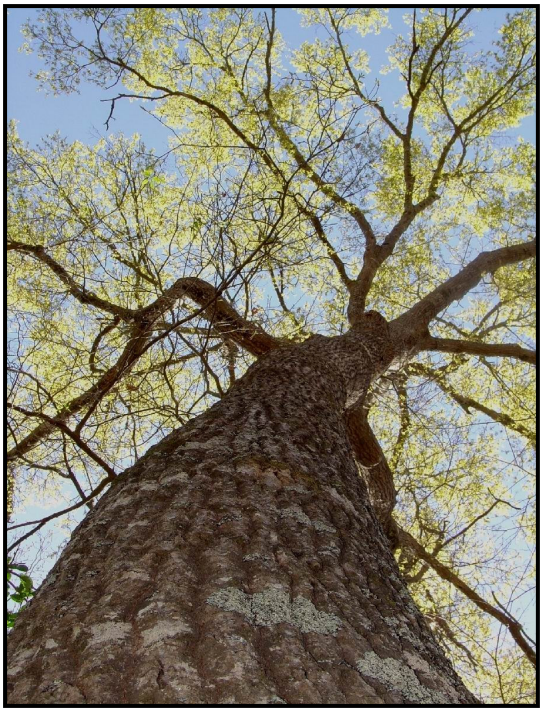
CITY OF COLLEYVILLE

Street Tree Inventory and Recommendations



June 2005

TEXAS FOREST SERVICE
The Texas A&M University System

Executive Summary – Colleyville Inventory

In April 2005, Texas Forest Service conducted a five-percent sample of public street trees for the City of Colleyville, Texas. During the survey, potential planting sites in the public right-of-way and on private front yards were also recorded.

Overall, the survey found that the street tree population is estimated to contain 36% oak species (14% post oaks) and a total of 11,900 street trees. Most trees are under 10" diameter, indicating an overall young forest. Eighty-eight percent of the trees are in at least fair condition, with 50% listed as good or excellent.

The value for Colleyville's public street trees is estimated to be more than $20 million based on the *Tree and Plant Appraisal Guide, 9th Edition.*

An abundance of possible planting sites were identified on both public and private land. It is estimated that there are more than 20,000 of these potential planting sites.

Recommendations include both short- and long-term options. Major recommendations include increasing tree plantings, reducing risk by training young trees, annual inspections of all street trees and developing an annual work plan.

Other short-term recommendations include additional staff training and ISA certification, as well as increasing public awareness of the value of the community forest.

Long-term recommendations include a 100 percent public tree inventory in order to develop a master plan for management of this valuable resource.

Introduction

Texas Forest Service (TFS) was contacted in early 2005 by Colleyville City Councilman Rich Hendler to review the current tree management and help the city determine priorities for future urban forestry efforts. In April, six TFS regional urban foresters conducted a Texas Sample Community Tree Inventory (TXSCTI) of five percent of the street blocksides in Colleyville. This was a survey of public street trees only and not trees on private property. This report consists of two sections: The State of the Urban Forest and Recommendations.

Colleyville, Texas

Incorporated in 1956, today Colleyville has over 27,000 residents. The town is located in Northeast Tarrant County near DFW International Airport. On average, residents of Colleyville have a higher annual median household income and higher educational levels than Tarrant County as a whole. The city has fixed boundaries and according to a 1994 master plan, the anticipated population at build-out may be as much as 36,000.

Current Tree Management In Colleyville

Colleyville is located mostly in the Eastern Cross Timbers region, characterized by oak woodlands composed primarily of post oak forest, with pockets of prairie. There is some neighborhood group involvement in urban forestry issues with excellent interaction between these groups and the city. Citizen awareness is considered high by the city with trees viewed as vital components of the community according to an urban forestry survey.

A limited, city-wide tree management plan exists, which includes an approved species list, a tree preservation ordinance, pre-development tree inventories, and fines and penalties for violations. A penalty of $100 per inch of removed or damaged trees is enforced as well as an inch-for-inch replacement of the removed trees. Program funding is considered "fair" by the city, and care consists primarily of contracted response to emergency situations. A partial tree inventory of park trees has been conducted, however no written tree care standards exists. No inventory of street trees has ever been conducted, and Colleyville has no Urban Forestry Master Plan.

The Colleyville Tree Board currently interprets and enforces the tree preservation ordinance. The Parks Department oversees the care and maintenance of city trees in parks and greenbelt areas, however they have no line-item budget for tree care activities. Ninety-eight percent of new tree planting stock for the parks is obtained from commercial nurseries. A contract maintenance program was drafted six years ago for park properties to guide tree management and includes pruning and a regular watering program for newly planted trees.

The street department, along with the code enforcement office, handles tree related issues for trees situated adjacent to city streets or for trees illegally removed. In total, these three departments receive less than 100 citizen calls each year concerning tree issues. ATMOS Energy is the utility company responsible for trimming trees near overhead power lines.

State of the Urban Forest

A five percent sample street tree inventory was conducted on April 20- 21, 2005, by a team of urban foresters from Texas Forest Service, and serves as the benchmark in the planning process for public trees in Colleyville. A windshield survey was taken and data recorded on a collection form, which can be found in Appendix I. For each of the 595 trees surveyed in the five percent blockside sample, data was collected on species, diameter, condition, and deadwood in the crown. Potential planting sites were also listed for both public right-of-way and front yards. Definitions of these data fields are found in Appendix II.

Species

The species or type of each tree was recorded by the foresters. For a complete list of trees, see Appendix II.

- **There are 42 species of trees.**
- **Almost 15% of the forest is composed of crape myrtles and Callery Pears. While attractive, both are non-native and provide limited environmental benefits. Research indicates that no one tree type should make up more than 10% of the population.**
- **Colleyville has an estimated 11,900 street trees.**

Figure 1

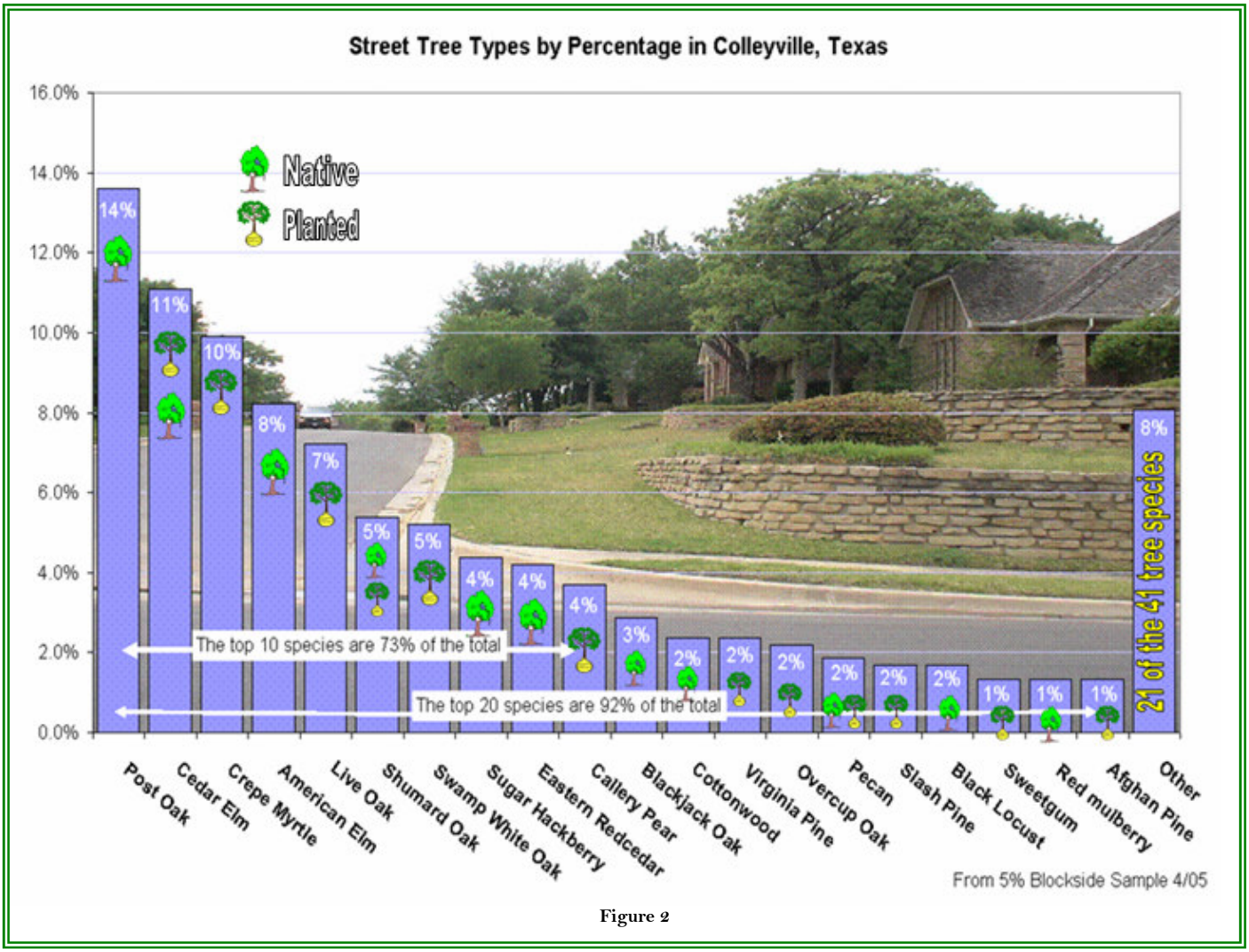


Figure 2

- **The top 20 species are evenly divided between planted and native trees. Over time the planted trees will replace most of the native forest trees.**
- **73% of all trees are in the top ten species (post oak 14%, cedar elm 11%, crape myrtle 10%, American elm 8%, live oak 7%, Shumard oak 5%, swamp white oak 5%, hackberry 4%, Redcedar 4%, pear 4%)**
- **The most abundant species, post oak (14%), is long-lived, slow growing and very sensitive to root disturbance from construction.**

Tree Size

All trees were categorized by size according to "diameter class." This is a measurement of trunk circumference 4.5 feet above the ground. Diameter classes are summarized in the chart below.

- **75% of public street trees are less than ten inches in diameter.**
- **Most of the street trees in Colleyville are young (small), and there are relatively few risk management concerns from large deadwood at this time**
- **Many of these young trees are in need of proper training to correct defects in their structure. Maintenance performed while the trees are small is inexpensive, increases the lifespan, and reduces future risk management concerns.**
- **A large number of the 0 – 5" trees are naturally regenerated trees along old fence lines or in ditches. These trees generally have a lower value than planted landscape trees.**

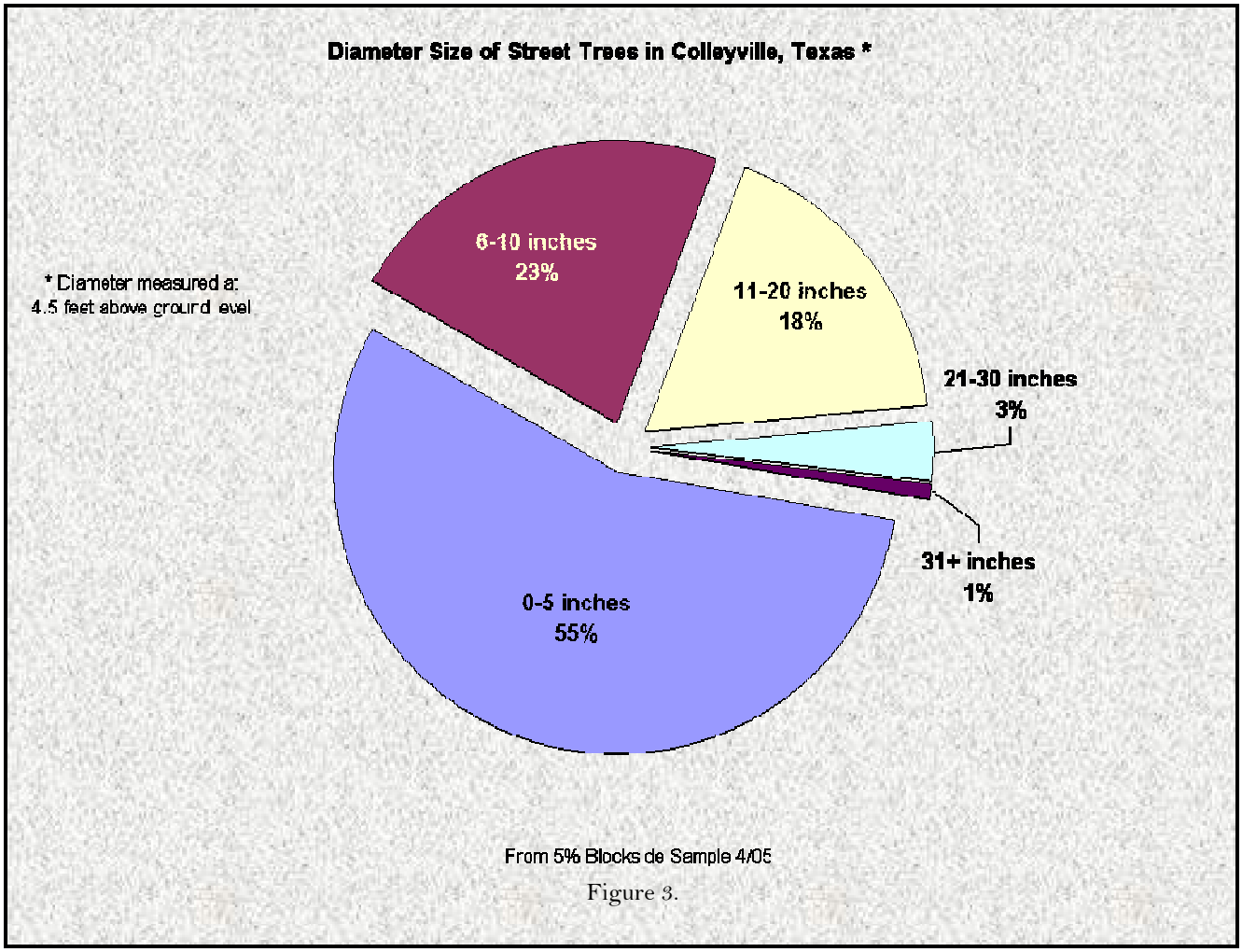


Figure 3.

Condition

Condition class is a general assessment of the overall health of a tree. Classes were separated into four categories: "Excellent," "Good," "Fair" and "Poor."

- **88% of the city's trees are in excellent, good or fair condition. This corresponds with the data showing the majority of trees are young (small) and major faults have yet to develop.**
- **13% of the trees are in poor condition or dead.**

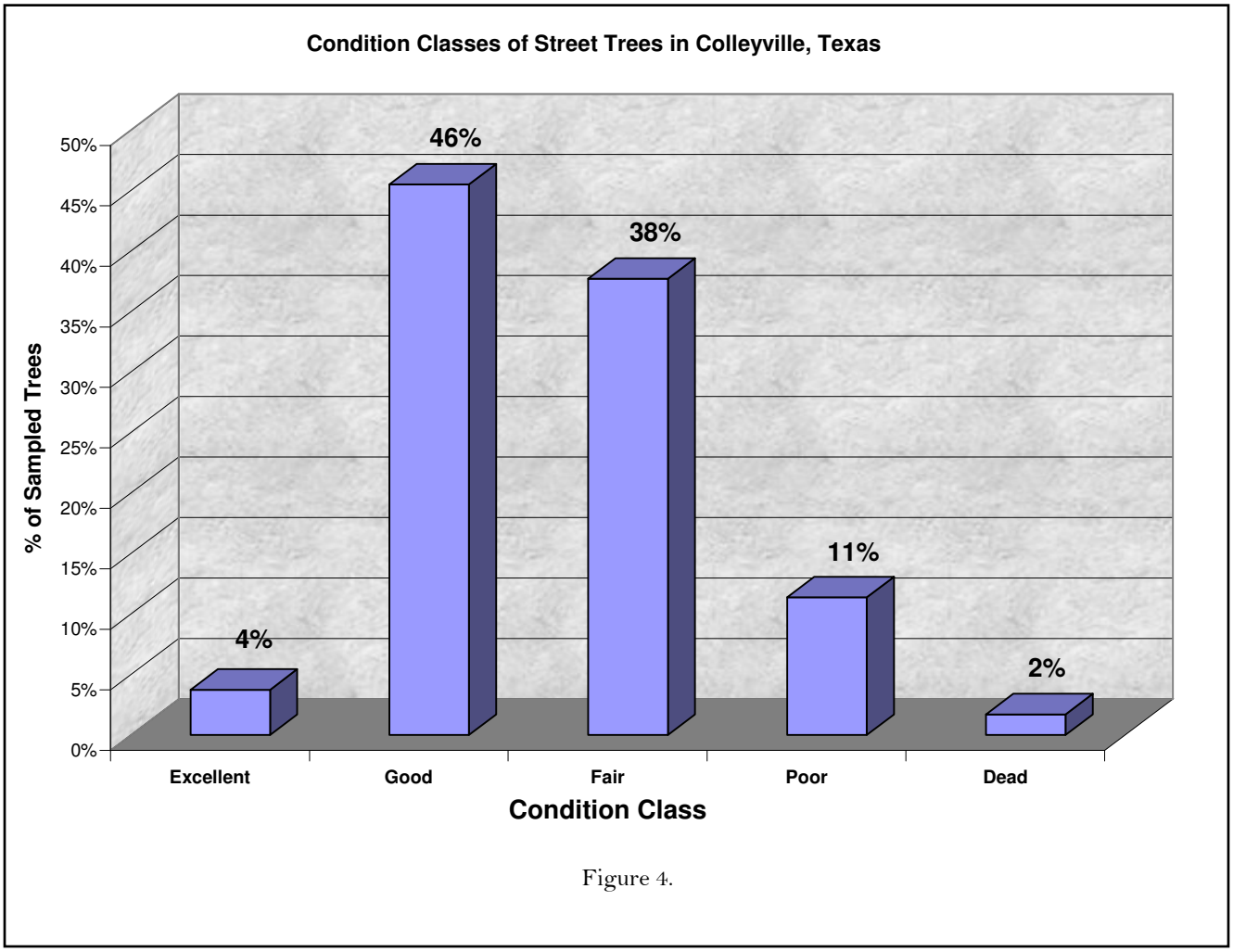


Figure 4.

Tree Management

Deadwood in trees is a risk management issue. Dead limbs three inches and larger were recorded so that the city could determine the extent of these problems.

- **Only 7% of all trees had deadwood, reflecting the small size and young age of most trees in Colleyville.**

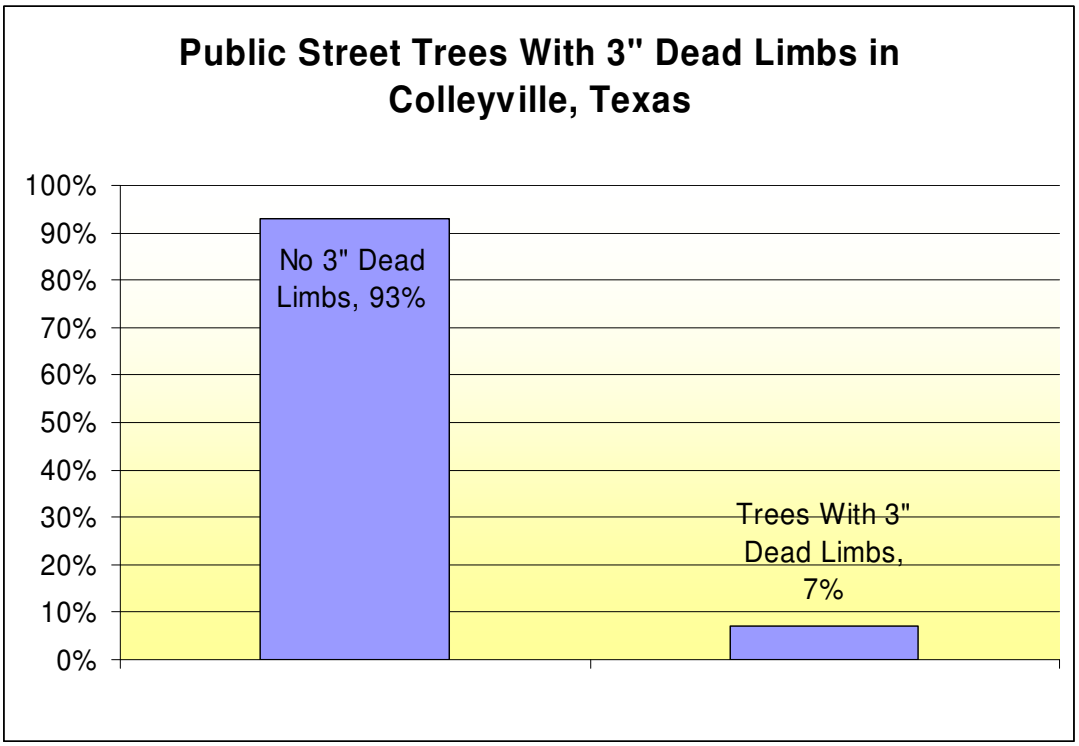


Figure 5.

Tree Value

- **The average value of a public street tree is $1,750.**
- **The approximate value of the public street trees in the City of Colleyville is $20.4 million.**

(From: Guide for Plant Appraisal, 9th Edition, Council of Tree and Landscape Appraisers, 2000, International Society of Arboriculture, Champaign, IL. Trunk Formula Method and the Texas Species Approximation, 2003, Texas Chapter of the International Society of Arboriculture, Elgin, Texas.)

Planting Sites

During the sample inventory, foresters recorded potential tree planting sites. Underground utilities were not considered as planting site criteria, therefore the actual number of sites will be lower than the sample estimate. The following criteria were used to select a tree planting site:

PLANTING CRITERIA

Tree Size:
Only medium to large trees to be planted.
Planting Site Definition:
In public right-of-way (ROW) and/or within 30' of ROW in private front yard
Distance from objects:
Utilities – overhead (15'), Hydrants, utility poles, and light posts (10'),
Curb or Road Edge (4'), Intersections (from corners) (25'),
Driveways (5'), Other trees: 20-40'

- **There are more planting sites than existing street trees.**
- **There are about 20,500 tree planting sites on public right-of-way and in front yards 30 feet in from the right-of-way.**

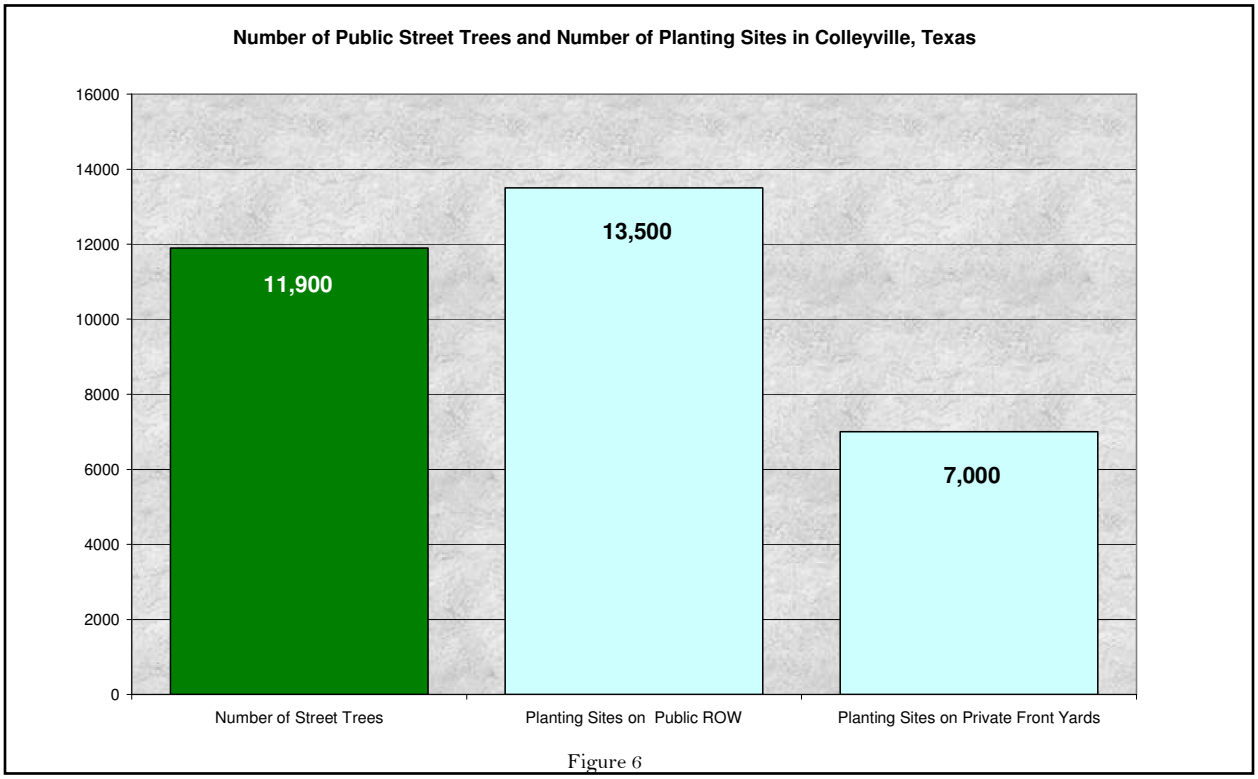


Figure 6

- **There are approximately 13,500 potential tree planting sites on the public right-of-way.**
- **There are approximately 7,000 potential tree planting sites on private front yards.**
- **If all the public tree planting spaces were filled with trees, there would be about 25,000 public street trees (11,900 + 13,500).**

Recommendations

The objective of the Colleyville 5% Texas Sample Community Tree Inventory (TXSCTI) was to provide the city with an overview of their street tree resource. Presented below are the short- and long-range recommendations provided by Texas Forest Service.

Short-range recommendations (2-3 years)

Planting: Increase the number of trees planted

Develop a citywide tree planting program in the range of 500 to 1,000 street trees each year. It is recommended that the city use a NeighborWoods Program to accomplish this planting in residential areas. With NeighborWoods, the city cooperates with businesses, neighborhood groups and residents to plant trees that will impact public streets. There should be no more than 10% of any one type or species of tree. Another rule of thumb is that the goal of total tree canopy coverage should be 40%. The city may also consider a Commemorative/Memorial tree planting program that allows citizens to contribute funds to public tree planting. For more about the NeighborWoods Program see http://texasforestservice.tamu.edu/pdf/urban/urban/neighborwoods.pdf.

Maintenance: Lower the risk from trees to the public

- Train young trees - Many trees in Colleyville are smaller, and work done to train these trees now can avoid greater costs for maintenance as the trees get larger.
- Conduct an annual inspection of public trees to assess risk.
- Based on the annual inspection, develop an annual work contract to reduce risk from blind corners (sight triangles at corners), low limbs, deadwood, removals, light/signage blockage and downed limbs.
    - All tree work should be done by Certified Arborists.
    - Develop bid specifications for contract tree care. Use the latest ANSI A300 Standard Practices for Tree, Shrub and other Woody Plant Maintenance, the ANSI Z133 Safety Standards and the latest Tree Pruning Guidelines from the International Society of Arboriculture.
- Review the storm damage and emergency response for public trees within the current emergency management operations protocols.

Management and Regulation: Increase the efficiency of operations

- Develop an annual work plan and budget for public tree planting and care.
- Consider integrating planting and care into planning and development. Review ways regulations overlap and seek to increase efficiencies.
- Training of staff on tree care and safety – Work with TFS Regional Forester to identify training classes for city workers. Encourage several city workers to become ISA Certified Arborists.

- Review utility (gas, electric, cable, telephone) franchise agreements for opportunities to upgrade tree planting, care and protection.
- Interlocal Contract Forester – Review the feasibility of joining with adjacent communities to contract the services of a forester/arborist to supply the city with part-time urban forestry technical expertise.

Community Support: Get the public involved

- Involvement – Work to make sure citizen tree interests are represented to the City Council by designating members of existing boards or forming a new Tree Commission or Urban Forestry Board. Invite Scouts, civic groups, neighborhood groups and others to continue to participate in urban forestry activities.
- Awareness – Continue with the annual Arbor Day celebration. Post these inventory results on the city web site and as an article in the city newsletter. Continue to participate in the National Arbor Day Foundation Tree City USA program.
- Education – Investigate developing a Big Tree and Historic/Heritage Tree registry to help stimulate interest in the urban forest.

Long-range recommendations

Prepare and Implement An Urban Forestry Master Plan

Conduct a comprehensive public tree inventory of all planting sites and trees on street, park and public facilities to develop an Urban Forestry Management Plan for Colleyville.

Benefits of a comprehensive inventory:

- Provides actual location and severity of tree risk conditions.
- Provides the city with the baseline information to implement a reasonable care policy to remove a portion of all risks over a scheduled period of time (years).
- 'Real time' data is produced in that daily reports of hazardous findings can be filed with the proper city department to facilitate necessary action.
- If collected in a GIS, the data will provide spatial information, such as street address, to compile a work order for pruning and other maintenance needs directly from the tree inventory. A Geographical Information Systems-based work order system may save the city money over a normal pruning cycle of 5-7 years.
- GIS tree information can be added to existing GIS layers of city infrastructure so that tree information can be considered in development and construction plans.
- A 100 % sample would provide actual planting spaces information for replacement plantings. Criteria for the exact type of tree would be catalogued according to growing space, overhead utilities and other site characteristics.
- The inventory can be used as data for a planning document to establish budgets.
- The inventory would provide individual tree values.

Consider Conducting an Ecosystem Analysis

A complete ecosystem analysis, such as "CityGreen" would quantify the environmental benefits of the forest cover. Values for carbon sequestration, pollution removal and stormwater mitigation could be verified and established.

Appendix I
Data Collection Form

TXSCTI Colleyville, Texas

Date: _____ Crew: _____ **Blockside #: _____**

ROW Width (ft): _____ Street: _____ From: _____ To: _____

Median Tree?	Tree #	Species	dbh Class					Condition Class				Deadwood ≥3"?	Report to community?
			0 - 5	6 - 11	11 - 20	21 - 30	30 +						
M	1		1	2	3	4	5	G	F	P	D	3"	
M	2		1	2	3	4	5	G	F	P	D	3"	
M	3		1	2	3	4	5	G	F	P	D	3"	
M	4		1	2	3	4	5	G	F	P	D	3"	
M	5		1	2	3	4	5	G	F	P	D	3"	
M	6		1	2	3	4	5	G	F	P	D	3"	
M	7		1	2	3	4	5	G	F	P	D	3"	
M	8		1	2	3	4	5	G	F	P	D	3"	
M	9		1	2	3	4	5	G	F	P	D	3"	
M	10		1	2	3	4	5	G	F	P	D	3"	
M	11		1	2	3	4	5	G	F	P	D	3"	
M	12		1	2	3	4	5	G	F	P	D	3"	
M	13		1	2	3	4	5	G	F	P	D	3"	
M	14		1	2	3	4	5	G	F	P	D	3"	
M	15		1	2	3	4	5	G	F	P	D	3"	
M	16		1	2	3	4	5	G	F	P	D	3"	
M	17		1	2	3	4	5	G	F	P	D	3"	
M	18		1	2	3	4	5	G	F	P	D	3"	
M	19		1	2	3	4	5	G	F	P	D	3"	
M	20		1	2	3	4	5	G	F	P	D	3"	
M	21		1	2	3	4	5	G	F	P	D	3"	
M	22		1	2	3	4	5	G	F	P	D	3"	
M	23		1	2	3	4	5	G	F	P	D	3"	
M	24		1	2	3	4	5	G	F	P	D	3"	
M	25 26		1	2	3	4	5	G	F	P	D	3"	
M	27		1	2	3	4	5	G	F	P	D	3"	
M	28		1	2	3	4	5	G	F	P	D	3"	

Special Notes:

Number of Planting Sites per Block:

In Public ROW _____

In Private Yard _____ (≤30' ROW)

Blockside Sheet _____of _____

Appendix II

Colleyville Tree Inventory Data Field Definitions: TXSCTI

Blockside Number: Blockside = street name from street name to street name. 5% random sample has been mapped with ROW width and Blockside Numbers assigned before the survey begins.

Median Tree: The survey is taken by driving up one side of the block and down the other. Circle 'M' if tree is a tree in a center median strip.

Tree #: Tree number is just to help keep track of where the surveyor is since this is a sample inventory. Start at a block end. All trees are counted in ROW for residences, businesses, parks and other maintained areas. Only survey trees over 5 inches in fencerows or wild areas. If you have more than 25 trees, use a sheet with blank tree number column and fill in 29, 30, 31… and fill in "Blockside Sheet _____ of _____" at bottom of survey sheet.

Species Code: See Appendix III.

dbh Class: 1 (0-5), 2 (6-10), 3 (11-20), 4 (21-30), 5 (31+). If forked, take diameter below fork. Diameter measures a breast height (4.5 ft. above grade).

Condition Class

Good - No apparent signs of physical damage, decay or insect damage, or deadwood in the crown, limbs or trunk,

Fair - Minor signs of limited insect and disease infestation, structural faults and minor deadwood in the crown, limb or trunk,

Poor - Tree in a general state of decline, exhibiting major disease or insect damage, physical defect, major deadwood in the crown, limbs, or trunk.

Dead - Greater than 90% of the crown contains dead wood or your judgment. (Removal)

Deadwood ≥ 3 inches diameter in crown: Circle 3" if yes

Report to Community: If the tree appears to need attention make a note.

PLANTING:

Planting: Only Medium to Large Trees to be planted.

Planting Site: In Public ROW and within 30' of ROW in Private Front Yard

Utilities – underground (5'), overhead (15')

Hydrants, utility poles, and light posts (10')

Curb or Road Edge (4')

Intersections (from corners) (25')

Driveways (5')

Other trees: 20-40'

Storm sewer - No posting

Appendix III
Colleyville Tree Species List

Tree Species Name	**Tree Name**
Acer barbatum var caddo	Caddo Maple
Acer rubrum	Red (Swamp) Maple
Acer saccharinum	Silver Maple
Bumelia lanuginosa	Coma
Carya illinoensis	Pecan
Catalpa spp	Catalpa
Celtis laevigata	Sugar Hackberry
Cercis canadensis	Eastern Redbud
Fraxinus berlandieriana	Berlandier Ash
Ilex decidua	Possumhaw Holly
Ilex vomitoria	Yaupon Holly
Juniperus ashei	Ashe Juniper
Juniperus virginiana	Eastern Redcedar
Lagerstromia indica	Crepe Myrtle
Liquidambar styraciflua	Sweetgum
Macula pomifera	Bois D'arc
Magnolia grandiflora	Southern Magnolia
Morus rubra	Red Mulberry
Pinus eldarica	Afghan Pine
Pinus elliotti	Slash Pine
Pinus thunbergii	Japanese Black Pine
Pinus virginiana	Virginia Pine
Populus deltoides	Cottonwood
Pyrus calleryana 'Bradford'	Callery Pear
Quercus alba	White Oak
Quercus bicolor	Swamp White Oak
Quercus Durandii	Durand Oak
Quercus lyrata	Overcup Oak
Quercus macrocarpa	Bur Oak
Quercus marilandica	Blackjack Oak
Quercus shumardi	Shumard Oak
Quercus stellata	Post Oak
Quercus virginiana	Live Oak
Robinia pseudoacacia	Black Locust
Salix nigra	Black Willow
Taxodium distichum	Baldcypress
Thuja orientalis	Chinese Arborvitae
Ulmus americana	American Elm
Ulmus crassifolia	Cedar Elm
Ulmus parvifolia	Lacebark Elm
Zanthoxylem clava-herculis	Hercules Club