

<b>Issue:</b> Urban Forestry Master Plan	<b>Planning Commission Hearing:</b>	June 2, 2009
	<b>City Council Hearing:</b>	June 16, 2009
<b>Description:</b> Amendment to the City’s Master Plan to adopt the Urban Forestry Master Plan.		
<b>Staff:</b> Department of Recreation, Parks and Cultural Activities		

**PLANNING COMMISSION ACTION, JUNE 2, 2009:** On a motion by Ms. Fossum, seconded by Mr. Robinson, the Planning Commission adopted Master Plan Amendment Resolution #2009-0001 with the following amendments:

Insert a new recommendation #38 and add it as an additional bullet under Tree Planting in the Executive Summary on page 5 and within the body of the report on page 43.

- 38. Increase and maximize the amount of tree canopy coverage required for Development Special Use Permits.**

Modify recommendation # 52 and add it as an additional bullet under Public Education and Outreach in the Executive Summary on page 5 and in the body of the report on page 47.

- 53. Actively promote the existing Tree Stewards program and engage other citizens by creating opportunities to become program volunteers to assist in completing the vital maintenance tasks proposed in the Urban Forestry Master Plan that are currently not funded or inadequately funded for completion by City staff. These tasks might include: conducting tree inventories, small tree maintenance, tree planting, pruning, teaching, grant writing, and marketing and public relations.**

Substitute the following paragraph for the first paragraph of the Conclusion to the Executive Summary on page 6.

**The recommendations in the master plan are ambitious, but realistically achievable. Some need immediate attention; whereas others can be phased in over time. Implementing some of these recommendations will require a significant increase in public funding. If funding is not available, alternative resources such as grants, sponsorships and most importantly volunteer efforts must be actively sought out and engaged to move closer to achieving the goals of this plan. Failure to make the investment or garner the alternative resources, however, could have serious long-term consequences for the City’s environmental quality of life.**

Speakers:

Poul Hertel, resident of 1217 Michigan Court, stated that the plan must be believable. Mr. Hertel urged the City to devise regulations during the planning process that require developers to work around existing trees instead of removing them. He also encouraged the use of watering trucks to maintain existing trees.

## **I. STAFF RECOMMENDATION**

Staff recommends that the Planning Commission initiate on its own motion an amendment to the City's Master Plan, adopting the attached Urban Forestry Master Plan as a chapter to the Master Plan.

## **II. DISCUSSION**

The attached Urban Forestry Master Plan is the result of the work of the 12 member Urban Forestry Steering Committee appointed by City Council in May 2004 to address growing concerns about the City's policies and procedures for the management and preservation of trees on both public and private property. Specific concerns included an increase in the number of trees being removed on public and private property, utility line clearance practices, and the replacement and planting of new trees. The mission of the Urban Forestry Steering Committee and goal of the Urban Forestry Master Plan was to characterize and quantify the current state of Alexandria's Urban Forest, and to identify strategies to improve its density, health and diversity.

The scope of work for the Urban Forestry Steering Committee included five primary areas of interest that were identified through meetings and input from City staff, as well as the goals and strategic recommendations set forth in the *Alexandria Open Space Plan* and *The City of Alexandria Recreation, Parks and Cultural Activities Strategic Master Plan*. They are to:

- Review City policies, programs and services for the planting, maintenance, and removal of publicly owned trees located along City streets, in parks, and on other public lands, and recommend needed changes;
- Review City ordinances, regulations and procedures that address the protection and preservation of trees located on public or private land and recommend changes;
- Promote programs that will enhance the public's awareness of trees and the benefits they provide to all of us individually, and as a community;
- Assist in the implementation of Goal 12 of the *Alexandria Open Space Plan*, Expand Citywide Street Tree Program and Protect Existing Trees and Woodland Areas: and
- Protect, restore and enhance the urban forest and beautification of the city, Strategy Recommendation Policy 1.5 presented in *The City of Alexandria Recreation, Parks and Cultural Activities Strategic Master Plan*.

The Urban Forestry Master Plan presents 52 short, mid, and long term recommendations to stem the decline and loss of the City's tree canopy and to improve the City's Urban Forest. The recommendations were developed in response to key challenges identified by the Urban Forestry

Steering Committee with the assistance of The Davey Resource Group, interaction with City residents, and the cooperation of City leaders, administration, and staff in the Departments of Planning and Zoning, Recreation, Parks and Cultural Activities and Transportation and Environmental Services. The key challenges identified include: the City's decreasing tree canopy cover; development and other pressures that are negatively affecting tree health and longevity, and further limiting the space available for trees to be planted and grow to maturity; the absence of a citywide tree management plan that has goals, objectives and performance measures; a current city program that is reactive not proactive, including a planting and tree care program that is limited and primarily focused on street trees; and, a lack of public education and outreach.

In order to meet these challenges, the Urban Forestry Master Plan recommends that the City adopt American Forests' tree canopy goal of 40%, plant more trees, provide better care for existing and new trees, create a proactive and accountable management program, and to provide public education and outreach that encourages the preservation and expansion of the urban forest. Many of the recommendations presented can be implemented at little or no cost to the City. Other recommendations including the planting of an additional 400 trees annually, pruning an additional 4000 trees annually, hiring additional tree and horticulture crew staff to meet the maintenance demands identified in the City's parks and school grounds, and the development and presentation of public education opportunities will require a significant increase in the level of funding provided for the City's arboriculture and horticulture programs. The recommendations are ambitious, but realistically achievable. Some need immediate attention; whereas other can be phased in over time.

The Urban Forestry Master Plan addresses one of the critical issues first identified for action during Alexandria's first Environmental Summit held in 1997. The problem is straightforward: every year, the City of Alexandria is losing tree canopy because of development, storms aging and urban pressures. If we are to enjoy the environmental, economic and aesthetic benefits of our urban forest, we must learn how to better manage it and invest in its maintenance and preservation. The plan responds to the issue by identifying and assessing current conditions, and by recommending actions to address these conditions.

**STAFF:** Richard J. Baier, Interim Director, Department of Recreation, Parks and Cultural Activities  
John Noelle, City Arborist

**ATTACHMENT:** Urban Forestry Master Plan

RESOLUTION NO. MPA 2009-0001

WHEREAS, under the Provisions of Section 9.05 of the City Charter, the Planning Commission may adopt amendments to the Master Plan of the City of Alexandria and submit to the City Council such revisions in said plans as changing conditions may make necessary; and

WHEREAS, the Department of Recreation, Parks and Cultural Activities has brought forward an amendment to the 1992 Master Plan for the adoption of the Urban Forestry Master Plan as a chapter; and

WHEREAS, the Department of Recreation, Parks and Cultural Activities has analyzed the proposed amendment and presented its recommendations to the Planning Commission; and

WHEREAS, a duly advertised public hearing on the proposed amendment was held on June 2, 2009 with all public testimony and written comment considered; and

WHEREAS, the Planning Commission finds that:

1. The proposed amendment is necessary and desirable to guide and accomplish the coordinated, adjusted and harmonious development of the City; and
2. The proposed amendment is generally consistent with the overall goals and objectives of the 1992 Master Plan; and
3. The proposed amendment shows the Planning Commission's long-range recommendations for the general development of the City; and
4. Based on the foregoing findings and all other facts and circumstances of which the Planning Commission may properly take notice in making and adopting a master plan for the City of Alexandria, adoption of the amendment to the 1992 Master Plan will, in accordance with present and probable future needs and resources, best promote the health, safety, morals, order, convenience, prosperity and general welfare of the residents of the City;

RESOLUTION NO. MPA 2009-0001

Page 2


NOW, THEREFORE, BE IT RESOLVED by the Planning Commission of the City of Alexandria that:

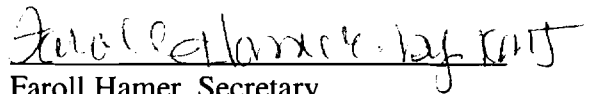
1. The following amendment is hereby adopted in its entirety as a chapter of the 1992 Master Plan of the City of Alexandria, Virginia in accordance with Section 9.05 of the Charter of the City of Alexandria, Virginia:

Addition of the Urban Forestry Master Plan

2. This resolution shall be signed by the Chairman of the Planning Commission and attested by its secretary, and a true copy of this resolution forwarded and certified to the City Council.

ADOPTED the **2nd day of June, 2009.**

  
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John Komoroske, Chairman  
Alexandria Planning Commission

ATTEST:   
Faroll Hamer, Secretary

John Noelle/Alex  
06/02/2009 08:44 AM

To Kendra Jacobs/Alex@Alex  
cc  
bcc  
Subject Fw: Comments on the Proposed Draft Alexandria Urban Forestry Master Plan: Fort Ward Park & Tree and Shrub Fund Comments

Kendra,

This is the first of several public responses to the Urban Forestry Master Plan that I have received. I will forward the rest to you.

John

----- Forwarded by John Noelle/Alex on 06/02/2009 08:43 AM -----



glenn\_eugster@comcast.net  
06/01/2009 06:51 PM

To Rich Baier <Rich.Baier@alexandriava.gov>  
cc Lance Mallamo <Lance.Mallamo@alexandriava.gov>, Mark Jinks <Mark.Jinks@alexandriava.gov>, John Noelle <John.Noelle@alexandriava.gov>, "Jr. Schreiner, Bill" <wschreiner@zuckerman.com>, Tom and Jeanne fulton-oleary <fulton-oleary@verizon.net>, Adrienne Washington <atwashin@aol.com>, Dave Cavanaugh <dacavalx@gmail.com>, Laura Durham <Laura.Durham@alexandriava.gov>  
Subject Comments on the Proposed Draft Alexandria Urban Forestry Master Plan: Fort Ward Park & Tree and Shrub Fund Comments

Dear Mr. Baier/ Rich,

Good day!

I recently learned of the Draft Alexandria Urban Forestry Master Plan which is being circulated for public review and comments. I appreciate the opportunity to provide the following comments.

First, the Urban Forestry Master Plan is well done, timely and has many excellent recommendations that will help Alexandria sustain a high quality living environment. The Urban Forestry Steering Committee has obviously taken this assignment seriously and should be complimented for a job well done.

Second, the 25<sup>th</sup> recommendation on page 76 involves rededicating Fort Ward Park as the City's Arboretum. It also suggests that a master plan be developed and adopted for the park. This recommendation reaffirms the

City's earlier commitment in 1983 to create a collection of trees and other woody plants that will serve as an educational resource for City residents and visitors. \$25,000 is proposed to go to implement this recommendation.

Recommendation 25 is also identified, on page 84 of the report, to be a pilot project. The narrative notes that "the multiple uses of the park and the increasing pressures of recreational demands on the site have led to the decline of the park's tree population and a loss of focus on its function as a showcase for native and ornamental woody plant species". The narrative goes further to say, "This rededication should include a careful study and development of a plan that will integrate and celebrate the park's historic past as well as its future and importance as one of the City's premiere recreational sites".

The idea of rededicating the City's Arboretum is an appropriate idea. Inappropriate recreational uses and neglect have had a negative impact on many of the trees and shrubs and more attention to this important park value is welcome. For example, the condition of the memorial for the first City Arborist is sad given this renewed interest in urban forestry.

The idea of the careful study and development of a plan for the park is also an appropriate idea, given that this area has never had a master plan in over 40 years. If a plan is done for the park it needs to be for overall park use, protection, and interpretation rather than just the use of the park as an arboretum. Unfortunately the leaders of the Recreation & Parks Department, as well as the Recreation & Parks Commission, indicate that a plan for Fort Ward park will not be undertaken within the next 5 to 10 years and many other parks are higher priority for planning if and when that service is available.

Although the Draft Urban Forestry Plan recommendation has merit the report needs to be revised to incorporate the following points.

1. The plan for the Arboretum needs to be done as part of the master plan for Fort Ward Park. A coordinated effort before additional action will avoid some of the destruction and conflicting uses we have experienced over the last five years. It will also eliminate the need to and cost of do things over.

The park continues to suffer from the uncoordinated and inappropriate activities by the Recreation & Parks Department. As we discussed with City staff during the City's community meetings in February and March 2009, Fort Ward Park is a Historical Park. This area is listed on the National Register of Historic Places and contains historic and cultural values from the pre-and-post Civil War periods including the graves of some of the first freed African-Americans who lived in the area before it

was made a park by the City.

The pilot project description on page 84 needs to be revised to reflect that this is the City's only Historical Park, its status on the National Register of Historic Places, and the results of the community meetings from February and March 2009.

Attached is a copy of the City's approved National Register of Historic Places Nomination Form from February 16, 1982.

2. The Draft Urban Forest Plan needs to recognize the various City of Alexandria Archaeological Protection Procedures and Ordinances for digging on city property. As you know from recent earth moving and tree planting work in the park these procedures and requirements have not been followed at Fort Ward despite the fact that the Office of Historic Alexandria in 1989 identified the overall area as "Land that may have the potential to contain significant archaeological materials" and in 1995 identified likely African-American graves based on interviews with Sgt. Young. In addition, it is important to note in the pilot project description that archaeological research needs to be completed throughout the park before the new plan for the park or the Arboretum is prepared.

3. The vision for the Arboretum is promising and would be viewed as a positive park improvement by many of the park users. The City would do well to keep it's February 9, 2009 written commitment, and other verbal commitments, to the public to use the results of the community meetings and prioritize a draft action plan for park improvements. Many of our residents are baffled by the City's unwillingness to use information provided by the public and the City's advisory groups.

4. Trees and shrubs are a wonderful way to connect with the public and generate support for parks. Although the draft plans speaks to the City's donation fund your efforts will be more effective if you create a fund specifically dedicated for planting trees and shrubs in the City's parks. Frankly people like to donate funds for trees and shrubs but want to be sure that the government uses the money for that purpose.

My experience managing the National Park Service's Tree & Shrub Replacement Fund and National Cherry Blossom Fund proved to be an excellent way to raise funds for the parks as well as significant donations for planting trees and shrubs. Should you be interested in the funds that I've mentioned please let me know. I have information on how they worked and the results of our efforts.

I sincerely hope that you and the Urban Forestry Steering Committee will use these comments and take time to revise the proposed plan before it is approved. As I wrote to you earlier, residents would like to support the



City with initiatives such as these and will do so if managers will work with us.

Thank you.

Sincerely,

Glenn

□

J. Glenn Eugster  
4022 Ellicott Street  
Alexandria, VA  
703-845-8947

[Glenn\\_eugster@comcast.net](mailto:Glenn_eugster@comcast.net)

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100-0113\_Fort\_Ward\_1982.pdf

UNITED STATES DEPARTMENT OF THE INTERIOR  
NATIONAL PARK SERVICE

**NATIONAL REGISTER OF HISTORIC PLACES  
INVENTORY -- NOMINATION FORM**

FOR NPS USE ONLY

RECEIVED

DATE ENTERED

SEE INSTRUCTIONS IN HOW TO COMPLETE NATIONAL REGISTER FORMS  
TYPE ALL ENTRIES -- COMPLETE APPLICABLE SECTIONS

**1 NAME**

HISTORIC

FORT WARD  
AND/OR COMMON

FORT WARD PARK

**2 LOCATION**

STREET & NUMBER

4301 West Braddock Road

N/A NOT FOR PUBLICATION

CITY, TOWN

Alexandria

N/A VICINITY OF

8th

CONGRESSIONAL DISTRICT

STATE

Virginia

22304 CODE

(no county) COUNTY

510 CODE

**3 CLASSIFICATION**

CATEGORY	OWNERSHIP	STATUS	PRESENT USE
<input type="checkbox"/> DISTRICT	<input checked="" type="checkbox"/> PUBLIC	<input checked="" type="checkbox"/> OCCUPIED	<input type="checkbox"/> AGRICULTURE
<input type="checkbox"/> BUILDING(S)	<input type="checkbox"/> PRIVATE	<input type="checkbox"/> UNOCCUPIED	<input checked="" type="checkbox"/> MUSEUM
<input type="checkbox"/> STRUCTURE	<input type="checkbox"/> BOTH	<input type="checkbox"/> WORK IN PROGRESS	<input checked="" type="checkbox"/> PARK
<input checked="" type="checkbox"/> SITE	<input type="checkbox"/> PUBLIC ACQUISITION	<input type="checkbox"/> ACCESSIBLE	<input type="checkbox"/> PRIVATE RESIDENCE
<input type="checkbox"/> OBJECT	<input type="checkbox"/> IN PROCESS	<input type="checkbox"/> YES: RESTRICTED	<input type="checkbox"/> RELIGIOUS
	<input type="checkbox"/> BEING CONSIDERED	<input checked="" type="checkbox"/> YES: UNRESTRICTED	<input type="checkbox"/> SCIENTIFIC
	N/A	<input type="checkbox"/> NO	<input type="checkbox"/> TRANSPORTATION
			<input type="checkbox"/> OTHER:

**4 OWNER OF PROPERTY**

NAME

City of Alexandria, Virginia

STREET & NUMBER

301 King Street, City Hall

CITY, TOWN

Alexandria

N/A VICINITY OF

STATE

Virginia 22314

**5 LOCATION OF LEGAL DESCRIPTION**

COURTHOUSE,  
REGISTRY OF DEEDS, ETC

Circuit Court Clerk - City Hall

STREET & NUMBER

301 King Street

CITY, TOWN

Alexandria, Virginia 22314

STATE

**6 REPRESENTATION IN EXISTING SURVEYS** Property declared eligible? no

TITLE

FORT WARD PARK - APPLICATION FOR FEDERAL GRANT (Map Code #05-102 Revised 3/25/63)

DATE

August 1, 1962

FEDERAL  STATE  COUNTY  LOCAL

DEPOSITORY FOR  
SURVEY RECORDS

City of Alexandria, Department of Planning and Community Development

CITY, TOWN

Alexandria

STATE

Virginia 22314

## 7 DESCRIPTION

<b>CONDITION</b>		<b>CHECK ONE</b>	<b>CHECK ONE</b>
<input type="checkbox"/> EXCELLENT	<input type="checkbox"/> DETERIORATED	<input checked="" type="checkbox"/> UNALTERED	<input checked="" type="checkbox"/> ORIGINAL SITE
<input checked="" type="checkbox"/> GOOD	<input type="checkbox"/> RUINS	<input type="checkbox"/> ALTERED	<input type="checkbox"/> MOVED      DATE _____
<input type="checkbox"/> FAIR	<input type="checkbox"/> UNEXPOSED		N/A

**DESCRIBE THE PRESENT AND ORIGINAL (IF KNOWN) PHYSICAL APPEARANCE**

FORT WARD is a 35-acre Historic Park owned and operated by the City of Alexandria, Virginia. The park is comprised of three major elements. In order of importance they are:

- a) Civil War Earthen Fortifications
- b) Reproduction Period Military Buildings, and
- c) Recreational Facilities

a) The Earthen Fortifications are a well-preserved 818 yard perimeter trace of the improved (1864-1865) fortified work. Original Infantry Trenches remain within the site, as well as, an Outlying Gun Battery. An archaeological exploration was performed in the summer of 1961 which established profiles and limits of the original construction in sufficient detail to allow accurate restoration of the Northwest Bastion of this work. The restoration was based on both archaeological and historical research to ensure its accuracy. The City employed an on-site archaeologist to supervise the restoration project. (Report of Edward McM Larrabee on file at Fort Ward Museum.)

The original fort was constructed in the shape of an elongated, 5-pointed star (or 5 bastions), using the French field fortification system as espoused by General Sebastien Le Prestre Vauban. The earthwork was constructed by staking the site, building a wooden frame conforming to the shape of the finished fortification. The frame was filled with earth, creating walls with very sharp angles. The interior of these walls were lined with revetting (wooden poles) and the outside of the slopes (banks) were covered with blocks of sod to prevent erosion. The 1864-65, the fort had emplacements for 36 guns and required about 1200 men for full troop strength.

The entire fort was surrounded by a ditch (moat without water), and an abbatis (felled trees with sharpened branches) was used to line the outer edge of the ditch. A Rifle Trench extended from the North Bastion toward the fort next in line to Fort Ward (Battery Garasche). An Outlying Gun Battery was located 150 yards to the front point of the Northwest Bastion. (An authentic abbatis was used to surround the restored area and thereafter for about five years. However, once this site was established as a well-used facility, the felled trees proved to be a safety hazard and were replaced with an acceptable, low-growing hedge.)

The remainder of the site outside the restored area has secondary growth of tree cover which has been trimmed above ground to expose the original construction trace, while still protecting the ground from erosion. Clearing has been accomplished to allow full comprehension of the topographical and military significance of the site.

(see Continuation Sheet #1)

# 8 SIGNIFICANCE

PERIOD	AREAS OF SIGNIFICANCE -- CHECK AND JUSTIFY BELOW					
<input type="checkbox"/> PREHISTORIC	<input type="checkbox"/> ARCHEOLOGY-PREHISTORIC	<input type="checkbox"/> COMMUNITY PLANNING	<input type="checkbox"/> LANDSCAPE ARCHITECTURE	<input type="checkbox"/> RELIGION		
<input type="checkbox"/> 1400-1499	<input checked="" type="checkbox"/> ARCHEOLOGY-HISTORIC	<input type="checkbox"/> CONSERVATION	<input type="checkbox"/> LAW	<input type="checkbox"/> SCIENCE		
<input type="checkbox"/> 1500-1599	<input type="checkbox"/> AGRICULTURE	<input type="checkbox"/> ECONOMICS	<input type="checkbox"/> LITERATURE	<input type="checkbox"/> SCULPTURE		
<input type="checkbox"/> 1600-1699	<input type="checkbox"/> ARCHITECTURE	<input checked="" type="checkbox"/> EDUCATION	<input checked="" type="checkbox"/> MILITARY	<input type="checkbox"/> SOCIAL/HUMANITARIAN		
<input type="checkbox"/> 1700-1799	<input type="checkbox"/> ART	<input checked="" type="checkbox"/> ENGINEERING	<input type="checkbox"/> MUSIC	<input type="checkbox"/> THEATER		
<input checked="" type="checkbox"/> 1800-1899	<input type="checkbox"/> COMMERCE	<input type="checkbox"/> EXPLORATION/SETTLEMENT	<input type="checkbox"/> PHILOSOPHY	<input type="checkbox"/> TRANSPORTATION		
<input type="checkbox"/> 1900-	<input type="checkbox"/> COMMUNICATIONS	<input type="checkbox"/> INDUSTRY	<input type="checkbox"/> POLITICS/GOVERNMENT	<input type="checkbox"/> OTHER (SPECIFY)		
		<input type="checkbox"/> INVENTION				

SPECIFIC DATES 1861- 1865 BUILDER/ARCHITECT Union Army  
Corps of Engineers

STATEMENT OF SIGNIFICANCE - See Continuation Sheet #3 for STATEMENT OF SIGNIFICANCE paragraph

When Virginia's vote of secession became effective in April, 1861, Union forces crossed the Potomac River and seized control of Alexandria and Arlington. Unable to determine the strength of the Confederate Army after the Battle of First Manassas (Bull Run), the Federal Government recognized the need for a defense system for the protection of the Capital City of Washington. Under the direction of the Corps of Engineers, the army began construction of a chain of forts known as the Defenses of Washington - which would later be recognized in military annals as one of the most formidable defense systems ever erected in the Western Hemisphere. By the end of the war in 1865, a total of 68 forts and batteries, 93 unarmed batteries, and over 30 miles of military roads had been built. Of these 68 forts and batteries, 9 were located in close proximity to Alexandria - with one water battery, Battery Rodgers, located within the City limits. These forts were frequently referred to as the defenses of Alexandria..

FORT WARD was the fifth largest of the 68 forts, with a perimeter of 818 yards and 36 gun emplacements. A Rifle Trench extended from its North Bastion toward the next fortification in line, Battery Garasche. An Outlying Gun Battery was located 150 yards to the front point of the Northwest Bastion. Fort Ward, located approximately 4 miles west of Alexandria, had the distinction of having been built at the highest elevation above sea level of any of the forts in the defenses of Alexandria.

The objective of this fortification, together with Fort Worth to the South East was to guard the approaches to Alexandria via routes from the West (State Route 236 - Little River Turnpike) and Northwest (State Route 7- Leesburg Turnpike). Fort Ward was considered by the Chief Engineer of the system, Major General John G. Barnard, to be one of the "major works in the defenses of Alexandria and after its reconstruction, one of the largest forts constituting the defenses of Washington." (Report on the Defenses of Washington by Maj. Gen. John G. Barnard, 1871, p37)

In 1864, the fort underwent extensive renovation to correct, and improve early design deficiencies. The perimeter of the fort was enlarged from 540 to 818 yards and the number of gun positions increased from 24 to 36. The fort required about 1200 men - primarily Infantry and Artillery - for full troop strength. It is conceivable however, that due to pressing manpower needs elsewhere, this figure was actually achieved only for brief periods.

(see Continuation Sheet #1)

## 9 MAJOR BIBLIOGRAPHICAL REFERENCES

- Barnard, Bvt. Maj. Gen, J.G. (USA), Defenses of Washington (Report of), 1871.  
 Cooling, Benjamin F., Symbol, Sword and Shield, Defending Washington During the Civil War, 1975.  
 McClure, Stanley, (USNPS) The Defenses of Washington, 1861-1865, 1961.  
 Wills, Mary Alice, The Confederate Blockade of Washington, D.C., 1861-62, 1975.

## 10 GEOGRAPHICAL DATA

ACREAGE OF NOMINATED PROPERTY 35 acres

QUADRANGLE NAME Alexandria, Virginia, DC, Maryland QUADRANGLE SCALE 1:24000

UTM REFERENCES

A	18	317610	4300150	B	18	317720	4299540
	ZONE	EASTING	NORTHING		ZONE	EASTING	NORTHING
C	18	317320	4299720	D	18	317320	4300060
E				F			
G				H			

### VERBAL BOUNDARY DESCRIPTION

Fort Ward is located east of I-395, between Seminary Road and State Route 7  
 It is bounded on the South by West Braddock Road, and on the North by North (see contin-  
 Van Dorn Street. (Approximately 4 miles west of the center of Alexandria) uation sheet 3)

LIST ALL STATES AND COUNTIES FOR PROPERTIES OVERLAPPING STATE OR COUNTY BOUNDARIES

STATE	N/A	CODE	COUNTY	N/A	CODE
STATE	N/A	CODE	COUNTY	N/A	CODE

## 11 FORM PREPARED BY

NAME / TITLE

Wanda S. Dowell, Curator

March 30, 1981

ORGANIZATION

Fort Ward Museum, City of Alexandria, Virginia

DATE

703-838-4848

STREET & NUMBER

4301 West Braddock Road,

TELEPHONE

CITY OR TOWN

Alexandria,

STATE

Virginia 22304

## 12 STATE HISTORIC PRESERVATION OFFICER CERTIFICATION

THE EVALUATED SIGNIFICANCE OF THIS PROPERTY WITHIN THE STATE IS:

NATIONAL

STATE

LOCAL

As the designated State Historic Preservation Officer for the National Historic Preservation Act of 1966 (Public Law 89-665), I hereby nominate this property for inclusion in the National Register and certify that it has been evaluated according to the criteria and procedures set forth by the National Park Service.

STATE HISTORIC PRESERVATION OFFICER SIGNATURE

*H. Bryan Mitchell*

TITLE H. Bryan Mitchell, Executive Director  
 Virginia Historic Landmarks Commission

DATE FEB 16 1982

FOR NPS USE ONLY

I HEREBY CERTIFY THAT THIS PROPERTY IS INCLUDED IN THE NATIONAL REGISTER

DATE

ATTEST: KEEPER OF THE NATIONAL REGISTER

DATE

CHIEF OF REGISTRATION

UNITED STATES DEPARTMENT OF THE INTERIOR  
NATIONAL PARK SERVICE

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**NATIONAL REGISTER OF HISTORIC PLACES  
INVENTORY -- NOMINATION FORM**

FORT WARD, Alexandria, Va

CONTINUATION SHEET 1

ITEM NUMBER 7

PAGE 2

b) The three Reproduction Military Buildings are secondary in importance but include a Headquarters Building (the original of which was located in Alexandria during the Civil War), used as the Museum; a single unit furnished Bachelor Officers' Hut, used for exhibit purposes, and a copy of the Headquarters Building of the hospital located near Alexandria (known as "Camp Misery") which is used as a Park Maintenance and Restroom Complex. The building exteriors have been reproduced in keeping with the 1865 drawings of typical structures in the Defenses of Washington. The exterior form and details are those of simple military, Victorian-influenced, board and batten buildings, expressive of the period and complimentary to the historical experience and total park environment.

c) The Park which surrounds the fortified works and reproduction buildings is on the perimeter, at a lower vertical elevation, and is sufficiently separated horizontally to be complimentary without degradation of the historical significance. Public picnic areas are provided outside the historic area as well as a rustic amphitheatre for summer evening concerts. The entire <sup>35</sup>-acre tract has been enhanced by carefully located planting beds containing over 60 varieties of azaleas and camellias. This adaptive use is mutually supportive of the fort, and is indicative of the City's total commitment to the preservation of the site.

The preservation of the forts within the Defenses of Washington and incorporation into the Greater Washington Park System was suggested by Frederick L. Omstead in his report to the Senate Park Commission's General Plan of Washington as early as 1902, indicating that the historical importance of this system of forts was recognized even at that date.

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INVENTORY -- NOMINATION FORM**

FORT WARD, Alexandria, Va.

CONTINUATION SHEET

2

ITEM NUMBER 8

PAGE 2

When the war ended in April, 1865, Fort Ward was selected as one of 20 forts to be retained as a permanent defense system for Washington, D.C. At that time, the fort was put into top condition and a large Ceremonial Entrance Gate was erected in place of the common sally port. The gate was a commemoration to the Corps of Engineers who were responsible for the construction and the Artillery who primarily manned the fort. The Corps of Engineers insignia was emplaced on top of the center arch, with cannon balls emplaced on the top of each column.

The fortification was not destined, however, to survive long after the end of hostilities, for the "Account of Auction Sales of Property of the Defenses of Washington," listed the November 30 sales of the wood from the abattis, gun platforms, revetting, etc., as sold to the salvage firms of E.C. Morrison and Bodfish Mills in Alexandria for the total sum of \$988. The idea of a permanent fortification system was abandoned in January, 1866.

During the Civil War Centennial, the City of Alexandria restored the Northwest Bastion of the fort to its 1864-65 condition, complete with reproduction armament taken from the 1865 table of armament. The City, also as a part of this project, cleared the underbrush from the entire site, providing public access to 99% of the perimeter of the site. This accessibility has been maintained and improved since the site was officially opened in May, 1964. Other elements of the unrestored portion of the fort are identified by descriptive markers. The Outlying Gun Battery and Rifle Trench are visible in their natural, unrestored condition and are also identified by appropriately placed descriptive markers. The Ceremonial Entrance Gate was faithfully reconstructed from the original plans, by the Corps of Engineers at Fort Belvoir, Virginia and is emplaced in its original position along the rear wall of the fort.

FORT WARD is the only one of the remaining fortifications to have an active museum to interpret the fort. The museum maintains an extensive collection of Civil War military memorabilia as well as items of social significance of the period; an exhibit area with at least two major exhibits each year; a 2000-volume Civil War Research Library and, an ongoing Living History and Museum Education program used in the interpretation of the site.

During the Centennial, the City of Alexandria was cited by the National Civil War Centennial Commission for outstanding achievement. There were only six cities in the Country which received this citation. Further, the restoration project at Fort Ward was such a major achievement as to be instrumental in the City being selected as an All American City in 1964 - the year Fort Ward was officially opened to the public.

(see Continuation Sheet #3)

UNITED STATES DEPARTMENT OF THE INTERIOR  
NATIONAL PARK SERVICE

**NATIONAL REGISTER OF HISTORIC PLACES  
INVENTORY -- NOMINATION FORM**

<b>FOR NPS USE ONLY</b>
RECEIVED
DATE ENTERED

FORT WARD, Alexandria, Va.

CONTINUATION SHEET

3

ITEM NUMBER

8, 10 PAGE

3

The City of Alexandria was also commended by an award from the Council on Abandoned Military Posts (CAMP) for its major contribution in the preservation and interpretation of this historical site.

STATEMENT OF SIGNIFICANCE

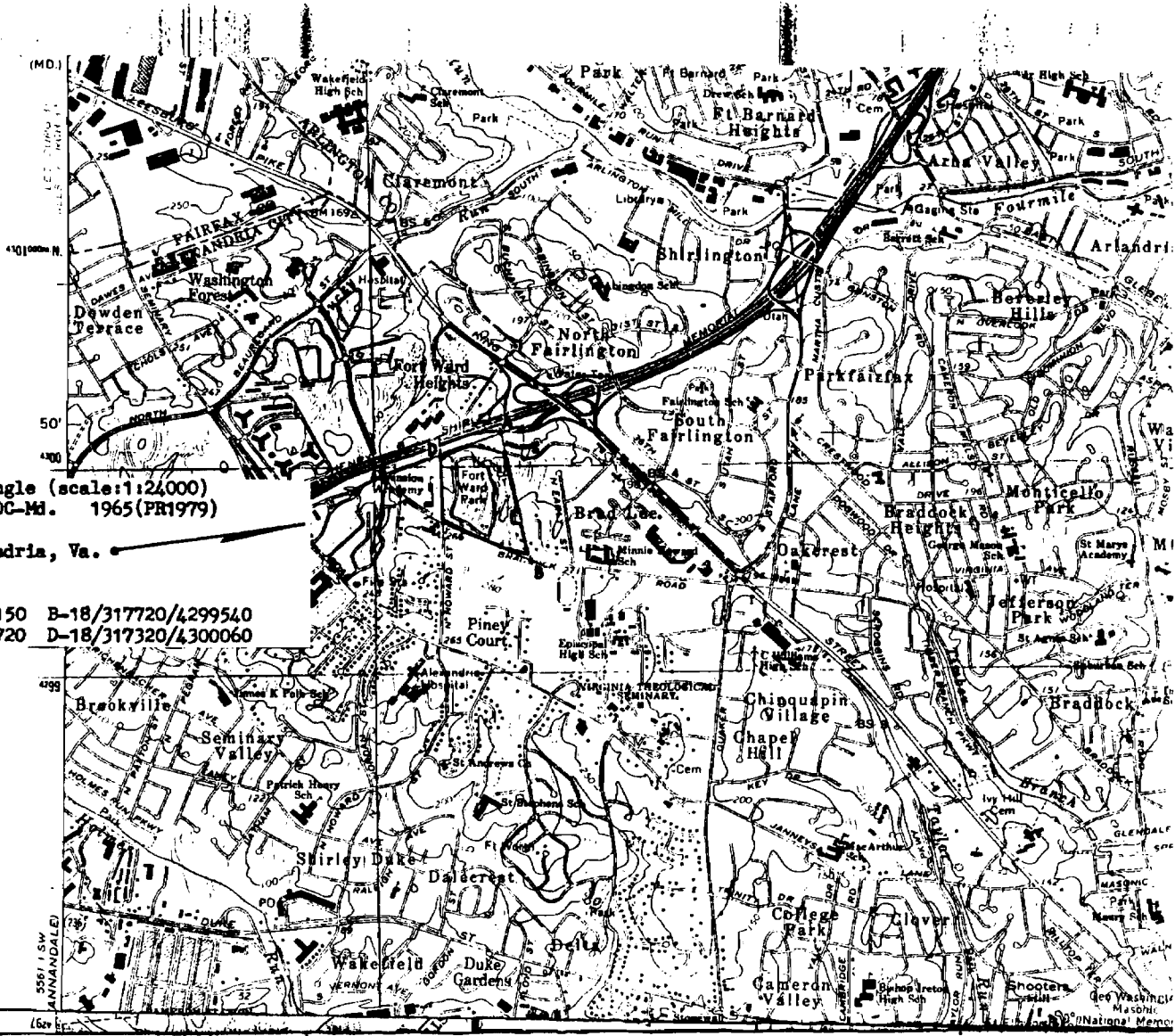
Fort Ward formed one of the strongest links in a chain of sixty-eight forts and batteries erected between 1861-65 by the Union Army Corps of Engineers for the protection of the Nation's capital. Guarding the approaches to Alexandria from the west and northwest on an elevated site four miles west of the city, the star-shaped earthenwork fortification was the fifth largest fort in the system, with a perimeter of 818 yards, holding thirty-six gun emplacements and troops numbering as many as 1,200 men. Although Fort Ward was selected as one of twenty forts to be retained as a permanent defense of Washington, the idea of a permanent system was abandoned in 1866, and the fort fell into a state of neglect for almost a century. During the Civil War Centennial, the City of Alexandria with the assistance of a professional archaeologist restored the northwest bastion of the fort to its original condition and cleared the perimeter as well as the outlying gun battery and rifle trench. With public investigation of the topographical and military significance of the site thus assured, Fort Ward today serves as a 35-acre historic park and museum owned and operated by the City of Alexandria.

10. GEOGRAPHICAL DATE- Verbal Boundary Description

Beginning at a point on N side of W. Braddock Rd. about 1100' SE of intersection with N. Van Dorn St.; thence extending about 910' N to S side of N. Van Dorn ; thence following said side about 1110' E; thence about 1600' SE to N side of W. Braddock (excluding and following W lines of cemetery); thence about 1520' NW along N side of W. Braddock to point of origin.

Justification: The bounds have been drawn to encompass the present 35-acre Historic Park consisting of the earthen fortifications, the reproduction military buildings, and the park.





USGS 7.5' quadrangle (scale:1:24,000)  
 Alexandria, Va.-DC-Md. 1965(PR1979)

FORT WARD, Alexandria, Va. →

UTM References:  
 A-18/317610/4300150 B-18/317720/4299540  
 C-18/317320/4299720 D-18/317320/4300060

John Noelle/Alex  
06/02/2009 08:45 AM  
To Kendra Jacobs/Alex@Alex  
cc  
bcc  
Subject Fw: Urban Forestry Master Plan

----- Forwarded by John Noelle/Alex on 06/02/2009 08:44 AM -----



Sarah Jennings  
<Sarah.Jennings@cbo.gov>  
06/01/2009 03:11 PM  
To "laura.durham@alexandriava.gov\_"  
<laura.durham@alexandriava.gov\_>,  
"john.noelle@alexandriava.gov"  
<john.noelle@alexandriava.gov>  
cc  
Subject Urban Forestry Master Plan

Mr. Noelle,

I was unable to attend the meeting on urban forestry on May 28 and am thus submitting written comments on the proposed plan to significantly increase our tree canopy.

Trees have many positive attributes, but they have some negative ones as well that I would like to see taken into account in Alexandria's Forestry plans.

Certain types of trees, and particularly the male cultivars of those trees, produce enormous quantities of pollen that causes significant suffering among the vulnerable population. Such suffering is much worse in urban areas because manmade pollutants, especially nitric oxide, a major component in air pollution, react with pollen to make it more apt to stimulate the immune system. In addition, the mucus membranes in the eyes, nose, and throat are already raw and irritated by these pollutants. In such areas allergies are more common and more severe, and children are especially hard hit. According to my reading, some trees create far fewer allergy problems than others. Trees such as Crape myrtle, Dogwood, Fig, Fir, Palm, Pear, Plum, Redbud, Redwood, and the female cultivars of Ash, Box Elder, Cottonwood, Maple, Palm, Poplar, or Willow trees are relatively easy for allergy and asthma sufferers to live with. On the other hand, trees such as Oak, Hickory, Birch, Sycamore, Cottonwood, Walnut, Ash (male cultivar), Beech, Maple(male cultivar) and Elm are highly allergenic. Avoiding those trees would ameliorate much suffering.

In addition, the city does not currently dedicate enough resources to care for the existing trees. Are Alexandrians prepared to dedicate sufficient resources to keep the cities current and newly planted trees healthy and pruned?

Finally, pickup of leaves from neighborhood trees is inadequate. How will the city government manage to arrange for pickup of even more leaves? One suggestion, if we

are to have more trees, is to eliminate the current leaf-collection system, deduct the fee for that pickup from our solid waste fee, and let citizens use that money to make their own, more satisfactory, arrangements.

Sarah T. Jennings  
100 East Luray Avenue  
Alexandria, VA 22301  
703-548-8286

John Noelle/Alex  
06/02/2009 08:45 AM

To Kendra Jacobs/Alex@Alex  
cc  
bcc  
Subject Fw: Urban Forestry Master Plan

----- Forwarded by John Noelle/Alex on 06/02/2009 08:45 AM -----



JeffRBarnes@aol.com

05/31/2009 04:06 PM

To john.noelle@alexandriava.gov  
cc norapalm@verizon.net  
Subject Urban Forestry Master Plan

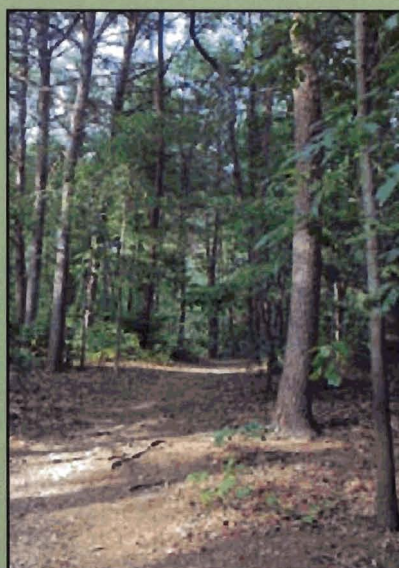
John, I appreciate the opportunity to attend the meeting last Thursday evening on the Urban Forestry Master Plan. I regret that only two of us showed up for the meeting, but believe that I benefited from your briefing on the Plan. You gave Linda (the certified arborist from Utah) and me a copy of the complete Plan, and I have gone over it. It is a thorough and well thought out product, and I hope that it will be given serious consideration by the Planning Commission at its June 2 meeting. The recommendations are detailed and, although obviously not all will be adopted, implementation of those with the highest priority will do much to preserve and even increase the city's tree canopy, an objective which should of interest to all of its citizens.

The Tree Stewards of Arlington and Alexandria have a meeting on June 11, and I will bring up the opportunity to attend the public hearing on June 13.

Jeff Barnes

We found the real '[Hotel California](#)' and the '[Seinfeld](#)' diner. What will you find? [Explore WhereItsAt.com](#).

# CITY OF ALEXANDRIA Urban Forestry Master Plan



Published and Printed By

The City of Alexandria  
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Roger Blakeley, Deputy Director

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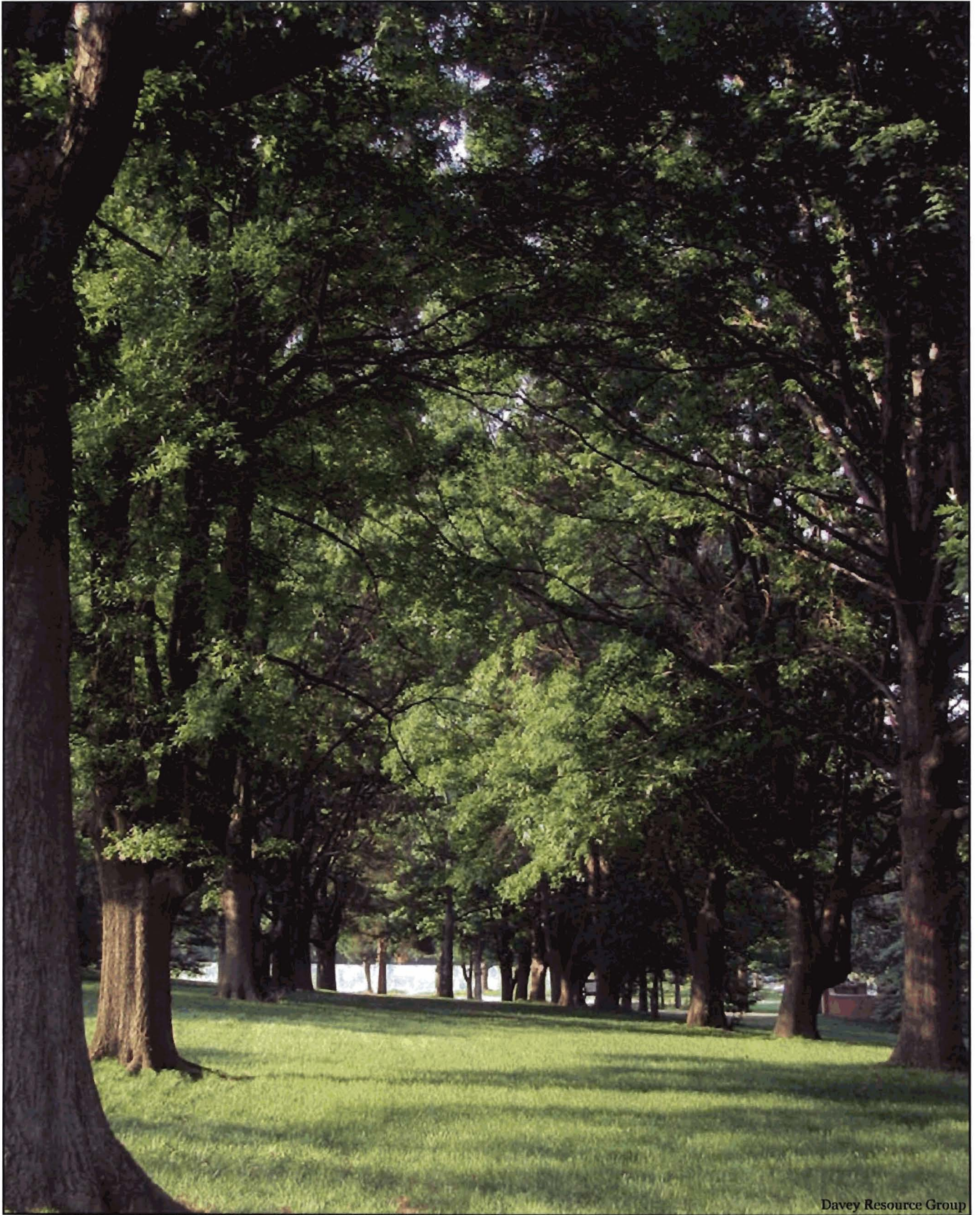
Prepared By

Davey Resource Group  
John Noelle  
Bethany Carton



# TABLE OF CONTENTS

Executive Summary	1
Introduction	1
Key Challenges	1
Major Recommendations	4
Tree Planting	4
Tree Care	5
Management	5
Public Education and Outreach	5
Conclusion	6
Recommendation Matrix	7
Chapter 1. Introduction	15
The Urban Forest	15
The Urban Forest and Its Management	15
Alexandria’s Urban Forestry Master Plan	16
Public Participation	17
Vision and Goals of the Plan	18
Vision	19
Goals	19
Chapter 2. Alexandria’s Urban Forest	21
History of Urban Forestry in Alexandria	21
Summary of Alexandria’s Existing Urban Forest Conditions	22
Overall Canopy Cover	22
Ownership and Land Uses	22
Regulatory Context	26
Current Program Management and Operations	26
Department of Recreation, Parks, and Cultural Activities	26
Department of Transportation and Environmental Services	28
Department of Planning and Zoning	29
Other City Departments	30
Commissions, Committees, and Volunteer Programs	30
Public Utilities	30
Chapter 3. Analysis and Recommendations	33
Overall Canopy Cover	33
Overall Public Tree Population	35
Street Trees	36
Public Park, School, and Open Space Trees	38
Stream and Natural Areas Tree Population	39
Institutional and Semi-Public Tree Population	40
Private Tree Population	41
Regulatory and Planning Context	42
Management and Operations	43
Public Education and Support	45
Appendices	49



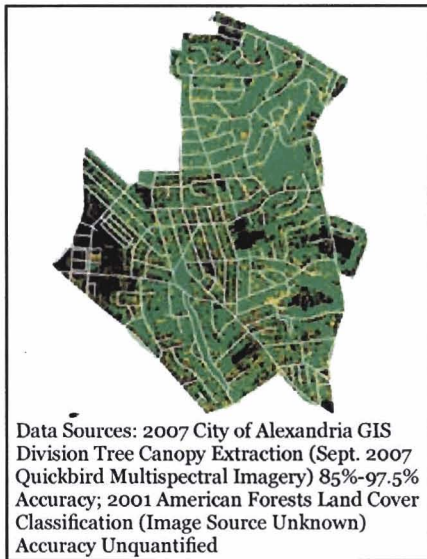
Davey Resource Group



# Executive Summary

## INTRODUCTION

The City of Alexandria has many lovely tree-lined streets and wooded areas, in both public and private ownership. Both the City government and citizens value the many environmental and economic benefits that trees provide. The government, strongly supported by its citizens, has consistently devoted significant resources to the planting and care of trees on public property.



**Northridge Study Area**  
■ 2007 Tree Canopy ■ 2001 Canopy Loss

(\*) The 2001 Canopy Extraction was performed by American Forests and delivered without “metadata” or other documentation. City of Alexandria GIS Staff contacted AF, but was unable to gather more details on the data source, extraction techniques, and other important information to help characterize the data quality. Therefore, the accuracy of the geographic referencing and the canopy extraction is unknown. Moreover, Alexandria GIS Staff observed a sizeable and irregular 15-30 ft. offset in the AF data set from the City’s 1:100-scale GIS database. For the sample areas described in this document, a local adjustment was applied to reduce the relative shift, but the accuracy of that adjustment cannot be known.

(\*\*) The 2007 Canopy Extraction was performed by City of Alexandria GIS Staff. The accuracy was measured at 85% (omission) - 97.5% (commission) and based on visual assessment of a random sample of 40 points distributed throughout the City. An adjustment was applied to correct for the underestimate created by the omission error.

Yet as a city with many densely developed areas, and with the pace of development intensifying in recent years, Alexandria faces a difficult challenge to maintain its existing tree cover and an even greater challenge to increase it. In fact, during the past few years, the extent of the tree canopy in the City appears to be getting smaller and its health declining. The overall state of the City’s urban forest is fragile, as is true in many urban settings.

Alexandria’s urban forest is at a critical juncture. The decisions made now will determine how much canopy cover will be gained or lost and how well or poorly Alexandria’s current and future forest will function.

Recognizing the challenges and benefits of properly managing an urban forest, the City Manager appointed the Urban Forestry Steering Committee in 2004 to work with City Staff, a consultant, and citizens to prepare a comprehensive urban forestry management plan that would help guide future efforts. This report presents recommendations that will be taken under consideration in conjunction with the current fiscal environment.

## KEY CHALLENGES

The City’s tree canopy cover is decreasing. A study of the City’s tree canopy using City Green, a program developed by the nonprofit group American Forests, indicated that, in 2001, tree canopy covered approximately 34% of the City. A more recent study conducted by the GIS Division of the Department of Planning and Zoning found that the City’s tree canopy cover was 30% in 2007.

In 2001 the tree canopy coverage of the more suburban Northridge Community was estimated to be 63%. The 2007 study indicates that the canopy coverage of Northridge decreased to 57%. Similarly, the tree canopy cover over the Del Ray community east of Commonwealth Avenue was reduced from 31% in 2001 to 27% in 2007. Del Ray west of

Commonwealth Avenue changed from 45% to 39% tree canopy cover during the same period. Figure 1 on page 3 shows the results of the City's tree canopy cover analysis of designated test plots using 2001 and 2007 data.

Development and other pressures are negatively affecting the health and longevity of Alexandria's trees and limiting the areas in which trees can be planted. In addition to major development and redevelopment projects, the expansion of many single-family homes has resulted in the loss of trees and less space for planting new ones. Street trees must often be planted in inadequate spaces, and conflicts with above-ground and below-ground utilities are rampant. The lack of adequate planting strips makes it difficult to plant large shade trees, which provide the greatest environmental benefits.

Current resources and funding limit the ability of the City Arborist Office to provide for little more than the basic needs of the City's trees. Most of the staff time is spent responding to requests for service and reacting to problems. Only minimum amounts of time and resources are dedicated to proactive activities designed to enhance the urban forest.

Currently the City does not have a formal citywide management plan with goals, objectives, and performance measures, nor the tools and data needed to effectively manage Alexandria's urban forest. Except for a partially completed street tree inventory, there are no resources available to quantify or monitor the extent and the health of the City's tree cover.

In the planting and care of trees, staff focuses almost exclusively on street trees. Efforts in other parts of the urban forest—school grounds, parks, natural areas, stream corridors, and private and institutional property—are limited.

Although tree pruning efforts have increased in recent years, they are still below a level required to promote a healthy stand of trees. More resources need to be focused on the care of newly planted trees, especially in the first two-to-three years when watering in particular can be critical to tree survival and growth.

Public education—considered by many experts to be a key factor in preserving and enhancing the urban forest—is virtually nonexistent. Promotion of existing City-sponsored tree-oriented programs, such as the program to share the cost of planting street trees with residents and the Living Landscape Fund, is minimal. There is no tree-oriented section of the City website.

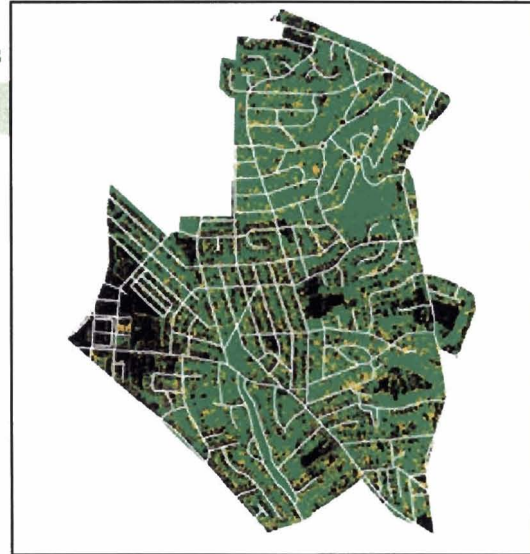
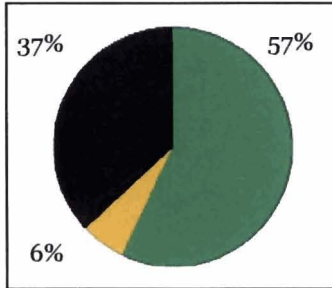


Although there are many needs on public property, most of the City's urban forest is under private control, not subject to state or local regulations, and therefore vulnerable to inadequate management, injury, and tree removal. Homeowners often take great pride in the trees on their properties, but many lack basic knowledge about the benefits of trees, the appropriate trees to plant, and how to plant and care for them. In addition, trees are being lost on institutional properties where there are no requirements to preserve, protect or increase the tree canopy. Maintaining tree canopy on private and institutional property will be a major challenge in the years to come.

**Figure 1.**  
**City of Alexandria Canopy Coverage Study Areas**

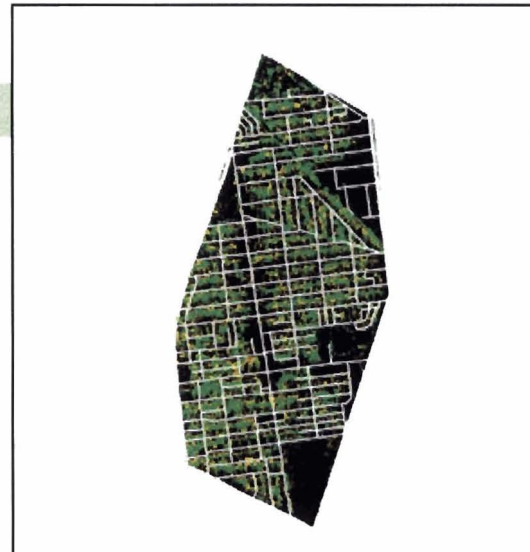
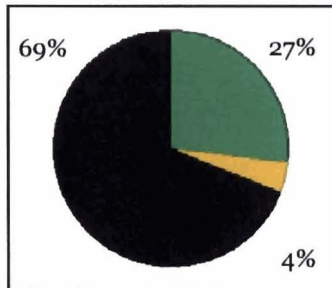
**Northridge Study Area**

- 2007 Tree Canopy
- Canopy Lost Since 2001
- Impervious Surface



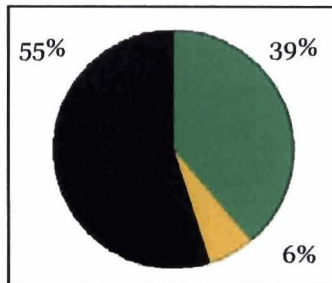
**Del Ray East Study Area**

- 2007 Tree Canopy
- Canopy Lost Since 2001
- Impervious Surface



**Del Ray West Study Area**

- 2007 Tree Canopy
- Canopy Lost Since 2001
- Impervious Surface



(\*) The 2001 Canopy Extraction was performed by American Forests and delivered without "metadata" or other documentation. City of Alexandria GIS Staff contacted AF, but was unable to gather more details on the data source, extraction techniques, and other important information to help characterize the data quality. Therefore, the accuracy of the geographic referencing and the canopy extraction is unknown. Moreover, Alexandria GIS Staff observed a sizeable and irregular 15-30 ft. offset in the AF data set from the City's 1:100-scale GIS database. For the sample areas described in this document, a local adjustment was applied to reduce the relative shift, but the accuracy of that adjustment cannot be known.

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## MAJOR RECOMMENDATIONS

To meet these challenges, innovative approaches to managing the urban forest are required. Based on lessons learned from across the country, and from the feedback provided by Alexandria's citizens, a variety of suggestions have been made to improve the City's urban forest.

The overarching goal of the Alexandria Urban Forestry Master Plan is to increase the tree canopy throughout the City by better maintaining our existing trees and adding a significant number of new trees. The master plan includes specific recommendations for improving each part of the urban forest: public trees along streets, in parks, on school grounds and as part of other open spaces; private trees in residential areas and on institutional grounds; and trees within stream valleys and other natural areas. Summarized below are the major recommendations of the plan, defined in four strategic categories: tree planting, tree care, management, and public education and outreach.

### *Tree Planting*

- Adopt American Forests' recommended tree canopy coverage goal of 40% and develop a citywide strategy to meet this goal. (Recommendation 1) \*
- Plant 400 additional trees per year above what is being planted today and plant them on all types of public properties. School grounds provide an excellent opportunity for increased tree planting and should be a top priority. (Recommendation 4)
- Develop and implement master landscaping, planting, and maintenance plans for all public properties, including City rights-of-way, schools, libraries, stream corridors, and open spaces, and implement one-to-two of these plans each year. (Recommendation 13)
- Employ planting techniques that will promote the healthy growth of trees within an urban setting, such as alternative soil mixtures, extended tree wells, and systems to direct and manage root growth. (Recommendation 19)
- Establish a tree bank to plant trees on both public and private properties. The bank would be funded through various sources such as development-related activities, property damage reimbursements, and other sources. (Recommendation 6)
- Create a grant program to permit the use of City funds to subsidize all or a portion of the cost of planting trees on private property. (Recommendation 7)
- Continue the City's spring and fall tree sales program (established in 2005 under the auspices of the Urban Forestry Steering Committee). (Recommendation 8)
- Provide and promote incentives to plant trees and implement projects to preserve and enhance the tree canopy on institutional and semi-public sites, such as INOVA Alexandria Hospital and Episcopal Seminary and High School. (Recommendation 31)
- Build on the Alexandria Open Space Plan's recommendation to seek innovative ways of creating more open space by developing and implementing pilot projects such as "green streets" (see Appendix F), which are aimed at redesigning streets to reduce impervious surface, thus freeing up land for tree planting and helping to meet other environmental goals, such as reducing the impact of storm water runoff. (Recommendation 24)



- Take steps to incorporate the use of more sustainable approaches to environmental design, such as rooftop gardens, to provide additional benefits for the City’s overall canopy on private as well as public properties. (Recommendation 11)

### ***Tree Care***

- Fund and implement a five-year pruning cycle for all existing street trees and a three-year establishment program for new trees. (Recommendation 38)
- Work with the Departments of Transportation and Environmental Services, and Planning and Zoning to develop standards for, and require, innovative planting techniques and products to facilitate tree planting in restricted, high-use, difficult, and special needs areas. (Recommendation 18)

### ***Management***

- Change the name of the Arborist Office to the Urban Forestry Office and take steps necessary to transform it into a proactive operation with a systematic and strategic focus on the urban forest system as a whole. Develop a management plan and provide the resources needed to effectively manage the plan. (Recommendation 39)
- Create a new Urban Forest Specialist position that would be dedicated to activities aimed at preserving and enhancing the City’s urban forest. (Recommendation 40)
- Establish benchmarks and report progress in an annual State of the Urban Forest Report to the City Manager and City Council. (Recommendation 42)

### ***Public Education and Outreach***

- Develop and implement an effective public outreach and education strategy and pursue it actively and consistently. Volunteers are a greatly untapped resource in this regard and should be a core part of this strategy. (Recommendation 43)
- Fund an additional extension agent at Virginia Cooperative Extension who would provide vital volunteer programming services for Alexandria’s residents. This person would, among other tasks, work to expand Alexandria’s role in the Tree Stewards of Arlington and Alexandria program, a group of volunteers trained by the extension service to educate and assist citizens on proper tree planting and care. (Recommendation 48)
- Rededicate Fort Ward as the City’s arboretum and develop and adopt a master plan for the park. An arboretum could be an effective educational tool, providing increased public awareness about tree species appropriate to our City, planting conditions, and care. (Recommendation 25)
- Build an effective website [www.AlexandriaTrees.org](http://www.AlexandriaTrees.org) and provide links to other important sites with information about the benefits of tree programs and services that are available to the public. (Recommendation 49)

\*Recommendation numbers refer to the overall number system used in the Analysis and Recommendation section of the plan (Chapter 3). They do not imply an order or priority.

### Fiscal Budget Impact of Proposed New and Expanded Programs

Action	Estimated Annual Cost	FY 2009 Budget	Added Cost
Increase Tree Canopy	\$177,750	\$105,000	\$72,750
Five Year Pruning Cycle (as part of) On-Going Tree Maintenance Program	\$976,945	\$496,945	\$480,000
Reorganize Arborist/Horticulture Section	\$2,007,476	\$1,596,476	\$411,000
Educational Opportunities and Public Outreach	\$95,000		\$95,000
<b>Total</b>	<b>\$3,257,171</b>	<b>\$2,198,421</b>	<b>\$1,058,750</b>

### CONCLUSION

The recommendations in the master plan are ambitious, but realistically achievable. Some need immediate attention; whereas others can be phased in over time. This plan recommends a significant boost in public funding. Failure to make this investment, however, could have serious long-term consequences for the City's environmental quality of life.

In 1997, when the City of Alexandria held its first Environmental Summit, the City's urban forest was one of the critical issues identified for action. In the eleven ensuing years, this issue has only become more urgent. The Urban Forestry Master Plan responds to this urgency both by identifying and assessing current conditions, and by recommending actions to address these conditions. The problem is straightforward: every year, the City of Alexandria is losing tree canopy because of development, storms, aging, and urban pressures. If we are to enjoy the environmental, economic and aesthetic benefits of our urban forest, we must learn how to better manage it. By developing systematic and enhanced tree planting and maintenance programs, by having adequate funding, staffing, and public education resources available, and by undertaking innovative projects, Alexandria's future urban forest can be extensive, healthy, and highly valued, as envisioned by this plan.



J. Noelle/Department of RPCA

## Recommendation Matrix

Recommendation	Priority	Annual Cost Increase	Annual Cost Savings	Comments
1. Adopt American Forest's recommended tree canopy coverage goal of 40% and develop a citywide strategy to meet this goal.	High	N/A	N/A	Short-term goal.
2. Perform tree canopy coverage analysis every five years using City Green or other comparable programs to determine changes in canopy cover and impervious surfaces.	High	\$8,000	N/A	Mid-term goal. This analysis would be completed every five years. The cost of the program includes \$3,000 for the required data and \$5,000 for the analysis.
3. Sustain Alexandria's existing tree canopy through a comprehensive tree replacement and maintenance program for trees on public property and by developing new and promoting existing educational resources for the public.	High	N/A	N/A	Mid-term goal.
4. Plant 400 more trees per year above what is currently being planted annually on public properties, including City rights-of-way, schools, libraries, and other public facilities.	High	\$90,000	N/A	Mid-term goal. The average unit cost for trees installed is approximately \$225 depending upon the species and size of the specimen.
5. Actively seek ways to increase Alexandria's tree canopy on private property.	High	N/A	N/A	Short-term goal.
6. Establish a tree bank to plant trees on both public and private properties. The bank would be funded through various sources such as development-related activities, property damage reimbursements, and other sources.	Moderate	N/A	N/A	Mid-term goal.
7. Create a grant program to permit the use of City funds to subsidize all or a portion of the cost for planting trees on private property.	Moderate	N/A	N/A	Long-term goal.
8. Continue the City's spring and fall tree sales program (established in 2005 under the auspices of the Urban Forestry Steering Committee).	High	N/A	N/A	Short-term goal.
9. Achieve and maintain a species diversity where no single genus comprises 15% and no single species comprises 5% of the total population.	Moderate	N/A	N/A	Long-term goal. This may be accomplished by expanding the palette of trees selected for planting and limiting the additional planting of Callery pear species and Red maples.

## Recommendation Matrix

Recommendation	Priority	Annual Cost Increase	Annual Cost Savings	Comments
10. Work with local civic and business groups to identify opportunities to plant additional trees on public and private lands.	Moderate	N/A	N/A	Long-term goal. Already conducted informally with small neighborhood groups.
11. Take steps to incorporate the use of more sustainable approaches to environmental design, such as rooftop gardens, to provide additional benefits for the City's overall canopy on private as well as public properties. Green roofs can provide some of the functions of forested areas including carbon fixation, shading, cooling, and watershed protection. Green roofs on underground parking structures can provide ground-level open space that is important to the continuous open space network.	Moderate	N/A	N/A	Long-term goal.
12. Conduct an inventory of all trees located in the public rights-of-way, in parks, on school properties, and at all other public schools and facilities. The inventory should be completed and reviewed on a continuous five-year schedule or as changes occur.	High	N/A	N/A	Short-term goal. To be completed on a five year schedule in concert with the recommended street tree pruning rotation.
13. Develop and implement master landscaping, planting, and maintenance plans for all public properties including City rights-of-way, schools, libraries, stream corridors, and open spaces, and implement one to two of these plans each year. These plans should provide maintenance rotations and establish level-of-service standards for each land use type. Plans should also include strategies for regular inspections of trees, criteria for treatment, and practical methods to maintain current information all on trees subject to treatment. Coordinate with the Departments of Transportation and Environmental Services and Planning and Zoning to ensure plans are consistent with existing transportation and area plans.	Moderate	N/A	N/A	Mid-term goal.
14. Develop quantitative methods to evaluate the overall health of Alexandria's street trees and trees on public properties.	High	N/A	N/A	Mid-term goal.
15. Plant and establish additional trees to achieve a 100% stocking level of available planting sites.	Moderate	N/A	N/A	Long-term goal.



## Recommendation Matrix

Recommendation	Priority	Annual Cost Increase	Annual Cost Savings	Comments
16. Actively seek opportunities to establish tree-lined medians along rights-of-way that are wide enough to create boulevards. Develop an urban forestry enhancement program specifically for Alexandria's unique boulevards and other significant transportation corridors.	Moderate	N/A	N/A	Long-term goal.
17. Establish criteria to identify sites that will permit the expansion of tree planting strips and tree wells to provide more suitable growing conditions for street trees, decrease conflicts between tree roots and urban infrastructure, and meet all Americans with Disabilities Act requirements for adequate clearance and passage.	High	N/A	N/A	Mid-term goal.
18. Work with the Departments of Transportation and Environmental Services, and Planning and Zoning to develop standards for, and require, innovative planting techniques and products to facilitate tree planting in restricted, high-use, difficult, and special needs areas.	High	N/A	N/A	Short-term goal.
19. Employ planting techniques that will promote the healthy growth of trees within an urban setting, such as alternative soil mixtures, extended tree wells, and systems to direct and manage root growth and limit conflicts between roots and urban infrastructure. Develop standards for planting in areas where space is too restricted or soil, aeration, drainage, or other conditions preclude providing adequate space and a satisfactory environment for trees to survive and thrive.	High	N/A	N/A	Mid-term goal.
20. Explore opportunities to protect existing trees by using alternative paving materials and methods to correct conflicts between tree roots and sidewalks, such as rubber sidewalks, stone dust, permeable paving, and alternative pavement profiles.	High	N/A	N/A	Mid-term goal.
21. Seek to relocate all overhead wires underground to avoid conflicts with trees and provide increased opportunities to plant large shade trees with an emphasis on major corridors.	Moderate	N/A	N/A	Long-term goal.

## Recommendation Matrix

Recommendation	Priority	Annual Cost Increase	Annual Cost Savings	Comments
22. Implement pilot programs to develop and adopt alternative street profiles and sections that provide larger tree planting areas, more open space, increased permeable surface area, and new opportunities for stormwater management, also referred to as shared street concepts.	Moderate	N/A	N/A	Long-term goal.
23. Establish and implement comprehensive planting and maintenance plans for trees located on parks, schools, and other public open space properties tree planting and maintenance plans for trees located in public parks and open spaces. These plans should be developed in conjunction with park landscape master/management plans which include both development and rotational maintenance costs.	High	N/A	N/A	Mid-term goal.
24. Build on the City Open Space Plan's recommendation to seek innovative ways of creating more open space by developing and implementing pilot projects such as Green Streets (see Appendix F), which are aimed at redesigning streets to reduce impervious surface, thus freeing up land for tree planting and helping to meet other environmental goals, such as reducing the impact of storm water runoff.	Moderate	N/A	N/A	Long-term goal.
25. Rededicate Fort Ward Park as the City's Arboretum and develop and adopt a master plan for the park. Create a collection of trees and other woody plants that will serve as an educational resource for City residents and visitors.	High	\$25,000	N/A	Mid-term goal.
26. Promote the value of tree donations and other support programs, such as the Living Landscape Program, as a source of trees to be planted in parks and other public open spaces. Park master plans should be developed with tree locations that are ear-marked for living landscape trees.	High	N/A	N/A	Short-term goal.
27. Continue to celebrate Arbor Day and hold other special events and educational programs about urban forestry on parks and school grounds.	High	N/A	N/A	Short-term goal.
28. Encourage the establishment and healthy growth of native tree species through planting and maintenance.	Moderate	N/A	N/A	Mid-term goal.
29. Control invasive plant species.	High	N/A	N/A	Short-term goal.

## Recommendation Matrix

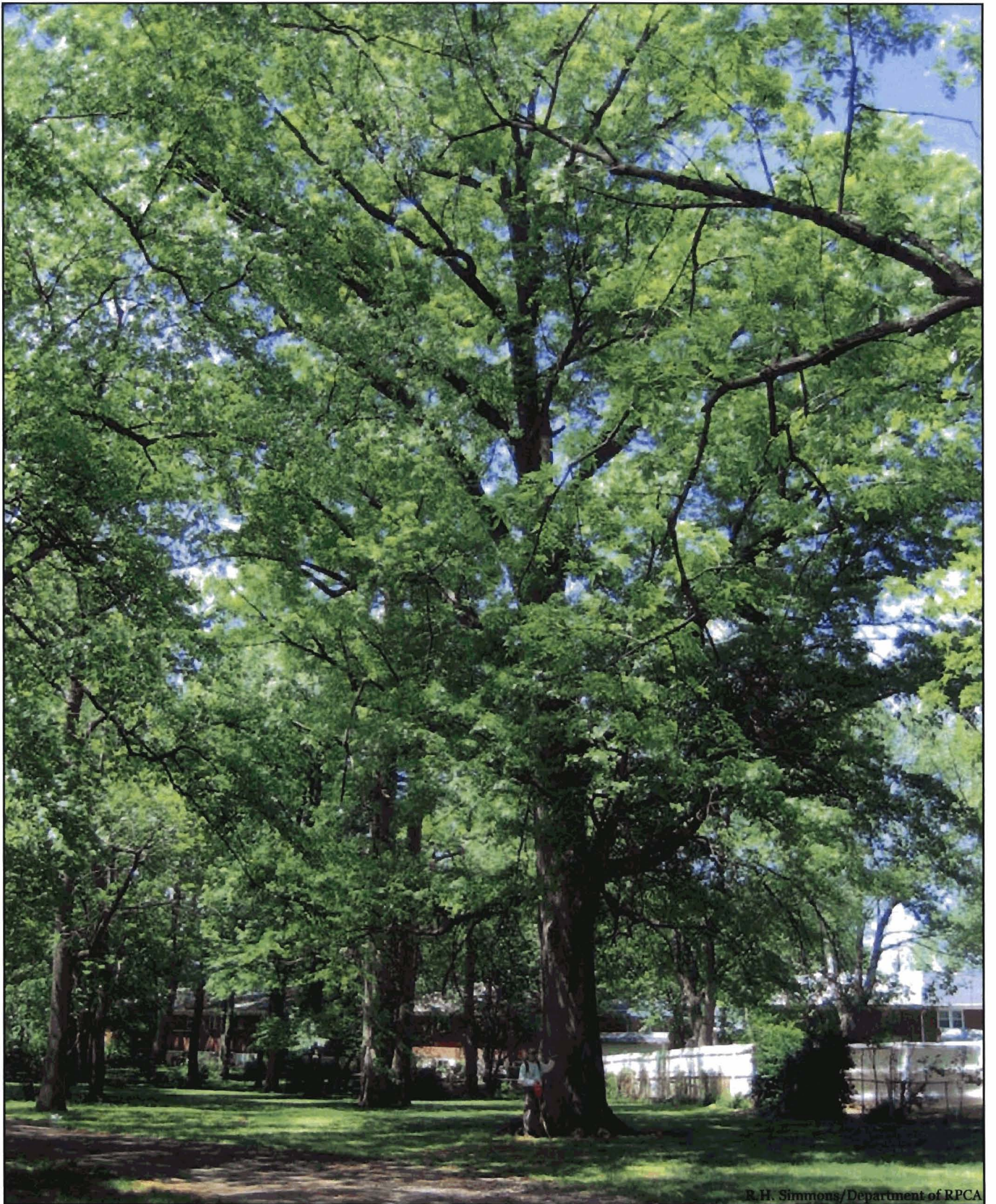
Recommendation	Priority	Annual Cost Increase	Annual Cost Savings	Comments
30. Improve maintenance of overgrown and currently inaccessible and under-used stream valleys and natural public open space.	Moderate	N/A	N/A	Long-term goal
31. Provide and promote incentives to plant trees and implement projects to preserve and enhance the tree canopy on institutional and semi-public sites, such as INOVA Alexandria Hospital and Episcopal Seminary and High School.	High	N/A	N/A	Mid-term goal
32. Encourage the establishment and dedication of open space, tree canopy conservation, scenic and historic easements on institutional and private properties.	Moderate	N/A	N/A	Mid-term goal
33. Develop guidelines for, and privately fund, a City grant program to support tree planting on private property. Grants should be made available to qualified homeowners, civic organizations, places of worship, religious institutions, and other not-for-profit organizations.	Moderate	N/A	N/A	Long-term goal
34. Educate private property owners about the benefits of trees and proper planting and maintenance strategies.	High	N/A	N/A	Short-term goal
35. Encourage homeowner and civic associations to create tree or beautification boards with which the City Arborist can communicate and provide information about tree planting and maintenance on this type of property.	High	N/A	N/A	Mid-term goal
36. For commercial and industrial properties, enforce site plan and special use permit landscape requirements and conditions for new and existing development sites. Perform site inspections to ensure compliance.	High	N/A	N/A	Short-term goal
37. Evaluate, update, and enforce the City's existing rules and regulations.	High	N/A	N/A	Short-term goal
38. Plan, fund, and implement a five-year pruning cycle for all established trees and a three-year establishment program for new trees planted along City streets, in parks, and on school and other public properties.	High	\$480,000	N/A	Mid-term goal. This would provide for the pruning of an additional 4,000 trees annually; to be accomplished through block to block pruning which will reduce the average unit cost of pruning a tree by an estimated 25%.

## Recommendation Matrix

Recommendation	Priority	Annual Cost Increase	Annual Cost Savings	Comments
39. Transform the City Arborist Office and Tree Maintenance Section into a proactive Urban Forestry Section with a systematic and strategic focus on the urban forest system as a whole. Develop and management plan and provide resources needed to effectively manage the plan. Optimize personnel allocations and create efficiencies by combining the City's urban forestry and horticulture programs under one Natural Resources Section.	High	N/A	N/A	Short-term. Convert five-year temporary Arborist position to permanent status.
40. Create a new Urban Forest Specialist position that would be dedicated to activities aimed at preserving and enhancing the City's urban forest.	Moderate	\$110,000	N/A	Mid-term goal.
41. Fund requests for additional tree trimmers and horticulture staff necessary to successfully meet the goals of the Urban Forestry Master Plan.	High	\$301,000	N/A	Mid-term goal. This would include the conversion of the vacant Assistant Superintendent position to a Tree Trimmer Position. Create two new Tree Trimmer Positions to create a third tree crew to accomplish the expanded scope of services recommended; \$160,000. Create two new Horticultural Assistant positions to meet the demands to maintain the additional trees planted and implement a comprehensive watering and new tree maintenance program; \$120,000. Purchase one chipper truck, one brush chipper, and one utility dump truck for the horticultural crews; \$21,000 annual equipment replacement cost.
42. Establish benchmarks and report progress in an annual State of the Urban Forest Report to the City Manager and City Council.	High	N/A	N/A	Short-term goal.
43. Develop and implement an effective public outreach and education strategy and pursue it actively and consistently. Volunteers are a greatly untapped resource in this regard and should be a core part of this strategy.	High	N/A	N/A	Short-term goal.
44. Create a series of public service announcements on various urban forestry topics for radio, cable access television, and print news media outlets.	Moderate	N/A	N/A	Mid-term goal.

## Recommendation Matrix

Recommendation	Priority	Annual Cost Increase	Annual Cost Savings	Comments
45. Develop and distribute information about the proper care for trees after they are planted.	High	N/A	N/A	Short-term goal.
46. Promote the preservation and expansion of Alexandria's tree canopy with programs, such as seminars and neighborhood tree walks.	Moderate	N/A	N/A	Mid-term goal.
47. Increase support for and promote the expanded use of existing public resources such as the Cooperative Extension Service and the Tree Stewards and Master Gardeners of Arlington and Alexandria to provide assistance advice and educational opportunities and materials to the citizens of Alexandria.	High	N/A	N/A	Short-term goal.
48. Fund an additional extension agent at Virginia Cooperative Extension who would provide vital volunteer programming services for Alexandria's residents. This person would, among other tasks, work to expand Alexandria's role in the Tree Stewards of Arlington and Alexandria program, a group of volunteers trained by the extension service to educate and assist citizens on proper tree planting and care.	Moderate	\$70,000	N/A	Mid-term goal.
49. Promote the availability and distribution of information to the public about the selection, planting, and care of trees through the development of an effective website <a href="http://www.alexandriatrees.org">www.alexandriatrees.org</a> , and the publication of handbooks, fliers and other publications.	Moderate	N/A	N/A	Mid-term goal.
50. Encourage collaborative efforts with local schools of landscape architecture to study opportunities to improve streetscape, public open space, park, school, and facility designs.	High	N/A	N/A	Short-term goal
51. Create partnerships with allied businesses and organizations to share in the distribution of timely urban forestry information; partnerships could include: local realtors, utility companies, nursery and landscape companies, and tree services contractors.	Moderate	N/A	N/A	Long-term goal.
52. Create opportunities for citizens to become program volunteers for projects and program assistance, such as tree planting, small tree maintenance, teaching, grant writing, and marketing and public relations.	High	N/A	N/A	Short-term goal.



R. H. Simmons/Department of RPCA

# Chapter 1. Introduction

## THE URBAN FOREST

The urban forest includes all parts of the city where trees provide canopy cover.

For Alexandria, the urban forest includes all areas that are publicly owned where trees are growing, such as public rights-of-way, parks, schools, and other public facilities, and those areas that are



B. Carton/Department of RPCA

privately owned, including undeveloped open space and residential, commercial, industrial and institutional uses. Regardless of ownership or land use, all of the trees and other vegetation that make up Alexandria's urban forest are subject to the pressures of development and the demands of citizens for improved transportation, public facilities and services, as well as a cleaner environment and an aesthetically pleasing city.

*The urban forest is the complex system of trees and smaller plants, wildlife, associated organisms, soil, water, air, and people in and around our city. The urban forest surrounds us and contributes to the quality of our daily lives. It provides environmental, psychological, and economic benefits ranging from improved air and water quality to savings from decreased heating and cooling costs to aesthetically pleasing neighborhoods and increased resale values.*

*- Portland Urban Forestry Management Plan, Oregon*

The urban forest differs from a traditional forest in some significant ways because it is superimposed on a functioning city, but shares common traits with traditional forests. Most forest lands in the U. S. today are managed for multiple uses, primarily including recreation, timber or other resource production, watershed protection, and natural habitat. In the urban forest, the primary management function is to provide a natural backdrop for city life. Various parts of the urban forest have other more specific primary management objectives, but the natural characteristics of the urban forest mean that through management, the urban forest can serve the multiple functions of traditional forests more effectively while meeting urban needs.

## THE URBAN FOREST AND ITS MANAGEMENT

Similar to traditional forestry, the goal of urban forestry is to optimize the value of the trees in a given urban area. The urban forest has many functions in the city that contribute to its value. Trees are a critical component of the character of Alexandria. Tree-lined streets and boulevards, natural areas, parks and schools, and tree-filled residential neighborhoods reveal a place that its people care about deeply. The urban forest also has important environmental roles, including providing shade to minimize the need for cooling interior spaces and to reduce the urban heat island effect, limiting erosion from rainfall, reducing peak runoff during storms, and cleaning pollutants from the air. The urban forest provides important habitat for migratory birds and insects, and provides habitat for resident species of plants and animals. Plants are also important in counteracting the adverse effects of burning carbon-based fuels on the worldwide cycle of atmospheric carbon dioxide. More detailed benefits of the urban forest are provided in Appendix A.

It is difficult to place a dollar value on some of the benefits of the urban forest, but it is clear that street trees, streets in parks and plazas and around public buildings, and trees on private property add substantially to the value of private residential and commercial property. Recent efforts to quantify the dollar value of the urban forest for its contribution to improving water and air quality, and carbon sequestration, conclude that a community's urban forest is an asset of significant dollar value that should be preserved.

Tree canopy coverage and tree planting programs in urban areas are now being considered an integral factor in improving air quality in urban areas that are not in compliance with the National Ambient Air Quality Standards.

Increasing the value of Alexandria's urban forest to better accomplish these many functions is the objective of urban forest management. Successful management of Alexandria's urban forest depends on citizens and staff who are aware of its many values and are committed to enhancing the urban forest as a fundamental part of a great community. Management of the urban forest requires consideration of the total urban forestry environment—biological, institutional/social, and legal.

*Urban Forest Management is the art, science, and technology of managing trees, forests, and natural systems in and around urban areas for the health and well-being of communities.*

*-National Urban Forest Council*



Urban forest management can be best conducted under the direction of a plan identifying the vision and overall goals for each of the principal functions of the urban forest. Implementing the plan requires a strategy for meeting the needs identified, and budget and staffing to carry out the strategy in each of the City departments that have a significant role in the strategy. It may require the adoption of standards and guidelines where appropriate to guide public and private actions. It will require methods of measuring the characteristics of the urban forest over time to track its effectiveness.

### ***Alexandria's Urban Forestry Master Plan***

An urban forestry master plan is a strategic plan that establishes the overall vision, goals, objectives, and implementation tools for a community's comprehensive urban forestry program. Alexandria's Urban Forestry Master Plan is intended to provide the overall direction for a program



to protect, enhance, expand, and preserve the City’s overall tree canopy for the benefit of the community. The plan will help coordinate and improve the City’s existing tree management program and operations in ways that will support the sustained health of the urban forest.

The creation of the Urban Forestry Master Plan for Alexandria follows a trend in urban forestry to move from reactive management of individual trees—typically characterized by an emergency response approach to problems and complaints—to a proactive, systematic, and strategic focus on the urban forest system as a whole. While limited municipal funds for forestry programs often constrain proactive tree care, management and planning efforts can both establish the rationale for allocation of increased resources, and increase the efficiency of use of scarce resources, with a significant beneficial impact on the landscape.

Implementation of Alexandria’s Urban Forestry Master Plan will fulfill many of the goals presented in the Alexandria Open Space Plan. Most specifically it supports Goal 12 to “expand the Citywide street tree program and protect existing trees and woodland areas.”

With professional consultation from Davey Resource Group, the Alexandria’s Urban Forestry Steering Committee, City staff, elected officials, and citizens worked together to develop the plan.

The planning program included the following tasks:

- Review and analyze City policies, operations, programs, and services that address the planting, maintenance, protection, preservation, and removal of trees on private property and of publicly owned trees along City streets, in parks, riparian corridors, and on other public properties. Recommend changes based on the review and analysis.
- Review and analyze the City’s current urban forestry resources, planning policies, development regulations, construction standards, master plans, and other applicable documents and information.
- Perform on-site surveys of public trees on streets, in parks, and in other public areas.
- Obtain public input through interviews with City personnel, elected officials, various commission members, and other key stakeholders and through an internet-based public opinion survey and printed questionnaire.

The Urban Forestry Master Plan presented in this document reflects the input received throughout the Plan’s development process. Recommendations made are based on the conclusions of the analysis and community input, in combination with urban forest best management practices and current arboricultural standards.

### ***Public Participation***

The public was involved on multiple levels throughout the development of the Alexandria Urban Forestry Master Plan. Public meetings, interviews with public officials and department heads, and a questionnaire were used to gather the opinions and ideas of Alexandria’s residents which are described below.

A public meeting was held on January 18, 2006. During this meeting, the public was introduced to the goals of the plan. Participants were provided an opportunity to discuss urban forestry visions for the City in small group formats.



Each group provided comments regarding three topics: public trees, private trees, and education. For each topic participants were asked to identify:

- Critical issues and challenges facing Alexandria’s urban forest
- Next steps and solutions to improve and enhance Alexandria’s urban forest community
- General goals for Alexandria’s Urban Forestry Program and Plan

Thirty citizens, public officials, and members of Alexandria’s Urban Forestry Steering Committee participated in the first public meeting. The following is a summary of the key comments received at the public meeting. More specific comments received at this meeting are included in Appendix B.

- Improve coordination and operations of City agencies and programs.
- Improve maintenance of public trees.
- Desire for more trees on public properties and rights-of-way.
- Perform a tree inventory of public trees.
- Protect large specimen trees.
- Encourage and explore ways to preserve trees on private property.
- Encourage planting new trees.
- Educate contractors and utility workers.
- Address invasive species problems in parks.
- Continue and expand programs such as the City-sponsored tree sales, tree steward program, master gardener programs, and Living Landscape Program.
- Expand the information available on the City’s website for public education.

A questionnaire was developed and distributed at the public meeting and posted on the Internet using the website [www.surveymonkey.com](http://www.surveymonkey.com). A news release was prepared by the City after the public meeting to inform the public of the process for developing the Urban Forestry Master Plan and to provide them with the website information needed to complete the survey. In addition, a link to the survey was made available on the City’s website. A total of 267 people responded to the survey. Specific results of the survey and other components of the public process are presented in Appendix B. The key results of the public survey are as listed here:



- Trees make the City a better place to live and work.
- It is fair to require developers to preserve and/or plant trees on their projects.
- The City should plant more trees along City streets and on public property.
- There is a need to create a master tree plan and plant more trees along City streets and on public property.
- The City’s urban forest and its future are very important.

## VISION AND GOALS OF THE PLAN

With the implementation of the plan, Alexandria’s vision for the urban forest of the year 2020 is:

Alexandria’s urban forest in the year 2020 is extensive, healthy, and highly valued—a model for densely developed urban areas. It is the product of a sustained energetic partnership between City government and informed and educated private groups and individuals.

### *Vision*

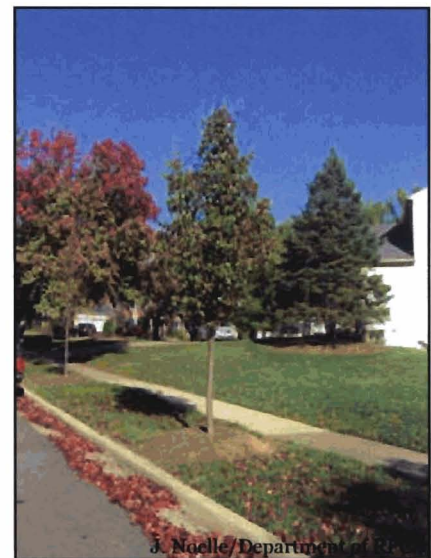
The vision for Alexandria’s urban forest is captured and expressed by these terms:

- Extensive—Tree planting is maximized, to the extent practical, on public and private land.
- Healthy—All trees are properly planted and well-maintained.
- Highly Valued—Citizens recognize the environmental benefits of trees and their contribution to the City’s livability, reflected in the taxpayer support for significant public funding.

### *Goals*

As a result of the planning process, the following goals have been established for the Alexandria Urban Forestry Master Plan:

- Achieve the goals and carry out the implementation strategies of the Alexandria Open Space Plan, the Recreation, Parks, and Cultural Activities Strategic Plan, and the 1992 Master Plan related to landscape trees and urban forest ecosystems.
- Develop a master planting plan for all public properties responsive to the Alexandria Open Space Plan, adopted area plans, and park plans to provide direction for planting trees along streets, in parks, schools, and other public properties. The Plan should identify the conceptual design objectives and appropriate planting characteristics for each of the major features of the urban landscape, including major transportation corridors, boulevards and parkways, other City streets, parks, plazas, natural open spaces, and school properties.
- Ensure that the protection and management of the urban forest are citywide priorities.
- Develop an integrated, coordinated approach to the management of the urban forest that is supported by all concerned organizations, City departments, businesses, developers, community and civic groups, and citizens. Accomplish this through enhanced communication, volunteerism, and social equity.
- Secure sufficient funding and management resources to maintain and enhance the urban forest.
- Ensure that the urban forest is sustainable by maximizing and expanding the urban tree canopy through tree planting to produce a multi-aged and diverse tree community.
- Enact the plan’s recommendations using education as the primary means of implementation, incentives as the next, and regulations as the last resort.
- Develop a plan that is adaptable and responsive to change, providing recommended benchmarks and schedules for implementation.





Alexandria Library, Special Collections

## Chapter 2. Alexandria's Urban Forest

### HISTORY OF URBAN FORESTRY IN ALEXANDRIA

The social, economic, and political history of Alexandria began in 1654 with development on 700 acres in what is now Old Town. As trade and commerce expanded, so did the City, and by 1749, it was officially established and named after previous landowners and eventually chartered as a city in 1852.



The City was planned and developed following a grid pattern. This popular urban development scheme has its basis in the typical eighteenth century conviction that rational order could be imposed upon nature. The grid served the commercial life of Alexandria well, and since it was expandable, it was subsequently extended several times to accommodate the growth of the City.

Primarily a port, industrial center and transportation hub, the prominence of Alexandria as a residential community did not develop until the 1930's with the annexation of the Town of Potomac (now Del Ray) northwest of Old Town, and the annexation of land west of Quaker Lane in 1952.

Compared to Alexandria's rich natural, political, and cultural history, the City's recognition and appreciation of its trees and urban forest are relatively recent. Early street tree planting efforts in Alexandria were sponsored by the Alexandria Chamber of Commerce and the Old Town Civic Association in the 1950's with the installation of trees at the Barrett Library and in Old Town.

The political will to protect trees and regulate the planting, maintenance, protection, control, and removal of trees, shrubs, plants and vegetation in the City of Alexandria was codified 1956 with the passage of Alexandria's first tree ordinances, limiting the removal, destruction or mutilation of trees planted on public property, including trees planted within the City's rights-of-way. Ordinance Number 902 called for the Director of Public Works to devise and place in force a master tree, shrub, plant, and vegetation plan for the City. In 1963, the general management of all trees, shrubs, plants, and vegetation covered by the previous ordinance were reassigned to the Director of the Department of Parks and Recreation.

The first City Arborist was hired in 1959 when City tree maintenance crews were established to plant and maintain trees in the public rights-of-way, parks, and on other public properties.

Measures to protect healthy mature trees on private property were first adopted in 1978 with the passage of Ordinance 2290, which established regulations prohibiting the removal of trees on private properties that are subject to site plan or subdivision regulations. This ordinance was the first to provide for the designation of specimen and historic trees on private property and prohibited their removal. In addition, the ordinance provided for the replacement of trees as a condition of permitting the removal of trees on private properties subject to subdivision and site plan regulations.

One measure of the success of Alexandria's existing urban forestry program has been the City's designation for 23 consecutive years as a Tree City, U.S.A. as recognized by the National Arbor Day Foundation. The City has also received two Growth Awards from the National Arbor Day Foundation for its continued efforts to improve and expand its tree maintenance program.

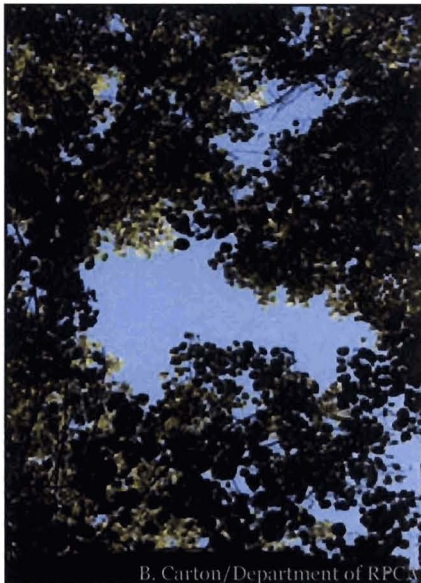
## SUMMARY OF ALEXANDRIA'S EXISTING URBAN FOREST CONDITIONS

### *Overall Canopy Cover*

The City's tree canopy cover is decreasing. A study of the City's tree canopy using City Green, a program developed by the nonprofit group American Forests, indicated that in 2001 tree canopy covered approximately 34% of the City. A more recent study conducted by the GIS Division of the Department of Planning and Zoning found that the City's tree canopy cover was 30% in 2007.

In 2001 the tree canopy coverage of the more suburban Northridge Community was estimated to be 63%. The 2007 study indicates that the canopy coverage of Northridge decreased to 57%. Similarly, the tree canopy cover of the Del Ray community east of Commonwealth Avenue was reduced from 31% in 2001 to 27% in 2007. Del Ray west of Commonwealth Avenue changed from 45% to 39% during the same period. Figure 1 on page 3 shows the results of the City's tree canopy cover analysis of designated test plots using 2001 and 2007 data.

Canopy loss throughout the City may be explained by development of properties and an increase in residential additions and redevelopment, decline and loss of mature trees as a result of environmental conditions including drought, storm damage, and disease, and the loss of trees during road improvements, particularly those associated with the Woodrow Wilson Bridge Project.



This loss of the tree canopy coverage clearly indicates that the City must be proactive and support programs to plant additional trees on public and private land, and increase its efforts to promote the health and longevity of its existing tree canopy. This is most urgent if the City is to achieve the suggested goal of 40% tree canopy coverage suggested by American Forests.

### *Ownership and Land Uses*

The trees that make up Alexandria's urban forest can be divided into four categories based on the ownership and land uses in the areas in which they are growing. These land use categories are: public trees, institutional and semi-public trees, private trees, and trees growing along stream valleys and in natural areas. Public trees can be divided into subcategories of street trees, trees growing in parks, public open spaces, public facilities and properties, and trees located on school properties. All of the trees in each of the categories

contribute to Alexandria’s urban forest; however, our ability to preserve existing trees, promote planting of additional trees, or influence their management and maintenance is directly affected by the ownership of the property, and the economic, environmental, and social pressures to which they are subject.

#### Overall Public Tree Population

Alexandria has a significant public tree population. It is estimated that there are 17,000 street trees, and possibly over 50,000 trees in parks, schools, public open space, and on other public properties.

#### Street Trees

There are approximately 220 street miles in Alexandria. Using the average for eastern U. S. cities of 100 trees per street mile, Alexandria has a potential street tree population of 22,000. It is estimated that Alexandria has 17,000 existing street trees, which is approximately a 77% stocking level for the street tree population. Of the existing street trees, nearly 7,500 have been mapped, assessed, and added to a computerized inventory. This inventory effort continues as time and resources allow.

The hierarchy of the City’s streets, their profile, and construction standards each influence the species, number, and survival of trees planted in treelawns, medians, and tree wells along public rights-of-way. Arterial streets, parkways, boulevards, and residential streets present different opportunities and constraints for street tree sustainability.

Alexandria recognizes and respects the importance of street trees and actively plants and maintains them for the many benefits they provide. However, in the right-of-way setting, trees must share limited space and compete with underground and above ground utilities, sidewalks, curbs, and vehicle, pedestrian, and building clearance needs.

Major thoroughfares, such as King Street, Braddock Road, Henry Street, Patrick Street, and Duke Street, carry high volumes of traffic resulting in more paved surfaces and wider sidewalks, limiting open space for trees and requiring more stringent sight and vehicular clearances for public safety. Particularly in the historic parts of Alexandria, some of these roadways have been widened to accommodate traffic, or sidewalks widened for pedestrians in retail districts, without acquiring right-of-way to maintain adequate space for trees. De-icing chemicals, automobile exhaust, and other pollutants contribute to an inhospitable environment for tree growth and survivability.

Trees on secondary, yet highly developed streets, such as those in Old Town and sections of Mount Vernon and Commonwealth Avenues, also compete with public infrastructure, utilities, and buildings where space is at a premium.

Streets through residential areas such as Del Ray, Seminary Valley and others are better able to support the growth of street trees because there are wider treelawns, fewer building, infrastructure and utility conflicts, less hostile environmental pressures, and a degree of protection and voluntary maintenance provided by adjacent private property owners.



Unique transportation and urban forestry resources in Alexandria are found on the City's parkways and boulevards. Holmes Run, Fort Williams, Francis Hammond, George Washington Memorial, Timber Branch, Yoakum, and Taylor Run Parkway are historic public rights-of-way that traverse significant parks and greenways. Trees planted and properly maintained on these parkways can make a significant and long-lasting contribution to the overall forest canopy and will create more pleasing, successful, and vibrant routes between the greenways, residential areas, and their surrounding communities.

Monticello Boulevard, Old Dominion Boulevard, and large sections of Commonwealth Avenue are examples of wide, historic residential streets that support a significant and vital urban forest. Due to their design and the qualities of the abutting properties, rights-of-way like these can be enhanced for the preservation of the City's canopy cover and maximization of urban forest benefits and should be considered as linear parks.

#### Parks, Schools, and Open Space Trees

Park trees have not been inventoried, but appear to be relatively well-stocked and diverse in terms of age and species composition. Fort Ward Park is a highly popular park and heavily used. Its many visitors enjoy the historical site, museum, amphitheater, walking trails, and the City's official arboretum. Most of Alexandria's large canopy trees are found in the parks along with a variety of well-planned landscapes.

The urban forest components of other public open spaces have not been inventoried or assessed in detail. However, key issues, such as tree maintenance, tree preservation, reforestation, and exotic vegetation control, should be addressed. The Alexandria Open Space Plan provides an assessment of these areas and recommends that the natural resource areas, recreational sites, rivers and streams, and environmentally sensitive areas be protected and enhanced.

The public school system, a major property owner in Alexandria, has significant land and urban forest resources, but the condition and quality of the trees on school properties are in many cases poor. Public school properties are important community green spaces and should be managed for the benefit of the neighborhoods in which they are located. Many of Alexandria's largest open space areas connect directly with school properties.



B. Carlton/Department of RPCA

#### Institutional and Semi-Public Tree Population

According to a 1990 land use analysis, nearly 868 acres, or 11%, of Alexandria's developed land, is in institutional use. This includes properties owned by private schools, churches, cemeteries, and hospitals. Typically, these properties are large tracts with buildings, roads, parking lots, and open landscapes that support numerous trees.

There are significant tree populations on privately held institutional lands, such as the Episcopal Seminary and High School, St. Stephen's and St. Agnes Schools, Alexandria Country Day School, INOVA Alexandria Hospital, and numerous churches. The Open Space Plan identifies these tree areas as critical to preserve. Nevertheless, in the last several years, significant tree stands have been lost to both storms and development activities with no apparent replacement programs in place. This significant loss of urban forest has had a major impact on the City's canopy cover.



### Private Tree Population

According to the Virginia Division of Forestry, private individuals own nearly 80% of the rural forests in Virginia. Mimicking this pattern, the vast majority (90%) of Alexandria’s urban forest is located on private property or property not under direct control of the City. Based on land area and canopy coverage, and using U. S. Forest Service estimates, potentially 500,000 landscape and woodland trees are in private ownership in Alexandria.

Non-public trees comprise the bulk of the urban forest in every city. Yet trees on private property typically do not receive routine professional arboricultural maintenance, are not planted or managed for the long-term benefit of the community as a whole, and their removal is not regulated.

A significant portion of Alexandria’s existing mature tree canopy is on private property, and more specifically on residential property since 50% of the land use in the City is classified as residential. The older, more established neighborhoods have historic and post-war smaller housing units that were built on relatively large lots. This situation allowed for landscape trees planted 40 to 80 years ago to flourish and become the dominant component of the forest canopy.

Today, the high quality of life in Alexandria, as well as the many other amenities and benefits of the City, have created a high demand for increased residential and commercial use of existing properties. Larger residential lots are being redeveloped, vacant land is being developed at an increasing rate, and the population continues to rise at a steady pace. These trends and activities place high pressure on the private tree populations, eliminating many trees and reducing the vitality and service lives of those that remain. Preventing a significant loss of tree canopy cover on private property will be a challenge for the future. Maintaining awareness of the extent of private canopy cover is an important reason to monitor the City’s overall tree canopy cover using aerial imagery.

### Stream and Natural Areas Tree Population

The Alexandria Open Space Plan identified rivers and streams and natural resource areas as important components in the City’s open space network. The Alexandria Open Space Plan revealed that many of these sensitive areas are not connected to other open space amenities, have been degraded in the past, and are small in size and number. The tree resources along streams and in natural areas has been significantly reduced, entirely eliminated, or degraded with exotic species.

The Alexandria Open Space Plan recommended these solutions to protect and expand the streams and natural areas of the City:

- Expand stream valleys
- Maintain streams in a natural condition
- Increase vegetation
- Restore natural areas
- Perform significant reforestation

The reforestation, expansion, and appropriate management of stream and river corridors and of natural areas, will provide all the benefits indicated in the Alexandria Open Space Plan—improved water quality, stormwater and erosion control,



educational opportunities, and aesthetics. In addition to these benefits, the reforestation and proper management of these areas will also result in a significant increase in protected tree canopy. This riparian tree canopy not only benefits the immediate riparian area, but also collectively benefits the City and citizens in other ways, such as air pollution abatement, temperature moderation, and increased property values.

## REGULATORY CONTEXT

The City’s urban forestry program is governed and guided by a variety of City ordinances and strategic plans. Ordinances found in Title 6 Chapter 2, Trees, Shrubs, Plants, and Vegetation; Title 5 Chapter 11, Gypsy Moth Control; the Zoning Code; the Environmental Management Ordinance; and the recently revised Landscape Guidelines define the primary regulation of the trees on public and private properties.

Section 6 of the City Code gives the Director of Recreation and Parks the authority to prepare and implement a “master tree, shrub, plant, and vegetation plan for all or any portion of the public places within the City, except public school sites.” The turf and tree maintenance of schools was added to the responsibilities of the Department of Recreation, Parks and Cultural Activities in 2007.

Strategic plans including the Recreation, Parks, and Cultural Activities Strategic Plan, the Alexandria Open Space Plan, and the 1992 Master Plan support and define objectives and goals for the program. The Department of Recreation, Parks, and Cultural Activities has the primary responsibility for implementing the Recreation, Parks, and Cultural Activities Strategic Master Plan and has major responsibility for implementing the Alexandria Open Space Plan. Both of these plans include clear goals and objectives that directly affect large portions of both the public and private urban forests.

The decisions, policies, and actions of the Park and Recreation Commission, the Beautification Commission, the Open Space Advisory Group, and the Waterfront Committee also have significant influences on the urban forest in the City.

Detailed descriptions of these regulatory and planning documents are provided in Appendix C.



## CURRENT PROGRAM MANAGEMENT AND OPERATIONS

Management and operations of Alexandria’s urban forestry program are organized in the Department of Recreation, Parks, and Cultural Activities. Activities within this department include the maintenance or removal of trees located on public properties including those located along the public rights of way, trees in parks and on school and library properties, stream valleys and other public open spaces. While the department has primary responsibility for the care of trees, other City departments and entities also play significant roles in promoting the health and longevity of trees within the City on both public and private properties.

## ***Department of Recreation, Parks, and Cultural Activities***

### **Management**

The Department of Recreation, Parks, and Cultural Activities has overall responsibility for management of all the City-owned parks and recreation facilities, recreation and cultural programs, and for management of the City's street trees located in the public right-of-way. The Department is responsible for development of plans, programs, and policies for open space, parks, recreation, and cultural activities for adoption by the City Council. The Department provides staff support to the Park and Recreation Commission, the Open Space Advisory Group, the Beautification Commission, and the Waterfront Committee. The Department is responsible for implementing the Open Space Plan, the Strategic Master Plan for Open Space, Parks, and Recreation, and the City's Landscape Guidelines. The Department participates in interdepartmental review of major development projects with emphasis on parks, recreation, open space and urban forestry issues. It develops plans for park improvements and works with the Department of General Services on design and construction of park and recreation facilities.

Long-range planning functions are performed by the Park Operations and Capital Development Division, which includes maintenance and operational sections as well as the Park Planning Section and Natural Resources Section.

### **Urban Forestry Management**

Daily management of the public urban forest is the responsibility of the Natural Resources Section. The Arborist Office is staffed by the City Arborist and two Arborists. The City Arborist and staff include Certified Arborists, and Municipal Specialists, certified by the Society of Municipal Arborists and the International Society of Arboriculture.

The Arborist Office is responsible for completing a variety of tasks on a daily basis and administering all levels of the program. In addition, the Arborist Office conducts site plan and landscape plan reviews, as well as site inspections as needed to assist Park Planning staff, the Departments of Planning and Zoning, Transportation and Environmental Services, Code

Enforcement, Historic Alexandria, and others to determine the impact of proposed development on existing vegetation. Following completion of a development, the Arborist Office is required to conduct as-built plan reviews and comment on the completeness and condition of the installed landscape. Development and site plans go through multiple stages of review, often requiring multiple site visits and meetings with City staff, applicants, and the public to address concerns raised by all parties.

The Arborist Office conducts an annual gypsy moth egg mass survey, and as needed, identifies treatment blocks and prepares required docket and program submittals to participate in federally funded and state-administered gypsy moth suppression programs. The Arborist Office is also charged with annually soliciting for the donation of a large evergreen tree that is to be used as the City's holiday tree installed yearly at Market Square.

Finally, the City Arborist and staff regularly meet with members of the public, attend public meetings, and make presentations to civic groups, City commissions, and to the City Council.



## Tree Maintenance and Removal Operations

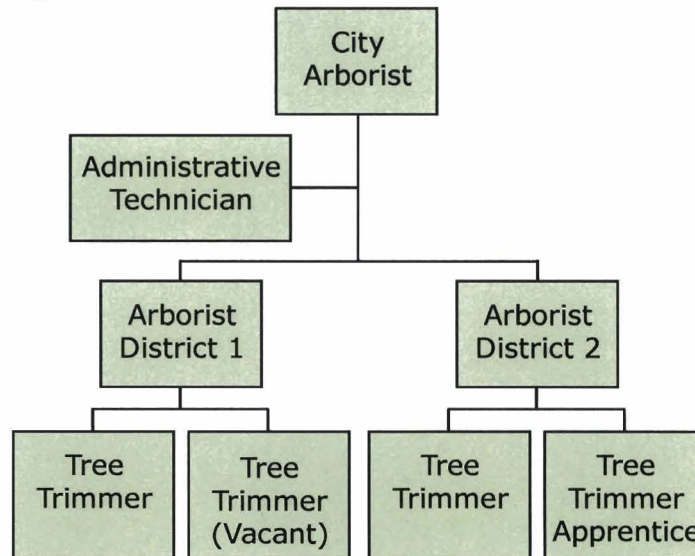
Tree maintenance and removal operations are carried out by City and by contracted tree crews. The City's tree crews are equipped to perform almost any tree maintenance task, however, they are usually assigned to complete high priority tasks, such as improving visibility at stop signs, removing low, hazardous or dead limbs over streets and sidewalks, and assisting other City departments when tree maintenance is required on projects such as street paving and alley clearance. City tree crews are the first to be called to respond to emergency calls involving trees from the police and fire departments at all times.

When fully staffed, the City's tree maintenance crews consist of three full-time tree trimmer positions and one tree trimmer apprentice position. These crews are equipped with two aerial lift trucks with chipper boxes and chippers, one stump grinder, two hydraulic sprayers, and required hand and power tools.

Contract tree crews are used to perform the bulk of the tree pruning and removals along City right-of-way and at City facilities. Work is completed for fixed unit prices based on the size of the tree and the task. These tasks include pruning, tree removal and tree planting. Contractor crews may also be required to perform tasks on a time and materials basis as requested by the Arborist Office and based upon hourly unit prices for the required personnel and equipment.

In addition to regular tree maintenance and removal tasks, holiday lights and decorations are installed by the City and contract tree crews from the beginning of October to the end of November.

**Figure 2.**  
**City Arborist Office Organization Chart**



## *Department of Transportation and Environmental Services*

This Department has direct responsibility for public infrastructure, public right-of-way, and environmental services. Every division in the department directly or indirectly affects the urban forest through their specific missions and daily operations.

The Construction and Inspection Division manages capital improvement projects; administers contracts for curb, gutter, and sidewalk repairs; administers and coordinates utility work within public rights-of-way; issues excavation permits; inspects all bonded development work; and enforces the soil erosion control ordinance. Public trees can be positively or negatively affected by these actions.

The Engineering and Design Division reviews site plans to ensure that construction is in compliance with the City's engineering standards and policies, and the stormwater management detention and water quality requirements of the Chesapeake Bay Preservation Ordinance.

The Office of Environmental Quality (OEQ) is responsible for the environmental programs designed to protect the public's health, safety, and welfare. The division safeguards the City's environment by regulating air, water, soil, and noise pollution. OEQ administers the Environmental Management Ordinance (Article XIII) which protects and enhances buffer areas (forested and non-forested) along perennial and intermittent streams and requires the implementation of Best Management Practices in developing or redeveloping properties in order to fulfill the requirements of the Chesapeake Bay Protection Act.

*The Chesapeake Bay Act is based on the premise that healthy state and local economies and a healthy Chesapeake Bay are integrally related; balanced economic development and water quality protection are not mutually exclusive. The goals of Alexandria's Urban Forest Management Plan will support the regional efforts to meet the Program's tree canopy goals as a way to improve and expand forested watershed functions in developed areas.*

OEQ actively initiates outreach to make the public aware of the importance of their actions in reducing nutrient loading to the Bay and how they can be better stewards to the environment. The public urban forest contributes significantly to this division's mandates and responsibilities.

The Division of Solid Waste provides refuse and leaf collection services and recycles the leaves for mulch. The mulch is made available in the spring to residents.

The Maintenance Division provides maintenance and repairs for all City sewers, streets, sidewalks, and fire hydrants, maintains the carrying capacity of streams, function of the weirs, and provides floodway capacity while minimizing any adverse environmental impacts along the stream banks/beds, and enhances the ecology and environment in and around our aquatic resources wherever possible. It maintains stormwater pollution removal facilities and conducts snow removal and flood control operations. This division coordinates with other City agencies and other divisions within the Department of Transportation and Environmental Services to respond to weather-related emergencies, such as unusually heavy snowfall and rain, floods, high winds, and hurricanes, and assists in both emergency management and clean-up following these events. Clearly, public trees are involved in a majority of this Division's responsibilities.

### ***Department of Planning and Zoning***

The Department of Planning and Zoning develops and provides policy recommendations to the Planning Commission and the City Council for the orderly growth and development of the City as envisioned by the community through the Master Plan and Small Area Plan process. It implements this policy through recommendation of zoning and development regulations, and management of and participation in, the interdepartmental development review process for new development and redevelopment. It enforces the adopted



zoning and subdivision regulations and conducts inspections on construction sites, to ensure that developments conform to project conditions and City regulations and to ensure protection of public health, safety, and general welfare. These responsibilities affect both public and private trees that make up Alexandria’s urban forest and, therefore, have a significant influence on the development and long-term preservation of the City’s tree canopy cover.

The City’s development regulations include requirements for open space in residential and mixed-use development, and require installation of street trees in large projects. Underground utilities and street tree plantings are required in most major projects. The department works with other City agencies to preserve resource protection areas established under the Chesapeake Bay Protection Act, to minimize the creation of new impervious surfaces in the City, and to require the planting of trees to maintain and increase canopy cover in the City.

***Other City Departments***

Other departments within the City that influence the planting and preservation of trees on both public and private property include the Office of Building and Fire Code Administration under the Alexandria Fire Department, the Department of General Services, Office of Historic Alexandria, and Alexandria City Public Schools.

The Office of Building and Fire Code Administration is responsible for managing the review and issuance of building permits and ensuring that there is a smooth transition for a development project from final site plan approval to building permit review, approval, and inspection.

The Department of General Services is responsible for all public buildings and facilities. Design for new building construction and the rehabilitation of existing facilities often affects existing trees and the installation of new trees.

Second only to the Department of Recreation, Parks, and Cultural Activities in area of open space managed, Alexandria City Public Schools controls all school grounds within the City, and therefore can play a significant role in the development of the City’s urban forest.

***Commissions, Committees, and Volunteer Programs***

The City also supports other boards and commissions. The decisions, policies, and actions of the Planning Commission, Board of Architectural Review, Board of Zoning Appeals, Urban Design Advisory Committee, and neighborhood committees and plan task forces can all influence the development and preservation of Alexandria’s urban forest.



Volunteer programs specifically oriented to trees and the urban landscape, such as the Beautification Commission, Tree Stewards of Arlington and Alexandria, and Virginia Tech Cooperative Extension’s Master Gardener program, also exist to help and support the urban forest in the City, but are underutilized at this time.

## **Public Utilities**

The installation and maintenance of public and private utilities, including communication, power, gas, water and sewer, can significantly affect the health and appearance of the City's street trees. Of these, overhead wires for electric, telephone, and cable television services present the most visible obstacle to planting and maintaining quality shade trees along City streets. Line clearance operations performed by utility companies are completed on a regular rotation in order to minimize service disruptions caused when tree branches grow and come into contact with energized wires. The severity of the pruning required is determined by the length of the rotation period and the anticipated growth of the trees. Repeated line clearance pruning often leads to a decline in the health of the trees and the destruction of their natural form and appearance. Lower growing and ornamental trees are now being planted under utility wires to minimize this conflict. However, these trees contribute less to the overall canopy coverage of the City, and often create new conflicts with vehicular and pedestrian traffic due to their lower branching habits.

Underground utilities, while less evident, may also conflict with the healthy development of City street trees because of the limited space available in the public right-of-way. New installations and repairs to underground services often result in significant damage to tree root systems, putting the health and stability of the trees in jeopardy. Excavation within their root zones causes damage to feeder roots as well as structural roots that support the trees. Service lines often occur in close proximity and even directly beneath street trees, making root disturbance during repairs unavoidable.

Efforts to place overhead utilities underground will eliminate many above-ground conflicts and develop a more natural habit with fuller crowns that are not subject to line clearance operations. It should be recognized that the process of installing overhead utilities underground will create other challenges to trees beneath the surface of the right-of-way.

The placement of trees within the City's right-of-way should be made with due consideration of the location of overhead and underground utilities; however, avoiding these conflicts completely is an unrealistic goal that would significantly reduce the valuable crown coverage, and associated environmental and aesthetic benefits provided by the City's street trees.

The public has the greatest influence on the development, maintenance, and preservation of Alexandria's urban forest. The public, including City residents, property and business owners, commuters, and visitors, influences the trees and canopy cover on both public and private land. Maintenance, removal, and planting of trees on public property are primarily driven by requests from the public.

Residential property owners influence the majority of the City's canopy cover through the decisions they make to care for, remove, or plant trees on their properties, particularly in areas of the City like Northridge where the tree canopy cover exceeds 50%. For many residential property owners, the desire to live among mature shade trees is challenged by the desire to improve their properties and upgrade their homes.

The public further influences the urban forest through its ability to participate in public processes regarding development. The public also has the ability to engage political influence in these and other matters that may affect the urban forest.





J. Noelle/Department of RPCA



## Chapter 3. Analysis and Recommendations

There is great potential for expansion and improvement of the City's urban forest. In order to evaluate the potential for improvement and develop recommendations to achieve it, the City conducted an analysis of its current plans, policies, and programs that affect the future of the urban forest. This section reports on the result of that analysis, identifies areas for potential improvement, and evaluates the improvement that is achievable through various actions.



J. Noelle/Department of RPCA

### OVERALL CANOPY COVER

#### *Issue*

Potential loss of citywide canopy cover.

#### *Analysis*

As indicated by the City Green analysis, Alexandria's tree canopy covered approximately 35% of the City in 2001. Most of the tree canopy is provided by mature oaks and other native trees growing on private property in established single-family residential areas, such as Northridge and Del Ray. In recent years, many trees have succumbed to the natural pressures of age and the environmental stresses of drought, insects, and diseases. Many new and long-time residents who are attracted to these communities because of the trees now find that they require larger, more updated homes, which requires the removal of mature trees to accommodate new houses, building additions, and other improvements.

American Forests recommends an average of 40% tree canopy for communities in the Chesapeake Bay region, and most urban foresters and other eastern cities agree with this overall goal. This goal is based on tree benefit studies, technological advances in urban forest measurement, and an evolution of thinking about how and why we quantify the urban forest. This goal appears to be the point where environmental benefits of trees are maximized, such as community-wide goals for clean air and water, and a balance is established between development and the natural environment that contributes to a high quality of life in a city. Achieving the goal of an overall 40% canopy cover is not without its challenges in Alexandria. New development of both commercial and residential properties throughout the City may not provide enough open or planting space to expand or even sustain Alexandria's existing tree canopy. There are currently no efforts to monitor and track increases or decreases in the City's canopy cover.

An additional challenge to the sustainability of the overall forest canopy in Alexandria is the species diversity. Species diversity enables a tree community, as a collective whole, to survive natural epidemics due to environmental or biological

factors. Urban foresters know the value of planting and maintaining a wide range of species, including both native and non-native, urban-tolerant trees species. Planting a large number of trees of the same species creates a monoculture and can lead to catastrophic results. A good example of this situation was the dominance of American elm (*Ulmus americana*) in American cities in the early 1900s. When Dutch elm disease (*Ceratocystis ulmi*) arrived in the United States in the 1930s, the resulting tree losses were devastating. Similar scenarios are now foreseeable due to the effects of the Asian long-horned beetle, gypsy moth, and emerald ash borer.

**Goal**

Increase Alexandria’s tree canopy.

**Recommendations**

1. Adopt American Forests’ recommended tree canopy coverage goal of 40% and develop a citywide strategy to meet this goal.
2. Perform tree canopy coverage analysis every five years using City Green or other comparable programs to determine changes in canopy cover and impervious surfaces.
3. Sustain Alexandria’s existing tree canopy through a comprehensive tree replacement and maintenance program for trees on public property and by developing new and promoting existing educational resources for the public.
4. Plant 400 more trees per year above what is currently being planted annually on public properties, including City rights-of-way, schools, libraries and other public facilities.
5. Actively seek ways to increase Alexandria’s tree canopy on private property.
6. Establish a tree bank to plant trees on both public and private properties. The bank would be funded through various sources such as development-related activities, property damage reimbursements, and other sources.
7. Create a grant program to permit the use of City funds to subsidize all or a portion of the cost for planting trees on private property.
8. Continue the City’s spring and fall tree sales program (established in 2005 under the auspices of the Urban Forestry Steering Committee).



9. Achieve and maintain a species diversity where no single genus comprises 15% and no single species comprises 5% of the total population.
10. Work with local civic and business groups to identify opportunities to plant additional trees on public and private lands.
11. Take steps to incorporate the use of more sustainable approaches to environmental design, such as rooftop gardens, to provide additional benefits for the City’s overall canopy on private as well as public properties. Green roofs can provide some of the functions of forested areas including carbon fixation, shading, cooling, and watershed protection. Green roofs on underground parking structures can provide ground-level open space that is important to the continuous open space network.

## OVERALL PUBLIC TREE POPULATION

### *Issue*

There is an incomplete strategy for management of all public trees.

### *Analysis*

Alexandria's public trees include street trees, those in parks, those located on public school properties, and on other public lands. While there has been a continuing effort to quantify the number and condition of the City's street trees, no similar efforts have been made for trees in parks, schools, and other City facilities. Maintenance of the public trees focuses on street trees. Tree maintenance in other public areas is generally conducted as a result of weather-related damage or when a tree dies or presents a hazard to the public.

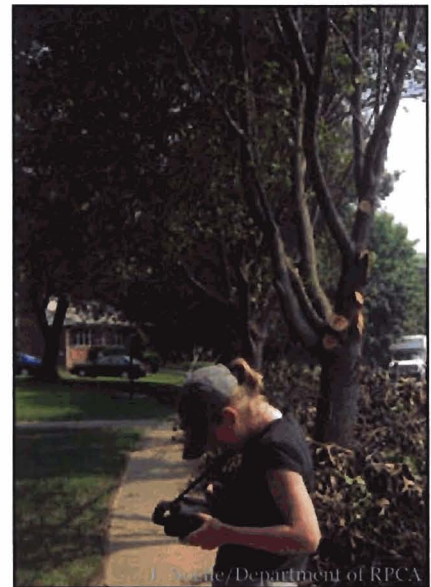
The cursory inspection of Alexandria's public trees indicates that they are in fair to good condition. The City has no procedures for evaluating the overall health of its public trees.

### *Goal*

Develop comprehensive management plans for all trees on public lands including a street tree inventory and inventories of trees located in public parks, schools, and facilities.

### *Recommendations*

12. Conduct an inventory of all trees located in the public rights-of-way, in parks, on school properties, and at all other public schools and facilities. The inventory should be completed and reviewed on a continuous five-year schedule or as changes occur.
13. Develop and implement master landscaping, planting, and maintenance plans for all public properties, including City rights-of-way, schools, libraries, stream corridors, and open spaces, and implement one to two of these plans each year. These plans should provide maintenance rotations and establish level-of-service standards for each land use type. Plans should also include strategies for regular inspections of trees, criteria for treatment, and practical methods to maintain current information all on trees subject to treatment. Coordinate with the Departments of Transportation and Environmental Services and Planning and Zoning to ensure plans are consistent with existing transportation and area plans.
14. Develop quantitative methods to evaluate the overall health of Alexandria's street trees and trees on public properties.



## STREET TREES

### *Issue*

There is a high public demand for a healthy public street tree population. However, many physical challenges to planting and maintaining a healthy population exist.

### *Analysis*

Street trees in Alexandria face many environmental challenges and physical barriers due to the limited dimensions of the planting strips and tree wells. Narrow rights-of-way, sidewalks, curbs and gutters, and under- and above-ground utilities often limit the space required to permit the healthy and unobstructed development of street trees. Planting strips along residential streets are often less than three feet in width and conflicts between tree roots and surface infrastructure regularly occur and are not easily resolved.

Despite the deficiencies in their growing spaces, many of Alexandria's street trees seem to defy the accepted arboricultural conventions of what trees require for growth, and have become fundamental components in defining the character and ambience of its neighborhoods and commercial districts. A higher priority is placed on satisfying the community's desire to have street trees rather than following accepted tree planting standards and arboricultural best management practices regardless of the potential conflicts that may be created. If the demands of the community for more street trees are to be met, then policies and maintenance practices that accommodate the challenges of the planting conditions must be adopted and funded.

Current tree removal policies do not fully consider or address the potential and existing damage that the roots of street trees cause to sidewalks, curbs, and gutters, or how the repair of these hardscape elements affect the health and stability of the trees. Some street trees may be pruned one or more times as their health declines before they are considered for removal. As a result, additional funds are being spent on street and curb repair and the maintenance of trees that will continue to decline rather than on improving trees that are in good health and would benefit from an ongoing maintenance rotation. Earlier replacement of trees that are likely to become problems for infrastructure would reduce infrastructure maintenance costs and result in a healthier tree canopy.



Street tree maintenance is performed predominately in response to citizen requests, public repair and improvement projects, and storms. This reactive approach to the care of the street trees results in higher costs and an uneven level of care provided to the trees in the stand. Recent increases in funding for tree maintenance have led to programmed maintenance rotations along major arterial streets and in some neighborhoods to a limited extent. There is currently no detailed plan for the maintenance of all street trees throughout the City.

The City's street tree planting program is primarily focused on the replacement of trees that have been removed. Tree replacement may not occur in circumstances where spacing between trees is deemed inadequate and where residents indicate that they do not want a tree planted adjacent to their properties. The City does not have a street tree planting plan; therefore, many opportunities to plant trees are overlooked.

**Issue**

The current street tree population is characterized by a lack of species and age diversity.

**Analysis**

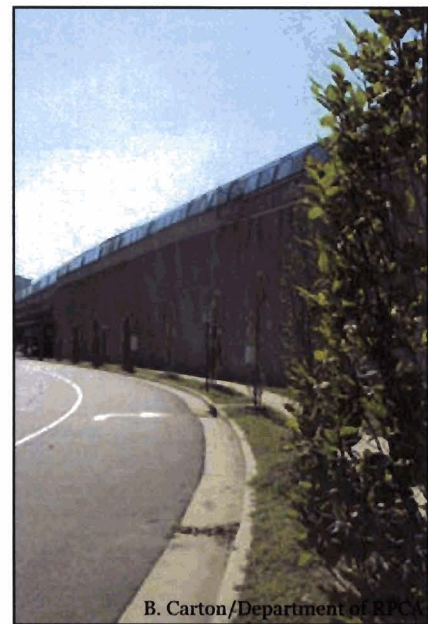
Current species diversity of Alexandria’s public street population is limited. Predominant street tree species include oaks, maples, and ornamental pears. Pears comprised nearly 30% of the inventoried trees. In addition, Alexandria’s stand of street trees is comprised primarily of either very young trees or old trees and lacks individuals of ages in between.

**Goal**

Improve the health and diversity of street trees, reduce the potential safety risks of trees to the public, and maximize planting sites along major thoroughfares and all public rights-of-way.

**Recommendations**

- 15. Plant and establish additional trees to achieve a 100% stocking level of available planting sites.
- 16. Actively seek opportunities to establish tree-lined medians along rights-of-way that are wide enough to create boulevards. Develop an urban forestry enhancement program specifically for Alexandria’s unique boulevards and other significant transportation corridors.
- 17. Establish criteria to identify sites that will permit the expansion of tree planting strips and tree wells to provide more suitable growing conditions for street trees, decrease conflicts between tree roots and urban infrastructure, and meet all Americans with Disabilities Act requirements for adequate clearance and passage.
- 18. Work with the Departments of Transportation and Environmental Services, and Planning and Zoning to develop standards for, and require, innovative planting techniques and products to facilitate tree planting in restricted, high-use, difficult, and special needs areas.
- 19. Employ planting techniques that will promote the healthy growth of trees within an urban setting, such as alternative soil mixtures, extended tree wells, and systems to direct and manage root growth and limit conflicts between roots and urban infrastructure. Develop standards for planting in areas where space is too restricted or soil, aeration, drainage, or other conditions preclude providing adequate space and a satisfactory environment for trees to survive and thrive.
- 20. Explore opportunities to protect existing trees by using alternative paving materials and methods to correct conflicts between tree roots and sidewalks, such as rubber sidewalks, stone dust, permeable paving, and alternative pavement profiles.
- 21. Seek to relocate all overhead wires underground to avoid conflicts with trees and provide increased opportunities to plant large shade trees with an emphasis on major corridors.



- 22. Implement pilot programs to develop and adopt alternative street profiles and sections that provide larger tree planting areas, more open space, increased permeable surface area, and new opportunities for stormwater management, also referred to as shared street concepts.

## **PUBLIC PARK, SCHOOL AND OPEN SPACE TREES**

### ***Issue***

Little is known about the nature and health of the tree population in the City’s parks, schools, and open spaces.

### ***Analysis***

No inventories exist for the trees in the City’s parks, schools, and open spaces; therefore, no information is known about the species diversity, age diversity, or health of these trees. Very little tree maintenance is completed in City parks, with the exception of Fort Ward Park, and new parks such as Ben Brenman Park. The majority of tree maintenance completed in City parks is tree removal. Tree work occurring in parks is generally focused on eliminating hazards to the public, and not on improving the overall health or coverage of the tree stand. There is no information of the quantity or quality of tree maintenance performed on school property or other public open spaces.

### ***Issue***

No comprehensive plans for tree maintenance have been considered, with the exception of new parks and those currently in the planning stages.

### ***Analysis***

Thousands of trees are expected to be planted as new parks are developed at Potomac Yard, and as part of the improvements to existing parks along the waterfront, Chinguapin Park, Four Mile Run, Jones Point Park, and others. The City’s parks, recreational areas, and other public properties provide great opportunities to plant additional shade and ornamental trees that can fully develop and add to the City’s tree canopy.



Alexandria City Public School properties are perhaps the City’s greatest untapped public resource for planting trees and adding to City’s tree canopy cover. School properties have a significant amount of open space, offering excellent opportunities for tree planting, which could increase the City’s overall canopy and provide environmental education opportunities for students. The maintenance, removal, and planting of trees located on City school properties are the responsibility of the Department of Recreation, Parks, and Cultural Activities (RPCA).

No detailed management plans exist to guide tree planting and maintenance in City parks, schools, or other developed open spaces.

### ***Goal***

Improve the health and diversity of public trees located in City parks, schools, and open spaces, reduce the potential safety risks of these trees to the public, and maximize canopy cover.

## ***Recommendations***

23. Establish and implement comprehensive planting and maintenance plans for trees located in public parks, on school and other public properties and open spaces. These plans should be developed in conjunction with park landscape master/management plans, which include both development and rotational maintenance costs.
24. Build on the Alexandria Open Space Plan's recommendation to seek innovative ways of creating more open space by developing and implementing pilot projects such as Green Streets (see Appendix F), which are aimed at redesigning streets to reduce impervious surface, thus freeing up land for tree planting and helping to meet other environmental goals, such as reducing the impact of storm water runoff.
25. Rededicate Fort Ward Park as the City's Arboretum and develop and adopt a master plan for the park. Create a collection of trees and other woody plants that will serve as an educational resource for City residents and visitors.
26. Promote the value of tree donations and other support programs, such as the Living Landscape Program, as a source of trees to be planted in parks and other public open spaces. Park master plans should be developed with tree locations that are ear-marked for living landscape trees.
27. Continue to celebrate Arbor Day and hold other special events and educational programs about urban forestry on parks and school grounds.

## **STREAM AND NATURAL AREAS TREE POPULATION**

### ***Issue***

There is a lack of management and focus on stream valleys and forested ecosystems.

### ***Analysis***

Based on local information and field observations, the following general analysis of the tree population in riparian and other natural areas was developed.

The canopy cover, forest conditions, and species composition of the urban forest in stream and natural areas are unknown. Many environmentally sensitive areas and streams have been altered from their natural state by previous development, engineering projects, and ongoing floodway maintenance activities. If riparian and natural areas are not properly managed, native trees will be particularly prone to damage by invasive species.

There are opportunities to plant more trees, especially large canopy trees, and native vegetation in these areas. Planting can often be accomplished economically with volunteers and smaller plant materials. Enhancement of these areas benefits the streams and environmentally sensitive areas directly and improves the quantity and quality of the overall urban forest canopy. Because streams provide the connected



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natural areas that enhance habitat and open space benefits compared to small, disconnected areas, they are particularly important as open space corridors and connections. The Alexandria Open Space Plan places emphasis on development of continuous open space corridors and integrating currently unconnected open spaces.

**Goal**

Improve stream corridors and other natural areas through urban forest management.

**Recommendations**

- 28. Encourage the establishment and healthy growth of native tree species through planting and maintenance.
- 29. Control invasive plant species.
- 30. Improve the maintenance of overgrown and currently inaccessible and under-used stream valleys and natural public open space.

**INSTITUTIONAL AND SEMI-PUBLIC TREE POPULATION**

**Issue**

The urban forest is at risk on these properties due to high development pressure.

**Analysis**

The condition of existing trees and the level of maintenance on institutional and semi-public properties varies considerably. However, intensive uses of these properties contribute to the challenging growing conditions for the trees.

The quantity, species diversity, and condition of the trees growing on these properties are unknown. No efforts to quantify or evaluate the trees on these properties have been considered.



No mechanism exists to enforce protection of existing trees on institutional and semi-public properties as development occurs. There are many opportunities to plant more trees and promote the creation of natural forest ecosystems on undeveloped portions of institutional and semi-public properties.

**Goal**

Establish a strategy for working collaboratively with institutions, such as hospitals, religious facilities, and private schools, to establish an appropriate approach to open space preservation and tree planting to benefit the public.



### ***Recommendations***

31. Provide and promote incentives to plant trees and implement projects to preserve and enhance the tree canopy on institutional and semi-public sites, such as INOVA Alexandria Hospital and Episcopal Seminary and High School.
32. Encourage the establishment and dedication of open space, tree canopy conservation, scenic, and historic easements on institutional and private properties.

## **PRIVATE TREE POPULATION**

### ***Issue***

Trees are threatened by new development, redevelopment, and expansion due to the City's limited regulatory powers.

### ***Analysis***

The City's Tree Ordinance establishes conditions on the removal of trees on private property, but these conditions only apply at the time an application for a site plan or subdivision is made. Therefore, only a small portion of the residential properties, where most of the private trees are located, are impacted by this Ordinance. A provision providing for identification of historic and specimen trees covers only a small number of additional trees in the City.

Many cities that recognize the importance of trees to quality of life and the character of the community have adopted tree ordinances that are much more restrictive, typically requiring a City permit for removal or major reduction of the tree canopy of any tree above a certain size. Such ordinances typically permit such removal on submittal of a report from a Certified Arborist indicating that the tree cannot be saved or presents a danger to life or structures on the property. They may require compensatory planting elsewhere on the property or contribution to a fund for planting of trees on public lands or in another location identified for canopy cover mitigation.

While such ordinances may not ultimately prevent owners from removing existing trees, they require owners to consider alternatives and to carefully consider their options when they decide it would be desirable to remove a mature tree on their property.

Whether or not the City chooses to revise its tree ordinance to better protect mature trees on private property, the City has the ability to influence the behavior of some owners by providing public information on the benefits of trees and alternatives to tree removal and by providing incentives to plant trees and to retain existing trees on their property.

### ***Issue***

As the private tree population reaches over-maturity, there is a lack of replacement planting when these over-mature trees are removed.



### ***Analysis***

The private tree population includes a high percentage of mature and over-mature trees, indicating that there is insufficient replacement stock to compensate for normal mortality and/or future loss to development and urban pressures. The overall condition of all trees is fair. Increasing disturbance of the growing area and urban environmental conditions can decrease this rating to poor or critical in a relatively short period of time.

Property owners may lack knowledge about proper tree care and planting. The level of maintenance private trees receive is unknown, but it is assumed that it is sporadic and on an as-needed basis. There may be opportunities to plant more trees, especially large canopy trees, on private properties, such as residential lots, open areas of industrial property, commercial parking lots, and other private properties.

### ***Goal***

As the largest property owner in the City, owners of industrial, commercial, and residential properties should preserve, plant, and maintain trees.

### ***Recommendations***

33. Develop guidelines for, and privately fund, a City grant program to support tree planting on private property. Grants should be made available to qualified homeowners, civic organizations, places of worship, religious institutions, and other not-for-profit organizations.
34. Educate private property owners about the benefits of trees and proper planting and maintenance strategies.
35. Encourage homeowners and civic associations to create tree or beautification boards with which the City Arborist can communicate and provide information about tree planting and maintenance on this type of property.
36. For commercial and industrial properties, enforce site plan and special use permit landscape requirements and conditions for new and existing development sites. Perform site inspections to ensure compliance.



## **REGULATORY AND PLANNING CONTEXT**

### ***Issue***

The City's existing regulations are outdated and the current City structure makes it difficult to enforce them.

### ***Analysis***

Alexandria directly and indirectly regulates the urban forest through a variety of legislation and planning documents. Most legislation and planning guidelines have been created and amended over time on the local level; however, Virginia's regulations and laws sometimes supersede and dictate Alexandria's ability to control and manage trees on public and private properties.

### **Goal**

Strengthen Alexandria’s ability to protect and increase its tree canopy as permitted by State and local regulation.

### **Recommendations**

37. Evaluate, update, and enforce the City’s existing rules and regulations.

## **MANAGEMENT AND OPERATIONS**

### **Issue**

The current urban forest management program is reactive.

### **Analysis**

The City’s urban forestry program has historically operated and still operates primarily in a reactive mode, responding to citizen requests for service with minimum proactive managed or pre-planned maintenance for the City’s trees. The Arborist Office primarily responds to one tree at a time. Tree maintenance is almost exclusively confined to street trees, neglecting the needs of park trees and those at other City public facilities. There is no coordinated program that addresses the maintenance of all City trees or the establishment of new trees that are planted. Although there is an understanding of the entire urban forest, its maintenance is currently approached one tree at a time.

### **Issue**

Current staffing, organizational structure, and funding levels are not adequate to meet the current needs of the program or the proposed goals of the Urban Forestry Master Plan.

### **Analysis**

The current staffing of the City’s tree crews does not provide enough full-time, permanent personnel to operate the equipment available or meet the many program demands. Three tree trimmers and one tree trimmer apprentice are assigned to operate two chipper trucks with aerial lifts and chippers, one stump grinder, and two hydraulic sprayers on trailers. Seasonal personnel and temporary full-time employees are trained to assist the tree trimmers and work with the specialized equipment, such as brush chippers and chain saws. Frequent turnover, mandatory furloughs, and limited seasonal budgets often interfere with the productive operation of the tree crews.

The City tree crews provide a variety of services including tree pruning, tree removal, clearing of traffic signs, removal of low hanging limbs over streets and sidewalks, removal of limbs interfering with buildings, clearing alleys, brush pick up, stump grinding, and the care and watering of new trees. The Arborist Office staff and the tree crews are also required to respond at any time to emergency calls from the police and fire departments when public and private trees that are blocking City streets or City trees have fallen onto private property. These calls are typically in response to severe weather events, but also include traffic accidents or other



Department of RPCA Staff

conditions that involve trees.

The City's tree crews are also responsible for installing the holiday lights in the street trees along King Street and holiday trees at four locations. During the months of October and November, one or both tree crews are committed to this task and cannot respond to citizen requests for service.

Tree pruning and removals are primarily completed by two contracted tree service companies. In 2007, approximately 1,300 trees were pruned and 300 trees were removed under unit price agreements. The volume of work completed by the contractors has increased over previous years as additional funds were made available. The majority of the work completed under contract is responding to requests for service from the public and high-priority items identified by City staff. Additional funding has also provided opportunities to begin the rotational maintenance of the trees along the City's major arterial and collector streets; those that are most visible to residents, visitors, and the commuting public. Contract crews are also called upon to assist in brush and debris pick up following severe storms.

Despite the assets, personnel, and contract services available, they are not adequate to meet the maintenance requirements of City's existing street trees, or those growing in parks and on school and other public properties. Proposals to expand the City's tree planting program will create increased demands for service which will not be met.

### **Goal**

Improve the health, appearance, and longevity of all street trees and trees planted in parks, at schools, and on all public properties through regular maintenance.

### **Recommendations**

- 38. Plan, fund, and implement a five-year pruning cycle for all established trees and a three-year establishment program for new trees planted along City streets, in parks, and on school and other public properties.



J. Noelle/Department of RPA

### **Issue**

The City's tree planting program fails provide adequate care for the survival, establishment, and development of healthy trees.

### **Analysis**

Trees are planted along the City rights-of-way, in parks, and on school and other public properties by contractors under a unit price agreement. Once planted, the trees are not given adequate care, lacking water, mulching, and pruning during their establishment. While most of the trees planted in residential neighborhoods appear to survive, too many of those planted in commercial areas of the City, along arterial streets, in parks, and on school properties fail to survive or thrive because they are not watered and are often damaged by the careless operation of gas powered weed eaters and turf maintenance equipment.

The survival and improved growth of the trees could easily be accomplished by the commitment of staff to a watering

program. However, the current level of staffing of the City tree crews and the demands for services to prune and maintain existing trees or clean-up response prevents the commitment of resources to a watering program.

### **Goal**

Reorganize and support the urban forestry program to achieve the goals and implement the recommendations of the Urban Forestry Master Plan.

### **Recommendations**

39. Transform the City Arborist Office and Tree Maintenance Section into a proactive Urban Forestry Section with a systematic and strategic focus on the urban forest system as a whole. Develop a management plan and provide resources needed to effectively manage the plan. Optimize personnel allocations and create efficiencies by combining the City's urban forestry and horticulture programs under one Natural Resources Section.
40. Create a new Urban Forest Specialist position that would be dedicated to activities aimed at preserving and enhancing the City's urban forest.
41. Fund requests for additional tree trimmers and horticulture staff necessary to successfully meet the goals of the Urban Forestry Master Plan.
42. Establish benchmarks and report progress in an annual State of the Urban Forest Report to the City Manager and City Council.

## **PUBLIC EDUCATION AND SUPPORT**

### **Issue**

Information about arboriculture and the Arborist Office is not easily accessible to the public.

### **Analysis**

During the public participation processes carried out throughout this planning effort, the citizens of Alexandria enthusiastically supported trees. Alexandria's citizens need aggressive and consistent education on urban forestry issues and the City's urban forestry program's function and capabilities in order to focus citizen efforts to produce meaningful results. Citizen interest in trees can serve to provide resources for volunteer activities as well as opportunities for public education.

Volunteers have been used for insect monitoring, tree inventory tasks, and tree planting projects. Currently, however, the City's urban forestry program does not extensively use volunteers. These are an untapped resource. Activities well-suited for volunteers include: conducting educational programs, sustaining public relations initiatives, participating on various advisory/liaison groups, and performing limited tree planting and small tree maintenance tasks. Volunteers should not be used as a supplement to, or replacement of, qualified staff to perform critical and core



urban forest management services. The City should explore greater and better utilization of existing volunteers from the Tree Stewards and Master Gardeners, but must be prepared to support them with supervision and training.

**Goal**

Actively engage the citizens of Alexandria to be involved in the care, protection, and planting of the urban forest.

**Recommendations**

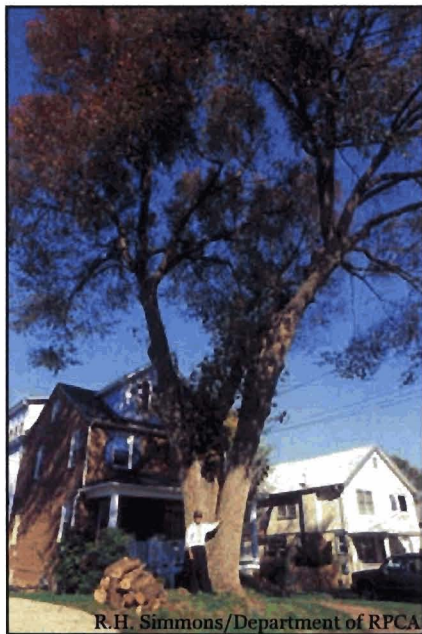
- 43. Develop and implement an effective public outreach and education strategy and pursue it actively and consistently. Volunteers are a greatly untapped resource in this regard and should be a core part of this strategy.
- 44. Create a series of Public Service Announcements on various urban forestry topics for radio, cable access television, and print news media outlets.
- 45. Develop and distribute information about the proper care for trees after they are planted.
- 46. Promote the preservation and expansion of Alexandria’s tree canopy with programs, such as seminars and neighborhood tree walks.

**Goal**

Expand educational opportunities regarding the urban forest for the citizens for Alexandria.

**Recommendations**

- 47. Increase support for, and promote the expanded use of, existing public resources, such as the Cooperative Extension Service, the Tree Stewards, and Master Gardeners of Arlington and Alexandria, to provide assistance, advice, and educational opportunities and materials to the citizens of Alexandria.



- 48. Fund an additional extension agent at Virginia Cooperative Extension who would provide vital volunteer programming services for Alexandria’s residents. This person would, among other tasks, work to expand Alexandria’s role in the Tree Stewards of Arlington and Alexandria program, a group of volunteers trained by the extension service to educate and assist citizens on proper tree planting and care.
- 49. Promote the availability and distribution of information to the public about the selection, planting and care of trees through the development of an effective website [www.alexandriatrees.org](http://www.alexandriatrees.org), and the publication of handbooks, fliers and other publications.
- 50. Encourage collaborative efforts with local schools of landscape architecture to study opportunities to improve streetscape, public open space, park, school, and facility designs.

51. Create partnerships with allied businesses and organizations to share in the distribution of timely urban forestry information; partnerships could include: local realtors, utility companies, nursery and landscape companies, and tree services contractors.
52. Create opportunities for citizens to become program volunteers for projects and program assistance, such as tree planting, small tree maintenance, teaching, grant writing, marketing, and public relations.









## Appendix A. Benefits of the Urban Forest

Trees are major capital assets in cities across the United States. Just as streets, sidewalks, public buildings, and recreational facilities are a part of a community's infrastructure and provide benefits, so are publicly-owned trees. Trees and the urban forest are important civic assets that require the same care and maintenance as other public properties to provide the services and benefits Alexandria's citizens expect and enjoy.

The following sections describe some of the general benefit types and values trees provide for the City.

### ENVIRONMENTAL BENEFITS

#### *Water Quality and Stormwater*

- Trees reduce topsoil erosion, prevent harmful land pollutants contained in the soil from getting into our waterways, slow down water runoff, and ensure that our groundwater supplies are continually being replenished. For every 5% of tree cover added to a community, stormwater runoff is reduced by approximately 2%. (1)
- Research by the U. S. Forest Service shows that in a 1-inch rainstorm over 12 hours, the interception of rain by the canopy of an urban forest reduces surface runoff by about 11.3 million gallons, or 17%. These values would increase as the canopy increases. (2)
- Along with breaking the fall of rainwater, tree roots remove nutrients harmful to water ecology and quality. (2)
- Trees act as natural pollution filters. Their canopies, trunks, roots, and associated soil and other natural elements of the landscape filter polluted particulate matter out of the flow toward the storm sewers. Reducing the flow of stormwater reduces the amount of pollution that is washed into a drainage area. Trees use nutrients like nitrogen, phosphorus, and potassium—by-products of urban living—that can pollute streams.

#### *Air Pollution*

- Trees mitigate carbon emissions from vehicles. The larger the tree, the more carbon can be stored, or sequestered. A 3-inch caliper tree can store 2 pounds of carbon per year; a 10-inch tree stores 19 pounds per year; a 20-inch tree stores 43 pounds per year; and a 40-inch diameter tree stores over 90 pounds of carbon annually. Therefore, 1 acre of average tree cover in an urban environment can compensate for automobile fuel use and emissions equivalent to driving a car between 7,200 and 8,700 miles. (3)
- Trees remove gaseous and solid pollution from the air. Studies showed that pollution removal (i.e., ozone, particulate matter, sulfur dioxide, nitrogen dioxide, and carbon monoxide) by trees and shrubs in Chicago was estimated at 651 tons and in Brooklyn at 287 tons. Average individual tree pollution removal estimates can vary by diameter classes. For example, a 3-inch tree removes 0.07 pounds per year; a 10-inch tree removed 0.8 pounds per year; a 20-inch tree removes 2.2 pounds per year; and a 40-inch diameter tree removes over 5.3 pounds of pollutant per year. (3)

## ***Energy Conservation***

- Trees lower local air temperatures by transpiring water and shading surfaces. Because they lower air temperatures, shade buildings in the summer, and block winter winds, they can reduce building energy use and cooling costs. (4)
- Trees help to cool cities by reducing heat sinks. Trees shading sidewalks, often lacking in the City today, can make walking more pleasant on warm summer days and perhaps encourage more walking overall. Heat sinks are 6 to 19 degrees Fahrenheit warmer than their surroundings. A tree can be a natural air conditioner. The evaporation from a single large tree can produce the cooling effect of 10 room-size air conditioners operating 24 hours per day. (5)
- The annual effect of well-positioned trees on energy use in conventional houses is a savings of 20% to 25% when compared to a house in a wide-open area. (6)

## **ECONOMIC BENEFITS**

The scope and condition of a community's urban forest is usually the first impression a community projects to its visitors. A community's urban forest is an extension of its pride and community spirit and has direct and indirect effects on economic development. Studies have shown that:

- Trees enhance community economic stability by attracting businesses and tourists.
- People linger and shop longer along tree-lined streets.
- Apartments and offices in wooded areas rent more quickly and have higher occupancy rates.
- Businesses leasing office spaces in developments with trees find their workers are more productive and absenteeism is reduced. (7)
- Property values increase 5% to 15% when compared to properties without trees, depending on species, maturity, quantity, and location.
- Cities spend fewer resources on street maintenance when street trees are present. The asphalt paving on streets contain stone aggregate in an oil binder. Without tree shade, the oil heats up and volatilizes, leaving the aggregate unprotected. Vehicles then loosen the aggregate and much like sandpaper, the loose aggregate grinds down the pavement. Streets should be overlaid or slurry sealed every 7 to 10 years over a 30- to 40-year period, after which reconstruction is required. A slurry seal costs approximately \$0.27 per square foot or \$50,000 per linear mile. Because the oil does not dry out as fast on a shaded street as it does on a street with no shade trees, this street maintenance can be deferred. The slurry seal can be deferred from every 10 years to every 20 to 25 years for older streets with extensive tree canopy cover. (8)

## **SOCIAL AND PUBLIC HEALTH AND SAFETY BENEFITS**

- Trees have the potential to reduce social service budgets, decrease police calls for domestic violence, strengthen urban communities, and decrease the incidence of child abuse according to the study.
- Residents who live near trees have significantly better relations with and stronger ties to their neighbors.
- Researchers found fewer reports of physical violence in homes that had trees outside the buildings. (9)

- Studies have shown that hospital patients with a view of trees out their windows recover much faster and with fewer complications than similar patients without such views.
- A Texas A&M study indicates that trees help create relaxation and well-being.
- A U.S. Department of Energy study reports that trees reduce noise pollution by acting as a buffer and absorbing 50% of urban noise.
- Trees can enhance traffic calming measures, such as narrower streets, extended curbs, and roundabouts. Tall trees give the perception of making a street feel narrower and closely spaced trees give the perception of speed, slowing people down. A treeless street enhances the perception of a street being wide and free of hazard, thereby increasing speeds. Increased speed leads to more accidents.
- Trees can serve as a buffer between moving vehicles and pedestrians.
- Street trees also forewarn drivers of upcoming curves. If the driver sees tree trunks curving ahead before seeing the road curve, they will slow down and be more cautious when approaching curves. (10)

## VALUE OF ALEXANDRIA'S URBAN FOREST

Alexandria's parks, forests, and open space systems provide many amenities for City residents, institutions, businesses and their employees, and visitors. Yet perceptions of public value by all these diverse beneficiaries may not incorporate all of the scientifically confirmed public goods and services of urban green space. Increasingly, theories and methods of economic valuation have been used to derive green space values. Alexandria's City Arborist and City leaders can and should use valuation data in strategic political management efforts on behalf of the urban forest and green spaces to assure that adequate resources are allocated for planning and management of urban nature systems.

The USDA Forest Service's Urban Forestry Effects (UFORE) and Street Tree Resources Analysis Tool for Urban Forest Managers (STRATUM) are the most recent cost-benefit models available today to measure and calculate the many and diverse values of the urban forest. UFORE quantifies the quantity, structure, and benefits of the overall forest canopy, while STRATUM focuses specifically on the street tree resources. Both models are peer-reviewed, scientifically based, and regionally applicable models.

UFORE and STRATUM have not been applied to Alexandria's urban forest resources. However, using results from similar cities where these models have been used and based on previous research on urban forest benefits, Alexandria received the following estimated benefits from its urban forest and street trees:

Alexandria's collective urban forest canopy provides:

- An annual removal of 117,600 pounds of air pollutants at a value of \$285,600.
- A stormwater retention equivalent of 7,560,000 cubic feet valued at \$1,512,000. (11).

Alexandria's street trees provide:

- Annual carbon sequestration of approximately 2,642 tons valued at \$39,610.
- Based on an average tree intercepting 2,460 gallons of stormwater annually, the street trees provide a service valued at \$408,000.

- Electricity and natural gas usage saved from both shading and climate effects of street trees can be valued at \$187,000 annually.
- Total annual benefits associated with aesthetics, property value increases, and other less tangible benefits is approximately \$545,000 per year.
- The annual gross value of the combined benefits of Alexandria's street trees is over \$1,175,000.

Once Alexandria applies the STRATUM and UFORE models to the City's urban forest resource, precise local data will be revealed about the costs and benefits of the public trees and the whole urban forest. Like other cities across the United States who have used the models, it is likely the results will show that there is a positive return on City funds invested in the planting and maintenance of public trees and for the education of private property owners in Alexandria.

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# Appendix B. Results of the Public Process

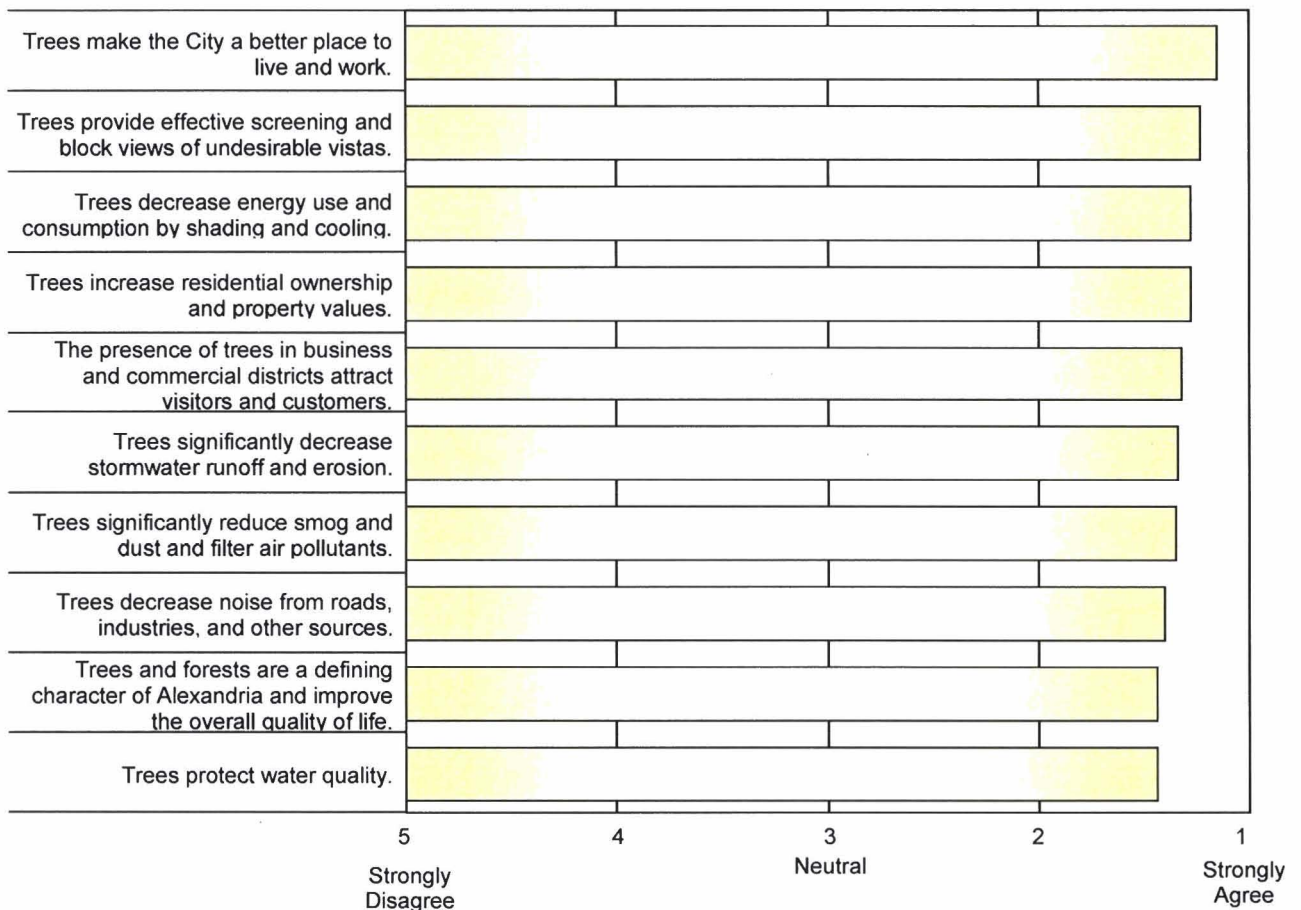
## QUESTIONNAIRE

The questionnaire was comprised of ranking statements, rating general opinions, and replying to short answer questions. Responses to the ranking and rating portions of the questionnaire were averaged to develop the following figures.

The following discussion provides a summary of the results of the 267 questionnaire responses received from January 18 to April 30, 2006.

Participants were asked to rank statements regarding the benefits of trees based on their level of agreement with the statement (Figure 1). The average, top-ranked statement was that “Trees make the City a better place to live and work”. Most respondents strongly agreed that all ten statements were valuable benefits of trees.

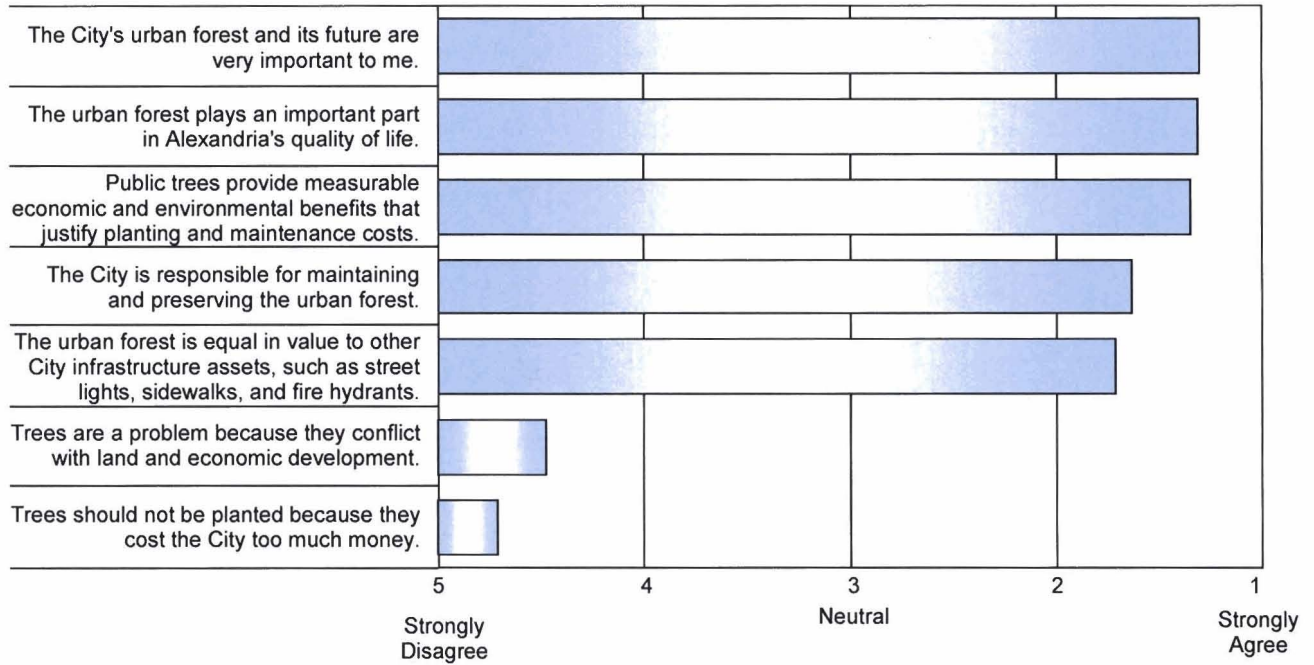
**Figure 1. Tree Benefits**



Prepared by Davey Resource Group

Participants were asked to rank statements regarding urban forestry values based on their level of agreement with the statement (Figure 2). The average, top-ranked statement was that the City’s urban forest and its future are very important. Of the seven statements, the lowest ranking one was that trees should not be planted because they cost the City too much money.

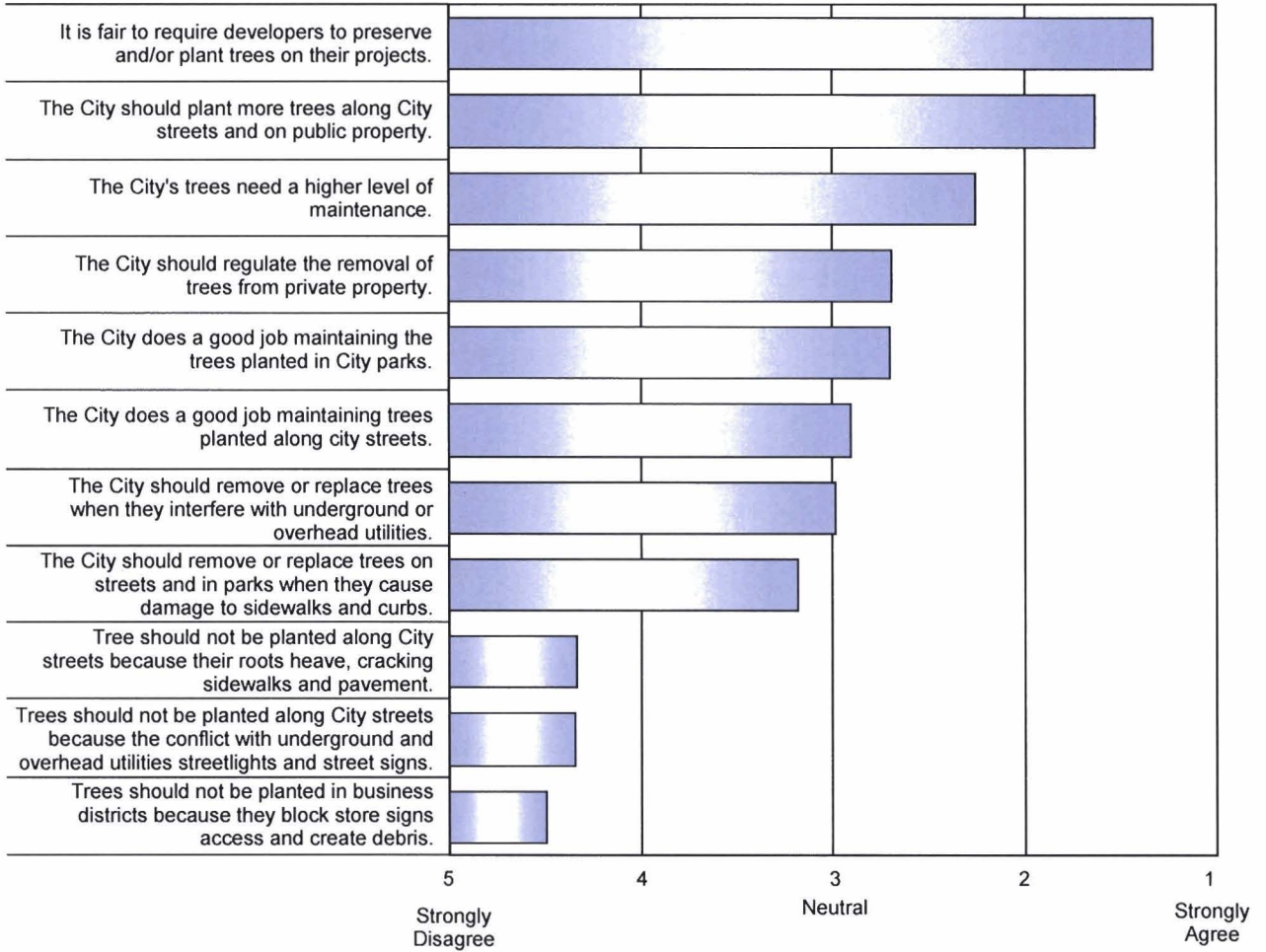
**Figure 2. Urban Forestry Values**





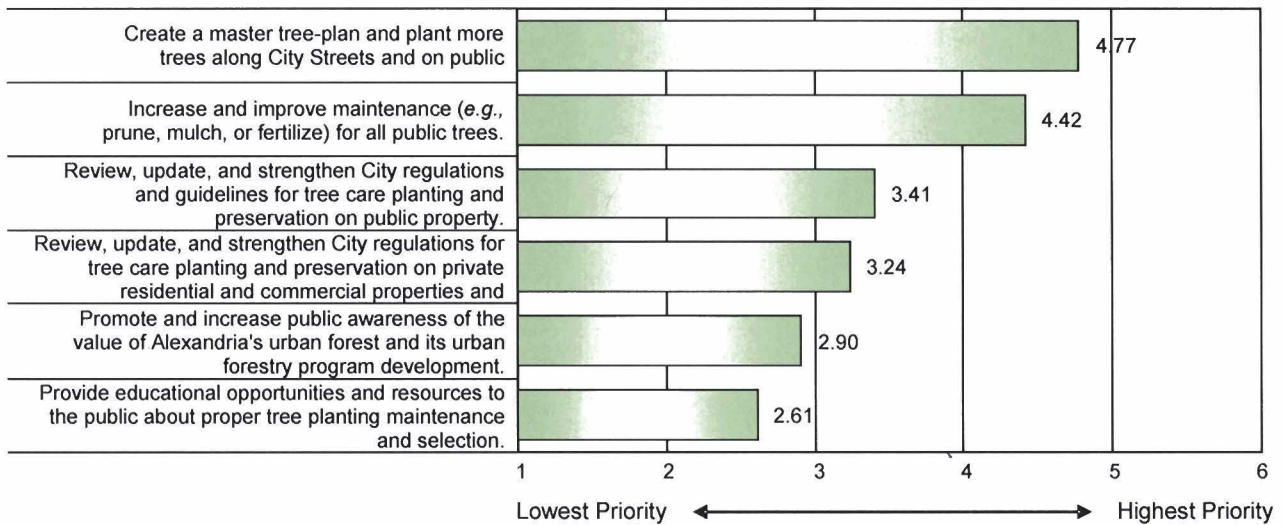
Participants were asked to rank statements regarding urban forestry management based on their level of agreement with the statement (Figure 3). Overall, respondents generally strongly agreed that it is fair to require developers to preserve and/or plant trees on their projects. The second, top-ranked statement was that the City should plant more trees along City streets and on public property. Of the 11 statements, the management statement that ranked the lowest was that trees should not be planted in business districts because they block store signs access and create debris.

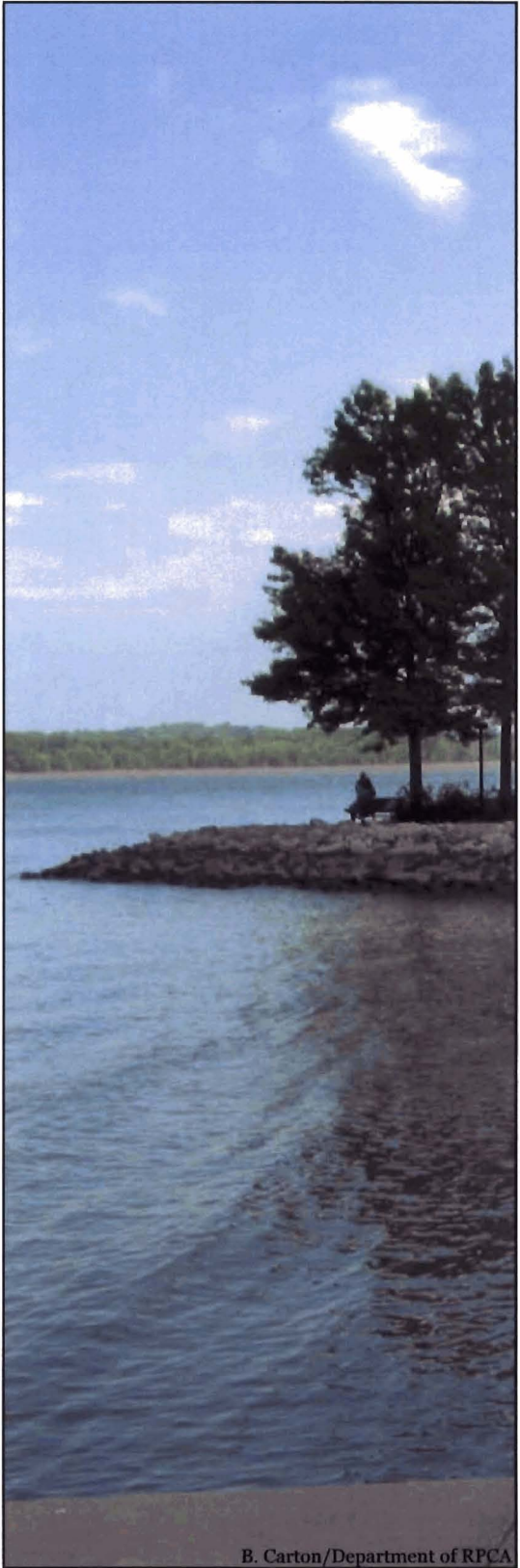
**Figure 3. Urban Forestry Management**



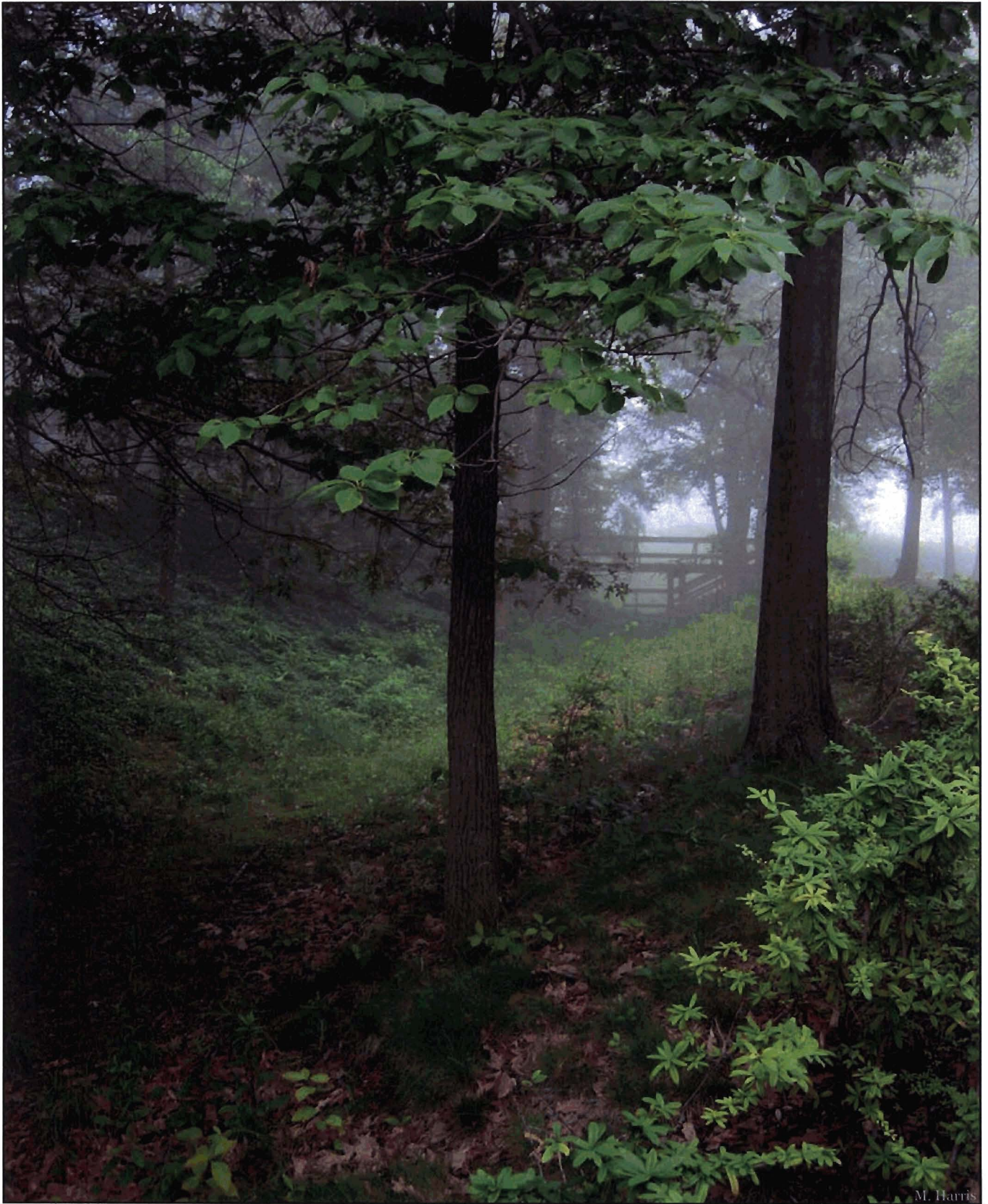
In the last part of the questionnaire, respondents were asked to prioritize a series of six action items. The average highest action priorities indicated a need to create a master tree plan and plant more trees along City streets and on public property. The lowest average action priority was to provide educational opportunities and resources to the public about proper tree planting, maintenance, and selection.

**Figure 4. Action Priorities**





B. Carton/Department of RPCA



M. Harris



## Appendix C. Detailed Analysis

### TRENDS AND ISSUES

Based on the existing urban forest data, field observations, staff interviews, and public comments, the following trends, issues, and challenges currently support or challenge Alexandria's urban forestry program:

- The City's 35% overall forest canopy cover provides multiple and valuable benefits to the City and citizens in terms of environmental, economic, and social values.
- The street tree population is estimated to be 77% stocked.
- Alexandria can effectively be described as built-out; only 6%, or approximately 550 acres, is considered vacant. This implies that additional trees, open space, and new developments must compete for this small amount of available land. It also implies that forest canopy and development issues are dealt with on a micro-scale, lot-by-lot basis.
- Increased construction and development within the existing canopy cover is expected to continue based on population growth, housing needs, and commercial expansion in the next 10 years. Therefore, environmental, economic, and social benefits/services from trees will decrease due to the decline in the mature tree canopy cover lost to development and impervious surfaces.
- Urban forestry staff and leaders are challenged to manage public and private expectations and multiple goals in the development process. At issue is the difficult and complex task of balancing the built and natural environments for the maximum benefit of the citizens and the City.
- Since the vast majority of the existing overall forest canopy and the potential for the future forest are on private property and not in the City's control, the urban forestry program is challenged to effectively control and manage the effects of increased development on the remaining forest cover.
- Tree maintenance is performed on public trees, but typically is restricted to storm damage correction/clean-up, street and sidewalk construction or repair projects, building and right-of-way clearances, citizen requests, and other reactive tasks. Preventive and routine maintenance programs for mature trees and newly planted trees are not in place; citizens and staff highly desire such services.
- Tree planting is performed primarily on public streets by the urban forestry program or on private or public properties by developers in compliance with City requirements. Since 80% of the street tree planting is for replacement planting, little net gain in the street tree population is accomplished. In addition, a significant portion of City funding is directed to planting and caring for street trees; little money and attention is directed to other areas of the urban forest. Tree planting should be increased on public streets, parks, recreation areas, along streams and other environmentally sensitive areas, and on private property.

- Tree planting on many public and private properties is extremely restricted and inadequately designed to support vital, safe, long-lived trees. Due to competition for space, the locations and rooting areas for trees are limited by needs for pavement, buildings, and utilities leading to hardscape and infrastructure damage and trees in poor condition.
- The urban forestry program lacks basic urban forestry tools to efficiently and effectively accomplish its mission and responsibilities. Examples include tree inventories for various land use types, computer hardware and software programs, and operational management and master tree planting plans.
- The urban forestry program, staff, equipment, and funding are organized in the Department of Recreation, Parks, and Cultural Activities. Yet, the funding and mandates of the program are centered on right-of-way trees and planning and zoning projects on private property. Very little direct interaction or support for the urban forestry program comes from the Department of Recreation, Parks, and Cultural Activities, where much interaction, project coordination, conflicts, and opportunities occur with other City departments.
- The citizens of Alexandria consistently voice their extreme affection and concern for trees in their community and should also be considered a valuable urban forest resource. Citizens need and deserve to be educated and involved in urban forest management in the City.

## REGULATORY AND PLANNING ANALYSIS

### *1992 Master Plan*

Alexandria adopted its 1992 Master Plan. The Plan is made up of 15 small area plans (SAPs) which cover neighborhoods throughout the City, and contains chapters on topics of citywide interest, such as historic preservation, land use, urban design, and open space. Chapters of the 1992 Master Plan are updated on an ongoing basis as needed, either through Council-adopted amendments to the 1992 Master Plan or neighborhood studies initiated by Planning and Zoning's Neighborhood Planning and Community Development Division.

The 1992 Master Plan currently supports the concept of a comprehensive urban forestry program within the City's organizational structure, and acknowledges the importance of the urban forest in defining the character and livability of Alexandria. Clear emphasis is placed on the value of the City's trees, parks, and open spaces now and in the future.

In 2006, the City and citizens created the Vision for Alexandria 2015: "Alexandria is a vibrant, diverse, historic, and beautiful City with unique neighborhoods and multiple urban villages where we take pride in our great community." A healthy urban forest canopy sustained by a strong urban forest management program with an appropriate structure and sufficient funding can help make this vision a reality.

#### Urban Forestry Elements

##### Land Use Goal

To preserve and increase parkland and open space throughout the City.

##### Housing Policy

For new development, the City shall require suitable landscaping and well-defined open spaces.

##### Transportation Goal

The City shall develop and manage a safe, comprehensive transportation system with minimal environmental impact.

#### Community Facility Goals and Strategies

Public and private policy must lead the way to guarantee a healthy satisfying environment for this generation and all generations to come.

Woodlands throughout the City should be mapped and preserved; the City should plan and encourage tree planting.

A citywide forestation program, including street trees, should be maintained.

Property owners and developers should be encouraged or required to preserve existing trees.

#### Parks and Recreation Goals and Objectives

To integrate public open spaces into the fabric of the City in order to preserve natural resources and provide a healthy and attractive environment.

To expand landscaping of street medians and rights-of-way, to preserve and expand the number and variety of trees in the City, and to encourage sound forestry practices.

### ***Alexandria Open Space Plan***

In 2003, the Alexandria Open Space Plan was completed and adopted by the City as part of the City's 1992 Master Plan. This important study and implementation plan resulted in 15 goals that form the framework of the Plan. Nearly all 15 goals support increased and proactive urban forestry management in Alexandria, and conversely, the City's comprehensive urban forestry program can support the Alexandria Open Space Plan in almost every goal.

Goal 12 specifically focuses on the urban forestry needs of the City—expand citywide street tree programs and protect existing trees and woodland areas. Three major recommendations include: protect significant tree-lined rights-of way; identify and address potential tree cover protection areas; and address stream valley protection areas.

The implementation strategies are broad in nature, but do include important general tasks for the City's urban forestry program and will be recognized and incorporated in the Urban Forestry Master Plan.

To supplement the Alexandria Open Space Plan, the City prepared the Guide to Voluntary Land Conservation Options. The Guide provides descriptions of various methods to conserve environmentally significant lands, including land donation, conservation easements, establishing a living trust, and donation of property.

The Open Space Plan does not address the planting of additional trees to enhance tree canopy cover. However, the Open Space Plan's emphasis on increasing the amount and connectivity of the City's protected open spaces carries an implication that the tree cover in these areas should be expanded and enhanced.

The implementation strategies of the Open Space Plan are broad in nature, but do include important, general tasks for the City's urban forestry program and these are recognized and incorporated in the Urban Forestry Master Plan.

### ***Recreation, Parks, and Cultural Activities Strategic Master Plan***

In 2002, the City accepted and adopted the Recreation, Parks, and Cultural Activities Strategic Master Plan. Its purpose was to provide a broad policy and management framework to guide decision-making about future land use and recreational needs of the residents. The need for the plan was motivated by the existing population density, the expected rapid growth in the near

future, and potential loss of community character and livability so important to Alexandria. The major urban forest related components and recommendations of the plan included: protecting stream valleys and natural areas, preserving significant tree cover, acquiring additional park and open space land, enhancing greenways, creating an expanded trail system, protecting the Potomac River, enhancing existing parks, expanding recreation opportunities, and protecting historic sites.

A major, stated goal of the plan is to “Protect and enhance the urban forest and beautification of the City.” However, while no direct analysis of the City’s urban and suburban forest and natural resources was made in the plan, it is clear that many of the objectives and implementation strategies of the plan coincide directly with the Urban Forestry Master Plan goals. Specifically, these recommendations are listed in the Plan’s Visioning Matrix.

#### Plan Visioning Matrix

**Goal 1.** Protect, restore, enhance, and connect open space and natural resources.

**Strategy 1.1.** Protect, restore, and enhance the urban forest and beautification of the City.

**Tactics:**

- Develop an urban forestry plan for the City.

- Seek City Council approval for funding the plan.

- Implement a work plan that is 70% planned work and 30% reactive work.

- Protect existing trees and woodlands.

- Expand citywide tree planting.

**Strategy 1.6.** Protect and enrich existing parks as well as new opportunities.

**Tactics:**

- Develop a master plan for each of the City’s parks.

- Expand the City’s volunteer programs, such as Adopt-A-Park and Tree Stewards.

- Develop a management and stewardship plan for each of the parks.

**Strategy 1.9.** Protect and expand stream valleys and other environmentally sensitive areas.

**Tactics:**

- Conduct a detailed survey of the City’s streams and woodlands; the survey should also include specific recommendations for the protection of these resources.

**Strategy 1.10.** Maximize use of public school open space to satisfy local needs.

**Strategy 1.11.** Enhance streetscapes and gateways.

Clearly, the City administration, Council, and the Department of Recreation, Parks, and Cultural Activities support the management of forest resources as an integral part of the provision of recreational experiences to City residents. The plan’s tactics for an urban forestry plan and funding have been accomplished.

New tree planting and mature tree care enhance the quality of existing and new parks, trails, gateways, public school properties, historic sites, and recreation areas. The protected status of parks, open spaces, stream corridors, and public schools make these areas prime opportunities for creating tree banks to recover overall canopy loss. Some of the revenue-generating mechanisms and suggestions made in the Recreation, Parks, and Cultural Activities Strategic Master Plan could be joint efforts to benefit both parks and urban forestry program goals.

#### ***Bicycle Transportation and Multi-Use Trail Master Plan***

Completed in 1998 for the Department of Recreation, Parks, and Cultural Activities, the Bicycle Transportation and Multi-Use Trail Master Plan for Alexandria, Virginia details policies and



actions to implement the City’s Transportation Master Plan and the Recreation, Parks, and Cultural Activities Strategic Master Plan goals relating to decreased vehicle use and increased pedestrian facilities. The plan calls for creating or designating 85 miles of on-street and off-street bikeways.

Whereas the plan does not directly address the value, use, or design of trees in the proposed bike trail system, except to dictate clearance requirements, the urban forest is a City resource that can enhance the plan’s goals and encourage increased bicycle riding. Street trees provide welcome shade and aesthetics along bicycle routes for both commuters and recreational users. Bike trails through woodland settings are extremely popular and are often destinations in themselves. Additionally, by supporting and implementing both the Bicycle Transportation Plan and the Urban Forestry Plan, significant improvements in air quality can be realized.

### ***Municipal Code***

#### **Title 6 Chapter 2, Trees, Shrubs, Plants, and Vegetation**

Alexandria already has one of the most important tools needed for a comprehensive urban forestry program and to attain a healthy, vigorous, and well-managed community forest—a tree ordinance. Generally, a tree ordinance establishes standards and sets guidelines. It is the legal framework within which local tree management activities are conducted for the general welfare of the citizens.

A tree ordinance is not an end in itself and is not a solution for poor or inadequate management of community tree resources, but it is a valuable support mechanism for comprehensive community forest management and, therefore, should not be viewed as simply another regulation.

Alexandria’s tree ordinance currently has four Articles that address these issues: regulation of trees on public property; regulation of trees on private properties that interfere with or endanger the public or public property; removal or damage of trees on private property; and appeals and penalties for violation of the ordinance. In almost all cases, public school properties are exempted.

The basic functional components and provisions of a good tree ordinance are currently in Alexandria’s ordinance:

- Designation of Authority
- Permit Requirements
- Master Plan
- Public Tree Protection
- Private Tree Protection
- Appeals/Penalties

However, some current sections should be revised and other sections should be added to reflect new goals of the City’s urban forestry program, current industry standards, and recommended professional practices.

These ordinances and guidelines provide direction that should result in gradual improvement of the condition of the City’s public trees as streets are improved and trees are replaced as a result of development projects and street or streetscape improvements. However, these ordinances do not give direction for establishment of priorities or achievement of long-term streetscape objectives through annual operations or planting programs.

The City Code at Section 6-2-6 gives the Director of Recreation and Parks the authority to prepare and implement a “master tree, shrub, plant, and vegetation plan for all or any portion of the public

places within the city, except public school sites.” The Department has not developed such a master plan since this responsibility was transferred from the Public Works Department in 1963.

The absence of such a master plan means that there is no formal policy direction for the role of street trees on the various streets throughout the City except in the very limited cases in which a specific role and streetscape policy has been identified in a small area plan. There has been no citywide evaluation of whether the current planting and streetscape is appropriate for the long-term role of the street in the citywide landscape. There is no policy direction for which streets should have priority for conversion to underground utilities in order to provide for the achievement of the long-term streetscape objectives for the street and the neighborhood.

The lack of such policy direction means that development of planting plans for each street is likely to be based on maintaining or improving current conditions without reference to ultimate need for a change in direction. Each tree replacement or maintenance activity in such cases may be a missed opportunity to come closer to long-term goals for the image of the City and the development of the City’s urban forest.

Because of the importance of the urban forest in the overall image of the City, this policy direction should be developed through an interdepartmental program involving the departments of Recreation, Parks and Cultural Activities, Planning and Zoning, and Transportation and Environmental Services.

Community support is critical to the effectiveness of Alexandria’s tree ordinance, but community support cannot be legislated into an ordinance. Rather, the ordinance must be developed within the context of community values and priorities if it is to enlist public support. Even a technically correct tree ordinance is apt to be ineffective without public support. Therefore, any future changes to the existing ordinance should be subject to the public information and input process.

Alexandria’s tree ordinance is an especially important regulatory and policy document. The tree ordinance, its use, and its enforcement demonstrate how the City and citizens manage and value the trees under their control. Tree ordinances can enhance the valuable natural resource of both the public and private urban forest and ensure that it is protected to provide public health and safety as well as many other important benefits.

#### Title 5 Chapter 2, Streets and Sidewalks

Across the country, trees are legitimately being considered and treated as publicly owned infrastructure on city rights-of-way. Therefore, it is appropriate to consider trees as green utilities and include them in other sections of the Municipal Code.

Despite the ultimate or future organizational location of the urban forestry program, public trees should be acknowledged, encouraged, and protected in this section of the Municipal Code.

#### Title 5 Chapter 11, Gypsy Moth Control

This chapter of the municipal code was created in October, 1987, when the threat of gypsy moths and the consequences of unmanaged control to the urban forest were extreme. Since that time, the efforts of the City, research entomologists, and time have significantly reduced the gypsy moth population and threat in Alexandria and the region.

Recently, however, there are new insects and diseases challenging the urban forest primarily due to the introduction of exotic threats from international sources. Some of these include the Asian long-horned beetle, Formosa termite, emerald ash borer, sudden oak death, and Armillaria root rots.

City governments are a logical entities to assist in the detection and control of these and any future insect and disease threats to the urban forest. The City should retain the power to monitor, suppress, and take other reasonable action to protect public and private trees.

#### Title 5 Chapter 4, Erosion and Sediment Control

Trees and associated shrubs, groundcovers, grasses, and other vegetation in urban forests have proven to provide very effective, natural erosion control. If significant forest resources exist on a site to be disturbed, then the owner or plan applicant should be encouraged to retain as much existing tree cover as possible as part of the total erosion and sediment control plan.

#### Title 5 Chapter 9, Weed Control

Weed control is a valid municipal responsibility to protect public health and safety and to enhance the aesthetics and livability of communities. Alexandria's Code instructs that abutting property owners shall be responsible for eliminating weeds on the public rights-of-way and in tree wells.

#### Title 5 Chapter 3, Underground Utilities

Within the City of Alexandria, all utilities are to be placed underground when possible. This creates a more aesthetic appearance for the City and does reduce conflicts between trees and aerial utilities. However, underground utilities and tree roots are not without their own set of conflicts.

Properly planned and constructed underground utilities and properly planned and planted public trees can usually co-exist in the public right-of-way. The primary urban forestry issue is the disturbance of established and mature trees when new utilities are constructed or when utilities and related facilities require routine or emergency repair. When trees and root systems are damaged by utility construction or repair projects, then the City not only faces the potential loss of the tree and its benefits, but also a safety risk may be created or exacerbated.

Therefore, it is important that the management of this issue and the role of the City Arborist be clearly defined in this Chapter. Section 5-3-4(A)(iii)(a) only indicates that aerial construction or expansion may occur if the City Arborist determines that underground construction would damage a mature tree.

#### Title 9 Chapter 3, Alexandria Cable Communications Code

Article 1 concerns the construction, operation, and maintenance of the cable system in the City. Section 9-3-122(o) specifically describes and regulates the pruning of public trees for cable wire and facilities clearances. These provisions are adequate if routinely followed and enforced. Section 9-3-123 generally describes the conditions for the use of public property for this activity and has provisions for the protection and repair of public structures and facilities.

### ***City of Alexandria Zoning Ordinance***

The City of Alexandria Zoning Ordinance was adopted June 24, 1992 and guides all land development and redevelopment in the City. The Department of Planning and Zoning is responsible for administration, review, inspection, and enforcement of its provisions. Chapter 9 of the City Charter, Planning, Zoning, and Subdivision Control, establishes the duties of the City Council, Plan Commission, and Board of Zoning Appeals and their roles in enforcing the Zoning Ordinance. In addition, Title 7 Chapter 1, Planning Commission, of the Municipal Code authorizes the City to participate in the Northern Virginia Regional Planning and Economic Development Commission.

The Zoning Ordinance recognizes the value of trees and takes several measures to account for and protect them:

- One of the purpose and intent statements is to “provide for the preservation of environmentally sensitive areas and urban forested lands.”
- Development plans must show existing tree cover and proposed landscaping in detail.
- Tree preservation measures are required and canopy cover must be provided for a minimum of 25% of the site.

- Overlay zones are established to allow for development in parks and open spaces that is consistent with and respectful of these land uses.

Article IX provides site plan requirements and general landscaping guidelines. Trees, shrubs, and other natural areas, including streams and wetlands, must be shown on all site plans. Preserved natural areas and/or individual trees must be indicated on the plans along with the methods that will be used to protect them during development of the site. Canopy cover must be provided for 25% of the site once the development is completed. Of the 25% canopy cover, at least half must include preservation of existing canopy and plan commission may approve up to 50% be provided with new plantings. In some cases, up to 100% of the required 25% canopy cover can be provided with new plantings.

Section 11-410(CC)(2) in Article IX of the Zoning Ordinance also establishes alternatives to traditional tree planting sites, allowing for plantings on decks, plazas, and even roof-tops to count to the minimum canopy coverage on a development site. The flexibility in this area of the Zoning Ordinance provides the City with the unique opportunity to encourage developers to implement alternative designs such as green roofs. Green roofs can help increase the size of the urban forest, particularly in the City's densest areas, where opportunities for additional tree planting are limited.

Article VI of the Zoning Ordinance establishes several special and overlay zones, including the public open space and community recreation zone (POS) and the waterfront park and recreation zone (WPR). The intent of the POS zone is "to preserve and enhance Alexandria's publicly owned open space and recreational areas and to protect the natural and developed amenities they possess." The WPR zone is intended "to enhance the vitality of the Alexandria waterfront by providing for parks, open spaces, and recreational opportunities." These areas provide a focal point for preserving existing canopy cover and increasing efforts to plant trees to increase canopy cover in the City's existing parks and open spaces.

### ***Landscape Guidelines***

The 1997 Landscape Guidelines were an interdepartmental effort to create a document for the use of property owners, developers, and applicants for site plan or special use permit approval in the development process. These current guidelines establish minimum standards and requirements for the protection and preservation of existing trees and vegetation and new plantings within the City.

The purpose and intent of this document are broad and admirable. The street trees and tree well specifications and planting detail are accurate and current. However, some of the details and specifications found within certain sections could be improved and expanded to truly achieve the stated and implied goals of the Landscape Guidelines relative to protecting trees and forests.

The science of arboriculture and the practical use of technical information about tree physiology and tree preservation measures have grown rapidly in the last decade, and the body of knowledge and experience continues to expand. Alexandria should use these resources to revise and strengthen most of the sections in the Landscape Guidelines.

### ***Virginia Codes***

Alexandria may be hindered from enacting legislation and taking actions that other cities across the nation can do within their comprehensive urban forestry program because the municipalities in the Commonwealth of Virginia are subject to the Dillon Rule of local governance. However, several sections of the Virginia Code relate directly to urban forestry issues and recommendations of this Plan.

#### **10.1-1127.1 Tree Conservation Ordinance**

Virginia Code 10.1-1127.1 clearly gives the City the right to create and adopt a public tree ordinance as has already been established. This section of the Code directly states that the local governing

body may adopt an ordinance “regulating the preservation and removal of...street trees. ... Such ordinance...may include reasonable fees for the administration and enforcement of the ordinance and may provide for the appointment... of an administrator of the ordinance.” The Code even allows for penalties for violations.

#### 15.2-960 Planting of Trees Destroyed During Construction

This section allows the City to make reasonable rules, regulations, and schedules for planting trees in and along public areas that have been destroyed in the construction process. This might be interpreted to allow for tree banking on public properties, thereby providing a mechanism for maintaining canopy cover on a city-wide basis.

#### 15.2-961 Replacement of Trees During Development

This unique section of the Code specifies that municipalities can require minimum canopy coverages within various land uses as a condition of site plan and subdivision approvals. The Codes states these minimum canopy coverages must be maintained or achieved in 20 years of the development:

- 10% canopy for land zoned business, commercial, or industrial
- 10% canopy for land zoned residential with 20 or more units per acre
- 15% canopy for land zoned residential with more than 10 but less than 20 units per acre
- 20% canopy for land zoned residential with less than 10 units per acre.

An interesting codicil of this section is that municipalities established before 1780 may make these minimum canopy coverages mandatory within only 10 years of a site’s development.

#### 15.2-4405 Creation of Districts of Local Significance

All localities have the authority to create special districts related to forest cover. Based on a minimum size of 20 acres, forest maps of a single or multiple districts may be created if the forests are significant, have scenic or historic qualities, and/or provide environmental benefits in the defined district.

## **MANAGEMENT AND OPERATIONS ANALYSIS**

A comprehensive five-year tree maintenance plan would have to provide for the maintenance of approximately 4,500 street trees per year at full stocking levels, and an estimated 1,500 to 3,000 trees per year for those trees located in parks and on other public properties, such as the schools annually. Additional personnel and resources will be required to develop, implement, and supervise this inclusive plan.

The development of a comprehensive tree management and maintenance program for all public trees requires a complete picture of what is to be managed. This will require that an inventory be developed for all street trees, park trees, and trees located at public facilities including City schools. An effort to inventory the City’s street trees was started in 2004. The inventory data includes the location of the trees on a geographical information systems (GIS) database, information about tree species, size, condition, and the planting site. Approximately 7,000 trees have been inventoried along all major arterial and connector streets, and in Del Ray. It is estimated that there are between 17,000 and 19,000 street trees along the City’s rights-of-way.

An inventory of street trees, park trees, and those on other public properties must be easily updated if it is to remain a useful management tool. Ideally, a tree inventory should be tied to a work order system that records all maintenance activities associated with each tree from the date of inventory or planting to the date of its removal. The City Arborist Office has conducted a partial

street tree inventory and a work order system that were developed in-house using available GIS and database programs. These systems do not work together and the tree inventory is not regularly updated. As a result, the street tree inventory cannot be used to make accurate management decisions.

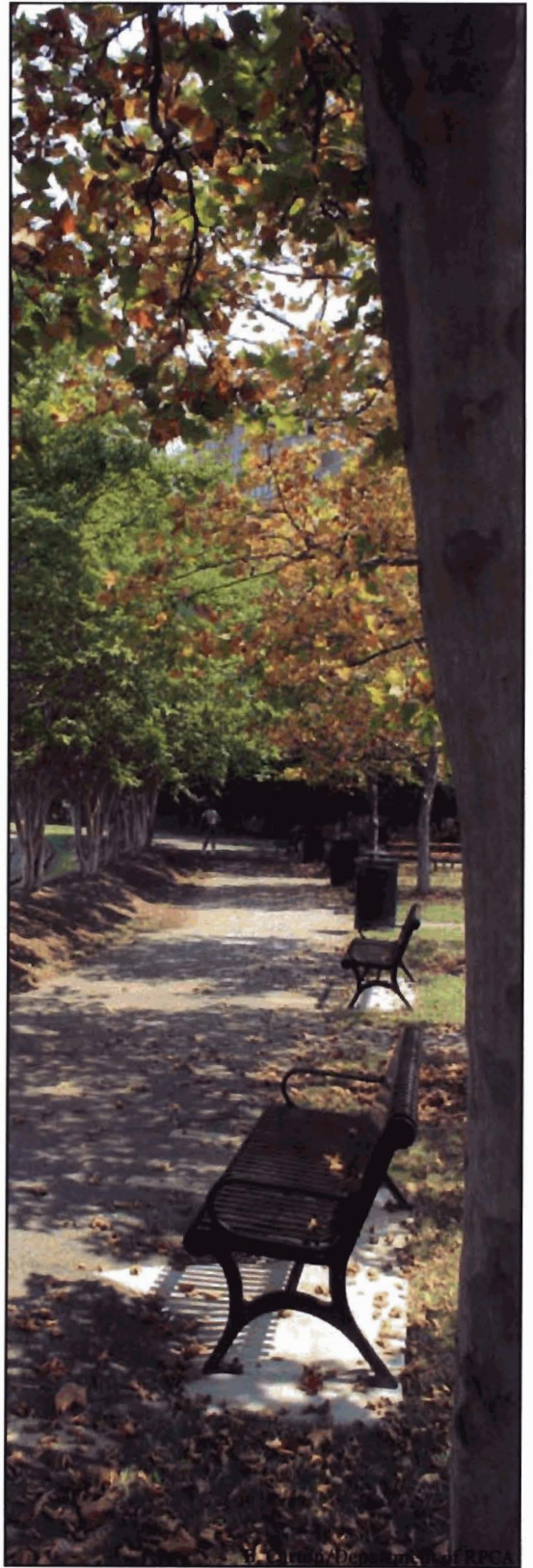
The Citizen Work Request and work order system now in use by the Arborist Office was developed in-house approximately 13 years ago. While the system works reasonably well, some inefficiency exists in the input requirements and output of the system; specifically the system is primarily paper-based, requiring data to be collected in the field and input at a later time back at the office. The result is a significant delay in completing inspection reports, and developing work orders that can be issued to the City's tree crews or contractors and further contributes to the lag time for completing the requested work. Computer hardware and software, and the technical knowledge to set up applications that would enable staff to input data in the field, print receipts or inspection reports to be left on site, and be downloaded into a main database are currently not available to the Department.

The City Arborist and/or Arborists regularly interact with other City departments that have responsibilities that directly and/or indirectly impact the development, maintenance, and preservation of Alexandria's urban forest. In some cases, the interaction of the Arborist Office with other City Departments is fairly well-defined; for instance, site plan review, Board of Zoning Appeals cases, building permit applications, and applications for waivers.

In other circumstances, the functions and responsibilities of other departments conflict with the best interests of City and/or private trees and the goals and function of the Arborist Office. These conflicts often involve the installation or repair of public and/or private infrastructure, such as curbs, sidewalks, street repairs, and storm and sanitary sewers. While many of these conflicts may be unavoidable, efforts should be made to encourage communication and cooperation among Departments. Standard procedures must be developed that allow for the careful and assessment of activities that occur around trees and identify and consistently apply criteria to be used to minimize damage or determine when tree removal is necessary to avoid the development of hazardous conditions.

In order to meet the challenge of transitioning from the current reactive management system to one that effectively addresses the needs of the entire urban forest, additional staff will be required. New program initiatives include street tree inventories, annual work plans for rotation pruning, the development of management and maintenance plans for trees in City parks, open spaces, stream valleys and on school properties. Work plans will include pruning all of the trees in designated sections of the City on a regular five to seven-year rotation. This shift in maintenance strategies requires an increased level of communication and cooperation with residents and civic organizations, and support from City administration and political leaders.

The City Arborist and Arborist spend a significant amount of time answering telephone calls, retrieving and responding to voice mail and e-mail requests, and inputting data for tree maintenance services. Most of these calls could be answered and request for service data directly input into the work order system by trained administrative staff, enabling the City Arborist and Arborist to concentrate on tree related matters in the field rather than clerical activities.





J. Noelle/Department of RPCA



## Appendix D. Recommendation Matrix

Recommendation	Priority	Annual Cost Increase	Annual Cost Savings	Comments
1. Adopt American Forest's recommended tree canopy coverage goal of 40% and develop a citywide strategy to meet this goal.	High	N/A	N/A	Short-term goal.
2. Perform tree canopy coverage analysis every five years using City Green or other comparable programs to determine changes in canopy cover and impervious surfaces.	High	\$8,000	N/A	Mid-term goal. This analysis would be completed every five years. The cost of the program includes \$3,000 for the required data and \$5,000 for the analysis.
3. Sustain Alexandria's existing tree canopy through a comprehensive tree replacement and maintenance program for trees on public property and by developing new and promoting existing educational resources for the public.	High	N/A	N/A	Mid-term goal.
4. Plant 400 more trees per year above what is currently being planted annually on public properties, including City rights-of-way, schools, libraries, and other public facilities.	High	\$90,000	N/A	Mid-term goal. The average unit cost for trees installed is approximately \$225 depending upon the species and size of the specimen.
5. Actively seek ways to increase Alexandria's tree canopy on private property.	High	N/A	N/A	Short-term goal.
6. Establish a tree bank to plant trees on both public and private properties. The bank would be funded through various sources such as development-related activities, property damage reimbursements, and other sources.	Moderate	N/A	N/A	Mid-term goal.
7. Create a grant program to permit the use of City funds to subsidize all or a portion of the cost for planting trees on private property.	Moderate	N/A	N/A	Long-term goal.
8. Continue the City's spring and fall tree sales program (established in 2005 under the auspices of the Urban Forestry Steering Committee).	High	N/A	N/A	Short-term goal.
9. Achieve and maintain a species diversity where no single genus comprises 15% and no single species comprises 5% of the total population.	Moderate	N/A	N/A	Long-term goal. This may be accomplished by expanding the palet of trees selected for planting and limiting the additional planting of Callery pear species and Red maples.

## Recommendation Matrix

Recommendation	Priority	Annual Cost Increase	Annual Cost Savings	Comments
10. Work with local civic and business groups to identify opportunities to plant additional trees on public and private lands.	Moderate	N/A	N/A	Long-term goal. Already conducted informally with small neighborhood groups.
11. Take steps to incorporate the use of more sustainable approaches to environmental design, such as rooftop gardens, to provide additional benefits for the City's overall canopy on private as well as public properties. Green roofs can provide some of the functions of forested areas including carbon fixation, shading, cooling, and watershed protection. Green roofs on underground parking structures can provide ground-level open space that is important to the continuous open space network.	Moderate	N/A	N/A	Long-term goal.
12. Conduct an inventory of all trees located in the public rights-of-way, in parks, on school properties, and at all other public schools and facilities. The inventory should be completed and reviewed on a continuous five-year schedule or as changes occur.	High	N/A	N/A	Short-term goal. To be completed on a five year schedule in concert with the recommended street tree pruning rotation.
13. Develop and implement master landscaping, planting, and maintenance plans for all public properties including City rights-of-way, schools, libraries, stream corridors, and open spaces, and implement one to two of these plans each year. These plans should provide maintenance rotations and establish level-of-service standards for each land use type. Plans should also include strategies for regular inspections of trees, criteria for treatment, and practical methods to maintain current information all on trees subject to treatment. Coordinate with the Departments of Transportation and Environmental Services and Planning and Zoning to ensure plans are consistent with existing transportation and area plans.	Moderate	N/A	N/A	Mid-term goal.
14. Develop quantitative methods to evaluate the overall health of Alexandria's street trees and trees on public properties.	High	N/A	N/A	Mid-term goal.
15. Plant and establish additional trees to achieve a 100% stocking level of available planting sites.	Moderate	N/A	N/A	Long-term goal.

## Recommendation Matrix

Recommendation	Priority	Annual Cost Increase	Annual Cost Savings	Comments
16. Actively seek opportunities to establish tree-lined medians along rights-of-way that are wide enough to create boulevards. Develop an urban forestry enhancement program specifically for Alexandria's unique boulevards and other significant transportation corridors.	Moderate	N/A	N/A	Long-term goal.
17. Establish criteria to identify sites that will permit the expansion of tree planting strips and tree wells to provide more suitable growing conditions for street trees, decrease conflicts between tree roots and urban infrastructure, and meet all Americans with Disabilities Act requirements for adequate clearance and passage.	High	N/A	N/A	Mid-term goal.
18. Work with the Departments of Transportation and Environmental Services, and Planning and Zoning to develop standards for, and require, innovative planting techniques and products to facilitate tree planting in restricted, high-use, difficult, and special needs areas.	High	N/A	N/A	Short-term goal.
19. Employ planting techniques that will promote the healthy growth of trees within an urban setting, such as alternative soil mixtures, extended tree wells, and systems to direct and manage root growth and limit conflicts between roots and urban infrastructure. Develop standards for planting in areas where space is too restricted or soil, aeration, drainage, or other conditions preclude providing adequate space and a satisfactory environment for trees to survive and thrive.	High	N/A	N/A	Mid-term goal.
20. Explore opportunities to protect existing trees by using alternative paving materials and methods to correct conflicts between tree roots and sidewalks, such as rubber sidewalks, stone dust, permeable paving, and alternative pavement profiles.	High	N/A	N/A	Mid-term goal.
21. Seek to relocate all overhead wires underground to avoid conflicts with trees and provide increased opportunities to plant large shade trees with an emphasis on major corridors.	Moderate	N/A	N/A	Long-term goal.

## Recommendation Matrix

Recommendation	Priority	Annual Cost Increase	Annual Cost Savings	Comments
22. Implement pilot programs to develop and adopt alternative street profiles and sections that provide larger tree planting areas, more open space, increased permeable surface area, and new opportunities for stormwater management, also referred to as shared street concepts.	Moderate	N/A	N/A	Long-term goal.
23. Establish and implement comprehensive planting and maintenance plans for trees located on parks, schools, and other public open space properties tree planting and maintenance plans for trees located in public parks and open spaces. These plans should be developed in conjunction with park landscape master/management plans which include both development and rotational maintenance costs.	High	N/A	N/A	Mid-term goal.
24. Build on the City Open Space Plan's recommendation to seek innovative ways of creating more open space by developing and implementing pilot projects such as Green Streets (see Appendix F), which are aimed at redesigning streets to reduce impervious surface, thus freeing up land for tree planting and helping to meet other environmental goals, such as reducing the impact of storm water runoff.	Moderate	N/A	N/A	Long-term goal.
25. Rededicate Fort Ward Park as the City's Arboretum and develop and adopt a master plan for the park. Create a collection of trees and other woody plants that will serve as an educational resource for City residents and visitors.	High	\$25,000	N/A	Mid-term goal.
26. Promote the value of tree donations and other support programs, such as the Living Landscape Program, as a source of trees to be planted in parks and other public open spaces. Park master plans should be developed with tree locations that are ear-marked for living landscape trees.	High	N/A	N/A	Short-term goal.
27. Continue to celebrate Arbor Day and hold other special events and educational programs about urban forestry on parks and school grounds.	High	N/A	N/A	Short-term goal.
28. Encourage the establishment and healthy growth of native tree species through planting and maintenance.	Moderate	N/A	N/A	Mid-term goal.
29. Control invasive plant species.	High	N/A	N/A	Short-term goal.

## Recommendation Matrix

Recommendation	Priority	Annual Cost Increase	Annual Cost Savings	Comments
30. Improve maintenance of overgrown and currently inaccessible and under-used stream valleys and natural public open space.	Moderate	N/A	N/A	Long-term goal
31. Provide and promote incentives to plant trees and implement projects to preserve and enhance the tree canopy on institutional and semi-public sites, such as INOVA Alexandria Hospital and Episcopal Seminary and High School.	High	N/A	N/A	Mid-term goal
32. Encourage the establishment and dedication of open space, tree canopy conservation, scenic and historic easements on institutional and private properties.	Moderate	N/A	N/A	Mid-term goal
33. Develop guidelines for, and privately fund, a City grant program to support tree planting on private property. Grants should be made available to qualified homeowners, civic organizations, places of worship, religious institutions, and other not-for-profit organizations.	Moderate	N/A	N/A	Long-term goal
34. Educate private property owners about the benefits of trees and proper planting and maintenance strategies.	High	N/A	N/A	Short-term goal
35. Encourage homeowner and civic associations to create tree or beautification boards with which the City Arborist can communicate and provide information about tree planting and maintenance on this type of property.	High	N/A	N/A	Mid-term goal
36. For commercial and industrial properties, enforce site plan and special use permit landscape requirements and conditions for new and existing development sites. Perform site inspections to ensure compliance.	High	N/A	N/A	Short-term goal
37. Evaluate, update, and enforce the City's existing rules and regulations.	High	N/A	N/A	Short-term goal
38. Plan, fund, and implement a five-year pruning cycle for all established trees and a three-year establishment program for new trees planted along City streets, in parks, and on school and other public properties.	High	\$480,000	N/A	Mid-term goal. This would provide for the pruning of an additional 4,000 trees annually; to be accomplished through block to block pruning which will reduce the average unit cost of pruning a tree by an estimated 25%.

## Recommendation Matrix

Recommendation	Priority	Annual Cost Increase	Annual Cost Savings	Comments
39. Transform the City Arborist Office and Tree Maintenance Section into a proactive Urban Forestry Section with a systematic and strategic focus on the urban forest system as a whole. Develop and management plan and provide resources needed to effectively manage the plan. Optimize personnel allocations and create efficiencies by combining the City's urban forestry and horticulture programs under one Natural Resources Section.	High	N/A	N/A	Short-term. Convert five-year temporary Arborist position to permanent status.
40. Create a new Urban Forest Specialist position that would be dedicated to activities aimed at preserving and enhancing the City's urban forest.	Moderate	\$110,000	N/A	Mid-term goal.
41. Fund requests for additional tree trimmers and horticulture staff necessary to successfully meet the goals of the Urban Forestry Master Plan.	High	\$301,000	N/A	Mid-term goal. This would include the conversion of the vacant Assistant Superintendent position to a Tree Trimmer Position. Create two new Tree Trimmer Positions to create a third tree crew to accomplish the expanded soope of services recommended; \$160,000. Create two new Horticultural Assistant positions to meet the demands to maintain the additional trees planted and implement a comprehensive watering and new tree maintenance program; \$120,000. Purchase one chipper truck, one brush chipper, and one utility dump truck for the horticultural crews; \$21,000 annual equipment replacement cost.
42. Establish benchmarks and report progress in an annual State of the Urban Forest Report to the City Manager and City Council.	High	N/A	N/A	Short-term goal.
43. Develop and implement an effective public outreach and education strategy and pursue it actively and consistently. Volunteers are a greatly untapped resource in this regard and should be a core part of this strategy.	High	N/A	N/A	Short-term goal.
44. Create a series of public service announcements on various urban forestry topics for radio, cable access television, and print news media outlets.	Moderate	N/A	N/A	Mid-term goal.

## Recommendation Matrix

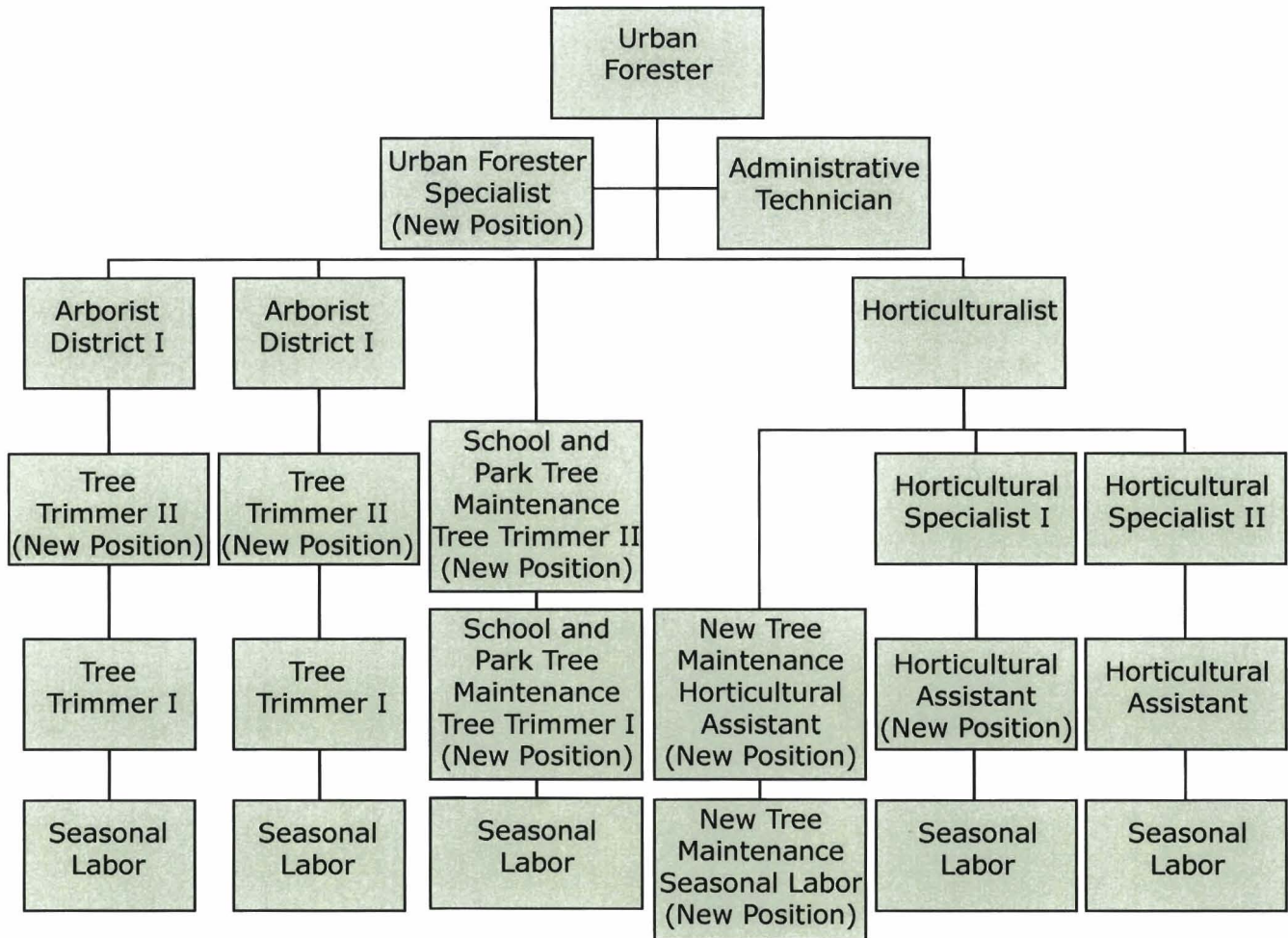
Recommendation	Priority	Annual Cost Increase	Annual Cost Savings	Comments
45. Develop and distribute information about the proper care for trees after they are planted.	High	N/A	N/A	Short-term goal.
46. Promote the preservation and expansion of Alexandria's tree canopy with programs, such as seminars and neighborhood tree walks.	Moderate	N/A	N/A	Mid-term goal.
47. Increase support for and promote the expanded use of existing public resources such as the Cooperative Extension Service and the Tree Stewards and Master Gardeners of Arlington and Alexandria to provide assistance advice and educational opportunities and materials to the citizens of Alexandria.	High	N/A	N/A	Short-term goal.
48. Fund an additional extension agent at Virginia Cooperative Extension who would provide vital volunteer programming services for Alexandria's residents. This person would, among other tasks, work to expand Alexandria's role in the Tree Stewards of Arlington and Alexandria program, a group of volunteers trained by the extension service to educate and assist citizens on proper tree planting and care.	Moderate	\$70,000	N/A	Mid-term goal.
49. Promote the availability and distribution of information to the public about the selection, planting, and care of trees through the development of an effective website <a href="http://www.alexandriatrees.org">www.alexandriatrees.org</a> , and the publication of handbooks, fliers and other publications.	Moderate	N/A	N/A	Mid-term goal.
50. Encourage collaborative efforts with local schools of landscape architecture to study opportunities to improve streetscape, public open space, park, school, and facility designs.	High	N/A	N/A	Short-term goal
51. Create partnerships with allied businesses and organizations to share in the distribution of timely urban forestry information; partnerships could include: local realtors, utility companies, nursery and landscape companies, and tree services contractors.	Moderate	N/A	N/A	Long-term goal.
52. Create opportunities for citizens to become program volunteers for projects and program assistance, such as tree planting, small tree maintenance, teaching, grant writing, and marketing and public relations.	High	N/A	N/A	Short-term goal.



J. Noelle/Department of RPCA



# Appendix E. Proposed Reorganization Chart





B. Carton/Department of RPCA



## Appendix F. Proposed Pilot Projects

### GREEN STREETS

In recent decades, urban planners, landscape architects, and others have been developing innovative ideas for increasing the amount of green, livable space in densely developed communities around the world. Recognizing that public streets often cover nearly one-third of urban landscapes with impermeable surface, these professionals have developed ways of retrofitting and redesigning streets to not only increase the amount of green space but also to accomplish a variety of environmental and other objectives. These designs have become known as green streets.

At their most basic, green street projects remove impermeable surface and allow more tree planting and other landscaping. But they can also be much more complex. In Portland, Oregon, for example, streets are being redesigned to mimic the natural hydrology of an area, in order to manage storm water, reduce flows, improve water quality, and enhance watershed health.

In some European and other countries, the entire concept of the street has been rethought. In the shared streets concept pioneered in Europe in the 1960s and 1970s, streets have been redesigned so that moving cars must share the street with pedestrians, including children at play and bicyclists. Vehicles, including emergency vehicles and wheelchairs, can still pass through, and residents still have areas to park their cars, but speed is restricted by careful placement of planting strips and other measures. Curbs, sidewalks, and grades changes are often eliminated to enhance a sense of continuous space. In essence, a kind of street park is created, which can be especially important in urban areas with little open space.

Although green streets were pioneered overseas, they have been increasingly embraced by U.S. cities such as Portland and Seattle. New York City recently announced a plan to construct 800 green streets. Green street ideas were incorporated into a project aimed at reinventing Commonwealth Avenue in Alexandria, which was conducted by Virginia Tech faculty and graduate students and sponsored by the Del Ray Citizens Association.

The Urban Forestry Master Plan proposes that the city adopt a pilot program to retrofit or redesign several streets or blocks in the city to allow more greening of the street, in the form of less impermeable surface and greater tree cover and other landscaping. The pilot program is designed in part to help overcome significant problems in planting street trees, especially inadequate planting areas and interference with overhead power lines. These obstacles often make it impossible to grow larger shade trees, which provide far more environmental and health benefits than do smaller trees (especially cleaner air and cooler temperatures during the summer). The pilot program is also designed to help implement goal 2 of the City's Open Space Plan, which is to "develop innovative opportunities for creating additional public open space."

For more details about green streets, see the following articles: "Green Streets: a better way to go" <<http://www.djc.com/special/landscape00/5.html>>; and "Green Streets: An Innovative design Approach" at <[http://extension.ucdavis.edu/unit/green\\_building\\_and\\_sustainable\\_design/pdf/resources/green\\_streets.pdf](http://extension.ucdavis.edu/unit/green_building_and_sustainable_design/pdf/resources/green_streets.pdf)>.

More detailed information about Portland, Oregon's program can be found at <<http://www.portlandonline.com/shared/cfm/image.cfm?id=153974>>. A virtual tour of Portland, Oregon's green streets can be taken at <<http://www.portlandonline.com/shared/cfm/image.cfm?id=96962>>.

For more information on shared streets, see "Streets for people too" at <[http://www.architectureweek.com/2004/0505/building\\_1-1.html](http://www.architectureweek.com/2004/0505/building_1-1.html)>.

## **REDEDICATION OF THE CITY OF ALEXANDRIA ARBORETUM AT FORT WARD PARK**

Fort Ward Park was designated the City of Alexandria's Arboretum on Arbor Day 1983. Its purpose was to showcase a wide variety of plants, including trees and shrubs that are well adapted to Alexandria gardens. One of the City's most popular destinations, Fort Ward attracts visitors to its Museum and historic site, picnic areas and playground, its amphitheater for summer concerts, and for many just a leisurely stroll along its shaded loop road.

The multiple uses of the park and the increasing pressures of recreational demands on the site have led to the decline of the park's tree population and a loss of focus on its function as a showcase for native and ornamental woody plant species. With the passing of the Arboretum's 25th anniversary gone unnoticed, it is time to rededicate this valuable resource to its important function as a collection of trees and shrubs that the public can come to observe study and enjoy throughout the year. This rededication should include a careful study and development of a plan that will integrate and celebrate the park's historic past as well as its future and importance as one of the City's premiere recreational sites. It should also include the reestablishment of the park's once enviable collections of azaleas and camellias and the thoughtful development of plant collections that will demonstrate a variety of plants that can be incorporated into local landscapes.

As a pilot program, the preliminary concepts of the plan could be developed with the help of schools of landscape architecture and land planning and landscape design programs of local universities.

The rededication of the City's Arboretum at Fort Ward Park should capture the imagination of gardeners and plant enthusiasts, gladden the hearts of present and future generations, and encourage all to plant trees and preserve our tree canopy.

## **COMMONWEALTH AVENUE: LOVE ME OR LEAVE ME NOT**

In December of 2005, the Del Ray Citizens Association in Alexandria, Virginia approached Virginia Tech about plans and designs for creating a new kind of landscape for Commonwealth Avenue that is part street and part park. The Association voiced concerns about Commonwealth Avenue's declining infrastructure and its accessibility for walkers and cyclists while many members believe its tree-lined medians could serve as a catalyst to enhance its green assets. The goal of the community and student collaboration was to establish a green vision for Commonwealth Avenue.

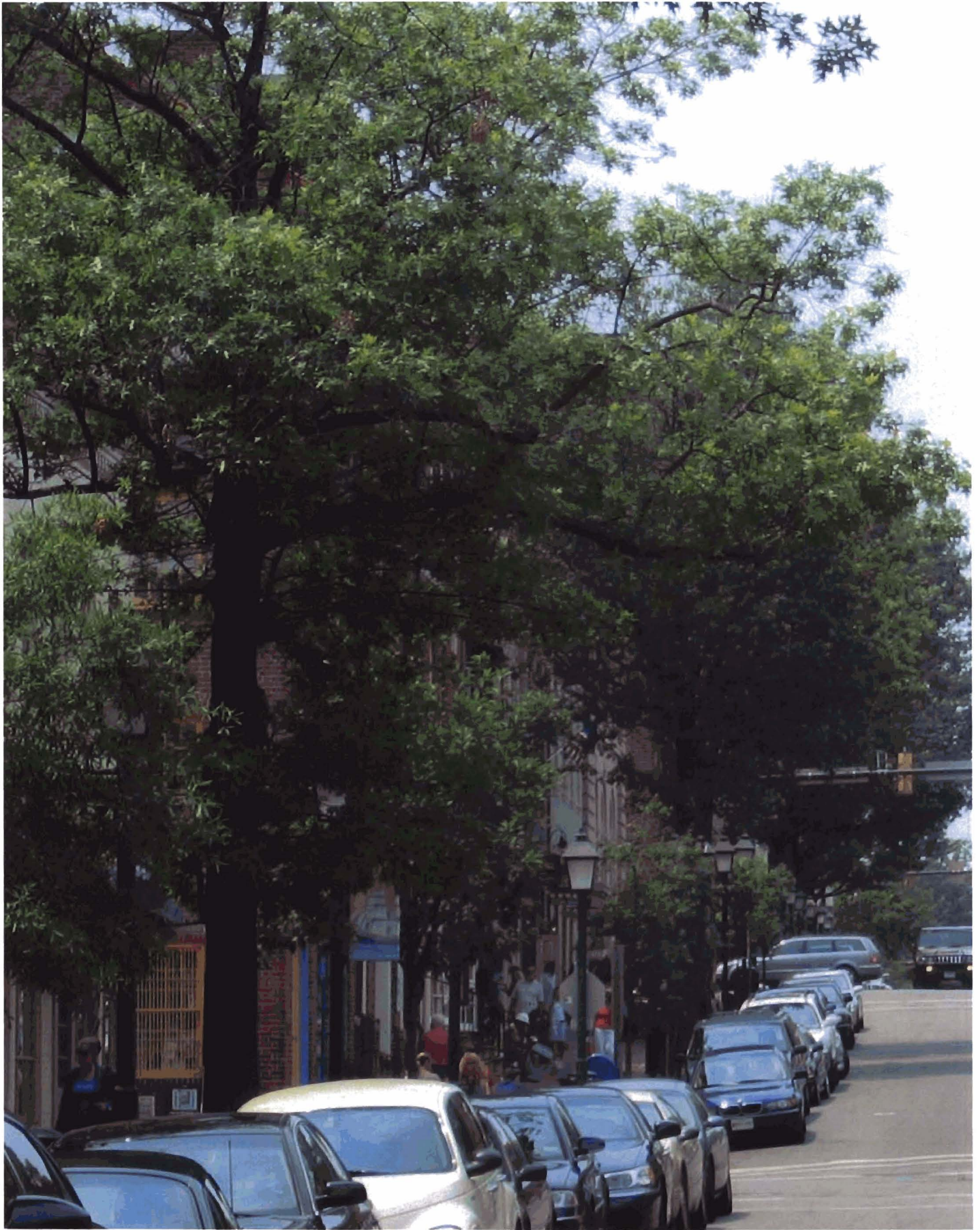
The final report, *Commonwealth Avenue: Love Me or Leave Me Not*, presents the results of four student design and planning teams along with neighborhood input. It offers ideas and suggestions for the community and city officials to consider how Alexandria can adapt the designs and concepts presented to form a more cohesive open space/transportation plan for Commonwealth Avenue.

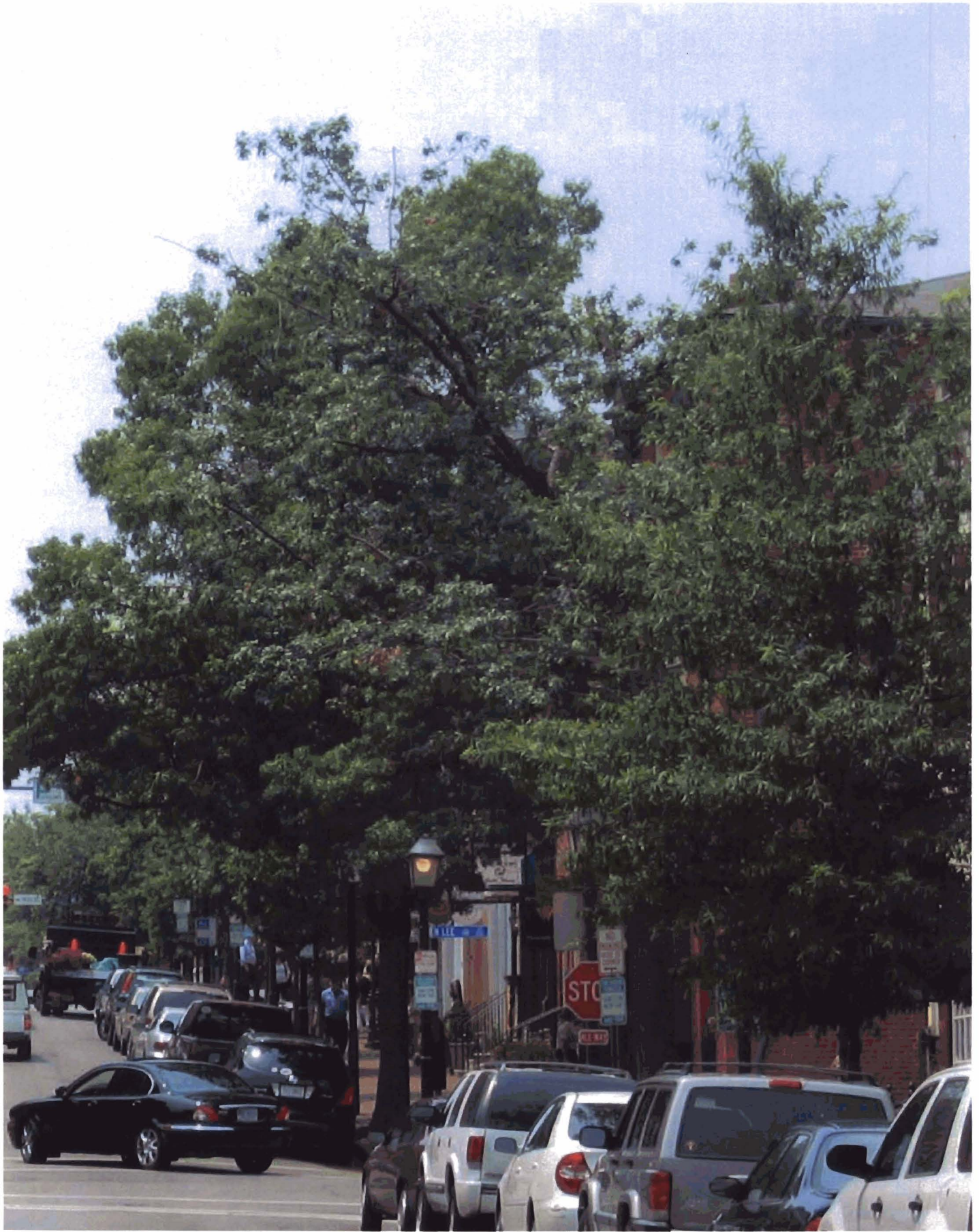
The conclusion of the report suggested several demonstration pilot projects that could be launched to test some of the design concepts presented and to promote public interest and support for the project and the long-term goals of the plan.

These pilot projects include:

- The design and development of a green promenade from Reed Avenue to the southern bank of Four Mile Run.
- The development of detailed designs and master plans for Commonwealth Avenue between Monroe and Mount Vernon Avenues with a particular focus on tree inventories, new and replacement tree plantings, new landscapes, possible pocket park designs, coordinated pedestrian scale street furniture, and traffic calming/pedestrian safety strategies.
- Experiment with the living streets concept presented by one of the design teams. Living streets are typically urban, pedestrian streets formed by placing trees, planters, parking areas, and other obstacles in the street to slow vehicles. Motorists are guests and must travel at walking speeds. A living street is more like a grand sidewalk than a street, where residents can navigate their cars between trees and people to get to their homes.

The full report can be viewed at <[http://www.nvc.vt.edu/uap/research/commonwealth\\_avenue.html](http://www.nvc.vt.edu/uap/research/commonwealth_avenue.html)>.





Testimony by Bill Hendrickson at City Council public hearing on the Alexandria Urban Forestry Master Plan, June 13, 2009

My name is Bill Hendrickson and I was a member of the committee that helped produce this plan. I want to thank Councilman Krupicka for his efforts in initiating the process that led to this plan, as well as former Council member Andrew Macdonald.

I want to highlight a few of our serious challenges and then make some practical recommendations for change, even in a difficult financial time. Three points on the problem.

1. Whereas Washington, DC, thanks to Casey Trees, is in the process of revitalizing its urban forest, Alexandria is going in the opposite direction. Our tree canopy has declined from 34% to 30% in just this decade—a dramatic change for such a short time span. We are planting far fewer trees than are being lost, and the health of our forest is declining.

2. We are not caring for our trees. We generally plant them, then neglect them until they fall down or cause a problem. We now spend more money on removing or dealing with dead or problem trees than we do on planting and tree care combined. Talk about skewed priorities.

3. Our tiny arborist office, though highly professional, spends most of its time reacting to problems and very little time working to preserve and enhance our forest.

Now, what can we do?

1. First, we need to plant many more trees. There are opportunities to plant an additional 5,000 street trees. Could some or all of this work be done by part-time employees or volunteers rather than relatively expensive contractors? We also have a major opportunity to do much more planting on school and other public grounds. We have the in-house expertise to develop landscaping/planting plans for these properties, and I urge you to direct the staff to do at least two a year. We also need to continue city tree sales. And ~~because much of our urban forest is on private property,~~ we should subsidize tree planting on private property.

Although we need to plant many more trees, it's important to remember that the ultimate goal is to increase the overall tree canopy. The best way to do this is to plant more, larger shade trees, which also have far greater environmental benefits than small trees. But the reality is that in many parts of the city today, far more small trees are being planted than shade trees. A big reason for this is the lack of adequate space for planting larger trees. This is a critical issue for the city. If we can't find ways to create larger planting strips for bigger trees, we'll be forced to plant more small trees, and our tree canopy will continue to decline. I urge you to direct staff to study the many alternatives that exist today for creating more planting space, explore how they could be used in Alexandria, and implement pilot projects.



12  
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6-13-09



"Judy Noritake"  
<jnoritake@nka-arch.com>  
06/10/2009 11:36 AM

To <Jackie.Henderson@alexandriava.gov>  
cc  
bcc  
Subject

Jackie:

Please distribute the attached letter to the Mayor and City Council Members. Thank you.

Judy Noritake

**Judy Guse-Noritake, AIA, LEED AP**

**NORITAKE**  
associates

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DEPARTMENT OF RECREATION, PARKS  
AND CULTURAL ACTIVITIES

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Alexandria, Virginia 22314-3999

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## Park and Recreation Commission

June 10, 2009

The Honorable William Euille  
Vice Mayor Redella Pepper  
Councilman Ludwig Gaines  
Councilman K. Rob Krupicka  
Councilman Timothy Lovain  
Councilman Paul Smedberg  
Councilman Justin Wilson

Re: Urban Forestry Master Plan

Dear Mayor and Council Members:


The members of the Park and Recreation Commission would like to convey our support for the adoption of the Urban Forestry Master Plan as an amendment to Alexandria's Master Plan. We understand you take this up for discussion at your next meeting.

The development of an urban forestry plan was first put forward as a priority when the Open Space Plan was developed, nearly a decade ago. The Open Space Plan took a forward-looking and broad view of all aspects of the natural resources in our community, including its "forest resources". The recognition of the far-reaching ecological importance of the small forest patch at Monticello Park for migratory songbirds underscored the need to view our trees in a broader way and so included a call for an urban forestry plan.

As this urban forestry plan was developed over a number of years we clearly began to see the challenges and opportunities for our trees and urban forest areas emerge in detail. The plan that you have in front of you recognizes the important role trees play in our own community and in the context of regional environmental challenges. It lays the groundwork for preservation, restoration and enhancement of Alexandria's urban forest resources which include enhanced wildlife habitat, cleaner air and water and a more beautiful place to live, work and visit.

The benefits of adopting and then investing in the vision this plan represents will have tangible benefits to all our citizens. We urge you to adopt this as an amendment to the Alexandria Master Plan without reservation.

Respectfully,

  
Judy R. Guse-Noritake, AIA, LEED AP  
Chair, Park and Recreation Commission

Cc: Jim Hartmann, City Manager  
Rich Baier, Acting Director, RPCA  
Deana Rhodesside, Chair, Urban Forestry Steering Committee  
John Noelle, Alexandria Arborist  
Park and Recreation Commission

12  
6-13-09



**Bill Hendrickson**  
<whendrick@aol.com>

06/08/2009 09:42 AM

Please respond to  
Bill Hendrickson  
<whendrick@aol.com>

To william.euille@alexandriava.gov,  
timothy.lovain@alexandriava.gov, councilmangaines@aol.com,  
council@krupicka.com, delpepper@aol.com,

cc

bcc

Subject COA Contact Us: Urban Forestry Master Plan

**Time: [Mon Jun 08, 2009 09:42:13] IP Address: [69.140.86.188]**

**Issue Type:** Mayor, Vice Mayor, and Council Members  
**First Name:** Bill  
**Last Name:** Hendrickson  
**Street Address:** 304 East Spring St.  
**City:** Alexandria  
**State:** VA  
**Zip:** 22301  
**Phone:** 703-549-7365  
**Email Address:** whendrick@aol.com  
**Subject:** Urban Forestry Master Plan

Dear Mayor Euille and members of the City Council:

At your June 13

meeting, you will be discussing and hopefully adopting the Alexandria Urban Forestry Master Plan. As a member of the committee that helped prepare the plan, I want to emphasize a number of points that I feel are especially critical.

We have serious problems. Our overall tree canopy and its health are declining. In the next fiscal year, we will be able to provide hardly any care for our trees, undermining our investment in planting them. In fact, in fiscal year 2010, we will spend more on removing dead trees and dealing with problem trees than we will on planting and tree care combined. Our tiny arborist office is struggling to fulfill even its most basic responsibilities.

A greater financial commitment will be needed, which I understand will be difficult in the current fiscal environment.

However, one area is critical for additional funding: tree care. Two aspects of this are important. First is care of newly planted trees, which must be watered in the first two to three years until their root systems can be sufficiently developed to store adequate water. The second aspect is the need for a "formative" pruning to be done within the first 10 years after planting. This formative pruning is critical because it shapes the tree to ensure healthy growth, and it can remove weaker branches that can later cause big problems and be much more time-consuming and expensive to deal with. This formative pruning is relatively easy to do, doesn't require special equipment, and can be done by staff or well-trained seasonal employees or volunteers.

We also need to plant more trees, and this will also require more money, although perhaps only a modest amount if we can find alternatives to the current system of having trees planted only by relatively expensive contractors. Again, well-trained seasonal employees or volunteers could do this. Healthy retired people are often interested in this type of work and could even be hired on a part-time basis at a modest hourly wage with no benefits.

The plan estimates that as many as 5,000 additional street trees could be planted, and there are many planting opportunities on other city property as well, especially school grounds. I urge you to authorize a landscaping/planting plan for two school properties a year, beginning with the middle schools. This design work can be done in house by Judy Lo, a landscape designer with the Department of Parks, Recreation and Cultural Activities, who did a fine job with the design of the pocket park in Del Ray. Volunteers could assist staff with the actual planting.

**Comments:**

Although we need to plant many more trees, it's important to remember that the ultimate goal is to increase the overall tree canopy. The best way to do this is to plant more, larger shade trees, which also have far greater environmental benefits than small trees (trees that never get

very big). But the reality is that in many parts of the city today, far more small trees are being planted than shade trees. A big reason for this is the lack of adequate space for planting larger trees. This is a critical issue for the city. If we can't find ways to create larger planting strips for bigger trees, we'll be forced to plant more small trees, and our tree canopy will continue to decline. I urge you to direct staff to study the many alternatives that exist today for creating more planting space, explore how they could be used in Alexandria, and implement pilot projects aimed at creating green streets.

Because much of our urban forest is on private land, we should create incentives for planting on private property. In addition to the biannual city tree sales, we should subsidize planting of big shade trees on private property, as the plan recommends.

Finally,

and especially in light of the city's current financial circumstances, we need to develop active and engaged partnerships between the city staff and neighborhood, community, business, and other organizations. Although the staff today is very responsive to citizen requests, it is not proactive.

This must change. The report calls for a new urban forest specialist position that would be dedicated to activities aimed at preserving and enhancing the urban forest. (We need somebody with the vision, energy, and drive of Yon Lambert, the pedestrian and bicycle coordinator.) But if funding for this new position is not immediately available, I urge that the city hire an independent consultant to examine how the arborist staff spends its time and find ways to reorient it to a proactive rather than its current, almost entirely reactive posture.

I personally am willing to provide significant additional volunteer time in helping to implement the Urban Forestry Master Plan. I believe that there are others like me. What is critical to me is a demonstrable commitment by the City Council to implement the plan. That will involve providing clear direction to staff

and the subsequent development of a specific action plan for the next few years. You must make it clear to staff that we need to be flexible and proactive but above all creative, if we are to make progress during the difficult fiscal times ahead. Thank you.

Bill Hendrickson  
Member,

Alexandria Urban Forestry Steering Committee