City of Columbia
701 East Broadway, Columbia, Missouri 65201

Agenda Item Number: REP 90-15
Department Source: Parks and Recreation
To: City Council
From: City Manager & Staff
Council Meeting Date: 9/8/2015
Re: Hazardous Tree Removal Report: Stephens Lake Park

Documents Included With This Agenda Item
Council memo
Supporting documentation includes: Images, Basic Tree Risk Assessment Forms

Executive Summary
The Columbia Parks & Recreation Department is requesting Council approval to remove three hazardous trees at Stephens Lake Park due to their current state of decline and the hazard potential for park users. These trees are dying and despite efforts of staff will not survive. All three trees present a high risk of public safety, as portions of each tree crown have expired and each tree is located within high use areas frequented by park users. The first tree is a Silver Maple located near the southeast corner of Riechmann Pavilion. It qualifies as a large tree due to its 46-inch Diameter at Breast Height (DBH) and is suggested for removal due an increasing amount of deadwood throughout the tree. The second tree is a Honeylocust located on the north side of the park adjacent to the hard surface trail. The tree has a 49-inch DBH and has less than 30% living crown due to mature age and drought stress from the summer of 2012. The final tree is another Honeylocust located in the northwest corner of the park along the hard surface trail and has a 31-inch Diameter at Breast Height. The tree has has shown continuous decline for five years and has a high potential to drop large limbs onto the fitness trail and East Walnut Street. Copies of the Tree Risk Assessment Forms and photos are included with the report.

Discussion
In February of 2009, the Columbia Parks & Recreation Department was asked by the City Council to develop a report relating to the removal of larger trees within the park system that may be perceived as significant to the public and/or the use of the park. The report recommended a policy that outlined the procedures to be followed whenever large trees were to be removed due to either being a public safety hazard or due to park development. A link to the 2009 report is included in the legislative history section of this report; and in summary, the P&R tree removal procedure for hazardous trees now includes the following key elements:

1. Tree Risk Assessment Forms will be completed by the Department's certified International Society of Arboriculture Forester and staff.
2. Trees larger than 20-inch Diameter at Breast Height (DBH) but smaller than 30-inch DBH must have the approval of the Park Development Superintendent and the Park Services Manager to be removed.
3. Trees larger than 30-inch DBH must have the approval of the P&R Director who will notify Council that the tree or trees will be removed.
4. Any size tree that presents an immediate danger to the public shall be removed immediately.

The Silver Maple tree that the Parks and Recreation Forestry staff is proposing to remove is located in Stephens Lake Park directly southeast of Riechmann Pavilion. The tree has a Diameter at Breast Height of 46 inches and has shown considerable decline over the past five years. The visible signs of decay and cavity in the branch system and over mature age of the tree create a high potential for falling scaffolding branches and dead limbs from the crown and canopy. The mature Silver Maple has had previous branch failures and continuous decline of the tree is due to age and drought conditions in the summer of 2012. This species of tree is notorious for failure in its current state of decline and mitigation is not feasible at this time. Forestry staff has determined that the potential for failure is the key factor for the determination of removal due to the location of the tree near park patrons utilizing Riechmann Pavilion.

The second tree recommended for removal is a Honeylocust tree located on the north side of Stephens Lake Park along the hard surface trail. The Honeylocust tree has grown to a mature height of 65 feet with a 49-inch Diameter at Breast Height. The tree has approximately 30% living crown and has shown visible signs of rot, decay and cavity in the branches and root crown. The visual signs of rot at the branch attachments is a clear sign of branch failure. Forestry staff has observed falling limbs and deadwood in the tree over the last 2 years and blame the decline over the past year due to the severe drought of 2012. Staff is requesting permission to remove the failing tree due to the risk of failure and public safety due to the proximity to the Stephens Lake Park fitness trail.

The final tree recommended for removal by Forestry staff is a mature Honeylocust tree located in the northwest corner of Stephens Lake Park. The tree has a 32-inch diameter at breast height and a total height of 40 feet. The Honeylocust currently has signs of complete decline in the upper 40% of the tree and has undergone multiple pruning cycles in which significant amounts of deadwood were removed. The continued dieback in the canopy continues to pose a hazard to East Walnut Street and park patrons utilizing the hard surface trail and amphitheater. The tree has shown previous signs of branch and major stem failure and will continue to drop large, dead limbs if it is not removed. The removal of the tree is necessary due to the weakened state of the tree and safety issues for park patrons.

All three trees have reached a mature growing age and the majority of the dieback and canopy loss is due to reaching the mature growing age in conjunction with excessive heat and drought conditions from 2010 to 2012. The severe drought of 2012 severely affected the overall health of each of these trees and is the main contributing factor for the tree loss. The Silver Maple tree located near Riechmann Pavilion and Honeylocust tree located on the north side of the park will be replaced with new trees similar in species in the same approximate locations. The Honeylocust tree adjacent to the amphitheater and hard surface trail will not be replaced because the Forestry staff has already planted a new tree adjacent to the mature Honeylocust in anticipation for the removal of the tree. A number of existing trees are also present in this location of the park. As reported to Council in 2012, there are several trees located between Walnut Street and the Stephens Lake Park trail that will
eventually be lost to age, storms, disease, or other acts of nature, so additional trees have been planted as a replacement and investment toward the future. An early example of this investment is the 82 trees that were planted as part of a TRIM Grant in 2004. Over 90 additional trees have been planted as a result of the community donating memorial and heritage trees to the park. Approximately 150 more trees have been planted as part of shoreline stabilization, tree collections (Maple, Nut, Oak, conifers) and other landscaping projects.

**Fiscal Impact**

Short-Term Impact: No fiscal impact  
Long-Term Impact: No fiscal impact

**Vision, Strategic & Comprehensive Plan Impact**

Vision Impact: Not Applicable  
Strategic Plan Impact: Not Applicable  
Comprehensive Plan Impact: Not Applicable

**Suggested Council Action**

Unless Council directs otherwise, park staff will proceed with the tree removal as outlined in this report.

**Legislative History**

2009 report regarding the removal of hazardous trees in the park system:  

Department Approved  
City Manager Approved
SUPPORTING DOCUMENTS INCLUDED WITH THIS AGENDA ITEM ARE AS follows:

Images, Basic Tree Risk Assessment Forms
Basic Tree Risk Assessment Form

Client: City of Columbia Parks and Recreation  Date: 8/28/15  Time: 
Address/Tree location: Stephens Lake Park: south side of Riechmann Pavilion  Tree no.:  
Assessor(s): Steve Fritz, Eric Schmitte  Time frame:  

Target Assessment

<table>
<thead>
<tr>
<th>Target number</th>
<th>Target description</th>
<th>Target zone</th>
<th>Occupancy rate</th>
<th>Projected to reach target?</th>
<th>Restriction practiced?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Park users traveling near tree. Tree is located near a frequently used shelter.</td>
<td>2</td>
<td>no</td>
<td>no</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Site Factors

History of failures: Tree has lost several large limbs already
Topography: Flat

Site changes: None
Grade change
Site clearing
Changed soil hydrology
Root cuts
Describe

Soil conditions: Limited volume
Saturated
Shallow
Compacted
Pavement over roots

Prevailing wind direction: W
Common weather: Strong winds
Ice
Snow
Heavy rain
Describe: Open hilltop

Tree Health and Species Profile

Vigor: Low
Normal
High
Foliage: None (seasonal)
None (dead)
Normal
70
Chlorotic
% Describe
Necrotic
30

Pests: Abiotic

Species failure profile: Branches
Trunk
Roots
Describe: Tree has major dieback in canopy and has begun shedding large limbs

Load Factors

Wind exposure: Protected
Partial
Full
Wind funnelling

Relative crown size: Small
Medium
Large

Crown density: Sparse
Normal
Dense
Interior branches: Few
Normal
Dense

Vines/Mistletoe/Moss

Recent or planned change in load factors: No

Tree Defects and Conditions Affecting the Likelihood of Failure

--- Crown and Branches ---

Unbalanced crown
LCR %
Dead twigs/branches % overall Max. dia. 20"
Broken/Hangers Number Max. dia. 10"
Over-extended branches

Pruning history
Crown cleaned
Thinned
Reduced
Flush cuts

Cracks
Codominant
Weak attachments
Previous branch failures
Dead/Missing bark
Cankers/Galls/Burls
Conks
Heartwood decay

Main concern(s): Tree has major dieback in canopy and has begun shedding large limbs

Load on defect: N/A
Likelihood of failure: Improbable

--- Trunk ---

Dead/Missing bark
Abnormal bark texture/color
Codominant stems
Included bark

Codominant stems
Cracks

Sapwood damage/decay
Cankers/Galls/Burls

Lightning damage
Heartwood decay
Conks/Mushrooms

Cavity/Nest hole
% circ.
Depth
Poor taper

Lean °
Corrected?

Response growth

Main concern(s): Potential for dead/dying codominant stems to split out

Load on defect: N/A
Likelihood of failure: Improbable

--- Roots and Root Collar ---

Collar buried/Not visible
Depth
Stem girdling
Dead
Decay
Conks/Mushrooms
Ooze
Cavity % circ.

Cracks
Cut/Damaged roots
Distance from trunk

Root plate lifting
Soil weakness

Response growth

Main concern(s):

Load on defect: N/A
Likelihood of failure: Improbable
### Matrix 1. Likelihood matrix.

<table>
<thead>
<tr>
<th>Likelihood of Failure</th>
<th>Likelihood of Impacting Target</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Very Low</td>
</tr>
<tr>
<td>Imminent</td>
<td>Unlikely</td>
</tr>
<tr>
<td>Probable</td>
<td>Unlikely</td>
</tr>
<tr>
<td>Possible</td>
<td>Unlikely</td>
</tr>
<tr>
<td>Improbable</td>
<td>Unlikely</td>
</tr>
</tbody>
</table>

### Matrix 2. Risk rating matrix.

<table>
<thead>
<tr>
<th>Likelihood of Failure &amp; Impact</th>
<th>Consequences of Failure</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Negligible</td>
</tr>
<tr>
<td>Very likely</td>
<td>Low</td>
</tr>
<tr>
<td>Likely</td>
<td>Low</td>
</tr>
<tr>
<td>Somewhat likely</td>
<td>Low</td>
</tr>
<tr>
<td>Unlikely</td>
<td>Low</td>
</tr>
</tbody>
</table>

### Notes, explanations, descriptions
Over-mature silver maple with significant amounts of large diameter dead and dying wood in the main stems and canopy. Tree has been pruned in the past to remove hazards, and continues in a cycle of decline.

### Mitigation options
Tree should be removed and new plantings installed in its place.

### Overall tree risk rating
- Low □ Moderate ■ High □ Extreme □ Work priority 1 □ 2 □ 3 □ 4 □
- Overall residual risk Low □ Moderate ■ High □ Extreme □ Recommended inspection interval
- Data □ Final □ Preliminary Advanced assessment needed □ No □ Yes-Type/Reason
- Inspection limitations □ None □ Visibility □ Access □ Vines □ Root collar buried Describe

---

This dataset was produced by the International Society of Arboriculture (ISA) and is intended for use by Tree Risk Assessment Qualified (TRAQ) arborists – 2013
Existing Conditions – Silver Maple Tree
Stephens Lake Park – Adjacent to Riechmann Pavilion

Significant amount dead/dying limbs

Significant bark loss/decay on main trunks
ISA Basic Tree Risk Assessment Form

Client City of Columbia
Date 6/22/15
Address/Tree location Stephens Lake Park
Tree species Honeylocust
Assessor(s) Eric Schmittel MW-4775A

Target Assessment

<table>
<thead>
<tr>
<th>Target number</th>
<th>Target description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Hardsurface Trail</td>
</tr>
<tr>
<td>2</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

Site Factors

History of failures Previous tree failure from drought and construction damage. Topography Flat □ Slope □ % Aspect SE
Site changes None □ Grade change □ Site clearing □ Changed soil hydrology □ Root cuts □ Describe Soil was compacted and raised for trail.
Soil conditions Limited volume □ Saturated □ Shallow □ Compacted □ Pavement over roots □ % Describe Trail around 2/3 of tree.
Prevailing wind direction West Common weather Strong winds □ Ice □ Snow □ Heavy rain □ Describe

Tree Health and Species Profile

Vigor Low □ Normal □ High □ Foliage None (seasonal) □ None (dead) □ Normal □ Chlorotic □ Necrotic □
Pests Borers, Carpenter ants
Abiotic Soil work around tree for trail.
Species failure profile Branches □ Trunk □ Roots □ Describe Several large branches have broken out of this tree in the past

Load Factors

Wind exposure Protected □ Partial □ Full □ Wind tunneling □ Relative crown size Small □ Medium □ Large □
Crown density Sparse □ Normal □ Dense □ Interior branches Few □ Normal □ Dense □ Vines/Mistletoe/Moss □ Wintercreeper, vines
Recent or planned change in load factors

Tree Defects and Conditions Affecting the Likelihood of Failure

— Crown and Branches —

Unbalanced crown □ LCR □ % Dead twigs/branches □ % overall Max. dia. □" Broken/Hangers Number □ Max. dia. □"
Over-extended branches □
Pruning history Crown cleaned □ Thinned □ Raised □ Reduced □ Topped □ Lion-tailed □
Flush cuts □ Other □

Cracks □ Lightning damage □ Codominant □ 3 large codominant stems □ Included bark □
Weak attachments □ Rot at attachments □ Cavity/Nest hole □ % circ.
Previous branch failures □ Similar branches present □
Dead/Missing bark □ Cankers/Galls/Burls □ Sap ooze □
Conks □ Heartwood decay □ Large open wounds □
Response growth □

Main concern(s) Seventy percent of the crown is completely dead. The primary branches of the remaining live canopy have large wounds from previous limb drop leaving them susceptible to failure.

Load on defect N/A □ Minor □ Moderate □ Significant □
Likelihood of failure Improbable □ Possible □ Probable □ Imminent □

— Trunk —

Dead/Missing bark □ Abnormal bark texture/color □ Codominant stems □ Included bark □ Cracks □
Codominant stems □ Included bark □ Cracks □ Sapwood damage/decay □ Cankers/Galls/Burls □ Sap ooze □
Lightning damage □ Heartwood decay □ Conks/Mushrooms □
Cavity/Nest hole □ % circ. Depth □ Poor taper □

Lean □ Corrected?
Response growth □
Main concern(s) □

Load on defect N/A □ Minor □ Moderate □ Significant □
Likelihood of failure Improbable □ Possible □ Probable □ Imminent □

— Roots and Root Collar —

Collar buried/Not visible □ Depth □ Stem girdling □
Dead □ Decay □ Conks/Mushrooms □
Ooze □ Cavity □ % circ.
Cracks □ Cut/Damaged roots □ Distance from trunk □ 35'
Root plate lifting □ Soil weakness □

Response growth □
Main concern(s) □

Load on defect N/A □ Minor □ Moderate □ Significant □
Likelihood of failure Improbable □ Possible □ Probable □ Imminent □
## Risk Categorization

<table>
<thead>
<tr>
<th>Condition number</th>
<th>Tree part</th>
<th>Conditions of concern</th>
<th>Part size</th>
<th>Fall distance</th>
<th>Target protection</th>
<th>Likelihood of Failure</th>
<th>Likelihood of Impacting Target</th>
<th>Failure &amp; Impact</th>
<th>Consequences</th>
<th>Risk rating of part (from Matrix 2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Branches</td>
<td>-Size of parts</td>
<td>18&quot;</td>
<td>20'</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-Advanced stage of</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>decay</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Matrix 1. Likelihood matrix.**

<table>
<thead>
<tr>
<th>Likelihood of Failure</th>
<th>Likelihood of Impacting Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very low</td>
<td>Low</td>
</tr>
<tr>
<td>Imminent</td>
<td>Unlikely</td>
</tr>
<tr>
<td>Impressive</td>
<td>Unlikely</td>
</tr>
<tr>
<td>Possible</td>
<td>Unlikely</td>
</tr>
<tr>
<td>Improbable</td>
<td>Unlikely</td>
</tr>
</tbody>
</table>

**Matrix 2. Risk rating matrix.**

<table>
<thead>
<tr>
<th>Likelihood of Failure &amp; Impact</th>
<th>Consequences of Failure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very likely</td>
<td>Low</td>
</tr>
<tr>
<td>Likely</td>
<td>Moderate</td>
</tr>
<tr>
<td>Somewhat likely</td>
<td>Low</td>
</tr>
<tr>
<td>Unlikely</td>
<td>Moderate</td>
</tr>
</tbody>
</table>

Notes, explanations, descriptions: The majority of this tree’s canopy is dead and the branches are rapidly decaying. Failure of these branches is imminent. Several of the larger live branches have advanced heartwood decay from previous failures. This tree not only looks bad but is also a large threat to park users.

Mitigation options: No options due to condition and age

Residual risk

Residual risk

Residual risk

Residual risk

Overall tree risk rating: Low □ Moderate □ High □ Extreme □

Overall residual risk: Low □ Moderate □ High □ Extreme □

Work priority: 1 □ 2 □ 3 □ 4 □

Recommended inspection interval

Data: Final □ Preliminary

Advanced assessment needed: No □ Yes-Type/Reason

Inspection limitations: None □ Visibility □ Access □ Vines □ Root collar buried

This datasheet was produced by the International Society of Arboriculture (ISA) and is intended for use by Tree Risk Assessment Qualified (TRAQ) arborists – 2013
Existing Conditions – Honeylocust Tree
Stephens Lake Park – Adjacent to fitness trail and lake trail

Only 30% of tree canopy is still alive / large amounts of deadwood

Large wound with decay at base of tree / entry point for disease and fungus
### Target Assessment

<table>
<thead>
<tr>
<th>Target number</th>
<th>Target description</th>
<th>Target zone</th>
<th>Occupancy rate</th>
<th>Predicted movement target?</th>
<th>Restriction present?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>East Walnut Ave</td>
<td>✓</td>
<td>3</td>
<td>n</td>
<td>n</td>
</tr>
<tr>
<td>2</td>
<td>Stephens Lake Fitness Trail</td>
<td>✓</td>
<td>3</td>
<td>n</td>
<td>n</td>
</tr>
<tr>
<td>3</td>
<td>Private parking lot on north side of E. Walnut</td>
<td>✓</td>
<td>3</td>
<td>n</td>
<td>n</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Site Factors

- **History of failures:** Main stem of tree has been removed, tree routinely sheds dead limbs.
- **Topography:** Flat
- **Slope:** 0-5
- **Aspect:** S
- **Site changes:** None
- **Soil conditions:** Limited volume, Saturated
- **Prevailing wind direction:** Common wind
- **Drought effects:** Long term effects of drought from 2012 and site construction

### Tree Health and Species Profile

- **Vigor:** Low
- **Foliage:** None (seasonal)
- **Chlorotic:** %
- **Necrotic:** 30%
- **Species failure profile:** Branches, Trunk, Roots

### Load Factors

- **Wind exposure:** Protected
- **Relative crown size:** Small
- **Crown density:** Sparse
- **Interior branches:** Few
- **Recent or planned change in load factors:**

### Tree Defects and Conditions Affecting the Likelihood of Failure

#### Crown and Branches

- **Unbalanced crown:** LCR
- **Dead twigs/branches:** 40% overall, Max. dia. 12" 
- **Over-extended branches:**
- **Pruning history:** Crown cleaned, Thinned, Raised
- **Reduced:** Topped, Lion-tailed
- **Flush cuts:** Other
- **Main concern(s):** Tree has been in a long term cycle of decline. Yearly dieback has been routinely pruned and removed. Over 65% of original canopy has been removed or is currently dead and threatening a roadway and fitness trail.

#### Trunk

- **Dead/Missing bark:** Abnormal bark texture/color
- **Codominant stems:** Included bark, Cracks
- **Sapwood damage/decay:** Cankers/Galls/Burls, Sap oozes
- **Lightning damage:** Heartwood decay, Conks/Mushrooms
- **Cavity/Nest hole:** % circ., Depth, Poor taper
- **Lean:** Corrected?

#### Roots and Root Collar

- **Collar buried/Not visible:** Depth
- **Dead:** Decay
- **Ooze:** Cavity, % circ.
- **Cracks:** Cut/Damaged roots, Distance from trunk
- **Response growth:**
- **Main concern(s):** None

---

**Page 1 of 2**
### Risk Categorization

<table>
<thead>
<tr>
<th>Condition number</th>
<th>Tree part</th>
<th>Conditions of concern</th>
<th>Part size</th>
<th>Fall distance</th>
<th>Target number</th>
<th>Target protection</th>
<th>Likelihood of Failure</th>
<th>Likelihood of Impacting Target</th>
<th>Failure &amp; Impact (from Matrix 1)</th>
<th>Consequences</th>
<th>Risk rating of part (from Matrix 2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>limbs</td>
<td>-size of limbs</td>
<td>12&quot;</td>
<td>25&quot;</td>
<td>1,2,3</td>
<td></td>
<td>Improbable</td>
<td>Possible</td>
<td>Imminent</td>
<td>Negligible</td>
<td>high</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>-history of failure</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Probable</td>
<td>Unlikely</td>
<td>Somewhat likely</td>
<td>Unlikely</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>-decay/deadwood in canopy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Possible</td>
<td>Unlikely</td>
<td>Likely</td>
<td>Somewhat likely</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Improbable</td>
<td>Unlikely</td>
<td>Very likely</td>
<td>Likely</td>
<td></td>
</tr>
</tbody>
</table>

#### Matrix 1. Likelihood matrix.

<table>
<thead>
<tr>
<th>Likelihood of Failure</th>
<th>Likelihood of Impacting Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very low</td>
<td>Unlikely</td>
</tr>
<tr>
<td>Low</td>
<td>Unlikely</td>
</tr>
<tr>
<td>Medium</td>
<td>Likely</td>
</tr>
<tr>
<td>High</td>
<td>Very likely</td>
</tr>
<tr>
<td>Imminent</td>
<td>Unlikely</td>
</tr>
<tr>
<td>Unlikely</td>
<td>Somewhat likely</td>
</tr>
<tr>
<td>Likely</td>
<td>Likely</td>
</tr>
<tr>
<td>Somewhat likely</td>
<td>Unlikely</td>
</tr>
<tr>
<td>Unlikely</td>
<td>Unlikely</td>
</tr>
</tbody>
</table>

#### Matrix 2. Risk rating matrix.

<table>
<thead>
<tr>
<th>Likelihood of Failure &amp; Impact</th>
<th>Consequences of Failure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very likely</td>
<td>Negligible</td>
</tr>
<tr>
<td>Likely</td>
<td>Minor</td>
</tr>
<tr>
<td>Somewhat likely</td>
<td>Significant</td>
</tr>
<tr>
<td>Unlikely</td>
<td>Severe</td>
</tr>
<tr>
<td>Low</td>
<td>Negligible</td>
</tr>
<tr>
<td>Moderate</td>
<td>Minor</td>
</tr>
<tr>
<td>High</td>
<td>Significant</td>
</tr>
<tr>
<td>Extreme</td>
<td>Severe</td>
</tr>
</tbody>
</table>

### Notes, explanations, descriptions

Mitigation options: Tree has undergone multiple pruning cycles where significant amounts of dead wood were removed. Tree has continued to decline, and only a small percentage of the original canopy is still living. I believe it is time to remove the entire tree, as the dieback in the canopy continues to pose a hazard to the roadway and fitness trail below.

Overall tree risk rating: Low □ Moderate □ High ■ Extreme □  
Overall residual risk: Low □ Moderate □ High ■ Extreme □  
Work priority: 1 ■ 2 □ 3 □ 4 □  
Recommended inspection interval: ____________

Data: Final □ Preliminary Advanced assessment needed □ No □ Yes-Type/Reason

Inspection limitations: □ None □ Visibility □ Access □ Vines □ Root collar buried Describe ____________

This dataset was produced by the International Society of Arboriculture (ISA) and is intended for use by Tree Risk Assessment Qualified (TRAQ) arborists - 2013
Existing Conditions – Honeylocust
Stephens Lake Park – Adjacent to Fitness Trail and Amphitheater

Significant limb loss over past three years/Removal of large amount of canopy

Dead limbs hanging over East Walnut Street and fitness trail