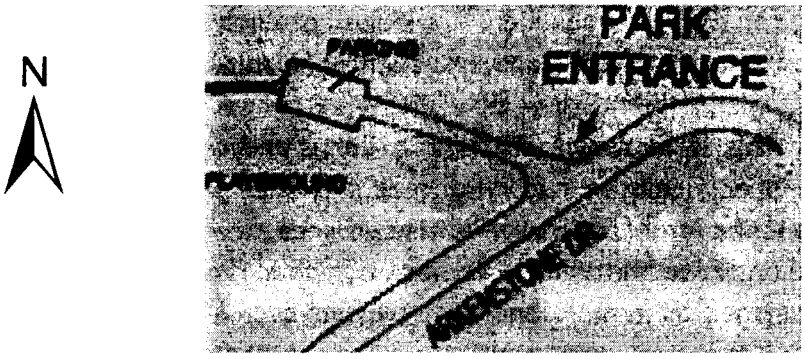
Durham's City Park Entrance
Tree Inventory and Management Plan

How the inventory was conducted...

With park tree inventories, it is often a challenge to identify the location of the trees so that they can be found again. While some companies tout the effectiveness of using hand-held GPS units, in tree inventories their usefulness is reduced by the existence of canopy cover that interferes with coordinate transmission. After lengthy debate about how best to identify the trees' locations in this inventory, we opted to use numbered aluminum tags, starting at 100.

Order of data collection: We started on the south side of the driveway into the park near the play area, and continued clock-wise. This took us east "up" the driveway, briefly south along Arkenstone Drive, west into and through the "grove" of beech and Port Orford-cedar and along the South boundary of the park, north at the grassy "gap", towards the old wooden play structure, and east again along the path, along the north side of the parking lot. (See park map). Tree #100 is close to the SE corner of the parking lot.



The following list describes the tree and site characteristics we recorded:

Location - we chose to differentiate between play area, parking area, along path, near picnic area, near sports area, near road, other.

Tree Number - Each tree is assigned a number based on the order in which they are inventoried, starting at 100. Most of the time, the tag is on the North side of the tree at about 6-7 ft above the ground. (Note: trees were re-checked in March 2007, and all tags seem to still be in place.)

Common Name (Species) - This is to make the species composition of the inventory easier to understand for the average reader.

Species code– This is comprised of the first two letters of the tree's genus and the first two letters of its species. So, red maple, *Acer rubrum*, would be written ACRU.

DBH Size Class (DBH) – diameter at breast height is a standard measurement taken at 4.5ft above the ground (inches). In the Durham inventory, we grouped the DBH measurements into size classes for ease of analysis. (See "Cheat Sheet" for further explanation).

Height Class (Height) – The primary reason for estimating tree height in a park tree analysis is to gain a sense of whether given target, (e.g. a play area or parking lot) would be within reach should a tree fail. These data are estimated from the ground. (See "Cheat Sheet" for further explanation).

Lean –When a tree leans, it is not necessarily a hazardous tree. It could be simply "reaching for the light". In the inventory, **Low** means that the tree has natural, but slight lean, say in response to light. **Medium** means that the lean is significant, but not necessarily dangerous (15-25 degrees off vertical). **Severe** means that the lean is threatening, being at least 30-40 degrees off the vertical.

Topping – Is an improper pruning practice, making a tree more susceptible to disease, insects, failure and death. Although it is unusual to find many topped trees in a park, the presence of topping should be a red flag for any tree manager. We looked at each tree to determine whether or not it had been topped longer than five years ago, or recently (within 5 years – best guess).

Root/Branch Issues – With this field, we were hoping to focus on two key indicators of tree health, roots and branches. Specifically we recorded tree branches that have been topped, broken, or storm damaged; tree branches interfering with overhead lines; trees with partially dead tops; etc. With roots, we focused on those that may have been damaged during path construction; roots that may be exposed and damaged by mowers and foot traffic; etc.

Area Use – Here we attempted to define how often an area was used. In this park, this estimation was based on when the inventory was in process, in mid-Summer, and when the play area and park trails were in daily use. The frequency of use was one factor that helped us to prioritize tree care.

Occasional Use – low use roads and park trails, natural areas such as wood or riparian zones, transition areas with limited public use.

Intermediate Use – moderate to low use school playgrounds, parks, picnic areas, parking areas adjacent to moderate use areas; park trails within moderate to high use areas; dispersed playgrounds.

Frequent Use – emergency access routes, handicap access areas; school playgrounds, parks and picnic areas, shelters, visitor centers; parking lots near high use areas, interpretive signs, scenic vistas, and drive-in campsites.

High Hazard? – Here we wanted to make sure we didn't miss recording if we thought a tree was in imminent need of remediation.

Tree Condition - This is where we recorded the tree's overall condition:

Excellent - young/newly planted tree with good branching pattern
Good - in apparent good health and appear structurally sound. No apparent problems or immediate concerns
Fair - in a state of decline, it is possible to remedy some of the trees' problems.
Poor - in poor health or have structural problems that are difficult, if not impractical to save the tree, removal is recommended
Dead - <10%viable foliage during leaf-on season (not due to topping), >90% deadwood, >70% circumference loss of cambium layer, has the obvious appearance of a dead tree.

Pruning - If pruning is needed, we attempted to specify the type of pruning the tree will require: pruning dead wood/damaged wood; structural pruning (included bark); clearance pruning (for vision and trail access); utility clearance pruning; crown thinning; security pruning; or more than one. This information is designed to help the City determine the extent and cost of the recommended work.

Follow-up: This provide a chance to record follow-up activities for the trees. Fortunately, most of the trees in Durham's city park were in good shape, and only need some follow-up pruning. Below is the list of possible "follow-up" activities:

*Remove Soon, *Arborist Consultation, *Bee/Hornet Nest, *Visible Cracks, *Check Roots, *Move Target, *Torn/Dead Branch, *High Priority Prune, *Large Wound(s), *Mushrooms at the Base, Monitor, Mulch, Vandalism, Hiding Potential, Animal Habitat, Sunscald, and Low Priority Prune.

* these follow-ups are higher priority and should be indicated first.

Park Tree Inventory "Cheat Sheet"

DBH Size Class (DBH)

DBH Size class	Symbol for spreadsheet
0-≤ 6in	1
>6-≤ 12in	2
>12-≤ 20in	3
>20-≤ 29in	4
>30in	5

Height Class (Height)

Height Size Class	Symbol for Spreadsheet
≤ 20ft	1
>20-≤ 40ft	2
>40-≤ 60ft	3
>60ft	4

Tree Condition (Cond.)

Overall Tree Condition	Symbol for Spreadsheet
Excellent - young/newly planted tree with good branching pattern	E
Good - in apparent good health and appear structurally sound. No apparent problems or immediate concerns.	G
Fair - in a state of decline, it is possible to remedy some of the trees' problems.	F
Poor - in poor health or have structural problems that are difficult, if not impractical to save the tree, removal is recommended	P
Dead - <10% viable foliage during leaf-on season (not due to topping), >90% deadwood, >70% circumference loss of cambium layer, has the obvious appearance of a dead tree	D

Lean

Level of Lean	Symbol
Low - the tree has natural, but slight lean	L
Medium - the lean is significant, but not necessarily dangerous (15-25 degrees off vertical)	M
Severe - the lean is threatening, being at least 30-40 degrees off the vertical	S

Area Use

Type of Use	Symbol
Occasional Use - low use roads and park trails, natural areas such as wood riparian zones, transition areas with limited public use	O
Intermediate Use - moderate to low use school playgrounds, parks, picnic areas, parking areas adjacent to moderate use areas; park trails within moderate to high use areas; dispersed playgrounds	I
Frequent Use - emergency access routes, handicap access areas, school playgrounds, parks and picnic areas, shelters, visitor centers; parking lots near high use areas, interpretive signs, scenic vistas, and drive-in campsites	F

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