

# LANDSCAPING & WATER CONSERVATION GUIDE



**CITY OF EL CENTRO**

**Planning and Zoning Department**



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## Purpose of the Guide

A well designed and maintained landscape can immediately enhance the attractiveness of homes, businesses, and the community at large. For that reason the City of El Centro has enacted and enforces landscape guidelines in order to maintain the beauty of our community. These guidelines have always reflected the unique climate of El Centro and the City is now encouraging the use of more water efficient landscaping.

The purpose of this document is to serve as a guide to the landscape and water conservation requirements found in **Section 29-142 of the City Zoning Ordinance** and in state legislation under Assembly Bill 1881. While for the most part water conservation guidelines only apply to large landscaping projects, the City encourages its application to smaller scale projects in order to conserve water. If you have questions regarding landscaping or other development regulations, please refer to the City of El Centro Zoning Ordinance or contact the Planning and Zoning Department.

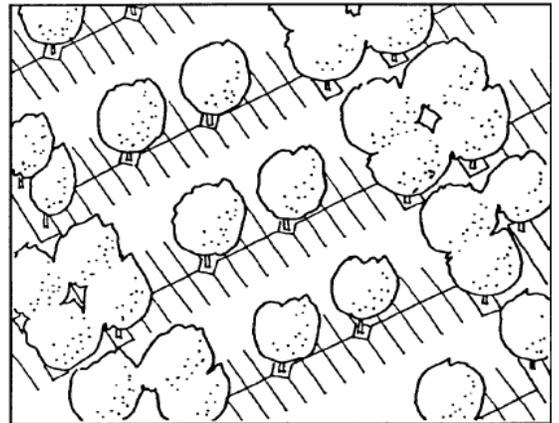
## Landscaping Guidelines

Landscaping is required in the front and exterior side yards of all properties, excluding parking spaces, driveways and sidewalks.

New residential dwellings shall plant at least two trees in the front yard from the **Recommended City Tree List** . Trees may be planted in the front parkway and street tree themes are encouraged.

### PARKING LOTS

- Parking lots with more than 5 spaces shall be landscaped. Lots with 5 to 20 spaces require a minimum of 5% of the area be landscaped. Lots with more than 20 spaces require a landscaped area of a least 10%. Landscaping needs to be evenly distributed and require complete coverage within a year of planting.
- Trees shall be planted in order to attain 40% coverage within 15 years. Parking lot islands at the end of aisles shall be a least 5 feet wide and have trees planted in order to obtain an “orchard” canopy effect.
- Trees shall be planted at a minimum ratio of 1 tree per 200 square feet or 1 tree for every five parking spaces, which ever is more.



*Planting trees in parking lots provides shade, cooling the pavement and ambient air.*

### NON-RESIDENTIAL ZONES

- For uses in commercial, manufacturing and the civic center zone that abut any residential zone or school, a 10 foot landscaping strip will be provided along the property lines adjacent to the residential zone or use.
- Properties in commercial, civic center or in the Visual Enhancement Area, will landscape an area equivalent to at least 15 % of the lot. Areas in the Downtown Commercial Zone require 5% of the lot be landscaped, except for properties facing Main Street between 8th and 4th Streets, which are exempt from the landscape requirement.

- Manufacturing Zones will provide a landscaping to at least 10 % of the lot. In non-residential zones, at least 80% of landscaping will be within the frontage areas or be visible from the street.

## **Water Conservation Guidelines**

Water conservation guidelines apply to commercial, industrial and tenant occupied residential property that require landscaping greater than 2,500 square feet and homeowner provided landscaping greater than 5,000 square feet. In order to verify that the property follows requirements, a landscaping documentation package will needed to be submitted with your building plan materials prior to issuance of a building permit.

### **Landscape Documentation Package Checklist**

- |   |  |
|---|--|
| <input type="checkbox"/> Water Conservation Concept Statement | <input type="checkbox"/> Irrigation Schedules                  |
| <input type="checkbox"/> Water Efficient Landscape Worksheet  | <input type="checkbox"/> Grading Design Plan                   |
| <input type="checkbox"/> Landscape Design Plan                | <input type="checkbox"/> Landscape Irrigation Audit Schedule   |
| <input type="checkbox"/> Landscape Maintenance Schedule       | <input type="checkbox"/> Certificate of Substantial Completion |

### **LANDSCAPE DOCUMENTATION PACKAGE**

#### **Water Conservation Concept Statement**

The water conservation concept statement will include information about the project such as date, project address, applicant with contact information, total landscape area, project type (new, rehabilitated, public, private, etc.), water supply, checklist of all documentation, and a statement of compliance signed by applicant.

#### **Water Efficient Landscape Worksheet**

This worksheet is composed of two elements: a hydrozone information table and the water budget calculations. See the Water Use Calculations of Species (WUCOS) (2000) for plant water usage available online at <http://www.water.ca.gov/wateruseefficiency/docs/wucols00.pdf>. The State Department of Water Resources has a Water Budget Calculator available at <http://www.water.ca.gov/wateruseefficiency/docs/WaterBudget101.xls>.

#### ***Hydrozone Information Table***

Identify and label each hydrozone, its water use, and the plant factor from the WUCOS. Each plant species will be assigned a water use type (low, medium or high) and each type has a specified range for its plant factor (PF) (low 0.1-0.3, medium 0.4-0.6, and high 0.7-1). Special landscape areas (SLA) are identified but are not to be calculated with the hydrozones. Special landscapes areas consist of landscaping with recreational use, composed with edible vegetation or using recycled water. Their plant factor is not to exceed 1.

Hydrozone	Plant Water Use Type (low, medium, high)	Plant Factor (PF)	Hydrozone Area (HA) (ft <sup>2</sup> )	PF × HA (ft <sup>2</sup> )
1	High	0.8	7000	5600
2	High	0.7	9000	6300
3	Medium	0.5	15000	7500
4	Low	0.3	7000	2100
5	Low	0.2	10000	2000
			<b>TOTAL HYDROZONE AREA</b>	<b>23500</b>
	Special Landscape Area	1	2000	2000
		<b>TOTAL LANDSCAPE AREA</b>	<b>50000</b>	

### Sample Hydrozone Table

### Water Budget Calculations

The water budget calculations are used to calculate the Maximum Applied Water Allowance or MAWA and the Estimated Total Water Use or ETWU. The sum of the ETWU shall not exceed the MAWA.

The MAWA is calculated using the formula

$$MAWA = (81.7)(0.62)[(0.7 \times LA) + (0.3 \times SLA)]$$

Where

MAWA= Maximum Applied water Allowance

81.7= Evapotranspiration factor for El Centro

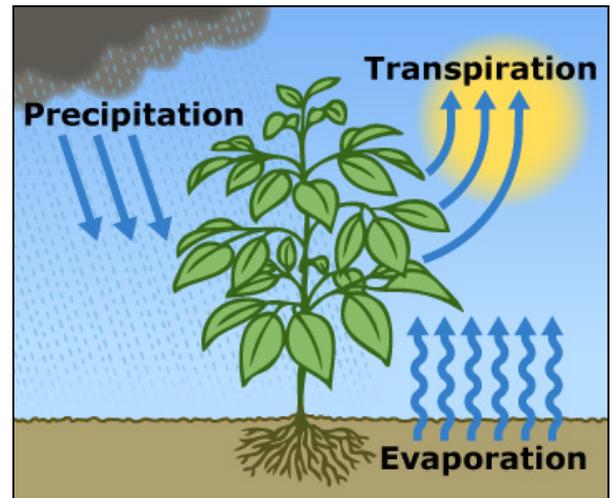
.62 = Conversion Factor to Gallons

0.7 = ET Adjustment Factor (ETAF)

LA = Landscape Area Including SLA (square feet)

0.3 = Additional Water Allowance for SLA

SLA = Special Landscape Area



*Evapotranspiration is the sum of water losses through evaporation from the soil and transpiration from the plant.*

### Example MAWA Calculation

For this example there is a landscape project in El Centro with a total landscape area of 50,000 square feet with a 2,000 square foot area of turf used for recreation. The 2,000 square foot area is considered to be a special landscape area.

$$MAWA = (81.7)(0.62)[(0.7 \times LA) + (0.3 \times SLA)]$$

$$MAWA = (81.7)(0.62)[(0.7 \times 50000) + (0.3 \times 2000)]$$

$$MAWA = 1,800,328$$

For the ETWU is calculated using the formula:

$$ETWU = (81.7)(0.62) \left( \frac{PF \times HA}{IE} + SLA \right)$$

Where:

ETWU = Estimated Total Water Use per year (gallons)

81.7 = Reference Evapotranspiration for El Centro (inches)

PF = Plant Factor from WUCOLS (see Section 491)

HA = Hydrozone Area [high, medium, and low water use areas] (square feet)

SLA = Special Landscape Area (square feet)

0.62 = Conversion Factor

IE = Irrigation Efficiency (minimum 0.71)

#### Example MAWA Calculation

Using the data from the Hydrozone Table and the project characteristics from the MAWA example:

$$ETWU = (81.7)(0.62) \left( \frac{PF \times HA}{IE} + SLA \right)$$

$$ETWU = (81.7)(0.62) \left( \frac{23500}{.71} + 2000 \right)$$

$$ETWU = 1,777,884$$

Since the ETWU doesn't exceed the MAWA it complies with the MAWA

#### Landscape Design Plan

The purpose of the landscape plan is to demonstrate the location and describe all the landscape features of a project. It will be planned for the efficient use of water and intended use of the project. The landscaping design will meet the following design criteria:

##### *Plant Materials*

- Any plant may be selected as long as its estimated total water use does not exceed the maximum applied water allowance.
- Each hydrozone shall have plants with similar levels of water use.
- Plants shall be selected and planted appropriately based upon their adaptability to the conditions of the site.

- We encourage choosing plant materials from the City's Recommended Plant list, Table 29-142.1 of the City Code.
- Turf is prohibited on slopes greater than 25%, where the toe of slope is adjacent to a non-permeable surface.
- The use of non-native and invasive species is strongly discouraged.

### ***Water Features***

- All water features must use recirculating water.
- Where available, recycled water shall be used for decorative water features.
- The surface area of a water feature shall be included in the high water use hydrozone area of the water budget calculation.

### ***Mulch & Amendments***

- A minimum 2" layer of mulch shall be applied on all exposed soil surface of planting except in turf areas, creeping or rooted ground covers, or direct seeding applications
- Stabilizing mulching products shall be used on slopes
- Soil amendments shall be incorporated according to recommendation of the soil report and what is appropriate for the plants selected



***The landscape design plan shall include the following:*** *The use of mulch helps soil to retain moisture and control weeds.*

- Delineate and label each hydrozone and identify it as low, moderate or high water use.
- Identify recreation areas.
- Identify areas permanently and solely dedicated to edible plants.
- Identify areas irrigated with recycled water.
- Identify type of mulch and application depth.
- Identify soil amendments, type, and quantity.
- Identify type and surface area of water features.
- Identify hardscapes (pervious and non-pervious).
- Identify storm water management measures.
- Identify any rain harvesting or catchment technologies.

- Contain the following statement: “I have complied with the criteria of the ordinance and applied them for the efficient use of water in landscape design plan”.
- And bear the signature of a licensed landscape architect, licensed landscape contractor, or any other person authorized to design a landscape, as permitted by 22 Cal. Code Regs. § 492.6.

### Landscape & Irrigation Maintenance Schedule

A maintenance schedule for landscaping and the irrigation system is required in the documentation package. The schedule shall include but not limited to:

- Routine inspection
- Adjustment and repair of irrigation system and its components
- Aerating and dethatching turf areas
- Replenishing mulch
- Fertilizing
- Pruning
- Weeding
- Removing obstructions to emission devices



*Choosing the most appropriate sprinkler devices for your projects is necessary to conserve water and properly irrigate your landscaping. Clockwise from top-left: rotor sprinkler, bubblers, drip emitter, and a spray sprinkler*

### Irrigation Design Plan

The design of the irrigation system shall be planned in accordance to the manufacture’s recommendations and the following requirements:

#### *System Design*

- The irrigation system shall be designed to ensure that the dynamic pressure at each emission device is within the manufacture’s recommended pressure range for optimal performance. If not within manufacture’s specifications, pressure regulating devices are required.
- Irrigation systems shall be designed to prevent runoff, low head drainage, overspray or other conditions where water flows onto non-targeted areas.
- Soil information such as soil type and infiltration rate shall be taken in to consideration during design.
- In mulched planting area, the use of low volume irrigation is required to maximize water infiltration into root zone
- Rotors and spray heads shall be designed and installed with minimized overspray onto paved surfaces, structures, and non vegetative areas. Head to head coverage is recommended with a maximum of 50% diameter overlap. Rotors and spray heads shall be zoned separately.

- Narrow or irregular shaped areas, including turf, less than eight feet in width in any direction shall be irrigated with subsurface irrigation or low volume irrigation system.
- Overhead irrigation shall not be permitted within 24 inches of any non-permeable surface. Drip irrigation or any low flow non-spray technology can be used instead.
- Overhead irrigation is only allowed within 24” when adjacent non-permeable surfaces are designed to redirect water entirely to landscaping or irrigation designer specifies an alternative design or technology to prevent runoff and overspray. This will be confirmed during irrigation audit.
- On slopes greater than 25%, irrigation system shall not have a precipitation rate exceeding .75 inches per hour. This may be modified if landscape designer specifies in documentation that no runoff or erosion will occur. This will be confirmed during irrigation audit.
- In order to manage water use, dedicated landscape water meters are recommended for areas smaller than 5,000 square feet.
- High flow sensors that detect and report high flow conditions created by damaged or malfunctioning system are recommended.

***All irrigation must be equipped with the following:***

- “Smart controllers” with either an evapotranspiration or soil moisture sensor.
- Weather sensors that suspend irrigation during windy, freezing weather, or during rain.
- Manual shut-off valves shall be required as close to possible to the point of connection to the water supply.
- Backflow prevention devices to protect contamination of water supply from irrigation system.
- Check valves or anti-drain valves.

***Hydrozone***

- Each valve shall irrigate a hydrozone with similar conditions and with plants of similar water usage.
- Sprinkler heads and other emission devices shall be selected on what is appropriate for plants and the hydrozone.
- When feasible, trees shall be placed on separate valves from shrubs, groundcovers, and turf.
- In hydrozones with plants of both low and medium or medium and high water uses, the water calculation will be based on the proportions of the respective plant water uses and their plant factor or on the plant factor of the higher water using plant for calculations.
- Hydrozones that mix plants of low and high water uses are not permitted.

***The irrigation design plan shall include the following:***

- Location and size of separate water meters for landscape.

- Location, type and size of all components of the irrigation system including controllers, main and lateral lines, valves, sprinkler heads, moisture sensing devices, rain switches, quick couplers, pressure regulators, and backflow devices.
- Static water pressure at the point of connection to the public water supply.
- Flow rate (gallons per minute), application rate (inches per hour), and design operation pressure (pressure per square inch) for each station.
- Recycled water irrigation systems as permitted.
- The following statement: “I have complied with the criteria of the ordinance and applied them accordingly for the efficient use of water in the irrigation design plan”
- Signature of license landscape architect, certified irrigation designer, licensed landscape contractor, or any other person authorized to design an irrigation system, as permitted by 22 Cal. Code Regs. § 492.6.

### **Irrigation Schedule**

To properly manage the use of water, irrigation schedules shall be developed and submitted with the documentation. The use of overhead irrigations is limited to the hours of 8:00 PM to 10:00 AM unless weather conditions prevent it.

The irrigation schedule shall be developed for the plant establishment period, established landscape and temporary irrigated areas. For each category, the plan shall have the flow rate, frequency of irrigation, duration of irrigation for each station. Schedule will also include the amount of applied water applied on a monthly basis.

### **Grading Design Plan**

A copy of the grading design plan must be included in the documentation package. The most current grading plans submitted to other City departments or for other development permitting procedures are acceptable.

### **Soil Analysis**

Soil amendments may improve growing conditions and the efficiency of water use. A soil management report shall be prepared by submitting soil samples to a laboratory for analysis and recommendations. Analysis may include:

- Soil texture
- Infiltration rate
- pH
- Total soluble salts
- Sodium
- Percent organic matter
- Recommendations

The report shall be made available to the professionals preparing the landscape design plans and

irrigation design plans in order to make any necessary adjustments to design plans. Documentation verifying the implementation of soil analysis report recommendations shall be submitted with documentation package.

### **Landscape Irrigation Audit**

Audits shall be conducted by a certified landscape irrigation auditor. A second irrigation audit is to be performed within 6 months from the date of Occupancy Permit. The audit may include, but not limited to inspection, system tune-up, and system test with distribution uniformity. It is recommended that an audit be performed every five years.

### **Certificate of Substantial Completion**

The project applicant is to fill out a Certificate of Substantial Completion upon completion of landscape project.

## **Water Efficient Landscape Design**

The popular misconception of water efficient landscaping is that it lacks the vibrancy and beauty of water intensive landscaping. This is not true! Careful plant selection, design and maintenance can make your landscape aesthetically pleasing while conserving water.

### **PLANT SELECTION**

The selection of locally appropriate plant species is fundamental in any successful landscape project. In order to thrive, species must be able to tolerate intense heat and sunshine. Also, take into consideration the benefits of growing in a desert environment, particularly moderate winters, abundant sunshine and the opportunity to grow cacti, agaves, and aloe.



*Indian Laurel, also known as yuccatecos, is an example of a tropical plant that adapts to the desert climate.*

Consider local species and plant families that do best in the desert. Arid climate species like ocotillos, prickly pear cacti, and yuccas have colorful seasonal blooms in the spring. Trees like mesquites do well and provide necessary shade. Agaves and aloes introduce interesting textures and some flower in spring. And of course there are many varieties of the iconic palm to select from.

There are many plants that while not native to desert regions thrive, due to our mild winters and abundant sunshine. For these reasons, many tropical and Mediterranean plant species do well. Bougainvilleas, bottlebrush trees, and bird of paradise are examples of plants that provide excellent color to local landscapes. Evergreen trees like ficus, rosewood and oak tolerate summer heat and provide excellent shade. And while pines, cypresses, and junipers are native to colder climates certain species do well here due to their heat tolerance and ability to withstand infrequent watering.

### **BASIC DESIGN ELEMENTS**

Think design elements as the building blocks for your landscaping project; the thoughtful integration



*Oleander and fountain grass used to screen a power box*



*Red bougainvillea used to screen windows and add color to building*

of them produces a functional landscape. Each has there proper place to make the greatest impact. The following is a short list of some landscaping elements you can employ.

### Screen

Screening plants provide privacy and control wind and dust. Species like oleander and ficus bushes do well. Cacti and agaves while not providing as much privacy serve as barriers by restricting the passage of humans and animals.



*These columnar cypress trees are tall and striking, and they are green!*



*Desert plants, like the agaves above, attract attention and are perfectly suited for our climate*

### Accent

Accent plants have bold forms that provide attention to their area. Many desert plants can be used for this function such as agaves, yucca and palms. Other plants with distinctive shapes like columnar cypress or with interesting flowers like bottlebrushes serve this function.



*Flowering groundcover, like the gazania above, bring color to your landscaping in spring*



*Use ground cover at the base of larger plants. Above is dusty miner at the base of an oleander bush*

### **Groundcover**

There are many water efficient alternatives to the grass lawn for use as ground cover. Wedalia, primrose, and myoporium provide good coverage and have the added benefit of flowering during the spring.



*Planting trees among ground cover, as demonstrated above help define the area between the sidewalk and building.*



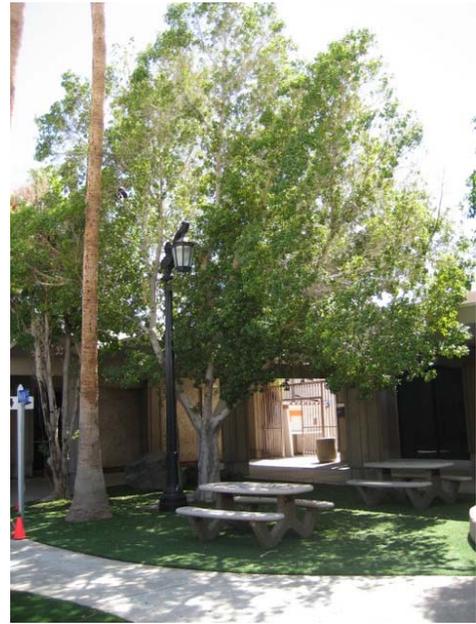
*A close up of the primrose in the preceding photo*

### **Border**

Border plants are used to define separate areas and serve as for a visual transition between hardscapes and vegetation or between walkways and walls. Plants used as groundcover also do well to define borders.



*Parking lots area perfect places for shade; they help cool the asphalt and cars while reducing their size.*



*A carefully placed shade tree increases the attractiveness for human use in an area.*

## Shade

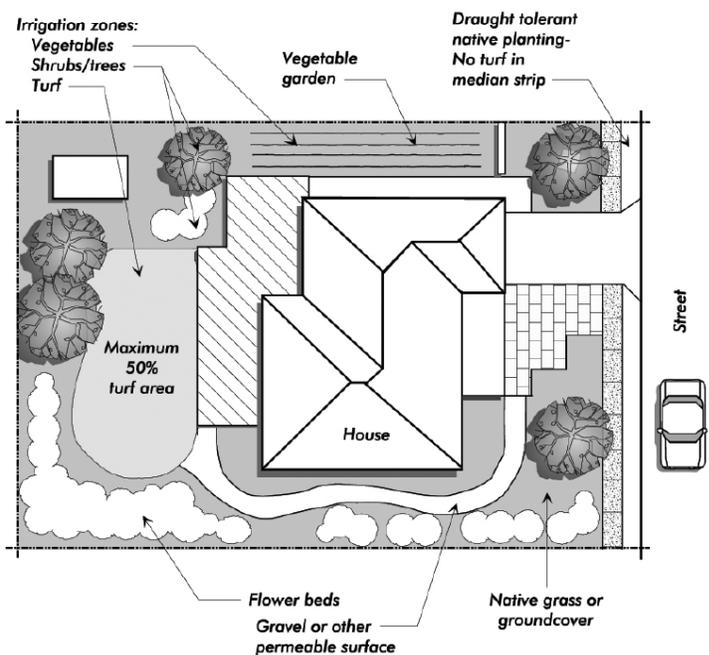
The careful planting of trees can provide much needed shade to humans and other plants. Shade has the added benefit of lowering energy costs by blocking sunshine. Providing shade over walls, a/c units, and windows can also decrease energy costs.

## XERISCAPING

Xeriscaping a landscaping concept with the goal of reducing water use. This doesn't necessary mean that one must use only arid climate vegetation , although this helps, but to use water efficiently using some of the following techniques.

### Appropriate Irrigation Methods

An important method to reduce unnecessary watering is to design using hydrozones. Hydrozones are areas with vegetation with similar water and sun needs; this reduces unnecessary watering of plants with lower water needs. Thus you will have a variety of hydrozones from high-use areas with grass, fruit trees, or bedding flowers to a hydrozone with lower water needs containing plants such as cacti, aloes, or palms. In order to maximize its effect it is important to reduce the areas of hydrozones as their water needs increase, so your grass lawn should be smaller than areas with arid plants.



*Xeriscape concept groups vegetation with similar water needs and limits the use of turf.*

**Proper maintenance**

Removing weeds and unwanted vegetation is important since they use up precious water and nutrients. Also, check if your irrigation system is properly functioning. Maladjusted or obstructed water emitters are common problems and waste water.

**Reduce use of lawn**

Grass lawns are the primary consumers of landscaping water. Limiting their use to smaller areas reduces water use as well as accentuating them. Take in consideration how much lawn you need for recreational purposes.

**Use of water-efficient plants**

Water efficient plants are better suited for Xeriscaping and there are many to choose from that thrive locally.

**Use of mulch**

Mulch around plants helps retain moisture and controls weeds. Soil compaction which increases water runoff can also be reduced with proper mulch.

# Recommended Plant List

## TREES

Name	Max Height (ft)	Max Spread (ft)	Water Need (WUCOLS)	Comments
<b>Abyssinica Acacia</b> Acacia abyssinica	20-25	20-25	Low	Slow growth to spreading, flat-topped or silhouette.
<b>African Sumac</b> Rhus lancea	15-30	15-35	Medium	Drought resistant. Hardy to 12° F. Susceptible to Texas root rot.
<b>Arizona Ash</b> Fraxinus velutina	30-45	25-45	Medium	Tree withstands hot, dry conditions and cold to about -10F°.
<b>Australia Willow</b> Geijera parviflora	25-30	20	Medium	Useful as patio tree or street tree.
<b>Australian Acacia</b> Acacia salicina	20-40	15	Medium	Fast growing tree with semi-weeping habit.
<b>Blue-Leaf Wattle</b> Acacia saligna	20-30	15-20	Medium	Screen for privacy or wind control.
<b>Bottle Tree</b> Brachychiton populneus	30-50	30	Medium	Susceptible to Texas root rot.
<b>Brazilian Pepper</b> Schinus terebinthifolius	15-30	15-30	Medium	Good shade tree for patio or small garden.
<b>California Fan Palm</b> Washingtonia filifera	60	10-15	Medium	Hardy to 18° F .
<b>California Pepper</b> Schinus molle	30-40	15-45	Medium	Tolerates drought once established.
<b>Carob Tree</b> Ceratonia siliqua	30-40	30-40	Low	Do not plant in narrow areas.
<b>Chaste Tree</b> Vitex agnus-castus	25-30	25-30	Medium	Good small shade tree.
<b>Chinese Elm</b> Ulmus parvifolia	40-60	50-70	Medium	Evergreen.
<b>Chinese Jujube</b> Ziziphus jujuba	20-30	20	Medium	Deciduous tree.
<b>Chinese Pistache</b> Pistacia chinensis	60	50	medium	Best in large areas.
<b>Chitalpa Tashkinensis</b> Chitalpa	20-30	20-30	Medium	Withstands low temperatures and grows quickly; excellent patio tree.
<b>Crape Myrtle</b> Lagerstroemia indica	30	25	Medium	Hardy to cold. Salt sensitive.
<b>Desert Ironwood</b> Olneya tesota	15-30	15-25	Low	Cannot endure prolonged freezes.
<b>Desert Willow</b> Chilopsis linearis	6-30	8-30	Medium	Grows fast at first.

## TREES (CONT)

Name	Max Height (ft)	Max Spread (ft)	Water Need (WUCOLS)	Comments
<b>Eucalyptus</b>	n/a	n/a	Low to Medium	Evergreen trees, many varieties.
<b>Evergreen Ash, Velutina</b> Fraxinus uhdei	40	n/a	High	Rapid growth, thrives in hot, dry climates.
<b>Feather Bush</b> Lysiloma thornberi	15-45	15-45	Medium	Takes desert heat and drought when established.
<b>Freemont Cottonwood</b> Populus fremontii	60	40	High	None.
<b>Jacaranda</b>	40	30	Medium	Younger plants are tender below 25° F.
<b>Mediterranean Fan Palm</b> Chamaerops humilis	20	20	Medium	Hardest palm tree.
<b>Mexican Fan Palm</b> Washingtonia robusta	100	10	Medium	Slender trunk.
<b>Olive Tree</b> Olea europaea	25-30	25-30	Medium	Many varieties.
<b>Osage Orange</b> Maclura pomifera	20	20	Medium	Can stand heat, cold, wind, drought, poor soil and moderate alkalinity.
<b>Persian Mulberry</b> Morus nigra	30	n/a	Medium	Takes drought once established.
<b>Pine Trees</b> Pinus	n/a	n/a	Low to High	Evergreen trees, many varieties.
<b>Raywood Ash</b>	30-40	n/a	Inapropriate	No invasive roots.
<b>Silk Tree</b> Albizia julibrissin	40	up to 40	Medium	Excellent patio tree.
<b>Smoke Tree</b> Dalea spinosa	30	10-15	low	None.
<b>Smooth Arizona Cypress</b> Cupressus glabra	40	20	Low	Drought resistant when established.
<b>Southern Live Oak</b> Quercus virginiana	40-60	40-80	Medium	Best oak for lawn planting in low desert.
<b>Sweet Acacia</b>	30-35	15-25	Low	Durable to frost.
<b>Tamarisk</b> Tamarix aphylla	30-50	25-50	Low	Resistant to wind and drought.
<b>Texas Ebony</b> Pithecellobium flexicaule	30	15	Low	Do not plant near sidewalks.
<b>Texas Honey Mesquite</b> Prosopis Glandulosa	15-30	15-30	Low	Different varieties.
<b>White Mulberry</b> Morus alba	35	35	Medium	Heavy surface roots. Do not plant along parkways.

**GROUNDCOVER**

Name	Max Height (ft)	Max Spread (ft)	Water Need (WUCOLS)	Comments
<b>Beard Tongue</b> Penstemon sp.	n/a	n/a	Medium	None.
<b>Carpet Bugle</b> Ajuga reptans	n/a	n/a	High	High water use.
<b>Centennial Coyote Bush</b> Baccharis centennial	1-3	6-8	Low	Tolerates desert heat.
<b>Dalea Greggii</b> Trailing Indigo Bush	1	3	low	Fast-growing Evergreen.
<b>Desert Carpet</b> Acacia redolens	2-5	12-15	Low	Endures drought and heat.
<b>Dwarf Rosemary</b> Rosmarinus officinalis prostratus	2	8	Medium	Cold hardy.
<b>Gazania species</b>	n/a	n/a	Medium	None.
<b>Ice Plant</b> Malephora crocea	6	1 1/2	Low	Good for erosion control.
<b>Lantana Rigens</b>	n/a	n/a	Medium	None.
<b>Mexican Evening Rose</b> Oenothera berlandieri	1	3	Medium	1 1/2 in flowers are carried on stems 10-12 inches high.
<b>Mondo Grass</b> Ophiopogon japonicus	n/a	n/a	Medium	Slow to establish as ground cover.
<b>Phyla Nodiflora</b> Lippia	n/a	n/a	Medium	Serves as lawn. Flowers attract bees. Unattractive in winter.
<b>Pink Clover Blossom</b> Polygonum capitatum	6	20	Medium	Will endure drought once established.
<b>Prostate Firethorn</b> Pyracantha santa cruz	3	5	Medium	Cold hardy.
<b>Prostrate Myoporum</b> Myoporum parvifolium	4	4	Medium	Moderately drought resistant.
<b>Psilostrophe Tagetina</b> Papel flower	n/a	n/a	Low	None.
<b>Purple Trailing Lantana</b> Lantana montevidensis	1 1/2	6	Medium	Hardy to 25°F.
<b>Snow in Summer</b> Cerastium tomentosum	6	2-3	Medium	Evergreen.
<b>Spring Cinquefoil</b> Potentilla tabernaemontani	6	18	Medium	Evergreen.

**GROUNDCOVER (CONT)**

<b>Name</b>	<b>Max Height (ft)</b>	<b>Max Spread (ft)</b>	<b>Water Need (WUCOLS)</b>	<b>Comments</b>
<b>Trianglelead Bursage</b> Ambrosia deltoidea	1-2	1-3	Low	None.
<b>Verbena</b> Verbena species	flat mat	2	Medium	Many varieties.
<b>Wedelia</b>	n/a	n/a	Medium	None.
<b>White Bursage</b> Ambrosia dumosa	2-3	2-3	Low	None.

**SHRUBS**

Name	Max Height (ft)	Max Spread (ft)	Water Need (WUCOLS)	Comments
<b>Agave sp.</b>	n/a	n/a	Low	None.
<b>Aloe sp.</b>	n/a	n/a	Low	None.
<b>Baja Ruellia</b> Ruellia peninsularis	2-4	2-4	Medium	Drought tolerant once established.
<b>Bear Grass</b> Nolina microcarpa	3	6	Low	None.
<b>Bird of Paradise</b> Strelitzia reginae	n/a	n/a	Medium	None.
<b>Bougainvillea Shrubs</b> Bougainvillea species	30	30	Medium	Evergreen. Cannot withstand frost.
<b>Coral Fountain</b> Russelia equisetiformis	3-6	4	Medium	None.
<b>Coyote Willow</b> Salix exigua	n/a	n/a	Medium	None.
<b>Creosote Bush</b> Larrea tridentata	4-12	4-12	Low	Evergreen. Cold hardy.
<b>Dasyilirion sp.</b>	n/a	n/a	Low	None.
<b>Deer Grass</b> Muhlenbergia rigens	4	4	Medium	None.
<b>Desert Honeysuckle</b> Anisacanthus sp.	3-5	4	Low	None.
<b>Fairy Duster</b> Calliandra eriophylla	1-3	3-4	Low	Evergreen. Hardy to 25° F. Drought resistant once established.
<b>Feathery Cassia</b> Cassia artemisioides	3	n/a	Medium	Other cassia varieties are also notable.
<b>Firethorn</b> Pyracantha fortuneana	n/a	n/a	Medium	Evergreen shrub.
<b>Fountain Grass</b> Pennisetum setaceum	3-4	3-4	Low	None.
<b>Giant Bird of Paradise</b> Strelitzia nicolai	n/a	n/a	Medium	None.
<b>Heavenly Bamboo</b> Nandina domestica	5-8	n/a	Medium	Vertical growth habit.
<b>India Hawthorn</b> Raphiolepis indica	3-5	3-5	Medium	Other varieties also suitable for the City. High water use.
<b>Jojoba</b> Simmondsia chinensis	6	6	Low	Needs little water.
<b>Juniper</b> Juniperus species	n/a	n/a	Low to Medium	Evergreen. Many varieties do not tolerate desert heat.
<b>Lantana Camara</b>	1.5	3-4	Medium	None.

**SHRUBS (CONT)**

Name	Max Height (ft)	Max Spread (ft)	Water Need (WUCOLS)	Comments
<b>Lindheimer's Muhlygrass</b> Muhlenbergia lindheimeri	3-5	3-5	Medium	None.
<b>Little Leaf Cordia</b> Cordia parvifolia	4-8	4-10	Low	None.
<b>Mangle Dulce</b> Maytenus phyllanthoides	n/a	n/a	Medium	None.
<b>Mediterranean Fan Palm</b> Chamaerops humilis	n/a	n/a	Medium	None.
<b>Mexican Bird of Paradise</b> Caesalpinia mexicana	10-15	10	Low	Evergreen shrub or small tree.
<b>Natal Plum</b> Carissa macrocarpa	5-7	5-7	Medium	None.
<b>Oleander</b> Nerium oleander	3-20	3-12	Medium	Evergreen shrubs. Many varieties. Basic shrub for the desert.
<b>Pampas Grass</b> Cortaderia sellowana	15	10	Low	None.
<b>Pigmy Date Palm</b> Phoenix roebelenii	6	3	Medium	None.
<b>Red Bird of Paradise</b> Caesalpinia pulcherrima	4-10	4-6	Medium	Deciduous shrub. Grows fast.
<b>Red Salvia</b> Salvia greggii	3-4	3-4	Medium	Other varieties also suitable for the City.
<b>Rose</b> Rosa varieties	n/a	n/a	Medium to High	Deciduous. High water use. Many varieties are available.
<b>Rosemary</b> Rosmarinus officinalis	4-6	4-8	Medium	Flowers attract bees.
<b>Sage</b> Salvia sp.	n/a	n/a	Medium	None.
<b>Scarlet or Smooth Sumac</b> Rhus glabra	n/a	n/a	Medium	None.
<b>Senna sp.</b>	3-6	3-6	Low to Medium	None.
<b>Shiny Xylosma</b> Xylosma congestum	8-15		M	Adaptable to most soils. Heat resistant.
<b>Small Soapweed</b> Yucca glauca	3	3	L	None.
<b>Soaptree Yucca</b> Yucca elata	2-6	8	L	None.
<b>Star Jasmine</b> Trachelospermum jasminoides	n/a		Medium	None.

**SHRUBS (CONT)**

<b>Name</b>	<b>Max Height (ft)</b>	<b>Max Spread (ft)</b>	<b>Water Need (WUCOLS)</b>	<b>Comments</b>
<b>Texas Ranger</b> Leucophyllum frutescens	4-8	4-8	Low	Takes any degree of heat and wind.
<b>Trailing Indigo Bush</b> Dalea greggii	2	6-9	Low	Excellent ground cover for desert.
<b>Variegated Dwarf Myrtle</b> Myrtus communis 'compacta'	5-7	4-6	Medium	None.
<b>Yellow Bush Daisy</b> Euryops pectinatus	6	n/a	Medium	Easy maintenance and extremely long flowering season.
<b>Yellow Oleander</b> Thevetia peruviana	6-8	8	Medium	Evergreen. Loves heat and sun.
<b>Yucca</b> Hesperaloe sp.	n/a	n/a	Low	None.