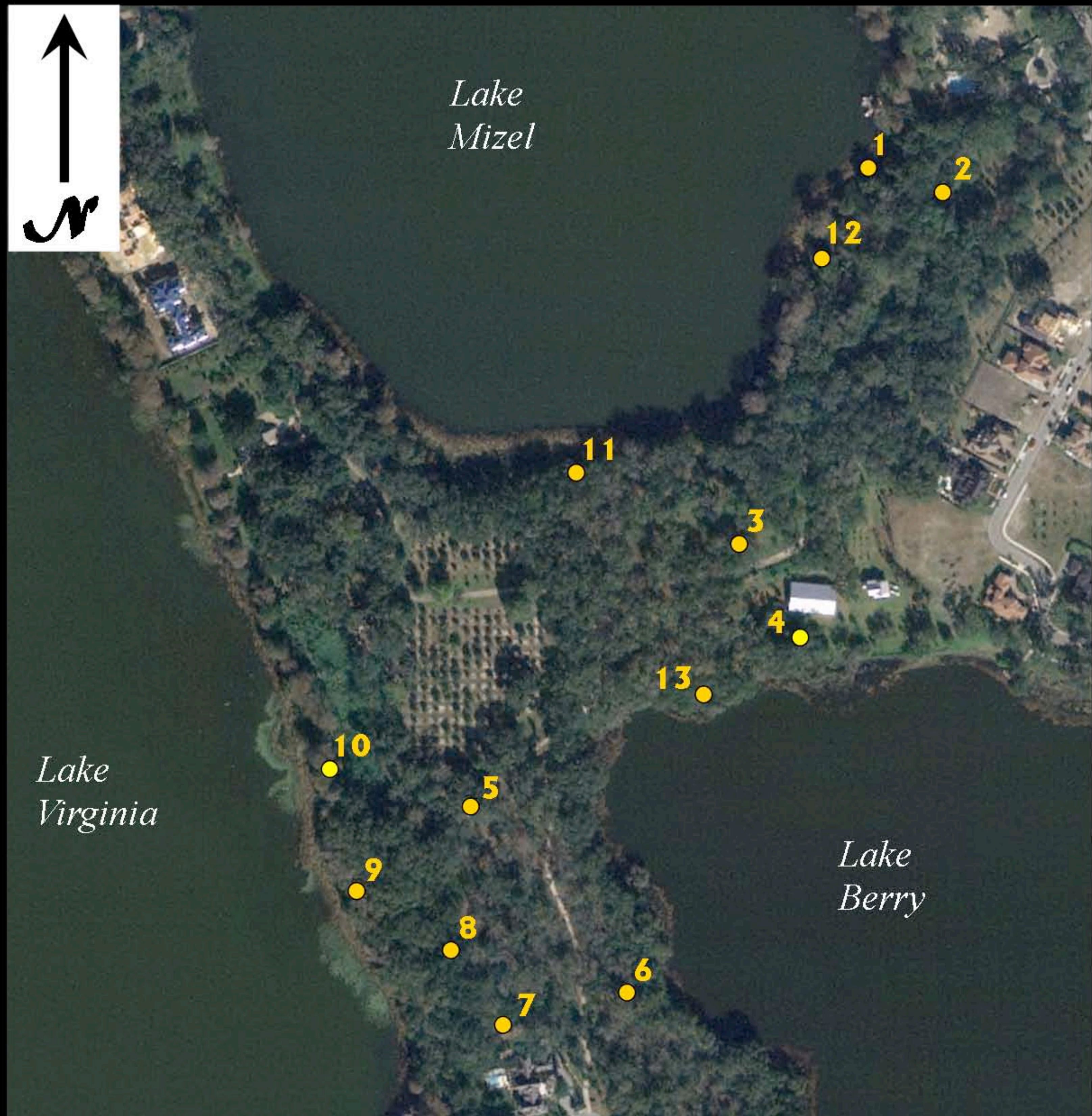
### I. INTRODUCTION

An essential component of managing the Genius Reserve (GR) includes monitoring the site to ensure the Comprehensive Management Plan (CMP) is on course and that the long-term restoration process is a continuing success. One means of documenting the environmental quality of the site includes photographic monitoring of the thirteen (13) various monitoring stations located throughout the property. The purpose of this continuing analysis is to document and analyze the GR's monitoring stations to assess the environmental quality of the property and ensure the goals of the CMP are being accomplished.

Photographic monitoring of twelve (12) stations within the GR traces back to December 2003. However, it wasn't until June 14, 2008 that signed monitoring stations were permanently selected and marked by professors Dr. Bruce Stephenson and Dr. Paul Stephenson and Hamilton Holt student Frank J. Gidus. Stations four (4), eight (8) and nine (9) remain true to their original location, while all other stations were permanently selected for the various vegetative communities represented by the location and to monitor three restoration areas (including the Banana Grove, Cedar Grove and the Lake Berry shoreline). The location of the thirteen (13) Photographic Monitoring Stations can be seen in **Figure 1**.

Photographic data from this report will be analyzed and compared with the previous photographic report by Frank J. Gidus, conducted in Summer 2008. Analysis will include vegetative cover for each of the three strata—groundcover, subcanopy





SOURCE: FLORIDA DEPARTMENT OF TRANSPORTATION 2004 AERIAL PHOTOGRAPHY

**LEGEND**

1 - Monitoring Station

Scale: 1" = 300'



**PHOTOGRAPHIC MONITORING STATION LOCATION MAP  
GENIUS RESERVE  
WINTER PARK, FLORIDA**

**FIGURE  
1**



and canopy. As included in prior reports, any notes on standard observations, such as the presence of wildlife, soil quality, water levels, and overall vegetative health, will be noted in **Table 2 – Vegetative Data at Photographic Monitoring Stations**. The intention of photographic monitoring is to visually document landscape changes over time from a series of specific stations throughout the Reserve. Continuing goals of this project include the following:

- Provide photographic documentation of vegetation progression
- Document the planting and restoration successes at Banana Grove, Cedar Grove and the Lake Berry shoreline
- Use the documented data to aid in the control of any invasive and/or exotic species that may be identified during the photographic analysis
- Compare the data and photographic images to previous studies to monitor the health and success of management efforts at the Reserve
- Make the information available in electronic form using a compact disk (attached)

## **II. SITE DESCRIPTION**

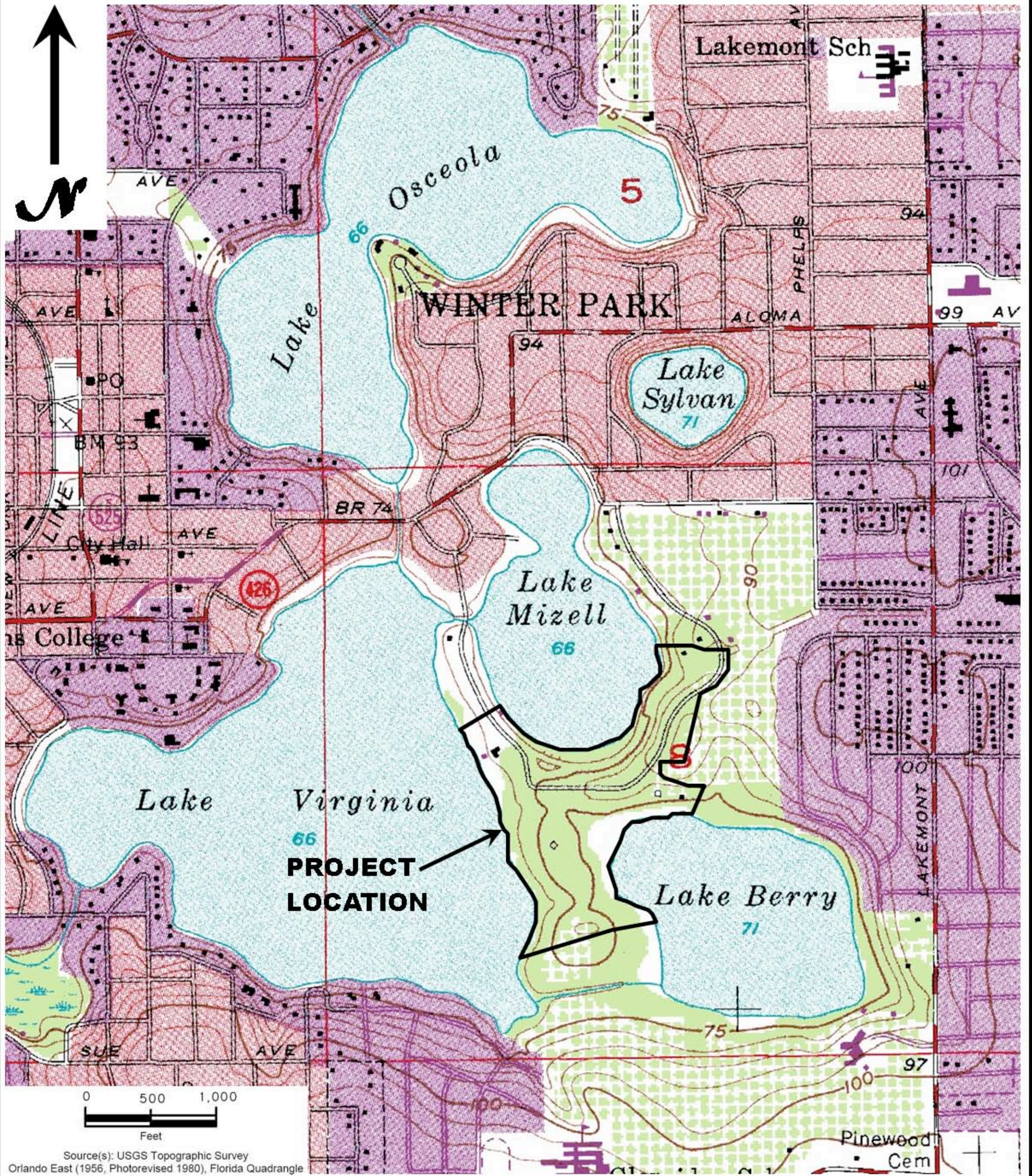
### **A. Location**

Orange County Property Appraiser (OCPA) records indicate the GR contains 46.67 acres and is located in Section 8, Township 22 South, Range 30 East, Parcel Identification No. 08-22-30-0000-00-001. The property is bordered to the north by Lake Mizell and a small residential area, to the south by Lake Berry and a portion of the Windsong residential subdivision, to the east by another portion of the Windsong residential subdivision, and to the west by Lake Virginia, as shown in **Figure 2**.

### **B. Stations**

Photographic monitoring stations are located throughout the GR as follows:





**USGS PROJECT LOCATION MAP  
 GENIUS RESERVE  
 WINTER PARK, FLORIDA**

**FIGURE  
 2**





**Table 1 – Photographic Monitoring Station GPS Location Data**

<b>Station</b>	<b>Latitude</b>	<b>Longitude</b>
1	28° 35' 29.83"	81° 20' 07.89"
2	28° 35' 28.94"	81° 20' 06.04"
3	28° 35' 22.05"	81° 20' 09.98"
4	28° 35' 19.34"	81° 20' 10.01"
5	28° 35' 15.12"	81° 20' 18.58"
6	28° 35' 11.69"	81° 20' 13.26"
7	28° 35' 11.93"	81° 20' 15.95"
8	28° 35' 11.90"	81° 20' 17.76"
9	28° 35' 13.57"	81° 20' 19.83"
10	28° 35' 16.99"	81° 20' 20.62"
11	28° 35' 29.83"	81° 20' 07.89"
12	28° 35' 27.83"	81° 20' 08.34"
13	28° 35' 18.58"	81° 20' 07.69"

**C Topography**

A map for the area produced by the U.S. Geological Survey (USGS) indicates the property features topography between roughly +70 feet to +90 feet NGVD, as shown on the USGS location map (**Figure 2**). Along the central interior of the property an elevated ridge can be found, which slopes downward toward the three (3) bordering lakes.

**D. Hydrology**

A total of three (3) wetlands are located on the Reserve, all of which are associated with the property's bordering lakes, Lake Berry, Lake Mizell and Lake Virginia. All wetlands are represented or partially depicted by various monitoring stations, including Station No. 9 (located in the wetland adjacent to Lake

Virginia), Station No. 13 (located in the wetland adjacent to Lake Berry), and Station No. 11 (located just south of the wetland adjacent to Lake Mizell, which is partially depicted in the north view photograph of that station).

The GR is located within the Howell Branch Drainage Basin, the region that channels runoff, throughflow and groundwater flow to Howell Creek, which eventually travels through the St. Johns River to the Atlantic Ocean. The Reserve's three lakes, Lake Berry, Lake Mizell and Lake Virginia, are 68, 60.5 and 224 acres, respectively. Ordinary High Water elevation of the three lakes averages between 66.5 and 70.2 feet and depths average between 9 and 10 feet.

#### **E. Vegetation**

The vegetative cover at each of the thirteen photographic monitoring stations was identified to the species level for each of the three strata—canopy, subcanopy and groundcover—by Frank J. Gidus on 26 July 2008. In addition, general observations were noted, including direct and indirect wildlife observations, soil subsidence, health and vegetative mortality. This data is described in the **Table 2 – Vegetative Data at Photographic Monitoring Stations**.

### **III. METHODS**

Following established methods of data collection, photographic data was collected at each station in the cardinal direction, facing north, south, east and west, through the use of a hand compass to assure consistency with previous data collection. A Nikon Coolpix S4 (6.0 megapixels) digital camera featuring a 10x optical zoom lens was used to record photographic data. While in the field, a data

sheet was utilized to record vegetative observations (including any notable changes throughout the seasonal transition from fall to winter), as well as the date, general meteorological conditions, hydrologic changes, direct and indirect wildlife observation, and other applicable notes and observations (**See Appendix B and Table 2**).

#### IV. RESULTS

The table below includes all vegetative data for each station at all three levels of stratum, canopy, subcanopy, and groundcover. The “Notes” section for each station contain observations on flora and fauna, hydrology, and any noteworthy changes in comparison to the previous Photographic Monitoring Report conducted by Frank Gidus in July 2008.

**TABLE 2 – VEGETATIVE DATA AT PHOTOGRAPHIC MONITORING STATIONS**

Station No.	Vegetative Descriptions
1	<p><b>CANOPY:</b> Pond cypress (<i>Taxodium ascendens</i>) and red maple (<i>Acer rubrum</i>). <b>SUB-CANOPY:</b> Elderberry (<i>Sambucus nigra</i>), red maple, pond cypress and willow (<i>Salix caroliniana</i>). <b>GROUNDCOVER:</b> Wild taro (<i>Colocasia esculenta</i>), cattail (<i>Typha latifolia</i>) (lake littoral zone), caesar weed (<i>Urena lobata</i>), dayflower (<i>Commelina</i> spp.), and a variety of grasses and weeds. <b>NOTES:</b> Located along the southern shore of Lake Mizel, this site is continuing to maintain its natural recruitment of red maple; both natural vegetation and planted vegetation from restoration efforts are succeeding; all stratum, the canopy, subcanopy, and groundcover, appear relatively unchanged from previous study (i.e. no substantial growth or vegetative mortality to note).</p>
2	<p><b>CANOPY:</b> Southern red cedar (<i>Juniperus silicicola</i>), laurel oak (<i>Quercus laurifolia</i>), live oak (<i>Quercus virginiana</i>) and Southern magnolia (<i>Magnolia grandiflora</i>). <b>SUB-CANOPY:</b> Blue porterweed (<i>Stachytarpheta jamaicensis</i>), American beautyberry (<i>Callicarpa americana</i>) and Southern magnolia. <b>GROUNDCOVER:</b> Wild coffee (<i>Psychotria nervosa</i>), saw palmetto (<i>Serenoa repens</i>), coontie (<i>Zamia pumila</i>) and a dense layer of pine straw. <b>NOTES:</b> Not far from Station No. 1, this station also experience little noticeable change in vegetation; this station represents the Cedar Grove and the cedars are continuing to thrive; sprouting oaks continue to scatter the groundcover stratum; wild coffee and beautyberry both fruiting bountifully as winter set in with cold temperatures starting in November and December; the sign for station two was down at the preliminary walk-through and would fall after moderate rains.</p>



3	<p><b>CANOPY:</b> Live oak, laurel oak, pignut hickory (<i>Carya glabra</i>) and camphor (<i>Cinnamomum camphora</i>). <b>SUB-CANOPY:</b> N/A. <b>GROUNDCOVER:</b> Assortment of natural grasses and weeds. <b>NOTES:</b> Station No. 3 exemplifies the some of larger, open space at the Reserve, and as such, experience little alteration in vegetation; a large number of squirrels were noted in this area.</p>
4	<p><b>CANOPY:</b> Cherry laurel (<i>Prunus caroliniana</i>), live oak and pignut hickory. <b>SUB-CANOPY:</b> Live oak, cherry laurel, saw palmetto, American beautyberry and lantana (<i>Lantana camara</i>). <b>GROUNDCOVER:</b> Saw palmetto, caesar weed, American beautyberry, various common weeds. <b>NOTES:</b> Located along the north side of a trail that traces the shoreline along Lake Berry, weedy species are naturally still surviving in the trail corridor; the beautyberry fruited in November, but not to the extent of the beautyberry located at Station No. 2 (possibly due to species competition for resources in a more crowded location).</p>
5	<p><b>CANOPY:</b> Pignut hickory, cabbage palm (<i>Sabal palmetto</i>), cherry laurel, live oak, laurel oak, Queen palm (<i>Syagrus romanzoffiana</i>) and Southern magnolia. <b>SUB-CANOPY:</b> Pignut hickory and beautyberry. <b>GROUNDCOVER:</b> Wild coffee (<i>Psychotria nervosa</i>), pignut hickory, live oak, greenbrier vine (<i>Smilax</i> spp.), saw palmetto, beargrass (<i>Nolina atopocarpa</i>), American beautyberry. <b>NOTES:</b> Substantial vegetative change has been noted at this station due to a tree planting event on behalf of Rollins College faculty, students, and their parents during the fall; natural oak recruitment continuing to thrive; dead oaks remain in the area; since the planting, the dense leaf litter that was suppressing the groundcover species is largely covered with pine needles to enhance the growth and survival of the plantings.</p>
6	<p><b>CANOPY:</b> Live oak, pignut hickory and cherry laurel. <b>SUB-CANOPY:</b> Cherry laurel and American beautyberry. <b>GROUNDCOVER:</b> American beautyberry, cherry laurel, saw palmetto and beargrass. <b>NOTES:</b> A layer of dense leaf litter continues to cover the ground; some slight reduction in shrubbery noted (common for fall and winter conditions); fallen trees seem to be a preferred spot for birds of prey to land, as several were noted on various field days (one was a red-tailed hawk and two others came and went before identification could be confirmed).</p>
7	<p><b>CANOPY:</b> Pignut hickory, southern magnolia, laurel oak and live oak. <b>SUBCANOPY:</b> Southern magnolia, cherry laurel, American beautyberry, sweet bay, saw palmetto and cabbage palm. <b>GROUNDCOVER:</b> Wild coffee, sweet bay, saw palmetto, leaf litter, cherry laurel. <b>NOTES:</b> Cherry laurel still excessive in groundcover; no strong odor of dead organic matter was noted as in previous study; numerous dead fallen trees continue to scatter the area; natural reduction in foliage observed throughout fall and winter.</p>
8	<p><b>CANOPY:</b> Laurel oak, live oak, Southern magnolia, pignut hickory and cabbage palm. <b>SUB-CANOPY:</b> Cabbage palm, water oak (<i>Quercus nigra</i>), pignut hickory, American beautyberry and swamp bay (<i>Persea palustris</i>). <b>GROUNDCOVER:</b> Swamp fern (<i>Blechnum serrulatum</i>), pignut hickory, saw palmetto, American beautyberry, beargrass, caesar weed, Virginia creeper (<i>Parthenocissus quinquefolia</i>) and dayflower. <b>NOTES:</b> Located in a transition zone and on/near the wetland edge that borders Lake Virginia (west of the station); station also located on a trail with weedy species present within the trail boundary; saw palmetto and swamp fern are both thriving at this station.</p>
9	<p><b>CANOPY:</b> Bald cypress (<i>Taxodium distichum</i>), cabbage palm, live oak, water oak and pignut hickory. <b>SUB-CANOPY:</b> Elderberry, American beautyberry, wax myrtle (<i>Myrica cerifera</i>) and turk's cap (<i>Malvaviscus arboreus</i>). <b>GROUNDCOVER:</b> Dayflower (dominant), swamp fern, cattail (lake littoral zone), royal fern (<i>Osmunda regalis</i>). <b>NOTES:</b> As seen in the West View photograph of Station No. 9, the turk's cap is continuing to thrive and encroach upon the wetland – removal of this plant is still recommended, preferably before the spring growing season; dayflower still covers the ground in a dense layer at one foot in height, small purple flowers no longer present as in previous study.</p>

10	<p><b>CANOPY:</b> Pignut hickory, bald cypress and cabbage palm. <b>SUB-CANOPY:</b> Cabbage palm, banana (<i>Musa</i> spp.), southern red cedar, Southern magnolia, pignut hickory, sweet bay, turk's cap, live oak and swamp dogwood (<i>Cornus foemina</i>). <b>GROUNDCOVER:</b> Clover (<i>Trifolium</i> spp.), caesar weed and a dense pine straw layer. <b>NOTES:</b> The vegetation in this planted area at the southern end of Banana Grove exhibited little change in comparison to the previous study; numerous bird species heard throughout the area in the early morning hours.</p>
11	<p><b>CANOPY:</b> Pignut hickory, camphor, laurel oak and live oak. <b>SUB-CANOPY:</b> Elderberry, pignut hickory, cabbage palm, water oak, and by Lake Mizell to the north: wax myrtle, swamp fern and willow. <b>GROUNDCOVER:</b> Sword fern (<i>Nephrolepis</i> spp.), cattail (lake littoral zone), various weeds, greenbrier, natural recruitment of camphor, water oak and American beautyberry also observed in groundcover. <b>NOTES:</b> This station is located on a trail (the Old Dinky Railroad line) that runs adjacent to the south portion of Lake Mizell; large, the dead fallen trees continue to rot in the area; remains of a bird spotted near the station, possibly a meal consumed by a resident red fox.</p>
12	<p><b>CANOPY:</b> Pignut hickory, live oak, Southern magnolia, laurel oak, and near Lake Mizell to north: cypress, elderberry and cherry laurel. <b>SUB-CANOPY:</b> Cherry laurel, pignut hickory and cabbage palm. <b>GROUNDCOVER:</b> Beggarticks (<i>Bidens alba</i>) and various weedy and grass species. <b>NOTES:</b> Located adjacent to the Old Dinky Railroad trail, this station represents another open, maintained area (much like Station No. 3); beggarticks still thriving in areas adjacent to mowed lands; flowering among weedy groundcover during the fall and winter that was not present in previous study; numerous squirrels in the area.</p>
13	<p><b>CANOPY:</b> Bald cypress (recently planted), red maple (existing and recently planted), live oak (existing - with 19-foot diameter) and willow. <b>SUB-CANOPY:</b> red maple, bald cypress and live oak (recently planted by dirt road). <b>GROUNDCOVER:</b> Buttonbush (<i>Cephalanthus occidentalis</i>), cinnamon fern (<i>Osmunda cinnamomea</i>), cattail (lake littoral zone), wild taro, swamp fern, cabbage palm, loblolly bay (recently planted), American beautyberry (recently planted), guineagrass (<i>Panicum maximum</i>) and various weedy species including caesar weed and clover. <b>NOTES:</b> This station is located in the recently planted (June 2008) and restored area on the northern shore of Lake Berry; a heavy rainy season resulting in a substantial rise in the lake's shoreline – now the entire sign and plantings of the area are submerged in water; all vegetative species are responding well to the influx of still water.</p>

#### IV. CONCLUSION

The goal of the ongoing Photographic Monitoring Project is to document the changes observed in vegetative communities and species over time on the Genius Reserve. Through an ever-growing collection of digital photography and observational data at thirteen (13) permanently marked locations, changes in vegetation and species populations can be visually documented and evaluated over time with observational data.



**Figure 2 Retention Pond at Baldwin Park**

Overall, this report's results documented a positive and natural progression of vegetative communities at all monitoring stations. All photographic analysis and other observations reveal healthy growth among mainly native species near the

monitoring stations, though some invasive species remain an issue. Represented by the success and survival rate of vegetative species planted at the Genius Reserve, it is clear that plants native to the area's natural habitat will naturally tend to survive since environmental conditions are ideal for their development. This same native concept has been put to good use with much success at the retention ponds in Baldwin Park, a New Urbanist community in Orlando, Florida. As depicted in the images, native species such as bald cypress, live oak, and various native grasses can thrive naturally without much maintenance.



**Figure 1 Retention Plantings at Baldwin Park**



Although most invasive and exotic species remain under control, a little more vegetative maintenance is recommended at or near certain stations, such as No. 9. Table 2 notes the Turk's cap at Station No. 9 should be removed before propagating deeper into the wetland habitat. As noted in the previous Photographic Monitoring Report, a number of moderately sized camphor trees remain to the north of Station No. 3 and near Station No. 11 and their removal is also recommended. Additionally, as recommended in the previous report, fallen trees documented in the vegetative data has be left to decompose naturally.

Major changes that were very easy to identify both in the field and in photographic data include the rise in water level at Station No. 13 and the vegetative change at Station No. 5 after the Rollins College tree planting. The rainy season resulted in a substantial rise in the Lake Berry's shoreline, causing the entire sign and plantings of the area to become submerged in water. Presently, all vegetative species are responding promisingly to the influx of stagnant water. The tree planting that took place at and around Station No. 5 has been an overall success, as the plantings are taking well to the environmental conditions and local habitat.



Figure 3 Tree Planting Near Station No. 5

It is worth noting that attaining the exact photographic perspective and angle at

each station can be quite difficult, depending upon hydrologic conditions, whether some natural force has obstructed proper positioning, or a variety of other conditions.

Documenting the stations by taking photos of each cardinal point surely provides substantial data to analyze, but growth and progression of some vegetation is naturally left out with only four images of each station being documented. If a researcher is so inclined in future reports, it would certainly be worthwhile to collect photographic data in eight directions, including north, northeast, east, southeast, south, southwest, west and northwest, to provide a more panoramic perspective of each station.

Appendix A: Photographic Monitoring Report  
Fall 2008 – Winter 2009

Location: Monitoring Station No. 1



Figure 1 North View



Figure 2 South View



Appendix A: Photographic Monitoring Report  
Fall 2008 – Winter 2009

Location: Monitoring Station No. 1



Figure 3 East View



Figure 4 West View



Appendix A: Photographic Monitoring Report  
Fall 2008 – Winter 2009

Location: Monitoring Station No. 2



Figure 5 North View



Figure 6 South View



Appendix A: Photographic Monitoring Report  
Fall 2008 – Winter 2009

Location: Monitoring Station No. 2



Figure 7 East View



Figure 8 West View



Appendix A: Photographic Monitoring Report  
Fall 2008 – Winter 2009

Location: Monitoring Station No. 3



Figure 9 North View



Figure 10 South View



Appendix A: Photographic Monitoring Report  
Fall 2008 – Winter 2009

Location: Monitoring Station No. 3

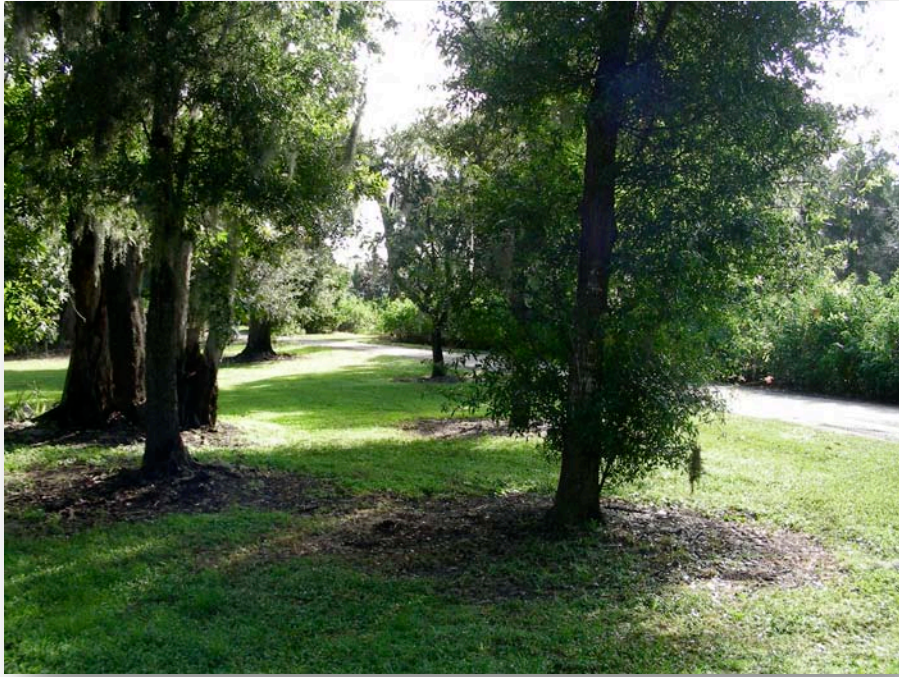


Figure 11 East View



Figure 12 West View



Appendix A: Photographic Monitoring Report  
Fall 2008 – Winter 2009

Location: Monitoring Station No. 4



Figure 13 North View



Figure 14 South View



Appendix A: Photographic Monitoring Report  
Fall 2008 – Winter 2009

Location: Monitoring Station No. 4



Figure 15 East View

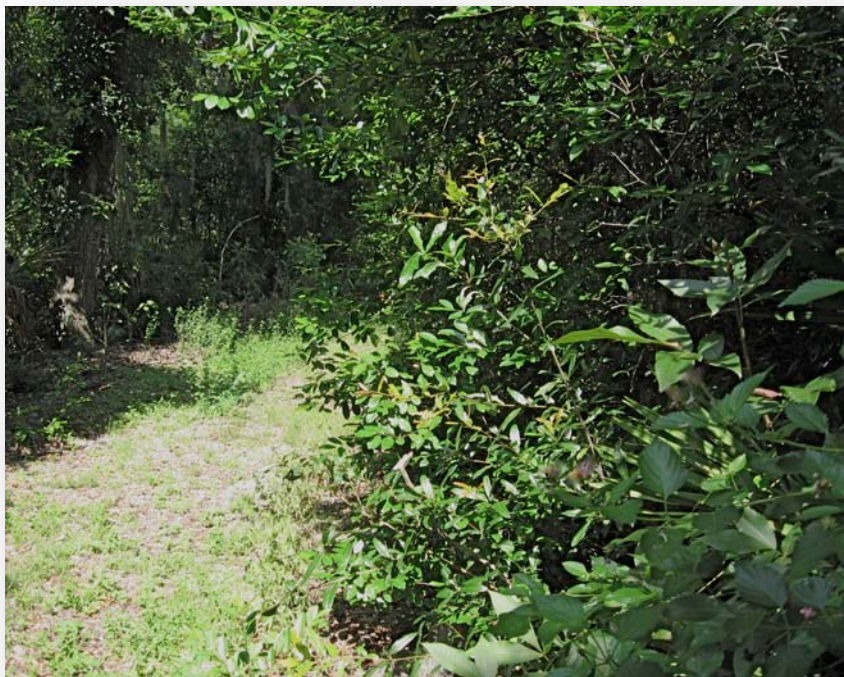


Figure 16 West View



Appendix A: Photographic Monitoring Report  
Fall 2008 – Winter 2009

Location: Monitoring Station No. 5



Figure 17 North View



Figure 18 South View



Appendix A: Photographic Monitoring Report  
Fall 2008 – Winter 2009

Location: Monitoring Station No. 5



Figure 19 East View



Figure 20 West View



Appendix A: Photographic Monitoring Report  
Fall 2008 – Winter 2009

Location: Monitoring Station No. 6



Figure 21 North View



Figure 22 South View



Appendix A: Photographic Monitoring Report  
Fall 2008 – Winter 2009

Location: Monitoring Station No. 6



Figure 23 East View



Figure 24 West View



Appendix A: Photographic Monitoring Report  
Fall 2008 – Winter 2009

Location: Monitoring Station No. 7



Figure 25 North View



Figure 26 South View



Appendix A: Photographic Monitoring Report  
Fall 2008 – Winter 2009

Location: Monitoring Station No. 7



Figure 27 East View



Figure 28 West View



Appendix A: Photographic Monitoring Report  
Fall 2008 – Winter 2009

Location: Monitoring Station No. 8



Figure 29 North View



Figure 30 South View



Appendix A: Photographic Monitoring Report  
Fall 2008 – Winter 2009

Location: Monitoring Station No. 8



Figure 31 East View



Figure 32 West View



Appendix A: Photographic Monitoring Report  
Fall 2008 – Winter 2009

Location: Monitoring Station No. 9



Figure 33 North View



Figure 34 South View



Appendix A: Photographic Monitoring Report  
Fall 2008 – Winter 2009

Location: Monitoring Station No. 9



Figure 35 East View



Figure 36 West View



Appendix A: Photographic Monitoring Report  
Fall 2008 – Winter 2009

Location: Monitoring Station No. 10



Figure 37 North View



Figure 38 South View



Appendix A: Photographic Monitoring Report  
Fall 2008 – Winter 2009

Location: Monitoring Station No. 10



Figure 39 East View



Figure 40 West View



Appendix A: Photographic Monitoring Report  
Fall 2008 – Winter 2009

Location: Monitoring Station No. 11



Figure 41 North View



Figure 42 South View



Appendix A: Photographic Monitoring Report  
Fall 2008 – Winter 2009

Location: Monitoring Station No. 11



Figure 43 East View

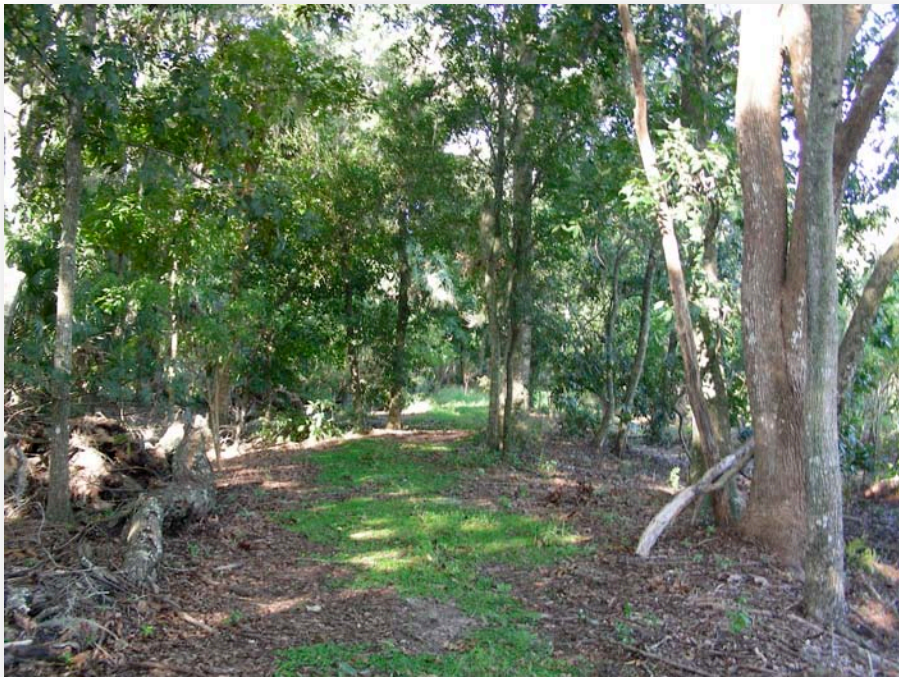


Figure 44 West View



Appendix A: Photographic Monitoring Report  
Fall 2008 – Winter 2009

Location: Monitoring Station No. 12



Figure 45 North View

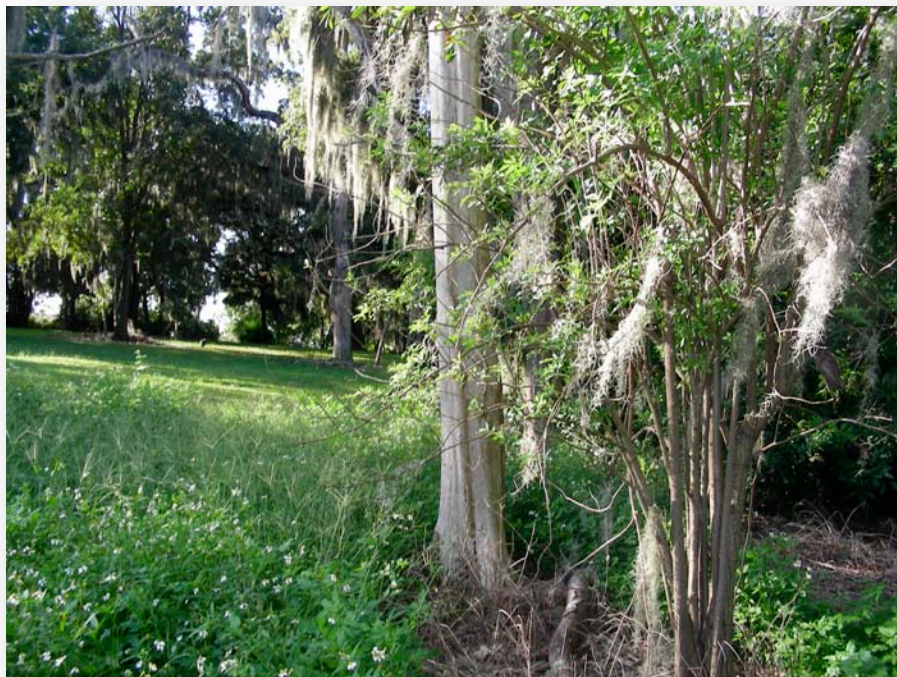


Figure 46 South View



Appendix A: Photographic Monitoring Report  
Fall 2008 – Winter 2009

Location: Monitoring Station No. 12



Figure 47 East View



Figure 48 West View



Appendix A: Photographic Monitoring Report  
Fall 2008 – Winter 2009

Location: Monitoring Station No. 13



Figure 49 North View



Figure 50 South View



# Appendix A: Photographic Monitoring Report Fall 2008 – Winter 2009

Location: Monitoring Station No. 13



Figure 51 East View



Figure 52 West View



**GENIUS RESERVE  
PHOTOGRAPHIC MONITORING STATION VEGETATIVE DATA SHEET**

Station No.	Vegetative Descriptions
1	<b>CANOPY:</b> Pond cypress ( <i>Taxodium ascendens</i> ) and red maple ( <i>Acer rubrum</i> ). <b>SUB-CANOPY:</b> Elderberry ( <i>Sambucus nigra</i> ), red maple, pond cypress and willow ( <i>Salix caroliniana</i> ). <b>GROUNDCOVER:</b> Wild taro ( <i>Colocasia esculenta</i> ), cattail ( <i>Typha latifolia</i> ) (lake littoral zone), caesar weed ( <i>Urena lobata</i> ), dayflower ( <i>Commelina</i> spp.), and variety of grasses and weeds. <b>NOTES:</b> Located along the southern shore of Lake Mizel, this site is continuing to maintain its natural recruitment of red maple; both natural vegetation and planted vegetation from restoration efforts are succeeding; all stratum, the canopy, subcanopy, and groundcover, appear relatively unchanged from previous study (i.e. no substantial growth or vegetative mortality to note).
2	<b>CANOPY:</b> Southern red cedar ( <i>Juniperus silicicola</i> ), laurel oak ( <i>Quercus laurifolia</i> ), live oak ( <i>Quercus virginiana</i> ) and Southern magnolia ( <i>Magnolia grandiflora</i> ). <b>SUB-CANOPY:</b> Blue porterweed ( <i>Stachytarpheta jamaicensis</i> ), American beautyberry ( <i>Callicarpa americana</i> ) and Southern magnolia. <b>GROUNDCOVER:</b> Wild coffee ( <i>Psychotria nervosa</i> ), saw palmetto ( <i>Serenoa repens</i> ), coontie ( <i>Zamia pumila</i> ) and a dense layer of pine straw. <b>NOTES:</b> Not far from Station No. 1, this station also experience little noticeable change in vegetation; this station represents the Cedar Grove and the cedars are continuing to thrive; sprouting oaks continue to scatter the groundcover stratum; wild coffee and beautyberry both fruiting bountifully as winter set in with cold temperatures starting in November and December.
3	<b>CANOPY:</b> Live oak, laurel oak, pignut hickory ( <i>Carya glabra</i> ) and camphor ( <i>Cinnamomum camphora</i> ). <b>SUB-CANOPY:</b> N/A. <b>GROUNDCOVER:</b> Assortment of natural grasses and weeds. <b>NOTES:</b> Station No. 3 exemplifies the some of larger, open space at the Reserve, and as such, experience little alteration in vegetation; a large number of squirrels were noted in this area..
4	<b>CANOPY:</b> Cherry laurel ( <i>Prunus caroliniana</i> ), live oak and pignut hickory. <b>SUB-CANOPY:</b> Live oak, cherry laurel, saw palmetto, American beautyberry and lantana ( <i>Lantana camara</i> ). <b>GROUNDCOVER:</b> Saw palmetto, caesar weed, American beautyberry, various common weeds. <b>NOTES:</b> Located along the north side of a trail that traces the shoreline along Lake Berry, weedy species are naturally still surviving in the trail corridor; the beautyberry fruited in November, but not to the extent of the beautyberry located at Station No. 2 (possibly due to species competition for resources in a more crowded location).
5	<b>CANOPY:</b> Pignut hickory cabbage palm ( <i>Sabal palmetto</i> ), cherry laurel, live oak, laurel oak, Queen palm ( <i>Syagrus romanzoffiana</i> ) and Southern magnolia. <b>SUB-CANOPY:</b> Pignut hickory and beautyberry. <b>GROUNDCOVER:</b> Wild coffee ( <i>Psychotria nervosa</i> ), pignut hickory, live oak, greenbrier vine ( <i>Smilax</i> spp.), saw palmetto, beargrass ( <i>Nolina atopocarpa</i> ), American beautyberry. <b>NOTES:</b> Substantial vegetative change has been noted at this station due to a tree planting event on behalf of Rollins College faculty, students, and their parents during the fall; natural oak recruitment continuing to thrive; dead oaks remain in the area; since the planting, the dense leaf litter that was suppressing the groundcover species is largely covered with pine needles to enhance the growth and survival of the plantings.
6	<b>CANOPY:</b> Live oak, pignut hickory and cherry laurel. <b>SUB-CANOPY:</b> Cherry laurel and American beautyberry. <b>GROUNDCOVER:</b> American beautyberry, cherry laurel, saw palmetto and beargrass. <b>NOTES:</b> A layer of dense leaf litter continues to cover the ground; some slight reduction in shrubbery noted (common for fall and winter conditions); fallen trees seem to be a preferred spot for birds of prey to land, as several were noted on various field days (one was a red-tailed hawk and two others came and went before identification could be confirmed).
7	<b>CANOPY:</b> Pignut hickory, southern magnolia, laurel oak and live oak. <b>SUBCANOPY:</b> Southern magnolia, cherry laurel, American beautyberry, sweet bay, saw palmetto and cabbage palm. <b>GROUNDCOVER:</b> Wild coffee, sweet bay, saw palmetto, leaf litter, and cherry laurel. <b>NOTES:</b> Cherry laurel still excessive in groundcover; no strong odor of dead organic matter was noted as in previous study; numerous dead fallen trees continue to scatter the area; natural reduction in foliage observed throughout fall and winter.
8	<b>CANOPY:</b> Laurel oak, live oak, southern magnolia, pignut hickory and cabbage palm. <b>SUB-CANOPY:</b> Cabbage palm, water oak ( <i>Quercus nigra</i> ), pignut hickory, American beautyberry and swamp bay ( <i>Persea palustris</i> ). <b>GROUNDCOVER:</b> Swamp fern ( <i>Blechnum serrulatum</i> ), pignut hickory, saw palmetto, American beautyberry, beargrass, caesar weed, Virginia creeper ( <i>Parthenocissus quinquefolia</i> ) and dayflower. <b>NOTES:</b> Located in a transition zone and on/near the wetland edge that borders Lake Virginia (west of the station); station also located on a trail with weedy species present within the trail boundary; saw palmetto and swamp fern are both thriving at this station.
9	<b>CANOPY:</b> Bald cypress ( <i>Taxodium distichum</i> ), cabbage palm, live oak, water oak and pignut hickory. <b>SUB-CANOPY:</b> Elderberry, American beautyberry, wax myrtle ( <i>Myrica cerifera</i> ) and turk's cap ( <i>Malvaviscus arboreus</i> ). <b>GROUNDCOVER:</b> Dayflower (dominant), swamp fern, cattail (lake littoral zone), royal fern ( <i>Osmunda regalis</i> ). <b>NOTES:</b> As seen in the West View photograph of Station No. 9, the turk's cap is continuing to thrive and encroach upon the wetland – removal of this plant is still recommended, preferably before the spring growing season; dayflower still covers the ground in a dense layer at one foot in height, small purple flowers no longer present as in previous study.
10	<b>CANOPY:</b> Pignut hickory, bald cypress and cabbage palm. <b>SUB-CANOPY:</b> Cabbage palm, banana ( <i>Musa</i> spp.), southern red cedar, Southern magnolia, pignut hickory, sweet bay, turk's cap, live oak and swamp dogwood ( <i>Cornus foemina</i> ). <b>GROUNDCOVER:</b> Clover ( <i>Trifolium</i> spp.), caesar weed and a dense pine straw layer. <b>NOTES:</b> Planted area near the southern end of Banana Grove (natural areas exist to the west along the shore of Lake Virginia); osprey ( <i>Pandion haliaetus</i> ) observed flying overhead.
11	<b>CANOPY:</b> Pignut hickory, camphor, laurel oak and live oak. <b>SUB-CANOPY:</b> Elderberry, pignut hickory, cabbage palm, water oak, and by Lake Mizell to the north: wax myrtle, swamp fern and willow. <b>GROUNDCOVER:</b> Sword fern ( <i>Nephrolepis</i> spp.), cattail (lake littoral zone), various weeds, greenbrier, natural recruitment of camphor, water oak and American beautyberry also observed in groundcover. <b>NOTES:</b> This station is located on a trail (the Old Dinky Railroad line) that runs adjacent to the south portion of Lake Mizell; large, the dead fallen trees continue to rot in the area; remains of a bird spotted near the station, possibly a meal consumed by a resident red fox.
12	<b>CANOPY:</b> Pignut hickory, live oak, Southern magnolia, laurel oak, and near Lake Mizell to north: cypress, elderberry and cherry laurel. <b>SUB-CANOPY:</b> Cherry laurel, pignut hickory and cabbage palm. <b>GROUNDCOVER:</b> Beggarticks ( <i>Bidens alba</i> ) and various weedy and grass species. <b>NOTES:</b> Located adjacent to the Old Dinky Railroad trail, this station represents another open, maintained area (much like Station No. 3); beggarticks still thriving in areas adjacent to mowed lands; flowering among weedy groundcover during the fall and winter that was not present in previous study; numerous squirrels in the area.
13	<b>CANOPY:</b> Bald cypress (recently planted), red maple (existing and recently planted), live oak (existing - with 19-foot diameter) and willow. <b>SUB-CANOPY:</b> red maple, bald cypress and live oak (recently planted by dirt road). <b>GROUNDCOVER:</b> Buttonbush ( <i>Cephalanthus occidentalis</i> ), cinnamon fern ( <i>Osmunda cinnamomea</i> ), cattail (lake littoral zone), wild taro, swamp fern, cabbage palm, loblolly bay (recently planted), American beautyberry (recently planted), guineagrass ( <i>Panicum maximum</i> ) and various weedy species including caesar weed and clover. <b>NOTES:</b> This station is located in the recently planted (June 2008) and restored area on the northern shore of Lake Berry; a heavy rainy season resulting in a substantial rise in the lake's shoreline – now the entire sign and plantings of the area are submerged in water; all vegetative species are responding well to the influx of still water.