URBAN FOREST MAINTENANCE MANAGEMENT PLAN
FOR THE CITY OF LONGVIEW, WASHINGTON

I. INTRODUCTION – PURPOSE AND INTENT OF PLAN

The Urban Forest Maintenance Management Plan establishes standards for the management of trees within the city limits of Longview, in order to ensure that Longview will continue to realize the benefits provided by its urban forest. The provisions of this plan are enacted to accomplish the following specific objectives:

A. Preservation, protection and active promotion of current urban forestry principles and practices.

B. The establishment and implementation of a tree management program to provide maintenance and preservation of existing City Trees and an orderly program of tree planting for the future.

C. The creation of guidelines for locations for tree plantings, recommendations of tree species to be planted, establishment of maintenance schedules and guidelines, and the identification of trees to be removed in consultation with the Tree Advisory Board, Planning Board, Department of Parks and Recreation, the Community Development Department, and the Public Works Department;

D. The recognition by the Parks Division, Community Development Department, and the Engineering Department of the interrelationship of their responsibilities relative to trees located on City-owned public property, improved rights-of-way, and privately owned property.

E. To maintain the Tree City USA designation

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II. STATUS OF URBAN FORESTRY IN LONGVIEW

A. The Community Forest

The City of Longview's community forest is a compiled system of trees, site conditions, and maintenance requirements. An understanding of this system is important to guide decisions regarding species selection and tree care practices. Forest characteristics in this section, provide insight into the composition and quality of the community forest while the Site Characteristics section identifies important limitations that affect tree growth. The Current Tree Care Status section outlines the maintenance requirements observed during and since the inventory which was completed in 1990 by Golden Coast Environmental Services. These requirements are, in part, the result of forest and site characteristics.

This information forms the foundation for managing the care of the City Trees of Longview. The information collected and the methods used for analysis are provided for with an eye toward implementation. This comprehensive view of community forest management maximizes the benefits of the tree resources. Examples of characteristics, which can be continually monitored using current computer software, will be cited.

B. Tree Characteristics of the Community Forest

The characteristics of the community forest include species, diameter, height, canopy spread, and health rating. The goal of this information is to provide an understanding of Longview's City Trees composition and health. This understanding comes from an analysis of species diversity, relative age, and general health.

1. Species Diversity

Longview has a diverse City Tree population inventory. There are 149 species totaling 11,954 trees. The diversity is unbalanced though, with just 28 species making up 89% of the population. The remaining 122 species have only a small number of trees of each species planted. A well maintained urban forest is balanced between establishing species diversity and consolidation of species for economy of maintenance. A general rule of thumb for establishing species diversity is that no more than 10% of the population be comprised of a single species, no more than 20% of trees in the same genus and no more than 30% within the same family. The most common genera are Prunus (Table 1). With 4,662 trees, it comprises 39% of the population. The next nine most common genera in order of their occurrence include, Betula (birch), Liquidambar (Sweetgum), Ulmus (American elm), Carpinus (hornbeam), Crataegus (hawthorn), Acer (maple), Quercus (red oak), Malus (crabapple), and Populus (cottonwood).

Species diversity is important in reducing the devastation affects on a community by species-specific pest epidemics. Diversity acts in two ways. First, it reduces the number of host trees for a pest. A wide variety of different types of trees reduce the proportion of the forest that could be damaged by a selective pest. Even if all of a species were lost, the majority of the forest would still exist. Second, diversity can reduce the density of species making tree to tree transfer of a pest

more difficult. For example, the Dutch Elm Disease (Ceratocystis ulmi) spreads by a host beetle flying from tree to tree or by the fungus itself through root grafts of certain species of elm trees in close proximity (i.e. Lake Sacajawea). If an epidemic such as Dutch Elm Disease were to develop in Longview, 535 trees would be affected, but the vast majority of the forest would remain. In addition, many of the susceptible elms might be 'overlooked' by the disease because they are isolated among no-host trees or are individually less susceptible.

Consolidation of species is also important to the community. First, diversity can be moderated from a maintenance viewpoint in order to streamline the variety of tree care practices and improve efficiency. For example, there are 117 species that combined account for 10% of the population. Maintenance economy is lost because each of these species has its own care requirements (i.e. Mulberry require a scheduled annual pruning whereas Quercus can be on a 5 to 10 year pruning cycle). Another advantage of consolidation is that it tends to better define the community from a design perspective. Just as street signs, monuments, and design ordinances define a community, the community forest can provide a unity between diverse developments.

City Trees in Longview are considered to be more of an arboretum and thus greater species diversity is warranted. When the street and median tree population is separated from the City Tree population, species diversity is still unbalanced, though less so. Currently, nine species of City Trees and seven species of street/median trees comprise over 50% of their respective populations. If arboretum diversity is desired, a 1 – 5% species composition goal for City Trees is suitable.

In order to achieve a diversity-consolidated balance, the city will need to reduce the total number of species. Although there is no set formula for calculating a perfect balance, the city will reduce the number of Prunus and Betula it plants and examine other successful species that are under-utilized now. Developing a species selection list helps to plan species diversity more carefully and this document will include a species master plan, which will identify where species will be planted over time, and will help to insure an adequate placement balance as well.

Table 1. Species Composition for Major Genera (grouping of species)	1990	2009	1990	2009
Genus Species (COMMON NAME)	Number of trees		%	%
Prunus				
Serrulata 'Kwanzan' (KWANZAN CHERRY)	1618	1462		12.12
Cerasifera (PURPLE LEAF PLUM)	1497	1479		12.26
Blireiana (FLOWERING PLUM)	805	168		1.39
Serrulata 'Shirotei' (MT. FUJI CHERRY)	427	305		2.52
Serrulata 'Shirofugen' (AUTUMN CHERRY)	219	143		1.18
Yedoensis (AKEBONO FL. CHERRY)	207	202		1.67
9 other species	189	387		3.14
	4962	4146	40.8	34.28
Betula				
Pendula (WHITE BIRCH)	1310	1004		8.32
Nigra (RIVER BIRCH)	39	36		.29
	1349	1040	11.11	8.61
Acer				
Platanoides (NORWAY MAPLE)	390	682		5.62
P. 'Schwedleri' (SCHWEDLERI MAPLE)	299	289		2.39
Saccharum (SUGAR MAPLE)	153	161		.97
10 other species	306	386		3.08
	1148	1518	9.4	12.06
Crataegus				
Laevigata (ENGLISH HAWTHORN)	486	373		3.09
Lavallei (CARRIERE HAWTHORN)	133	88		.72
Doughlasi (DOUGLAS HAWTHORN)	38	29		.24
Phaenopyrum (WASHINGTON HAWTHORN)	11	8		.06
	668	498	5.5	4.11
Liquidamber				
Styraciflua (SWEETGUM)	642	620	5.3	5.14
Ulmus				
Americana (AMERICAN ELM)	572	525		4.35
Pumula (SIBERIAN ELM)	7	4		.04
Campestris (ENGLISH ELM)	4	6		.03
	583	535	4.8	4.42
Quercus				
Rubra (RED OAK)	248	255		2.11
Coccinea (SCARLET OAK)	164	164		1.35
5 other species	58	111		2.8
	470	530	3.9	6.26
Carpinus				
Betulus 'Fastigiata' (EUROPEAN HORNBEAM)	350	617	2.9	5.11
Malus				
Augustifolia (AMERICAN BEAUTY CRABAPPLE)	274	121		.73
Ionensis plena (BECHTEL CRABAPPLE)	24	13		.10
2 other species	19	36		.25
	317	170	2.6	1.08
Tilia				
Americana (AMERICAN LINDEN)	157	150		1.24
Cordata (LITTLE-LEAF LINDEN)	116	150		1.24
Heterophylla (WHITE BASSWOOD)	1	1		.008
	274	301	2.3	2.49
Populus				
Trichocarpa (BLACK COTTONWOOD)	207	190		1.57
4 other species	38	39		.31
	245	229	2.1	1.88

2. Relative Age:

The relative age of a tree population refers to how old the trees are relative to their life span, for a given species. Since life spans vary for different species, it is more useful to classify a tree in terms of a relative young, mature, or over mature status rather than in actual years. In plant physiology terms, age refers to the ratio of dynamic mass to static mass.

Dynamic mass is the amount of tree mass that its canopy can supply sugar to during the current growing season and store up for the next growing season. It represents the functioning parts of the tree that produce sugar and trap Carbon Dioxide. Static mass refers to the heartwood that provides structure but no longer provides growth functions. In a young tree, 100% of the tree is dynamic biomass. A mature tree has between 50 – 100% dynamic biomass and an over mature tree has less that 50% dynamic biomass. As a tree ages it will convert dynamic biomass into static biomass and will shed that mass in the form of branches and roots in order to support itself.

Relative age can be determined by looking at how developed the form and structure of a particular tree is. As a tree becomes mature, small branches will die back and the height and diameter will keep increasing measurably from year to year. When large branches begin to die back and the height and diameter do not increase measurably from year to year, the tree is considered over mature. Relative age can be calculated forest-wide by analyzing the diameter, height and canopy spread characteristics of each species. This analysis assumes the natural growth limits attained by small, medium, and large trees and adjusts size for trees growing in urban areas.

A forest's relative age has a significant impact on tree care. Young trees require attention to ensure they adapt to their environment and do not develop weak branch structure habits. Over mature trees often require more costly care to keep up with dead branches and tree mortality. Mature trees require the least amount of care if they have been trained properly when young.

Almost half of the City Trees in Longview are over mature (45%), reflecting the initial planting that was done when the city was first planned. The remaining population is more divided between young trees (25%) and mature trees (30%). Longview's mature trees provide the backbone of the population and give the community forest its form. The young trees in the population are growing vigorously and beginning to attain their mature character and stature. They require more frequent training care, but this care requires less costly equipment and is accomplished with ground crews. The large proportion of over mature trees indicates that as this population declines, large numbers of removals and costly pruning to renovate and stabilize hazardous trees and will occur over a relatively short period of time. The forest population needs to have a more balanced age distribution to reduce the dramatic fluctuations in tree care budget over time.

The Ideal age distribution should be approximately 20% young, 60% mature, and 20% over mature trees. The high proportion of mature trees accounts for the greater number of years that a tree is in its mature phase relative to its young or over mature phases. The software program can assist the urban forester in monitoring the relative age distribution of trees as they have moved from one age category to another. This combined with long-term planning efforts to redistribute the age of the

forest can help stabilize the dramatic fluctuations in tree care budget needs and project what the cost of tree care will be over time.

3. General Health

Longview's public urban forest is in good health. Condition is based on weighted averages of trunk, structure, canopy, and pest evaluations. Ninety-five percent of the trees are rated in good condition. However, since Longview has a predominantly over mature population and the visual inspection cannot detect hidden defects, the actual condition of the population may be less than the percentages indicated. A tree hazard assessment is recommended to prioritize the hazardous trees.

Poor branch structure decreases the overall condition rating. In the 1990 inspection, sixty-one percent of the trees surveyed had a few important branches either missing or diseased and had the presence of some narrow crotches with included bark. Included bark refers to bark that grows between two major branches that were left too close together radially during a training prune or neglected to be corrected when planted. Eventually, the weakly attached branches split when the tree matures. Ulmus americana (American elm), Tilia americana (basswood) and Tilia cordata (little-leaf linden) were noted to have large limbs that were fused together. Although the percentage of limbs that would actually drop is small, the damage could be serious.

During the aforementioned inspection/survey, three percent of the population had significant trunk damage or early signs of decay. Conks are significantly present in Acer macrophyllum (big-leaf maple) and Fraxinus latifolia (Oregon ash) and in Prunus ceresifera (purple-leaf plum). The presence of trunk conks indicates columns of decay and advanced stages of decline. Even though the crowns may be green and full, the trees should be prioritized and planned for removal. Otherwise, the trunk and crown condition of the community forest was rated in good condition with only minor bark and cambium damage (8.3%) and slightly asymmetrical crowns (18.2%).

Slightly over 8% of the population was affected by a controllable leaf pest; and overall, this was a minimal problem. However, specific pests were present in significant percentages of the certain species: Betula pendula (white birch) 75%, Crataegus lavellei (Carriere hawthorn) 25%, and Fraxinus latifolia (Oregon ash) 98% had aphids. Aphid control of the most severely affected trees can be achieved with the application of insecticidal chemicals such as insecticidal soaps, Neem oils, or imidacloprid. The Department has chosen to reduce the number of trees receiving chemical treatment and only treating upon request if there is no alternative method. Currently applications of granular imidacloprid are being administered to treat for the aphids. Crataegus lavellei was also infected with mites (25%) and scale (25%). Most species of Prunus and Quercus were significantly affected by leaf-skelatonizing caterpillars. Treatment may only be warranted in severe cases or in highly visible areas. The Parks Division utilized all of the above methods of control with moderate temporary success on the populations, but not to the public's satisfaction.

Site Characteristics of the Community Forest

Natural tree growth is restricted in the urban environment. The restrictions can be compared to a "box" with various urban features affecting the bottom, sides, and top. For example, the size of a tree well cut in concrete restricts root growth and forms the bottom of the box. Streets and sidewalks that must remain clear for the safe flow of traffic form the sides of the box. Utility lines form the top. In some instances the box is opened on one or all sides when there are not restrictions placed on growth. A tree that is not surrounded by hardscape has an open bottom with little restriction on root growth. The data collected representing the limitations of the box include growing space, size and tree related hardscape damage, clearance needs for streets and sidewalks and the presence of overhead utilities.

1. Growing Space

A tree's growing space, especially in urban environments, is a specific area usually bounded by hardscape. Hardscape is the sidewalk, curb, or street covering the soil surface around the base of a tree. These coverings generally form the most restrictive side of the box. The size and configuration of the area covered by these impermeable surfaces determines the degree of limitations placed on root growth.

Longview's hardscape damage in 1990 was noted at 1,812 tree site locations. This is 15% of the total tree sites. By far the most frequent damage noted was sidewalk displacement raised less than one-half inch (8% of total population). Sidewalk displacement raised greater than one-half inch occurred at 478 tree sites (3.3%); repair of these sites took priority to protect public safety and a program was begun to replace the sidewalks. Geographically, the areas of most hardscape damage correspond to the oldest additions with the largest trees, which are the Olympic, Old West Side, and Highland Additions.

It is important to review the species in Longview that cause the majority of the damage (Table 2). Several species inherently cause hardscape damage when planted in even moderately restrictive growing spaces and should be phased out or only planted in unrestricted growing spaces. Species with the highest percentage of damage in descending order are: Morus alba (white mulberry), Tilia americana (American basswood), Acer platanoides (Norway maple), Acer saddharum (sugar maple), and Quercus coccinea (scarlet oak).

Hardscape damage occurred in 284 sites with Betula pendula (white birch), which contributes significantly to the total damage. However, the number of occurrences only represented 22% of that species in the population. Therefore, the species was not recommended for abatement based solely on the presence of hardscape damage since virtually any tree species will cause damage in a restrictive growing space. However, in 1995, public dissatisfaction with the white birch and the trees susceptibility to aphid infestation and the accompanying honeydew led the City Council to initiate a birch tree removal program. Because the council was apposed to removing otherwise healthy trees, this program was and continues to be made available only relative to birch trees. A property owner must complete and submit to the Superintendent of Parks an application for the removal of the birch street tree(s) in the planting strip adjacent to his/her property, which is or has been infested with aphids. Upon approval of the removal(s), the property owner must submit a

payment in the amount of $200.00 per tree to cover a portion of the cost to remove the existing birch tree and the purchase of a replacement tree. The Superintendent of Parks will schedule the tree removal(s) into the city arborist's work schedule for the earliest possible attention. Appropriate species selection for the replacement trees allows the damage to be reduced in the future. Other species that are planted in large numbers and contribute minimal damage considering their numbers are Ulmus american (American elm) 20%, Prunus serrulata 'Kwanzan' (Kwanzan cherry) 15% and Prunus ceresifera (purple-leaf plum) 10%. The cultivar Prunus serrulata 'Kwanzan' develops a huge butt from the native stock to which it is grafted thus creating hardscape damage in parking strips.

In many cases hardscape damage becomes a serious problem for a heritage tree. Many of Longview's large trees in the central additions of the City have historical importance. Design and arboricultural alternatives, which reduce future damage, can be employed to preserve heritage trees. These alternatives attempt to change the characteristics of the 'box' so that a tree can continue to grown without extensive hardscape damage. Routing sidewalks around trees and increasing the size of tree wells are design possibilities. Root pruning is an arboricultural alternative, but should only be performed or supervised by a qualified arborist to ensure the stability and health of the tree. Hardscape replacement alternatives will be mentioned later in the plan.

2. Clearance

Obstructions to the free and safe movement of vehicular and pedestrian traffic, the line of sight to traffic safety signs, or the illumination provided by streetlights are clearance concerns. Generally, infrastructure such as streets, sidewalks, signs and lights permanently limit the space available for tree growth.

Often, canopy spread is encouraged over streets to provide cooling shade and create attractive streetscapes. With the exception of commercial areas where view to merchant's signs and store fronts is a consideration, canopy spread is usually only restricted near ground level. Merchants have been and are encouraged to change their thoughts on signage and encouraged to lower signage below the canopy. However, ground level restrictions are important to the health and safety of City Trees. Foliage should be cleared from these areas to prevent damage to life and property and damage to tree structure.

In 1990, clearance obstructions were identified at 1,508 sites, representing about 10% of all of the pruning needs in the City. Trees have been generally well matched to the growing spaces to avoid clearance problems.

3. Overhead Utilities

Overhead growth is the least restricted side of the 'box'. Generally, trees have enough available space to grow to their mature height. The most common restriction to height growth is overhead utilities. Planning the appropriate location and species of a tree to be installed is critical to the success of the tree and the uninterrupted service of the utility line.

The inventory in 1990 identified 910 trees located under primary electrical utility lines, over 64% of trees growing under all utility lines. Out of that figure, only 9% were characteristically large trees, Liquidamber styraciflua (sweetgum) and Ulmus americana (American elm), predominated. The Sweetgum has an excurrent growing form with major growth coming from a central leader. Excurrent trees cannot be topped without destroying their form. The elm has a decurrent or round-headed growth pattern. Although ideally trees should not be planted under such utilities, such species can be carefully thinned without destroying their form or directionally pruned. Again, appropriate selection of species and location has minimized the problem of having to contend with many large trees under primary utility lines. This accounts for only .6% of the entire tree population. For the 81 trees, which were located in this zone, primary utilities require a ten-foot clearance. Tree care has not included the destructive, severe heading back often-imposed on trees situated beneath utilities in other communities. Training trees to grow around primary utility lines through selective pruning (directional pruning) is a viable, though more costly option.

III. SUBSTANTIVE STANDARDS
GUIDELINES & REGULATIONS

A. DEFINITIONS

1. **Arboricultural Value:** monetary value of a tree(s) as determined by a qualified arborist using a tree valuation formula established by the Council of Tree and Landscape Appraisers or other comparable valuation method.

2. **Buildable area:** those portions of a parcel of land wherein building, parking and other improvements may be located and where construction activity may take place. Buildable areas shall not include sensitive land areas as defined herein.

3. **Caliper:** The American Association of Nurseryman standard for trunk measurement of nursery stock. Caliper of the trunk shall be the trunk diameter measured 6” above the ground for up to and including 4” caliper size, and 12” above the ground for larger sizes.

4. **Clearing:** Any cutting or removal of vegetation in any manner.

5. **Crown:** Means the area of a tree containing leaf or needle-bearing branches.

6. **Developed Lot:** (1) A lot or parcel of land upon which a structure(s) is located, which cannot be further subdivided pursuant to the City Subdivision ordinance. (2) Any street right-of-way that has been constructed to at least minimum city standards.

7. **Diameter at Breast Height (d.b.h.):** A tree’s diameter in inches at four and one half (41/2) feet above the ground. On multi-stemmed or trunked trees, the diameter shall be the sum of diameters of all individual stems or trunks.

8. **Director:** The Director of the Department of Parks and Recreation or his/her designee.

9. **Dwelling unit:** A single unit providing a complete independent living space for one or more persons, including permanent facilities for living, sleeping, eating, cooking, and sanitation.

10. **Drip line (of a tree):** A line projected to the ground delineating the outermost extent of foliage in all directions

11. **Erosion Control Measures:** Any combination of methods, materials or devices used on a site to prevent unwanted movement of dirt, mud, sediment, and/or debris down slope, off-site, into drainage courses or in undesirable directions.

12. **Grove:** A stand of three or more trees of the same species or mix, which form a visual and biological unit.

13. **Owner:** Where used in relation to real property, owner means the legal owner of record or, where there is recorded a land sales contract in force, the purchaser thereunder.

14. **City Tree:** Any tree in the City of Longview's urban forest as identified in the written inventory maintained by the Parks Department and those trees located at the Mint Valley Golf Course.

15. **Person:** Any person, individual, public or private corporation, firm, association, joint venture, partnership, owner, lessee, tenant, or any other entity whatsoever or any other combination of such, jointly or severally.

16. **Planting Strip** shall mean the following:

a. Where there is a curb to a public street and a sidewalk, then the area of land lying between the curb and a paved sidewalk parallel or approximately parallel to such curb;
b. Where there is a no curb to a public street and a sidewalk, then the area of land lying between the edge of the paved surface of the public street and the sidewalk parallel or approximately parallel to such public street;
c. Where there is a curb to a public street and no sidewalk (within the industrial/manufacturing zones), then the area of land located i.) within five (5) feet of the paved surface of the street and ii.) within the right-of-way; or
d. Where there is a curb to a public street and the sidewalk is directly adjacent to the curb, then the area of land located i.) within seven (7) feet of the paved surface of the sidewalk and ii.) within the right-of-way.

17. **Qualified Arborist:** A professional in the field of Arboriculture who provides professional consultation about trees and other woody plants regarding damage, diseases and afflictions which effect them, their health and care and their

value. The arborist must be able to demonstrate proficiency and credibility through evidence of either of the following:

(1) Membership in the American Society of Consulting Arborist, or;

(2) Qualification for the inclusion on a list of acceptable qualified arborist by the City through documentation of any or all of the following:

(a) Substantial and regular experience as an arborist.

(b) Pertinent academic degree or other forms of certified training;

(c) Referential record of practice in the field as an arborist through examples of a variety of arboricultural consultation problem solving situations.

19. **Removal:** The actual removal, or causing the effect of removal through damage, poison, root destruction or other direct or indirect action resulting in the death of a tree.

20. Right of Way: The total width of a dedicated public street as shown on a plat or as described in a written dedication document.

21. **Routine Vegetation Management:** Tree trimming and ground cover management, which is undertaken by a person in connection with the normal maintenance and repair of the property.

22. **Sensitive Lands Area:** Wetlands and associated buffers, watercourses, steep slopes, landslide hazard area as now or hereafter designated in the Longview Municipal Code.

23. **Site Plan:** A two-dimensional drawing, drawn to scale, of a lot or parcel depicting the following items:

(1) Location of all existing and/or proposed structures, driveways, parking, utilities, drainage easements, and landscaping.

(2) Areas proposed for clearing and the proposed use for such area.

(3) Designation of all diseased or damaged trees.

(4) Any proposed grade changes that might adversely affect or endanger trees on the property and specifications to maintain grade change.

(5) Designation of all trees six (6) inch caliper or greater, indicating those to be removed and those to be retained.

(6) Designation of all wetland, streams and environmentally sensitive areas.

24. **Street Tree:** A tree existing within any Planting Strip.

25. **Tree:** Any living woody plant characterized by one main stem or trunk and many branches, or a multi-stemmed trunk system with a definitely formed crown.

26. **Tree Cutting:** The actual removal of the above ground plant material of a tree through manual or mechanical methods.

27. **Tree Density Requirement:** The minimum number of trees required of each site as defined in Section III E.

28. **Tree Survey:** A drawing at a scale of at least one (1) inch equals 100 feet scale drawing which provides the following information: location of all trees having six (6) inches or greater d.b.h., or groves of trees, plotted by accurate techniques, and the common or botanical name of those trees and their d.b.h.

29. **Tree Trimming:** The pruning or removal of limbs provided that the main stem is not severed, and no more than 40% of the live crown is removed, except as to Heritage Trees.

30. **Tree Topping:** The severing of the main stem of the tree in order to reduce the overall height of the tree.

31. **Vegetation:** Plant material, including trees, shrubs and ground cover.

B. Areas of Responsibility

City Trees are the responsibility of the Parks Division for planting and management. All trees bordering streets that have planting strips between curbs with detached sidewalks and all attached sidewalks with planting strips in the right-of-way newly constructed after January 1, 2009 are managed by the City in accordance with funding levels adopted by the City Council.

C. General Standards and Specifications

These specifications are to serve as a standard for planting and maintenance of all City Trees. They will apply whether work is performed by City forces or contractually. Exceptions to Urban Forestry Standards and Specifications must be by written approval of the Director of Parks and Recreation.

1. Whenever electric, telephone, gas, or water lines, or other improvements, public or private, upon a public area will be knowingly impacted or jeopardized by any authorized tree or shrub activity, the proper authorities of the utilities involved or property owner involved shall be consulted prior to performing any work activity and all requested precautions by any such authority shall be complied with.

2. All motor vehicles and other major equipment of any licensed arborist used in conducting the licensed business shall be clearly identified with the name of the licensee.

3. Authorized work on or with City Trees neither expresses nor implies a right to violate any law of the land while in process of performing such work.

4. All such work shall be conducted in a manner as to cause the least possible interference without annoyance to others.

5. All personnel utilized for work on or with trees shall be trained to perform the work properly and safely.

6. A supervisor shall be present at all times when work is being performed except that he may be absent for short periods during the day when necessary because of emergencies or other urgent or scheduled matters.

7. Any injury to persons or damages to any improvement, vehicle, tree, shrub or structure while working with City Trees or shrubs shall be promptly reported to the appropriate supervisor.

8. Any use of tools or equipment in unsafe conditions or any application of techniques or methods deemed unsafe to life, limb or property is forbidden.

9. Pedestrian and vehicular traffic shall be allowed to pass through the work areas only under conditions of safety and with as little inconvenience and delay as possible.

10. Adequate barricades and warning devices shall be placed and flaggers shall be stationed as necessary for the safety of persons and vehicles.

11. Qualified street and sidewalk warning devices shall be in position as required at all times while work on City Trees is being performed.

12. Nothing in this Chapter shall be deemed to impose any liability upon any member of the Tree Advisory Board, City Council or the City, or any of its officers or employees nor to relieve the owner of any private property from the duty to prune trees in accordance with the Longview Municipal Code.

13. The abutting property owner is responsible for the maintenance of all vegetation other than street trees located on planting strips and will maintain the height of such vegetation in accordance with the Property Maintenance Code Chapter 16.30 and the Hedge Ordinance Chapter 16.46. The abutting property owner shall maintain trees and other vegetation outside of the planting strip. The Code Compliance Officer shall enforce compliance of the maintenance

responsibility of the abutting property owner in the cases of hazardous and obstructive street trees or other vegetation as outlined in the Hedge Ordinance.

D. Permitted and Prohibited Street Trees

1. Permitted Street Trees

The following list constitutes the current official street tree species approved for the City of Longview, Washington. No species other than those included in this list may be planted as street trees without written permission of the Superintendent or designee. The Superintendent of Parks with the approval of the Tree Advisory Board shall have the authority to add or delete trees from this section.

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COMMON NAME	BOTANICAL TAXONOMY
American Arborvitae	Thuja occidentalis
American Beauty Crabapple	Malus angustifolia
American Elm	Ulmus americana
Arizona Ash	Fraxinus velutina
Bald Cypress	Taxodium distichum
Basswood	Tilia americana
Big Leaf Magnolia	Magnolia macrophylla
Bigleaf Maple	Acer macrophyllum
Black Locust	Robinia pseudoacacia
Bolleana Poplar	Populus alba Pyramidalis
Bunya-Bunya Tree	Araucaria bidwillii
Cape Chestnut	Calodrendrum capense
Cascara Sagrada	Rhamnus purshiana
Chinese Hackberry	Celtis sinensis
Cleveland Select Pear	Pyrus callerylana Cleveland
Columnar Hornbeam	Carpinus betulus Fastigiata
Common Hackberry	Celtis occidentalis
Common Lilac	Syringa vulgaris
David's Maple	Acer davidii
Elderberry	Sambucus neomexicana
Elm Species	Ulmus spp.
Empress Tree	Paulonia tomentosa
English Elm	Ulmus campestris
English Holly	Ilex aquifolium
English Laurel	Prunus laurocerasus
Eucalyptus	
European Beech	Fagus sylvatica
European Larch	Larix decidua
Fairview Maple	Acer platanoides "Fairview"
Filbert	Corylus maxima

Fraser's Photinia	Photinia fraseri
Golden Chain Tree	Laburnum anagyroides
Goldenrain Tree	Koelreuteria paniculata
Green Ash	Fraxinus pensylvanica "Marsh"
Hinoki Cypress	Chamaecyparis obtusa
Honey Locust	Gleditsia triacanthos
Japanese Maple	Acer palmatum
Japanese Tree Lilac	Syringa reticulata
Juniper	Juniperus chinensis
Katsura	Cercidephyllum japonicum
Lace-Leaf Maple	Acer palmatum Dissectum
Littleleaf Linden	Tilia Cordata
London Plane	Platanus acerifolia
Maidenhair Tree	Ginkgo biloba
Maple Species	Acer spp.
Mimosa	Albizia julibrissin
Moraine Ash	Fraxinus holotricha Moraine
Morgan Maple	Acer rubrum "Morgan"
Mossy-Cup Oak	Quercus macrocarpa
Mountain Ash	Sorbus aucuparia
New Zealand Chaste Tree	Vitex lucens
Norway Maple	Acer platanoides
Nuttal Willow	Salix scouleriana
Oregon Ash	Fraxinus latifolia
Pacific Dogwood	Cornus nuttallii
Peachleaf Willow	Salix amygdaloides
Persian Parrotia	Parrotia persica
Pin Oak	Quercus palustris
Pink Dogwood	Cornus florida
Purple Ash	Fraxinus americana
Purple Leaf Beech	Fagus sylvatica Atropunicea
Purple Robe Locust	Robinia psendoacacia
Quaking Aspen	Populus tremuloides "enermis"
Raywood Ash	Alnus oregona
Red Alder	Alnus oregona
Red Maple	Acer rubrum
Red Oak	Quercus rubrum
Redbud	Cercis canadensis
Saucer Magnolia	magnolia x. soulangiana
Scarlet Oak	Quercus coccinea
Schwedler Maple	Acer platanoides Schwedleri
Siberian Elm	Ulmus pumila
Smooth Sumac	Rhus glabra
Southern Magnolia	Magnolia grandiflora

Staghorn Sumac	Rhus typhina
Sugar Maple	Acer saccharum
Sycamore Maple	Acer pseudoplatanus
Tree of Heaven	Ailanthus altissima
Trident Maple	Acer buergeranum
Tulip Tree	Liriodendron tulipifera
Vine Maple	Acer circinatum
White Ash	Fraxinus americana
White Basswood	Tilia heterophylla
White Cedar	Chamaecyparis thyoides
White Oak	Quercus alba
White poplar	Populus alba
White Sapote	Casimiroa edulis
Wisteria	Wisteris sinensis

2. Prohibited Trees:

a. It is unlawful to plant in any planting strip the following trees:

Poplar	Weeping Willow
Cottonwood	Conifers
Box elder	Catalpa
Mulberry	Sycamore
Birch	Ginkgo (female)
Flowering Plum (Prunus blireiana)	
Horse Chestnut	Hawthorn
Kwansan Cherry	Crabapple

b. The Superintendent of Parks, with the approval of the Tree Advisory Board shall have the authority to add or delete prohibited trees to or from this section. Any of the aforementioned trees currently existing in any planting strip will when scheduled for appropriate removal, be replaced with one of the species on the approved list.

E. Street Tree Spacing and Location Requirements

1. At the intersection of roadways or vehicular access points, no plant material with a mature height greater than 30 inches shall be planted within the sight triangle measuring 30 feet along the boundary of each of the intersecting roadways, measured from the point of the intersecting curb lines, except where engineering standards indicate otherwise.

2. No tree planting is permitted where the distance between a curb and a detached sidewalk is less than 3.5 feet. In addition, a planting area defined by two curbs, curb and fence, or sidewalk and fence must be 3.5 feet wide if street trees are to be planted.

3. Trees must be centered in the planting strip when the distance between the curb and detached sidewalk is 8 feet or less.

4. Where the sidewalk is attached to the curb as a continuous element, the street tree planting must be at least 3 feet in back of the walk and no more than seven (7) feet. The tree must also be located on the public right-of-way.

5. Larger maturing trees should be spaced 35 feet apart and smaller maturing trees 25 feet apart. The Superintendent of Parks may require wider spacing if it is necessary for development of the tree or for safe use of the street or sidewalk. When space is limited or to achieve a certain design effect, closer spacing may be considered.

6. No street tree shall be planted closer than 10 feet from any driveway or alley, nor shall a street tree or shrub be planted in such a manner that its eventual growth cannot be reasonably controlled so as to avert interference with or obstruction to any improvements installed for public benefit.

7. Tree planting cutouts made in a sidewalk must have a minimum of a 16 square feet cutout area. The tree must be set back from the street a minimum of 30 inches from the face of the curb.

8. No tree planting is to be made within 10 feet of any building or structure.

9. No street trees other than those low-growing species that do not attain a mature height greater than 20 feet shall be planted under or within ten feet of any overhead power line exclusive of street light or service lines.

F. Planting Strip and Street Tree Design

Design concepts and objectives discussed in this Plan represent the standards of the City of Longview and shall be adhered to in designing street tree plantings for both public and private projects.

1. Planting Strip Design

The zone along the sides of streets where trees and landscaping can be located is referred to as the planting strip. Design of the planting strip is just as important as the street tree design. These spaces must provide adequate space for growth and development. Planting strips can be designed in four basic styles:

a. Curbside **Planting Strip:** Located between a detached sidewalk and curb or where there is no curb, between a detached sidewalk and the edge of the public street. At least 3.5 feet is required if trees are to be planted. Wider spaces are preferred and should be provided wherever possible.

b. Boundary **Planting Strip:** Located in back of a sidewalk between the property line and sidewalk. Street trees should be planted 3 – 7 feet in back of the sidewalk and within the right-of-way. This design designation becomes effective for new developments after January 1, 2009. There were no planting strips that met this definition prior to this date with trees planted and maintained by the city.

c. Sidewalk **Planting Strip:** Located as part of the sidewalk where the walk extends from the curb to the building. The walk must be wide enough to allow the tree to be set back at least 30" from the face of the curb and 5 feet from the building.

d. Undefined **Planting Strip:** Located where there is a curb to a public street and no sidewalk (within the industrial/manufacturing zones). The location of trees should consider the future installation of a sidewalk. Street trees planted in undefined planting strips should be located 4 – 5 feet in back of the curb and within the right-of-way.

2. Street Tree Design

a. Street trees should be used in an assertive architectural fashion to reinforce and connect the spaces and corridors created by buildings and other features. Street tree plantings should be on the grand public scale, rather than be intimate and private. Great numbers of 60' shade trees such as ash, honey locust, maple, and bur oak with high canopies spaced at 30' – 40' centers, in groves and alleys are favored over the individual ornamental tree. Large canopies should interconnect to enclose and unify space (i.e. Washington Way). Heavy pedestrian and vehicular traffic should continue below unhindered. To accomplish this objective, wide medians and parkways should be developed (Cervelli, 1985).

b. The importance of street trees to define, reinforce, or create spaces cannot be over emphasized. The use of trees as sculpture or decoration is incidental to their fundamental value for spatial arrangement in urban design.

c. Street trees establish a lower space that is comfortably sized for human use and still permits people to experience the larger space. Tree branches create a partially transparent tent or canopy that allows awareness of the space beyond, but confers a psychological sense of containment and protection. Trees can do this more easily than inert materials because of their unique properties. Their size, irregularity, subtle translucence and psychological impact make them appropriate where no other structure would be suitable. (Arnold, 1980.)

d. The street corridor as defined by trees must be considered a volume of space and not simply an elongated or lineal ground plane. A successfully designed street side landscape will be open where pleasant views or safe vision is desired; closed where visual screen is needed; and varied in form, size texture, and color for interest. Spatial variety is important in preventing driver fatigue, maintaining driver alertness, and emphasizing danger zones. It also helps in developing a satisfactory visual-sensual experience. Spatial variety must, however, be properly designed. Too much variety leads to disorder and a lack of harmony and continuity, while too little variety results in monotony. The ideal street corridor will be scientifically engineered and artistically formed of expanding and contrasting spaces in which adequate variety exist. Motorist and pedestrians should move safely and freely through the corridor, enjoying a streetscape designed to keep them relaxed, happy, and alert (Deneke, Grey 1986).

e. A street corridor space, whether occurring naturally or intentionally designed, will be enclosed by base, vertical and overhead planes. It is three-dimensional volume usually experienced while driving, riding, or walking. To the viewer, it will be a continually changing space primarily affected by changes in the vertical plane. This plan of the three-dimensional enclosure of space is also the area where street trees have their greatest influence. Therefore, street trees and other objects that create vertical enclosures are the most significant parts of the space. In the creation of this vertical enclosure the importance of the proper use of street trees with respect to form, size, texture, and color cannot be over-emphasized (Deneke, Grey, 1986).

f. The vertical enclosure created by street trees or other objects provides visual control. Everything that occurs within the enclosure is a part of the visual function of that space and must be taken into account. A desirable object can be emphasized and, conversely, an unattractive object negated by manipulating the vertical enclosure. Strong contrasts in form, size, texture, and color, or combinations of the design elements will create interest and lead the viewer's eye to a desired object. By the same token, repetition of any one of the design elements may tend to negate an associated object. An object outside the vertical enclosure of the street space can be introduced into the space visually. A pleasing feature can become part of the visual scene when openings in tree rows are designed that permit viewing and provide framing of the outside object (Deneke, Grey, 1986).

g. Generally strong contrasts within street tree groupings should be avoided. Repetition and subtle changes in form, size texture, and color are desirable. Exceptions to this principle occur at major street intersections or at any other area where alertness and viewer attention are desired (Deneke, Grey, 1986).

h. The use of form, size, texture, and color in the development of aesthetically pleasing and functional spaces is the key in street tree design. Seldom will the designer utilize all four of the design elements at one time in concept development, but all four must be considered. To achieve design continuity, repetition of elements is basic. For example, careful selection and spacing of trees with respect to size, form and color, or size, form and texture are common approaches. The common denominator should usually be size and form. Exceptions to the above guidelines occur when emphasis or viewer attention is desired. In such cases, the more variety or change from the characteristic landscape, the stronger the emphasis. For example, in a composition where medium-sized trees, round in form, green in color, and fine in texture predominate, plants that are larger, pyramidal, bright red, and coarse will seem to shout out for attention (Deneke, Grey, 1986).

The Design of Street Trees Should:

a.) Reinforce and extend spatial quality of the city, not to provide arbitrary diversity.

b.) Be deployed to define and direct use.

c.) Organize architectural spaces.

d.) Create spatial rhythms to heighten the experience of moving through outdoor spaces.

e.) Reinforce the lineal form of streets.

f.) Enhance urban elements, not hide them.

g.) Be utilized not as decoration, but as living building material.

h.) Not be antidote to the city, but rather an extension of the city.

I.) Link and extend: not separate.

j.) Restore desirability to urban living.

k.) Have trunks rising from an uncluttered ground form.

l.) Be used in symphony with the geometry of the City.

m.) Symbolize the renewed fitness of the urban environment for all forms of life.

n.) Provide symbolic significance.

o.) Reinforce and embellish good architecture.

p.) Be an intrinsic part of the city's structure, not masking for inept design.

q.) Restore the rich architectural detail missing from most modern construction.

r.) Improve connections between indoor and outdoor spaces.

s.) Modulate light and shadow.

(Arnold, 1980)

G. Planting Design – Public Projects

1. **PUBLIC PROJECTS**, i.e. parks, streets, medians, substations, treatment plants, plazas, and other public buildings, shall provide for street and park vegetation planting as a part of the development process. The landscape plans for such projects shall be approved by the Superintendent of Parks or designee and adhere to the following standards and specifications.

2. Existing public properties shall receive new in-fill planting on an ongoing basis. All removed City Trees shall be replaced with one or more new trees either near the same location or in other public properties.

3. Site criteria to be evaluated in determining tree-planting locations are:

a.) Visibility of site.

b.) Probability of long-term tree survival.

c.) Likelihood of private participation and financing.

d.) Overall benefit to the community.

4. City Tree planting can be by the balled and burlapped, tree spade, or container method. Bare root plantings are not permitted without planting instructions from the Superintendent of Parks.

5. The following are the minimum sizes for plant material. Larger sizes may be required to ensure survival or provide a specific design effect.

a.) Street Trees – 2-3" caliper

b.) City Trees planted in parks – 3" caliper

6. No single species shall make up more than 15% of the total city tree population. If percentages are above or below 15% an adjustment must be made to bring the species frequency into balance. This is to prevent uniform disease susceptibility and eventual uniform senescence (biological changes related to aging).

H. Plant Material Standards

1. Plant material shall conform to American Standard for Nursery stock. Plant material shall be of standard quality, true to name and type and first class representatives of their species or variety.

2. Plants shall have normal, well-developed branches and be vigorous plants free from defects, decay, sunscald injuries, abrasions of the bark, insect pests and all forms of infestations or objectionable disfigurements.

3. Balled and burlapped plants shall be dug with solid balls of adequate size, the balls securely wrapped with burlap or canvas, tightly bound with rope, twine or an appropriate container utilized by the industry.

4. The minimum sizes of plants shall be specified on a planting permit or approved landscape plan. Variances must be authorized by the Superintendent of Parks.

5. The Superintendent of Parks may request to inspect any trees or shrubs before they are planted.

I. Planting Standards

1. The Superintendent of Parks may plant or cause trees to be planted in the planting strips, parks and other property of the City. In addition to using his/her own personnel, he/she may hire independent landscape contractors consistent with City Code provisions.

2. The Superintendent of Parks shall submit for review all tentative planting proposals along streets to the City Engineer for the purpose of protecting existing utilities and sewer branches. The City Engineer shall issue an appropriate permit for planting, barring any conflict with any known facility.

3. It shall be unlawful for any person to plant or set out any tree or authorize or cause or procure any person to set out any tree in or upon any part of any street, park or public area

4. When the City Engineer or his designee undertakes to plan or design major capital improvements to the road system, the Park and Tree Advisory Boards should be consulted through the Superintendent of Parks, in order to ensure that the urban forest management plan policies are implemented to the maximum extent feasible.

5. The Superintendent of Parks shall require that the planting of street trees within the planting strips of any new subdivision be made in conformity with this Urban Forest Maintenance Management Plan. All such planting shall be done in accordance with the planting specifications governing the planting of trees in planting strip(s) as provided by the Superintendent.

J. Planting Methods and Techniques

1. No plant pits shall be dug or prepared until their location is approved by the Superintendent of Parks or designee.

2. Circular pits with sloping sides shall be excavated for all balled and burlapped, and container plants. All pits should be 50% wider than the ball and at least the depth of the soil ball.

3. For all balled and burlapped, bare root and container plantings, it is recommended that the back-fill should be 25% peat and 75% soil of a desirable structure, texture and pH for plant growth. The Superintendent of Parks or his/her designee shall decide if the existing soil at each location is adequate for use in the backfill or if soil will have to be brought in. The backfill shall be added and tamped firmly around the ball or root system at 6-inch increments until the pit is 2/3 full. The remaining open space in the pit should be filled with water and let soak in twice before final back filling. The top layer of soil should then be thoroughly soaked with water.

4. For all plants moved with a tree spade, all holes and cavities between the ball and the surrounding soil shall be filled. The ball shall be thoroughly soaked with water after planting.

5. All plants shall be centered in the pit and set at the depth of the ball or slightly higher than they were when growing at the nursery.

6. All evergreen trees in excess of 6 feet in height and any deciduous tree insecure in the ground should be guyed. The method should be approved by the Superintendent of Parks or his/her designee.

7. An inspection by utility providers for underground service lines, or any other improvements, public or private, shall be required before planting.

8. All tree and shrub plantings shall have the root system covered with mulch 3 inches of wood chips or equivalent.

9. An 8-inch watering dike should be constructed around all new trees and shrub plantings when determined by the Superintendent of Parks or his/her designee to be necessary to insure adequate irrigation.

10. When planting a tree that will be surrounded by a hard surface, there shall be a minimum of 16 square feet of porous surface around the tree.

11. Trees and shrubs should not be dug, balled and burlapped or moved with a tree spade during the active growth period unless the ball is large enough to insure survival.

12. Plant material shall be handled in a manner so as to cause the least amount of damage during the planting process.

13. Bare root plants shall have their roots either covered with a moist tarp or mulch while they are being transported to the planting site.

14. Evergreen trees with an excessively bushy form of growth shall have the boughs tied up with rope or twine during transporting and planting to avoid damage to the foliage and branches. After planting, the boughs should be released.

15. Balled and burlapped, and container plants shall always be handled by the soil ball. Under no circumstances should they be dragged, lifted or pulled by the trunk or foliage parts in a manner that will loosen the roots in the ball or disturb the integrity of the cambium.

16. Incases where trees or shrubs are loose in a soil ball, the ball shall be secured with twine or burlap before transporting to the planting site.

17. During transportation, plants shall be handled, secured or covered so as to prevent damage from wind or vibration. Plants should never be thrown or bounced off a truck or loader to the ground.

18. Plant material shall be planted the day it is taken to the planting site or it shall be watered or covered, and placed in a shady area to prevent dehydration.

19. Any abrasions of the bark or broken limbs or branches caused in the planting operation shall be treated or corrected immediately.

20. In cases where trees are apt to have their trunks scarred during the planting operation, the trunks shall be protected with wrap or padding.

21. Excavated plant pits that will be left open when work is not in progress or pose an immediate and considerable hazard shall be adequately barricaded with qualified warning devices.

22. All twine or rope and plant labels secured around the trunk or limbs shall be removed after planting is completed.

23. Trees or shrubs that have their soil balls secured in a wire basket shall have the entire basket removed after the plant is placed and centered in the pit and before back filling occurs.

24. Cleanup of any soil, branches or other debris resulting from any tree or shrub planting shall be promptly accomplished. The work area shall be kept safe at all times until the cleanup operation is completed. Under no condition shall the accumulation of soil, branches or other debris be allowed upon a public property in such a manner as to result in a public hazard.

25. Increasing the root zone. Research by Bassuk (Urban Horticulture Institute), Lindsey (Cornell University) and Urban (Urban and Associates, Maryland) have revealed that urban trees require a much greater volume of open soil, for water and oxygen exchange, than is traditionally provided in a 4 X 4 foot tree well (48 cubic feet, assuming a three foot rooting depth). Using a model derived from their research, one can specify the soil volume required to sustain a mature tree of a certain size. In general, one cubic foot of soil is required for every square foot of crown projection (defined as the ground surface area in square feet that is enclosed within the drip line of the tree). A 10-inch DBH tree requires about 450 cubic feet of soil, which translates into a basin that has a 5 X 30 foot configuration.

These huge space requirements can be achieved by reconfiguring the traditional tree basin. Planting trees in front yard easements, as described above, is one way of providing increased soil volume that allows free gas and water exchange. In downtown and commercial areas where a sturdy walking surface is required, streets and sidewalks can be reconfigured, when undergoing renovation, to provide larger soil volumes by clustering trees in shared basins. This is a viable option when urban sites undergo renovation. In situations where linear trees must be preserved, contiguous bands of concrete pavers with a porous jointing material can be laid between individual tree basins. The spaces between the pavers allow adequate oxygen and water exchange and in effect, satisfy a tree's need for increased soil volume.

To maximize water and oxygen exchange, pavers should have curved edges and be spaced ¼ inches apart. A course grade, bitumen-bound sand provides the most permeable jointing material. Since water will not penetrate a fine soil layer to a coarse layer beneath it until it becomes saturated, specify that the base course be of similar texture to the jointing material.

K. General Maintenance Standards

1. All deciduous City Trees on improved properties shall be pruned on a rotational basis of not more than ten (10) years, and more frequently as the species growth habits dictate. This involves pruning each City Tree at least once in this time period based on the medium prune specifications in this document.

2. City Trees shall be managed in such a manner so as to promote their general health by providing the necessary cultural practices which may include insect and disease control, fertilization, irrigation, staking, guying, wrapping, cabling, bracing and pruning.

3. City Trees shall be maintained in such a manner as not to endanger, interfere, or otherwise conflict with requirements of safe public use of an area.

4. Any City Tree, that because of its growth habit, age, condition, or disease becomes a hazard to public safety or obstructs a clear view of streets, signs, lights or intersections, shall be maintained to correct the problem. Hanging limb and branch growth shall be maintained 14 feet above streets and eight (8) feet above sidewalks.

5. The owner of any tree or shrub overhanging any street or sidewalk within the City shall prune the branches so that such branches shall not interfere with the safe use of the street or sidewalk or obstruct the view of any street intersection or create a threat to thoroughfare travel. The City shall have the right to prune any tree or shrub on private property when it interferes with the safe use of the street or sidewalk or when it interferes with the feasibility of any traffic control device or sign if after notice the owner fails to rectify the problem at the owner's expense.

6. Any tree, which, because of an epidemic disease or insect infestation, poses a threat to other trees or plants in the community, shall be treated by the owner so as to control the spread of the problem organism. Upon notification by the Superintendent of Parks the property owner will be requested to rectify the problem within a specific time period based on the severity of the problem. If the problem is not corrected within this time period, the Superintendent of Parks will make the correction at the owner's expense.

L. Maintenance Standards – Relative Maintenance Need

1. Maintenance needs of City Trees by species:

a. Trees with High Maintenance Needs:

This category includes species that currently require regular sucker removal. By shifting sucker removal work to mid-summer, reducing pruning of any sucker-prone new trees or changing species, these trees should eventually be placed in a lower maintenance category.

Common Name	Scientific Name
Hawthorn	Crataegus laevigata
Carriere Hawthorn	Crataegus lavallei
American Beauty Crabapple	Malus angustifolia
White Mulberry	Morus alba
Flowering Plum	Prunus blireiana
Purple Leaf Plum	Prunus cerasifera
Amanogawa Cherry	Prunus serrulata 'Amanogawa'
Kwanzan Cherry	Prunus serrulata 'Kwanzan'

Autumn Cherry	Prunus serrulata ‘Shirofugen’
Mt Fuji Cherry	Prunus serrulata ‘Shirotae’
Basswood	Tilia americana
Little-leaf Linden	Tilia cordata
American Elm	Ulmus americana

b. Trees with Medium Maintenance Needs:

Moderate growth rates with less frequent pruning needs, some self pruning necessitating more branch cleanup, some train pruning desirable.

Red Alder	Alnus oregona
River Birch	Betula nigra
White Birch	Betula pendula
Douglas Hawthorn	Crataegus douglasi
Oregon Ash	Fraxinus latifolia
Golden Chain	Laburnum anagyroides
Sweetgum	Liquidamber styraciflua
Black Cottonwood	Populus trichocarpa
	Prunus avium
Akebono flowering cherry	Prunus yedoensis

c. Trees with Low Maintenance Need:

Slow growth, no problem with water sprouts, good structure, little or no train pruning required, denser or stronger wood.

Common Name	Scientific Name
Big-leaf Maple	Acer macophyllum
Norway Maple	Acer platanoides
Schwedler Maple	Acer platanoides ‘Schwedleri’
Sycamore Maple	Acer pseudoplatanus
Scarlet Maple	Acer rubrum
Horse Chestnut	Aesculus hippocastanum
Incense Cedar	Calocedrus decurrens
Columnar Hornbeam	Carpinus betulus ‘Fastigiata’
Pacific Dogwood	Cornus nuttallii
Purple-leaf Beech	Fagus sylvatica ‘Atropunicea’
Shore Pine	Pinus contorta
Douglas Fir	Pseudotsuga menziesii
Scarlet Oak	Quercus coccinea
Red Oak	Quercus rubra

M. Pruning Specifications

Specific Requirements Pertaining to Pruning of City Trees

1. No tree shall be cut back in such a manner that its health will be impaired. An exception to this may occur in tree removal or emergency relief of an immediate danger to persons or property. Any such emergency procedures must be reported promptly to the Superintendent of Parks or his/her designee with plans for completion or follow-up work submitted for approval.

2. Authority to prune street trees does not include the cutting back of sound, healthy tree branches in excess of 6 inches in diameter (outside bark) unless specifically described and written into the permit form by the Superintendent of Parks or his/her designee or if required by accepted arboricultural standards in the course of utility line clearance work and approved by the Superintendent of Parks or his/her designee.

3. When tree-pruning cuts are made to a side branch, such remaining branch must possess a basal thickness of at least 1/3 of the diameter of the wound so affected. Such cuts shall be considered proper only when such remaining branch is vigorous enough to maintain adequate foliage to produce woody growth capable of healing the cut within a reasonable period of time.

4. All final tree pruning cuts shall be made in such a manner as to favor the earliest possible covering of the wound by natural callus growth. Excessively deep flush cuts, which produce large wounds or weaken the tree at the cut, shall not be made. Tree pruning cuts shall be made just outside the branch collar.

5. Tree branches shall be removed and controlled in such a manner as not to cause damage to other parts of the tree or to other plants or property.

6. All tools used on a tree known to contain an infectious disease shall be properly disinfected immediately after completing work in such a tree.

7. Maple, birch, and walnut trees shall be pruned only when in leaf except where conditions hazardous to the public or property are involved.

8. All cutting tools and saws used in making tree pruning cuts shall be kept adequately sharpened to result in final cuts with a smooth surface and secure bark remaining adjacent thereto.

9. Whenever pruning cuts are to be made while removing branches too large to hold securely in one hand during the cutting operation, the branches shall be cut off first one to two feet beyond the intended final cut. Then the final cut shall be made in a manner to prevent unnecessary tearing back of the bark and wood.

10. Any cutting of tree roots, other than in the process of tee removal, shall give due consideration to the future welfare of the tree. Proper action shall be taken utilizing the latest scientific techniques, to treat resulting wounds to prevent the entry of decay organisms.

N. Standards of Workmanship for Pruning

1. Cleanup of branches, logs or other debris resulting from any tree pruning or removing shall be promptly and properly accomplished. The work area shall be kept safe at all times until the cleanup operation is completed. Under no condition shall the accumulation of brush, branches, logs or other debris be allowed upon a public property in such a manner to create a public hazard.

2. The use of climbing spurs or spike shoes in the act of pruning trees is prohibited unless authorized by the Superintendent of Parks.

3. Under no condition shall a tree being worked on be left unattended with any severed or partially cut branches in the upper portion of the tree.

4. Whenever large tree sections are being cut in a treetop that may endanger the public or property, such sections shall be secured by ropes and lowered safely in a controlled manner.

5. The tree work area shall be totally barricaded or otherwise kept safe while pruning or removing trees. At least one responsible tree worker shall serve to coordinate safe ground activities at all times when work operations are in progress.

6. City Trees or utility poles shall not be used as an anchor for winch trucks in the process of removing other trees.

O. Authorized Types of Pruning

1. **"Crown Cleaning"**

"Crown Cleaning" is the removal of dead, dying, diseased, crowded, weakly attached, and low-vigor branches from the crown of a tree

2. **"Crown Reduction"**

"Crown Reduction" reduces the size of a tree, often for clearance for utility lines. Reducing the height or spread of a tree is best accomplished by pruning back the leaders and branch terminals to lateral branches that are large enough to assume the terminal roles (at least one-third the diameter of the cut stem). Compared to topping, reduction helps maintain the form and structural integrity of the tree.

3. **“Crown Thinning”**

“Crown Thinning” is the selective removal of branches to increase light penetration and air movement through the crown. Thinning opens the foliage of a tree, reduces weight on heavy limbs, and helps retain the tree’s natural shape.

4. **“Crown Elevation”:**

“Crown Elevation” is the removal of the lower branches from a tree in order to provide clearance for buildings, vehicles, pedestrians, and vistas.

5. **“Crown Restoration”:**

“Crown Restoration” is the repair of damage resulting from storms, vandalism, and the like.

6. **“Topping”:**

“Topping” is the removal of the leader stem of a tree. It is prohibited except in cases of emergency. Trees severely damaged by storms or other causes, or where other pruning practices are impractical, may be exempted from this restriction at the determination of the Superintendent of Parks or his/her designee. Topping can be further defined as the severe cutting back of limbs to stubs larger than one and one-half inches in diameter within the tree’s crown to such a degree so as to remove the normal canopy and disfigure the tree.

REASONS FOR PROHIBITING THE TOPPING OF CITY TREES

Other names for topping include stubbing, heading back, dehorning and lopping. Although slight differences exist, all involve limb removal to reduce height without regard for tree growth.

1. It is harmful to the tree. It removes a significant portion of the photosynthetic leaf area and limits the tree’s ability to photosynthesize. The result is slow starvation.

2. It reduces the canopy, which is important because it shields the bark tissue from direct rays of the sun. If bark tissue is exposed, sunscald and cracking are more likely.

3. It is detrimental to tree structure. It causes weak, new limbs to form by forcing growth into poorly developed auxiliary buds. If cuts are made in the internodal area, dieback to the previous node is more likely and it complicates the matter of weak-limb formation.

4. Large stubs of topped trees are not likely to heal in a reasonable period. The terminal location of the cuts, as well as the large diameter, generally prevents the tree's natural defense system from deterring pests. Remaining stubs are highly vulnerable to insect and disease invasion.

5. The intended goal of topping is to lower the height of the tree and reduce unwanted growth. However, topping is counterproductive to that goal. In fact the opposite effect will be achieved. Resulting sprouts are far more numerous than the normal new tree growth and they elongate so rapidly that the tree soon returns to its original height with a far denser crown.

P. Chemical Application Regulations (See Integrated Pest Management Program)

The following regulations pertain to the application of fertilizers or pesticides in either aerosol or granular form to the above ground portions of park and City Trees or over the root zone of these trees. (Note that on June 14, 2012, the City Council voted to concur with a recommendation from the Parks and Recreation Board (the Tree Board) and suspend the application of imidacloprid because of its questionable effectiveness as a treatment for controlling aphid infestations in birch trees.)

1. The pesticide applicator should know and understand the characteristics of those materials used by either him or those employees who he is supervising and be aware of and understand those recommendations stipulated by the manufacturer.

2. Ineffectual control of pests, damage, injury or death to plants, or animals resulting from the use of chemicals exceeding the limitation of the manufacturer's recommendations shall be considered the responsibility of the licensed operator.

3. The application should provide coverage to all portions of the infested or infected tree being treated or it shall be considered inadequate to perform such operations.

4. Application equipment shall be kept clean and in good working order. The Superintendent of Parks or his/her designee shall inspect it at any time and take samples of spray materials being applied.

5. Operation with dirty tanks or equipment, or unsanitary unsafe methods of washing out or draining of it in public sewers and gutters is prohibited.

6. No spray application shall be carried out when there is sufficient wind to make pesticide control ineffectual or rated a hazard to person, plants or property.

7. No spraying of pesticides shall be done when air temperature is less than 40 degrees Fahrenheit. Exception: Certain growth regulators may be applied at lower temperatures.

8. All spray machines other than pump-up hand sprayers must have agitators capable of maintaining a uniform spray suspension at all times when spray application is in progress.

9. Adequate precautions shall be taken in all phases of chemical application concerning factors of toxicity, phytotoxicity, chemical reaction or residual action pertaining to any materials used.

10. Applicators applying chemical pesticides to park and City Trees shall adhere to all federal and state laws and regulations pertaining to pesticides and their application.

11. Applicator must be licensed with the State as a Public Applicator.

Q. Hardscape Replacement Alternatives

Hardscape damage is common in areas where the growing space is not large enough to support the existing tree. Short-term solutions include root pruning and physical barriers to deter future root growth. Long-term solutions include replacing the species with one that is suitable to the size of the existing space, changing the basin materials to allow more oxygen and water infiltration or altering the size of the growing space. Selecting the best combination of alternatives will depend on the physical constraints of the site, health and expected lifespan of the tree, and budget. The following descriptions will provide guidelines for each alternative.

1. Root Pruning and Barriers

Root pruning removes specific roots that cause the hardscape damage. When used in conjunction with a root barrier to deflect the new growth away from hardscape, future damage should be reduced. All root pruning should be undertaken by an experienced certified arborist, who can determine whether a tree can be pruned without jeopardizing its strength and anchoring ability. There are two general types of root barriers that are used in conjunction with root pruning. Rigid plastic panels or fabric impregnated with a time-release herbicide are placed linearly against the curb to redirect root growth. Although root pruning and root barriers reduce the incidents of hardscape damage, these are not considered permanent solutions because it is possible that re-growth will eventually cause further hardscape damage and it can impact tree health.

2.) Long-term solutions provide adequate growing space for the species. One solution is to reconfigure the sidewalk and/or curb to increase the growing space.

For a healthy tree that has a 10+ year expected lifespan and whose mature size can be predicted, re-routing the sidewalk will provide adequate space for future growth. When trees on an entire block side must be removed and replanted the curb and sidewalk can be reconfigured into one element, eliminating the parkway or planting strip.
3). New trees are planted behind the sidewalk where they have a 180 degree open space in which water and oxygen exchange can take place. This placement has the added benefit of moving trees away from traffic and utility zones that typically cause clearance problems. In both cases, managers must evaluate the feasibility of adjusting easements and must work closely with the adjacent proper owners and the appropriate city departments to gain their cooperation.

R. City Tree Protection During Construction

Site changes during construction can injure trees through: 1) Misuse of tools or equipment. 2.) Grade changes. 3.) Excavation. 4.) Soil Compaction. 5.) Chemical substances. The physical signs may not be readily apparent but an injured tree will show signs of decline within one or two years. These effects can severely damage or kill trees over a period of time.

During construction projects, Tree Protection Zones shall be established around all trees prior to the commencement of construction activities.

The Tree Protection Zone (TPZ) encompasses the entire canopy plus an additional radial distance of ten feet (10') beyond the edge of the canopy. This area should be fenced and posted in a manner that alerts contractors on the site and all others that no equipment, materials, debris, supplies, or fill soil shall be located within this area.

When excavation is to take place during construction a Critical Root Zone (CRZ) should also be established. To determine the critical root zone, measure the trees trunk diameter at 4.5 feet above ground (DBH), and multiply this number by 1.5. This result will be the radius in feet of the critical root zone. Ex: A 24' DBH tree would require a 36' radius from the base of the tree or a 72'diameter around the tree.

The TPZ should be fenced to allow access to the site in the fewest number of routes possible with the least amount of disturbance to the area.

Post and instruct those on site where parking and driving is permitted.

During construction the entire TPZ should be mulched with 4-6" of chipped material to reduce soil compaction, improve aeration, enhance moisture retention and reduce temperature extremes. Mulch can consist of wood chips, shredded leaves or bark, straw, or composted green waste.

If trenching is necessary within the TPZ all trenches should be hand dug. No roots larger than two inches (2") shall be cut unless no other alternative is feasible. All smaller roots that require cutting shall be cut with pruning saws. Cuts should be made flush with the side of the trench. If at any time 25% of the area within the TPZ is being separated from the tree by a trench, then the line should be relocated or installed by boring instead of trenching.

1. Mechanical Injuries

Mechanical injuries occur from carelessness with tools, collisions with vehicles and other mechanical equipment, soil compaction, fire, girdling with guy wires, and unnecessary cutting of roots. To avoid mechanical injuries, protective fencing should be constructed around individual or groups of trees that could be susceptible.

Barriers must be conspicuous enough and high enough to be seen by equipment operators. They should be large enough to include the drip-line. Place sturdy protective fencing at least five feet from the tree trunk and cover the remaining root area with a 4-6 inch layer of wood chip mulch. Use interlocking metal plates on top of the mulch for driveways. Materials, equipment, temporary buildings and work areas, fuels, oils, paints, and other items should not be placed within the drip-line of a tree. If branches must be pruned to make room for demolition, the work should be performed by a qualified arborist under the direction of the Superintendent of Parks or his/her designee... If brush and weeds inside the barrier are to be removed, hand tools shall be used.

2. Grade Changes

Fill soil placed around the trunk provides a moist environment around the normally dry bark and encourages the growth of rot-inducing organisms. The bark and cambium layer are killed within two years. If the grade must be raised, an aeration system can be constructed to avoid bark rot and allow for the proper oxygen/carbon dioxide exchange within the root zone. Another alternative is a dry well around the tree, which permits air and water circulation. It should be large enough to allow for future increases in trunk diameter. Most large shade trees will need at least a 60-inch diameter well. For slow-growing mature trees, allow 18 inches from the trunk in each direction. Gratings or barriers may be necessary around large opening that could present a hazard but must be cleaned regularly to remove sediment, leaves, and debris which might interfere with free passage of air.

3. Excavation into Root Zone

Roots, which are cut with mechanical equipment, should be carefully re-cut with sharp tools since crushed roots are not regenerative. After mechanical excavation, fork the soils from the roots back toward the trunk approximately 18 inches and cut the root stubs back to within 1-2 inches of the soil. Pruning cuts should be made

obliquely so that the cut surfaces face down. Mix peat moss with fill soil to promote new growth. Moisten the surrounding soil and root ends then cover to keep moist and cool. Normally, the only top pruning necessary is to remove dead or damaged branches and light thinning to reduce wind throws.

4. Chemical Injury

Chemical injury can easily be avoided by keeping the soil within the drip line undisturbed and free of building materials, refuse and harmful runoff. Care should be taken with herbicides that can harm the roots and foliage of desirable trees.

S. Removal Standards and Regulations

City Trees that are a hazard to people and property are recommended for removal. Hazardous trees can be dead, in such poor condition that preserving them would be cost prohibitive, or located in an inappropriate location such that they cause a safety hazard.

Some trees prove to be less desirable as street trees due to characteristics that cause concerns for adjacent property owners. The lace leaf birch tree has proven to be one of those. They attract aphids in large numbers, which produce a sticky substance that coats sidewalks, lawns, and vehicles park under the trees. In response to complaints from property owners, the city council in 1995 approved a policy of permitting a property owner to submit a request for the removal of birch street trees adjacent to their property along with a payment to cover the cost of the purchase of a replacement tree. The parks department staff is responsible for removing the birch tree, grinding the stump, and planting the new tree.

Tree mortality and structural failure can be caused by many factors in the urban environment. Natural tree loss is due to old age, disease, insects and weather conditions. Losses resulting from increased urbanization are caused by mechanical injury, vandalism, chemical poisoning and destruction or compaction of roots during construction in addition to the natural causes. Removal of dead or poor quality street trees reduces hazards to persons and property, eliminates breeding sites for diseases and insects and improves the aesthetic of the community.

1. Diseased trees. When any tree located on private property is diseased or is, in the opinion of the city arborist, infectious and may spread such disease to other trees in the City, the Superintendent of Parks shall notify the property owner that corrective action is needed. Should the property owner fail to respond within the given time period, the Director shall cause to have the tree(s) removed or treated at the property owner's expense.

2. The Superintendent may abate or remove or cause to be abated or removed any tree located in the planting strip or that encroaches from private property into the street or planting strip because of age, disease or the debilitating cause, death,

insecure root system or another condition which, in the opinion of the Superintendent of Parks, causes its continued existence to be detrimental to public safety.

3. Whenever it is necessary to remove a tree or shrub from the planting strip due to installation or realignment of a sidewalk, the paving, repaving, and/or widening of a street the city or contractor shall be responsible and shall bear the cost of the replanting of such trees that have been removed.

4. Stump removal – when required: When any tree or shrub is removed from the planting strip, the stump of said tree or shrub shall be ground with a stump grinder. The Superintendent of Parks or his/her designee shall authorize the grinding of the stump to a depth of one foot below the surrounding average finished grade. Adequate good quality topsoil shall be used to fill the hole created by the removal of the said stump followed by seeding. Provisions shall be taken to accommodate settling of the topsoil.

5. Replanting on private property. If, in the determination of the Superintendent of Parks, conditions prevent the planting of street trees within the planting strip in new subdivisions, the requirements of this chapter may be satisfied by the planting of an equivalent number of trees of the same size and species as provided for in the street tree master plan and arboricultural standards and specifications in an acceptable and attractive manner on the abutting private property. The responsibility of maintaining these trees will remain with the property owner.

6. Existing street trees shall be retained unless approved for removal during site development or in conjunction with a street construction project. Any street tree removed shall be replaced where possible. It shall be the responsibility of the City to plant and maintain any replacement tree. Whenever the property owner, lessee, occupant or person having the control or custody of any premises or unimproved property removes a City Tree without the City's authorization, that person shall be responsible for reimbursing the City for the full value of the removed tree and replanting costs.

7. All removal of City Trees shall be done in a manner so that the remaining stumps will be ground up at least 12 inches below grade level unless special exemption is granted by the Superintendent of Parks or his/her designee.

8. Excavations resulting from tree or shrub removal must be promptly filled in to normal ground level with clean, fill properly compacted and the surface free of debris.

9. When removing a tree, the act of cutting tree roots and then leaving the work scene with a standing tree having little or no support is prohibited.

10. Removal of leaves from City Trees in the fall is the responsibility of the abutting property owners.

T. City Tree Removal Criteria

1. General

It is the objective of the City of Longview to provide a tree planting program on City property that insures the future existence of the City's tree resource by the planting of as many or more trees than must be removed due to infection, death, hazardous condition, nuisance or construction occurring in the area. In addition a set of tree removal criteria is used to prevent indiscriminate removal. Wildlife habitat is considered as a factor in making all tree management and removal decisions. City Trees may be removed only when one or more of the following criteria are met:

a. The tree is dead or infected with an epidemic insect or disease that could cause the demise of the tree and where no known control is available and removal is the recommended practice to prevent transmission.

b. The tree poses a severe safety hazard, including a visual traffic hazard, or is causing structural damage to public or private property that cannot be corrected by pruning, hardscape grinding, transplanting or other hazard removal treatments.

c. The tree severely interferes with the growth and development of a more desirable tree.

d. The aesthetic value of the tree is so low or negative that the site is visually enhanced by the tree's removal.

e. Work improvements required to be made around the tree will kill or render it a hazard.

f. Requested removal involves a birch street tree infested with aphids for which the property owner adjacent to the parking strip containing the tree petitions the Superintendent of Parks for its removal and agrees to pay the tree replacement fee. Upon approval from the Superintendent, the tree will be removed.

2. Birch Tree Removal Policy

a. Introduction

Tree removal is an acceptable management option in parks and other city property when required for health, safety, and protection of infrastructure.

Additionally in 1995, the city council approved a birch tree replacement policy that authorizes staff to approve requests from property owners to have the birch tree in the planting strip adjacent to their property removed due to aphid problems. Because the aphids and other insects do not impact other species of trees to the same extent as they do with the birch trees, this policy was restricted to applying only to the birch trees. Trees other than birch are treated for aphids with chemical applications upon request from the adjacent property owners or residents.

b. Requests

Property owners may request a birch tree removal application forms from the Longview Parks Department. If the resident applicant is not the property owner, he/she must have approval in writing from the property owner allowing for the removal and submit such along with the application. The requesting party must be the adjacent resident or property owner. The form will explain the removal program and give alternative options to removing the tree. Applicants are encouraged to contact the Parks Superintendent prior to submitting the request should they have any questions or concerns. The form along with the tree replacement fee must be received by the parks department in order to activate the scheduling of the tree removal. Purchasing a replacement tree is not optional.

c. Procedure for Tree Removal

Within five (5) days of receiving the removal application form and the tree replacement fee, the Parks Superintendent or his/her designee will contact the applicant to discuss the removal process and any applicable alternatives. A site inspection will take place to determine if there is any health or safety related issue with the tree that would warrant its removal regardless of the aphids. Finding such would release the applicant from having to pay for the replacement tree.

Before a removal can take place, the parks department ~~will~~ may apply a chemical treatment to the tree during the appropriate season to determine if the aphid population can be sufficiently reduced so as to eliminate the need for removal. (Note that on June 14, 2012, the City Council voted to concur with a recommendation from the Parks and Recreation Board (the Tree Board) and suspend the use of imidacloprid because of its questionable effectiveness as a treatment for controlling aphid infestations in birch trees.) If a chemical treatment is applied, t~~T~~he tree will be inspected afterward ~~the treatment is applied~~ to determine the results, which will be shared with the applicant. Removal will only be approved if the results determine that the chemical application has not had a sufficient impact. Should the results prove to be insufficient and should the applicant still desire to have the tree removed, a date will be scheduled for the work. The removal will consist of the following steps:

1. Downing of the tree
2. Removal of the stump
3. Adding any required soil and grass seed to the old tree site.
4. Planting of a new tree adjacent to the old tree site. Should this not be possible due to the proximity to other existing trees or hardscape, or due to site distance problems, the replacement tree will be planted at another site on city property.
5. The homeowner will be expected to water the tree as needed during the twelve months following its planting.
   The replacement tree species will be selected from the approved street tree list as designated in the tree management plan. The applicant may request a tree from this list, and the parks superintendent will grant the request if possible and if a specific species has not already be determined for the particular street. Planting of street trees only takes place from late fall to early spring therefore a delay from the time the birch tree is removed to the time a replacement tree is planted may occur.

d. Payment of Fee

All of the costs for the **removal** of the birch tree are borne by the city. The applicant is responsible for the cost of the replacement tree and the associated materials related to the planting of the tree, which have been set at a total of $200. The funds are placed in a dedicated tree account and are used exclusively for the costs associated with the purchase and planting of the new tree.

U. Hedges and Shrubs

See **LMC. Chapter 16.44**

V. Miscellaneous City Tree Protection Regulations

The following regulations are intended to prevent unnecessary damage and destruction to City Trees.

1. Authorization must be given by the Superintendent of Parks or his/her designee before any party:

a.) Attaches or installs any metal materials, signs, cables, wires or other things foreign to the natural structure of a City Tree.

b.) Excavates into the root zone within the drip line of a City Tree.

c.) Treats the soil within the root zone of a City Tree with a soil sterilant. or any chemical that would be determined to be detrimental to the tree.

2. All site or landscape plans involving public property should show all existing trees. Trees to be saved and removed should be indicated. Every effort should be made to preserve all trees.

3. Trees to be saved should be marked prominently. Where tree trunks are apt to be damaged, they should be protected with metal posts and plastic or snow fence.

4. Heavy equipment should not be allowed to compact the soil over the root zone of existing trees. Restricted equipment access routes should be established.

5. New sidewalks, paving or asphalting must allow breathing space for tree roots. The following should be used as a guideline:

a.) For trees up to 4 inches in trunk caliper, a minimum of 25 square feet of porous area is needed.

b.) For each additional 2 inches of tree caliper, 10 more square feet are needed.

6. Where grade change is required, the same area must be provided either by construction of a dry well where the level is to be raised or by building a retaining wall where the level is to be lowered.

7. Parties should avoid cutting surface roots wherever possible. Sidewalks and paving levels should be contoured sufficiently to avoid such cutting.

8. Excavation involving root cuts should be done rapidly, making smooth, flush cuts, backfilling before the roots have a chance to dry out, and watering the tree immediately.

9. Where many roots have to be removed, branches should be pruned out of the top of the tree to restore a proper top to root balance.

10. If trees are in full leaf during the construction phase, supplemental irrigation should be supplied.

W. SEVERANCE CLAUSE

Should a court of competent jurisdiction declare any section or provision of this Ordinance to be invalid or unconstitutional such decision shall not affect the validity of the Plan in whole or any part thereof other than the part so declared invalid or unconstitutional.

X. LIABILITY

Nothing in this ordinance shall be deemed to impose any liability upon the City of Longview or upon any of its officers or employees, or to relieve the owner or occupant of any private property from the duty to keep the trees upon their property in safe and healthy conditions.

V. Administrative Considerations

A City Tree management plan is important to creating effective community forestry management. It is generally accepted that tree programs should be planned for the life-expectancy and replacement of the trees. Several administrative considerations are important to move from plan to reality. These include recognizing basic tree value, maximizing the value of City Trees, and sustaining financial and community support for City Trees.

Community Forest Value:

Recognition of basic tree value is first and foremost in realizing the effects of a City Tree management plan. This is especially true in relation to the cost of tree care. The quality of life is improved considerably by providing shade and an aesthetically pleasing environment. Not as obvious is the real dollar value trees provide to communities. While many community expenditures involve capital invested in projects that decline in value over time, investment in tree planting and care is an investment that increases in value.

In 1990, the dollar value of Longview's existing 12,168 City Trees, based on the method developed by the Council of Tree and Landscape Appraisers and supported by the International Society of Arboriculture, was estimated to be $53,621,000. Currently, the trees in Longview's community forest are mature to over mature. As the over mature trees decline and are removed, the forest value will decrease in the short term. However, by improving tree care, through a planned maintenance cycle, planting more appropriate species and maximizing the size of trees for the available growing space, the value can be increased and stabilized over the long term.

In addition, with proper planning, the size and age distribution of the population should shift over time. With in-fill planting and possibly interim planting, the age distribution should approximate a 20% young, 60% mature, and 20% over mature tree mix. In 1990, the size distribution was composed of 44% small, 32% medium and 24% large trees. However the available growing space can support a distribution of 8.5% small, 27% medium and 65% large trees, accounting for large trees growing under overhead utilities. When factoring in the age spread, the greatest number of trees would be in the 12-18" diameter class. The peak of the diameter class has shifted to a larger tree.

When developing a Species List, the percentages of trees by size should follow this distribution curve. By shifting the population to a more unevenly balanced and therefore more stable population, forest value increases dramatically and consistently to over $107 million dollars.

Though growth will occur regardless of the municipal policy toward trees, inappropriate species will not adapt well to their environment. These will decline at a relatively rapid pace and require costly maintenance to reduce hazards. Throughout their life they will contribute little to forest value while costing more to maintain. Value increases might still be expected, but they will be significantly reduced. Management should focus on the most appropriate species and their placement and quality tree care. This ultimately provides the most valuable community forest.

City Tree Inventory:

The data collected in the 1990 community forest inventory was the foundation for the tree care program. Although all complaints and resultant maintenance have been recorded on every tree since 1990, it is extremely important to update the inventory statistics.

The community forest is dynamic; always growing and changing. Basing future decisions on 1990 information would cause serious discrepancies in data used for planned management of the urban forest. A new accurate database is necessary for decision-making in the future.

Generally, once the data is current, an annual report is important for tracking progress and trends, though evaluations can take place at any given time during the trim cycle. Reports can reveal that the scheduled tree care program needs to be adjusted or that it is operating smoothly. It can indicate the precise level of service and illustrate important trends.

Tracking and adjustment provides the greatest effectiveness for a scheduled tree care program in Longview. Thoroughly managing the maintenance program will maximize the value of the community forest at a predictable cost and its highest value.

VI. Conclusion

Currently, community forests across the nation are beginning to recover from the harsh urban environment and years of restricted budgets. This is primarily the result of a greater awareness of the values trees provide to a community. Longview holds its trees in high regard and in the early 1960s embarked on a tree care program to pass on the legacy of large, valuable trees to future generations by adopting a Master Street Tree Plan (Resolution 696). In 1990 they re-affirmed that commitment by funding the first City Tree Inventory. This has provided a model framework for management. The Treekeeping software program involves information gathering, management planning, and implementation. It provides the ability to continually update the tree inventory, and provides the information needed to adjust management plans.

Longview continues to face many challenges as the community forest continues to grow. A comprehensive urban forestry program can insure that its character remains, and that the visual and environmental qualities that help to make Longview a desirable place to live are preserved. The application of the treekeeping system aids staff in developing a community forest that is sensitive to local environmental conditions and provides the information that allows for coordination of a high level of scheduled tree care services.

This plan serves as a benchmark with which to measure future management practices. Effective management combined with active community involvement will navigate Longview's management responsibly into the future.

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