

# Urban Forest Management Plan



## Purpose/Aim

The purpose of this document is to:

- Develop a plan that establishes the City of Sunset Valley's commitment and future direction for tree planting, protection, management and maintenance for its streets, parks, and public spaces.
- Provide an overview of the state of the urban forest
- Address park, street, and public tree management and maintenance issues faced by the City of Sunset Valley.
- Provide a rationale for decision making to ensure consistency in the management of park, street, and public area trees in the City of Sunset Valley

The Urban Tree Management Plan will include a suite of documents that will provide the tools for tree management and planning in the City of Sunset Valley.

These documents include:

- Urban Forest Management Policy (Section I)
- State of the Urban Forest (Section II)
- Street Tree Management Plan (Section III)
- Urban Forest Emergency Response Plan (Section IV)
- Champion and Heritage Tree Register (Section V)
- Tree Protection Ordinance (Section VI)
- Diseased Tree Ordinance (Section VII)

# Section I

## Urban Forest Management Policy

The City of Sunset Valley is an approximate 1 square mile area completely surrounded by the City of Austin. Currently, the City is home to approximately 400 residents.

Land use in the City of Sunset Valley ranges from residential to commercial, with nearly 200 acres of dedicated open space. In 2005, the City began a street tree inventory and the state of the urban forest was determined. The results of this effort are outlined in the following pages.

Urban trees provide many environmental and economic benefits. Trees make streets more aesthetically pleasing, provide wildlife habitat, and determine the character of the City. Trees produce oxygen, absorb carbon dioxide, and trap airborne pollutants.

While trees provide many benefits it is recognized that without proper management, trees can pose potential problems or risks. The goal of this plan is to optimize the benefits of trees and manage for potential problems, to obtain the best community outcome.

### Objectives:

- To enhance the City of Sunset Valley's reputation in the community as a steward and manager of trees.
- To maintain and improve the quality of the urban forest canopy.
- To increase awareness and educate the community and developers on the benefits of urban trees.
- To identify and preserve significant valuable trees based on historical, cultural, visual, ecological, and social criteria.
- To broaden the emphasis from tree planting and preservation to a more comprehensive approach to urban tree management.
- To document and standardize process and procedure to ensure consistency of management practices.

# **Tree Protection Status**

The protection of trees will be given a high priority in all aspects of City activities. Currently trees with a 12-inch diameter as measured at 4 ½ feet above the ground are protected and require permits for removal (Tree Protection Ordinance, Section VI of this document). A copy of the tree removal permit application is included in the appendix.

Property owners are allowed to prune trees within their property, but maintenance of trees within the right of way or on public property is the responsibility of the City of Sunset Valley. Property owners are encouraged to follow proper pruning practices (ANSI A300) and oak wilt management guidelines (Diseased Tree Ordinance, Section VII). Brochures on the City's Oak Wilt Management program are available to citizens.

In a continuing effort to protect trees of significance, the City has established and will maintain a Champion and Heritage Tree Register (Section V).

Trees will also be given adequate protection from construction and other activities that may have a significant impact on the health or appearance of the trees. The preservation of the natural character of the landscape in regards to trees between six to twelve inches in diameter will be considered for site plan approval (16 .204 Land Development Code).

# **Tree Selection and Installation**

The City of Sunset Valley will proactively identify opportunities for increased canopy cover within the City.

In order to accomplish this goal the City will enhance the local character of each street, park, and public area by identifying planting areas. The City will also emphasize the entrances into the City, as primary areas for plantings.

To achieve these goals the Street Tree Management Plan (Section III) has been prepared to outline management guidelines and planting areas.

Selection of street trees will be based on several criteria including:

- Location
- Environmental Tolerance
- Form and Scale
- Longevity
- Disease Resistance
- Drought Tolerance

Nursery stock will be examined prior to planting to insure good quality plants are planted.

Attention will be paid to tree installation to insure successful establishment of the tree. This includes staking and protection from wildlife. A watering strategy should also be developed for each planting location.

Community involvement will also be encouraged for tree planting activities. Historically, most major tree plantings will be hosted by the City of Sunset Valley and staffed by citizen volunteers.

# Tree Removal and Replacement

The City of Sunset Valley will assess trees proposed for removal on both private and public property.

Approval of removal permits will be based on, but not limited to the following criteria (Sec. 16.202 Land Development Code):

- Prevents reasonable access or precludes reasonable and lawful use of the property.
- The City or its designate determines that the tree constitutes a hazard to life or property which cannot reasonably be mitigated without removing the tree; or,
- The City or its designate determines that the tree is diseased to the point that its restoration to sound condition is not practicable, or that disease can be expected to be transmitted to other trees and to endanger their health.

The City may require replacement plantings as a condition of removal. Replacement plantings must be done within twelve months of removal of a protected tree. Replacement inches are usually done at approximately 1/3 the diameter of the tree removed.

In emergency situations, risk to public safety will take priority in tree removals. The Urban Forest Emergency Response Plan outlines the guidelines for mitigating damage by natural causes.

Poor performing trees may be removed and replaced. Exotic, invasive trees that are crowding natives may also be removed, upon approval.

The community will be informed and consulted on large tree planting activities and proposals.

# Community Involvement

The City of Sunset Valley manages and maintains the urban forest on behalf of the community.

Community involvement is necessary to maintain a productive forest community.

The City will inform members of the community on proposed tree planting activities and any removals that may be of interest. The community will be encouraged to join in City sponsored tree planting events.

Education is also a primary part of good management. Periodically the City of Sunset Valley will publish and mail informational fliers on tree management issues. These informative sheets may include information on the following:

- Proper Pruning Techniques
- Proper Planting Practices
- Transplanting
- Pest and Disease Problems
- Tree Care Issues

The location of each Sunset Valley public tree was marked using a Trimble Geo XT GPS unit. The data recorded for each individual tree is listed in Table 1. This information was then downloaded into ARC GIS 9, and put over aerial photos of the city. Images showing each street with the location of individual trees are included in the Appendix. Data collected were analyzed using the SPSS statistics program. Trees growing in the green spaces and conservation areas were not included in this study.

**Table 1.** Data collected for each individual tree. Data were collected between March and October 2005.

Scientific name	N/A
Common name	N/A
DBH	N/A
Condition	Good, fair, poor, dead
Weak fork	Yes or no
Cavity	Yes or no
Electric hazard	None, overhead, mild contact, moderate contact
Percent dead wood	0, 0-25, 25-50, 50-75, 75-100
Maintain or remove	Maintain, remove
Consult	Yes or no
Prune	No, clean, raise canopy, clear electrical lines
Trunk	Single, forked, multi-stemmed

## Section II

# State of the Urban Forest

## Materials and Methods

# State of the Urban Forest

## Species Distribution

There are 1,412 trees growing along streets and on public property in Sunset Valley. The inventory shows that there are approximately 3.3 public trees for each of the 430 residents in Sunset Valley. Cedar elm (*Ulmus crassifolia*) and plateau live oak (*Quercus fusiformis*) are the most commonly occurring trees in the city, making up 21.6% and 14.6% of the tree population, respectively. Ashe juniper (*Juniperus asheii*) and sugar hackberry (*Celtis laevigata*) are also common trees. Japanese privet (*Ligustrum japonica*) makes up 5.2% of the population (Fig. 1)

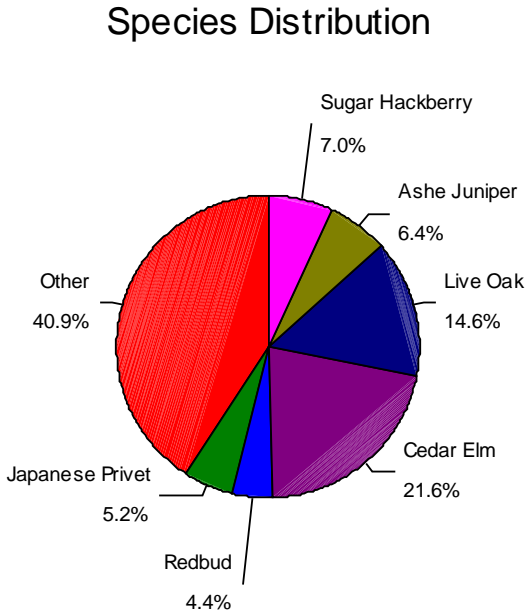


Figure 1. Percentage of urban forest by tree species. Data were collected between March and October 2005.

Over 40% of the individuals were other species such as bur oak (*Quercus macrocapra*) 2.2%, flameleaf sumac (*Rhus lanceolata*) 3.9%, Texas mountain laurel (*Sophora secundiflora*) 2.2%, yaupon (*Ilex vomitoria*) 3.8, and crape myrtle (*Lagerstroemia indica*) 2.3%. A complete list of species is located in Table 2 in the Appendix.

# State of the Urban Forest

## Conditions

Greater than 80% of the public trees in Sunset Valley are in good condition. Nearly all of the rest are in fair condition, with only 1.6% in poor condition. Less than 1% of the trees are dead (Figure 2).

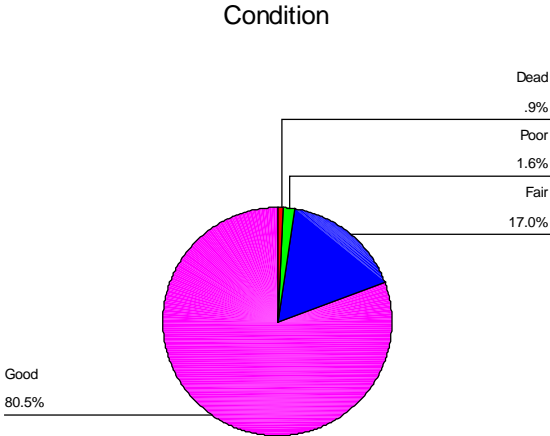


Figure 2. Percentage of trees by condition. Categories are good, fair, poor, and dead. Data were collected between March and October 2005.

A weak fork within a tree can be potentially hazardous. These are areas where a possible split can occur during a wind event or other inclement weather. Less than three percent of trees have weak forks (Fig. 3).

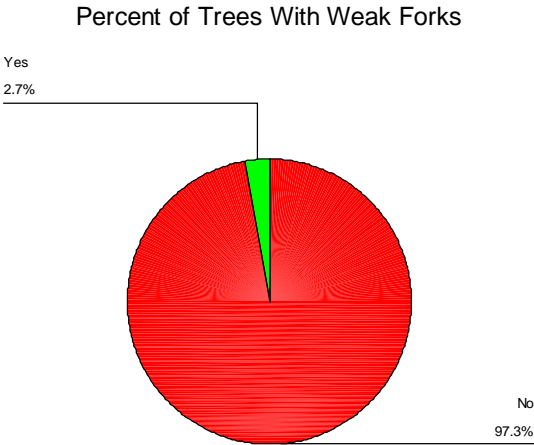


Figure 3. Percentage of trees with or without a weak fork. Data were collected between March and October 2005.

# State of the Urban Forest

## Conditions

The data on diameter indicates that just over half of the trees are less than five inches in diameter (Fig. 4). This trend suggests that many of the trees in Sunset Valley are young and more recently planted. Another contributing factor is that trees with multiple trunks tend to have smaller calculated diameters. Greater than 30% of the trees included were multi-stemmed or forked (Fig. 5).

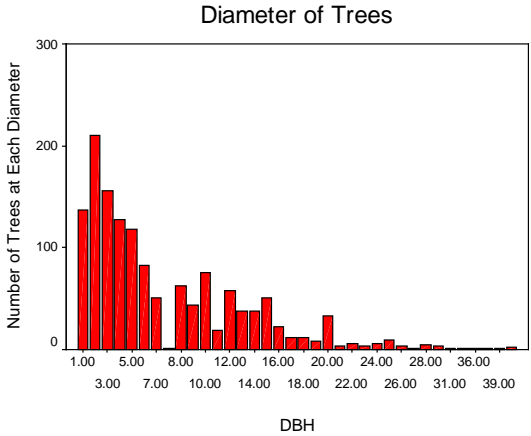


Figure 4. Number of trees at various diameters at breast height (DBH). Data were collected between March and October 2005.

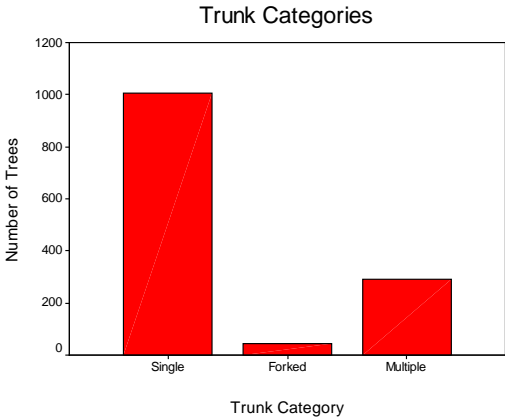


Figure 5. Number of trees categorized as single, forked or multiple trunk. Data were collected between March and October 2005.

# State of the Urban Forest

## Conditions

Greater than 75% of trees have little to no dead wood (Fig. 6). Approximately 18% have up to 25% dead wood, 3.5% have about 50% dead wood, and 1.5% have up to 75% of the crown dead. Many of these trees have pruning or removal recommendations.

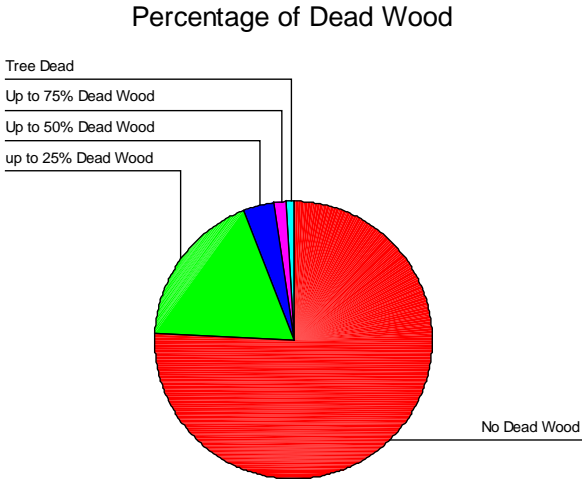


Figure 6. Percentage dead wood on each tree surveyed. Data were collected between March and October 2005.

# State of the Urban Forest

## Electrical Hazards

Seven percent of trees are in contact with electrical, cable or phone wires (fig. 7). Contact is considered to be mild or moderate based on how much of the tree is in contact with the wires. A portion (5.3%) of the trees has no contact, but do have overhead wires. These trees will require monitoring as they grow.

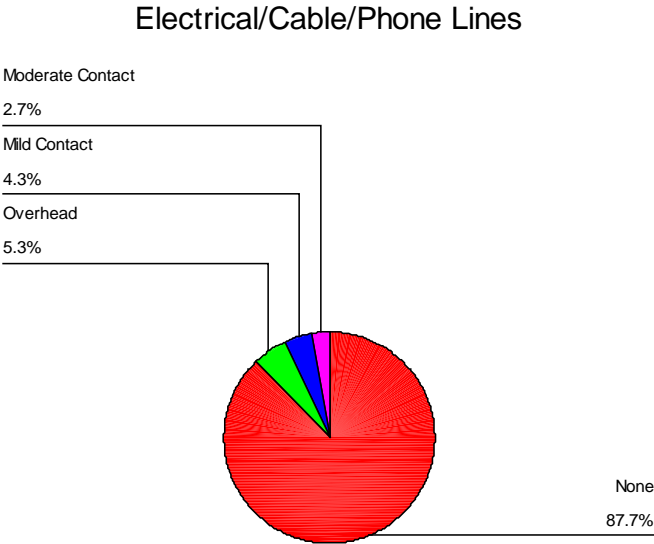


Figure 7. Percentage of trees posing electrical hazards. Data were collected between March and October 2005.

# State of the Urban Forest

## Tree Species by Location

City Hall (including the Public Works and Police Buildings), Westgate Entry, and Valley Creek Park are the public spaces with the greatest number of trees, respectively. Jones, Pillow and Oakdale are the residential streets with the greatest number of trees (Fig. 8). Lovegrass Lane has a moderate number of trees, but they are all located along the entry to the Sunset Valley Meadows. If the water quality ponds are excluded (Fig. 9), there are no street trees on the remainder of Lovegrass Lane, Yellowtail Cove, and Curley Mesquite Cove.

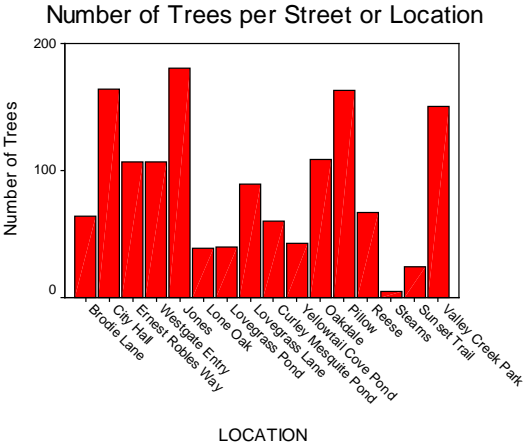


Figure 8. Number of trees by street or location, including trees at the water quality ponds on Lovegrass Lane, Curley Mesquite Cove, and Yellowtail Cove. Data were collected between March and October 2005.

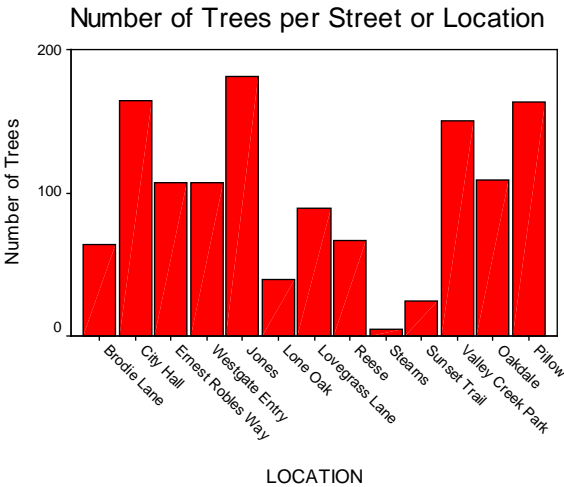


Figure 9. Number of trees by street or location, excluding trees at the water quality ponds on Lovegrass Lane, Curley Mesquite Cove, and Yellowtail Cove. Data were collected between March and October 2005.

# State of the Urban Forest

## Management Recommendations

The data collected from the street tree inventory delineated some of the priority areas in the City of Sunset Valley. Less than three percent of trees are recommended to be removed (Fig. 10). This is larger than the number of trees reported as dead. Living trees are recommended for removal because they are considered hazards or are invasive exotics that are crowding native trees. For example, a Japanese privet (*Ligustrum japonica*) crowding a black walnut (*Juglans nigra*) on Pillow Road is recommended for removal.

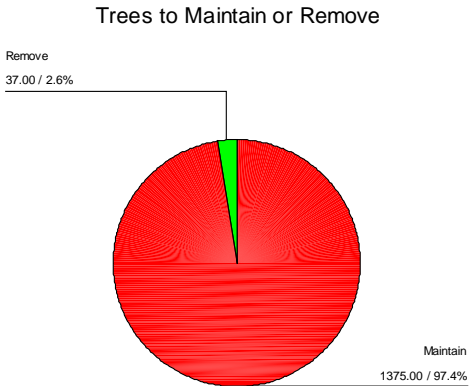


Figure 10. Percentage of trees to be maintained or removed. Data were collected between March and October 2005.

Nearly 94% of trees in Sunset Valley are in need of no immediate pruning. Less than 1% needs to be raised for traffic clearance, 1.8% consulted by a utility arborist, and 3.6% need to be cleaned (removal of dead wood) (Fig. 11).

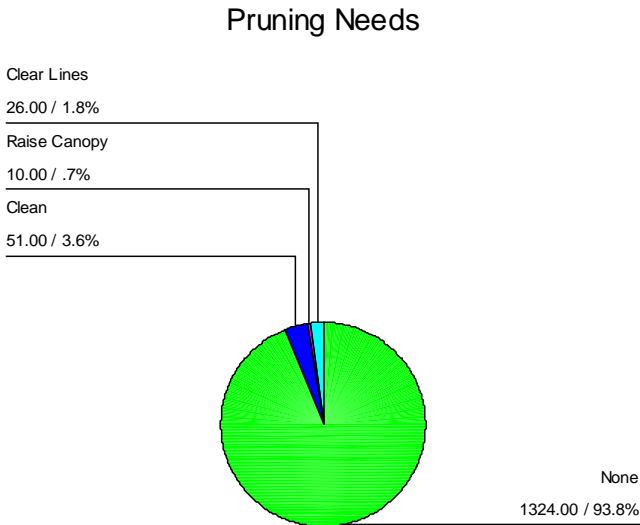


Figure 11. Percentage of trees needing pruning. Data were collected between March and October 2005.

# State of the Urban Forest

## Management Recommendations

The number of trees at each condition category per location was also determined (Fig. 12). The data indicates that Valley Creek Park has the highest number of dead, poor, or fair trees. This data combined with public park status makes Valley Creek Park the priority pruning and maintenance location. At locations such as City Hall, trees recorded as dead may be due in part to their installation within the last year.

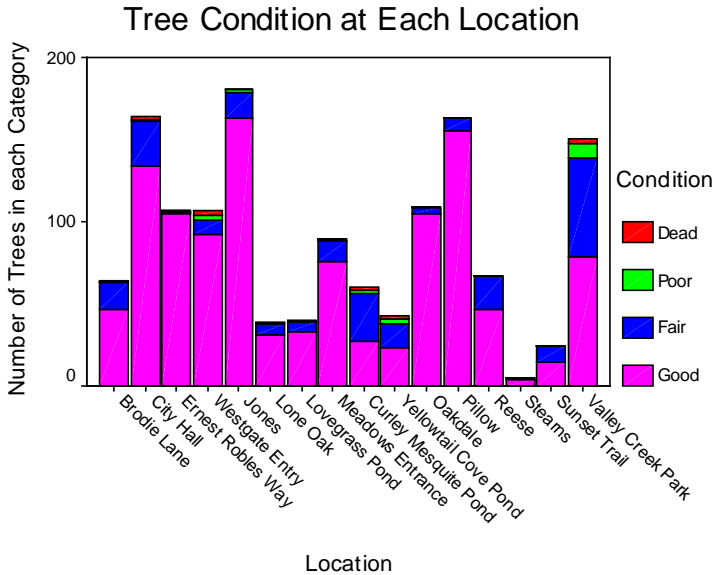


Figure 12. Tree condition category by location. Data were collected between March and October 2005.

Based on the data recorded from the street tree inventory and in order to accomplish the objectives outlined in Section I of this document, a Street Tree Management Plan has been developed.

This plan has four parts:

- Priority Removals and Pruning
- Ongoing Activities
  - Update Tree Inventory
- Yearly Maintenance Plan
- Future Planting Locations

#### **Priority Removals, Pruning, and Replacement**

The data collected during the street tree inventory delineated several areas in need of priority pruning and tree removals.

1. All dead or hazardous trees will be removed from the public right of ways and park.
2. Trees located in Valley Creek Park will be pruned to remove dead wood and reduce hazard potential.
3. Trees that have died at the water quality ponds in the Sunset Valley Meadows and at City Hall/Public Works/Police Department should be removed and replaced.

## **Section III**

### **Street Tree Management Plan**

#### **Priority Removals, Pruning, and Replacement**

The data collected during the street tree inventory was input into ARC GIS 9, and this information will be used to guide management decisions, and determine budgetary requirements. The data in this program will need to be routinely updated. In order to do this in a timely fashion the City has been divided into two zones. Each year one zone will be re-inventoried to update tree information. This way each tree will be examined every other year. This survey may be conducted as part of each summer's teen program (Table 3). Large-scale plantings (>10 trees) will be added to the inventory within 30 days of installation.

# Street Tree Management Plan

## Tree Inventory Update

Table 3. Areas in Sunset Valley, Texas to be inventoried in alternating years.

<u>Zone 1 (Even Years)</u>	<u>Zone 2 (Odd Years)</u>
Jones	Pillow
Lone Oak	Reese
City Hall	Sunset Trail
Stearns	Westgate Entry
Valley Creek Park	Oakdale
Brodie	Ernest Robles Way
Meadows	

Maintenance of street and public trees will be conducted throughout the year (Table 4). The Right-of-Ways will be checked for clearance every June. Vertical clearance will be maintained at 12 feet above ground. The line of sight on Jones Road is frequently blocked by vegetation. Each January and August the line of sight will be checked and necessary action taken to increase visibility. Based on the data generated in ArcMap, trees will be located for pruning priorities. Pruning priority will be determined by location (street/park/public space), percentage of dead wood, and budgetary resources.

Table 4. Annual maintenance timeline.

<b>Task</b>	<b>Timeline</b>
Check ROW Clearance	June
Line of Sight on Jones	January and August
Clean canopies of trees with 25% or greater dead wood.	June and July
Replacement Plantings	January and February
Fall Planting Trails and Trees Day	September
Spring Planting Arbor Day	May

## **Street Tree Management Plan**

## **Yearly Maintenance Plan**

# Street Tree Management Plan

## Future Planting Sites and Continued Maintenance

Numbers and diversity of trees, respectively, were used as indicators to prioritize planting locations. Charts showing species distribution at each location are located in the Appendix.

In order to increase species diversity and to fully stock the urban forest there are several areas for future planting sites.

### **Lovegrass Lane, Yellowtail Cove, Curley Mesquite Cove**

Excluding the entrance to the Sunset Valley Meadows subdivision and water quality ponds, there are no street trees on Lovegrass Lane, Yellowtail Cove, or Curley Mesquite Cove. Any plantings on these streets must not disrupt drainage and must avoid underground utilities.

### **Lone Oak Trail**

Of the relatively few street trees on Lone Oak Trail, 33% are sugar hackberry (*Celtis laevigata*). There are approximately five to seven locations along Lone Oak that would be appropriate for planting.

### **Valley Creek Park**

Cedar elm (*Ulmus crassifolia*) makes up 65% of the relatively large number of trees in the park. Diversifying the space by planting other species in the open area on the southern end of the park will create a healthier environment in the long term.

### **Pillow Road North of Jones Road**

In 2005 several trees were planted along Pillow Road north of Jones Road. There are other areas, south of the previous plantings, that could be planted.

Data in some areas shows low numbers of street trees, yet canopy cover is near or over the street, with trees rooted on private property. This is evident on parts of Sunset Trail and Reese Drive.

### **Continued Maintenance**

Several of the trees at the corner of Pillow and Jones Road, are actually on Austin Independent School District (AISD) property. Although these trees are not on the City's property, there is an inter-local agreement between the City and AISD. This agreement allows planting in this area and the City is responsible for the maintenance.

The urban forest provides many economic and environmental benefits. However, if not properly maintained trees can create problems. In order to insure the quality of the urban forest while maintaining public safety this Urban Forest Emergency Response Plan has been developed. The purpose of this plan is to provide guidelines for responding to damage of the urban forest following a severe storm or other natural disaster. This plan addresses preparation, response, and recovery from natural disasters. All forestry operations should comply with ANSI Z133 safety standards to guarantee the safety of the City of Sunset Valley workers and the public. ANSI Z133 is used by OSHA at federal and state levels. The City of Sunset Valley will follow all ANSI standards and use only equipment that is ANSI certified. The City of Sunset Valley must instruct its employees in the proper use, inspection, and maintenance of tools and equipment, including ropes and line, and shall require that appropriate working practices be followed. The City of Sunset Valley will also require all companies or individuals contracted to comply with these standards.

## **Section IV**

# **Urban Forest Emergency Response Plan**

Several things will be done prior to a storm event in order to enhance effectiveness. These activities will streamline responses and lessen damage caused by storm or natural disasters.

### ***Tree Inventory***

A street and public tree inventory has been completed in order to better understand the state of the urban forest. The inventory contains location of trees along the right of ways (ROW) and on public land. The tree inventory has also identified potential hazards and pruning needs. Trees that have been identified as candidates for structural failure will be accessed for removal. The tree inventory will provide valuable information in order to mitigate damage that may occur. The street and public tree inventory will be updated on a routine basis in order to provide accurate data.

### ***Routine Inspections***

Routine inspections of trees on public property will take place twice a month and after major storm events in order to determine and remove possible problems before they occur. Removal of trees in non-emergency situations will follow the guidelines of the City of Sunset Valley's Tree Ordinance.

### ***Proper Planting and Maintenance Practices***

In order to prevent potential hazards, trees planted on public property will be selected based on the tree's growth habit, site conditions, and resistances. For example, boxelder (*Acer negundo*), dogwood (*Cornus sp.*), and cherry (*Prunus sp.*) are less resistant to storm damage (wind) than oaks (*Quercus sp.*) Trees planted below utility lines should be lower growing in order to reduce potential damage. Planting locations will also be selected to provide adequate space for the crown and roots of the trees.

Nursery stock will be examined prior to planting so that trees with multiple leaders and girdling roots are not planted. Once trees have been planted they will be properly maintained to avoid weak forks and other potentially dangerous structural problems. Good branch angles, strong branch/trunk size relations, and a stable center of gravity will be encouraged. Waterspouts, rubbing branches and suckers will be removed in a timely manner.

# **Urban Forest Emergency Response Plan**

## **Before the Storm**

### ***Records***

After each catastrophic event that requires any response from staff, a record will be made of the event and the records will be maintained in a central location. These records will track employee time, equipment, purchased supplies, field reports, and service contract costs. A photographic record will also be kept of damaged trees.

### ***Public Education***

Residents of the City of Sunset Valley will be sent information on what to do before, during, and after a catastrophic event such as a storm or flood. This information may also include a list of local companies that are licensed, trained, and insured to aid in tree trimming and removal. A series of public service announcements will be printed in the Sunset Valley Newsletter including, chain saw safety, benefits of trees, and selecting quality nursery stock.

### ***Early Warning***

The City of Sunset Valley Public Works Department will keep apprised of possible weather events through the Internet, television, and radio broadcasts to prepare for any potential damage.

# **Urban Forest Emergency Response Plan**

## **Before the Storm**

### **Phase I. Survey for immediate threats**

The first priority following a catastrophic event is to maintain public safety throughout the city. Following is a list of emergency tree assessment priorities:

- I. Trees down, trapping or injuring people.
- II. Trees down and blocking major arterial streets such as highway 290, Brodie Lane, Jones Road and Ernest Robles Way.
- III. Trees down blocking residential streets or not allowing people to exit their homes.
- IV. Trees that are in danger of structural failure that may cause injuries.
- V. Trees that have fallen and rest on a building, home, or vehicle.
- VI. Trees blocking the line of sight.

These are the top priorities in responding to damage. In each of these situations staff will identify live electrical wires in, on, or around trees. If there is a live wire, public access should be blocked and the appropriate utility officials contacted. In the event that the City does not have the appropriate equipment or staff is unable to remove a tree, contacts have been made with several tree companies to enlist their assistance. A list of contacts is located in Appendix A. After all emergency situations are addressed the remainder of the response plan will be put into effect.

### **Phase II. Determine Priority Pruning**

- I. Streets will be checked systematically by staff to look for limbs that are broken, cracked or hanging.
- II. Priority will be given to limbs hanging over streets, sidewalks, in the park and anywhere near live electrical wires.

# **Urban Forest Emergency Response Plan**

# **Storm Damage Response Plan**

# Urban Forest Emergency Response Plan

## Storm Damage Response Plan

### **Phase III: Debris Clearance and Removal**

- I. Remove all debris from major thoroughfares.
- II. Remove debris from culverts in order to insure the flow of water and reduce flooding opportunities.
- III. If debris cannot be completely removed following the storm, the debris will be moved off the road to insure access.
- IV. Remove debris from sidewalks, walkways, and trails.

#### **Temporary Staging Area**

The north end of Pillow Road will serve as a temporary collection area when the storage yard is inaccessible. As soon as the storage yard is accessible the debris will be moved from the Pillow Road location.

### **Phase IV. Communication**

- I. In the event of a major weather event the administrative assistants of all departments will be informed of the activities taking place in order to answer any questions from the public.
- II. Efforts will be made to contact landowners of trees that may have fallen from their yards into the street, before removal.
- III.

### **Phase V. Debris Disposal**

- I. Debris collected throughout the year will be chipped and offered to residents as mulch.
- II. Brush on private property will be picked up the Thursday following the storm during normal brush pick-up operations. The brush must be moved to the curb. On-site chipping will be offered to residents twice a year.
- III.

### **Phase VI. Reassessment**

- I. After any major weather event public trees will be assessed to determine health and to look for structural damage.
- II. The City will locate future planting sites and estimate the cost of replacing lost trees.

Heritage trees possess integrity of location, setting, and design and represent Sunset Valley heritage and/or a specific historical or cultural association. Qualifying criteria for Heritage Trees must include one or all of the following:

- The tree or group of trees is associated with events that have made a significant contribution to the broad pattern of our history.
- The tree or group of trees is associated with a local person or group of historic significance to Sunset Valley.
- The tree or group of trees represents a significant and distinguishable entity within the Sunset Valley community.
- The tree or group of trees is of an age, size and/or species significance that contributes to its heritage status.

To nominate a Heritage Tree, a Sunset Valley resident fills out a City of Sunset Valley Heritage Tree form (see appendix) and returns it to the City of Sunset Valley Public Works department. A qualified arborist is available to assist the residents in gathering information about their tree or trees.

The Environmental and Planning Committee will review applications, and trees accepted into the Register will be listed in the City of Sunset Valley's monthly newsletter. A member of the Public Works department will locate and digitally record the heritage tree with Geographic Information System software. A gallery of trees, including a short biography of each Heritage Tree, will be created and displayed at City Hall

## **Section V**

# **Champion and Heritage Tree Register**