



**ENGINEERING  
ENVIRONMENTAL  
ECOLOGICAL**

August 9, 2017

Mr. Brian Dick  
Assistant Superintendent Parks and Recreation  
City of Lakeland  
228 S Massachusetts Avenue  
Lakeland, Florida 33801

**Subject:        Lover's Oak Arborist Assessment  
                 Success Avenue and Lake Morton Drive  
                 Lakeland, Polk County, Florida  
                 E Sciences Project Number 3-0002-001**

Dear Mr. Dick:

E Sciences, Incorporated (E Sciences) is pleased to submit this report on our assessment and recommendations associated with the live oak (*Quercus virginiana*) at the intersection of Success Avenue and Lake Morton Drive. This oak is known as the Lover's Oak. This assessment was prepared in general accordance with our proposal number 3-0002-P01 dated July 25, 2017.

On Friday, July 21, a 14-inch limb from the subject tree failed and damaged a vehicle. The City engaged E Sciences to provide an assessment of the general health and structure to evaluate the tree's future viability in the landscape. Please note that the scope did not include a Tree Risk Assessment Qualification (TRAQ) assessment.

## **TREE OBSERVATIONS**

An E Sciences senior arborist visited the site to observe the tree on August 1, 2017. The tree is in the city right-of-way between the sidewalk and the street. The subject tree is a 105-inch diameter live oak tree. The measurement was taken at the narrowest point below the basal codominant union. The canopy to the east overhangs the sidewalk and the front yard of a private residence and the canopy to the west overhangs the street. The tree has poor structure and average-good health.

During our assessment, it appeared that the tree was healthy with some areas of dieback and low crown density, however, the tree has structural defects which cannot be corrected. The trunk forms a basal codominant with included bark. This condition occurs when one or more trunks emanate from grade and contact one another. This union was inspected with the use of a probe and it was determined that there is no connective tissue between the two trunks. The original connective tissue has decayed due to the contact pressure from annual secondary growth in the trunks. The

decay and strength loss increases each growing season until failure occurs when the load bearing capacity is exceeded.

There is an inclusion bulge indicating internal decay on the east side of the basal codominant. Once the codominant trunks have reached a point where inward growth is no longer possible new tissue often forms creating a pronounced bulge spanning the base of the two trunks. This bulge forms at a point below the two codominant stems where the new wound wood has grown in response to the continual internal fracture and included bark underneath.

There are important factors that create a predisposition for failure. The aspect ratio is approximately 1:1, meaning both trunks are essentially the same size in diameter. As the aspect ratio decreases the strength of the trunks increases; therefore, the strength in the subject trunk is compromised. A 1:1 ratio has the highest probability for failure as the two leaning trunks of the tree are unable to develop response growth in the crotch area.

The two leaning trunks of the tree are unable to develop response growth in the crotch area. In addition, the tree has decay in the crotch and no connective tissue. This tree has a large canopy which compounds the likelihood of failure of an included, basal codominant trunk due to excessive weight over the defective crotch. This tree's broad spreading canopy creates a strong pull in an outward and downward fashion over the weakened crotch. This condition is exacerbated during wind events and rainy periods when a tree's weight can increase substantially. The decay associated with this defect is progressive and will continue to worsen with each passing year.

In instances where you have a single tree that develops a lean in one direction it will compensate by producing tension roots and tension wood on the opposite side of the lean. Tension roots function to support the unequal weight distribution of the crown. Tension wood functions to pull the tree back against the effects of gravity. In this tree, the individual trunks are unable to develop tension roots because of the presence of the adjacent tree, they are attached to at the base. Trees with basal codominant structure can fail at any time but more typically fail when they reach a mature level.

The 38-inch diameter trunk to the south has a significant amount of decay potentially from contact from large vehicles. Consequently, the extending branches have extensive dieback. This decay is present along the southern most trunk and continues down into the main trunk. Directly below this decay is a wound in the main trunk. It is our opinion that the decay in the overhead branch and the main trunk have likely connected internally causing a high predisposition for failure. This defect cannot be corrected with pruning which would leave a 38-inch wound on the south side of the tree. In addition, if this trunk was removed there would be no counter weight leaving most of the weight on the east side over the sidewalk and private residence.

There is also evidence of other areas of decay in the canopy of the tree. Our observations indicate that this decay was likely caused by a lightning strike that entered the canopy with a resultant exit

wound on the north side of the trunk near grade. The city has effectively pruned the tree to mitigate defects by pruning back branches gradually. The tree has reached a point where additional pruning of defects may negatively affect the tree due to a deficit of stored up energy to overcome the pruning.

The tree has outgrown the space provided between the sidewalk and the street. The roots are girdling in the provided space leaving the tree with an abbreviated root system to the east and west. There are wounds present on the surface roots from pruning and other mechanical maintenance equipment such as a mower. These wounds could result in decay in the root system.

### **RECOMMENDATION**

The tree has average-good health but should not be preserved because of the structural defect of the included, basal codominant. The decay in the south trunk will exacerbate the decay associated with the inclusion. There is no viable options to mitigate the included, basal codominant. Bracing with rods would not likely be successful over time due to the additional decay in the more external areas of the south trunk. There is likely not enough sound wood to hold the nuts and washers in the location where the rods would need to be installed. As there are targets of people and/or property in this area, and we have identified no viable mitigation options to correct the structural defect, the tree is recommended for removal.

We appreciate the opportunity to provide you with this arborist assessment report. If you have any questions concerning this report, please contact Lori Ballard 727-403-5980.

Sincerely,

**E SCIENCES, INCORPORATED**



Lori Ballard  
Senior Arborist



Justin Freedman  
Associate

Attachment  
Attachment A: Photolog

# **ATTACHMENT A**

PHOTO DOCUMENTATION LOG



Photo 1  
Basal codominant with included bark



Photo 2  
Union inspected with the use of a probe



PHOTO DOCUMENTATION LOG



Photo 3  
Inclusion bulge on east side



Photo 4  
1:1 Aspect ratio



PHOTO DOCUMENTATION LOG



Photo 5  
38" Diameter trunk to the south with decay



Photo 6  
Wound in main trunk below decay along  
southern trunk



PHOTO DOCUMENTATION LOG



Photo 7  
Other area of decay in canopy of tree



Photo 8  
Exit wound on north side near grade



PHOTO DOCUMENTATION LOG



Photo 8  
Girdling roots and surface roots  
with wounds present