

Tree Evaluation Report

Lacebark Elm Structural Integrity Dow Park, Deer Park, Texas



Prepared for City of Deer Park, Park Operations
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OBJECTIVE/REASON FOR TREE EVALUATION

1. It is my understanding the Lacebark Elms (*Ulmus parvifolia*) in Dow Park have recent history of branch failure. C.N. Koehl Urban Forestry, Inc. was contracted by City of Deer Park, Park Operations to evaluate tree condition and cause for branch failure, and specifically to evaluate for presence of Anthracnose. I met Park Operations staff on site of Dow Park on August 8, 2016 and have the following findings and recommendations:

GENERAL TREE CONDITION FINDINGS

1. I found most of the Lacebark Elms to have several trunk and scaffold branch wounds. Most of the wounds were older with new reaction wood starting to grow across the wound. I also found fresh wounds, in which the wood of the tree was still green, with desiccated areas that were obviously teeth marks of squirrels. Squirrel damage on thin barked trees like Lacebark Elm, Water Oak, Shumard Oak, and Nuttall Oak has become fairly common in the Greater Houston area in the last 5-10 years. The squirrels will frequently rest in the area of a branch attachment and chew the bark of the limb where it attaches to the trunk or a larger branch. Frequently the entire circumference of the bark is stripped from the limb, causing the limb to die. It seems thinner barked trees are the squirrels' preference, which is evident in the amount of wounding on the Lacebarks in Dow Park relative to other species.



Figure 1: An older trunk wound with reaction wood at margins.





Figure 2: Fresh wound with squirrel teeth marks.

2. I found deadwood in most Lacebark Elm trees located in the park. Lacebark Elms tend to be slow in shedding deadwood. This phenomenon causes wall number 4 (reaction wound tissue) of the wound compartmentalization process to start growing up the dead or dying limb before it falls from the tree, rather than growing across and compartmentalizing the wound. This condition tends to allow decay columns to develop in the limb or trunk to which the dead limb is attached. With time these decay columns structurally compromise the integrity of the branch or trunk to which the dead limb is attached, causing branch failure at some point in the future. This phenomenon has caused Lacebark Elm to fall out of favor with many Urban Foresters across the Greater Houston area.

3. I found several Lacebark Elm trees that had poor overall canopy vigor and a significant amount of deadwood that did not appear to be related to squirrel damage. The trees appeared to be suffering from years of soil compaction and/or root rot infestation. Root rot fungi have been more prevalent than typical the last several years with the abundant rainfall the Greater Houston area has received.
4. It is my opinion that the Lacebark's propensity to be a poor compartmentalizer of decay to be the primary cause for the recent history of branch failure. In my opinion the deadwood that has developed related to soil compaction, root rot fungi, and squirrel damage are leading to decay columns that are structurally compromising branches, which is causing branch failure.
5. It is my understanding from Parks Operations staff that at least one Lacebark Elm's trunk split and failed recently. This is typical with Lacebark Elms that have co-dominant trunks with included bark in the trunk attachment. I found two trees near the parking lot with co-dominant trunks that should be removed due to the structurally compromised condition.



Figure 3: Co-dominant trunk with included bark.

GENERAL (PARK WIDE) BRANCH FAILURE MITIGATION RECOMMENDATIONS

1. Preventing squirrel damage in trees is a rather difficult endeavor. Some residents have found trapping and relocation to be an effective approach. I'm not sure if or how this could be implemented in Dow Park, but I do recommend looking into its feasibility.
2. Wounds on the trunks of trees will typically compartmentalize and not become a structural integrity issue. The wounds should be monitored and inspected at least once every 3 years to ensure proper compartmentalization and structural integrity. If the trunk wounds are repeatedly damaged and made larger by the chewing, decay may develop and entire tree may need to be removed for patron safety.
3. Given the Lacebark Elm's poor compartmentalization properties, deadwood should be pruned from the trees to allow proper reaction wood tissue development and compartmentalization. I recommend the trees in Dow Park be placed on a 3-5 year Crown Cleaning Pruning schedule that should include removal of deadwood 1" diameter and larger. The routine maintenance should prevent development of decay columns and associated branch failure.

INDIVIDUAL TREE EVALUATION & RECOMMENDATIONS

(Reference attached park map for tree numbers & locations. Tree diameters were not measured in field for cost savings purposes – diameters are approximate.)

Tree No. 1 – 12" Lacebark Elm – Co-dominant trunk with included bark in attachment. Tree is structurally compromised and should be removed for safety concerns.

Tree No. 2 – 9" Lacebark Elm - Co-dominant trunk with included bark in attachment. Tree is structurally compromised and should be removed for safety concerns.

Tree No. 3 – 22" Lacebark Elm – Significant deadwood throughout canopy of tree. Approximately 50% of the tree's canopy has died. Structural integrity concerns with size and amount of deadwood and the anticipated decay columns in scaffold branches. The tree should be removed for safety concerns.

Tree No. 4 – 16" Lacebark Elm – Squirrel damage wounds on trunk and minor deadwood in canopy. The tree should be pruned with a Crown Cleaning Pruning, removing deadwood 1" diameter and larger as soon as feasible. The tree should be included in a 3-5 year Crown Cleaning and trunk wound inspection schedule.



Tree No. 5 – 16” Lacebark Elm - Squirrel damage wounds on trunk and minor deadwood in canopy. The tree should be pruned with a Crown Cleaning Pruning, removing deadwood 1” diameter and larger as soon as feasible. The tree should be included in a 3-5 year Crown Cleaning and trunk wound inspection schedule.

Tree No. 6 – 18” Lacebark Elm - Squirrel damage wounds on trunk and minor deadwood in canopy. The tree should be pruned with a Crown Cleaning Pruning, removing deadwood 1” diameter and larger as soon as feasible. The tree should be included in a 3-5 year Crown Cleaning and trunk wound inspection schedule.

Tree No. 7 – 12” Lacebark Elm - Squirrel damage wounds on trunk and minor deadwood in canopy. The tree should be pruned with a Crown Cleaning Pruning, removing deadwood 1” diameter and larger as soon as feasible. The tree should be included in a 3-5 year Crown Cleaning and trunk wound inspection schedule.

Tree No. 8 – 14” Lacebark Elm - Squirrel damage wounds on trunk and minor deadwood in canopy. The tree should be pruned with a Crown Cleaning Pruning, removing deadwood 1” diameter and larger as soon as feasible. The tree should be included in a 3-5 year Crown Cleaning and trunk wound inspection schedule.

Tree No. 9 – 17” Lacebark Elm - Squirrel damage wounds on scaffold branches and minor deadwood in canopy. The tree should be pruned with a Crown Cleaning Pruning, removing deadwood 1” diameter and larger as soon as feasible. The tree should be included in a 3-5 year Crown Cleaning and trunk wound inspection schedule.

Tree No. 10 – 16” Lacebark Elm - Squirrel damage wounds on scaffold branches and minor deadwood in canopy. The tree should be pruned with a Crown Cleaning Pruning, removing deadwood 1” diameter and larger as soon as feasible. The tree should be included in a 3-5 year Crown Cleaning and trunk wound inspection schedule.

Tree No. 11 – 12” Lacebark Elm - Squirrel damage wounds on scaffold branches and minor deadwood in canopy. The tree should be pruned with a Crown Cleaning Pruning, removing deadwood 1” diameter and larger as soon as feasible. The tree should be included in a 3-5 year Crown Cleaning and trunk wound inspection schedule.

Tree No. 12 – 11” Pine – Trunk heavily infested with Fusiform rust (*Cronartium fusiforme*), which has created a canker that has enveloped most the circumference of the tree. The canker has severely compromised the trunk’s structural integrity. The tree should be removed as soon as possible.



Figure 4: Fusiform canker on trunk of Tree No. 12.

Tree No. 13 – 23” Lacebark Elm - Squirrel damage wounds on scaffold branches and minor deadwood in canopy. The tree should be pruned with a Crown Cleaning Pruning, removing deadwood 1” diameter and larger as soon as feasible. The tree should be included in a 3-5 year Crown Cleaning and trunk wound inspection schedule.

Tree No. 14 – 13” Lacebark Elm – The tree is suppressed by the larger Tree No. 13. With time the tree will start to decline and die as the larger tree continues to prevent the smaller tree from receiving adequate sunlight, water & nutrients to support essential life functions. Removal of Tree No. 14 will prevent future deadwood and safety issues and will also allow Tree No. 13 to develop a full canopy and be healthier over the long term.

Tree No. 15 – 11” Lacebark Elm - Squirrel damage wounds on trunk and minor deadwood in canopy. The tree should be pruned with a Crown Cleaning Pruning, removing deadwood 1” diameter and larger as soon as feasible. The tree should be included in a 3-5 year Crown Cleaning and trunk wound inspection schedule.

Tree No. 16 – 12” Lacebark Elm - Squirrel damage wounds on trunk and minor deadwood in canopy. The tree should be pruned with a Crown Cleaning Pruning,



removing deadwood 1” diameter and larger as soon as feasible. The tree should be included in a 3-5 year Crown Cleaning and trunk wound inspection schedule.

Tree No. 17 – 11” Lacebark Elm - Co-dominant trunk with included bark in attachment. Tree is structurally compromised and should be removed for safety concerns.

TREE TREATMENT CRITERIA

Tree recommended for immediate removal

1. Trunk of tree has been structurally compromised by decay, pathogen, or Co-dominant trunk with included bark.

Tree recommended for removal as soon as schedule permits

1. Tree suppressed by adjacent larger tree.
2. Tree with large deadwood that has started to compromise structural integrity of large scaffold limbs.

Tree recommended for Crown Cleaning prune and scheduled inspections

1. Tree with squirrel damage wounds on trunk or major branches.
2. Tree with deadwood 2” diameter or larger.