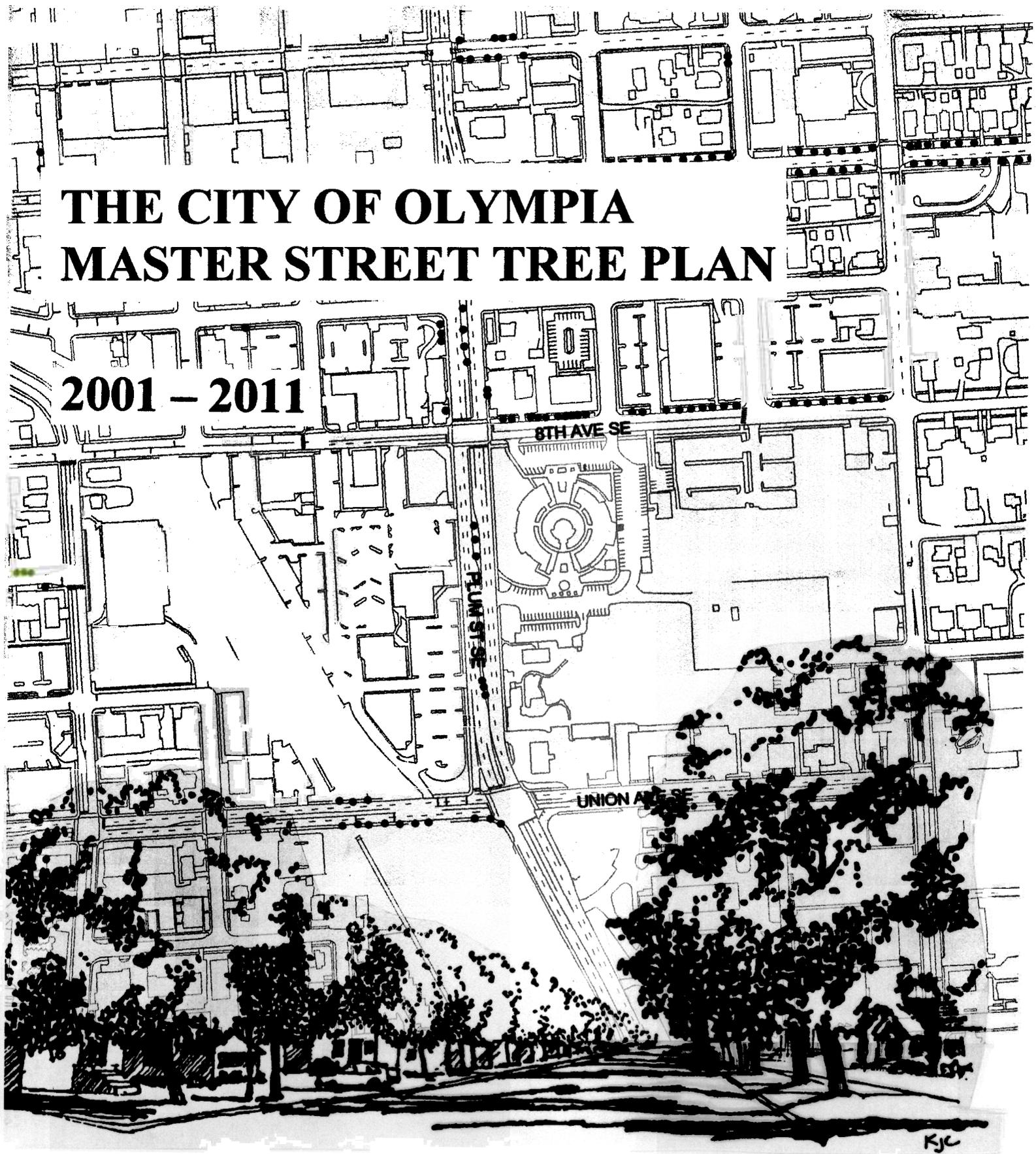


THE CITY OF OLYMPIA MASTER STREET TREE PLAN

2001 – 2011



City of
OLYMPIA

Community Planning and Development Department

Master Street Tree Plan - Executive Briefing -

I. Master Street Tree Planning Process

A. Evaluate and interpret our comprehensive plan goals and policies.

The fact that Olympia's street trees are valued by the public is clearly expressed in the City's Comprehensive Plan, where street trees are mentioned over 80 times, and 29 policies were developed specifically for trees.

Some of the policies specific to street trees include:

Tree 2.1 - Street trees should be a high priority for any public improvements within Olympia's High density and Entry/Exit Corridors...

Tree 2.2 - New tree plantings within the Corridors, including both street trees and trees on private development, should create a pattern of visual continuity and a sense of visual order...

Tree 3.1 - A coordinated pattern of street trees should be planted and maintained within the Downtown...

Tree 3.5 - The City should work with downtown groups on public/private cooperative efforts in tree planting and preservation.

Tree 8.1 - Tree plantings within neighborhoods should be used to help foster a sense of neighborhood identity.

T3.9 - Provide attractive streetscape with street trees and sidewalks, planting strips, shelters, benches and pedestrian scale street lights in appropriate locations.

LU 2.4 - Work with the neighborhoods and the business community to develop and conduct a city wide beautification program. This program could include activities such as tree planting...

LU 2.7 - Establish gateways to Olympia with significant, special landscaping...

LU 2.9 - Provide street trees and sidewalks on both sides of all streets...

LU 8.8 - Establish a program to provide sidewalks, street improvements, bike paths, street trees... in established neighborhoods with priority given to areas designated for higher density development.

B. Identify and quantify our current street tree resources, our current practices, and our current expenses.

Downtown and Arterial Street Tree Planting

- *Downtown and Arterial street trees, with an appraised value of over \$3,000,000;*
- *2600 available planting spaces Downtown and along arterial streets*
- *Currently planting about 50 new street trees in the Downtown and along arterial streets at an expense of approximately \$1000 per tree.*

Residential Street Tree Planting

- *6500 Residential area street trees,*
- *22,000 available planting spaces in residential areas.*
- *We currently plant about 300 new street trees per year in residential areas at an expense of approximately \$100 per tree.*

Downtown and Arterial Street Tree Maintenance and Pruning

- *It currently requires approximately 1 FTE to prune & maintain approximately 1500 downtown and arterial street trees;*

Residential Street Tree Pruning

- *We do not currently provide any pruning or maintenance of residential street trees.*

Hazard Tree Abatement

- *We spend about \$30,000 per year, to remove approximately 50 hazardous street trees in residential areas, on a request basis;*

C. From the Comprehensive Plan goals and policies, develop feasible and achievable objectives for enhancing this resource;

1. Hazard Tree Abatement - Reduce the number of hazardous street trees to acceptable levels, through a pro-active approach to their management.
2. Street Tree Planting Levels - Achieve a 60% street tree stocking level. The stocking level represents the percentage of potential street tree spaces that are currently planted to trees. (60% represents the stocking level of comparable cities in our region, and national averages.)
3. Tree Pruning and Maintenance Standards - Provide routine maintenance to all of our street trees consistent with standards established by the Society of Municipal Arborists.

D. Develop and analyze varying levels of service (LOS) for accomplishing these objectives over the course of time.

Urban Forestry Management is a relatively new and evolving effort for the City of Olympia. Levels-of-service are quantifiable measures of capacity, such as acres of parkland per capita, vehicle capacity of intersections, or water pressure per square inch available for the water system. To determine appropriate levels of service for street trees, we used a methodology similar to the methodology used for other elements of city service.

In developing levels of service for street trees, we did the following:

- Identified our current policies, procedures, and funding levels for street tree management practices.
- Identified quantifiable measures of service. For street trees, we identified three measures of service. 1) hazard tree abatement, 2) street tree stocking levels, and 3) street tree pruning and maintenance.
- Compared our current practices in these areas against a “local standard”.

Citizen, City Council, and Urban Forestry Advisory Board recommendations; national standards; federal and state mandates; and the standards of neighboring jurisdictions are the basis for “local standards”. Following are some examples of how we established our local standard: **1) Hazard Tree Abatement** - Our City’s Risk Manager determined the local standard for hazard tree management in terms of the acceptable level of risk for hazardous street trees. **2) Street Tree Stocking Levels** - Our local standard for street tree stocking levels was developed by comparing Olympia’s current street tree stocking levels 38% (downtown and arterials) and 21% (residential areas) to national average street tree stocking levels (38-72%) and the street tree stocking levels of other cities in Washington State. **3) Street Tree Maintenance Standards** - The local standard for on-going street tree pruning was developed by using the Society of Municipal Arborists, national accreditation standards for tree maintenance.

Hazardous Street Tree Abatement:

We have approximately 900 dead or poor classed street trees in the residential areas of Olympia. The removal of these trees is a high priority. Currently we have approximately \$30,000 per year available for removal or pruning of hazardous street trees. If we include the cost to inspect and administer this program, we can remove/prune approximately 50 trees per year. Four levels of service were identified. ~~Except for our current level of service (LOS~~ 4) Each of the levels of service are designed to reduce the number of hazard street trees to an acceptable level within a specified length of time.

Street Tree Stocking Levels

Several research studies, including “A Study of 22 U.S. Street Tree Populations” (McPherson and Rowntree 1989) and “Trends in Urban Forestry Management” (Kielbaso, J. James, 1988), have attempted to quantify street tree stocking levels for municipalities.

There are two methodologies used to determine street tree stocking level. In some studies street tree stocking is based on the number of street trees per mile of street, compared to an ideal 100% stocking level (180 trees per mile of street.) Other studies determine stocking level by comparing the number of existing street trees to the total number of potential street trees (number of trees plus the number of available planting spaces).

For our purposes we determined our street tree stocking level using the second methodology. With 1596 existing street trees and 4242 potential tree spaces in the Downtown and along Arterial streets, these areas have a stocking level of 38%. In residential areas where we have an estimated population of 6053 existing street trees and 28,497 potential tree spaces, we have a stocking level of 21%. This compares to an average street tree stocking level of between 60% and 80% in the national studies.

Other cities in Washington State, including Vancouver, Spokane, and Longview, reported having street tree stocking levels ranging from 61% to 76%.

Consistent with numerous goals and policies of the City’s comprehensive plan, regarding the value and need for street trees, the Urban Forestry Advisory Board, determined that a 60% stocking level was an achievable, realistic goal. At 60% stocking we will be approaching a street tree stocking level equivalent to other comparable cities here in the Pacific Northwest and around the country.

Street Tree Maintenance Standards

The Society of Municipal Arborists (SMA) is the leading professional organization representing municipal arboriculture. The SMA offers a program to provide accreditation to municipal forestry departments. The accreditation program is a non-government voluntary system of self-regulation that sets the standards for municipal arboriculture. Some of the minimum standards established by the SMA include: 1) street trees must be pruned at least once every 8 years, with recommended pruning every 3 years for young trees and every 5 years for older trees.

Their accreditation program also requires that you have at least 1 arborist for every 10,000 street trees. Many cities with active street tree programs report having at least 1 arborist for every 4000 street trees.

We currently prune the street trees in Downtown and along the Arterial streets on approximately an 8year cycle. The remaining street trees receive no routine pruning.

Following is a summary of the varying levels of service that have been established for the enhancement and maintenance of street trees in Olympia.

(Those levels of service that are in bold and underlined represent the current level of service provided today.)

1. Hazard Tree Abatement:

- **LOS 1 - Remove hazard trees on a request basis, eliminate hazard trees in 20 years**
- LOS 2 - Eliminate hazard trees in 15 years;
- LOS 3 - Eliminate hazard trees in 10 years;
- LOS 4 - Eliminate hazard trees in 5 years.

2. Tree Planting (Downtown and Arterial Streets)

- **LOS 1 – Plant 60% of available planting spaces in 20 years; (Current LOS)**
- LOS 2 – Plant 60% of available planting spaces in 15 years;
- LOS 3 – Plant 60% of available planting spaces in 10 years;
- LOS 4 – Plant 60% of available planting spaces in 5 years;

3. Tree Planting (Residential Streets)

- **LOS 1 – Plant 60% of available planting spaces in 20 years; (Current LOS)**
- LOS 2 – Plant 60% of available planting spaces in 15 years;
- LOS 3 – Plant 60% of available planting spaces in 10 years;
- LOS 4 – Plant 60% of available planting spaces in 5 years;

4. Tree Pruning (Downtown and Arterial Streets)

- LOS 1 – Provide no pruning for street trees
- LOS 2 – Only hazard prune street trees
- **LOS 3 – Prune street trees approximately once every 8 years (no more than 10,000 trees per arborist); (Current LOS)**
- LOS 4 – Prune street trees approximately once every 3-5 years (no more than 4000 trees per arborist)

5. Tree Pruning (Residential Streets)

- **LOS 1 – Provide no pruning for street trees (Current LOS)**
- LOS 2 – Only hazard prune street trees;
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Preface

Street Trees Make Our Community Livable.

They make our streets safer for pedestrians, by physically separating them from traffic and by slowing traffic;

They make the streets pleasant, by shading the walking areas; cleaning pollutants out of the air; producing oxygen for us to breath; providing habitat for wildlife; and adding beauty through green leaves, spring flowers and fall color.

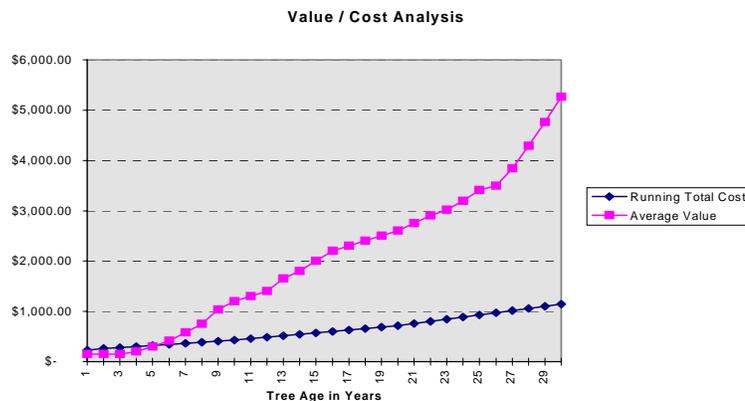
They increase the values of residential properties, and increase retail sales in commercial areas.

To provide these benefits, however we need to design, plant and maintain our street trees properly. If we do not, then many problems could occur including:

- ◆ *Older trees may go into decline and become hazardous.*
- ◆ *Tree branches may block traffic signs and signals, causing traffic hazards.*
- ◆ *Tree branches may hang into roads and sidewalks, blocking safe travel for pedestrians and motorists.*
- ◆ *Tree roots may buckle sidewalks and streets.*
- ◆ *Trees may grow into power-lines, causing the trees to be severely pruned, or causing power outages and hazards.*

Even with these potential problems, street trees are still a wise investment. In fact, street trees are the only element of the public infrastructure that gains in value as they age, but only when designed, planted and maintained properly.

For example, the following graph shows the average value of just one street tree in Downtown Olympia, compared to the total cost of its care over 30 years, as you can tell, the value of the tree increases as it ages, easily outpacing the cost of its care.



The 1500 street trees we maintain in the Downtown and along arterial streets, have an appraised value of over \$3,000,000.

The fact that Olympia's street trees are valued by the public is clearly expressed in the City's Comprehensive Plan where, street trees are mentioned over 80 times, and 29 policies were developed specifically for trees.

Some of the policies specific to street trees include:

Tree 2.1 - *Street trees should be a high priority for any public improvements within Olympia's High density and Entry/Exit Corridors...*

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I. Introduction

A. Vision of Olympia (excerpted from Olympia’s Comprehensive Plan)

“Trees of various species, ages, and sizes are growing in all parts of the city, contributing to a green and healthy community. Tall slender conifers accentuate and add beauty to the skyline. Graceful tree branches arch over busy thoroughfares and quiet residential streets. Wooded corridors weave through the city, providing for coexistence of wildlife habitat, play areas for children and recreational space for all citizens. These trees give character to the City's neighborhoods and shopping areas. Trees create streets friendly to walkers and buffer between people and the hard edges of buildings and roads. People of all ages and walks of life are active in planting and caring for trees, demonstrating their faith in, and commitment to posterity. Evergreen trees grow throughout the city, a visual reminder of the special character of the Pacific Northwest. Deciduous trees mark the seasons, connecting us visually with the passage of time. Shady areas in public places welcome citizens on a summer's day and provide shelter from the rain. These trees help ensure that this Olympia of the future will remain a most livable community.” *Jay Butts, 1990*

B. Purpose, Goals & Objectives

This Master Street Tree Plan is a map to the future. The purpose of this plan was to identify and analyze the street tree resources in the City of Olympia and to formulate a strategy for enhancing and managing this resource. Through the implementation of this plan, we will accomplish the following goals:

- ◆ Create healthier and safer streets for pedestrians, bicyclists, transit and motorists;
- ◆ Make Olympia a more beautiful place to live in and visit;
- ◆ Bring a sense of natural beauty into the Downtown and our city streets;
- ◆ Increase residential and commercial property values;
- ◆ Increase civic pride.

Objectives of this plan are to:

- 1) Create a usable tool for the design of future street tree planting projects;
- 2) Provide clear direction and priorities for the maintenance of our street trees;
- 3) Identify and document our existing street tree resources so we can track and measure our implementation efforts;
- 4) Estimate planting and maintenance costs to assist in the budget process;
- 5) Perform as a marketing tool to solicit grants and other funding.

C. Why we need Trees

Trees save energy and reduce noise pollution. They shade buildings, cool the air, provide protection from the wind and absorb unwanted noise.



Trees improve water and air quality. They reduce erosion and filter pollutants out of the air, water and soil.

Trees beautify our community, enhance property values and provide wildlife habitat.

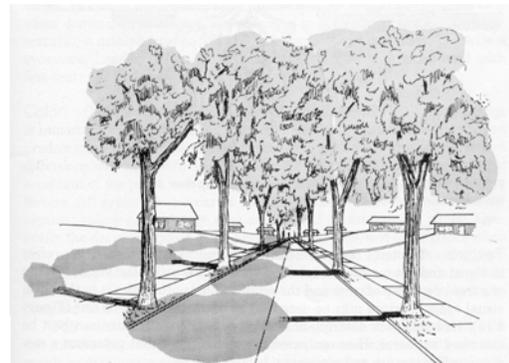


D. Why we need Street Trees

Besides the benefits all trees provide, street trees serve a special role in the urban environment. They help to enclose the travel corridor by defining and reinforcing a three-dimensional space around and over the street. No man-made element of the infrastructure can accomplish this effect.

Simply drive up Legion Way and notice the difference when you cross Central Street.

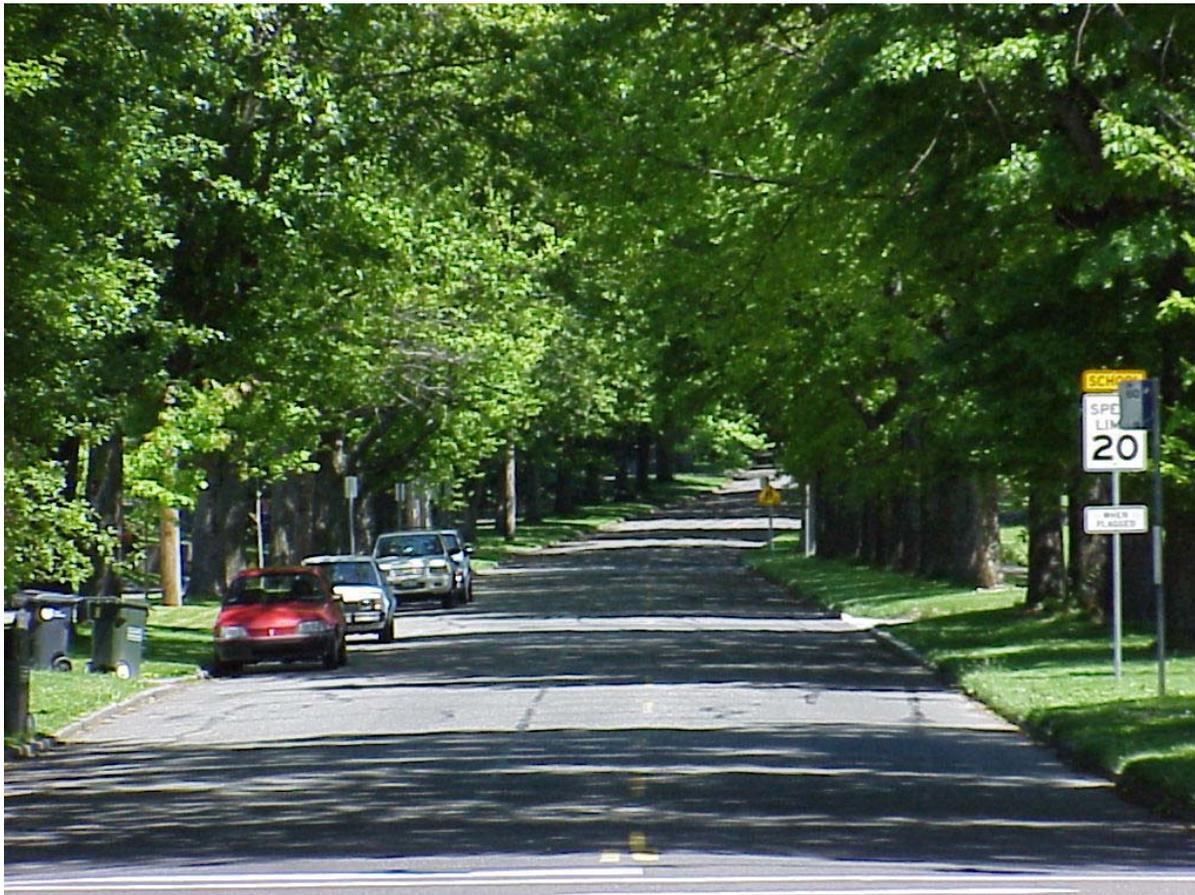
Street trees are the most visible of public trees. When we travel, whether by foot, bike, bus or car, we experience street trees more intimately than other trees in the City.



II. Street Tree Inventory and Analysis

A. Description of Olympia's Street Trees

We have street tree plantings throughout our Downtown, along our arterial streets and in our residential neighborhoods. In order to better manage this valuable resource, a street tree inventory was conducted. Every street tree currently maintained by the Parks Department has been individually located and inventoried. Additionally, we have conducted a sample street tree inventory in our residential neighborhoods. In this next section of the plan, we provide a narrative description of the street trees of Olympia, their unique characteristics and some of the management challenges associated with them.



1) Legion Way

Legion Way is graced with a canopy of mature Oaks and Sweetgums, planted on both sides of the street from Plum to Central. Planted in 1928, they honor Olympia's armed servicemen who died during the Spanish-American War and World War I.

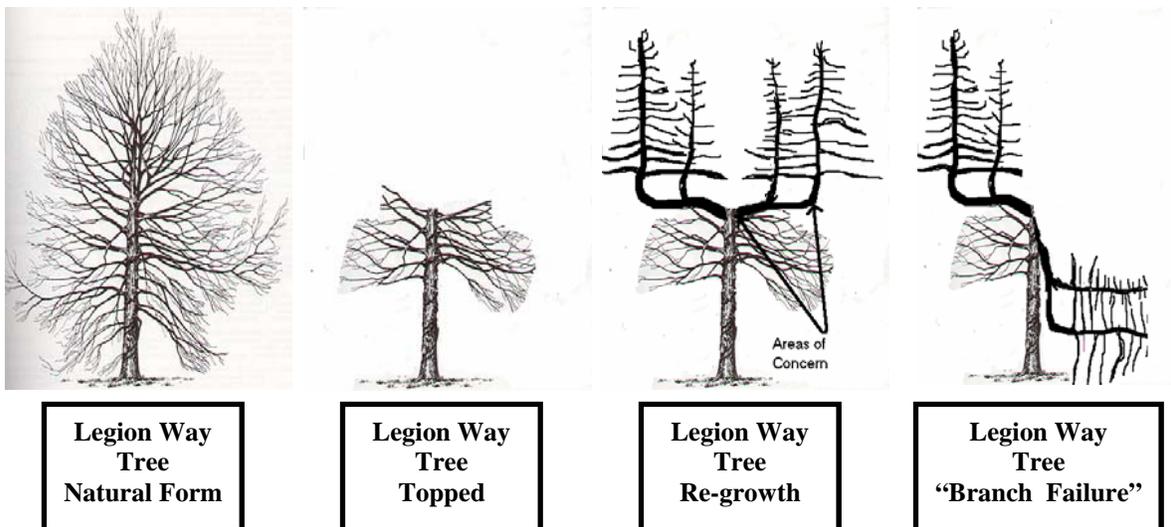
The trees have had a mixed history of care and abuse, but still adorn the city with their beauty. Sweetgums anchor the corners with Pin Oaks and Red Oaks planted mid-block.

A 12 foot wide planting strip was provided for these trees, which allowed them to grow to their full mature size without conflicting with the sidewalk and curbs.

Pruning History: An electrical power line formerly ran along the North side of the street. Over the years Puget Power pruned these trees to provide clearance for their lines. When the pruning was initially performed (approximately 30 years ago) the trees were topped. We now know that topping is an inappropriate method of tree pruning. Besides making trees ugly, topping predisposes them to rot and compromises their structural integrity. Ironically, and to our own demise, the City required Puget Power to prune the South side of the street in the same fashion. To avoid further damage to this historic planting, Puget Power decided to reroute and underground most of their lines along Legion Way, approximately 10 years ago.

Removal History: Over the past four years, six Legion Way trees have been removed. Three trees had split down the middle. In each case, the split occurred at the point where the tree had been previously topped.

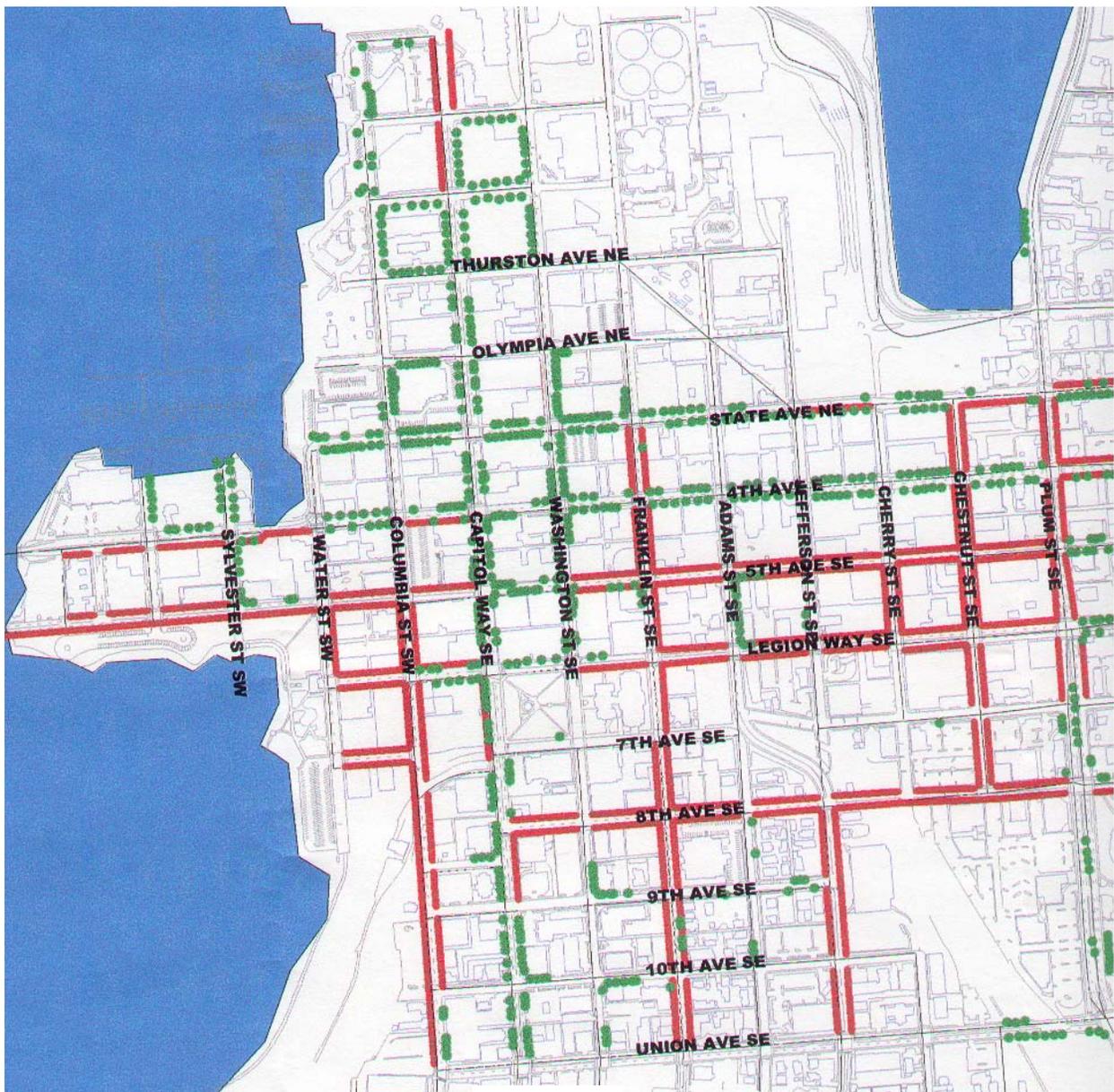
The Future of Legion Way Trees: Since the trees have all been topped we can expect many of the trees to develop additional structural problems. To address these structural issues we are performing a detailed analysis separate from this plan.



2) Downtown

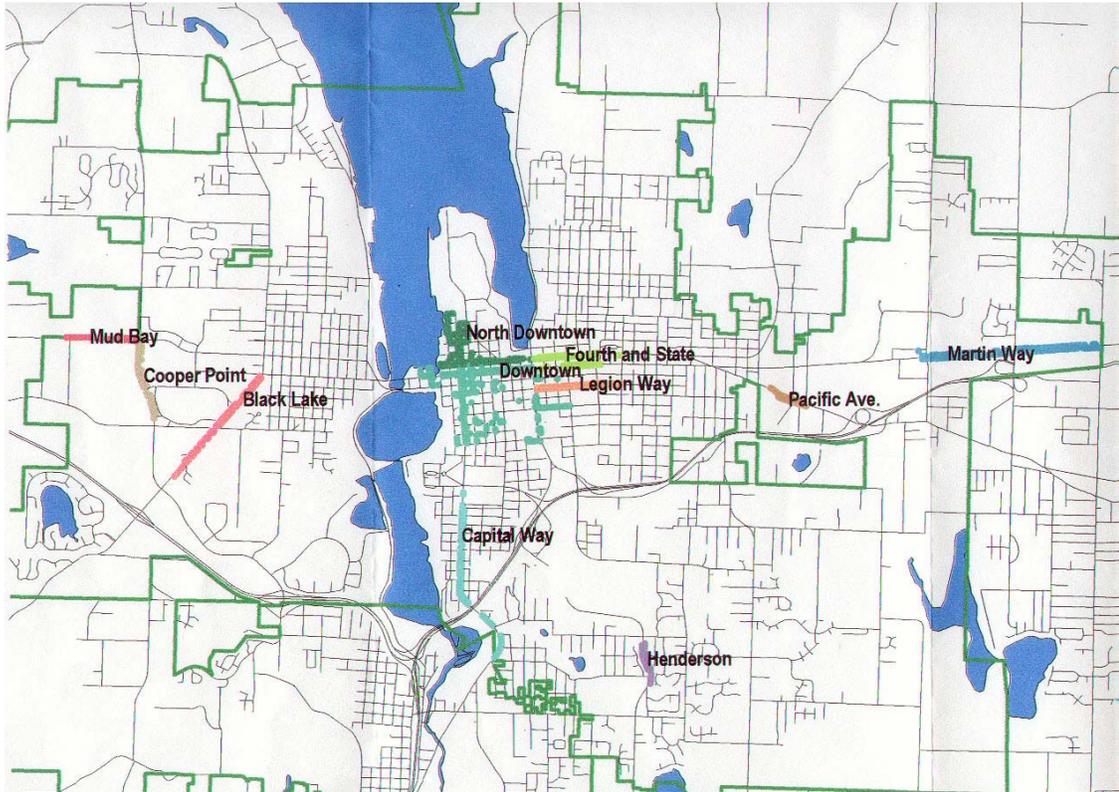
We have a diverse well established street tree population in parts of our Downtown. Currently there are over 660 street trees in Downtown Olympia. They range in size from newly planted 2 inch caliper trees to 14 inch diameter Hornbeams on State Avenue near the Olympia Center.

In the map below, the green dots represent the locations of existing street trees, while the red lines indicate tree planting priority areas identified in the City's Comprehensive plan. A recent inventory indicated that there are over 850 available planting spaces in these areas.



3) Arterials

We have historically planted and maintained street trees along major arterial streets in the City. To date we have approximately 840 street trees planted along our arterial streets. The following map shows the locations of these street trees.



Pacific Avenue. Most of the street trees along Pacific Avenue are Marshall Seedless Ash trees. They were planted in the mid 1980's when the Pacific Avenue road improvements were installed. We had a very limited right-of-way to work with, so the trees were planted behind the sidewalk in a 3 foot cut out of the sidewalk. A 3 foot cast-iron tree grate was then installed. Because of the limited space, we may eventually experience some heaving of the sidewalk. Currently, the trees are well established and healthy, and no sidewalk damage has been noticed. There are 42 existing street trees growing on Pacific Avenue, with space for an additional 88 trees.

Martin Way. In 1993, 200 Red Maples and Autumn Purple Ash trees were planted from Lilly road to College Way. Although these new trees are small, they will eventually become large and full canopied, lending a pedestrian scale to the street. Most of the trees have plenty of room for both their tops and roots to grow, so no substantial problems are expected with these trees. Between Lilly Road and State Avenue, there is room for an additional 150 street trees to be planted, assuming no street trees would be planted adjacent to the large wetland.

Cooper Point. In mid 1970's London Plane trees were planted along Cooper Point, from Harrison to Capital Mall Drive, as part of the Cooper Point Roadway Improvements. The 1996 winter ice storm severely damaged many of these trees, requiring many to be removed. There are currently 44 trees planted along Cooper Point. Until recently, none of these trees had been routinely maintained by City Crews. The scale of these trees helps to visually reduce the width of Cooper Point Road, making it a more pleasant street for pedestrians and other non-motorized forms of transportation. The soil type and hydrology of this part of Olympia requires a very tough tree like London Plane. Unfortunately the same quality that makes it a survivor in such tough conditions has also caused problems with root damage to the sidewalks and curbs of Cooper Point Road. Due to these root problems, we are recommending that a substitute species be planted when and/or if any of these trees need to be replaced in the future. There are approximately 220 additional planting spaces along Cooper Point Road from 14th Avenue North to Highway 101 near Evergreen Park Loop.

Black Lake Boulevard. From Harrison to Cooper Point Road, Black Lake Boulevard was previously lined with European White Birch. They were planted approximately 20 years ago when the Black Lake Boulevard road improvements were installed. Prior to the ice storm most of these trees were in fairly poor condition. European White Birch is particularly ill suited to our climate and the dry gravelly soils along Black Lake Boulevard. Their informal semi-weeping form made them an inappropriate choice as a street tree. Additionally they grew too large to be planted under power lines and subsequently had been severely pruned to provide clearance for the power lines. All of these trees were severely damaged during the ice storm and subsequently had to be removed. From 1997 to present, we have planted new street trees with the assistance of several dozen volunteers. Currently, Black Lake Boulevard is lined with a mixed planting of 110 Hawthorns and Hedge Maples, from Cooper Point Road to 4th Avenue.

South Capitol Way/ Capitol Boulevard. South Capitol has a very interesting history. Either the City or the first residents of the South Capitol Neighborhood lined the street with the Native Big-Leaf maple. These trees grew up and formed a beautiful canopy over the street. However, they apparently caused damage to the sidewalks and blocked the streetlights. In the mid-1950's the city removed these trees and planted Red Maples and Hawthorns. Unfortunately, the species of Hawthorn (Paul's Scarlet Hawthorn) chosen for this planting was very disease prone and many of the Maples caused irreparable damage to the sidewalk. In 1996, the Hawthorns and some of the Maples were replaced with Red Oak, Maples (Pacific Sunset) and Flowering Pear trees. The remaining Maple trees will need to be monitored and some may need to be removed in the future. With these new plantings, the next generation of Olympia residents will be able to experience a tree canopy over Capitol Way again.

Henderson Boulevard. Henderson Boulevard, from Eskridge to Carlyon, was planted with approximately 90 Deodar Cedar and Blue Spruce during the 1970's. These trees create a nice transition from Watershed Park to the neighborhoods. The Deodar Cedars are doing very well, but the Blue Spruce are plagued with several insect problems, most notable is the spruce aphid. The spruce aphid generally will not kill an otherwise healthy Blue Spruce, but they can become problematic during excessively dry summers, like the one we experienced in 1998. The aphids will generally kill lower branches and the interior of the trees, giving Blue Spruce a rather ragged appearance. The trees create a nice buffer between Henderson Boulevard and the adjacent residential area. Their low canopy occupies most of the available space from the property line to the curb line, limiting the use of this area for pedestrians. If this develops into a problem in the future, narrower trees such as Alaska Yellow Cedar should be planted as a substitute in this area. There are approximately 100 additional planting spaces along Henderson Boulevard from the Yelm Highway to Watershed park.

Harrison Avenue. Harrison Avenue, from the 4th Avenue bridge to Cooper Point Road, does not currently contain any street trees. This area has been highlighted in the City's Comprehensive Plan as being a priority area for planting. Recent inventories indicate there are approximately 140 planting spaces available along Harrison. Most of these spaces would be behind the sidewalk, or in a pit cut out of the sidewalk.

Mud Bay Road. We recently planted 37 new street trees along Mud Bay Road from Cooper Point Road to Yauger Way. Plans are in place to continue to plant street trees as Mud Bay Road is improved from Yauger Way to the West. There are approximately 150 additional planting spaces along Mud Bay Road.

4th and State Avenue Corridor. 4th and State Avenues, from Plum to the Martin Way "Y", has approximately 120 street trees. Most of these trees were planted in 1994 with a Small Business Administration Grant administered through the State Department of Natural Resources. This corridor has been identified as a priority for planting in the City's Comprehensive Plan. Currently there are over 230 additional planting spaces. Plans are in place to finish this planting in the fall of 2000.

Boulevard Road. Boulevard Road, from Pacific Avenue to the Yelm Highway, has only a few street trees recently planted by developers who built on adjacent properties. There are over 200 available planting spaces but most are in areas where there are no sidewalks. Street tree planting along Boulevard Road should probably wait until future improvement plans are developed for this road.

4) Residential Areas

Using a sample inventory method, we have estimated that there are over 6500 street trees currently growing in our residential areas with over 22,000 available planting spaces. At our current rate of planting it would take us over 30 years to plant all of the available planting spaces

Older Neighborhoods

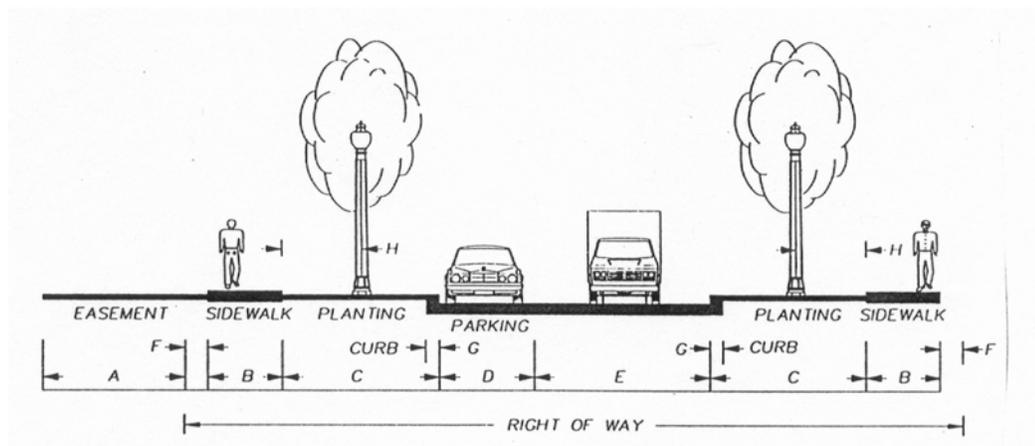
The street trees growing in many of our older neighborhoods represent Olympia's heritage. Because most street trees were planted by the early residents of Olympia, they represent not only Olympia's natural heritage, but also its cultural and social heritage.

Receiving little to no maintenance in their lifetimes, we can anticipate that our responsibility for the pruning and removal of hazard trees in these areas, will increase, over time.

Newer Neighborhoods (circa 1970-1995)

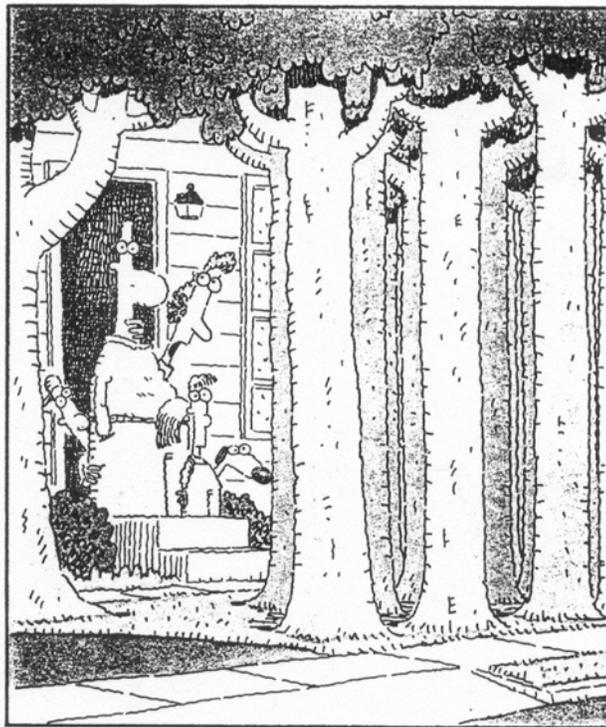
Many of the neighborhoods built during the 1970's and 1980's were built without consideration for planting traditional street trees. The street cross section typically included wide pavement, limited sidewalks and no planting strips. In most of these neighborhoods, street trees in their traditional sense may never be able to be established. By working with the individual homeowners and homeowner's associations, however, we can encourage the planting of trees that can function as street trees.

In 1995 the City adopted a new street cross section as part of the The "Public Works Standards and Development Guidelines". The following detail shows two 8 foot planting strips on both sides of the street. This will allow us to achieve our street tree goals as established in the City's Comprehensive Plan.



B. Lessons Learned from our Existing Street Trees

- **Proper tree selection.** Careful consideration of the planting site constraints and the mature size of the tree are important, if we expect them to survive to a mature age.
- **Appropriate routine pruning.** Structural pruning, especially when trees are young could have prevented much of the damage from the ice storm.
- **Wide planting strips are important,** if we want our street trees to reach maturity without damaging our sidewalks and curbs.
- **Topping is very bad for trees.** It compromises their structural integrity, decreases aesthetics, and is a great cost to the public to maintain.
- **Large trees and power lines are not compatible.** To provide consistent and safe power to their customers, Puget Sound Energy will continue to prune trees to clear their lines. We need to consider this when we select the species to plant under their wires.



"Are you sure that was
grass seed we planted
last year?"

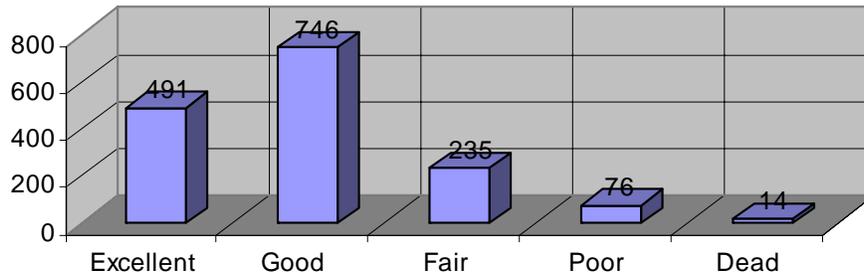
C. Downtown and Arterial Street Trees (Population Statistics)

This next section includes general statistics developed from the 100% inventory of street trees in Downtown Olympia and along most of our Arterial Streets. In the Downtown/Arterial areas, we have approximately 1500 street trees that receive routine maintenance, from the Parks Department maintenance staff.

1. General Condition

The following graph shows the condition of the street trees we currently maintain. This information shows that the majority of the street trees (1231 trees) under our stewardship are in good and excellent condition. The 90 trees that are in the poor and dead classes will need to be removed as soon as possible.

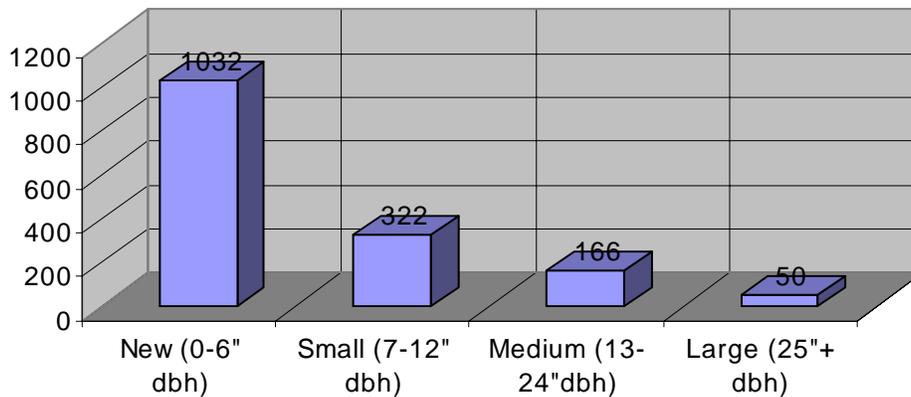
Downtown/Arterial Street Trees - Condition Class



2. Size Distribution of Street Trees

The following graph shows the number of trees in different size classifications. Those trees in the medium and large size classes are too large for our maintenance staff to prune, and must be pruned by a private contractor. As more and more trees grow into these larger size classes it may become necessary for the City to purchase a “bucket truck” for the purpose of pruning our street trees.

Size Distribution

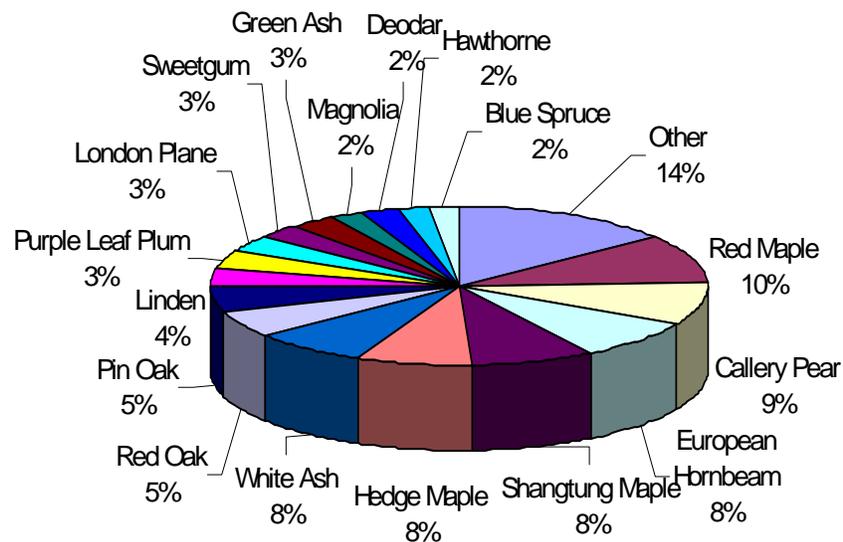


3. Species Distribution of Street Trees

From the following graph you can see that we have a relatively diverse street tree population in the Downtown and along our arterial streets. Having a diverse street tree population is very important.

Decades ago, the street tree populations of Eastern and Midwestern cities consisted primarily of one species of tree, American Elm. As most people know, Dutch Elm Disease killed a great majority of these trees, leaving many cities without street trees. Although we may not be able to predict or prevent the “next” disease or insect catastrophe, we can prepare for it by maintaining a diverse street tree population. A general rule of thumb is keep your street tree population limited to no more than 10% of any one species of tree.

One interesting note: Dutch Elm Disease is now becoming prominent in the Intermountain west and the Pacific Northwest. Many cities in these locals still have significant elm populations, that are facing an uncertain fate.. Olympia, fortunately, has a very limited elm tree population.



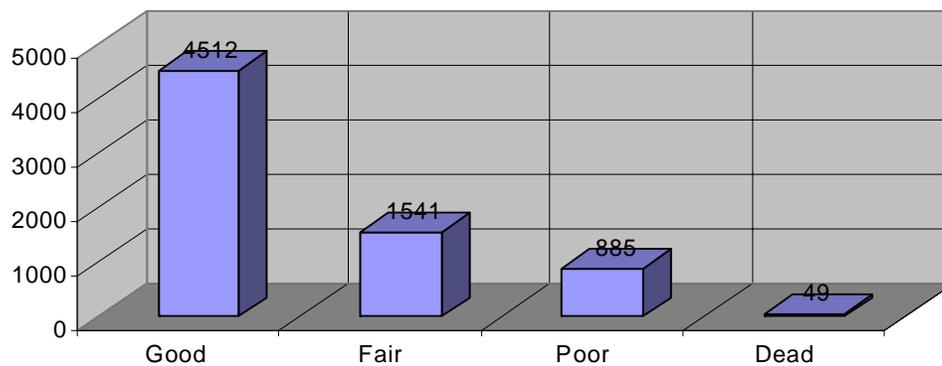
D. Residential Area Street Trees (Population Statistics)

The following information was derived from a 10% sample inventory of street trees in residential areas.

1. General condition

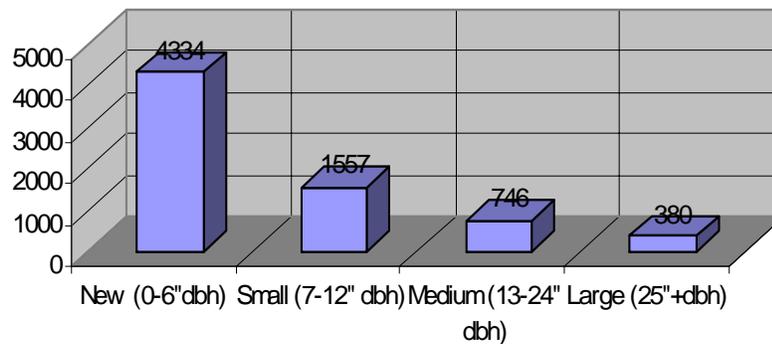
Even though the majority of trees in residential areas are in the good and fair classes, there are approximately 900 trees in the poor or dead classifications. These trees will need to be removed as soon as possible

Tree Condition



2. Size Distribution -The graph below shows the number of trees by size class. As you can tell the majority of the street trees in residential areas are new to small trees. Most of these trees were planted by residents in the past 20 years.

Size Distribution



E. Personnel and Equipment Resources

Community Planning and Development Department. Currently 1 full time Urban Forester is on staff with CP&D. The Urban Forester is responsible for the management of all Urban Forestry Programs. This responsibility is currently split in the following areas. Administration of the Tree Protection and Replacement Ordinance (80%); Streetscape project management (5%), Education and Public Relations (this includes the NeighborWoods program) (5%), Hazard Tree Program (5%), program and policy development (5%).

In addition to in-house staff, CP&D also contracts out approximately \$35,000 per year for consulting foresters to assist the Urban Forester in the various program areas.

Starting in 2001 the Urban Forester will take over the full responsibility for managing the removal of hazard street trees in residential areas. Previously the urban forester performed inspections and administered contracts for tree removal, that were then paid for by the street section of Public works. The cost to remove hazard street trees on a request basis has been approximately \$25,000 to \$30,000 annually.

Parks, Recreations and Cultural Services Department. There is currently one full time maintenance II worker who is trained as an arborist. Additional staff with the Parks Department perform street tree related tasks. Detailed maintenance management analysis indicates that all street tree work performed by the Parks Department equals approximately 1 FTE.

The Parks Department has at least one pickup truck fully equipped with tree care equipment, including both hand and power pruning tools. A small bucket truck primarily for electrical utility maintenance is also available for street tree work. This bucket truck is very limited for use in tree work because of its size.

Street Section - Public Works Department. The street section currently performs hazard tree work in an emergency response after storm events.

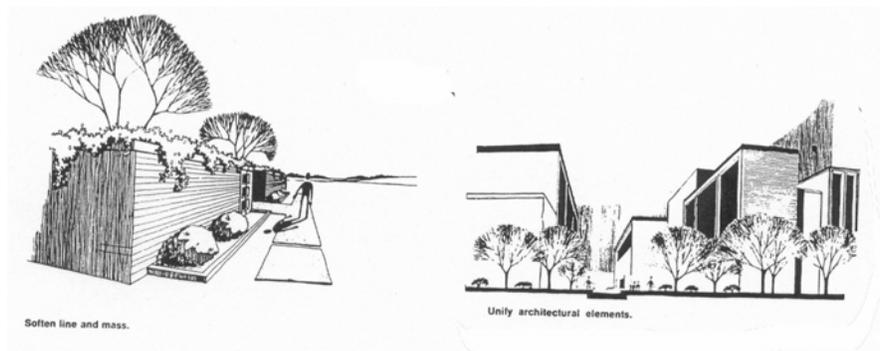
One small bucket truck is available for use by the street section or Parks Dept. on an as-needed basis. This bucket truck is small and does not have an articulated boom, so it is limited in its utility for tree work.

III. Street Tree Design Considerations

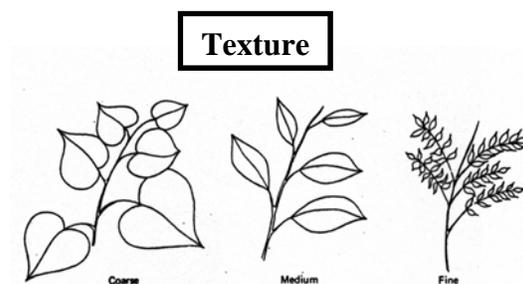
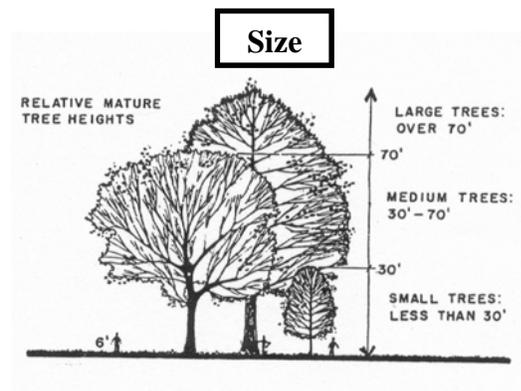
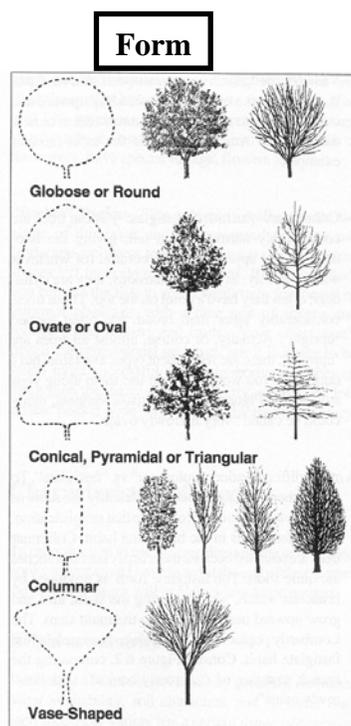
This section discusses the various design elements considered when choosing the appropriate species of trees to plant as street trees.

A. Landscape Design

The inclusion of living plants to enhance architectural design is one of the reasons for designing with trees. Some of the aesthetic uses of trees in the landscape include: *Softening line and mass; and unifying diverse architectural elements.*



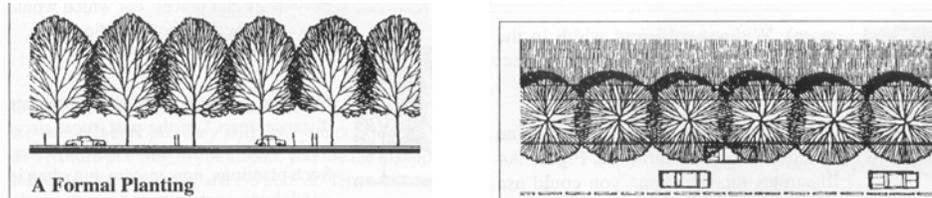
When designing a landscape project you need to consider the four basic elements of design: *form, size, color, and texture.*



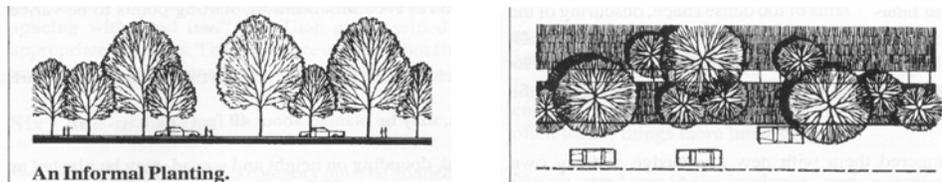
B. Streetscape Design

Besides the four basic elements of landscape design, streetscape designs are also governed by three different planting concepts: *Formal, Informal, and Combined*.

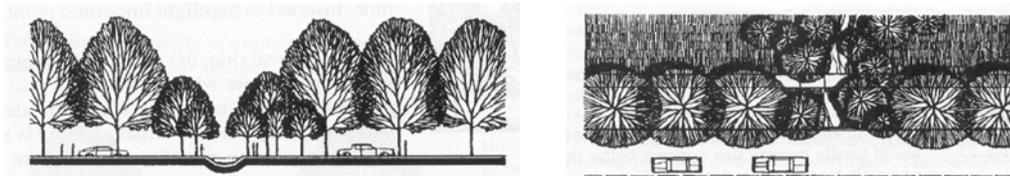
Formal plantings generally utilize the same species of trees on both sides of the street for a distance of several blocks. A formal planting can also incorporate different species of trees as long as they are similar in size, form and texture. A prominent example of this design style is the Legion Way Tree planting.



Informal plantings emphasize randomness, a large number of species, and irregular spacing. An informal planting concept is most appropriate for large areas such as parks. As a general rule, informal plantings in strips adjacent to streets is applicable only if the area for planting is large (20 feet wide or more). Without sufficient width in the planting strip, the desired informal effect cannot be achieved. A prominent example of this design style are the Deodar Cedar and Blue Spruce planted on Henderson Avenue from Watershed Park to Carlyon Street.



Combined plantings include elements of both formal and informal planting concepts. Generally one species of tree is used on both sides of the streets for the majority of the planting, with a different species (of different size, form, color, or texture) used to accent some particular feature, like an intersection, building, entryway, etc. The 1997 streetscape planting on 4th. Avenue is an example of a combined planting, where one species (European Hornbeams) was utilized mid block with a smaller, more ornamental tree used to highlight each intersection.



There are opportunities to utilize all three of these planting concepts in the City of Olympia. However, formal and combined concepts are the most appropriate for most of our plantings.

C. Planting Location

In addition to the various design options, we must also consider the locations of the street trees with regard to the sidewalk and the road.

Street trees in planting strips: A planting strip helps to separate pedestrians from traffic lanes. The wider the planting strip the larger a tree can be, and the greater the buffering capacity for pedestrians. When planted in a strip large enough to accommodate the mature growth of the trees this is probably the ideal planting location for street trees.



Street trees planted in pits with tree grates: This is a common planting option in areas with confined planting spaces and high pedestrian traffic, like downtown Olympia. We have planted many trees successfully with this planting option. Generally this option has a higher installation cost and slightly higher cost for long-term maintenance. Cast-iron tree grates cost approximately \$300 - \$400 each and then they have to be cleaned out every year and widened every couple years as the trees grow. Eventually the trees grow large enough the grate has to be removed completely.



Street trees planted in islands or bump-outs: This planting option is probably preferred over planting in tree grates when there is adequate space for the islands. By using this option it eliminates the tree grates and their future maintenance, while gaining valuable soil volume for the trees roots. The problem with this option is that it sometimes eliminates parking spaces, and it is difficult to clean leaves off the streets with our street sweeper. With careful planning, islands can be placed at the end of blocks or in existing no parking areas. Discussions with Public Works personnel are necessary prior to installation of any more bump-outs to evaluate design options that would allow leaf cleanup with the street sweeper. The most common examples of this planting option are: Washington Street, 5th. Ave. in the Downtown.



Street trees planted behind the sidewalk: When the curb, sidewalk and other street improvements are already installed, or if the planting strip is too narrow, the only place to plant a street tree is behind the sidewalk. Planted behind the sidewalk, the tree no longer buffers the pedestrians from the traffic lane, and it becomes more difficult to obtain the canopy effect of street trees over the roadway. However, by placing the tree behind the sidewalk there is potentially more soil volume available to the roots of the tree.

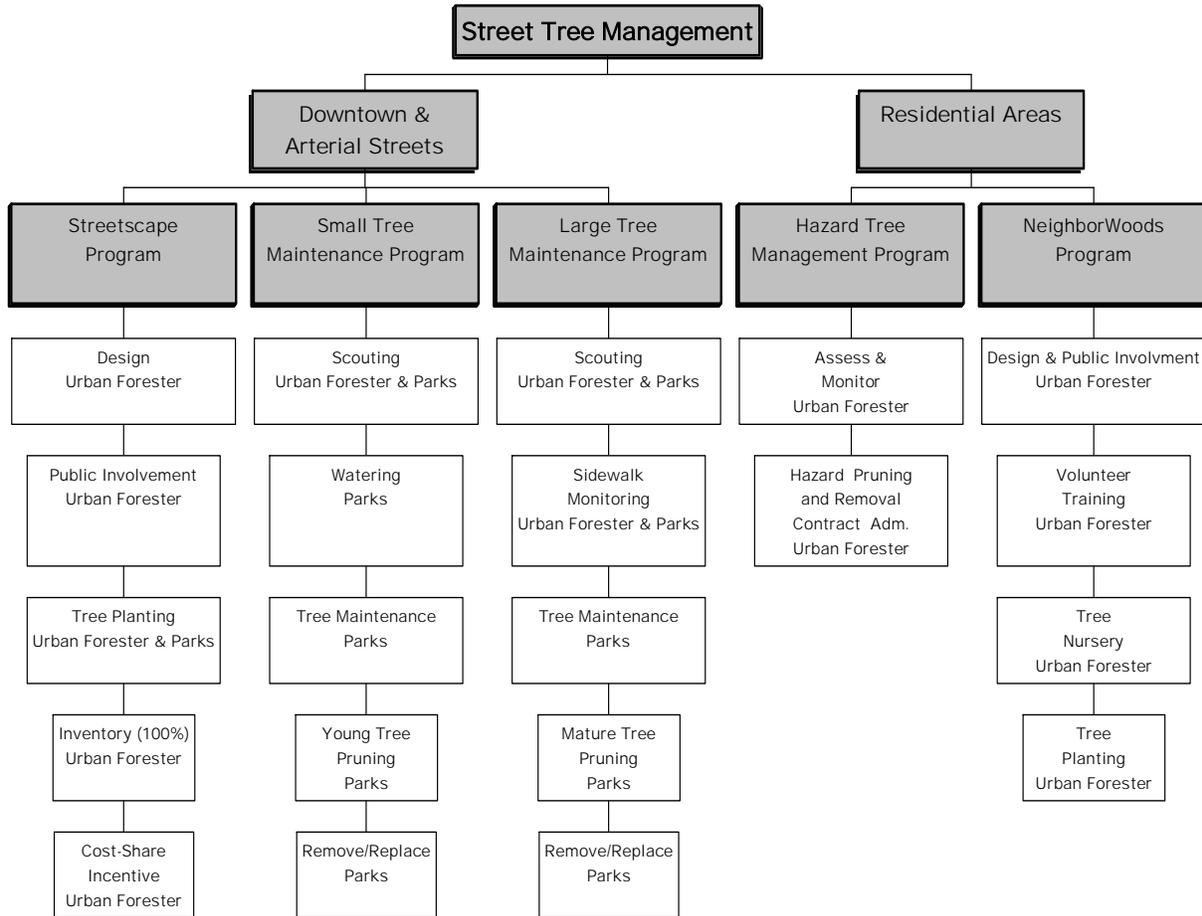


Street trees planted in Medians: This planting option is generally very effective at making a very wide street much more pedestrian scaled. Unfortunately, we often times do not have sufficient right-of-way width to be able to incorporate these types of features into our streetscape. The most prominent medians in Olympia are on Plum Street near the City Hall. Currently there is an unplanted median that runs through Priest Point Park, that would make a wonderful location to plant additional street trees.



IV. Street Tree Management Programs

In Olympia we have several different “programs” related to the planting and maintenance of street trees. These programs include: *Streetscape*, *Small Tree Maintenance*, *Large Tree Maintenance*, *Hazard Tree Management*, and *NeighborWoods*. The following organization chart shows how these programs are implemented and the staff /budget implications.



A. Streetscape Program

Historically we have planted street trees in Downtown and along Arterial Streets, utilizing both Streetscape Improvement and Downtown beautification funds. The Comprehensive plan supports the continuation of this practice.

In Appendix I - Street Tree Planting Priority - The Urban Forester and the Urban Forestry Advisory Board prioritized planting locations for new street trees, based on a number criteria including the city's comprehensive plan.

The streetscape street tree planting program focuses on planting new street trees in Downtown and along major arterial streets. This requires the urban forester (or a consultant hired through a professional service contract) to design the project and discuss the project with potentially affected parties including adjacent property owners and businesses.

Once every 5 years the street tree inventory will need to be updated by incorporating any new trees into our inventory data base, and re-evaluating the existing trees. This will most likely be performed by a private consultant through a professional services contract.

A street tree planting incentive program similar to NeighborWoods is proposed to be developed for the Downtown and arterial areas. This incentive program will provide technical and financial assistance to property owners / developers for the installation of street trees in designated areas of the Downtown and along Arterial streets.

B. Small Tree Maintenance Program

The Parks Department currently has staff that are trained and equipped to provide maintenance and pruning for small or young trees (generally less than 12" in diameter). Our street tree inventory indicates there are approximately 1500 trees in the Downtown and along arterial streets that are maintained by the Parks Department as part of this program. This program consists of bi-annually scouting of the Downtown and arterial streets to determine work needs, watering newly planted trees, annual maintenance of tree grates and pruning each tree approximately once every 8 years depending on the species and location of the trees. A detailed description of each of these tasks and an analysis of the budget implications of this program are identified in Appendix II – Maintenance Standards.

C. Large Tree Maintenance Program

The Parks Department as currently staffed and equipped does not have the equipment necessary to prune large or mature trees. At our current level of service the pruning of these trees will need to be contracted out to a private tree service. A Budget enhancement will be needed to accomplish this work. Depending on the number of new street trees planted and the level of service we plan to provide for the pruning and maintenance, it may be justified to invest in equipment, like a bucket truck. Scouting, annual maintenance and sidewalk monitoring, of these large trees is currently performed by both the Urban Forester and the Parks Department staff.

D. Hazard Tree Program

The Street Section of Public Works has historically provided tree pruning and tree removal service for any street tree determined to be a hazard, through a contract with a private tree service. After the City hired an urban forester in 1992, he has assisted Public Works with this work program.

Typically the City will only provide this service on a request basis. After a citizen makes a request for the City to inspect a street tree, the Urban Forester or a private arborist under contract with the City, assesses the tree in question and determines whether it is a hazard.

If the tree is hazardous, then a private tree service, under contract with the City is hired to perform the necessary tree pruning or removal. If a tree is not removed, it is inventoried and the Urban Forester re-inspects (monitors) the tree annually. Historically the Public Works, street section has paid for this program out of their operating budget. Starting in 2001 the Urban Forester will pay for this work out of his operating budget.

A 10% sample tree inventory performed in the residential areas of Olympia indicates that there are approximately 900 street trees that are either in poor condition or dead, and need to be removed. The current budget allocated for removal and/or pruning of hazard trees is only sufficient to remove approximately 50 trees per year. In discussions with the City's risk manager, he suggests we develop a more pro-active approach to removing these hazard trees.

E. NeighborWoods Program

The NeighborWoods Program is the City of Olympia's volunteer tree planting program. The Urban Forester and an Urban Forestry consultant hired through a professional service contract administers this program. The program consists of working with individuals and neighborhood groups to plant street trees throughout Olympia, focusing on the residential areas of the City.

The trees for this program are grown in a "City Tree Nursery", that is managed by the urban forester with assistance from local high school and college horticulture students. Prior to tree planting, applicants are required to attend a training workshop. This workshop teaches applicants how to plant and care for trees. Once trained staff meets with every property owner to evaluate their potential planting sites to ensure the right tree is chosen.

Appendices

Appendix I. Downtown and Arterial Street Tree Planting Priorities

Appendix II. Maintenance Standards

Olympia Master Street Tree Plan

Appendix I- Downtown and Arterial Street Tree Planting Priority

<u>Streetscape Areas</u>	<u>Location Description</u>	<u>Planting PriorityCriteria</u>	<u>Estimated Cost to Plant</u>
Harrison Ave	Harrison Avenue from Olympic Way to Cooper Pt.	1,3,4	\$145,000
*Franklin St.	Franklin Street from Union to State Avenue	1,3,4	\$63,000
4th. Ave.	4th. Avenue from Plum to the Bridge	2,3	\$15,250
*Legion	Legion Way from Plum Street to Columbia	1,3,4	\$56,000
*5 th . Ave.	5th. Avenue from Eastside Street to the Bridge	1,3,4	\$100,000
Mud Bay	Mud Bay Road from Yauger to the City Limits	3,4	\$37,500
Jefferson Street	Jefferson Street from Union to State Avenue	1,3,4	\$21,000
Washington Street	Washington Street from Union to State Avenue	2,3,4	\$31,500
*Chestnut St.	Chestnut Street from Union to Legion Way	1,3,4	\$61,000
*Union	Union Avenue from Columbia to Eastside Street	1,3,4	\$89,000
*Columbia	Columbia Street from Union Avenue to State Ave.	1,3,4	\$67,000
@Pacific Avenue	Pacific Avenue from State Avenue to the City Limits	1,3,4	\$74,000
Capital Way	Capital Way from the Farmer's Market to State Avenue	2	\$10,000
Henderson	Henderson (From Watershed Park to Yelm Highway)	2,3,4	\$26,250
Boulevard Road	Boulevard (from Pacific Avenue to Yelm H-way)	3,4	\$54,500
East Bay / Plum	East Bay Dr./ Plum - Through Priest Point Park.	3,4	\$22,500
Other Downtown Areas	(As indicated on the map)	3,4	\$490,000
Martin Way	Martin Way from State Avenue to the City Limits	3,4	\$66,500
Cooper Point	Cooper Point from Hwy 101 North to the City Limits	1,3,4	\$106,000

* These areas were identified as priority planting areas in the City's Comprehensive plan.

1 = Highest priority – Plant trees with streetscape funds;

2 = Most spaces already planted, replacement trees as part of on-going maint.;

3 = Plant trees as part of larger CFP street/utility project;

4 = Tree planting should be done by developer of abutting property

@ Pacific Avenue was considered a high priority by the Urban Forestry Advisory Board, it is not however considered a high priority based on the Comprehensive plan..

Olympia Master Street Tree Plan

Appendix II– Maintenance Standards

As discussed throughout this plan, street trees must be properly maintained if we want them to continue to be a beautiful and valuable asset to our community.

All of the trees less than 12 inches in diameter are maintained and pruned by in-house staff. The remaining trees (over 12 inches in diameter) are maintained by our staff, but will need to be pruned through a contract with a private tree service. This work could be done in house, but it would require the addition of a bucket truck and an additional arborist.

To ensure integration of this plan with the Parks Department maintenance program, this appendix chapter features a revised section of the Parks Maintenance Management Manual, and should be incorporated into that document. The Parks Maintenance management manual is used to set the maintenance standards for various work tasks performed by the Parks Maintenance staff. This chapter will set maintenance standards for street trees and has been used to determine work loads generated by adding additional street trees to the Parks Department maintenance inventory.

TASK: #S1 - PRUNING - STREET TREES

DESCRIPTION: Pruning of Street Trees in Street Scape Areas.

OPTIMAL QUALITY: Trees pruned to provide vehicle and pedestrian safety, to develop Strong branch structure and attachment, to remove dead, diseased, rubbing and weakly attached limbs, and to maintain an aesthetic, natural, beautiful form.

EQUIPMENT & MATERIALS: Pruning shears, loppers, saw, Chain Saw, Tarp, Rake, Broom, blower, Chipper if applicable, and Safety equipment. Bucket truck and/or climbing saddle & rope.

WORK METHOD:

1. Inspect Tree.
2. Set up and maintain vehicle and pedestrian traffic control.
3. Prune, using care not to injure healthy wood.
4. Clean up debris and haul to compost site.
5. Clean up walkways and streets

CREW SIZE: 2 to 3 persons depending on the traffic control requirements.

LOCATION: All Streetscape areas.

SEASON: (year round)

FREQUENCY: Refer to the Street Tree Pruning Matrix

TASK STANDARD: 53 – 212 minutes per tree depending on size

STREET TREE PRUNING MATRIX

Crew size: 2 to 3 persons, depending on traffic control requirements

Frequency: As indicated

Tree Age	Pedestrian and vehicle clearance	Crown Structure (Training)	Standard	Sign clearance	Building Clearance
1					
2					
3	X	X			
4					
5					
6	X	X		as needed	as needed
7				"	"
8				"	"
9				"	"
10	X		X	"	"
15			x	"	"
20			x	"	"
25			x	"	"
30			x	"	"
35			x	"	"
40			x	"	"
45			x	"	"
50			x	"	"
55			x	"	"
60			x	"	"

TASK: #S2 - STREET TREE MAINTENANCE

DESCRIPTION: All street tree maintenance except pruning. This includes removing suckers, spraying herbicide, staking, mulching, watering, grate inspection, cleaning, and maintenance.

OPTIMAL QUALITY: Clean and level grates, gravel in wells, and all street trees looking healthy.

EQUIPMENT & MATERIALS: Flat shovel, leaf rake, Garbage Can, Pruning shears Sledge hammer, Blower/Vacuum, Sprayer. Materials needed: Wooden Stakes, Pea Gravel, Herbicide, Mulch.

WORK METHOD:

1. Remove litter from grates and wells at base of tree.
2. Add pea gravel if necessary.
3. Cut back grate if trunk is growing into it.
4. Root prune tree if buckling grate and/or sidewalk.
5. Control Weeds around base of trees.
- 6 Mulch trees in areas where there are no grates.
7. Remove sucker growth.
8. Remove any broken limbs that can be reached from the ground.
9. Stake new trees as necessary.

CREW SIZE: Two persons (Arterials and Collectors)
Three persons (Downtown)

SEASON: Year round

FREQUENCY: Three times per year (Downtown trees)
Once per year (other street trees)

TASK STANDARD: 5 minutes per tree

TASK: #S3 - STREET TREE SCOUTING

DESCRIPTION: Rapid visual inspection of street trees. Generally performed from a vehicle, by two staff people who are knowledgeable of street tree maintenance needs.

OPTIMAL QUALITY: Potential tree problems identified so preventative measures can be taken to ensure healthy safe street trees. Existing tree problems identified so measures can be taken to ensure healthy and safe street trees.

EQUIPMENT & MATERIALS: Vehicle, maps, notepad with scouting tally sheet.

WORK METHOD:

1. Drive each management unit, visually inspecting each tree.
2. Record location, tree species, size, etc. for trees with problems.
3. Transfer information from work sheets to computer data base and submit as a work order.

CREW SIZE: Two persons

LOCATION: Street trees as indicated in the master street tree plan.

SEASON: Summer, and after every storm event.

FREQUENCY: 1-2 times per year.

TASK STANDARD: 15 minutes per management area

TASK: #S4 - STREET TREES - 100% INVENTORY

DESCRIPTION: The 100% inventory is performed on every street tree within a Streetscape Enhancement Area, every 5 years. This inventory consists of updating our current street tree inventory by locating newly planted trees and recording changes in size, condition and/or work needs of existing street trees.

OPTIMAL QUALITY: Accurate, as-built maps and inventory data for our street trees.

EQUIPMENT & MATERIALS: Vehicle, maps, notepad with inventory forms, tape measure, diameter tape.

WORK METHOD:

1. Obtain as-built maps from current inventory.
2. Obtain as-built maps from any tree planting project since last inventory.
3. Record inventory information for any new trees since last inventory.
4. Measure diameter of each tree and record on form.
5. Check condition and work needs for each tree and update inventory if changed.
6. Transfer information from work sheets to computer data base.

CREW SIZE: One person

LOCATION: Streetscape Enhancement areas.

SEASON: Summer

FREQUENCY: Once every 5 years.

TASK STANDARD: 5 minutes per tree

TASK: #S5 - STREET TREE WATERING

DESCRIPTION: Manual watering of newly established street trees during the first two growing seasons after planting.

OPTIMAL QUALITY: Healthy well established street trees not stressed from drought.

EQUIPMENT & MATERIALS: Water truck, water injector, traffic cones and signs.

WORK METHOD:

1. Set up and maintain necessary traffic control devices.
2. Hand water street trees using water from water truck.

CREW SIZE: One person

LOCATION: Street trees as indicated in the master street tree plan.

SEASON: May - October

FREQUENCY: Once per week for 25 weeks during dry part of season, in the absence of adequate rain.

TASK STANDARD: 10 minutes per tree.

Acknowledgements

This Master Street Tree Plan for Olympia has been a work in progress for many years. Its completion is a milestone for the Urban Forestry Program in Olympia.

This plan would not have been possible without the assistance, patience, and understanding of many, many people.

A Special Thanks to:

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&

The Olympia Urban Forestry Advisory Board

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&

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Kevin M. McFarland, principal

This plan and the trees that will be planted, pruned and enjoyed with its guidance are dedicated to the memory of

Joan Ridgway
Urban Forestry Advisory Board Member,
Tree Lover, & Good Friend

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&

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