

Source: Parks and Recreation *AK*

Agenda Item No: REP 114-12

To: City Council  
From: City Manager and Staff *MM*

Council Meeting Date: July 16th, 2012

Re: Hazardous Tree Removal Report

**EXECUTIVE SUMMARY:**

The Columbia Parks & Recreation Department is proposing to remove two hazardous trees located at Stephens Lake Park due to their location and current state of decline and to notify Council that a hazardous tree was recently removed that presented a high level of danger. The first tree that is scheduled for removal is a Hackberry and is located between the amphitheater and the swimming beach. It qualifies as a large tree due to its 30-inch Diameter at Breast Height (DBH). The second tree is a Northern Red Oak with a 42.7-inch DBH and is located on the northeast side of the park approximately 30 ft. from the walking trail. The trees present a high risk of public safety as a large portion of each tree crown extends over walking trails and sidewalks at the park. A Chinkapin Oak with a 43-inch DBH was removed at Stephens Lake Park on April 30th, 2012 due to complete canopy dieback and the potential risk to park users along the fitness trail. A falling limb from this tree narrowly missed a pedestrian using the trail. Since Stephens became a park, over 300 new trees have been planted. Copies of the Tree Hazard Evaluation Forms and photos are attached.

**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 which may be perceived as significant to the public and/or the use of the park. The report recommended a policy which 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. The 2009 report is attached and in summary, the P&R tree removal procedure for hazardous trees now includes the following key elements:

1. Tree Hazard Evaluation Forms will be completed by the Department's certified International Society of Arboriculture Forester.
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 Hackberry tree that the Parks and Recreation Forestry staff is proposing to remove is located between the Stephens Lake Park beach and amphitheater directly off the walking path to the south entrance of the amphitheater. The tree currently has a live crown of less than 20% and is considered a mature tree with a dbh of 30.8 inches. The Parks and Recreation Forestry staff would like to proceed with removal of the tree due to root rot, lack of living crown and potential for falling scaffolding branches and dead limbs from the crown and canopy. The location of the tree and potential for failure are the key factors for the determination of removal due to the high traffic use of the sidewalk during amphitheater events.

Staff is also proposing to remove a Northern Red Oak located on the Northeast side of Stephens Lake Park due to a high volume of limb loss. The mature Red Oak with a DBH of 42.7 inches is located approximately 30 ft. south of the walking trail, shows multiple signs of decline, and requires removal due to numerous factors that will eventually result in the falling of the tree. The tree has a large amount of rot in the root flare and also has an unnatural lean that will ultimately cause failure of the tree at the base causing the entire tree to fall. The presence of insect borers throughout the trunk of the tree is also a primary concern as the pest is known to attack trees that are not healthy enough to withstand the insect. The Forestry staff has recorded wounds, decay, and cavity throughout the tree and only 40% of the crown of the tree is reported as having good health with correct foliage density and proper shoot growth.

The Parks and Recreation Forestry staff removed a mature Chinkapin Oak with a 43" DBH on the east side of Stephens Lake Park on April 30th, 2012 due to complete failure of the tree and the potential for immediate danger to park users. The tree had been monitored for the past couple of years to observe canopy dieback, foliage loss, and the presence of disease and insects. The tree began to show rapid signs of decline during the drought/high heat period of July 2011 and in the spring of 2012 nearly 99% of the tree failed to leaf out during the spring season. The tree is located approximately 8 ft. from the Stephens Lake Park fitness trail with a large percentage of the canopy directly over the trail. The immediate removal was necessary due to the weakened state of the tree and the potential for falling directly on the fitness trail. The tree had multiple suspected issues including signs of hypoxylon canker throughout the tree and borer damage in the trunk and scaffolding branches.

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 two straight summers with excessive heat and drought conditions. The forestry staff has already made arrangements to replace the Northern Red Oak tree with a similar species in the same location on the northeast side of the park during the fall 2012 planting season. The Chinkapin Oak had previously been adopted as a memorial/heritage tree so steps have already been made to replace the tree with a similar species on the other side of the fitness trail. The Hackberry is located on a hillside with other smaller tree species around it. It will not be replaced so that the smaller trees can have the proper space to mature.

Recognizing that as some of the existing trees within the park will eventually be lost to age, storms, disease, or other acts of nature, 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. Another 81 trees have been planted as a result of the community donating memorial and heritage tree 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.

A 2010 independent inventory funded by a TRIM grant counted 979 open grown trees within the park including most of the 313 trees identified above. Riparian corridors along the Hinkson Creek and other wooded areas at Stephens Lake Park were not included in this inventory. The hundreds of saplings planted as part of the mitigation on the eastern side of the park were also not included in the inventory.

**FISCAL IMPACT:**

There is no fiscal impact to this report.

**VISION IMPACT:**

**<http://www.gocolumbiamo.com/Council/Meetings/visionimpact.php>**

There is no vision impact to this report.

**SUGGESTED COUNCIL ACTIONS:**

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

<b>FISCAL and VISION NOTES:</b>					
<b>City Fiscal Impact</b> Enter all that apply		<b>Program Impact</b>		<b>Mandates</b>	
City's current net FY cost	\$0.00	New Program/ Agency?	No	Federal or State mandated?	No
Amount of funds already appropriated	\$0.00	Duplicates/Expands an existing program?	No	<b>Vision Implementation impact</b>	
Amount of budget amendment needed	\$0.00	Fiscal Impact on any local political subdivision?	No	Enter all that apply: Refer to Web site	
Estimated 2 year net costs:		<b>Resources Required</b>		Vision Impact?	No
One Time	\$0.00	Requires add'l FTE Personnel?	No	Primary Vision, Strategy and/or Goal Item #	
Operating/ Ongoing	\$0.00	Requires add'l facilities?	No	Secondary Vision, Strategy and/or Goal Item #	
		Requires add'l capital equipment?	No	Fiscal year implementation Task #	

**Source:**  
Mike Hood  


**TO:** City Council  
**FROM:** City Manager and Staff  
**DATE:** February 16, 2009  
**RE:** Council Tracker 2303: Notification of Large Tree Removal.



**FISCAL NOTES:**

City Fiscal Impact Enter all that apply	
\$0	City's current net FY cost.
\$0	Amount of Funds Already appropriated
\$0	Amount of budget amendment needed
\$0	Estimated 2 yr net costs:
\$0	One-time
\$0	Operating / On-going
Program Impact:	
N	New program/ agency (Y/N)
N	Duplicates/expands an existing program (Y/N)
N	Fiscal impact on any local political subdivision (Y/N)
Resources Required:	
N	Requires add'l FTE personnel? (Y/N)
N	Requires additional facilities? (Y/N)
N	Requires additional capital equipment? (Y/N)
Mandates:	
N	Federal or state mandated? (Y/N)

**EXECUTIVE SUMMARY:**

Parks & Recreation staff was directed by Council to provide a report with solutions to the unexpected situations where larger trees are removed which may be significant to the public and provide character to the park. This report discusses the definition of a large and significant tree; scenarios where large trees are removed; and a recommended notification policy regarding the removal of large trees.

**DISCUSSION:**

This report is divided into three sections: definition of a large, significant tree; scenarios where large trees are removed; and discussion of various polices regarding the removal of large trees.

**Large Tree Definition**

The standard measurement for tree size is either caliper or diameter at breast height (dbh). Caliper is used for trees four inches in diameter or smaller and is the diameter of a tree trunk taken at a point six inches above the ground. For trees larger than four inches, diameter at breast height is used. This is measured on a tree's trunk at a point four and one half feet above ground. The dbh measurement is used in the City of Columbia's Tree Preservation ordinance.

When it comes to establishing a definition of a "large" tree, it often results in subjective discussion with various levels of dissenting points of view. Park staff searched for examples where a governmental agency defined large tree trees and found that most examples are those included in various tree preservation ordinances.

Research found ordinance standards that vary from protecting 3-inch trees (essentially nursery stock size) up to 24- or 36-inch trees. These are often based on the extent of development in a community. If a community has very few natural areas, greenways, or parks, their ordinances reflect a greater protection of trees. In Virginia, Fairfax and Alexandria require tree removal permits for all trees greater than 5-inches. On the other end of the scale, communities that are surrounded with open space or farms, limit protection to just the largest sized trees (20-36 dbh). Some communities also promote the protection of durable or aesthetically pleasing trees while offering less protection to trees unusually prone to damage during wind or ice storms or trees that drop messy fruit (ie, Bradford Pears). Some ordinances focus only on preserving historic or specimen trees. An oak tree that has a 30-inch dbh is fairly common while a dogwood that large would be extremely rare,

Columbia's Tree Preservation ordinance as approved on January 1, 2005, defines trees as:

*Tree, existing.* A tree which meets or exceeds the following size standards:

Deciduous shade trees shall have a four (4) inch diameter, measured four and one-half (4 1/2) feet above the ground and ornamental and evergreen species shall be a minimum of six (6) feet in height.

Columbia's Tree Preservation ordinance further provides a definition of a climax forest, which by inclusion, highlights desirable trees:

*Climax forest.* Any woodland community of over twenty thousand (20,000) square feet which is dominated by\* climax species such as oak, hickory, sugar maple or bottomland hardwoods such as river birch, basswood, sycamore and hornbeam and which includes an area of five thousand (5,000) square feet with a maximum aspect ratio of 4:1.

\* "dominated by" is defined as greater than 50% climax species

Park staff feels that a combination of these ordinances should be considered for determining a definition of a large and significant tree. Staff is recommending that for the purpose of reporting to Council, all trees greater than 24 inches in diameter or any specimen trees more than 18 inches in diameter be considered as the definition of a large and significant tree.

#### **Scenarios Where Large Trees are Removed**

With few exceptions, the removal of large trees or other specimen trees in Columbia's parks or related areas are done either due to park development or as a result of deteriorated, hazardous or unsustainable conditions caused by such factors as disease, weather or insects.

When it comes time to remove a tree for any reason, nearly all of the researched ordinances recommend that an assessment and evaluation be conducted by a professional arborist or forester. The P&R Department is fortunate to have two staff members that are both certified by the International Society of Arboriculture in addition to their professional degrees.

#### **Hazardous/Diseased/Damaged Trees**

To document the necessity for a tree's removal which is not part of a development project, the practice has been to complete a tree hazard evaluation form prior to removing the potentially controversial park tree of significant size or importance (Attachment A). This is usually done by either the department's Forester or the Park Natural Resource Supervisor, both being certified arborists. This evaluation is important to the department as the removal of a tree is the last choice of action. Every effort is made to take corrective measures in cases where the possibility of recovery or hazard abatement is favorable. For example, the Norway Spruce located on Broadway between the Gentry and the Howard Building is a tree that had suffered significant stem and foliar loss from road salt/deicer, but is now in slow recovery due to corrective pruning and soil treatments by the P&R Department. A critical factor in this tree's slow return to health was that even when this tree was in its' most unsightly and unhealthy state it was not a high hazard risk as it did not exhibit structural defects such as major decay or root loss. On the opposite side of the spectrum, there are cases where trees may appear full and healthy, but actually have a high risk potential because of these structural defects.

Trees that appear to be healthy may be infected by a disease and may have to be removed in order to prevent further infection. If a tree contracts a disease, certain species are susceptible for transmitting the disease to other healthy trees. Common examples in Missouri include trees in the oak family and the "oak wilt" fungus. This fungus is usually fatal and the recommended treatment is slicing the roots to prevent further transmission of the disease and then removal of

the infected tree. Park staff usually recognizes the symptoms of many diseases, but most are only confirmed via laboratory analysis. On all of the hazardous and diseased trees an evaluation is conducted by the arborist and sent to the superintendent of park planning and development for confirmation.

Trees are often damaged by the weather which requires that they be removed immediately. These are the obvious cases where trees are blocking a recreation amenity such as a trail, playground or shelter or blocking the road and pedestrian access into the parks and trails.

#### Park Development Situations

If trees are scheduled for removal due to park development, staff follows the Columbia Tree Preservation ordinance and in nearly all cases, exceeds the requirements for tree preservation and restoration. In the early days of park master plans, aerial views of the parks were either not current or not available in the scale required for a conceptual master plan. Park planners did not have the detail available to specify which trees will be removed and preserved. The park master plans were conceptual in nature and used to indicate quantity, general location and size of the development rather than the actual details. Park staff believes that there needs to be some flexibility in shifting development to better fit the site especially since the department conducts most of the park development with force account labor. This ability to modify a master plan usually results in cost savings by being able to design on site (thus saving design fees and time) and by adjusting the development to better fit the actual site and future use. A good example is that during the construction of Louisville Park, park staff shifted the park shelter away from trees in order to assist in their survival. The shelter style, size and quantity remained the same—it was just shifted to a slightly different location of the park to better suit the terrain and natural features (in this case, protection of a specimen oak). Often these decisions are made during the time of construction with the field construction staff or contractors. If this type of notification has to be routed to Council, then it will either (1) cause delays in projects; (2) increase costs as more engineering will have to be conducted ahead of time; (3) result in some amenities being built in areas that are not ideal to the site just because they were located there on the master plan. In the Louisville Park shelter example, if Council approval was required prior to moving the shelter, staff may have left the shelter where it was shown on the plan. It would have worked and maybe the specimen oak would not have been impacted, but by moving the shelter another 50-ft north, we insured that construction of this shelter would not cause any damage to trees in this area.

An example of where this flexibility caused public concern occurred during the construction of the Stephens Lake Park amphitheater. Park staff modified the stage plans which resulted in the removal of several 18-inch hackberrys. It would have been appropriate to report this change in the master plan to council prior to proceeding with construction.

With the technological improvement of the City's GIS/GPS system, planners are now able to create park master plans with greater detail including the identification of individual and climax forest trees. The preferred option for all park developments is to locate future park amenities to preserve all climax forest trees including oak, hickory, sugar maple or bottomland hardwoods such as river birch, basswood, sycamore and hornbeam. There may be cases where the removal of larger trees is unavoidable. There may be a desirable species of tree that is just in the wrong place. For example, in order to save three nice walnuts at Grasslands Neighborhood Park, a single Pin Oak must be removed. In these cases, the certified arborist does not conduct a hazard evaluation form.

Staff also considers the impact that the construction will have on trees. Different tree species will react differently to construction. The old rule of thumb of keeping construction outside the drip line is no longer valid. For example, hackberry and hickory trees are prime examples of trees that will not handle any disturbance even outside the drip zone. With this knowledge, staff is more apt to remove these species from the construction site especially if the plans are to construct a shelter or playground near the tree. In cases where planners have tried to save various trees, it ends up creating more work for the department's forestry staff as they will have to monitor the trees for the next five years. Unfortunately, most of these trees do not survive and are likely removed as a hazardous tree. This is often referred to as the five year construction kill. Park planning staff takes this into consideration and utilizes a distance-formula based on the specific type of tree which is gaining acceptance as the standard practice. As noted on the *National Association of Home Builders* website, construction kill is a significant factor:

“A key guideline often discussed is the importance of protecting the roots of a tree. Fencing off the trunk, an older standard, is ineffectual. Even the drip line of the tree is now being viewed as an inadequate protection zone now that the root network of a tree is better understood. The bulk of a tree's roots are a mat of finely meshed feeder roots that fan out well beyond the drip line of a tree and occur primarily within the top 12 inches of soil. Instead of a taproot, trees have a network of roots. Prince George's County's manual contains a rather technical discussion of the formulas now being used to calculate a tree's protection area but explains that the basic concept is that a tree's root volume equals the volume of its canopy. Chapel Hill, North Carolina, uses the simple rule of thumb of allowing one foot out in horizontal distance for each inch of the tree's diameter. This easy-to-use formula is gaining in acceptance.”

This is important as larger, older trees have greater root system extension making them more susceptible to construction damage. As older trees, they usually do not have the aggressive growth patterns and their ability to survive construction is reduced. Younger, smaller trees do not have the root extension and as a young growing tree, are more likely to survive and even thrive in post construction activities.

In all park developments, the department usually ends up planting more trees than what previously existed on the site, often at ratios exceeding 10-1. In conducting research on tree replacement plans, several communities, including Columbia, require standards such maintaining a minimum percentage of the site in some form of forest or canopy measurements. The P&R Department has always met these standards and often exceeded them. The department strives to establish a healthy and vibrant tree/forest community in the park system.

#### **Recommended Notification Policy**

In developing an appropriate notification policy, the department tried to determine a balance that would insure notification that would not be burdensome to both Council and park staff and still allow for the timely completion of park projects and to insure the safety of park users. This is not intended to be a preservation ordinance revision or substitute, but to be an addition to existing Park and Recreation Department operational policies.

Listed below is a proposed notification procedure based on the two methods that trees are removed as well as a statement on how to resolve any conflicts:

**1. Hazardous/Diseased/Damaged Trees.**

Park staff will continue to complete the attached "Tree Hazard Evaluation Form" with it being evaluated and approved by the Park Natural Resources Supervisor (certified arborist). On trees larger than 20-inches dbh, it will be routed to the Park Development Superintendent and the Park Services Manager for their review prior to the tree being removed. On trees larger than 30-inches dbh, the form will be routed to the Director of Parks and Recreation as well. At this point, the Director will notify Council of the situation. No action will be taken by staff until Council has had the opportunity to review and provide input regarding the proposed removal. If any Council member expresses concern with the action recommended by staff, the issue will be referred to the Park and Recreation Commission for review and resolution.

On any sized trees that present an immediate danger to the public due to weather, the tree or the hazardous portion will be removed immediately.

In all cases, photos to document the condition of the tree will be taken.

**2. Trees Removed for Park Development**

On all future park development plans, park staff will add a "vegetation analysis" to the plans. This analysis will be similar to the tree preservation ordinance in that all climax forest will be noted, but it will also highlight or call-out plans to preserve or remove cultural or significant natural vegetation. This could include a 36-inch oak down to a stand of native prairie grass. The department will conduct this type analysis on all park developments and the park master plans will indicate vegetation preservation and removal proposed. Should the plans change in scope due to unknown circumstances, then a revised master plan or a report will be sent to Council prior to any action being taken.

Such a policy would have provided the Council prior knowledge of as well as the opportunity to modify, if needed, the tree removals undertaken as part of the site preparation for the Stephens Lake Park-Amphitheater. When the department received the grant that provided for a change to the size, style and design of the amphitheater (which caused the removal of the trees), it would have been appropriate to report this change to Council. While staff did obtain Council approval to accept the grant, Council was not advised of the grant's impact on the trees located in and around the amphitheater site. The department would like to continue with their current on-site flexibility regarding the location of the approved amenities, providing the change does not impact any other feature on the site. Park planning staff strives to make sure that all plans are final prior to taking the master plan to Council for their approval.

For example, listed below are the written notes on what the department would have included on the master plan for the Grasslands Neighborhood Park development should this policy have been in place. The master plan is attached to indicate how future plans will be presented to Council.

Existing prominent vegetation:

Pin Oak, Honey (thorny) Locust, Shingle Oak, Siberian Elm, Sycamore, Green Ash, Catalpa, Black Walnut, Black Cherry, Paw Paw and Persimmon. Understory overgrown with invasive Bush Honeysuckle. Grapevine is damaging the mature trees.

Recommended management:

Selectively remove invasive species (Siberian Elm, Honeysuckle) as well as undesirable species (Thorny Locust, Grapevine) to improve the overall quality of native woods. Protection of all climax forest species (12"+dbh). Hazard trees (dead, diseased or dying) to be removed. Stumps next to existing healthy trees to be cut flush with grade and left. Minimize all grading around healthy mature trees. An estimated 20 trees ranging in size from 10" - 30" dbh will be removed.

In the Grassland project, the department conducted two interested party meetings in order to determine the final park master plan. This plan was then submitted and approved by Council. Prior to beginning construction, particularly, site grading, the department's forestry staff needed to remove several honey locust trees that fell into the range of 10- to 30-inch dbh. Recognizing the impact that seeing approximately 20 trees cut down (even though they are Siberian Elm, or Honey Locust which is a thorny and undesirable tree), the department scheduled an on-site meeting with key representatives of the neighborhood in order to explain what was about to occur. The neighborhood understood what was going to happen and resulted in a very positive experience. On future park plans, staff anticipates that this type of information will be presented during the initial interested party meetings.

### 3. **Controversy or Questions**

In rare cases where there might be controversy and the arborist's judgment questioned, an independent consulting forester could be hired to consult on the matter. This was done once before during the construction of the ARC. The consulting firm that designed the ARC was concerned that the large pin oak would not survive construction. Park staff felt that it could be saved and an independent forester was consulted. It showed a positive demonstration of the P&R department's commitment to save this specimen pin oak and confirmed staff's belief that it could be saved. Six years after the ARC has opened, the pin oak is doing fine.

#### **FISCAL IMPACT:**

The department does not anticipate any fiscal impact if this report is accepted.

#### **SUGGESTED COUNCIL ACTIONS:**

There are several actions that the Council may want to consider, including but not limited to (1) Accept the recommendations of this report, (2) Accept the report with Council revisions or; (3) Direct staff to develop other options.

**Parks Services Natural Resources  
Tree Hazard Evaluation Form**

Site/Address: Stephens Lake Park

Map/Location: South side of amphitheater along service drive/sidewalk

Owner:  public  private  unknown  other

Date: 5/17/12 Inspector: David Dittmer City Forester

Date of last inspection: NA

<b>HAZARD RATING:</b>						
3	+	2	+	3	=	8
Failure Potential of part		Size Rating		Target Rating		Hazard Rating
<input checked="" type="checkbox"/> Immediate action needed <input type="checkbox"/> Needs further inspection <input type="checkbox"/> Dead tree						

**TREE CHARACTERISTICS**

Tree#: \_\_\_\_\_ Species: Celtis occidentalis Hackberry

DBH: 30.8" # of trunks: 1 Height: 75ft. Spread: 45ft

Form:  generally symmetric  minor asymmetry  major asymmetry  stump sprout  stag-headed

Crown class:  dominant  co-dominant  intermediate  suppressed

Live crown ration: 15 % Age class:  young  mature  over-mature

Pruning history:  crown cleaned  excessively thinned  topped  crown raised  pollarded  crown reduced  none

Special Value:  specimen  heritage/historic  wildlife  unusual  street tree  screen  shade  indigenous  other

**TREE HEALTH**

Foliage color:  normal  chlorotic  necrotic Epicormics?  Y  N

Foliage density:  normal  sparse Leaf Size:  normal  small

Annual shoot growth:  excellent  average  poor Twig dieback?  Y  N

Callus development:  excellent  average  poor  none

Major pests/diseases: \_\_\_\_\_

**SITE CONDITIONS**

Site character:  residence  commercial  industrial  park  open space  natural

Landscape type:  parkway  raised bed  container  open

Irrigation:  none  adequate  inadequate  excessive  trunk wetted

% dripline paved:  0%  10-25%  25-50%  75-100% Lifted?  Y  N

% dripline w/fill soil:  0%  10-25%  25-50%  75-100%

% dripline grade lowered:  0%  10-25%  25-50%  75-100%

Soil problems:  drainage  shallow  compacted  troughy  saline  alkaline  acidic  small volume  disease center  history of fail

Obstructions  lights  signage  line-of-site  view  overhead lines  underground utilities  traffic  adjacent veg.

Wind (tree position)  single tree  below canopy  above canopy  recently exposed  windward, canopy edge  area prone to windthrow

**TARGET**

Use under tree:  building  parking  traffic  pedestrian  recreation  landscape  hardscape  small features

Can target be moved?  Y  N

Occupancy:  occasional use  medium, intermittent use  frequent use

**TREE DEFECTS:** \_\_\_\_\_

Rate defect severity:  S severe defect, high potential for failure  
 M defect of moderate severity  
 L defect of low severity

LEAN: 0 deg. From vertical  natural  unnatural    Soil heaving:  Y  N  
 Decay in plane of lean:  Y  N    Roots exposed:  Y  N    Soil cracking:  Y  N  
 Compounding factors: \_\_\_\_\_    Lean severity:  S  M  L

**ROOT DEFECTS:**

Suspect root rot:  Y  N    Mushroom/conk present:  Y  N    ID: \_\_\_\_\_  
 Exposed roots:  S  M  L    Undetermined:  S  M  L  
 Root pruned: 12 ft from trunk    Root area affected: 20 %    Buttress wounded:  Y  N    When: \_\_\_\_\_  
 Restricted root area:  S  M  L    Potential for root failure:  S  M  L

**CROWN DEFECTS:**

DEFECT	ROOT CROWN	TRUNK	BRANCHES	MAP
Poor taper	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Codominants/forks	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Multiple attachments	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Included bark	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Cracks/Splits	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Girdling	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Wounds	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Decay	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Cavity	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Conks/Mushrooms	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Bleeding	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Deadwood/stubs	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Borers/termites/ants	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Cankers/galls	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Previous failure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

**HAZARD RATING** \_\_\_\_\_

Part most likely to fail: Large scaffolding limbs and limbs of the canopy and crown

Failure Potential:  1  2  3    Size of Part:  1  2  3    Target:  1  2  3

Hazard Rating:  1  2  3  4  5  6  7  8  9

**HAZARD ABATEMENT** \_\_\_\_\_

Prune:  remove defective part  reduce end weight  crown clean  thin  raise canopy  crown reduce  restructure  shape

Cable/Brace: \_\_\_\_\_    Inspect further:  root crown  decay  aerial  monitor

Remove tree:  Y  N    Replace?  Y  N    Move target:  Y  N

Other: \_\_\_\_\_

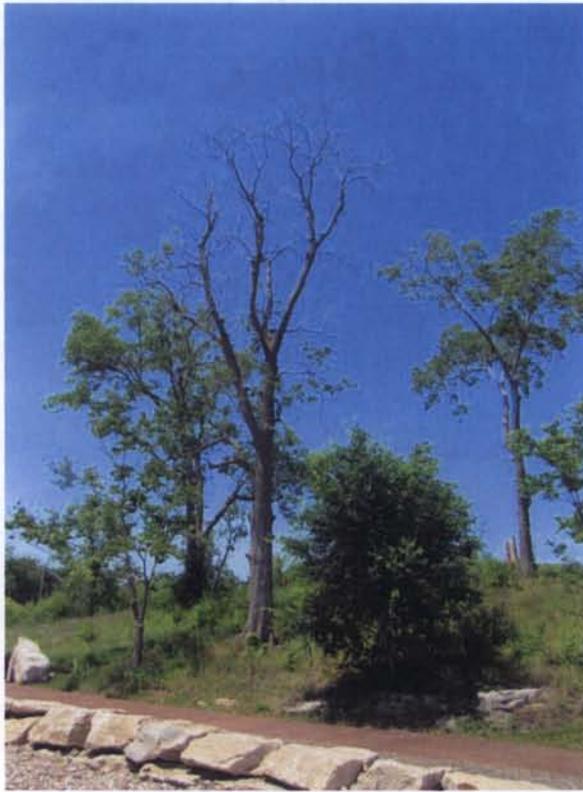
Effect on adjacent trees:  none  evaluate

**COMMENTS**

This tree is located in a high traffic area of a high use park. As the dead limbs of the canopy decay further, there is a high potential for it to drop these limbs on both park users and structures/facilities. Approximately 80 % of the canopy of this tree is dead. The tree has gone through this decline fairly rapidly, and I foresee the remaining live portion of the tree continuing this decline. It is my opinion that this tree should be removed as soon as possible.

Signature  ISA# MW-4935A Date 5/17/12

Hackberry Tree



Hackberry Trunk Damage

**Parks Services Natural Resources  
Tree Hazard Evaluation Form**

Site/Address: Stephens Lake Park  
 Map/Location: 30 feet south of exterior hard surface trail, NE of amphitheater  
 Owner:  public  private  unknown  other  
 Date: 5/22/12 Inspector: David Dittmer Forester  
 Date of last inspection: 5/11

<b>HAZARD RATING:</b>				
2	+	2.5	+	2.5 = 7
Failure Potential		Size of part		Target Rating = Hazard Rating
<input checked="" type="checkbox"/> Immediate action needed <input type="checkbox"/> Needs further inspection <input type="checkbox"/> Dead tree				

**TREE CHARACTERISTICS**

Tree#: \_\_\_\_\_ Species: Northern Red Oak  
 DBH: 42.7 # of trunks: 1 Height: 60 Spread: 45  
 Form:  generally symmetric  minor asymmetry  major asymmetry  stump sprout  stag-headed  
 Crown class:  dominant  co-dominant  intermediate  suppressed  
 Live crown ration: 40 % Age class:  young  mature  over-mature  
 Pruning history:  crown cleaned  excessively thinned  topped  crown raised  pollarded  crown reduced  none  
 Special Value:  specimen  heritage/historic  wildlife  unusual  street tree  screen  shade  indigenous  other

**TREE HEALTH**

Foliage color:  normal  chlorotic  necrotic Epicormics?  Y  N  
 Foliage density:  normal  sparse Leaf Size:  normal  small  
 Annual shoot growth:  excellent  average  poor Twig dieback?  Y  N  
 Callus development:  excellent  average  poor  none  
 Major pests/diseases: Borers present in main stem

**SITE CONDITIONS**

Site character:  residence  commercial  industrial  park  open space  natural  
 Landscape type:  parkway  raised bed  container  open  
 Irrigation:  none  adequate  inadequate  excessive  trunk wetted  
 % dripline paved:  0%  10-25%  25-50%  75-100% Lifted?  Y  N  
 % dripline w/fill soil:  0%  10-25%  25-50%  75-100%  
 % dripline grade lowered:  0%  10-25%  25-50%  75-100%  
 Soil problems:  drainage  shallow  compacted  troughy  saline  alkaline  acidic  small volume  disease center  history of fail  
 Obstructions:  lights  signage  line-of-site  view  overhead lines  underground utilities  traffic  adjacent veg.  
 Wind (tree position)  single tree  below canopy  above canopy  recently exposed  windward, canopy edge  area prone to windthrow

**TARGET**

Use under tree:  building  parking  traffic  pedestrian  recreation  landscape  hardscape  small features  
 Can target be moved?  Y  N  
 Occupancy:  occasional use  medium, intermittent use  frequent use

**TREE DEFECTS:** \_\_\_\_\_

Rate defect severity:  S severe defect, high potential for failure  
 M defect of moderate severity  
 L defect of low severity

LEAN: 8 deg. From vertical  natural  unnatural Soil heaving:  Y  N  
 Decay in plane of lean:  Y  N Roots exposed:  Y  N Soil cracking:  Y  N  
 Compounding factors: lean coexists with root flare rot Lean severity:  S  M  L

**ROOT DEFECTS:**

Suspect root rot:  Y  N Mushroom/conk present:  Y  N ID: \_\_\_\_\_  
 Exposed roots:  S  M  L Undetermined:  S  M  L  
 Root pruned: \_\_\_\_\_ ft from trunk Root area affected: \_\_\_\_\_ % Buttress wounded:  Y  N When: \_\_\_\_\_  
 Restricted root area:  S  M  L Potential for root failure:  S  M  L

**CROWN DEFECTS:**

DEFECT	ROOT CROWN	TRUNK	BRANCHES	MAP
Poor taper	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Codominants/forks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Multiple attachments	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Included bark	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Cracks/Splits	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Girdling	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Wounds	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Decay	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Cavity	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Conks/Mushrooms	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Bleeding	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Deadwood/stubs	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Borers/termites/ants	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Cankers/galls	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Previous failure	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

**HAZARD RATING** \_\_\_\_\_

Part most likely to fail: Entire tree  
 Failure Potential:  1  2  3 Size of Part:  1  2  3 Target:  1  2  3  
 Hazard Rating:  1  2  3  4  5  6  7  8  9

**HAZARD ABATEMENT** \_\_\_\_\_

Prune:  remove defective part  reduce end weight  crown clean  thin  raise canopy  crown reduce  restructure  shape  
 Cable/Brace: \_\_\_\_\_ Inspect further:  root crown  decay  aerial  monitor  
 Remove tree:  Y  N Replace?  Y  N Move target:  Y  N  
 Other: \_\_\_\_\_  
 Effect on adjacent trees:  none  evaluate

**COMMENTS**

This tree has been slowly declining for several years. There is a large amount of rot in the root flare (base) of the tree, coupled with an unnatural lean. The presence of borers in the main stem is also a concern. The tree is in a high use area of the park, above the seating for the park amphitheater. Because of the rot in the base of the tree, the most likely scenario for failure would be the entire tree failing at the base. This tree is located on top of an open hill and is exposed to winds from all directions.

Signature  ISA# MW 4935A Date 5/22/12

Northern Red Oak



Insect Borers

Root Decay



**Parks Services Natural Resources  
Tree Hazard Evaluation Form**

Site/Address: Stephens Lake Park

Map/Location: East side of park, 8" off of fitness trail, 300" south of E. Walnut

Owner:  public  private  unknown  other

Date: 4/30/12 Inspector: John Cruit

Date of last inspection: \_\_\_\_\_

<b>HAZARD RATING:</b>				
3	+	3	+	3 = 9
Failure + Potential of part		Size + Rating		Target = Hazard Rating Rating
<input checked="" type="checkbox"/> Immediate action needed <input type="checkbox"/> Needs further inspection <input checked="" type="checkbox"/> Dead tree				

**TREE CHARACTERISTICS** \_\_\_\_\_

Tree#: \_\_\_\_\_ Species: Chinkapin Oak

DBH: 43" # of trunks: 1 Height: 55 Spread: 70

Form:  generally symmetric  minor asymmetry  major asymmetry  stump sprout  stag-headed

Crown class:  dominant  co-dominant  intermediate  suppressed

Live crown ration: >1 % Age class:  young  mature  over-mature

Pruning history:  crown cleaned  excessively thinned  topped  crown raised  pollarded  crown reduced  none

Special Value:  specimen  heritage/historic  wildlife  unusual  street tree  screen  shade  indigenous  other

**TREE HEALTH** \_\_\_\_\_

Foliage color:  normal  chlorotic  necrotic Epicormics?  Y  N

Foliage density:  normal  sparse Leaf Size:  normal  small

Annual shoot growth:  excellent  average  poor Twig dieback?  Y  N

Callus development:  excellent  average  poor  none

Major pests/diseases: Extensive dieback, hypoxylon canker, borer damage

**SITE CONDITIONS** \_\_\_\_\_

Site character:  residence  commercial  industrial  park  open space  natural

Landscape type:  parkway  raised bed  container  open

Irrigation:  none  adequate  inadequate  excessive  trunk wetted

% dripline paved:  0%  10-25%  25-50%  75-100% Lifted?  Y  N

% dripline w/fill soil:  0%  10-25%  25-50%  75-100%

% dripline grade lowered:  0%  10-25%  25-50%  75-100%

Soil problems:  drainage  shallow  compacted  droughty  saline  alkaline  acidic  small volume  disease center  history of fail

Obstructions:  lights  signage  line-of-site  view  overhead lines  underground utilities  traffic  adjacent veg.

Wind (tree position)  single tree  below canopy  above canopy  recently exposed  windward, canopy edge  area prone to windthrow

**TARGET** \_\_\_\_\_

Use under tree:  building  parking  traffic  pedestrian  recreation  landscape  hardscape  small features

Can target be moved?  Y  N

Occupancy:  occasional use  medium, intermittent use  frequent use

**TREE DEFECTS:** \_\_\_\_\_

Rate defect severity:  S severe defect, high potential for failure  
 M defect of moderate severity  
 L defect of low severity

LEAN: \_\_\_\_\_ deg. From vertical  natural  unnatural Soil heaving:  Y  N  
 Decay in plane of lean:  Y  N Roots exposed:  Y  N Soil cracking:  Y  N  
 Compounding factors: \_\_\_\_\_ Lean severity:  S  M  L

**ROOT DEFECTS:**

Suspect root rot:  Y  N Mushroom/conk present:  Y  N ID: \_\_\_\_\_  
 Exposed roots:  S  M  L Undetermined:  S  M  L  
 Root pruned: \_\_\_\_\_<sup>8</sup> ft from trunk Root area affected: \_\_\_\_\_<sup>30</sup> % Buttress wounded:  Y  N When: \_\_\_\_\_  
 Restricted root area:  S  M  L Potential for root failure:  S  M  L

**CROWN DEFECTS:**

DEFECT	ROOT CROWN	TRUNK	BRANCHES	MAP
Poor taper	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Codominants/forks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Multiple attachments	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Included bark	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Cracks/Splits	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Girdling	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Wounds	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Decay	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Cavity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Conks/Mushrooms	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Bleeding	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Deadwood/stubs	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Borers/termites/ants	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Cankers/galls	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Previous failure	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

**HAZARD RATING** \_\_\_\_\_

Part most likely to fail: scaffolding branches over trail  
 Failure Potential:  1  2  3 Size of Part:  1  2  3 Target:  1  2  3  
 Hazard Rating:  1  2  3  4  5  6  7  8  9

**HAZARD ABATEMENT** \_\_\_\_\_

Prune:  remove defective part  reduce end weight  crown clean  thin  raise canopy  crown reduce  restructure  shape  
 Cable/Brace: \_\_\_\_\_ Inspect further:  root crown  decay  aerial  monitor  
 Remove tree:  Y  N Replace?  Y  N Move target:  Y  N  
 Other: \_\_\_\_\_  
 Effect on adjacent trees:  none  evaluate

**COMMENTS**

This tree is next to a high use paved fitness trail, with a high target potential beneath it. It began to go into a rapid decline following the extended drought/heat wave in the summer/fall of 2011. In the spring of 2012, 99% of the tree failed to leaf out, and signs of hypoxylon canker were evident throughout the tree. Borer damage was also present on the majority of the trunk and main scaffolding branches. By April of 2012 the remaining live branches had died, and the wood in the canopy of the tree had become quite brittle. The likelihood of branch failure is very high.

Signature 

ISA# MW 4935A Date 4/30/12

## Chinkapin Oak



Chinkapin Scaffolding Branch Damage