Culver City Urban Forest Master Plan

City of Culver City, California, 2015

master plan team

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acknowledgements

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1 executive summary

This Master Plan reflects the commitment of the entire Culver City community to foster a robust and resilient urban forest today and for the future. As the ecosystem of plants and people in the city, the urban forest affects each of our lives directly. It offers important environmental and social benefits, and enhances the character of the streets, neighborhoods, and public places in the City. Culver City has inherited an extensive, beautiful urban forest from previous generations; many current residents were originally drawn to Culver City or selected their home because of the City's majestic, mature tree canopy. In recent years, the City has renewed its commitment to shaping a vibrant, healthy, and sustainable urban environment for its residents, workers, and visitors. The Urban Forest Master Plan is an important part of these efforts, empowering the City to build on its existing strengths and and to strategically plan for the future, so that the community will continue to benefit from a beautiful and healthy urban forest.

When we discuss and plan for the urban forest, there are several scales to consider: large (the urban environment), medium (urban places), and small (urban plants). At the large scale, the urban forest shapes the environment and identity of the City, offers numerous ecosystem benefits, and helps to orient us as we navigate the City. At the medium scale, the urban forest shapes the places where we live, gather, do business, and recreate. At the small scale, thoughtful species selection, planting, and maintenance allow urban plants to thrive.

Community involvement was critical for the development of the Plan and will continue to be crucial for acheiving its goals. When a community recognizes the value of its urban forest, it is more likely to place priority on its management and development. The high level of community engagement in this process reflects the profound concern of City residents for the urban forest and larger environment.

The Plan articulates a clear vision for the future of Culver City's urban forest based on analysis of the City's historical and existing urban forest, as well as on synthesis of current reasearch, best management practices and community input. The Plan provides guiding principles for both long-term and day-to-day management, comprehensive tree designations, technical standards, and resources for City and community members.

The Plan reflects current best practices, technologies, and city policies while allowing for future revision to maintain its relevance for the next 50 years. The Plan will be evaluated and revised periodically to reflect evolving conditions, new information, and updated best management practices. The Plan is designed to support Culver City's environmental goals in regards to stormwater management and carbon sequestration; it also envisions increased shade for pedestrians and motorists, improved air quality, and increased opportunity for healthy recreation.

By planning for the urban forest, the City will ensure that it maintains this valuable resource, an investment that will provide consistent returns well into the future. Cost-benefit analyses demonstrate tangible benefits such as reduced costs for heating and cooling, higher real estate values, improved water quality, and reduced pollution.

Culver City is known for its history, culture and beauty; increasingly it is also known as a forward-thinking community with a vibrant, healthy urban environment. This Master Plan will offer important tools to aid the City in attaining its overall environmental and urban design goals.

mission statement

The Mission of the Urban Forest Master Plan is to foster a robust and resilient urban forest today and in the future, so that the community will continue to enjoy the important environmental and social benefits it offers. The Urban Forest Master Plan is an important part of the commitment of the City and community to shaping a vibrant, healthy, and sustainable urban environment for its residents, workers, and visitors.

2 introduction

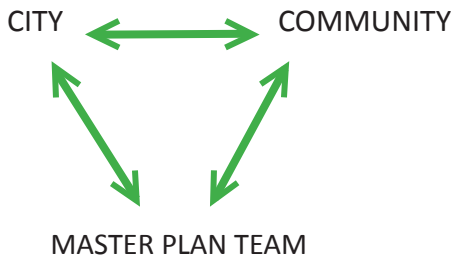
background + process

The City of Culver City initiated the Urban Forest Master Plan process to fill a pressing need for a comprehensive long-term management plan, robust tree designations (a list indicating tree species to be planted on each street segment when an existing tree must be removed), clear policies, and extensive best management practices for tree planting, preservation, and maintenance. In addition, the City sought to establish a dynamic community dialogue in order to gather residents' input, offer education, and promote stewardship of the urban forest.

This Plan replaces the existing Street Tree Master Plan (2002); the new Plan has a greatly expanded scope.

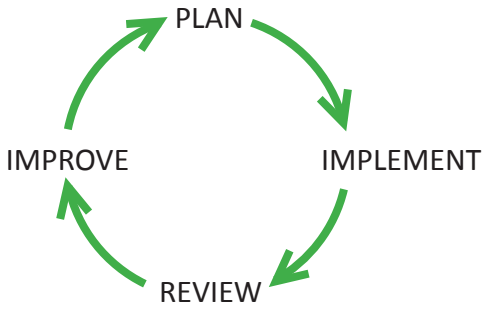
The Plan was funded primarily by a CalFire grant as part of its Urban or Community Forest Management Plan Grant Program, with additional funds from the City of Culver City.

A Collaborative Process



The Plan was the result of a collaboration between the City of Culver City Deparment of Public Works, the Consultant Team led by ARTECHO Architecture and Landscape Architecture, and the Culver City community.

A Continuous Improvement Cycle



As this diagram illustrates, the Master Plan is not a static, final product; rather, it is a significant step forward that will be implemented, reviewed, and evaluated over time as part of a Continuous Improvement Cycle.

coordination with related city documents

The Urban Forest Master Plan is supported by and reinforces other City documents, plans, and policies, especially the closely related documents listed to the right. The following is a list of themes from other City documents that are particularly relevent to the goals set forth in the Urban Forest Master Plan:

The City and its residents are committed to supporting a healthy urban environment

The community engagement process for this Plan and for the PRMP noted that City government and residents are strongly interested in environmental stewardship. Residents understand that City decisions and initiatives can have a positive impact on larger environmental issues.

The City supports walking and biking

Culver City has a goal to create a more pedestrian- and bike-friendly urban environment (BPMP 1, 3, 8). Street trees support this goal by providing much-needed shade and by calming traffic.

The urban forest shapes important links to transit, work, recreation, and commerce

The urban forest is an important part of urban design in Culver City; it "links neighborhoods and businesses, and installs civic pride (GP-OSE 7).

The urban forest shapes a park-like environment in the city

Culver City is short of its goal of providing 10 acres of parkland for each 1000 residents (PRMP 8). A robust urban forest can mitigate this lack of parkland by helping to create green, vibrant, pedestrian- and bike-friendly streets (GP-OSE 11, 16). The public trees in Culver City make a significant contribution to the character of the City and its sense of place (GS-OSE 7).

The urban forest should strengthen urban ecology and habitat

Culver City contains significant habitat resources worthy of perservation (GP-OSE 6, 15; PRMP 7.3.11). The Urban Forest Master Plan addresses the ecological heritage of the City and proposes a conceptual ecological framework that could strenghten habitat and urban ecology. Furthermore, the Plan addresses ecosystem issues like water quality and replensishment of groundwater.

RELATED CITY DOCUMENTS

2010 - Bicycle and Pedestrian Master Plan | BPMP

2009 - Parks and Recreation Master Plan | PRMP

1995 - General Plan
- Open Space Element | GP-OSE
- Circulation Element | GP-CE
- Land Use Element | GP-LUE

THE PLAN SUPERCEDES THESE DOCUMENTS

2002 - Street Tree Master Plan

DOCUMENTS LINKED TO THE PLAN

2012 - Street Tree Inventory

what is the urban forest?

The urban forest is the ecosystem of plants and people in the city

The concept of the "urban forest" is relatively new, although what it describes- the ecosystem of plants and people in the city- is as old as cities themselves[1]. The term is not always immediately understood, so it is useful to examine it more closely.

The Urban Forest Is An Ecosystem

The term "urban forest" puts emphasis on the ecosystem (the interconnected system of living and non-living elements), whereas the term "street trees" emphasizes trees as isolated objects. When we use the phrase "urban forest" we are talking about more than just street trees; we are also talking about the connections between people, plants, air, water, animals, and climate in the city. This allows for a larger scope of thinking, management, and planning; this approach relates urban plants to broader goals for resource management, conservation, and ecosystem health.

Urban Forestry Is A Multidisciplinary Field

The concept of the urban forest and the field of urban forestry emerged in the 1970s[2], reflecting the paradigm shift that accompanied the development of the concept of ecology. Ecology recognized the importance of studying the interconnections between organisms and communities. Just as the term "urban forest" describes an interconnected system, so too does the field of urban forestry create connections among diverse fields of knowledge and practice, including horticulture, arboriculture, urban design, landscape architecture, history, conservation, and government.

The Urban Forest is a Cultural Resource

In some places, the urban forest includes significant remnants of natural forests, however, in most places (including Culver City) the majority of plants in the city are planted and managed by people. People create the urban forest as a way to make the city more comfortable and more beautiful: planting an allee of trees along a street tranforms this utilitarian public infrastructure into an amenity[3]. There is a long history of plants being used in urban design to shape the form and function of the city.

small scale | URBAN TREES

medium scale | URBAN PLACES

large scale | URBAN ENVIRONMENT

The urban forest includes the small, medium, and large scales

In planning for and managing the urban forest, it is vital to understand each scale and how it impacts the others.

small scale | URBAN TREES

At the small scale, the urban forest is composed of many individual trees. In planning for the urban forest, managers decide which tree species are suitable for the city and which will be planted on each street segment. Urban forestry also considers the best practices for planting and maintaining trees in the city, and how to address challenges to urban trees like drought, disease, and potential conflicts with infrastructure.

medium scale | URBAN PLACES

At the medium scale, trees shape places in the city, including public spaces, residential neighborhoods, landmarks, views, and streetscapes. In Southern California, trees provide much-needed shade so that people can enjoy urban places, inviting people to gather, shop, relax, or be active. Part of planning for the urban forest is appreciating how trees already shape places in the city, and where there is potential for planting to improve (or to shape new) places.

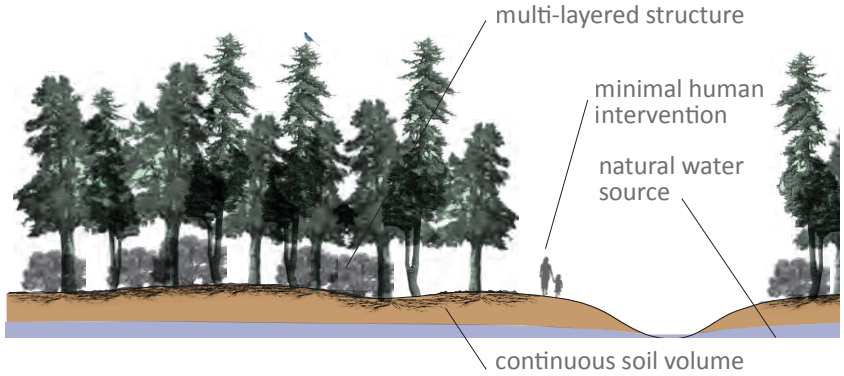
large scale | URBAN ENVIRONMENT

At the large scale, the urban forest shapes the environment of the city, including air and water quality, climate and microclimate, transportation and wayfinding, and overall city character and identity. Urban forestry considers these “big-picture” issues and systems which significantly impact cities and their inhabitants, as well as the larger environment.

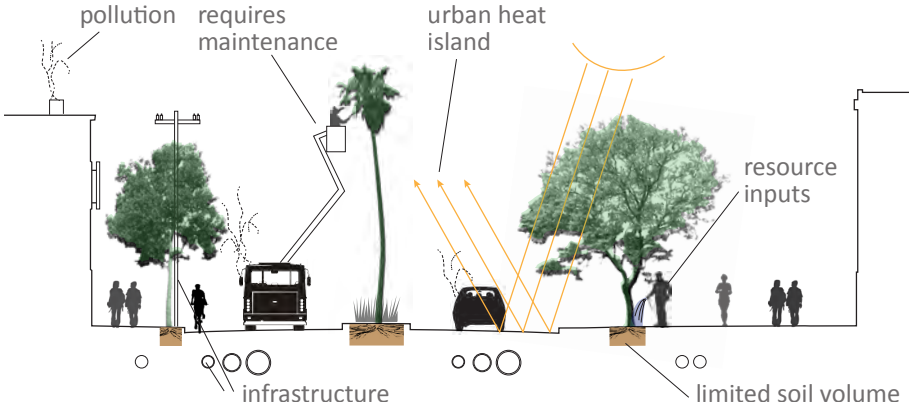
how is an urban forest like and unlike a rural forest?

When people hear the word “forest” they often think of a rural forest of mature trees, apparently untouched by humans, rather than of a collection of trees distributed throughout a city and managed by people. So what does it mean to use the word “forest” in this way, and how is an urban forest similar to and different from a rural forest? As discussed previously, the term “urban forest” is used to describe all the plants in a city in a holistic way and to place emphasis on the ecosystem or relationships among plants, people, and non-living elements like air and water. Some of the specific ways that an urban forest is like and unlike a rural forest are outlined below.

Rural Forest



Urban Forest



	Rural Forest	Urban Forest
ECOLOGICAL PROCESSES	For the most part, processes are natural, including competition and ecosystem change	Processes are altered by people and urban conditions
HABITAT VALUE	Provides valuable habitat for species that require large expanses of undisturbed ecosystems (forest species)	Provides habitat for people and for animals that can thrive in the city (urban species)
ENVIRONMENTAL STRESSES	Pests, disease, fire, drought	Pests, diseases, drought, pollution, compacted soil and small grow spaces, urban heat island
HUMAN INVOLVEMENT	For the most part, minimal	Planting, maintenance, resource management
PLANTING STRUCTURE	Often includes canopy, understory, shrub and groundcover layers	Often includes only canopy layer, sometimes others

benefits of the urban forest

ENVIRONMENTAL

Improved Water Quality
Tree leaves, and the soil around trees, intercept rain water, and tree roots take up rain water, thus reducing the amount of stormwater runoff that flows over polluted urban surfaces before flowing into rivers and oceans.

Improved Air Quality
Trees improve air quality by reducing ground-level ozone, intercepting particulate matter, and taking up gaseous pollutants like carbon monoxide, nitrogen oxides, and sulfur dioxide[4]. Trees also improve air quality by reducing energy demand, thus reducing emissions from power plants.

Strengthened Habitat
Trees and plants provide important habitat for insects, birds, and mammals. Much of the original ecosystem in the Los Angeles region has been vastly altered, so it is important to consider ways that cities can provide habitat value. Habitat is important for supporting larger goals of biodiversity and ecosystem health.

Climate Change Mitigation
Trees remove carbon from the atmosphere and store it in their cells through the process of photosynthesis. Even with carbon dioxide releases associated with tree maintenance and decay, trees still contribute to a significant net carbon reduction[4].

SOCIAL + CULTURAL

Improved Health + Wellness
Extensive research has shown that experiences with plants and landscapes can improve mood, reduce stress, support the ability to focus, and can bolster social connections[5]. The urban forest may also encourage walking and biking, especially in hot climates like Southern California.

Strong City Identity
Many participants in the planning process commented that they were drawn to Culver City because of its well-maintained, beautiful mature trees. Trees also strongly contribute to the "legibility" of a city-- they can help provide structure to the urban landscape in a way that helps people feel oriented and connected to their surroundings[6].

Vibrant Public Places
In Culver City and around the world, many of the most well-loved public places are shaped by trees. People are drawn to these spaces for their beauty, comfortable microclimates, and for the connection to plants and other living things[7].

ECONOMIC

Increased Property Values
iTree analysis indicates that a large percentage of the value of the urban forest results from tree's effect on increasing the value of property. Increased property values indirectly reflect the various benefits trees offer, especially in terms of beauty, health, and neighborhood character.

Bolstered Local Economy
Studies have shown that trees in business districts improve shoppers' experience and that shoppers are willing to pay more for items sold in districts with plants and trees[8].

Decreased Energy Spending
In hot weather, trees cool buildings and cars and reduce the urban heat island effect; in cold weather, they also help to mitigate winds. By reducing the demand for cooling and heating, the urban forest leads to descreased energy demand and spending.

challenges and costs in the urban forest

As with any resource, there are costs and challenges involved with the urban forest, in addition to the many benefits it provides.

INHERENT CHALLENGES

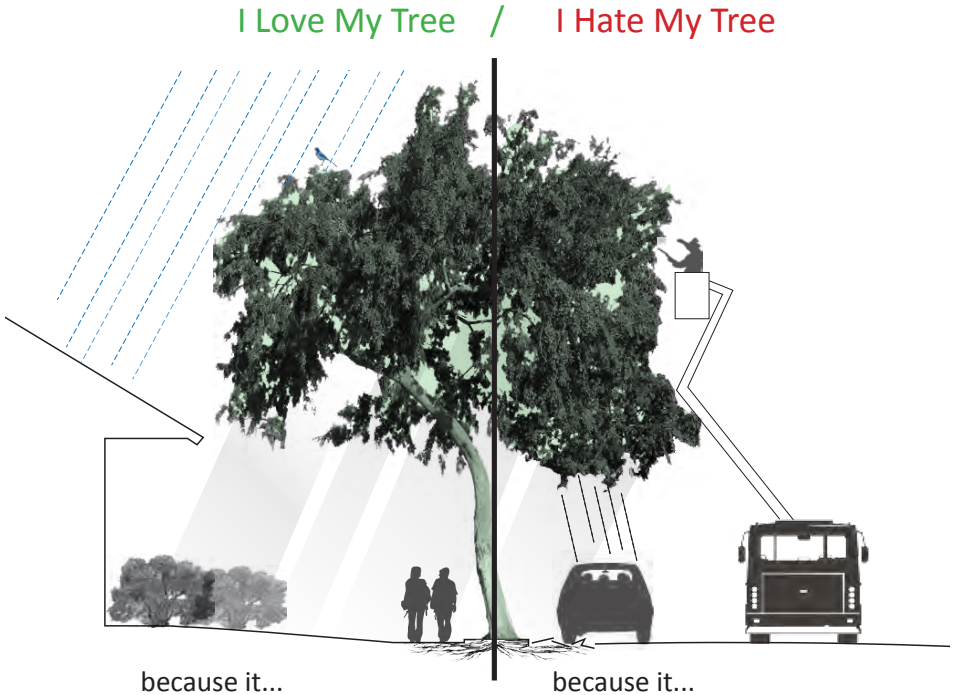
In the juxtaposition of two extremes, the term "urban forest" itself suggests some of the challenges inherent in managing plants in the city[9]. In most places around the world, streetscapes were not designed in a way that supports healthy tree growth; as a result, conflicts can arise between trees and urban infrastructure[10]. Furthermore, trees in cities are challenged by pollution including carbon monoxide, sulfur dioxide, ozone gases, and road salt, and also by poor, polluted, compacted soils; increased heat from glare, and often restricted planting space and soil volumes[11].

CONFLICTING GOALS

Another challenge in the urban forest is managing conflicting goals for the overall urban forest, or for one particular place. For example, the goal for beautiful and orderly aesthetics could conflict with the goal for habitat creation; similarly, the goal for energy reduction (shading buildings) could conflict with fire safety (maintaining defensible space). Urban forest managers must carefully weigh these goals in the planning and decision-making process.

MINIMIZE CHALLENGES, MAXIMIZE BENEFITS

In planning for and managing the urban forest, the goal is to minimize costs and challenges while maximizing the benefits. Chapter 4 of this Plan includes multiple, robust strategies for how to do this in Culver City.

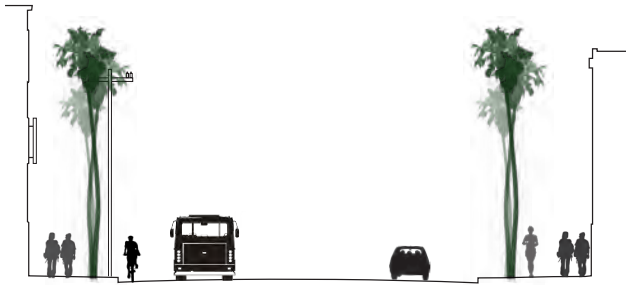


People often have strong feelings about trees! People often either love "their" tree, or hate it, or both. It is important to understand the diverse benefits and challenges of urban trees in order to maximze their benefits and minimize the costs. As the list above suggests, some of the benefits are not immediately visible, so public education is necessary in order to explain the full value of the urban forest.

typologies in the urban forest: A Vocabulary for Planted Form and Composition

To discuss the urban forest, it is useful to have a shared vocabulary to describe characteristics of form as well as species and age composition. Some helpful terms are illustrated here.

planted form | How trees shape spaces, create places, and provide wayfinding



ALLEE | A street or walkway bordered on each side by a row of trees of the same species.

An allee can mark an important route or frame a special view.

example: Palm allee on Washington Blvd

DOUBLE ROW | As the name suggests, two rows of trees of the same species.

A double row can shape a beautiful and comfortable pedestrian enviroment.

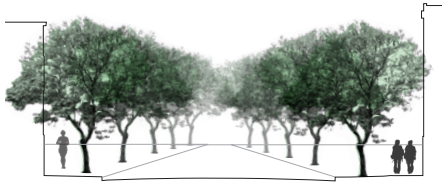
example: Jacarandas on Culver Blvd downtown

BOSQUE OR GROVE | A group of trees of the same species planted with regular spacing (for a bosque) or irregular spacing (for a grove).

A bosque or grove can mark a significant gateway or shape a welcoming place.

example: Eucalyptus grove in Culver City Park

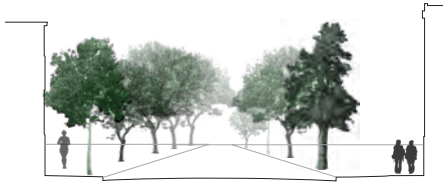
composition | How species and age characteristics define different types within the urban forest



MATURE MONOCULTURE

A planting of a single species with trees that are all full-grown

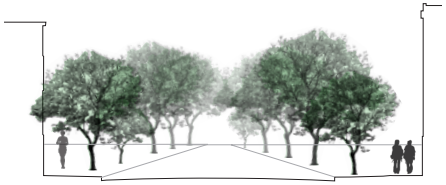
This type can be very beautiful, but lacks age and species diversity



MATURE MIXED PLANTING

A planting of several species with trees that are all full-grown

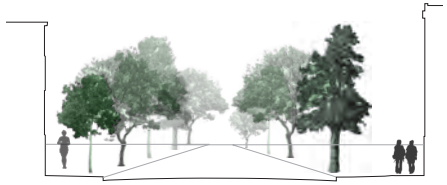
This type has species diversity but lacks age diversity



VARIOUS AGES, MONOCULTURE

A planting of a single species with trees of various ages

This type has age diversity but lacks species diversity



VARIOUS AGES, MIXED PLANTING

A planting of a several species with trees of various ages

This type has age diversity but lacks species diversity

endnotes

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10. Moll, p. 3.

11. Bradley, p. 7.

3 Culver City's urban forest

Culver City's urban forest heritage: preserving our heritage, planning for the future

Courtesy Friedan Collection, Culver City Archives

1947

Courtesy Friedan Collection, Culver City Archives

1970s

2014

We have inherited the urban forest from previous generations. The image on the left, from the Culver City Archive, shows Marilyn Freidan celebrating her mother Bessie's success in initiating street tree planting on Reid Avenue[1]. In the later photos, we can see how these Chinese Elm trees have transformed the streetscape over time. This kind of effort and investment in the future has built a strong urban forest in Culver City today. The Master Plan is an important step for protecting this heritage and developing it for the future.

Culver City's urban forest heritage: an evolving landscape | photos

Historic photos are a useful source of information about Culver City's evolving landscape. While few written records exist about tree planting in the City, these photos reveal some interesting information about how the urban forest developed over time.

Ballona Creek, undated
Herald-Examiner Collection, Los Angeles Public Library

This photo shows riparian vegetation (shrubs and trees) along the edge of Ballona Creek.

View of Culver City looking north, 1924
Los Angeles Public Library

This view from Baldwin Hills across Ballona Creek shows residential development beginning to fill in the street grid. Some young and maturing street trees line parts of residential neighborhoods. Culver Hotel and a studio complex are visible Downtown. The regular planting of deciduous trees on this side of the Creek were likely orchards, situated to benefit from the nearby fresh water source.

Fishing in Ballona Creek, 1938
Los Angeles Public Library

The formwork visible in this photo indicates that the concrete Creek channel was still under construction when this photo was taken. In this Depression era-photo, the men are fishing after a heavy rain washed fish from Silver Lake into the Creek.

Lucerne-Higuera neighborhood, 1956
Public Works Department, Culver City

This photo shows the studio at Ince and Washington (Desilu-Culver Studios at the time of this photo, now The Culver Studios). Many of the streets to the north of Ince were planted with Chinese Elms; many of the streets to the south were planted with Deodar Cedar, which appear as larger, darker canopies here. Aerial photos show that many street trees were planted at the time of development, so that the age of the development roughly correlates to the age of the street trees. In some cases different species reflect different periods of development. In Carlson Park, for example, the portion north of Farragut was developed and planted (primarily with Chinese Elms) before the portion to the south (planted primarily with Indian Laurel Fig).

Downtown Culver City, 1976
Public Works Department, Culver City

This photo shows Downtown Culver City before the revitalization of the 1990s which widened sidewalks, added Jacaranda trees, and created the pedestrian plaza at the Culver Hotel. Note that there are few if any street trees on the major corridors around Downtown.

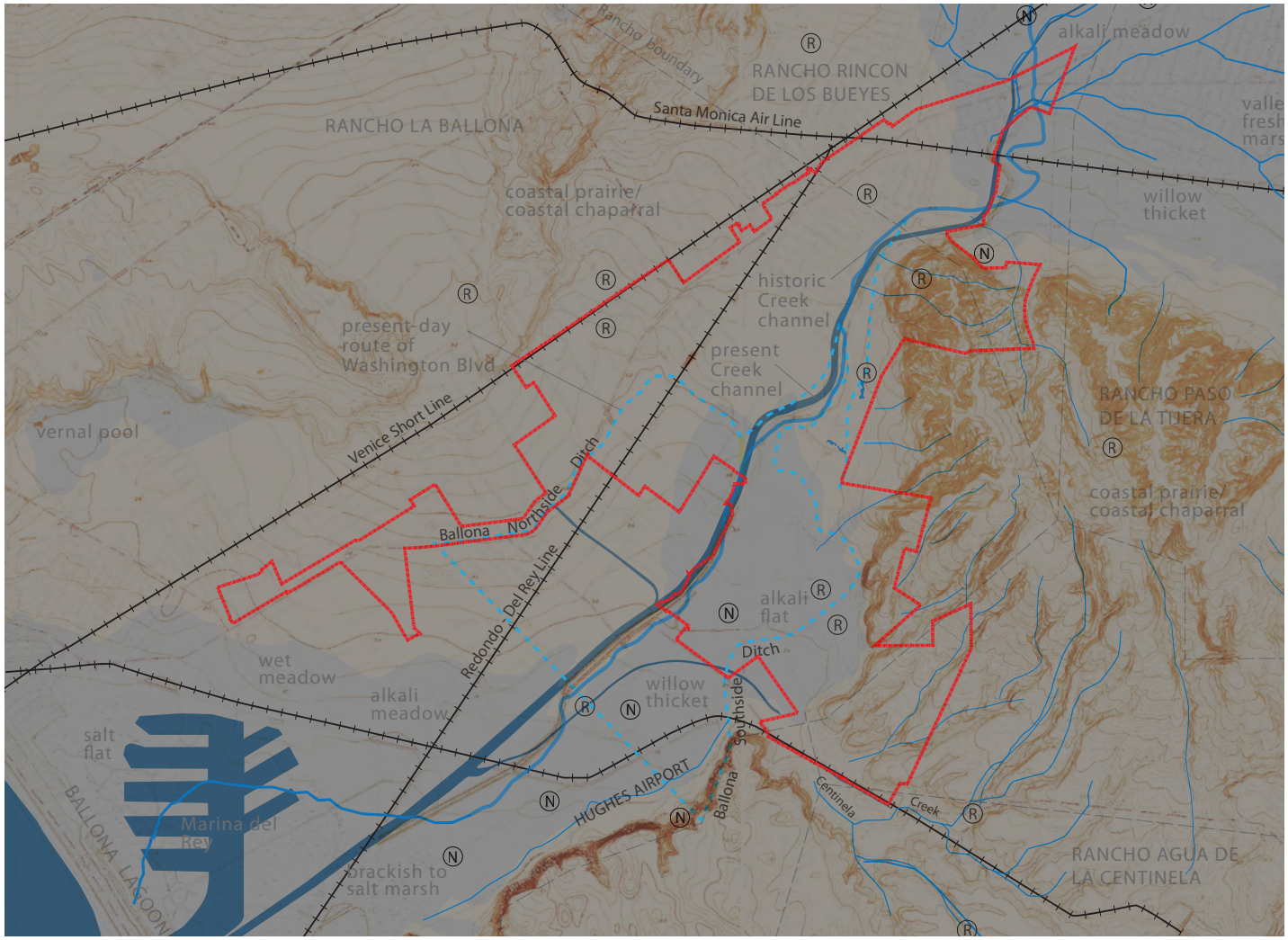
Sepulveda, Washington Pl and Blvd, 1980
Public Works Department, Culver City

Even as late as the 1980s, there were few street trees on major corridors in Culver City. The recently-planted Mexican Fan Palms are visible here on Washington Place and Blvd.

Culver City's urban forest heritage: an evolving landscape | maps

As the urban forest can be defined as the ecosystem of plants and people in the city, the history of the urban forest traces changes over time in this ecosystem and human community. This history can reveal significant information about how the City developed its current form and how humans have shaped the land over time. The history of Culver City parallels that of the larger Los Angeles region, tracing a familiar historic arc from native landscape and settlements, to rancho farming, early development, rapid growth, and urban revitalization.

This diagram illustrates some of Culver City's most significant landscape features from various times in history. The City's current form was shaped by major landscape features such as the Baldwin Hills (forming the eastern boundary), Ballona Creek, and the irrigation ditch, or zanja, (Washington Blvd follows the route of the former zanja) and the Pacific Electric Lines (now Venice and Culver Blvds). The ecology of the area changed dramatically over time due to both natural causes and human actions, such as the agricultural practices of the Rancho area, and later urban development.



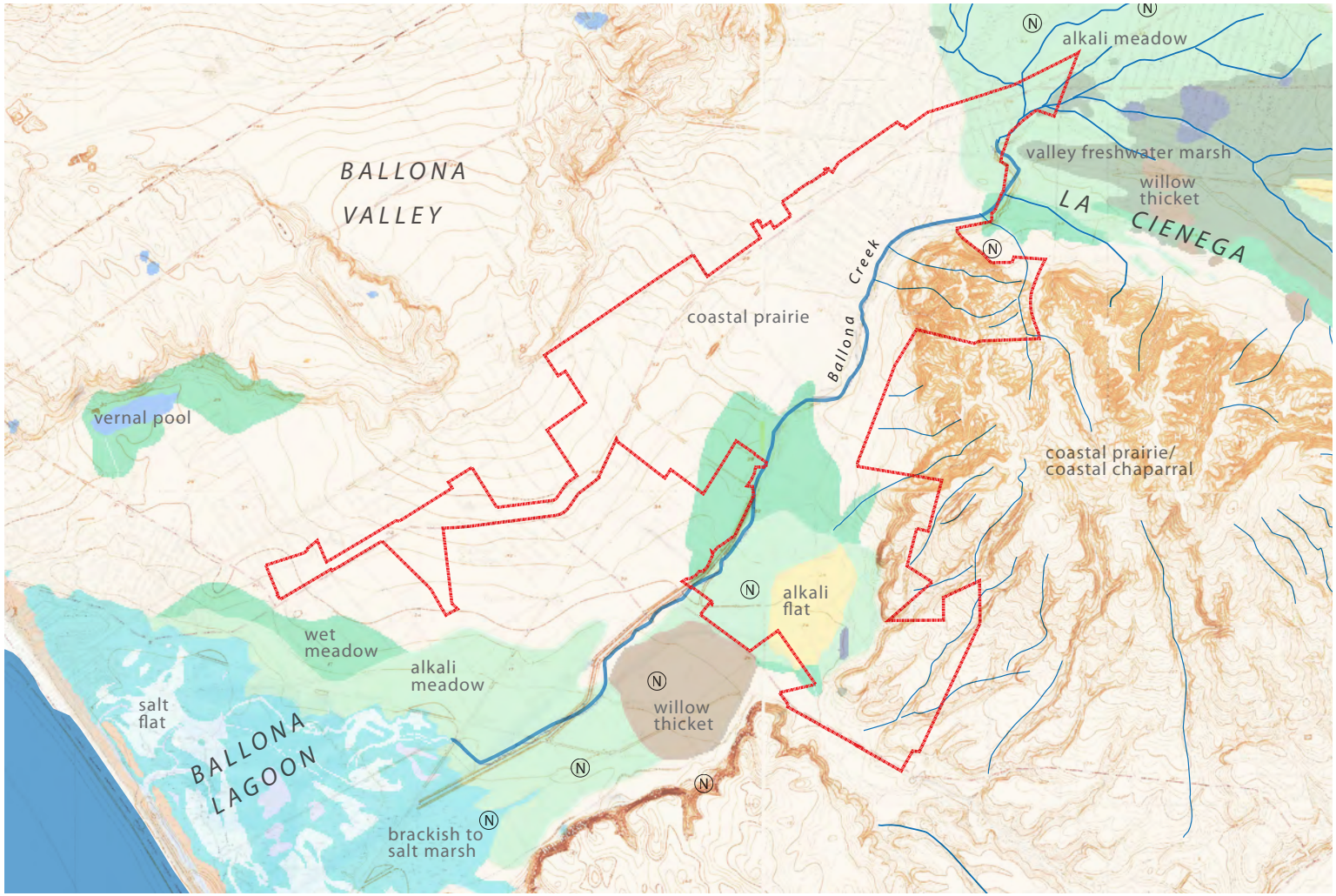
Layers of History in Culver City

Note that this map includes significant landscape features from different time periods; see maps on the following pages for more information.

- (N) native villages
- (R) rancho houses
- railroads
- zanja (irrigation ditch)

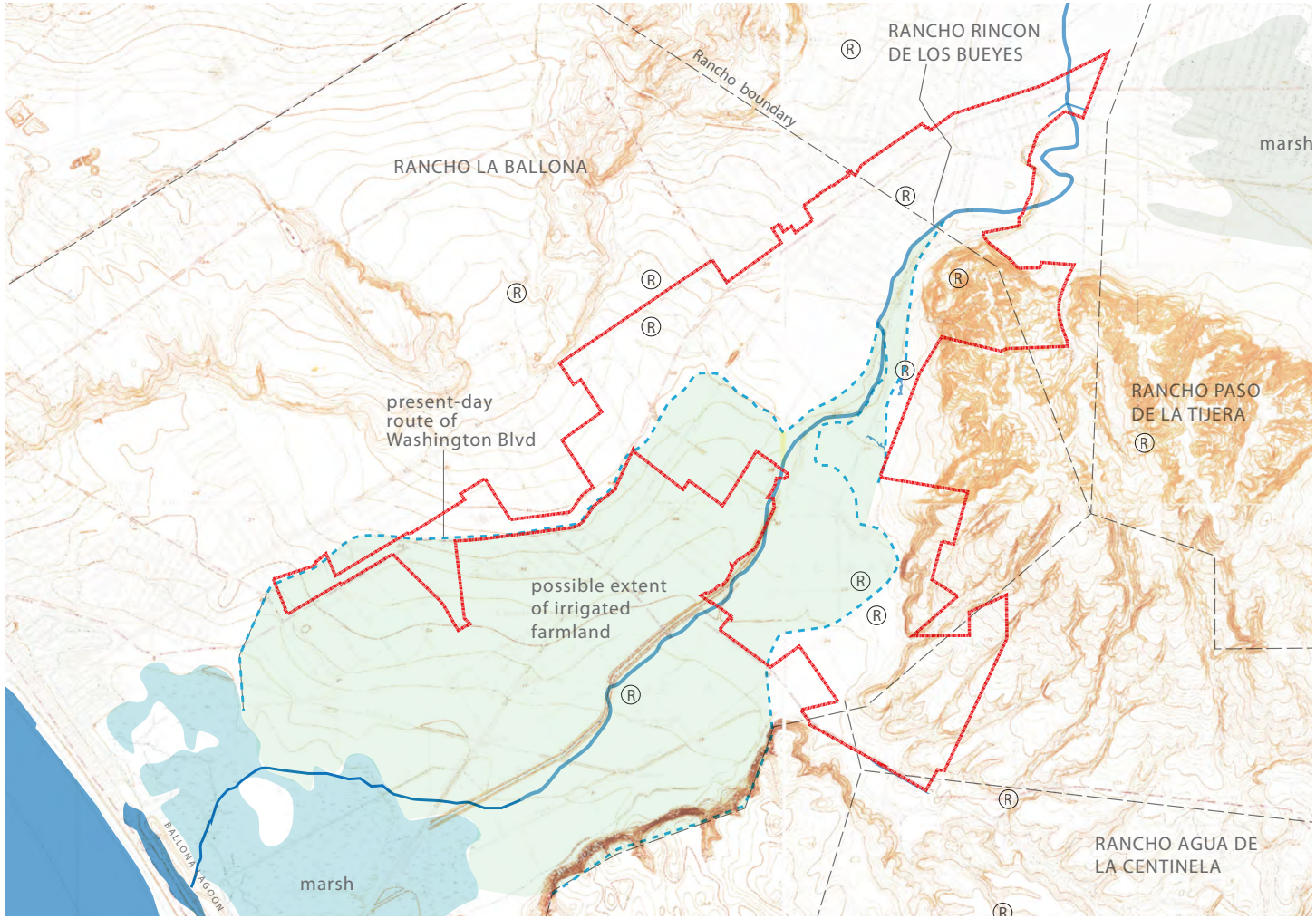
until c.1880 | Native villages and diverse ecosystems

This map shows the landscape types that existed in and around present day Culver City around 1850-1890, prior to significant alteration by Spanish and Mexican settlers, when the area contained significant wetland complexes[2]. Even earlier, the present course of Ballona Creek was the course of the Los Angeles River; a great flood in 1825 caused it to change course[3]. This area was once home to numerous Native American villages, especially near Ballona Creek; approximate locations are noted here[4]. The wetland types and associated features shown here appear in a map in the report "The Historical Ecology of the Ballona Creek Watershed" (see Works Cited), based on extensive research and review of historic documents. Most of present day Culver City lies within the Ballona Valley (the low-lying area between the Santa Monica foothills and the Baldwin Hills), formerly coastal prairie; Culver City also contains some areas that were once part of the Ballona Lagoon and the La Cienega wetland complexes. While development has since vastly diminished the wetlands, Ballona Creek is still an important landscape feature in Culver City. As the map shows, the landscape was characterized by the Creek, meadows, and alkali flats; while it was a rich and diverse ecosystem, few trees originally grew here[5].



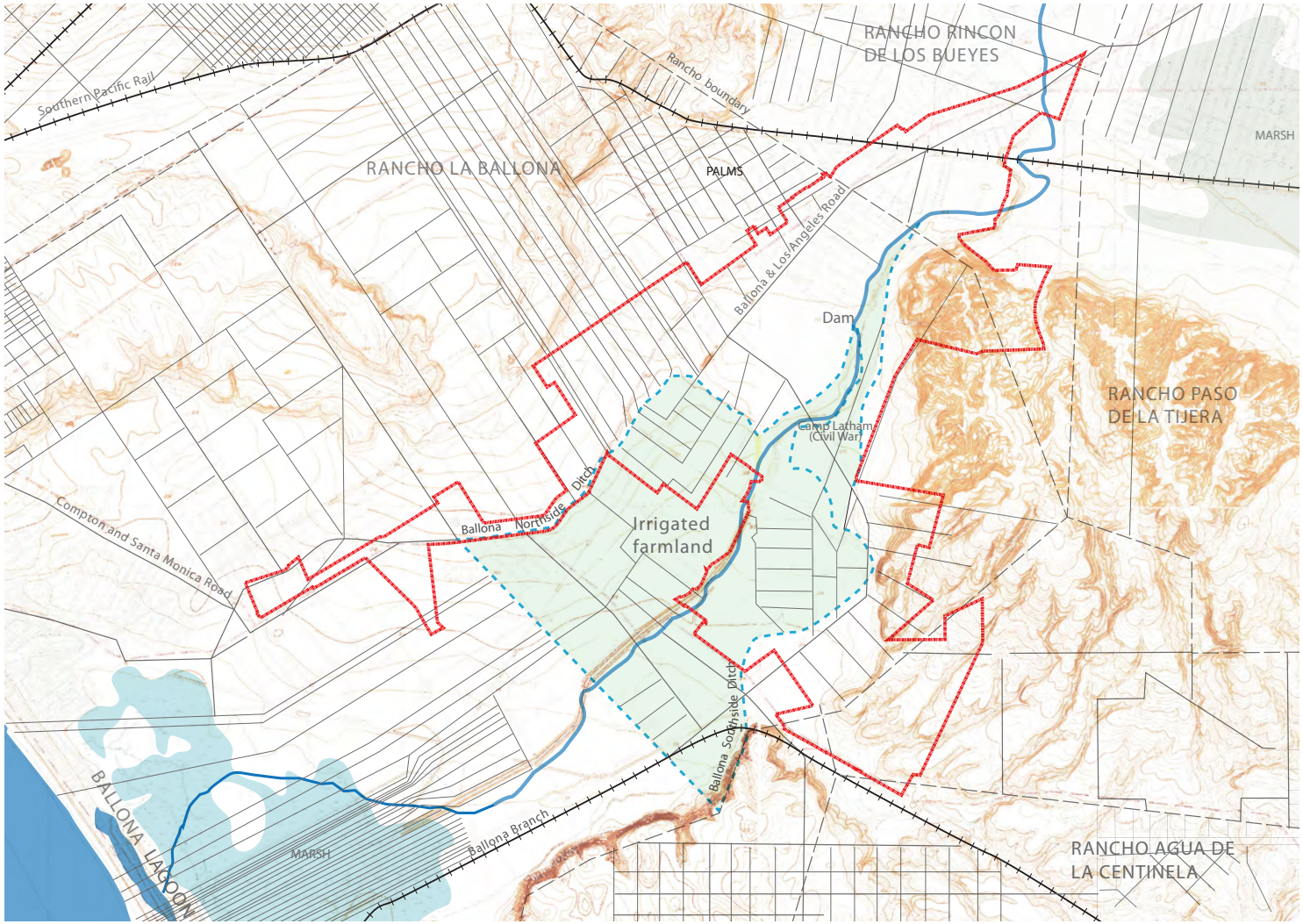
c. 1820- c.1880 | Transforming the landscape through farming

Around 1820, Rancho La Ballona was founded as a vast farming property, adjacent to other, similar Ranchos. The 14,000 acre Rancho La Ballona produced a diverse range of grains, vegetables, and fruit including corn, pumpkins, wheat, and grapes, and supporting animals such as sheep, cattle, and horses[6]. Soon after the Rancho was founded, in 1822, Spanish rule of California came to an end, and Mexican rule began. As mentioned previously, the flood of 1825 caused the "most dramatic change in the the course of the [Los Angeles] River[7]," as it shifted from the present course of Ballona Creek to run directly southward to San Pedro Bay. While this natural transformation altered the local wetland ecosystem, the ranchers also initiated dramatic changes in the landscape: the clearing of vegetation for farming and ranching and the irrigation of farmland significantly transformed the Ballona Lagoon, Ballona Valley, and La Cienega during this era[8]. Ballona Creek was an important souce of irrigation water for farmland; the salt marsh closer to the Bay likely formed the edge of cultivated land[9]. These irrigation ditches lent significant shape to present day Culver City: the north ditch established the present, curving course of Washington Blvd and Zanja St. The approximate location of ranch houses are noted here[10].



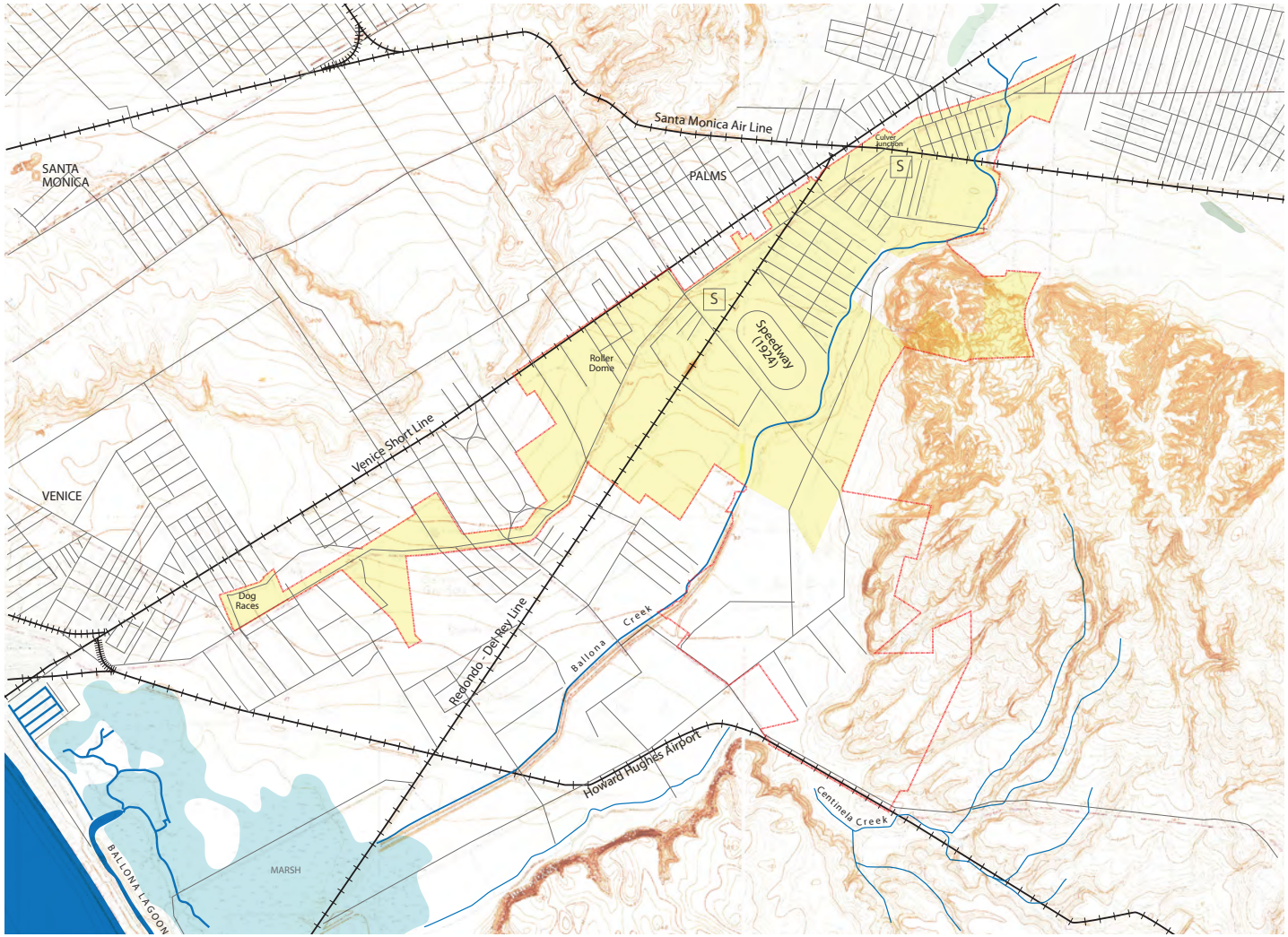
c.1880- c.1900 | Farming decreases and land is subdivided

The end of the 19th Century was a time of transition from large scale farming to an era of land sub-division (first, among the children of the Rancho families)[11] and early residential and commercial development. This transition is evident in this map, based on the Hall Irrigation Map of 1888[12]: the Rancho names were still in use, as were ditches to irrigate farmland adjacent to Ballona Creek, but subdivision was well underway. As farming practices declined throughout the Los Angeles region, the networks of zanjas (irrigation ditches) were gradually abandoned, mostly in the late 19th Century[13]. Many of the names of landowners from this era persist as local street names (Rose, Charnock, etc). While farming practices and shifting hydrology decreased the extent of wetlands in this area[14]; the marshes to the east and west of today's Culver City were still present and visible on contemporary maps. By comparing this map to the first, one can observe that some of this farmland was previously willow thicket, alkali flat, alkali meadow, and wet meadow. This time marks the arrival of rail in Los Angeles, a harbinger of major transformations throughout the region. Early railways crossed north and south of what was to become Culver City, as shown here.



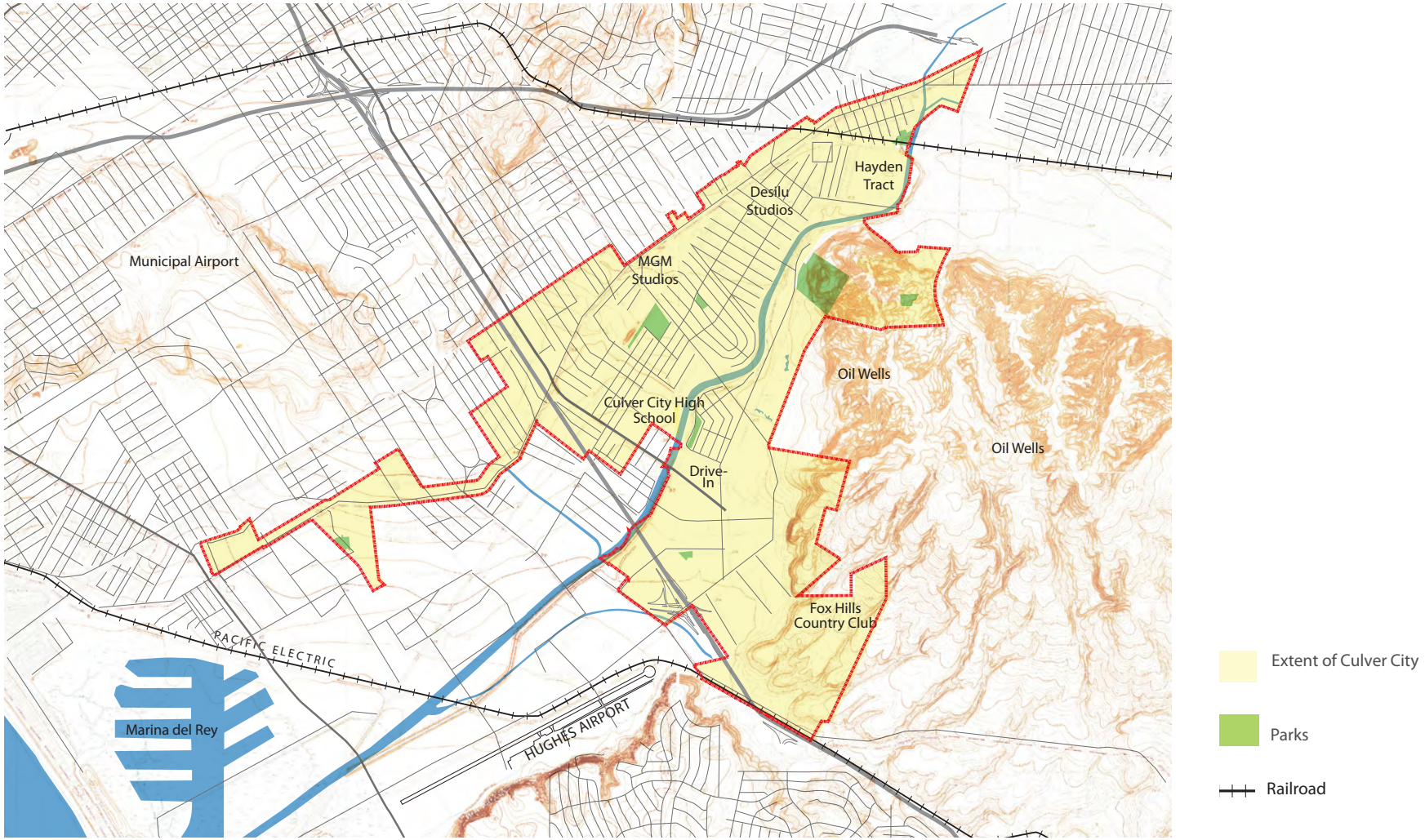
1920 | Culver City founded and the region continues to develop

The early 20th Century saw the founding of Culver City (incorporated in 1917), following Venice (1905) and Palms (1886)[15]. Maps from this era continue to note Rancho names, but no longer show irrigation ditches nor farmland. Photos from this time show small scale agriculture in some places, such as orchards near Ballona Creek[16]. The marsh to east of the City was largely filled in by this time[17]. During this era, the street grid continued to develop, building on the earlier framework of subdivision parcel lines. Harry Culver envisioned the City as a community that balanced commerce and family living, located at the halfway point between downtown Los Angeles and the emerging resort of Venice[18]. From the beginning, Culver City was a crossroads of important regional transportation lines: an early advertisement stated that "All Roads Lead to Culver City" and listed Washington, Pico, Putnam and National Boulevards, as well as the Del Rey, Venice, and Air Lines, shown here. This map shows the extent of Culver City in 1920, when the population totaled 503; ten years later, the population had skyrocketed to 5,669[19]. The 1920s and 1930s saw the emergence of industry and movie studios in the City[20]. As the City developed, it dedicated land for parks and planted trees along residential streets.



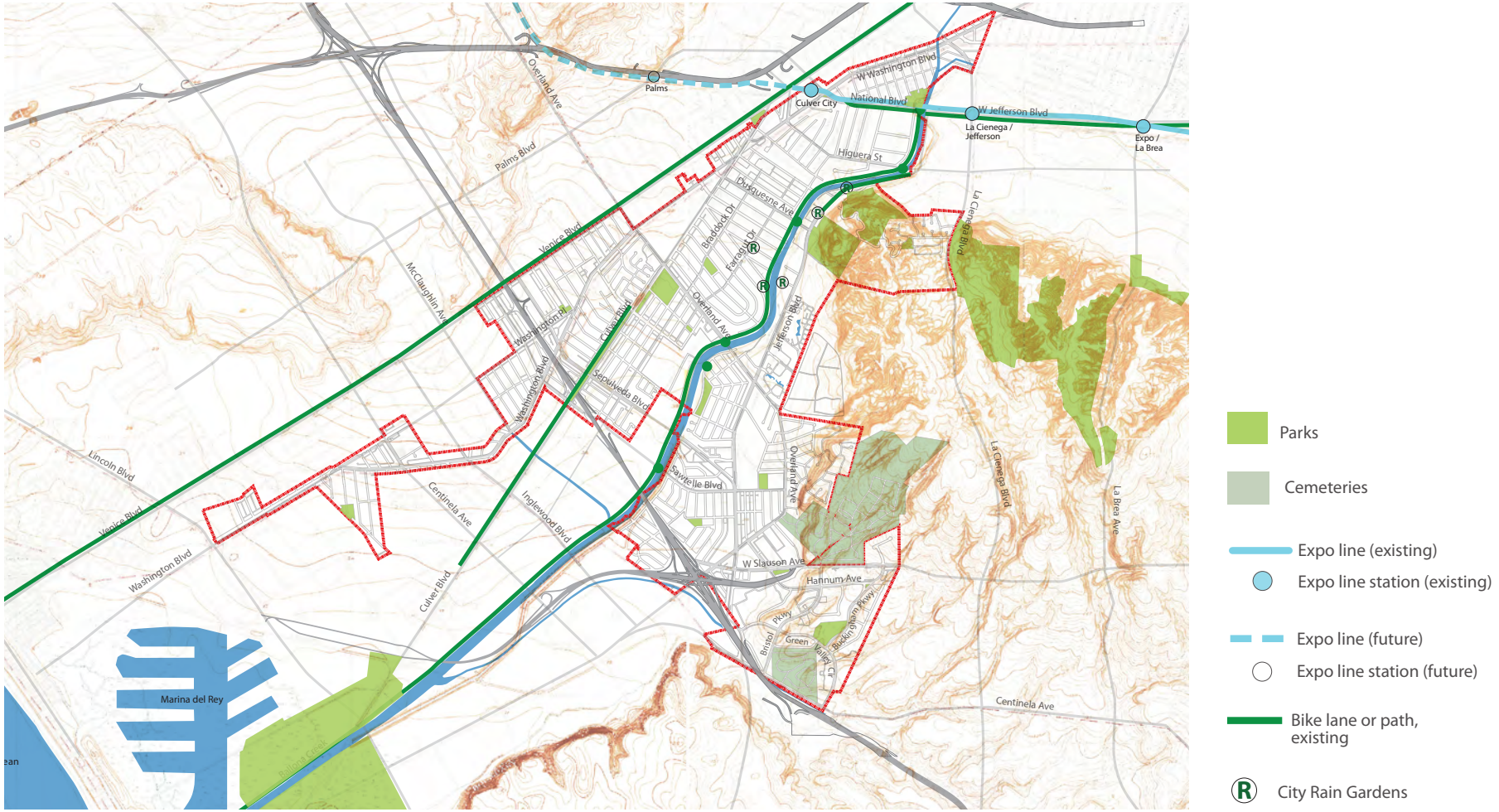
1940s-60s | Increasing urbanization, expanding transportation network, and a growing urban forest

Through the middle of the 20th Century, Culver City continued to grow in population and industry; at the same time, the City continued to dedicate parkland, and a canopy of street trees began to shade residential areas[21]. Most of the land currently in Culver City had been annexed by the middle of the century[22]. As shown on p. 20, some City residents undertook tree planting efforts during this time; many of these trees now provide great beauty and environmental benefits. This era saw the transformation of railways to major vehicular corridors, including Venice, Culver, and National Boulevards. As the era of the automobile emerged, vehicle-oriented shopping centers were developed and freeways were constructed. Photos from this time show few trees on commercial corridors. To eliminate flooding, Ballona Creek was channelized by the US Army Corps of Engineers in 1935. The Ballona Wetlands west of Culver City were further diminished by the construction of Marina del Rey, formally dedicated in 1965.



2015 | A maturing urban forest, urban revitalization, and expanding green infrastructure

The last few decades in Culver City have been marked by key redevelopment projects as well as the strengthening of green infrastructure and public transportation. The redevelopment of Downtown Culver City in the 1990s created a pedestrian hub through the inclusion of design features such as widened sidewalks, double rows of trees, and conversion of selected street segments into pedestrian areas. Several more recent projects will have a significant positive impact on the health of the environment as well as residents' quality of life. In 2011 and 2012, the City completed several projects around Ballona Creek and the bike path, including the completion of two rain gardens on the Creek and improvements to the bike path. In 2012, the Expo Line station opened in Culver City; this light rail line runs along Exposition Blvd and will ultimately run from Downtown Los Angeles to Santa Monica along the former Santa Monica Air Line right of way (see p. 27). The City has recently realized several projects to improve pedestrian and bicycle safety and access, including the Sepulveda Blvd Streetscape Improvements (2010-2011), the Jefferson Blvd Pedestrian and Bicycle Access Improvements near the Hetzler Road entrance to the Baldwin Hills Scenic Overlook (2012), and the Bicycle and Pedestrian Master Plan (2010). The Urban Forest Master Plan is an important part of these efforts to continue to shape a vibrant, healthy, and sustainable urban environment for its residents, workers, and visitors.
The City will celebrate its Centennial in 2017.



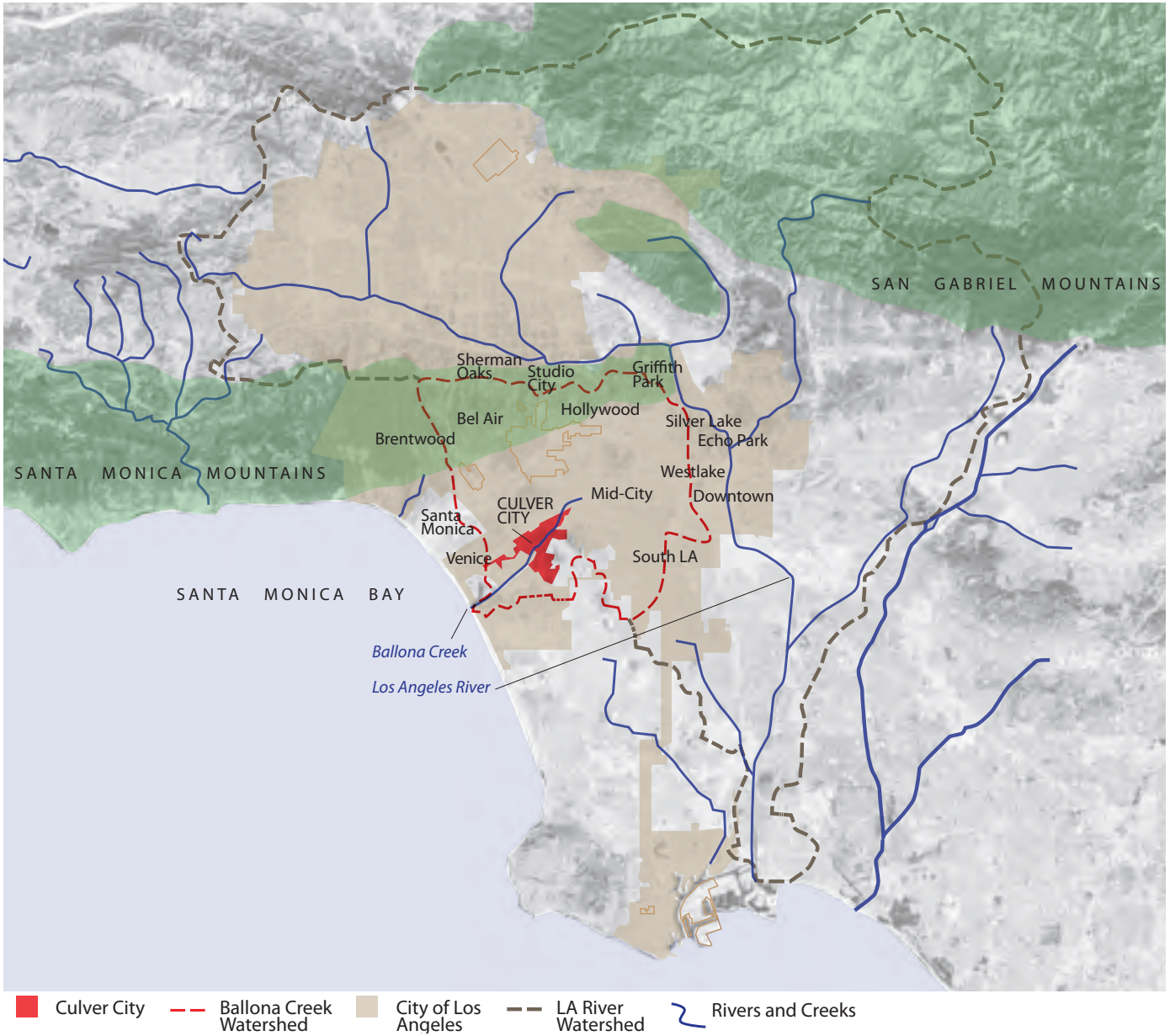
Culver City landscape and ecology

Culver City is located within the Los Angeles Basin, roughly halfway between Downtown and the Santa Monica Bay. As this map illustrates, Culver City lies within a vast urbanized metropolis but is also near extensive mountainous parkland (the Santa Monica Mountains National Recreation Area) as well as beaches and the Santa Monica Bay. Most of the City is relatively flat except for the steep slopes of Baldwin Hills.

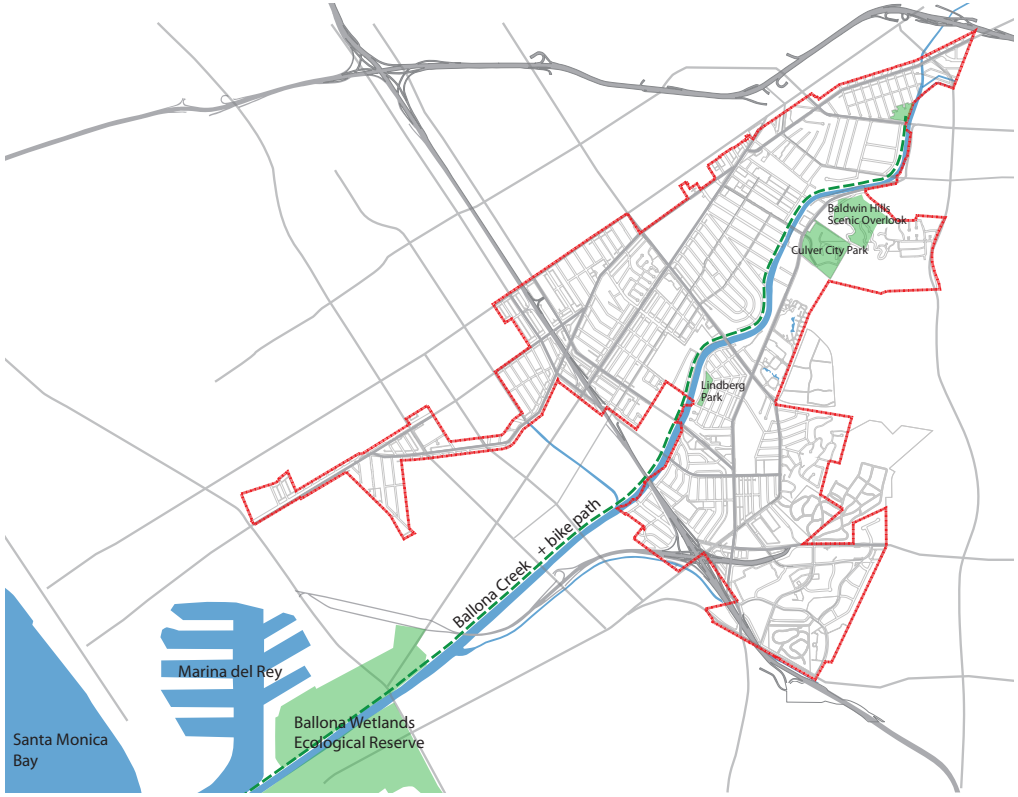
Like the rest of the Los Angeles region, the climate is Mediterranean with dry summers and wet winters. Culver City lies within Sunset Climate Zones 22 (roughly the eastern half of the City) and 24.

The map illustrates the extent of the Ballona Creek and the Los Angeles River Watersheds. The Ballona Creek Watershed is the area that drains into Ballona Creek, and then into the Santa Monica Bay, and includes a significant portion of the City of Los Angeles.

REGIONAL ECOLOGICAL CONTEXT: Culver City, the Los Angeles region, and the Ballona Creek Watershed



significant Culver City landscape: Ballona Creek



Ballona Creek roughly bisects the City from northeast to southwest in its route to the Santa Monica Bay. The Creek is literally central to the City; it also plays a significant role in the City's identity. As a physical link between the City, the Bay, and the Ballona Watershed, the Creek reminds Culver City residents of their connection to the larger environment. The Creek Bike Path is an important recreational corridor that strengthens the connection between Culver City, Los Angeles to the east, and the wetlands, Marina, and Bay to the west. It is interesting to note that several local parks are directly adjacent to or near the Creek and are thus connected into a larger recreational and ecological network.

The Creek and the remaining wetlands also provide important habitat for birds and insects. Birds species include year-round inhabitants like the Snowy Egret and Great Blue Heron as well as species that spend a season or that migrate through the area. While the portion of the Creek within Culver City remains a concrete channel, there is potential that the Creek could one day be reimagined as a more dynamic ecological system, similar to the current plans for the LA River.

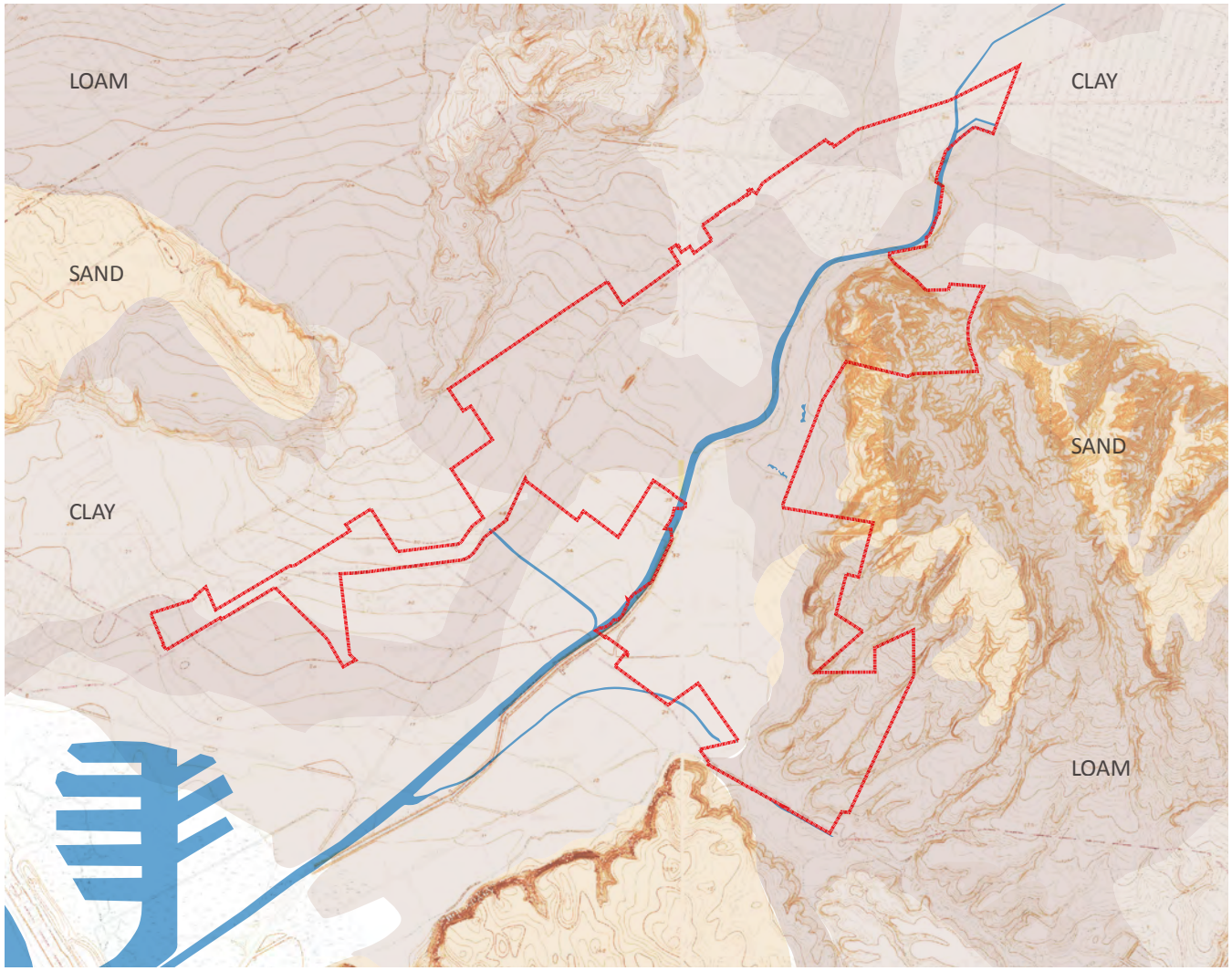
Interpretive signage along the Creek

The bike path

One of two existing rain gardens along the Creek

soils

Much of Culver City soil is loam, with some areas of clay and smaller patches of sandy soil. The soil type may not have greatly affected the distribution of vegetation; this is more strongly influenced by soil moisture, surface water, slope/aspect, and topography.



Simplified from map by Nelson, J.W., C.J. Zinn, A.T. Strahorn, E.B. Watson, and J.E. Dunn. 1916. Soil Survey of the Los Angeles Area. US Dept. of Agriculture, Washington D.C. See Appendix I - Additional Mapping.

overview of Culver City's urban forest

View of the City looking north from Culver City Park

Culver City has inherited a strong urban forest from previous generations. This image shows the lush canopy in many parts of the City that provides important environmental, social, and financial benefits. This section provides an overview of the current state of the urban forest and an analysis of its particular strengths and challenges. This analysis supports the recommendations proposed in the following chapter.

The benchmark data to the right provides a kind of snapshot of the urban forest through numbers. If the same numbers are measured over time, they can be used to measure progress in managing the urban forest. However, these numbers only tell a small part of the story of the urban forest. Other key information is analyzed in the following pages.

BENCHMARK DATA from 2012 Inventory

15,356	trees
215	species
114	genera
1	genus that represents over 10% of the urban forest
16,962	total planting sites
1,605	vacancies
$3,596,523	total annual benefits

managing Culver City's urban forest

The City's urban forest is managed by the Public Works Department and the Department of Parks, Recreation, and Community Services. The City also works with consultants to perform regular pruning and as-needed services like disease analysis. This Master Plan was also developed by the City in collaboration with consultants, including landscape architects, arborists, and consulting arborists. The Plan will be an important tool for managing the urban forest both in terms of long-range goals as well as day-to-day mangement practices.

CITY OF CULVER CITY

PUBLIC WORKS DEPARTMENT

For street trees:
Planning
Funding
Management
Day-to-day maintenance (planting, watering, monitoring, pruning)

DEPARTMENT OF PARKS, RECREATION, AND COMMUNITY SERVICES

For parks trees:
Planning
Funding
Management
Day-to-day maintenance

CONSULTANTS / CONTRACTORS

ARBORISTS + CONSULTING ARBORISTS

Pruning
Inventory Disease analysis
Valuation of trees pre-development
Urban Forest Master Plan

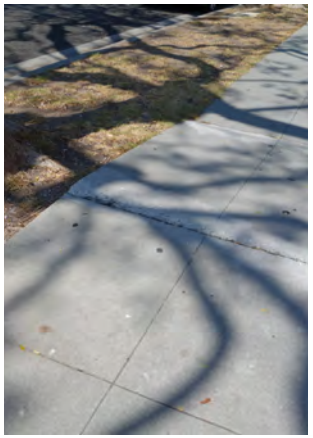
LANDSCAPE ARCHITECTS

Urban Forest Master Plan

Recent Initiatives In Culver City's Urban Forest

Recently, the City worked with a consultant to successfully manage a ficus disease (ficus canker). The City also conducted a comprehensive inventory and repair of damaged sidewalks; it is also utilizing innovative technologies like these rubber sidewalk panels that accomodate root growth and can be removed to facilitate root pruning.

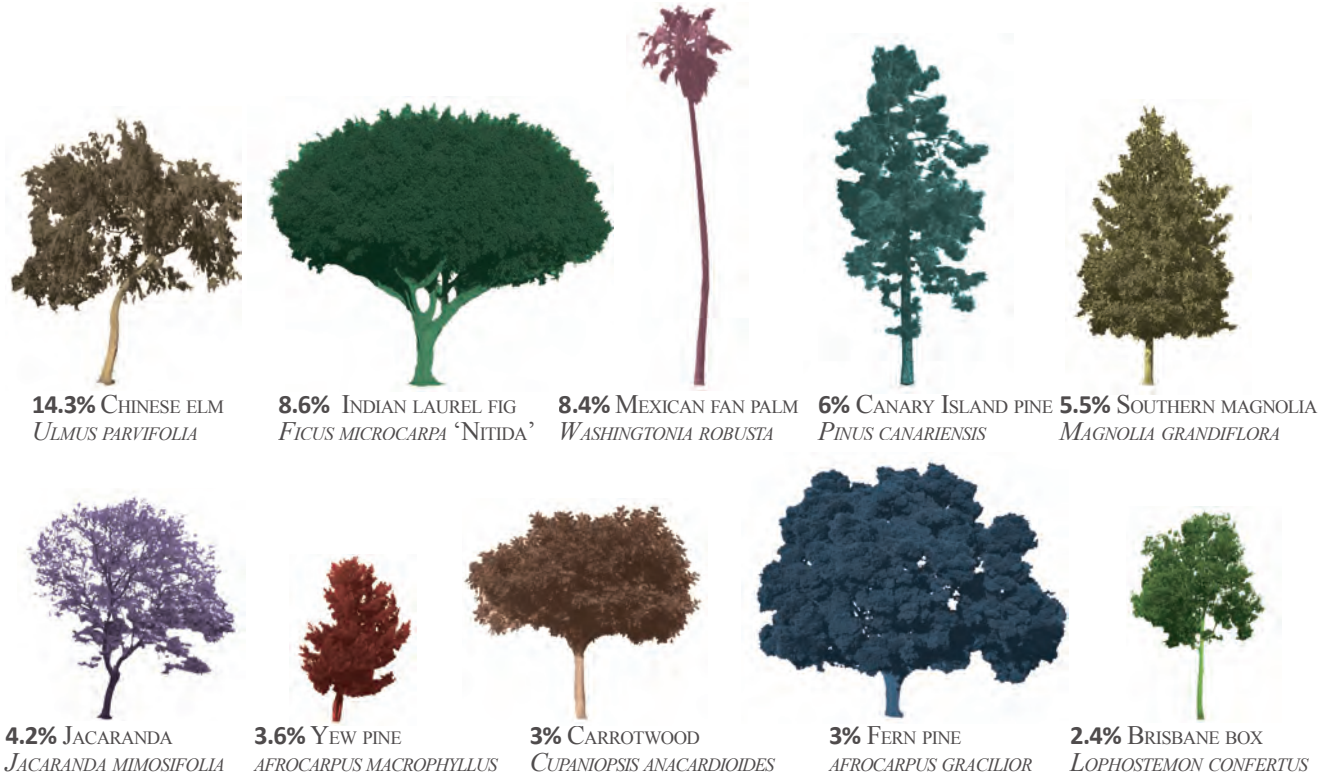
Containment of Ficus canker



Sidewalk repair

Rubber sidewalks

most common existing species in Culver City's urban forest

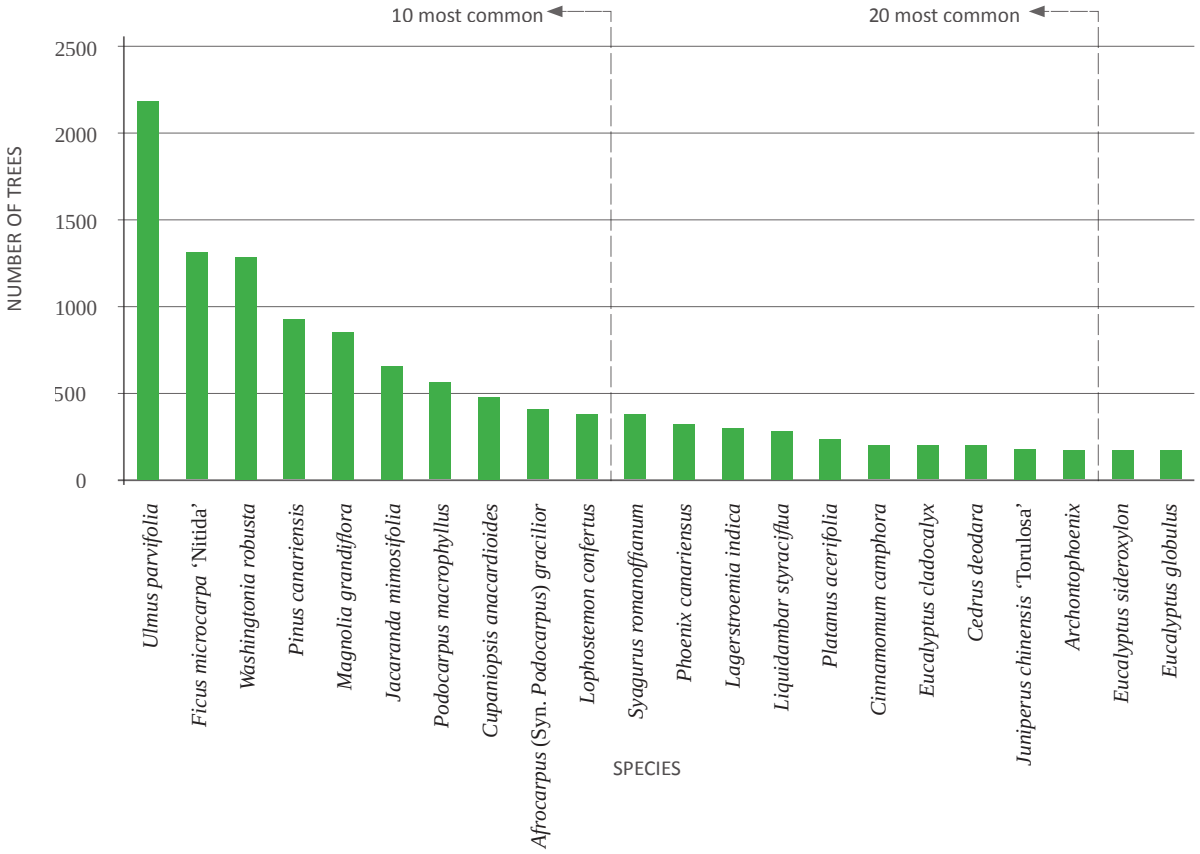


Most City residents probably recognize the ten most common species in Culver City's urban forest. These species strongly contribute to the character of the City, from the Jacarandas downtown, to the Chinese elms arching over residential streets, to the Canary Island Pines, Podocarpus and Brisbane Box along major corridors. Each species offers different benefits: aesthetic, environmental, and financial. These ten species account for 59% of all street trees in the City.

Some of these common species are no longer considered suitable for planting as street trees because of their large size (*Ficus microcarpa* 'Nitida'), poor performance (*Afrocarpus* (syn. *Podocarpus) macrophyllus)*; or because they are exhibiting drought stress *(Pinus canariensis* and *Magnolia grandiflora).* This Master Plan is an opportunity to take stock of the current composition of the urban forest and to envision change over time to a more resilient mix of species with an appropriate amount of diversity.

note: Species data based on 2012 Inventory

most common existing species in Culver City's urban forest



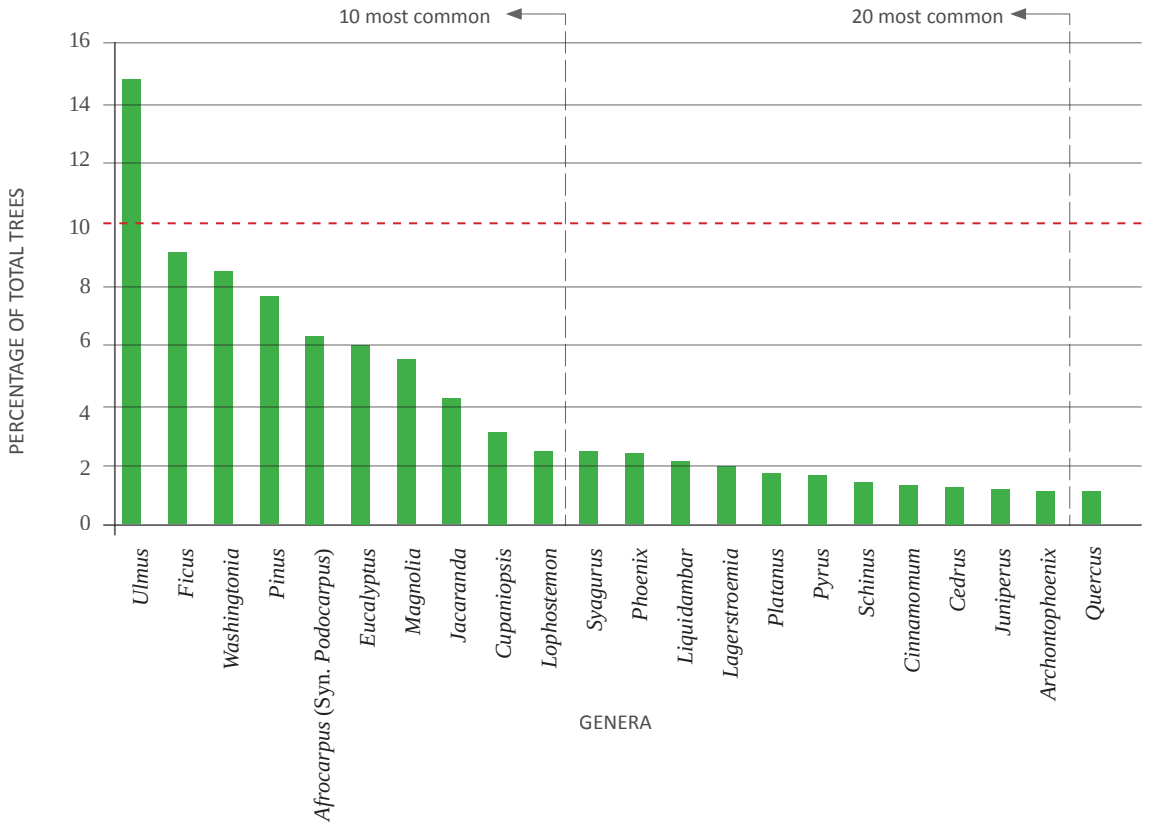
Another way to look at the most common species is in graph form, as above. The most common existing species in the City are a mix of shade trees and palms, deciduous and evergreen species, large and small stature trees; the most common species include some that are indigenous to Asia, the Americas, Africa, Australia, and Europe.

This graph clearly shows that there are many more *Ulmus parvifolia* (Chinese Elm) in the urban forest than any other tree species. Many of these trees were likely planted in the mid-Twentieth Century as part of neighborhood tree-planting campaigns, as seen on p. 20.

The many Ficus in the City were also likely planted in the early to mid-Twentieth Century. Today, the Ficus provide significant environmental benefits (see p 46-47), although they also pose challenges due to litter and large root systems.

Most of the *Washingtonia robusta* trees in the City line Washington Boulevard, and were apparently planted in the late 1970s or in 1980 (see p. 22).

most common existing genera in Culver City's urban forest



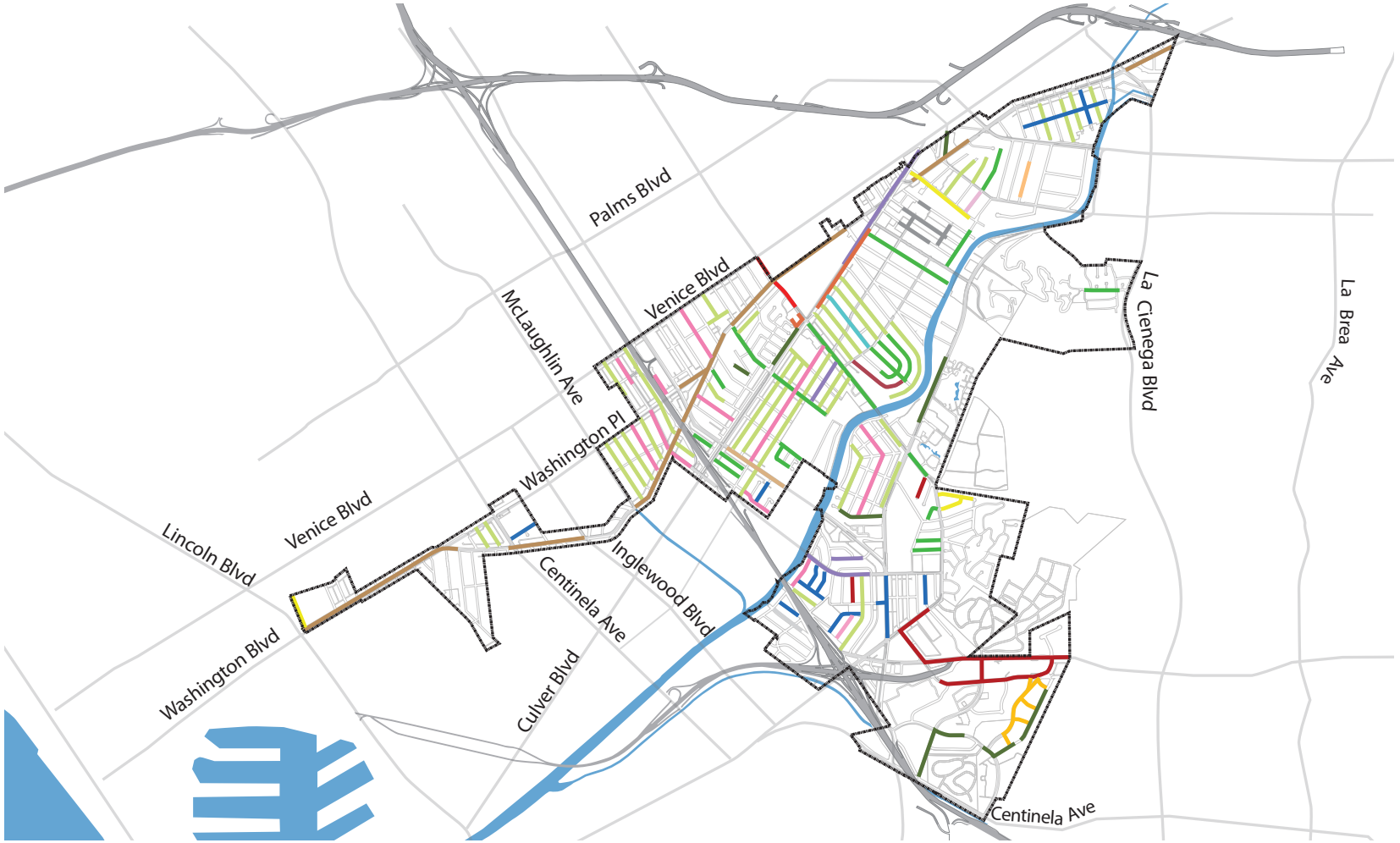
Some urban forest research has suggested limiting the percentage of a certain species or genus in a given inventory, for example, limiting any genus to 10% of the total in order to reduce the risk of damage from an eventual pest or disease. This kind of limit had previouly focused on species, however, it is now thought that genus is the more relevent metric for predicting risk[23]. Some researchers believe that suitability of the species (appropriateness for climate and growing conditions, reasonable maintenance costs, etc) is just as important as having diversity. In this way, looking at these percentages is just one "piece of the puzzle" in evaluating the strength and suitability of the urban forest.

Using data from the 2012 tree inventory for Culver City, the *Ulmus* genus is well over 10% (14.8%), and the *Ficus* and *Washingtonia* genera are near that at 9% and 8.5%, respectively.

As would be expected, the most common genera are similar to the most common species (the *Ulmus* genus is the most common and the *Ulmus parvifolia* is the most common species), but the two graphs differ at some points. For example, the genera *Eucalyptus, Afrocarpus* (Syn. *Podocarpus*), *Platanus*, *and Quercus* each include multiple species (ie. *Eucalyptus sideroxylon* and *E. globulus*), and so the bar for the genus is larger than that for the individual *Eucalyptus* species.

most common existing species in Culver City's urban forest

This map shows, at a glance, where there are monocultures of the ten most common species in Culver City. Because of the large area shown in this small size map, it is not possible to show each individual tree. Certain species, like *Washingtonia robusta* and *Afrocarpus* (syn. *Podocarpus*) *gracilior*, are concentrated along certain streets, while others, like *Ulmus parvifolia* and *Magnolia grandiflora,* are dispersed throughout the City.



Ulmus parvifolia *Ficus macrocarpa* *Washingtonia robusta* *Pinus canariensis* *Magnolia grandiflora* *Jacaranda mimosifolia*

Podocarpus macrophyllus *Cupaniopsis anacardioides* *Afrocarpus gracilior* *Lophostemon confertus*

Note: Species in key appear in order from most to least populous in tree inventory

most common existing species : Snapshots of the existing urban forest

Along with other tree types, the most common species strongly contribute to shaping places in Culver City as well as its overall character.

Chinese Elms - Fay St
Many residential streets in the City are lined with graceful, mature Chinese Elms.

Ficus - Lincoln north of Farragut
The greatest concentrations of massive Ficus trees are located in the Park East neighborhood, as well as in Park West and Clarkdale.

Mexican Fan Palms - Washington Blvd
Mexican fan palms line Washington Boulevard, which traverses Culver City from northeast to southwest, linking the City to central Los Angeles and to the ocean.

Canary Island Pines - Jefferson Blvd
Mature Canary Island palms create a dramatic streetscape along part of Jefferson.

Jacarandas - Culver Blvd
A double row of these flowering trees create a welcoming plaza on Culver Blvd.

Magnolias - Sawtelle
Mature magnolias provide shade, spreading forms, and scented blooms in spring.

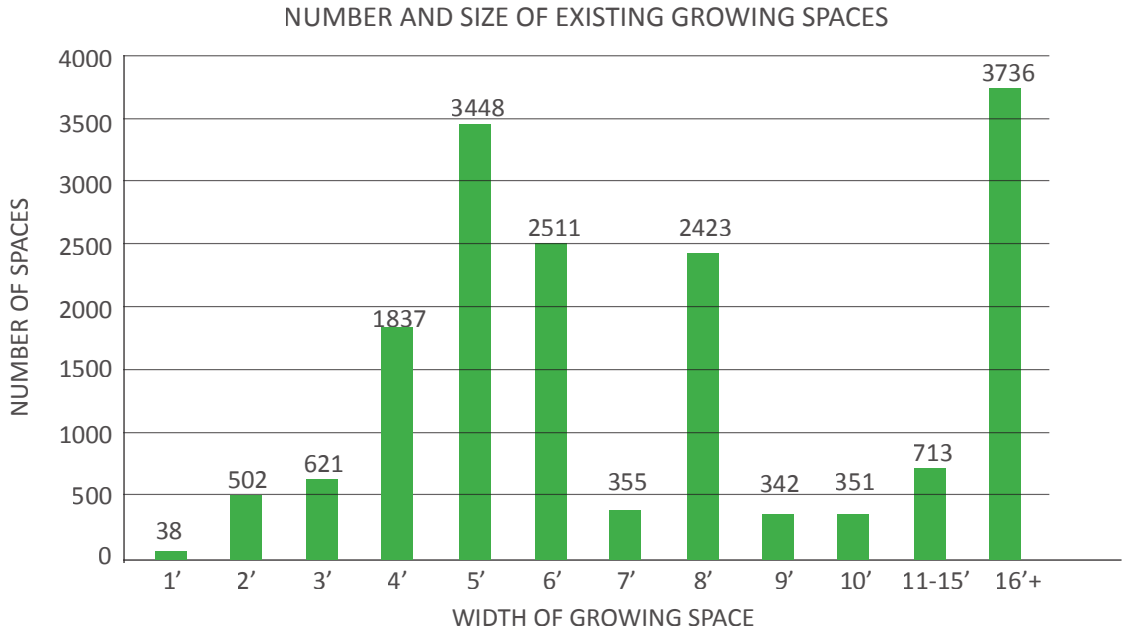
size of existing grow spaces: A critical factor for the growth of street trees

One of the most important factors determining the success of urban trees is the amount of available growing space. The size of the growing space is important because it is a limiting factor for the size of the tree: while a large tree could grow in a small space, the risk of damage to the sidewalk and other infrastructure is higher that if it were planted in a large space.

As shown in the graph below, existing growing spaces in Culver City range from very small (1' wide) to very large (15' wide, and wider in parks). The map on the facing page illustrates the patchwork pattern of growing spaces that resulted from the incremental process of development in Culver City: parkways and tree wells were constructed at the same time as with new roads and neighborhoods were constructed,

Overall, Culver City has mostly medium and large size growing spaces, and so the City can support many medium to large size street trees. In planning for the urban forest, it is important to match the size of the growing space to the eventual size of the tree selected in order to maximize tree growth (and resulting environmental benefits) while minimizing the potential for infrastructure damage.

In the book *Reducing Infrastructure Damage by Tree Roots: A Compendium of Strategies*, the authors state: "Providing a planting space of appropriate size for the desired species is a critically important preventive strategy. Where large-stature tree species are desired, sufficiently large planting spaces must be provided (p.22)." In addition to the strategy of matching tree size to growing space, there are diverse strategies for enlarging the growing space in order to support larger trees. One method is to lengthen tree wells (widening is often not an option, because sidewalk width must be preserved). Other methods include expanding growing space beneath the surface, that is, increasing the soil volume available for root growth. This can be acheived through technologies such as structural soil and Silva Cells.

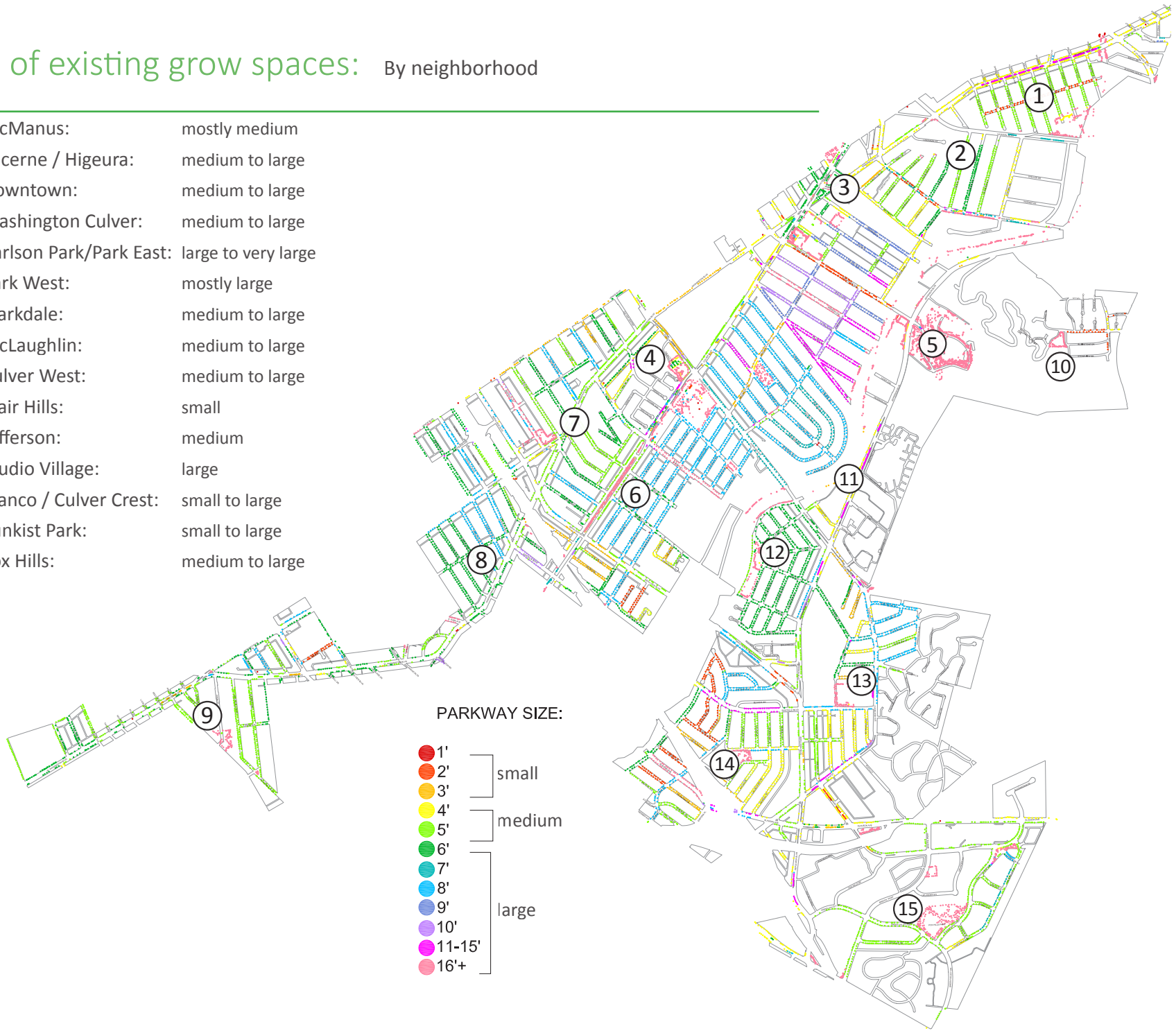


GROWING SPACE TYPES

The most common types of growing spaces for street trees are parkways, tree wells, and medians. Parkways refer to continuous planting areas between the curb and sidewalk; these exist mostly in residential areas but sometimes in commercial areas as well. Tree wells are square or rectangular planting wells in the sidewalk, and are most common in commercial areas. Medians are raised planting areas that divide a street.

size of existing grow spaces: By neighborhood

1	McManus:	mostly medium
2	Lucerne / Higeura:	medium to large
3	Downtown:	medium to large
4	Washington Culver:	medium to large
5	Carlson Park/Park East:	large to very large
6	Park West:	mostly large
7	Clarkdale:	medium to large
8	McLaughlin:	medium to large
9	Culver West:	medium to large
10	Blair Hills:	small
11	Jefferson:	medium
12	Studio Village:	large
13	Blanco / Culver Crest:	small to large
14	Sunkist Park:	small to large
15	Fox Hills:	medium to large



tree size and age: Evaluating the age distribution of Culver City's existing urban forest

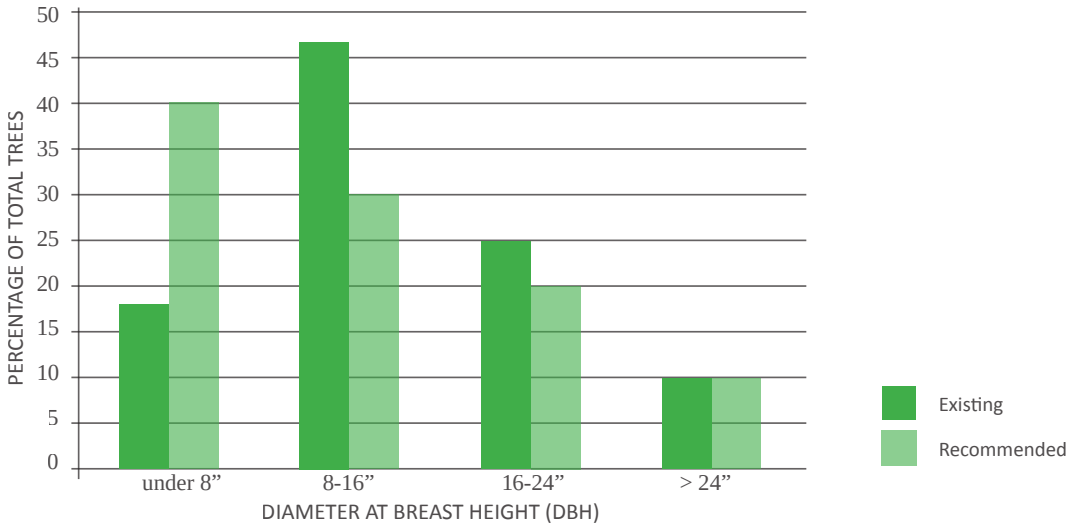
Current scientific knowledge recommends a particular ideal age distribution for trees in the urban forest in order to maximize resilience and benefits[24]. In any urban forest, it is important to have a both young, mature, and senescent trees to acheive benefits today and in the future.

According to this rubric, the urban forest in Culver City is a maturing population, with more individuals in the 16-45 cm DBH class, suggesting that most trees were planted 20-50 years ago. Based on this rubric, Culver City's urban forest is lacking in small (young) trees. If more young trees were planted, the age distribution in the urban forest would be closer to the recommended percentages.

DBH in inches	Percentage of Total Inventory	Quantity	DBH brackets used in MFRC (in inches)	Percentage of Total Inventory (approximate)*	Recommended percentages (per MFRC)	DBH in cm (approx)	Recommended
0-6	18.10%	2776	under 8	18.10%	40%	0-15	40% under 20cm
7-12	27.14%	4164				18-30	
13-18	19.67%	3018	8-16	46.82%	30%	33-46	30% 20-40cm
19-24	25.05%	3842	16-24	25.05%	20%	48-61	20% 40-60cm
25-30	7.51%	1152				64-76	
31+	2.53%	388	> 24	10.04%	10%	79+	10% > 60cm

* Note: DBH brackets used in the Tree Inventory and the those cited in the article are different; so they cannot be compared with complete accuracy.

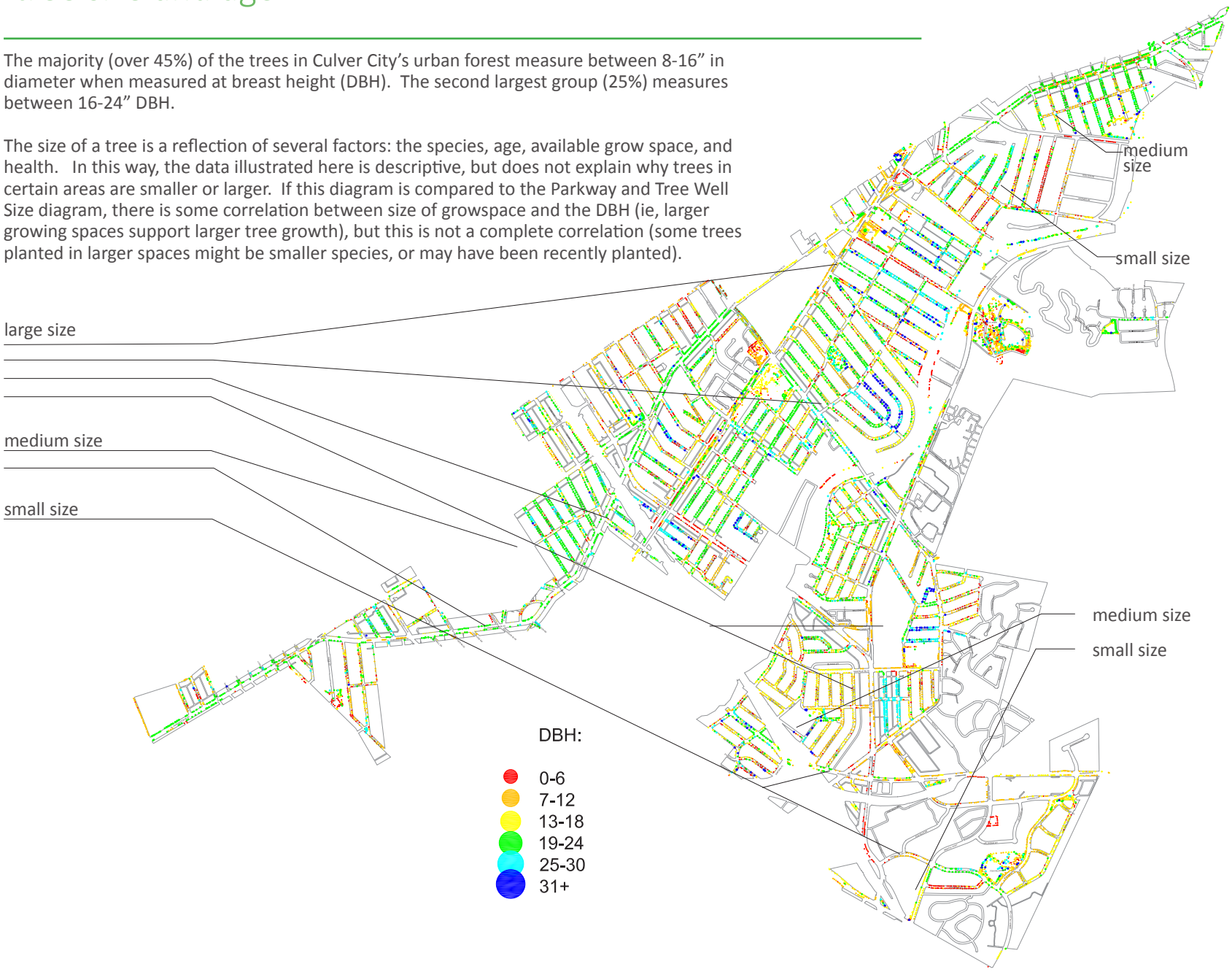
DIAMETER AT BREAST HEIGHT OF TREES IN CULVER CITY'S URBAN FOREST



tree size and age

The majority (over 45%) of the trees in Culver City's urban forest measure between 8-16" in diameter when measured at breast height (DBH). The second largest group (25%) measures between 16-24" DBH.

The size of a tree is a reflection of several factors: the species, age, available grow space, and health. In this way, the data illustrated here is descriptive, but does not explain why trees in certain areas are smaller or larger. If this diagram is compared to the Parkway and Tree Well Size diagram, there is some correlation between size of growspace and the DBH (ie, larger growing spaces support larger tree growth), but this is not a complete correlation (some trees planted in larger spaces might be smaller species, or may have been recently planted).



benefits of the urban forest

Culver City's urban forest provides significant and diverse benefits, some of which can be quantified or assigned a dollar value, and some of which relate more to quality of life and quality of the urban environment. All of these benefits are valuable. Another term used to describe these benefits is "ecosystem services."

QUANTFIABLE BENEFITS: Assigning a dollar value

The urban forest provides important benefits, some of which are quantifiable. By calculating the dollar value of benefits provided by the urban forest, we get a clear sense of the contribution of trees to our urban environment. This data also supports the view of the urban forest as an important "green infrastructure" in the city-- a designed landscape that provides crucial services and benefits. As for other types of infrastructure, the urban forest is worthy of continued investment; this investment ensures continued returns. This data was gleaned from iTree, software developed by the United States Forest Service. Note that iTree bases its calculations on local data regarding energy use, climate, stormwater, etc.

Total Annual Dollar Value Of Benefits Provided By The Entire Urban Forest In Culver City
(value of all publicly-managed trees)

Stormwater interception	$32,716
CO2 reduction	$69,248
Energy savings	$245,908
Air Quality improvement	$598,202
Aesthetic / other	$2,650,449
TOTAL	**$3,596,523**

QUALIFIABLE BENEFITS: Contributions to quality of life

In the survey conducted for this plan, residents stated that the benefit of the urban forest that is most important to them is that it improves the overall quality of life in Culver City. At the community meetings, several residents noted that they chose to move to the City, or to their particular block, in part because of the beautiful, mature trees. This kind of personal connection to trees in an important component of public support for urban forestry programs.

Of the top five survey results about urban forest benefits, three could be categorized as qualifiable benefits. Note that some of these benefits could be quantified as well, but to date the relevent data have not been measured.

Survey Responses about Most Important Benefit of Urban Forest for Residents
bold = qualifiable benefits

1. **Improves overall quality of life in Culver City**
2. **Provides habitat + strengthens urban ecology**
3. Improves air quality
4. **Makes beautiful places in the City**
5. Provides shade

ecosystem services: Quantifying the Benefits of Culver City's Existing Urban Forest

Note: data from iTree

Species providing greatest total annual benefits

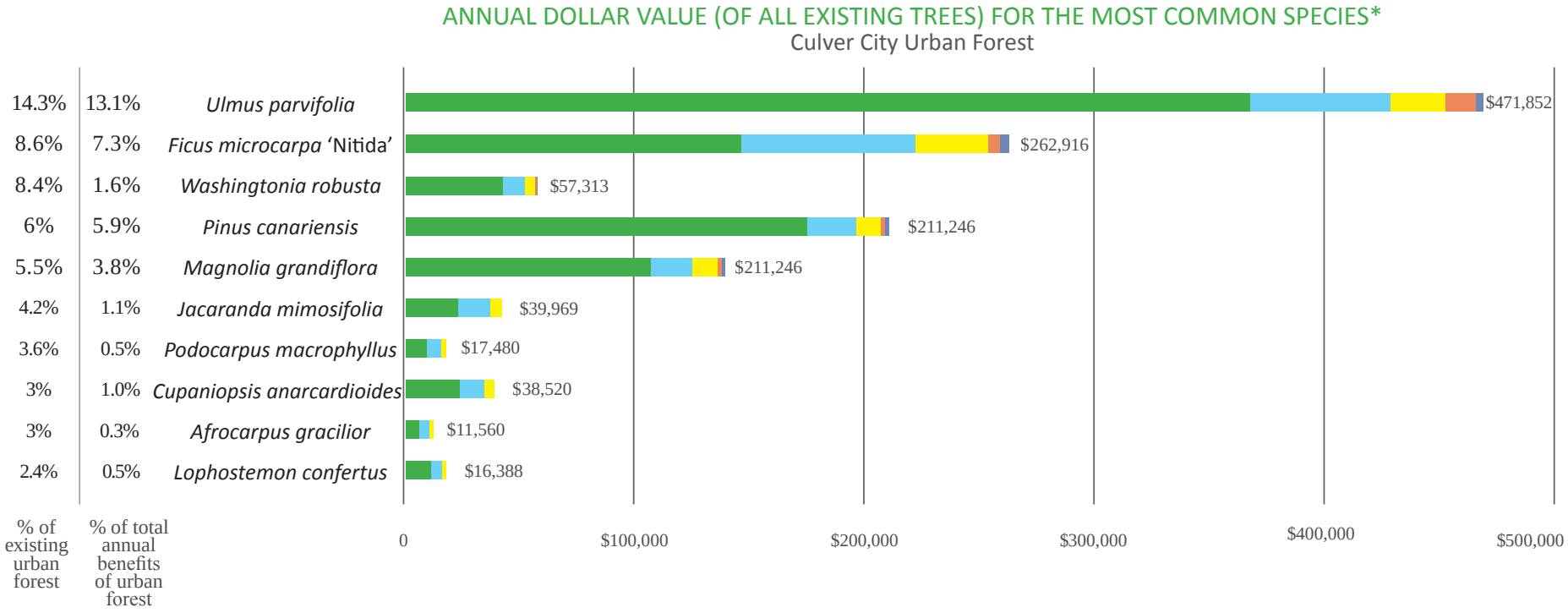
1	*Eucalyptus* spp.	$498.60
2	*Cedrus deodara*	$454.69
3	*Cedrus decurrens*	$411.01
4	*Morus alba*	$393.31
5	*Quercus rubra*	$393.31
6	*Casuarina cunninghamiana*	$363.99
7	*Pinus pinea*	$358.50
8	*Cedrus atlantica*	$356.15
9	*Ficus macrophylla*	$356.08
10	*Salix x pendulina* Wenderoth	$348.37
11	*Populus nigra*	$314.97
12	*Pinus brutia*	$314.97
13	*Acer japonica*	$303.43
14	*Salix matsudana*	$303.43
15	*Robinia pseudoacacia*	$300.65

Species providing greatest annual energy benefits

1	*Acer saccharinum*	$27.43
2	*Taxodium mucronatum*	$27.43
3	*Ulmus americana*	$25.87
4	*Populus nigra*	$25.78
5	*Ficus macrocarpa* ssp *nitida*	$24.09
6	*Ficus rubiginosa*	$23.62
7	*Eucalyptus* spp.	$22.63
8	*Incense cedar*	$21.60
9	*Morus alba*	$20.83
10	*Quercus rubra*	$20.83
11	*Cedrus deodara*	$20.62
12	*Robinia pseudoacacia*	$20.14
13	*Casuarina cunninghamiana*	$19.47
14	*Cedrus atlantica*	$19.12
15	*Pinus pinea*	$17.68

gray text = species not suitable for designation in Culver City urban forest (not climate-appropriate, not low-water, weak-limbed, or not suitable as street tree)

ecosystem services: Quantifying the Benefits of Culver City's Existing Urban Forest



Key

- Property Value Increase
- CO2 Reduction
- Air Pollution Reduction
- Runoff Reduction
- Energy Reduction

The ten most common trees species, shown here, make up 59% of the total trees in the urban forest.

These trees provide a combined $1,265,258 in annual benefits, which is 35.2% of the total annual benefits of the urban forest ($3,596,523).

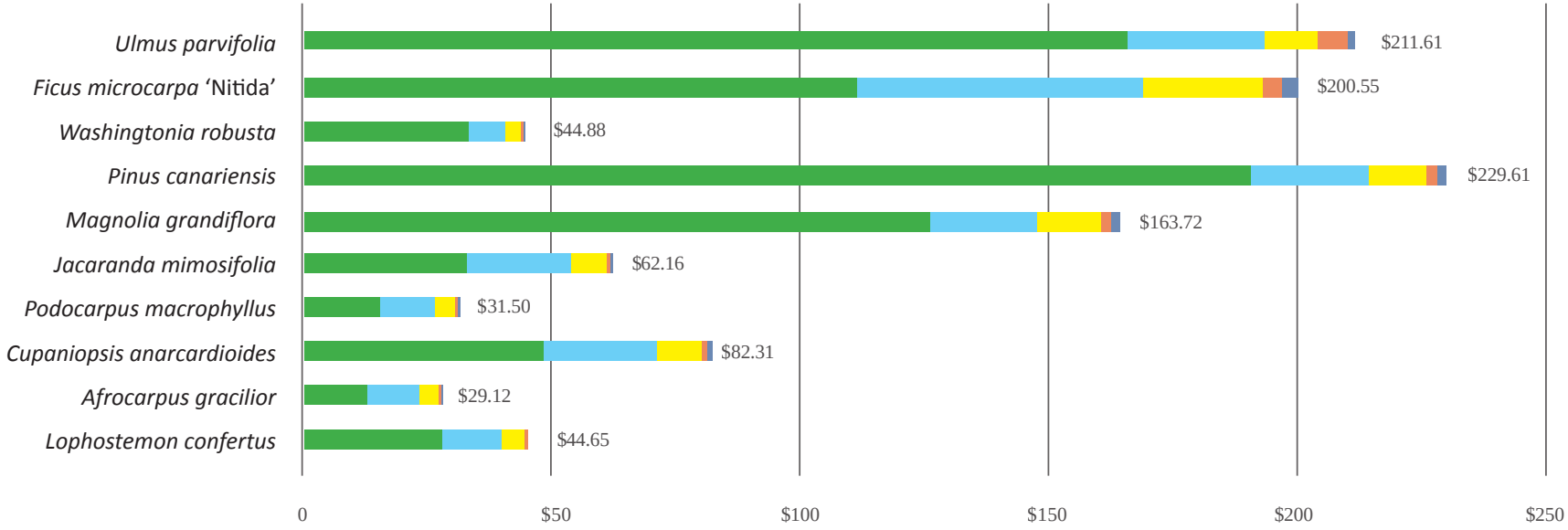
The greatest dollar value benefit is from aesthetics / increase in property value.

* Data taken from 2012 inventory for all publicly-managed trees in Culver City

ecosystem services: Quantifying the Benefits of Culver City's Existing Urban Forest

ANNUAL DOLLAR VALUE (PER TREE) OF THE MOST COMMON SPECIES

Culver City Urban Forest



Key

- Property Value Increase
- CO2 Reduction
- Air Pollution Reduction
- Runoff Reduction
- Energy Reduction

Value comparison among the ten most common species

Relatively high value (high to low)		Relatively low value (high to low)	
Pinus canariensis	$229.61	*Washingtonia robusta*	$44.88
Ulmus parvifolia	$211.61	*Lophostemon confertus*	$44.65
Ficus microcarpa 'Nitida'	$200.55	*Podocarpus macrophyllus*	$31.50
Magnolia grandiflora	$163.72	*Afrocarpus gracilior*	$29.12

SPECIAL TOPIC

water and the urban forest: managing a precious resource

California's Current Drought

As of this writing in 2015, California is in the fourth year of the worst drought in its history. The drought has attracted world-wide attention and has stimulated extensive discussion about the management of water in the state, particularly in arid and semi-arid regions like Southern California. The duration and severity of this drought has made clear the critical need for large-scale changes in our thinking and actions. This drought may produce a much-needed paradigm shift in how water is managed in California. The following pages discuss issues related to the drought and the urban forest, including a summary of recent research about trees, water use, and water management strategies.

Water Use Restrictions

In April 2015, Governor Jerry Brown announced the state's first mandatory water use restrictions[25]. The Governor's executive order charged local water supply agencies with making significant reductions in water use based on past usage and conservation efforts. The order also prohibits cities and towns from using potable water to irrigate turf in medians.

Drought Stress In Trees

Trees in Culver City and across the state have suffered stress due to the current drought.

City staff and the consultant team noted that drought stress was most severe for the following species:

- *Magnolia grandiflora*
- *Pinus canariensis*
- *Sequoia sempervirens*
- *Ficus* species (increased berry production)
- *Ulmus parvifolia* (increased limb breakage)

Since drought is likely to continue to be an issue in the future, this Plan does not recommend planting these species; they are not included in the tree designations. Over time, other species may also show drought stress; conversely, certain species may show particular resilience to drought. These observations and new knowledge should inform periodic re-evaluation of the species included in the tree designations.

Managing Drought In The Urban Forest

During the drought, it is crucial to maintain trees so that they continue to provide important benefits. Trees are an investment; in this way, letting a tree die during a drought represents a loss of all prior investment in the tree. A tree stressed by drought becomes more vulnerable to pests and diseases. Watering trees is a preventive measure to preserve the valuable resource that is the urban forest.

While it is often appropriate to change landscape practices to reduce water use (ie, by selecting low-water plants and by reducing irrigation), it is crucial to continue to irrigate trees infrequently and deeply in order to maintain them in good health.

In this Plan, the City and consultant team has given careful consideration to the water requirements of each tree species in the urban forest. In recommending trees species for future planting, a high priority was placed on species with low water needs and with tolerance for drought.
After a tree is planted, it requires periodic watering so that it can adapt to its new site and can establish a strong root system. The City waters newly-planted trees for one year, after which the tree depends on watering by residents as well as rainwater.

The City's Role In Water Conservation

In recent years, Culver City has completed several projects including rain gardens and water-harvesting systems that conserve water and also improve water quality in the Creek and in the groundwater supply. These projects raise visibility of water issues in the community; they also serve as models or prototypes that could be adapted for other local sites.

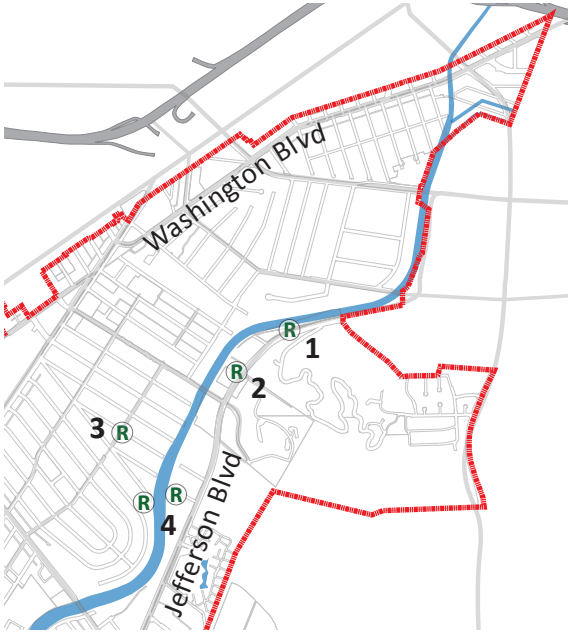
Citizens' Role In Water Conservation

Residents of Culver City can play a significant role in managing water wisely during the drought and beyond. A few steps to try:

- Try to reduce irrigation in the landscape, then monitor plants carefully for any signs of stress
- Continue to deep water trees
- Create a rain garden to cleanse stormwater and to replenish the groundwater supply

water and the urban forest: existing water-smart landscapes in Culver City

Culver City has created several rain gardens in order to improve local water quality and to increase groundwater levels. As the map here indicates, these rain gardens are adjacent to City buildings, the Creek, and residential landscapes; taken together, they treat rain water from several acres of impermeable surfaces. These projects demonstrate the City's commitment to manage precious water resources and to improving water quality in Ballona Creek and Santa Monica Bay. These projects could be considered demonstration projects in the sense that they could encourage other local institutions and City residents to consider similar strategies.



1. Culver City Transfer Station

2. Culver City Public Works

3. Baldwin Ave and Farragut Dr

4. Ballona Creek rain gardens

WHAT IS A RAIN GARDEN?

A rain garden is a planted landscape designed to collect rain water from impermeable surfaces (roofs, paved areas, etc). In a rain garden, rain water is cleansed as it filters through the soil and plant roots. Rain gardens reduce the amount of rain water that runs over impermeable surfaces in the city, collects pollutants, and then drains to the Creek and Bay. Rain gardens are designed to detain and/or retain rain water. Water that is detained is held temporarily in the garden before it is drained into the pipes; this allows time for the water to be cleansed, and reduces the instance of storm drains backing up into the street. Water that is retained is allowed to infiltrate completely into the soil; this allows the water to be cleansed by plant roots and other natural processes and then to replenish the groundwater supply, an important water resource.

water and the urban forest: highlights of current research

In recent years, several California-based scientists and designers have been studying water use in the urban forest and water conservation strategies. This important research is working to fill significant gaps in knowledge about water management, knowledge that is becoming ever more critical as we face increasingly limited water resources, particularly in semi-arid regions like Southern California. While this research offers significant new knowledge, it is important to conduct and support further studies in order to understand these complex issues.

SELECTING URBAN TREES FOR WATER-EFFICIENCY

Heather McCarthy and Diane Pataki, from the University of California (UC) Irvine, and G. Darrel Jenerette, from UC Riverside, published an article in 2011 entitled "Plant water-use efficiency as a metric of urban ecosystem services.[26]" In this article, the team states that in our arid climate, it is important to balance the benefits of urban trees with the cost of irrigation. To maximize the benefits of the urban forest while minimizing the cost (in dollars as well as precious water resources), we need to know which tree species are particularly efficient in their use of water. To quantify efficiency, they examined the relationship between water use and tree growth: the most water-efficient tree would be one that uses little water while still increasing in mass.

The research findings indicate that overall, the most water-efficient species were evergreen and from parts of the world with high vapor-pressure deficit (arid places). The sample size was somewhat limited (eight species).

Trees with the greatest water-use-efficiency:

Brachychiton discolor (Australia)
Brachychiton populneus (Australia)
Eucalyptus grandis (Australia)
Ficus microcarpa (Asia)

Trees with the lowest water-use-efficiency:

Gleditsia triacanthos
*Jacaranda chelonia (*syn. *mimosifolia)*
Koelreuteria paniculata
Lagerstroemia indica

Pataki and McCarthy, along with Elizaveta Litvak and Stephanie Pincetl, also published "Transpiration of urban forests in the Los Angeles metropolitan area[27]" (2011). In this article, the scientists describe very large species differences in transpiration, ranging from very low (unirrigated *Pinus canariensis*) to very high (*Platanus* x *hybrida*).

Species with relatively low rates of transpiration:

Pinus canariensis (unirrigated)
Malosma (Syn. *Rhus*) *laurina* (unirrigated)
Brachychiton populneus
Jacaranda mimosifolia
Brachychiton discolor
Sequoia sempervirens
Eucalytpus grandis

Species with high transpiration included:

Platanus x. hybrida
Platanus racemosa
Jacaranda chelonia
Gleditsia triacanthos
Ficus microcarpa
Pinus canariensis (campus, irrigated)

UNDERSTANDING WATER SOURCES OF URBAN TREES

In the article "Water sources of urban trees in the Los Angles metropolitan area[28]," authors Neeta Bijoor, Heather McCarthy, Dachun Zhang, and Diane Pataki show that some irrigated trees also utilize groundwater, which suggests that these trees might be better able to withstand drought and water conservation measures. The trees in the study that used the most groundwater were large trees; the authors hypothesize that the deep root systems of these mature trees may account for the higher use of groundwater. Conversely, some mature trees seemed to be using mostly shallow water from irrigation, which could make them more suseptible to drought. The authors conclude that at some sites, irrigation could be reduced without detriment to the trees; on the other hand, where the groundwater is an important water source for people, it may be undesirable for trees to tap into groundwater. More studies about water sources of urban trees would be very valuable for planning and managing the urban forest.

SMART STORMWATER STRATEGIES

The Arid Lands Institute at Woodbury University (Burbank, CA) is focused on developing water-smart design strategies for the West. The Institute is currently developing a digital map, accompanied by an app, that will indicate the most effective stormwater strategy for each part of the Los Angeles region (water harvesting, infiltration, etc)[29]. Entitled "Divining LA: Drylands City Design for the Next 100 Years, this project takes into account data about soil, hydrology, contamination, land use, permeability, and precipitation in order to create the map of "hydrologic urban zones." This kind of site-specific information and big-picture thinking will be crucial for developing strategic plans for local and regional water management.

community views of the urban forest

Community engagement was a critical component of the Master Plan process, and will continue to be crucial for acheiving the goals of the Plan. When the community recognizes the value of its urban forest, it will be more likely to place priority on its management and development. Making the planning process and document accessible to the community, visitors, and partners will support broader understanding and will foster strong stewardship or the urban forest.

The community engagement process included:

- **Outreach at Fiesta La Ballona 2014**
  The team listened to residents' observations, concerns, and questions about the urban forest.

- **The Culver City Urban Forest Survey**

  The survey gathered residents' views about the urban forest, including the most important benefits, concerns, and challenges. In order to reach a broad audience, the survey was available in hard copy and online (see results on pages 54-55). A total of 325 surveys were collected and analyzed.

- **Five Community Meetings**
  The planning team hosted five community meetings in early 2015. Meetings were publicized in local newspapers, on the City website, email, and a City-wide postcard mailing. The first two meetings focused on residential areas; the second two on commercial areas. The fifth meeting reviewed the draft tree designations using the designation list, map, and tree palette with photos and key information. The draft designations were also posted online. Over 140 people attended the five community meetings. At each meeting, residents discussed their views, concerns, and suggestions with the team of consultants and City staff. Meeting presentations were posted on the City website for residents who could not attend in person.

THEMES FROM COMMUNITY MEETINGS

Discussion at the community meetings and comments on the survey covered a wide range of topics related to the urban forest. The most frequent comments could be grouped into five themes.

• Reducing infrastructure conflicts

Residents were strongly interested in tree species that have less mess and fewer conflicts with infrastructure. Many residents were concerned with damage related to tree roots, also a strong theme from the survey results. Residents spoke clearly in favor of trees that with low maintenance requirements and that are drought-tolerant.

• Design and diversity

Residents generally agreed that at the scale of the block, it is acceptable and often desirable to have monocultures (continuous plantings of a single tree species), if this is balanced with an appropriate amount of diversity at the scale of the City. Residents described the monocultural plantings are an important part of Culver City's Heritage.

• Urban ecology

Residents were very interested in the ecological aspects of the urban forest. Many residents stressed the need for shade, for increased habitat, and for ways to integrate storm water design into the urban forest. Other residents spoke out for native tree species and against invasive species.

• Enhancing certain areas of the City

A few places were mentioned most often as worthy of particular attention regarding expanding the urban forest: South Sepulveda, Washington Blvd, and other commercial corridors with small tree canopies.

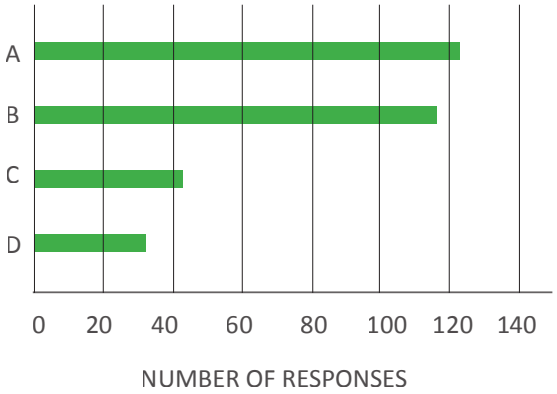
• Maintaining the urban forest

Some residents had concerns about tree trimming (that pruning was either too much or too little). Some residents expressed a desire to be more involved with caring for and enhancing the urban forest.

urban forest survey

1. Goals for the Urban Forest

Most respondents stated a goal for **more trees** in certain parts of Culver City. The second most common goal was for more species and age diversity, which suggests an understanding of the ecological principles involved in managing the urban forest.



A **More trees**

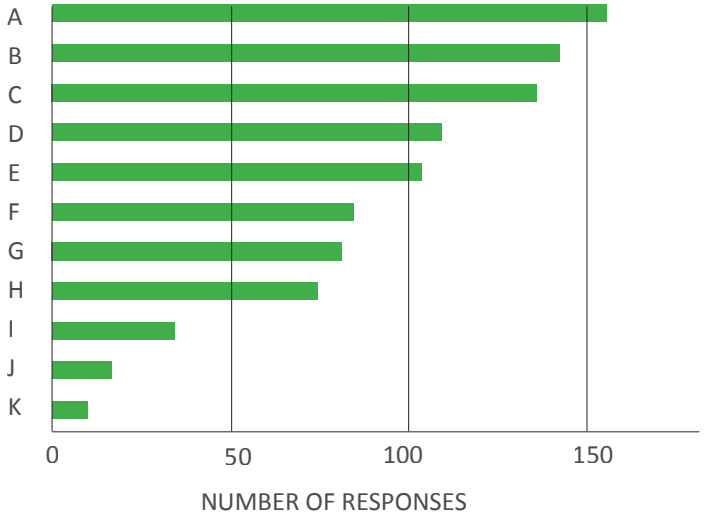
B **More species and age diversity**

C More frequent maintenance

D More community education / involvement

2. Benefits of the Urban Forest

Respondents strongly appreciated the **positive effect of trees on the quality of life and beauty of Culver City**. People also stated a clear appreciation for **trees' effect on urban ecology,** including improved air quality, habitat, and the cooling effects of shade, as well as the role of trees in creating beautiful places in the City.



A **Improves overall quality of life in Culver City**

B **Provides habitat + strengthens urban ecology**

C **Improves air quality**

D Makes beautiful places in the City

E Provides shade

F Improves people's physical+ mental health

G Calms traffic + encourages walking and biking

H Improves property values + local economy

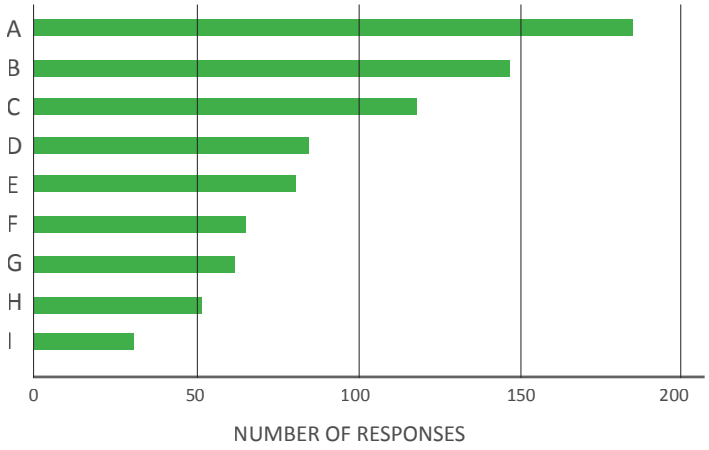
I Improves water quality

J Displays ornamental flowers, leaves, and bark

K Reduces electric bills

3. Concerns about the Urban Forest

Respondents' main concern was with **conflicts between trees and infrastructure**, namely sidewalks and pipes. Despite these problems with trees, their third most frequent concern was that there are not enough trees in the City.

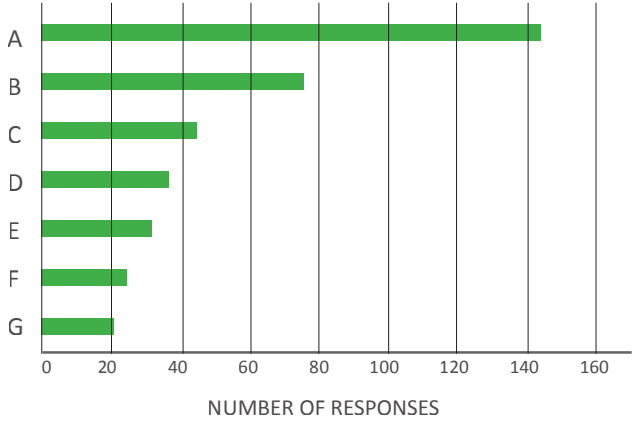


A **Sidewalk damage**
B **Tree roots damaging pipes**
C **Not enough trees and plants**
D Trees need more frequent maintenance
E Leaves, flowers, or fruits dropping
F Not enough trees in these areas or neighborhoods*
G Blocking signs / stores / views / lights
H Limbs falling
I Pollen / allergies

* Some people who checked this response did not indicate which areas or neighborhoods they feel need more trees. Those who did mentioned Overland between Sawtelle and Jefferson, McLaughlin Ave between the two Washingtons, along Washington/West Culver City, and Carlson Park.

2. Communicating about the Urban Forest

Most people would prefer to receive information about the urban forest, trees, and tree care through written information **online or through email**. There was also strong desire stated for community events and volunteer activities related to trees



A **Email**
B Internet - written information
C Mailing
D Community events
E Internet - videos
F Workshops / classes
G Volunteer activities

ways for the community to stay involved

There are several ways that Culver City residents can help support a healthy urban forest.

VOLUNTEER

Residents can assist the City's urban forest program by observing and reporting instances of birds nesting in public trees, so that the City can avoid work that would disturb the nests. To learn more about volunteering in this capacity, please contact Public Works-Maintenance Operations Division at 310-253-6420 or 310-253-6440.

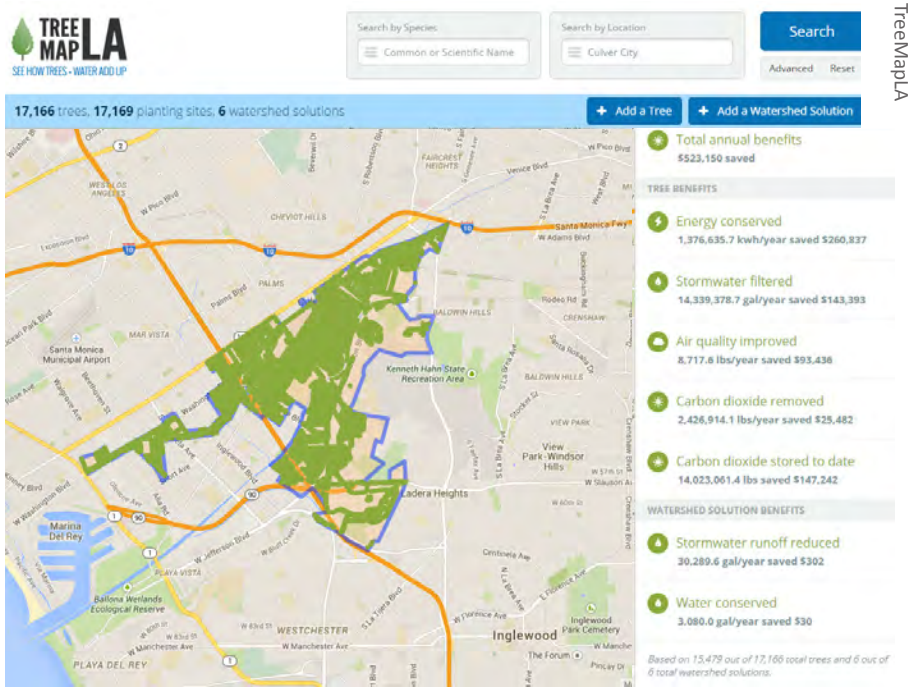
LEARN MORE

The City hosts classes periodically that are related to the urban forest. Past classes include Smart Gardening Workshops, where residents learned how to plan and maintain a garden that is adapted to our climate and requires less water and maintenance. To learn about upcoming classes, visit the City website and sign up for emails about environmental topics.

To learn more about the existing trees in Culver City, view the TreeMapLA online. This map was spearheaded by Tree People; Culver City collaborated with them to upload the 2012 Tree Inventory data. You can learn the name of any existing tree in the City (as of 2012) and you can also view the benefits provided by the urban forest.

BE A STEWARD

While the City owns and maintains street trees, residents can help care for trees and other plants in the parkway in front of their homes. Please refer to "Caring for a Parkway Tree" (Appendix B) for more information.



TreeMapLA

CONNECT WITH LOCAL ORGANIZATIONS

There are many non-profits in Culver City and the greater Los Angeles region that are working on issues related to the urban forest, urban ecology, environmental education, and resource conservation. A few of the organizations are listed here:

- Ballona Creek Renaissance
- The Bay Foundation
- Culver City Garden Club
- Friends of Ballona Wetlands
- Transition Culver City
- TreePeople
- Northeast Trees

summary: strengths and challenges in Culver City's urban forest

GREATEST STRENGTHS OF CULVER CITY'S URBAN FOREST

- Many streets and parks have large mature canopies that provide a strong character to the City while also providing shade and other environmental benefits
- The City has welcoming public spaces and parks shaped by beautiful trees
- The community and the City are strongly engaged with the urban forest and other environmental issues

GREATEST CHALLENGES FOR CULVER CITY'S URBAN FOREST

- Environmental stresses: drought, diseases, pests
- Imbalance of age and genus diversity: maturing forest, high numbers of certain genera
- Infrastructure conflicts: sidewalks, sewers, etc

endnotes

1. Cerra, Julie Lugo. *Images of America: Culver City*. Charleston SC: Arcadi Publishing, 2004, p. 87.
2. "The Historical Ecology of the Ballona Creek Watershed"
3. Gumprecht, 140-141. Fletcher, Infrastructure, p.40.
4. Gumprecht, 30, and "A Whale of a Tale: the Westside Story," historic map of Culver City region by James and Tracey Robertson, 1992.
5. Historical Ecology, appendices 10-3: Flora of the Ballona Valley, La Cienega, and Ballona Lagoon Regions, as documented by herbarium specimens.
6. Cerra, Screenland, 13.
7. Gumprecht, 141.
8. Gumprecht, 142.
9. The location of irrigation ditches is from the 1888 Hall map (see note 12 below). While it cannot be certain that the ditches were the same in earlier decades, it is reasonable to assume that ditches would have persisted in roughly the same location. Similarly, it can reasonably be assumed that farming and ranching during the mid 19th Century was more extensive than it was during the late 19th Century, when the Hall map was drawn.
10. Historic map of Culver City.
11. Cerra, Screenland, 16.
12. Hall, William Hammond. California State Engineering Department, Detail Irrigation Map, Santa Monica Sheet. Sacramento: California Department of Engineerings, 1888. David Rumsey Historical Map Collection, accessed online.
13. Gumprecht, 89.
14. Gumprecht, 53; Historical Ecology, iii and 4.
15. Wikipedia
16. See photos in section "Culver City's Urban Forest Heritage: An Evolving Landscape."
17. USGS map, 1926, Hollywood.
18. Harry Culver's 1913 speech at the California Club, as quoted in Cerra, Chronicles, 40.
19. Cerra, Screenland, 57.
20. Cerra, Screenland, 41.
21. See historic aerial photos from Culver City Public Works Department, some of which are reproduced in this section.
22. Annexation Map, City of Culver City, by the City Information Technology Department, Feb. 5, 2007.
23. McPherson, E.Gregory; Kotow, Louren. 2013. "A Municipal Forest Report Card: Results for California, USA." Urban Forestry & Urban Greening 12, (2013) 134-143.
24. McPherson, E.Gregory; Kotow, Louren. 2013. "A Municipal Forest Report Card: Results for California, USA." Urban Forestry & Urban Greening 12, (2013) 134-143.
25. Nagourney, Adam. "California Imposes First Mandatory Water Restrictions to Deal With Drought," New York Times, 04.01.15, accessed online 06.17.15.
26. McCarthy, Heather R., Diane E. Pataki, and G. Darrel Jenerette 2011. "Plant water-use efficiency as a metric of urban ecosystem services." Ecological Applications 21:3115–3127.
27. Pataki, Diane E., Heather R. McCarthy, Elizaveta Litvak, and Stephanie Pincetl 2011. "Transpiration of urban forests in the Los Angeles metropolitan area." Ecological Applications 21:661–677.
28. Bijoor, Neeta S., Heather R. McCarthy, Dachun Zhang, Diane E. Pataki. "Water sources of urban trees in the Los Angeles metropolitan area." Urban Ecosystems March 2012, Volume 15, Issue 1, pp 195-214
29. Anderton, Frances. "Hadley and Peter Arnold Envision "Hydrologic Zoning" As a Way Out of Drought." Design and Architecture blog, KCRW. Posted April 29, 2015. Accessed June 19, 2015. http://blogs.kcrw.com/dna/hadley-and-peter-arnold-envision-hydrological-zoning-as-a-way-out-of-drought

4 recommendations

recommendations overview

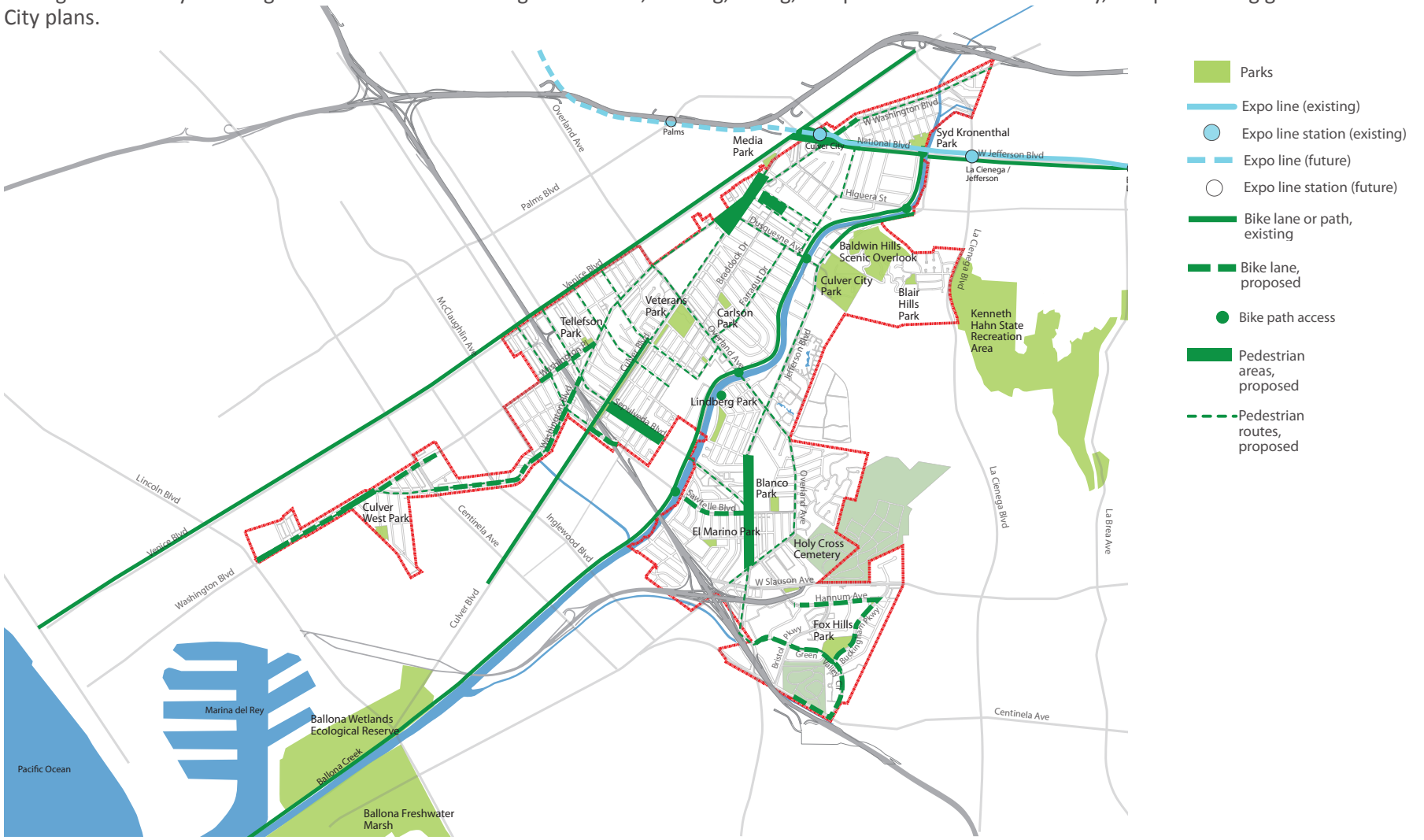
This chapter sets forth recommendations for Culver City's urban forest based on community input, research about the urban forest heritage and ecology, and analysis of existing conditions, combined with current knowledge about urban forestry and local conditions. The recommendations comprise a "big picture" vision for Culver City's urban forest as well as a structured framework of five Action Areas and related Strategies to support acheivement of this vision. The Strategies are also organized into a Schedule of short, mid, and long-term actions, as well as ongoing actions.

The recommendations also address important functions of the urban forest including wayfinding and placemaking. The Tree Palette (recommended tree species for Culver City) is described here, as is the process for selecting certain species for each location in the City (Tree Designations). Areas of greatest need are described in Places of Priority.

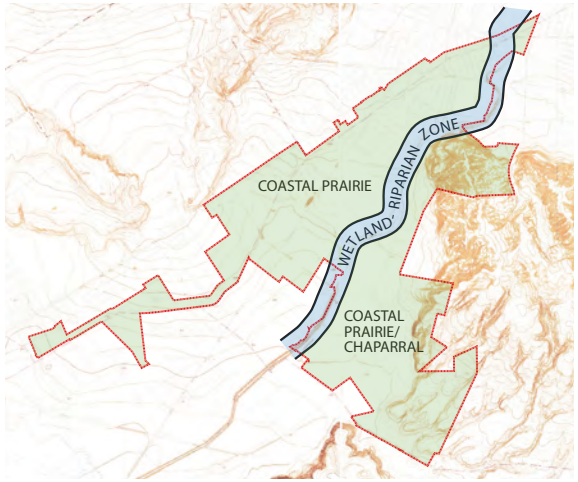
As with the other elements of this Master Plan, the recommendations can be revised over time as necessary to reflect changing conditions and new knowledge about the urban forest.

vision: green connections for Culver City

This chapter on recommendations for the urban forest begins with the large scale, a broad vision for the urban environment of the City. In this vision, planning for and investing in the urban forest will strengthen the important network of "green connections" throughout Culver City. More than just tree-lined streets, this vision describes a green infrastructure that includes the urban forest, park land, sustainable transportation networks, and pedestrian areas. This green infrastructure provides vital functions for the City including improving air and water quality, mitigating the urban heat island effect, reducing energy demand, and improving public health. A strong urban forest and sustainable transportation network work together to improve links among exisiting resources (including civic, retail, and business areas, as well as public space and recreation) to improve access and interconnections throughout the City. These green connections encourage recreation, walking, biking, and public transit use in the City, complementing goals from other City plans.



ecological framework: plant palettes for ecological zones



The first step in strengthening local habitat is to understand the pattern of habitat types that once existed in the area that is now Culver City (see p.24). While these pre-development habitat types (Wetland-Riparian Zone, Coastal Prairie, and Coastal Chaparral) are almost completely gone from this area today, we can use these plant palettes in order to provide more habitat and a stronger ecosystem in the City today. For example, some areas along Ballona Creek (the Wetland-Riparian Zone) could be planted with certain riparian tree species which, in some places, could be maintained to be more "wild" in order to support more bird species along this corridor. Wetland plant species that once grew in the Ballona and La Cienega wetland complexes could be planted in urban rain gardens. Coastal Prairie / Chaparral species could be planted in parks, medians, residential yards, and schoolgrounds.

The species listed in these palettes are **local natives** and are particularly adapted to the soil type and moisture level of their respective ecological zone. These palettes represent a selection of species; there are many other local native plant species that could thrive in these zones. There are also many plants that are native to California but not to the Culver City area, which could thrive here (just one example is *Quercus agrifolia*, Coast Live Oak).

WETLAND - RIPARIAN ZONE PALETTE

for areas adjacent to Ballona Creek, and for rain gardens

TREES
Alnus rhombifolia (White Alder)
Fraxinus velutina (Velvet Ash)
Juglans californica (California Black Walnut)
Populus fremontii (Fremont Cottonwood)
Populus balsamifera (Black Cottonwood)
Salix lasiolepsis (Arroyo Willow)
Salix lasiandra (Pacific Willow)
Salix laevigata (Red Willow)
Salix gooddingii (Black Willow)
Umbellularia californica (California Bay)

SHRUBS
Baccharis salicifolius (Mulefat)
Salix exigua (Sandbar Willow)

PERENNIALS, GRASSES, + REEDS
Anemopsis californica (Yerba mansa)
Cyperus eragrostis (Umbrella sedge)
Juncus mexicanus (Mexican rush)

COASTAL PRAIRIE + COASTAL CHAPARRAL PALETTE

for grassy areas, residential yards, etc.

LARGE SHRUBS
Heteromeles arbutifolia (Toyon)
Baccharis pilularis (Coyotebrush)
Ceanothus spinosus (Greenbark Ceanothus)
Peritoma (syn. Isomeris) arborea (Bladderpod)
Quercus dumosa (Nuttall's Scrub Oak)
Rhus integrifolia (Lemonadeberry)
Rhus ovata (Sugarbush)
Sambucus nigra ssp. *caerulea* (Blue Elderberry)

SMALL SHRUBS
Epilobium canum (California Fuschia)
Eriogonum fasciculatum (California Buckwheat)
Lupinus bicolor, L. longifolius, L. sparsiflorus, L. succulentus, L. truncatus (Lupines)
Ribes aureum (Golden Currant)

PERENNIALS
Asclepias eriocarpa (Wollypod Milkweed)
Asclepias fascicularis (Narrow-leaved milkweed)
Gilia capitata (Globe gilia)
Sisyrinchium bellum (Blue-eyed grass)

PLANTING STRUCTURE

The structure of planting in large part determines its value as habitat (species composition is another major factor in habitat value). In general, if more planted layers (canopy, sub-canopy, shrub, groundcover) are present, a greater variety of species can use this habitat. However, these kinds of layered plantings are not appropriate for many urban situations. It is important, then, to determine where these types of habitats could be offered within the urban forest.

MOST COMPLEX STRUCTURE ⟷ LEAST COMPLEX STRUCTURE

MOST SPECIES DIVERSITY

+ complex structure provides crucial urban habitat
+ provides more ecological benefits

- more plants require more maintenance
- might not allow enough visibility / sense of safety

Most appropriate for:
--natural resource areas
--residential landscapes

LEAST SPECIES DIVERSITY

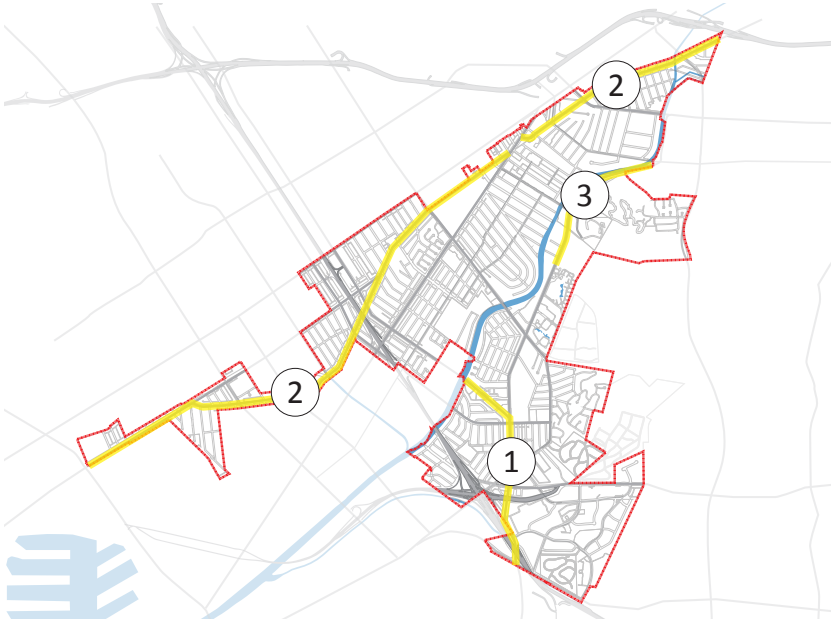
+ requires less maintenance
+ high visibility

- low habitat value
- fewer ecological benefits

Most appropriate for:
--plazas
--parts of parks
--parkways

places of priority: Key Locations for Strengthening the Urban Forest

Community input as well as the consultant team's site observations revealed several areas of priority for expanding the urban forest. Identifying these places of priority allows the City to focus future efforts and resources where they are most needed. Some of the most visible and highly-trafficked parts of the City, these areas have the greatest need for more trees and larger canopies to reduce the visual impact of wide commercial streets and to increase walkability and shade. The areas are listed in order of priority, based on community input. Over time, other priorities may arise and the City can respond accordingly.



1. Sepulveda Blvd south of Ballona Creek

This is a wide (6-lane) commercial street lined with storefronts and expansive parking lots, with little visual buffer. The existing tree wells are too small to support a large canopy tree; the resulting small canopies do not match the scale of the street and hardscape.

2. Washington Blvd

This is the longest continuous road in Culver City and the link between the City, the beach, and West Los Angeles. The existing Mexican Fan Palms shape a dramatic vertical allee and aid in waydfinding, but they do not offer shade for pedestrians or visual interest at the level of people, cars, and shops. The lack of shade discourages pedestrian activity and may also encourage higher vehicle speeds.

3. Jefferson Blvd north of Raintree

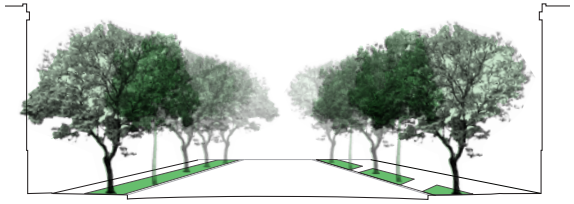
This part of Jefferson Blvd has very few tree wells and lacks the extensive medians further south on Jefferson. This lack of street planting creates an imposing character on this section of the wide (5-lane) boulevard. In addition, the lack of trees discourages pedestrian activity along this route, which is a vital connector between the two largest parks in the City.

1. Sepulveda Blvd south of Ballona Creek

2. Washington Blvd

3. Jefferson Blvd north of Raintree

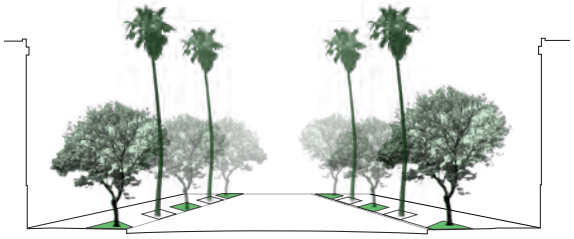
places of priority: proposals for Strengthening the Urban Forest



1. Sepulveda Blvd south of Ballona Creek

LENGTHEN TREE WELLS

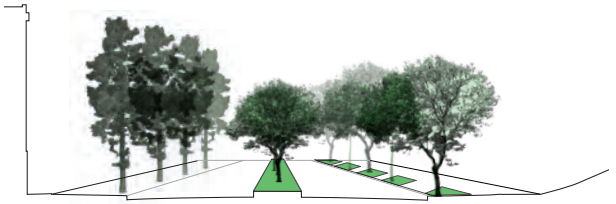
Lengthening the existing tree wells would accomodate larger canopy trees, which would could balance the wide scale of the street and provide a visual buffer between the street, shops, and parking lots.



2. Washington Blvd

INTERPLANT SHADE TREE WITH PALM

Adding a shade tree to the palms along Washington would greatly improve the corridor's walkability, strengthening pedestrian connections throughout the City and encouraging foot traffic to the many shops and destinations along the boulevard. The selected species of shade tree will have a canopy high enough that the trees will not block signs or storefronts.



3. Jefferson Blvd north of Raintree

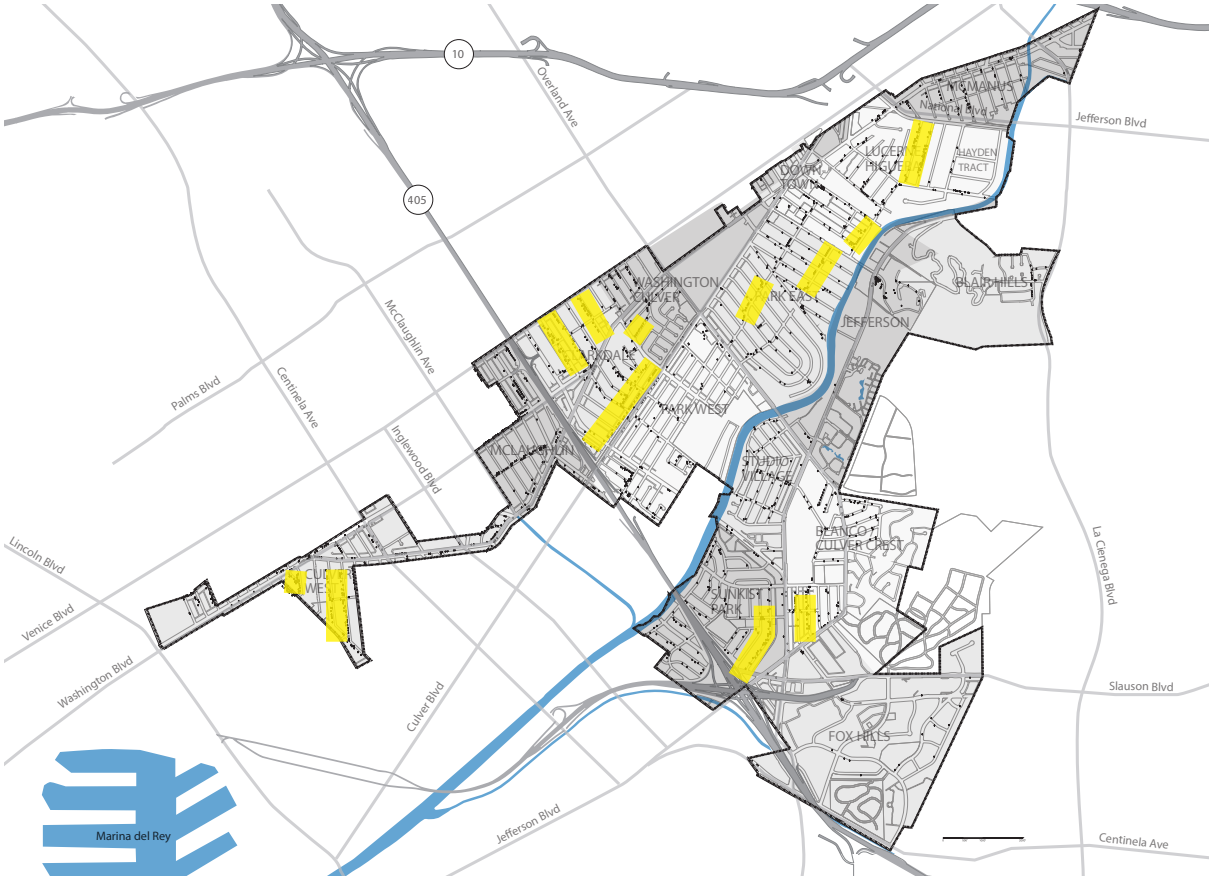
ADD TREE WELLS +/or MEDIANS

Similar to both Sepulveda and Washington Blvds, adding large trees would strongly improve the aesthetics of this portion of Jefferson and would increase pedestrian activity among the shops, offices, services, and parks here.

VACANCIES

Vacancies are empty tree wells or spots in a parkway. As of the writing of this Plan, there were a total number of 16,962 planting spaces, of which 1,305 (7.7%) were vacant. When the City undertakes planting of new street trees, it will examine the map of vacancies in order to help identify areas with greater need for new trees.

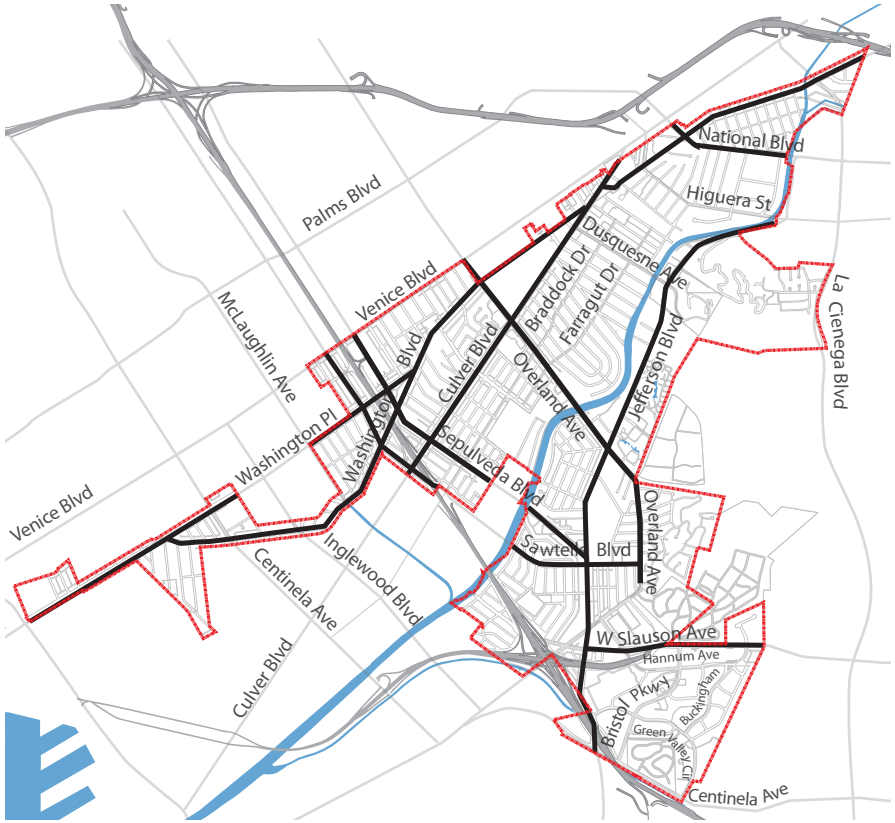
Areas with more vacancies



wayfinding

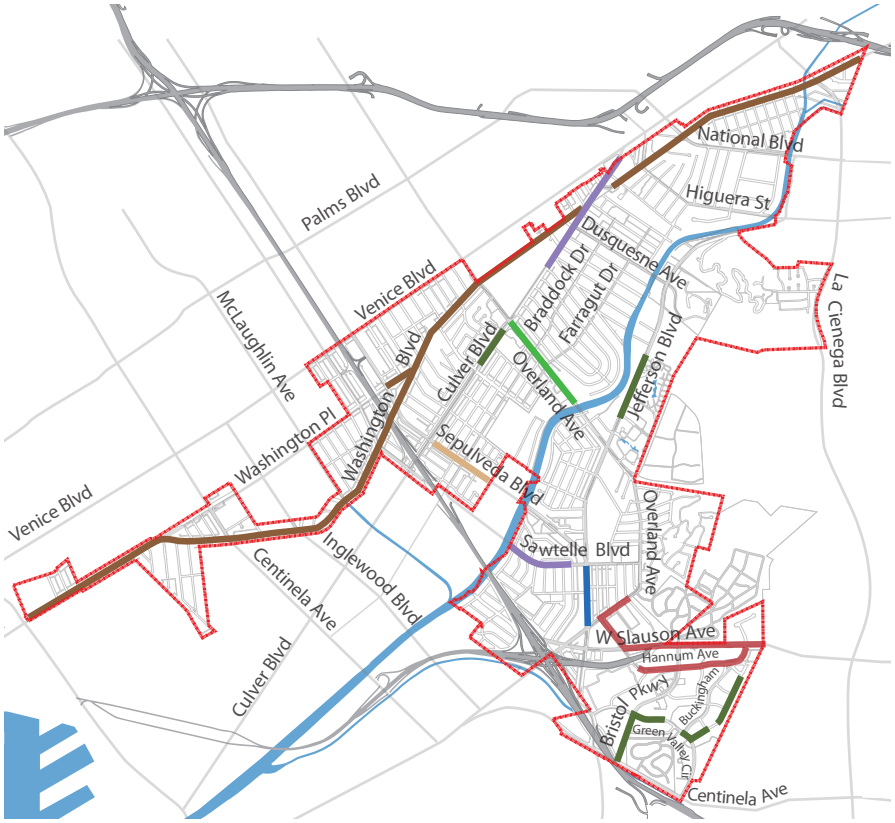
Orientation and Navigation in Culver City

The irregular street pattern in Culver City poses a challenge for orientation and navigation in the City. As discussed in the Urban Forest Heritage section, the current street layout was based on earlier rail lines, irrigation ditches, and subdivision parcel lines, and also responded to the topography of Baldwin Hills. As such, the street layout does not follow the regular grid common to much of the rest of the Los Angeles region. Major streets like Washington Blvd, Jefferson Blvd, Sepulveda Blvd, and Overland Ave change direction so dramatically it can be difficult to orient oneself. In some places, existing street trees aid in wayfinding by providing strong identity to certain corridors like Washington Blvd and parts of Overland Ave and Jefferson Blvd.



MAJOR STREETS IN CULVER CITY

This diagram shows the irregular (non-grid) pattern of major streets in the City. Also, some of the main streets are partly located in Los Angeles, so the design of the streetscape may be discontinuous.

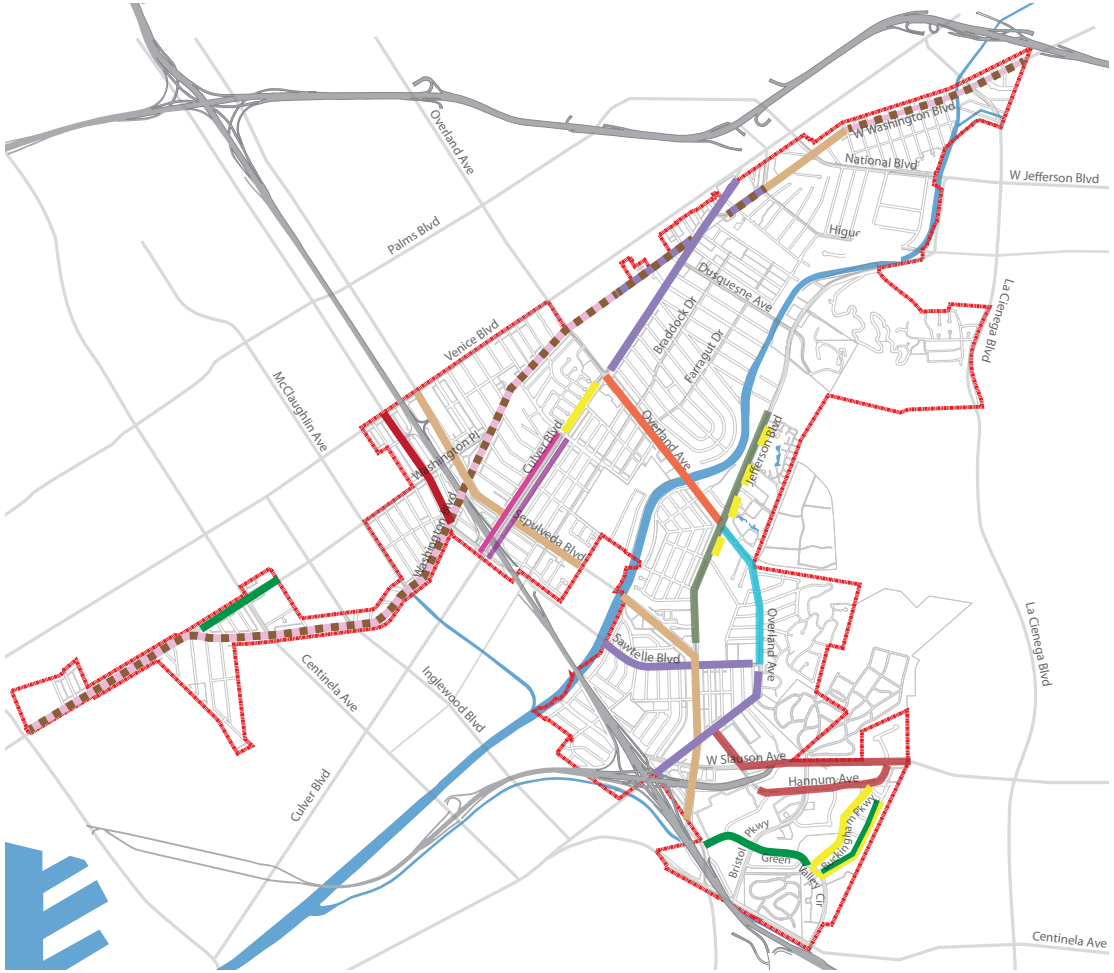


EXISTING PRIMARY SPECIES ON MAJOR STREETS

- *Washingtonia robusta*
- *Jacaranda mimosifolia*
- *Ficus macrocarpa*
- *Pinus canariensis*
- *Podocarpus gracilior*
- *Platanus x acerifolia*
- *Podocarpus macrophyllus*

wayfinding: proposal for Strengthening the Urban Forest as a Framework for Orientation and Navigation

The Tree Designations included in this plan were selected in part to strengthen wayfinding in the City. The key considerations are discussed below.



In designating tree species for the main corridors to help with wayfinding, the planning team selected species for continuity, contrast, and strong character:

- CONTINUITY: As much as possible, a few species were designated along the length of a main corridor to provide as much continuity as possible. Often, conditions like planting space sizes, existing species, and the location of overhead wires change over the length of a corridor so it is usually not possible to designate one species along the entire length.
- CONTRAST: At major intersections (i.e. Jefferson and Sepulveda, Sawtelle and Slauson) species on each main corridor were selected to provide contrast between one street and the other
- STRONG CHARACTER: Species with strongly identifiable form (and large canopies, if possible) contribute more to wayfinding

There are limits to the effect that street trees can have on wayfinding, including :

- IRREGULAR CITY BOUNDARY: In some cases, the main corridors are located partly in Los Angeles (i.e. Sepulveda, Sawtelle, Washington Pl.) so it is not possible to determine the species along the entire length of the corridor
- INCREMENTAL NATURE OF DESIGNATIONS: Designated species will be planted over time, so the effect on wayfinding will also occur over time

DESIGNATED SPECIES FOR MAJOR STREETS

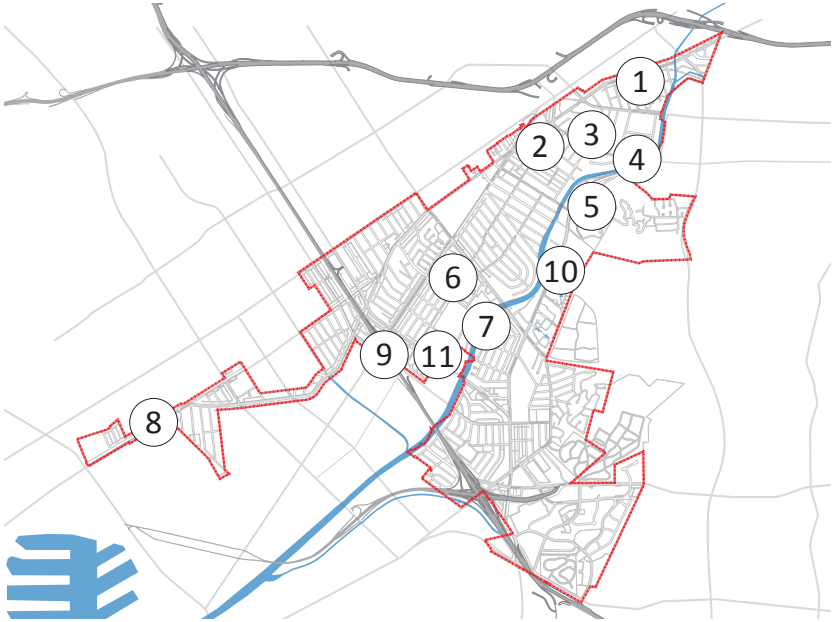
Angophora costata *Arbutus 'Marina'* *Calocedrus decurrens* *Casuarina cunninghamiana* *Ficus macrocarpa* *Geijera parvifolia* *Ginkgo biloba*

Jacaranda mimosifolia *Koelreuteria bipinnata* *Pinus canariensis* *Platanus x acerifolia* *Podocarpus gracilior* *Podocarpus macrophyllus* *Quercus virginiana*

Tabebuia impetiginosa *Washingtonia robusta*

place-making The Role of the Urban Forest in Shaping Culver City's Public Spaces

Trees and plants play an important role in creating vibrant public spaces in Culver City. Trees and plants make beautiful, comfortable places to gather, play, work, relax, and shop. These places shape the identity of the City and greatly contribute to quality of life in the City by facilitating connection to the outdoors, recreation, community interaction. The places shown here are just a selection of the great places shaped by trees throughout Culver City.



1 Washington Blvd
2 Downtown Culver City
3 Lucerne-Higuera neighborhood
4 Syd Kronenthal Park
5 Culver City Park
6 Veterans' Park
7 Ballona Creek
8 Washington Blvd - West Culver City
9 McLaughlin neighborhood
10 Jefferson neighborhood
11 Sepulveda Blvd

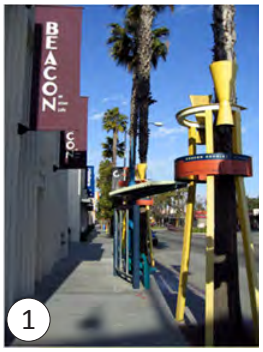
NEIGHBORHOODS

McManus neighborhood: mature Chinese elms

McLaughlin neighborhood: mature magnolias

Jefferson neighborhood: mature Canary Island pines

MAIN STREETS



Washington Blvd: Palms and public art

Main St: Trees with seating

Sepulveda Blvd: Trees with seating

PARKS

Syd Kronenthal Park: massive ficus canopy shades picnic area

Culver City Park: mature eucalyptus grove defines picnic area and provides shade

Veterans' Park: venerable ficus tree

PLAZAS

Downtown: double row of jacarandas on Culver Blvd

Downtown: streetscape planting at City Plaza

BIKE PATHS

Ballona Creek: linear native plant garden

tree palette: selected species for Culver City

Two of the most important components of the Master Plan are the Tree Palette and the Tree Designations. Along with the other recommendations, the Palette and Designations provide a plan for creating a more resilient urban forest in Culver City. The Palette and Designations are the result of a thorough process of research, analysis, and decision-making; however, they are not set in stone: the City can revise them over time in order to reflect new information, respond to scientific research, and to adapt to changing conditions.

The Tree Palette (see following page) is a master list of all the species that are recommended for Culver City's urban forest. These species have been selected according to several important criteria, noted below.

CRITERIA FOR SELECTING SPECIES FOR THE TREE PALETTE

1. PROVEN LOCAL PERFORMANCE

Tree species that have already performed well in Culver City or in nearby cities have a high chance for continued success in the urban forest. Drawing on the extensive local experience of City staff, residents, designers, arborists, and ecologists, the palette includes familiar trees that are healthy, long-lived, and beautiful.

2. ABILITY TO THRIVE IN URBAN CONDITIONS

Some species are better adapted to urban conditions than others. The Palette includes species that can thrive in urban conditions including poor, compacted soil and polluted air. Another important element of a species' appropriateness for the urban forest is that it have low risk of infrastructure conflicts.

3. RESILIENCY

Similarly, the species on the palette all exhibit resiliency: they can survive a range of challenges and stresses and continue to thrive. Overall, the species are at low risk of damage by pest or disease. Most species on the Palette can withstand drought and require a low to moderate level of maintenance.

4. ENVIRONMENTAL BENEFITS

Trees provide a range of environmental benefits including cooling, stormwater retention, and carbon sequestration. Species were selected in part to maximize the environmental benefits of the urban forest.

5. AESTHETICS

Trees create places of beauty in the City, including shady sidewalk plazas, lushly canopied neighborhoods, and inviting public spaces. Beauty is an important criteria for selecting trees for the urban forest.

6. HABITAT / ECOSYSTEM VALUE

Urban trees provide important habitat for birds, mammals, and insects. Some species offer more habitat value than others.

7. GOOD "NEW" SPECIES FOR CULVER CITY

Several of the species on the Palette are not currently represented in the City's urban forest, but have very high potential for success. These trees meet the other criteria listed here, and have been recommended by numerous local arborists, horticulturists. By planting some of these species, the City will be able to "test" their success and may find them to be an important new component of the evolving urban forest.

A NOTE ON NATIVE TREES

The Palette includes several California native tree species that meet these criteria (see p. 73). Native plants are well-adapted to our climate and provide important habitat to native species. However, not all native California trees are able to thrive in urban conditions with compacted soil, air pollution, and the small growspaces in tree wells or parkways; nor are all native species drought-tolerant. The California native species on the palette have been generally successful as street trees in the Los Angeles region.

Not all trees that we know as California natives are native to the Los Angeles region, and even fewer are native to the land that is now Culver City. The pre-development landscape in the Culver City area included few trees of very few species (see the section entitled "Culver City's Urban Forest Heritage: An Evolving Landscape").

tree palette | alphabetical order

Acrocarpus fraxinifolius
PINK CEDAR

Afrocarpus (Syn. *Podocarpus*) *gracilior*
FERN PINE

Alnus rhombifolia
WHITE ALDER

Angophora costata
APPLE GUM

Arbutus 'Marina'
MARINA STRAWBERRY TREE

Archontophoenix cunninghamiana
KING PALM

Bauhinia variegata
PURPLE ORCHID TREE

Bischofia javanica
BISCHOFIA

Brachychiton populneus
BOTTLE TREE

Brahea armata
MEXICAN BLUE PALM

Brahea edulis
GUADELUPE PALM

Calocedrus decurrens
INCENSE CEDAR

Calodendrum capense
CAPE CHESTNUT

Casuarina cunninghamiana
RIVER SHE-OAK

Cedrela fissilis
BRAZILIAN CEDAR WOOD

Cedrus deodara
DEODAR CEDAR

Ceiba speciosa
SILK FLOSS TREE

Cercidium 'Desert Museum'
DESERT MUSEUM PALO VERDE

Cercis occidentalis
WESTERN REDBUD

Cinnamomum camphora
CAMPHOR TREE

Erythrina crista-galli
COCKSPUR CORAL TREE

Geijera parviflora
AUSTRALIAN WILLOW

Ginkgo biloba
MAIDENHAIR TREE

Jacaranda mimosifolia
JACARANDA

Jubaea chilensis
CHILEAN WINE PALM

Koelreuteria bipinnata
CHINESE FLAME TREE

Lagerstroemia indica
CRAPE MYRTLE

Lophostemon confertus
BRISBANE BOX

Maytenus boaria 'Green Showers'
MAYTEN TREE

Melaleuca linariifolia
FLAXLEAF PAPERBARK

Metrosideros excelsa
NEW ZEALAND CHRISTMAS TREE

Olmediella betschleriana
COSTA RICAN HOLLY

Paulownia tomentosa
EMPRESS TREE

Pinus halepensis
ALEPPO PINE

Pinus pinea
ITALIAN STONE PINE

Pinus torreyana
TORREY PINE

Pistacia chinensis
CHINESE PISTACHE

Platanus racemosa
CALIFORNIA SYCAMORE

Platanus x acerifolia
London Plane Tree

Pyrus kawakamii
Evergreen Pear

Quercus agrifolia
COAST LIVE OAK

Quercus tomentella
ISLAND OAK

Quercus virginiana
SOUTHERN LIVE OAK

Quillaja saponaria
SOAPBARK TREE

Rhus lancea
AFRICAN SUMAC

Sophora japonica
JAPANESE PAGODA TREE

Spathodea campanulata
AFRICAN TULIP TREE

Stenocarpus sinuatus
FIREWHEEL TREE

Stereospermum (Radermachera) sinica
CHINA DOLL

Syagrus romanzoffianum
QUEEN PALM

Tabebuia chrysotricha
GOLDEN TRUMPET TREE

Tabebuia impetiginosa
PINK TRUMPET TREE

Tipuana tipu
TIPU TREE

Ulmus parvifolia
CHINESE ELM

Washingtonia robusta
MEXICAN FAN PALM

tree palette | by species origin

California And Baja

Alnus rhombifolia
WHITE ALDER

Brahea armata
MEXICAN BLUE PALM

Calocedrus decurrens
INCENSE CEDAR

Cercis occidentalis
WESTERN REDBUD

Platanus racemosa
CALIFORNIA SYCAMORE

Pinus torreyana
TORREY PINE

Quercus agrifolia
COAST LIVE OAK

Quercus tomentella
ISLAND OAK

USA (outside CA)

Cercidium 'Desert Museum'
DESERT MUSEUM PALO VERDE

Quercus virginiana
SOUTHERN LIVE OAK

Central + South America

Brahea edulis
GUADELUPE PALM

Cedrela fissilis
BRAZILIAN CEDAR WOOD

Ceiba speciosa
SILK FLOSS TREE

Erythrina crista-galli
COCKSPUR CORAL TREE

Jacaranda mimosifolia
JACARANDA

Jubaea chilensis
CHILEAN WINE PALM

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GOLDEN TRUMPET TREE

Tabebuia impetiginosa
PINK TRUMPET TREE

Tipuana tipu
TIPU TREE

Washingtonia robusta
MEXICAN FAN PALM

Asia

Acrocarpus fraxinifolius
PINK CEDAR

Bauhinia variegata
PURPLE ORCHID TREE

Bischofia javanica
BISCHOFIA

Cedrus deodara
DEODAR CEDAR

Ginkgo biloba
MAIDENHAIR TREE

Koelreuteria bipinnata
CHINESE FLAME TREE

Lagerstroemia indica
CRAPE MYRTLE

Paulownia tomentosa
EMPRESS TREE

Pistacia chinensis
CHINESE PISTACHE

Pyrus kawakamii
EVERGREEN PEAR

Sophora japonica
JAPANESE PAGODA TREE

Stereospermum (Radermachera) sinica
CHINA DOLL

Ulmus parvifolia
CHINESE ELM

Australia + New Zealand

Angophora costata
APPLE GUM

Archontophoenix cunninghamiana
KING PALM

Brachychiton populneus
BOTTLE TREE

Casuarina cunninghamiana
RIVER SHE-OAK

Geijera parviflora
AUSTRALIAN WILLOW

Lophostemon confertus
BRISBANE BOX

Melaleuca linariifolia
FLAXLEAF PAPERBARK

Metrosideros excelsa
NEW ZEALAND CHRISTMAS TREE

Stenocarpus sinuatus
FIREWHEEL TREE

Africa

Afrocarpus gracilior
FERN PINE

Calodendrum capense
CAPE CHESTNUT

Cinnamomum camphora
CAMPHOR TREE

Rhus lancea
AFRICAN SUMAC

Spathodea campanulata
AFRICAN TULIP TREE

Europe

Pinus halepensis
ALEPPO PINE

Pinus pinea
ITALIAN STONE PINE

Hybrid origin

Arbutus 'Marina'
MARINA STRAWBERRY TREE

Platanus x acerifolia
LONDON PLANE TREE

tree palette | species that are new to Culver City's urban forest

These trees meet the other criteria listed here, and have been recommended by numerous local arborists, horticulturists. By planting some of these species, the City will be able to "test" their success and may find them to be an important new component of the evolving urban forest.

Note: These species are currently not part of Culver City's public tree inventory (2012), or are represented by fewer than 10 specimens.

Acrocarpus fraxinifolius
PINK CEDAR

Angophora costata
APPLE GUM

Arbutus 'Marina'
MARINA STRAWBERRY TREE

Bischofia javanica
BISCHOFIA

Brahea armata
MEXICAN BLUE PALM

Calocedrus decurrens
INCENSE CEDAR

Calodendrum capense
CAPE CHESTNUT

Casuarina cunninghamiana
RIVER SHE-OAK

Cedrela fissilis
BRAZILIAN CEDAR WOOD

Cercidium 'Desert Museum'
DESERT MUSEUM PALO VERDE

Cercis occidentalis
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Erythrina crista-galli
COCKSPUR CORAL TREE

Jubaea chilensis
CHILEAN WINE PALM

Maytenus boaria
MAYTEN TREE

Melaleuca linariifolia
FLAXLEAF PAPERBARK

Olmediella betschleriana
COSTA RICAN HOLLY

Paulownia tomentosa
EMPRESS TREE

Pinus torreyana
TORREY PINE

Quercus virginiana
SOUTHERN LIVE OAK

Quillaja saponaria
SOAPBARK TREE

Sophora japonica
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Spathodea campanulata
AFRICAN TULIP TREE

Stereospermum (Radermachera) sinica
CHINA DOLL

Tabebuia chrysotricha
GOLDEN TRUMPET TREE

tree designations: a framework for managing change over time

The Tree Designations list (Appendix G) indicates which species (selected from the Palette) will be planted on each block in the City when a tree is removed. The main goal of the designations process is to select the best species for each planting location in the City. The designations seek to reduce potential infrastructure conflicts, to establish stronger aesthetics for City streets and neighborhoods, to make maintenance more efficient, and to shape a more resilient urban forest overall. The Designations are based on knowledge gained from the existing urban forest, and from current scientific research. As with the Palette, the City may alter the Designations over time to reflect new information, knowledge, and experience.

It is important to emphasize that the Master Plan does not call for the removal or replacement of any particular tree or tree species. The designations list will be used only when a tree needs to be removed. In this way, the species on this list will not be planted all at once; rather, the designations list shapes a process of change over time.

In some cases, the existing tree was selected to for continued planting in the future. In other cases, a different species was selected. In some situations, there was no predominant existing species, and the plan designates either one of the existing species or another species that was deemed more suitable.

To determine which species would be designated for each block, the Master Plan Team considered several questions (criteria), listed in the box to the right.

TREE DESIGNATION PROCESS / CRITERIA

1. What is the existing species, and is it OK for this site? Is this species "overplanted" in the City?

2. What species would work well with the existing species?

3. What is the parkway size? What is the largest possible tree for this location?

4. Are there overhead wires or other particular conditions?

5. What kind of street is it? What is the urban context?

EXISTING: some less resilient species

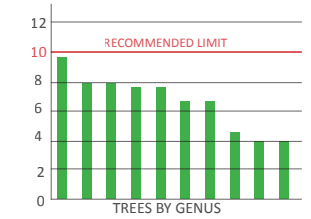
FUTURE: more resilient species

EXISTING: mixed planting on some blocks

FUTURE: more uniformity at block

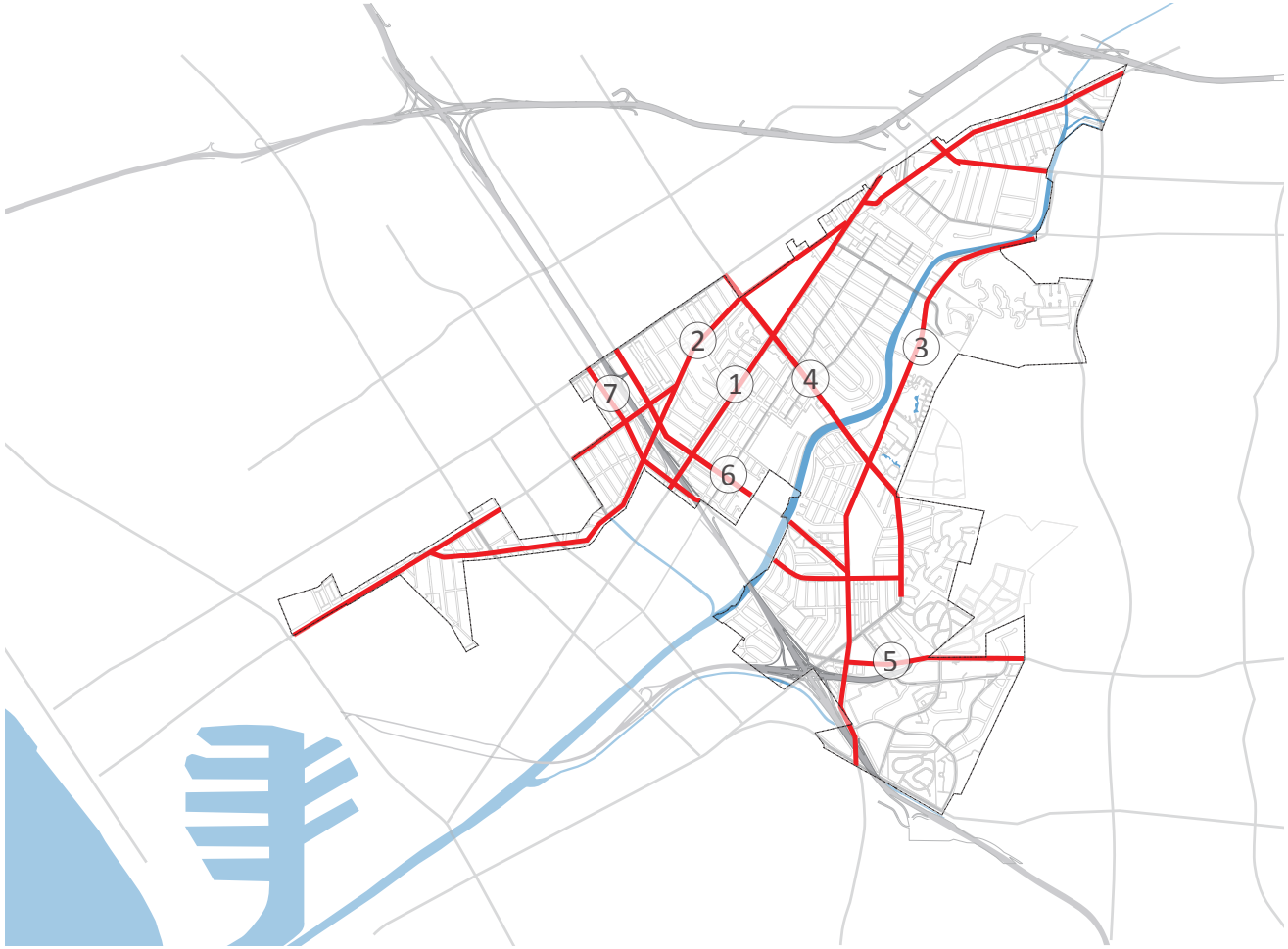
EXISTING: some types overplanted

FUTURE: more appropriate amount of diversity



tree designations for major streets

The major streets in Culver City comprise a significant portion of the the urban forest, both in terms of the numbers of trees planted along them and in terms of the way they shape the identity and experience of the City. As the most highly travelled routes in the City, these streets are an important part of the daily experience for residents, visitors, and people passing through the City. The following pages describe the thought process used to select species for planting on these streets when a tree is removed (the Tree Designations). A similar process was applied for designating tree species for each block in the City. On the main corridors, the Plan proposes species that will increase shade, offer seasonal interest, improve wayfinding, and maximize environmental benefits. The complete tree designations are in Appendix G.



1. CULVER BLVD
2. WASHINGTON BLVD
3. JEFFERSON BLVD
4. OVERLAND AVE
5. SLAUSON AVE
6. SEPULVEDA AVE
7. SAWTELLE AVE

CULVER BLVD Retain jacaranda as "identity tree," add drought-tolerant canopy trees

PROPOSED

Pinus torreyana
(Torrey Pine)

Ginkgo biloba
(Maidenhair Tree)

EXISTING

Jacaranda mimosifolia
(Jacaranda)

Juniperus chinensis
'Torulosa'
(Hollywood Juniper)

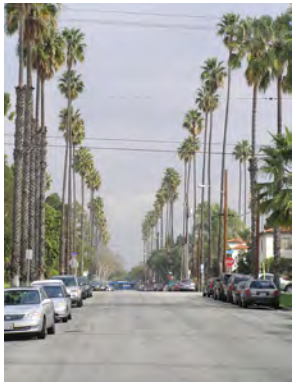
Pinus canariensis
(Canary Island Pine)

WASHINGTON BLVD Add canopy trees to palms for shade and greater benefits

PROPOSED

EXISTING

Koelreuteria bipinnata
(Chinese Flame Tree)



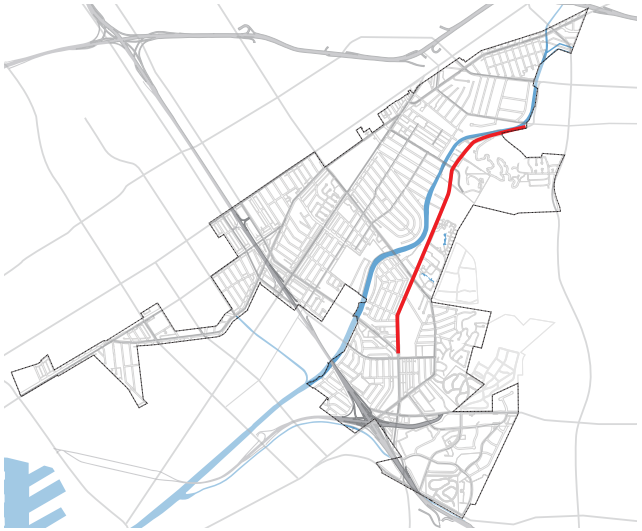
Washingtonia robusta
(Mexican Fan Palm)

Jacaranda mimosifolia
(Jacaranda)

Platanus x *acerifolia*
(London Plane Tree)

Lophostemon confertus
(Brisbane Box)

JEFFERSON BLVD Drought-tolerant species and fall color



PROPOSED

Casuarina cunninghamiana
(River She-Oak)

Gingko biloba
(Maidenhair Tree)

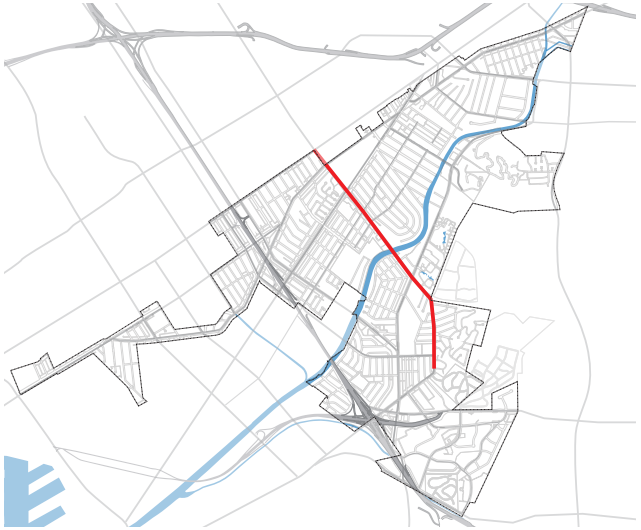
EXISTING

Pinus canariensis
(Canary Island Pine)

Liquidambar styraciflua
(American Sweetgum)

Ficus microcarpa 'Nitida'
(Indian Laurel Fig)

OVERLAND AVE Evergreen species with beautiful bark, canopy, and/or flowers



PROPOSED

Arbutus 'Marina'
(Strawberry Tree)

Metrosideros excelsus
(New Zealand
Christmas Tree)

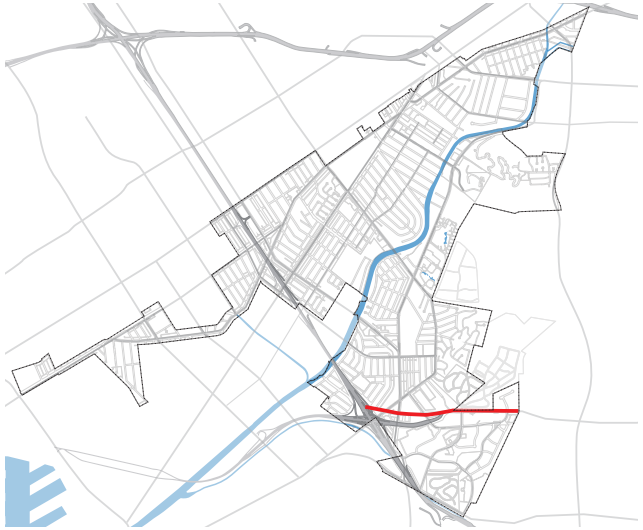
Quercus virginiana
(Southern Live Oak)

EXISTING

Callistemon citrinus
(Crimson Bottlebrush)

Ficus microcarpa 'Nitida'
(Indian Laurel Fig)

SLAUSON AVE Add flowering species for seasonal bloom



PROPOSED

Tabebuia impetiginosa
(Pink Trumpet Tree)

Pinus pinea
(Stone Pine)

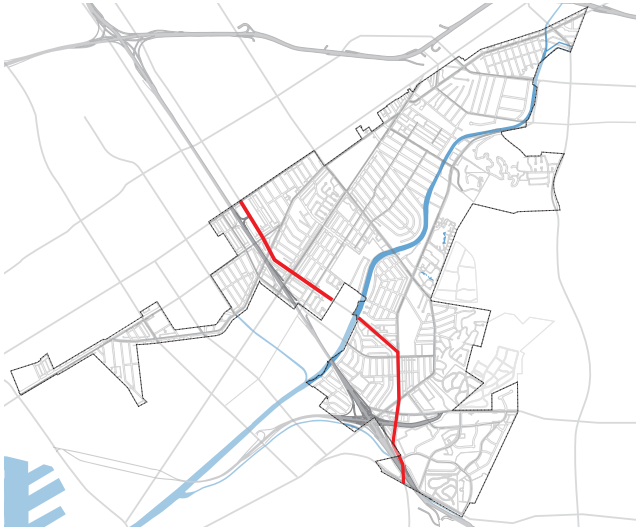
Pyrus kawakamii
(Evergreen Pear)

EXISTING

Afrocarpus gracilior
(Podocarpus,
Fern Pine)

Cedrus deodara
(Deodar Cedar)

SEPULVEDA AVE Retain London Plan as "identity tree," add floweing canopy trees



PROPOSED

EXISTING

Tipuana tipu
(Tipu Tree)

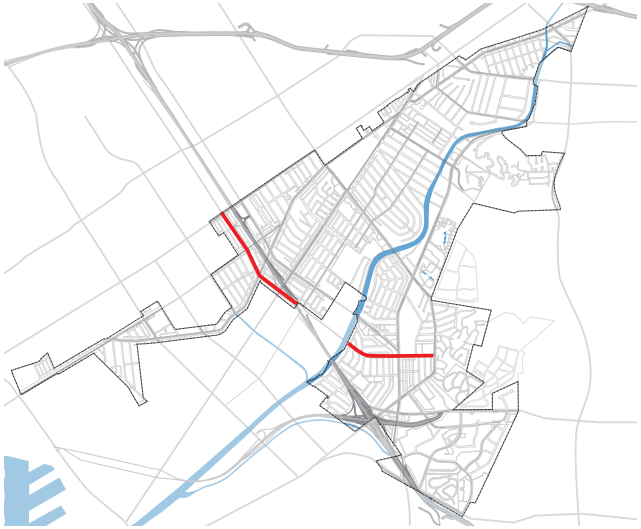
Pyrus kawakamii
(Evergreen Pear)

Platanus x *acerifolia*
(London Plane Tree)

Lophostemon confertus
(Brisbane Box)

Podocarpus macrophyllus
(Yew Pine)

SAWTELLE AVE Increase drought-tolerance and canopy size, add seasonal beauty



PROPOSED

Angophora costata
(Applegum)

Metrosideros excelsus
(New Zealand
Christmas Tree)

Pinus pinea
(Stone Pine)

EXISTING

Jacaranda mimosifolia
(Jacaranda)

Magnolia grandiflora
(Southern Magnolia)

Ficus microcarpa
'Nitida'
(Indian Laurel Fig)

strategies for tree well paving and size

Many tree wells with rigid paving (tree grates or permeable paving) are currently cutting into the base of tree trunks. For the majority of the trees downtown, the trunks have expanded into the tree grates, which compromises the structure and health of the tree. Wells with "soft" paving, like decomposed granite or mulch, allow the tree trunk to grow unimpeded. Elongated planting areas, such as the one pictured below right, provide more space for root growth than small "cut-outs." Where appropriate, cut-outs could be extended into continous planting areas for this reason.

Tree grates
Culver Blvd, downtown

Tree grate replaced with decomposed granite
Culver Blvd near Downtown

Continuous planting area
Washington Blvd east of Walgrove Ave

creating more planting space : Strategies for expanding the urban forest

Some streets could benefit from more space for trees, especially in situations where the existing tree wells or parkways are very narrow, or where the street is very wide. A few strategies that the City is already using in order to create more space for trees are pictured below. In the future, the City will continue to employ these strategies where appropriate. Careful planning is required in order to balance the desire for additional planting space with provision for vehicle and bicycle lanes, issues of safety and visibility, as well as cost of construction and maintenance.

Medians
Jefferson Blvd

Bumpouts, approximately 6’ x 6’
Hayden St

Rain gardens
Baldwin Ave and Farragut Dr

Large planters
Culver and Washington Blvds

recommendations framework: action areas and strategies

In order to achieve the vision for the urban forest described in the previous pages, recommendations are structured into a framework that comprises Action Areas and related Strategies to support acheivement of this vision. The Strategies are also organized into a schedule of short, mid, and long-term actions, as well as ongoing actions.

As with the other elements of this Master Plan, the recommendations can be revised over time as necessary to reflect changing conditions and new knowledge about the urban forest.

ACTION AREAS

1 EVALUATE

2 MANAGE

3 ENHANCE

4 ENGAGE

5 FUND

recommendations framework: summary

Action Areas	Strategies

1 EVALUATE
Conduct periodic evaluations of urban forest using criteria and indicators, as well as quantifiable and qualifiable benefits
	• COLLECT DATA + ASSESS: Periodically collect benchmark data and review Criteria and Indicators (quantifiable data) to assess condition of the urban forest
	• REVIEW + REPORT: On a biennial and seven-year cycle, write reports that compile information in previous items
	  • QUANTIFY BENEFITS: Analyze current urban forest benefits, compare to benchmark benefits, establish goals for future
	  • QUALIFY BENEFITS: In addition to quantifiable data, evaluate the urban forest's contribution to placemaking, wayfinding, aesthetics, urban design, walkability, neighborhood character, etc.
	  • REVIEW TREE SPECIES: Periodically evaluate the performance of tree species and adjust desingations accordingly
	  • UPDATE TREE GUIDELINES: Periodically update tree guidelines to reflect current industry standards

2 MANAGE Provide careful, thorough, and systematic maintenance and resource management	• MAINTAIN TO HIGH STANDARD: Use Tree Guidelines in Plan to effectively and efficiently maintain City trees • DEVELOP + REFINE STRATEGIES: Continue to develop methods to reduce tree-infrastructure conflicts + to manage pests + diseases • RENEW: Plant young trees to balance aging tree population and reduce vacancy rate • COORDINATE WITHIN CITY: Continue to coordinate decisions about the urban forest with other City goals and initiatives regarding transit, recreation, water quality, etc. • BUILD KNOWLEDGE: Continue to work with other local urban forest managers to share knowledge and best practices

3 ENHANCE
Strengthen the urban forest to acheive maximum benefits
	• INCREASE CANOPY: Plant trees in areas with low canopy cover or where there is particular need; plant large trees where possible
	• ENHANCE SENSE OF PLACE: Reinforce neighborhood character; strengthen sense of place in commercial and public areas
	• IMPROVE WAYFINDING: Consider how the urban forest can improve orientation, particularly in areas with confusing circulation patterns. Strengthen links between public spaces, parks, pedestrian areas
	• STRENGTHEN THE URBAN ECOSYSTEM: Increase the habitat value of the urban forest, continue to develop stormwater designs, mitigate pollution / improve air quality
	• INCREASE RESILIENCE
	  • Designate species that are appropriate for climate and planting situation, re-evaluate periodically
	  • Designate species that will, over time, shift composition of urban forest so that is has sufficient age and species diversity, pest resistance, and climate adaptability, and fewer species that are not appropriate

4 ENGAGE Engage in an ongoing dialogue with the community about the urban forest to promote stewardship	• EDUCATE: Provide ongoing education about the urban forest through diverse mean (emails, workshops, website, events), particularly about any timely or critical issues • FOSTER STEWARDSHIP: Offer resources for community related to urban forest education and stewardship • COMMUNICATE: Share information about City policies and actions regarding the urban forest through appropriate means
5 FUND Develop funding options and budget structure to maximize efficiency of urban forest operations	• REVIEW BUDGET: Review budget to reflect priorities and to increase efficiency • RESEARCH OPTIONS: Identify potential funding sources • GATHER DATA: Gather data and other useful information for use in grant applications • INNOVATE: Consider innovative funding options

recommendations framework: priorities

Action Areas	Strategies
1 EVALUATE Conduct periodic evaluations of urban forest using criteria and indicators, as well as quantifiable and qualifiable benefits	• COLLECT DATA AND ASSESS: Continue to develop benchmark data such as canopy cover and tree health • REVIEW PROGRESS: Continue to develop Criteria and Indicators to be used to evaluate progress towards goals • REVIEW TREE SPECIES: Continue to monitor existing and new species for health, drought-tolerance, and overall suitability
2 MANAGE Provide careful, thorough, and systematic maintenance and resource management.	• MANAGE: Use current Best Management Practices to effectively and efficiently maintain City trees • ACT STRATEGICALLY: Continue to develop strategies to reduce tree-infrastructure conflicts and to manage pests and diseases • BUILD KNOWLEDGE: Continue to work with other local urban forest managers to share knowledge and best practices • RENEW: Plant young trees to balance aging tree population and reduce vacancy rate
3 ENHANCE Strengthen the urban forest to acheive maximum benefits	• INCREASE CANOPY, ENHANCE SENSE OF PLACE, IMPROVE WAYFINDING: Focus attention on Places of Priority (see p 64) to address areas of greatest need. Revise Places of Priority as necessary over time • STRENGTHEN THE URBAN ECOSYSTEM: For new and ongoing projects, consider how the urban forest can provide habitat, improve air and water quality, and reduce energy use
4 ENGAGE Engage in an ongoing dialogue with the community about the urban forest to promote stewardship	• EDUCATE: Provide key information about the urban forest through handouts, the website, and events • FOSTER STEWARDSHIP: Offer resources for the community related to urban forest education and stewardship • COMMUNICATE: Share the Master Plan with the community
5 FUND Develop funding options and budget structure to maximize efficiency of urban forest operations	• REVIEW BUDGET: Review budget to reflect priorities and to increase efficiency

recommendations framework: action areas and strategies

1 EVALUATE Conduct periodic evaluations of urban forest using criteria and indicators, as well as quantifiable and qualifiable

Short-term actions

COLLECT DATA + ASSESS

- Continue to maintain a comprehensive electronic inventory of all City trees.
- Develop criteria and indicators in order to evaluate progress toward environmental goals
- Conduct canopy cover study, analyze results to identify areas with greatest need / potential
- Monitor and keep records about conflicts between trees and infrastructure
- For biennial and seven-year reporting, collect key data about the state of the urban forest, compare to Criteria and Indicators and other benchmark data

REVIEW + REPORT: BIENNIAL REPORTING

Produce a clear, concise report on the state of the urban forest for internal use and to communicate to the community

- COLLECT DATA + ASSESS: Report on key data about the about the state of the urban forest and recent activities, compare to Criteria and Indicators and other benchmark data. Include number of trees planted, removed, vacancies, etc.
- QUANTIFY BENEFITS: Analyze current urban forest benefits, compare to benchmark benefits, establish goals for future
- REVIEW TREE SPECIES: Evaluate the performance of both common and "new" species, and adjust Tree Palette and Designations if needed. Develop method for recording and analyzing observations about tree species.

Mid-term

REVIEW + REPORT: SEVEN-YEAR REPORTING

Produce a clear, concise report on the state of the urban forest for internal use and to communicate to the community. Include information listed above for Biennial Reporting, as well as the following additional information:

- QUANTIFY BENEFITS: Use iTree to perform cost-benefit analysis, analyze generic and age composition.
- QUALIFY BENEFITS: In addition to quantifiable data, evaluate the urban forest's contribution to placemaking, wayfinding, aesthetics, urban design, walkability, neighborhood character, etc.
- REVIEW TREE PALETTE AND DESIGNATIONS: Based on ongoing observations of tree species, re-evaluate the Tree Palette and Tree Designations
- REVIEW POLICIES: Evaluate the effectiveness of the street tree removal and appeal process
- REVISE RECOMMENDATIONS: Evaluate the Recommendation Framework (Action Areas and Strategies, as well as Priorities and Places of Priority) and revise as necessary to reflect new conditions, progress acheived, etc.
- BUDGET + ORGANIZATIONAL REVIEW: Review the budget and operating structure and analyze efficiency

Long-term

REVIEW MASTER PLAN

Revise and amend Urban Forest Master Plan as necessary

recommendations framework: action areas and strategies

2 MANAGE Provide strategic maintenance, planning and resource

Short term

RENEW

- Using the species listed in the Tree Designations, the City will plant young trees to balance aging tree population and reduce vacancy rate. On an annual basis, the City will establish a planting plan, giving consideration to what quantity is feasible and appropriate in order to balance aging tree population and to reduce vacancy rate. The City will focus on Places of Priority and areas with a high amount of vacancies.

Ongoing

MAINTAIN TREES TO HIGH STANDARD

- The City will use the Tree Guidelines in Plan to effectively and efficiently maintain City trees
- The City will provide tree planting and preservation details and Best Practices to developers and contractors
- Identify risks to mature trees and develop strategies to minimize them
- Continue to identify and monitor declining trees, evaluate for treatment
- Remove tree grates where trunks have grown into them

DEVELOP + REFINE TREE CARE STRATEGIES

- Continue to monitor conflicts beween trees + infrastructure + to address them through appropriate means (pruning, root barriers, use of rubber sidewalks, etc).
- Continue to develop methods to reduce tree-infrastructure conflicts + to manage pests + diseases
- Keep ongoing records of actions and results in order to evaluate the effectiveness of different methods.

COORDINATE WITHIN CITY

- Continue to coordinate decisions about the urban forest with other City goals and initiatives regarding transit, recreation, water quality, etc. Consider ways that the urban forest can strengthen overal urban design including connections between public spaces, parks, pedestrian areas
- Continue to collaborate among City departments to make key decisions and plans regarding the urban forest

COORDINATE WITH NURSERY TRADE

- To the extent feasible, the City will arrange with commercial nurseries to contract grow specimens to be planted in the City; especially for species that are not readily available in the trade. On an annual basis, the City will review its needs for tree planting in order to coordinate in advance with nurseries.

BUILD KNOWLEDGE

- Continue to work with other local urban forest managers to share knowledge and best practices Share information about species' performance with local experts.
- Continue to provide professional development opportunities to City staff about urban forest related issues and practices

REVIEW POLICIES AS NEEDED

- Review policy regarding tree replacement due to construction.
- The City will evaluate the viability of instituting fines for damage to street trees during the course of construction and for other policy violations.
- Review other policies on as-needed basis, and review all policies in Seven-Year Reporting.

recommendations framework: action areas and strategies

3 ENHANCE Strengthen the urban forest to acheive maximum benefits

Short term

INCREASE CANOPY IN CERTAIN AREAS

- Allow for larger trees when requested. The City's policy is to plant a 24" box tree of the designated species in residential areas. The City will establish procedures for residents to have a larger specimen planted when the space is adjacent to their house, in which case the resident would pay the cost difference.
- Review policy for replacing trees during construction in order to maximize replacement value due to age or stress, or existing species are being phased out
- Set goals for increasing canopy based on canopy cover study

Ongoing

- The City will continue to identify opportunities to add planting spaces and to reduce vacancies in the Places of Priority (and additional places identified by City).
- In reviewing and implementing the Tree Designations, continue to place priority on selecting the largest possible tree for each planting space size
- Explore opportunities to inter-plant (add new tree in a space between existing trees) where existing trees are declining
- The City will pursue planting on freeway slopes with Caltrans, enlisting the support of elected representatives at the State level and regional non-profit tree planting organizations.

INCREASE PLANTING SPACE (SOIL VOLUME) WHERE APPROPRIATE

These strategies are closely connected to increasing canopy, because larger soil volumes can support larger trees.

- Where practical, enlarge existing planting volumes by widening and/or lengthening tree wells and parkways. Refer to designations for site-specific recommendations.
- Where practical, enlarge existing soil volume by improving soil health and aeration
- For new private developments, employ improved design for tree wells and review planting details to maximize soil volume
- When the Department of Public Works undertakes construction related to sidewalks, curbs, gutters, and other street-related work, review opportunities for enlarging soil volume

ENHANCE SENSE OF PLACE

- Use the section in the Plan on Placemaking as a starting point to consider how the urban forest can strengthen the sense of place in neighborhoods as well as commercial and public areas. Coordinate with current and future City initiatives so that the urban forest can enhance placemaking at strategic locations.

IMPROVE WAYFINIDNG

- Use the section in the Plan on Wayfinding as a starting point to consider how the urban forest can improve orientation, particularly in areas with confusing circulation patterns. In current and future City initiatives, consider how the urban forest can strengthen links between public spaces, parks, pedestrian areas, and other City resources

STRENGTHEN THE URBAN ECOSYSTEM

- Continue to develop plans for the urban forest to increase habitat value, incorporate stormwater design, mitigate pollution, and improve air quality. Include these plans in the Seven-Year Reporting
- Identify opportunities within development projects for planting trees and for integrating landscape-based stormwater design to acheive City goals.
- Explore the possibility of creating landscape-based stormwater strategies on private property, especially commercial parking lots, to acheive City stormwater goals.

recommendations framework: action areas and strategies

4 ENGAGE Engage in an ongoing dialogue with the community about the urban forest to provide education and to promote stewardship

Short term

EDUCATE

- Post the Urban Forest Master Plan on the City website, place hard copy at the City library
- Post "Caring for a Parkway Tree" info sheet on the City website; give info sheet to adjacent homeowner or business owner when a tree is planted, including name of tree and other relevant information
- Post "Urban Trees 101" info sheet on the City website

FOSTER STEWARDSHIP

Offer resources for community related to urban forest education and stewardship

- Post on the City website resources for further information about urban trees, urban forestry, and stewardship opportunities through local organizations like Tree People, Ballona Creek Renaissance, and the Bay Foundation (see Appendix E)
- Consider opportunities for community involvement in tree planting events, community education and training on tree care

COMMUNICATE

Share information about City policies and actions about the urban forest through appropriate means

- Post tree designations and pruning schedules on City website
- Post Tree Removal Policy and Application, and Removal Appeal Policy and Application, on website.
- Post contact information on website for residents to report issues regarding the urban forest
- Create a Frequently Asked Questions (FAQ) page on the website

Ongoing

- Strategically use email to communicate information about the urban forest with residents
- Post news about the urban forest on the City website (ie tree plantings, capital improvements, sidewalk repairs, etc)
- Post biennial report on state of urban forest, including quantifiable and qualifiable benefits, progress towards goals, etc

EDUCATE

- Conduct periodic public workshops on tree care
- Provide ongoing education about the urban forest through diverse means (emails, workshops, website, events), particularly about any timely or critical issues

recommendations framework: action areas and strategies

5 FUND Develop funding options and budget structure to maximize efficiency of urban forest

Short term

REVIEW BUDGET

- Review budget to reflect priorities and to increase efficiency

Ongoing

SECURE CITY FUNDING

As part of the city's ongoing budget process and contingent upon available funding, the City will approve adequate capital and operating funds to ensure a healthy urban forest. The funds will be sufficient to accomplish the following:

- Provide for adequate annual maintenance of existing trees
- Support street tree planing in order to reduce vacancy rate and increase population of young trees
- Support consultation with qualified independent Urban Foresters when considering major decisions regarding the urban forest.
- Support continuing professional education for City staff related to urban forestry
- Support ongoing community engagement through online materials, events, workshops, and printed materials

PURSUE EXTERNAL FUNDING

The City with pursue external sources of funding to support the goals of the Master Plan, including:

- Grants from county, state, and federal sources for tree planting, maintenance, and infrastructure improvements
- Develop resources for use in grant applications including data
- Consider innovative funding options

DEVELOP PARTNERSHIPS

- Continue to develop public-private partnerships through strategies such as assessment districts in order to enhance the urban forest

recommendations framework: schedule

short-term actions (1-7 years)

EVALUATE

COLLECT DATA + ASSESS

- Continue to maintain a comprehensive electronic inventory of all City trees.
- Develop criteria and indicators in order to evaluate progress toward environmental goals
- Conduct canopy cover study, analyze results to identify areas with greatest need / potential
- Monitor and keep records about conflicts between trees and infrastructure
- For biennial and seven-year reporting, collect key data about the state of the urban forest, compare to Criteria and Indicators and other benchmark data

REVIEW + REPORT: BIENNIAL REPORTING

Produce a clear, concise report on the state of the urban forest for internal use and to communicate to the community

- COLLECT DATA + ASSESS: Report on key data about the about the state of the urban forest and recent activities, compare to Criteria and Indicators and other benchmark data. Include number of trees planted, removed, vacancies, etc.
- QUANTIFY BENEFITS: Analyze current urban forest benefits, compare to benchmark benefits, establish goals for future
- REVIEW TREE SPECIES: Evaluate the performance of both common and "new" species, and adjust Tree Palette and Designations if needed. Develop method for recording and analyzing observations about tree species.
- UPDATE TREE GUIDELINES: Review and update Tree Guidelines according to current industry standards, as needed

MANAGE

RENEW

- Using the species listed in the Tree Designations, the City will plant young trees to balance aging tree population and reduce vacancy rate. On an annual basis, the City will establish a planting plan, giving consideration to what quantity is feasible and appropriate in order to balance aging tree population and to reduce vacancy rate. The City will focus on Places of Priority and areas with a high amount of vacancies.

ENHANCE

INCREASE CANOPY IN CERTAIN AREAS

- Allow for larger trees when requested. The City's policy is to plant a 24" box tree of the designated species in residential areas. The City will establish procedures for residents to have a larger specimen planted when the space is adjacent to their house, in which case the resident would pay the cost difference.
- Review policy for replacing trees during construction in order to maximize replacement value (ie, 2 young trees replace mature tree) due to age or stress, or existing species are being phased out
- Set goals for increasing canopy based on canopy cover studyplanting organizations.

recommendations framework: schedule

short-term actions (1-7 years)

ENGAGE

EDUCATE

- Post the Urban Forest Master Plan on the City website, place hard copy at the City library
- Post "Caring for a Parkway Tree" info sheet on the City website; give info sheet to adjacent homeowner or business owner when a tree is planted, including name of tree and other relevant information
- Post "Urban Trees 101" info sheet on the City website

FOSTER STEWARDSHIP

Offer resources for community related to urban forest education and stewardship

- Post on the City website resources for further information about urban trees, urban forestry, and stewardship opportunities through local organizations like Tree People, Ballona Creek Renaissance, and the Bay Foundation (see Appendix E)
- Consider opportunities for community involvement in tree planting events, community education and training on tree care, etc.

COMMUNICATE

Share information about City policies and actions about the urban forest through appropriate means

- Post tree designations and pruning schedules on City website
- Post Tree Removal Policy and Application, and Removal Appeal Policy and Application, on website. The Removal Policy outlines procedures for communicating with the public about pending removals.
- Post contact information on website for residents to report issues regarding the urban forest
- Create a Frequently Asked Questions (FAQ) page on the website

FUND

REVIEW BUDGET

- Review budget to reflect priorities and to increase efficiency

recommendations framework: schedule

mid-term actions (7-15 years)

EVALUATE

REVIEW + REPORT: SEVEN-YEAR REPORTING
Produce a clear, concise report on the state of the urban forest for internal use and to communicate to the community. Include information listed above for Biennial Reporting, as well as the following additional information:

- QUANTIFY BENEFITS: Use iTree to perform cost-benefit analysis, analyze generic and age composition.
- QUALIFY BENEFITS: In addition to quantifiable data, evaluate the urban forest's contribution to placemaking, wayfinding, aesthetics, urban design, walkability, neighborhood character, etc.
- REVIEW TREE PALETTE AND DESIGNATIONS: Based on ongoing observations of tree species, re-evaluate the Tree Palette and Tree Designations
- REVISE TREE MANAGEMENT GUIDELINES: Review and revise Guidelines every ten years to reflect current best practices
- REVIEW POLICIES: Evaluate the effectiveness of the street tree removal and appeal process
- REVISE RECOMMENDATIONS: Evaluate the Recommendation Framework (Action Areas and Strategies, as well as Priorities and Places of Priority) and revise as necessary to reflect new conditions, progress acheived, etc.

long-term actions (15 + years)

EVALUATE

REVIEW MASTER PLAN
Revise and amend Urban Forest Master Plan as necessary

recommendations framework: schedule

ongoing actions

MANAGE

MAINTAIN TREES TO HIGH STANDARD

- The City will use the Tree Guidelines in Plan to effectively and efficiently maintain City trees
- The City will provide tree planting and preservation details and Best Practices to developers and contractors
- Identify risks to mature trees and develop strategies to minimize them
- Continue to identify and monitor declining trees, evaluate for treatment
- Remove tree grates where trunks have grown into them

DEVELOP + REFINE TREE CARE STRATEGIES

- Continue to monitor conflicts beween trees + infrastructure + to address them through appropriate means (pruning, root barriers, use of rubber sidewalks, etc).
- Continue to develop methods to reduce tree-infrastructure conflicts + to manage pests + diseases
- Keep ongoing records of actions and results in order to evaluate the effectiveness of different methods.

COORDINATE WITHIN CITY

- Continue to coordinate decisions about the urban forest with other City goals and initiatives regarding transit, recreation, water quality, etc. Consider ways that the urban forest can strengthen overal urban design including connections between public spaces, parks, pedestrian areas
- Continue to collaborate among City departments to make key decisions and plans regarding the urban forest

COORDINATE WITH NURSERY TRADE

- To the extent feasible, the City will arrange with commercial nurseries to contract grow specimens to be planted in the City; especially for species that are not readily available in the trade. On an annual basis, the City will review its needs for tree planting in order to coordinate in advance with nurseries.

BUILD KNOWLEDGE

- Continue to work with other local urban forest managers to share knowledge and best practices Share information about species' performance with local experts.

REVIEW POLICIES AS NEEDED

- Review policy regarding tree replacement due to construction.
- The City will evaluate the viability of instituting fines for damage to street trees during the course of construction and for other policy violations.
- Review other policies on as-needed basis, and review all policies in Seven-Year Reporting.

recommendations framework: schedule

ongoing actions

ENGAGE

COMMUNICATE

Share information about City policies and actions about the urban forest through appropriate means

- Strategically use email to communicate information about the urban forest with residents
- Post news about the urban forest on the City website (ie tree plantings, capital improvements, sidewalk repairs, etc)
- Post biennial report on state of urban forest, including quantifiable and qualifiable benefits, progress towards goals, etc

EDUCATE

- Conduct periodic public workshops on tree care
- Provide ongoing education about the urban forest through diverse means (emails, workshops, website, events), particularly about any timely or critical issues

recommendations framework: schedule

ongoing actions

ENHANCE

INCREASE CANOPY IN CERTAIN AREAS

- The City will continue to identify opportunities to add planting spaces and to reduce vacancies in the Places of Priority (and additional places identified by City).
- In reviewing and implementing the Tree Designations, continue to place priority on selecting the largest possible tree for each planting space size
- Explore opportunities to inter-plant (add new tree in a space between existing trees) where existing trees are declining
- The City will pursue planting on freeway slopes with Caltrans, enlisting the support of elected representatives at the State level and regional non-profit tree planting organizations.

INCREASE PLANTING SPACE (SOIL VOLUME) WHERE APPROPRIATE

These strategies are closely connected to increasing canopy, because larger soil volumes can support larger trees.

- Where practical, enlarge existing planting volumes by widening and/or lengthening tree wells and parkways. Refer to designations for site-specific recommendations.
- Where practical, enlarge existing soil volume by improving soil health and aeration
- For new private developments, employ improved design for tree wells and review planting details to maximize soil volume
- When the Department of Public Works undertakes construction related to sidewalks, curbs, gutters, and other street-related work, review opportunities for enlarging soil volume
- Where appropriate, use new and emerging technologies such as structural soil and Silva Cells to enlarge soil volume

ENHANCE SENSE OF PLACE

- Use the section in the Plan on Placemaking as a starting point to consider how the urban forest can strengthen the sense of place in neighborhoods as well as commercial and public areas. Coordinate with current and future City initiatives so that the urban forest can enhance placemaking at strategic locations.

IMPROVE WAYFINIDNG

- Use the section in the Plan on Wayfinding as a starting point to consider how the urban forest can improve orientation, particularly in areas with confusing circulation patterns. In current and future City initiatives, consider how the urban forest can strengthen links between public spaces, parks, pedestrian areas, and other City resources

STRENGTHEN THE URBAN ECOSYSTEM

- Continue to develop plans for the urban forest to increase habitat value, incorporate stormwater design, mitigate pollution, and improve air quality. Include these plans in the Seven-Year Reporting
- Identify opportunities within development projects for planting trees and for integrating landscape-based stormwater design to acheive City goals. Explore the possibility of creating landscape-based stormwater strategies on private property, especially commercial parking lots, to acheive City stormwater goals.

recommendations framework: schedule

ongoing actions

FUND

SECURE CITY FUNDING

As part of the city's ongoing budget process and contingent upon available funding, the City will approve adequate capital and operating funds to ensure a healthy urban forest. The funds will be sufficient to accomplish the following:

- Provide for adequate annual maintenance of existing trees
- Support street tree planing in order to reduce vacancy rate and increase population of young trees
- Support consultation with qualified independent Urban Foresters when considering major decisions regarding the urban forest.
- Support continuing professional education for City staff related to urban forestry
- Support ongoing community engagement through online materials, events, workshops, and printed materials

PURSUE EXTERNAL FUNDING

The City with pursue external sources of funding to support the goals of the Master Plan, including:

- Grants from county, state, and federal sources for tree planting, maintenance, and infrastructure improvements
- Develop resources for use in grant applications including data
- Consider innovative funding options

DEVELOP PARTNERSHIPS

- Continue to develop public-private partnerships through strategies such as assessment districts in order to enhance the urban forest

5 appendices

for Residents

for the City

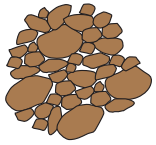
for Residents + for the City

Urban Trees 101

The more we know about trees, the better able we are to care for them and to make wise planning decisions. Unfortunately, there are many persistent myths and misunderstandings about trees. This guide was prepared for you by Culver City staff with consulting arborists and landscape architects to share some of the most important and interesting information about urban trees.

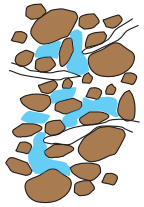
SOIL

- A major challenge for urban trees is poor soil quality. Urban soils are often nutrient-poor with few beneficial microorganisms, and are often compacted from construction of roads and buildings. Compacted soil lacks spaces for air and water, both of which are essential for root growth. In this way, poor soil can drastically limit the space available for root growth.
- Compost and mulch improve soil in several ways: they help to retain moisture the soil, improve the physical structure and chemistry of the soil, and encourage a healthy ecosystem of micro-organisms in the root zone, which is essential for healthy plants.



COMPACTED SOIL

lack of pore space



UNCOMPACTED SOIL

pore spaces hold air, water, and organic matter; and allow roots to penetrate the soil

ROOTS

- Most tree roots are located in the top 2’ of soil. We sometimes hear that tree roots mirror the shape and size of the canopy, but this is incorrect!
- Roots will only grow where moisture is available-- roots don’t “seek” out moisture. For example, roots do not enter pipes unless the pipe is already broken and leaking.
- Some tree species tend to have more shallow roots which pose a greater risk of infrastructure damage. However, rooting depth also depends on site conditions like soil quality (see above) and water availability.
- In general, the larger the tree, the larger the root system, and the smaller the tree, the smaller the root system.
- The City is using several innovative strategies to reduce damage by tree roots. For example, the City has installed some rubber tile sidewalks that accomodate root growth and which can easily be removed if root pruning is required.

Most tree roots are located in the top 2’ of soil

Urban Trees 101

PLANTING

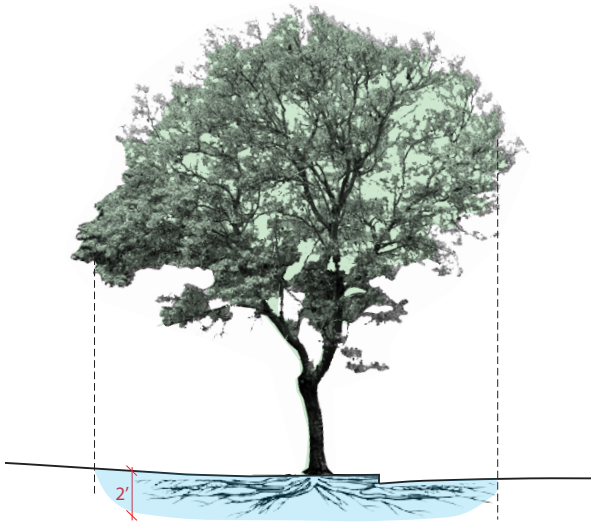
- When the City plants a street tree, they place stakes next to the trunk to help it grow straight. The City will remove the stakes when they are no longer needed; please do not remove them yourself.
- The City usually plants trees in 24" box sizes. This is a good size because the tree already has some height, but is still small enough to thrive when transplanted. Larger trees are more expensive to buy and to plant, and in a few years, a smaller tree often "catches up" to a larger one in growth!

WATERING

- After the City plants a street tree, they water it for one year so that the tree can adapt after transplanting and so it can establish a healthy root system.
- One of the goals set forth in the City's Urban Forest Master Plan is to increase the number of tree species that have low water requirements and are able to withstand drought.
- During drought, homeowners can provide supplemental irrigation to help sustain young and mature trees. As a rule of thumb, water trees 10G per 1" of trunk diameter (measured at 4.5' above ground). For palms below 20' tall, water 20G; for those above 20', provide 50G. For trees with minimal water needs, watering (in the amount described above) twice a month from April to October should help reduce stress during drought years.

PRUNING

- Young trees need periodic pruning to develop good form and branching structure.
- The City is responsible for pruning all street trees, residents should not prune street trees.
- When pruning trees in your own yard, it is best to hire an arborist or other licensed tree care professional. If you prune the trees yourself, there are a few key fundamentals to know- please refer to a pruning guide or tutorial before you begin.



Infrequent, deep watering (to about 2'), within the entire dripline of the tree, is best

Caring for a parkway tree

Trees that are located in the parkway (the portion of the street right-of way between the curb and the sidewalk) are owned and maintained by the City. However, residents can also play an important role in keeping parkway trees healthy. This sheet offers a summary of key information about caring for "your" parkway tree.

MULCH

Mulch is very important for retaining moisture in the soil, improving the soil biology, and reducing weeds. Mulch is a generic term that describes organic material spread on the soil surface, and there are many types of mulch composed of different elements. A 3-4 inch layer of medium-texture mulch is recommended to cover an area of at least 4-5' in diameter. It is important to keep mulch away from the trunk-- when mulch is piled at the base of the tree, it creates conditions that favor decay, disease, and insects.

WATERING

For one year after a tree is planted, Culver City waters the tree periodically so that it can adapt to its new site and develop a healthy root system. After one year, the City waters only in case of prolonged drought, when the trees are at greatest risk of decline.

Residents can assist by checking the moisture level in the soil and adding water only if necessary. The best way to check soil moisture is to use a soil probe, available at hardware stores. Check the soil once a month, if the soil 18" below the surface is dry, it is ok to water. If possible, it is best to apply water slowly so that it sinks in instead of running off. Water until the soil is moist 18" below the surface.

STAKES

When the City plants a tree in the parkway, they use stakes to stabilize the tree and help it to grow a straight trunk. The City will remove the stakes when they are no longer needed. Please do not remove the stakes yourself.

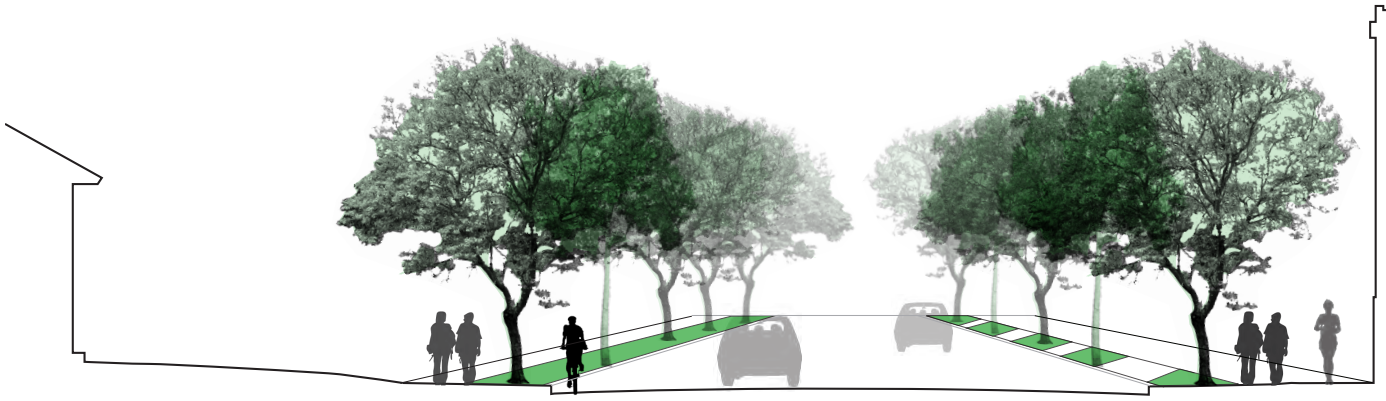
OTHER PLANTING IN THE PARKWAY

Planting in the parkway must follow certain guidelines to support the health of the parkway tree and to ensure visibility and access between the street and the sidewalk. For example, plants should not be placed at the base of a tree, because they would compete with the tree for moisture and nutrients. Please refer to the Culver City Parkway Ordinance for complete information.

PROBLEMS OR QUESTIONS?

If you have a general question about the characteristics and maintenance requirements of the tree in your parkway, please refer to the CalPoly Selectree website for detailed information.

If you think there is a problem with a parkway tree (you notice fungus on the trunk or roots, dead limbs, leaves yellowing or falling out of season, damage or wounds, etc), or if tree roots are damaging the sidewalk, please contact Public Works-Maintenance Operations Division at 310-253-6420 or 310-253-6440.



The urban forest is the ecosystem of plants and people in the city

The urban forest offers important, diverse benefits such as improving air and water quality, shaping neighborhood character and city identity, reducing energy use, and increasing property values.

Before requesting a tree removal, please consider:

- **A mature tree offers many valuable benefits**, some of which are not readily apparent. One of the most significant benefits is increased property value. Trees provide much-needed shade in our warm climate, which also reduces costs for cooling. In commerical areas, trees attract clients to stop by and to stay. See the illustration on the right for a list of other benefits.

- **A mature tree represents an investment of time, money, and energy**, which cannot easily be replaced. A newly planted tree could take 20 years or more to reach the size of a mature tree.

- **Explore other options to remedy the problem first**, including requesting pruning or sidewalk repair from the City, or repairing breaks in your sewer line to prevent root intrusion. If root instrusion is a concern, you might consider the National League of Cities Service Line Warranty Program. For more information, call 866-922-9006.

People often have strong feelings about trees! People often either love “their” tree, or hate it, or both. It is important to understand the diverse benefits and challenges of urban trees in order to maximze their benefits and minimize the costs. As the list above suggests, the benefits often outweigh the challenges.

requesting a tree removal

The following is a summary of Culver City Municipal Code 9.08.200 to 9.08.230 related to tree removal requests. Please refer to the Code (available on the City website) for the complete text.

OVERSIGHT OF PARKWAY TREES

The City's Public Works Director is charged with overseeing the City's trees and determining whether a tree should be removed. The Public Works Director shall have sole authority to cut, trim, prune, replace, or remove any tree in or on any Parkway in the City. **No other person shall cut, trim, prune, replace, remove, deface, or in any manner injure any tree in or on any Parkway in the City**, **except as authorized by the Public Works Director** in the case of a private improvement project in accordance with Section 9.08.215.

REQUESTING A TREE REMOVAL

Any Interested Person (see definition below) may request discretionary removal of a Parkway tree by submitting a written application to the Public Works Director, on a form approved by the City. The written application shall state the name and address of the Applicant, the location of the tree, the reason for the request, and any other information required by the Public Works Director. The written application shall be accompanied by a filing fee, established by resolution of the City Council. A filing fee is not required to request removal of a tree that is suspected to be in a hazardous or unsafe condition.

("Interested Person" is defined as an owner, occupant or agent of real property located within a 100 feet radius of the location of a Parkway tree that is proposed for removal. For purposes of this definition, an Interested Person is limited to owners, occupants and agents of real property located on the same Street on which the proposed Parkway tree is located or on a Street intersecting the Street on which the proposed Parkway tree is located.)

APPLICATION REVIEW

The Public Works Director shall review the application and supporting documentation to determine whether to approve the removal of the requested tree. In determining whether any tree in or on the Parkway shall be removed or replaced, the Public Works Director shall determine whether the removal or replacement is in the best interest of the City and the public health, safety and welfare.

Such determination shall be based on the following criteria:

1. If any **one** of the following criterion is met:

   A. The tree is dead, dying, or weakened by disease, age, storm, fire, or other injuries so as to pose an existing or potential danger to persons, properties, improvements, or other trees; or

   B. The removal is necessary for construction of a Street improvement project or other public improvement/ repair work; or

   c. The removal is necessary for a private improvement or development project. Where the application for removal is related to a private improvement or development project, see Section 9.08.215.

2. If **two or more** of the other criteria are met:

   A. The tree is a known problem species or is otherwise found to be an undesirable species for its location based on tree size relative to available area for tree growth.

   B. The tree roots are creating extensive and repeated damage to public and/or private infrastructure, including sidewalks, sewer lines, or other utility lines. A history of sewer line blockages from tree roots does not alone provide sufficient reason for tree removal, but rather suggests the need for sewer repair to stop leaks and the accompanying root intrusion that results.

   C. The tree is creating a public or private nuisance.

REMOVAL

If a Parkway tree is approved for removal, such removal shall be accommodated subject to availability of City resources and funds. In the event that the Applicant desires the approved removal occur prior to when it can be accommodated by the Public Works Director, the Applicant shall be given the option of paying for the removal, in which case the tree will be removed at the first opportunity upon receipt of payment.

APPEALS

The decision of the Public Works Director is final, unless appealed by the Applicant, a member of the City Council or an Interested Person. **Appeals shall be submitted in writing and filed with the City Clerk within 10 days after the decision date identified in the notice of decision.** The notice of decision shall be prepared by the Public Works Director and sent to the Applicant and all interested Persons with a copy provided to the City Council. The number of days shall be construed as City Hall business days. Where the last of the specified number of days falls on a weekend, holiday, or other day when City Hall is officially closed, the time limit will extend to the following City Hall business day.

An appeal shall include a general statement, specifying the basis for the appeal, shall be based on an error in fact or dispute of the findings of the decision, and must be accompanied by supporting evidence substantiating the basis for the appeal. Appeals shall be accompanied by a filing fee established by resolution of the City Council.

Appeals shall be heard by the City Council, which shall affirm the decision of the Public Works Director, unless the appellant demonstrates, by substantial evidence, that the decision is based on an error in fact or disputed findings. The decision of the City Council on an appeal shall be final.

community resources

CULVER CITY RESOURCES

If you think there is a problem with a parkway tree (you notice fungus on the trunk or roots, dead limbs, leaves yellowing or falling out of season, damage or wounds, etc), or if tree roots are damaging the sidewalk, please contact Public Works-Maintenance Operations Division at 310-253-6420 or 310-253-6440.

Culver City Urban Forest website
http://www.culvercity.org/en/Articles/Archives/2015/UrbanForest_042515.aspx

Culver City environmental information | http://www.culvercity.org/Environment.aspx

TREE INFORMATION

Brenzel, Katherine N., ed. *Sunset Western Garden Book*. 8th ed. Menlo Park, CA: Sunset Publishing Corporation, 2007.

International Society of Arboriculture | http://www.isa-arbor.com/
find a certified arborist

Las Pilitas Nursery | www.laspilitas.com

Perry, Bob. *Landscape Plants for California Gardens: An Illustrated Reference of Plants for California Landscapes*. Claremont, CA: Land Design Publishing, 2010.

Perry, Bob. *Landscape Plants for Western Regions: An Illustrated Guide to Plants for Water Conservation*. Claremont, CA: Land Design Publishing, 1992.

SelecTree: A Tree Selection Guide | http://selectree.calpoly.edu/
CalPoly San Luis Obispo / Urban Forestry Ecosystems Institute

San Marcos Nursery | www.smgrowers.com

Tree People | www.treepeople.org
lectures, classes, tree care training, field trips, tours

SUSTAINABLE DESIGN

The American Society of Landscape Architects | www.asla.org
Sustainable Design Case Studies, Sustainable Design Guides

The Arid Lands Institute | http://aridlands.org/
Ongoing research about water-smart design for the West

LOCAL ECOLOGY

Ballona Creek Renaissance | http://www.ballonacreek.org/
tours, volunteering, advocacy

Transition Culver City

Bay Foundation
volunteering in Culver City rain gardens and other sites, advocacy
http://www.santamonicabay.org/

Dark, S., E.D. Stein, D. Bram, J. Oscuna, J. Monteferante, T. Longcore, R. Grossinger, and E. Beller. 2011. “Historical Ecology of the Ballona Creek Watershed.” Technical Report 671. Southern California Coastal Water Research project. Costa Mesa, CA.

Friends of Ballona
wetland tours, volunteering, advocacy
http://www.ballonafriends.org/

Mattoni, Rudy, Travis Longcore, Jeremiah George and Catherine Rich. “Down Memory Lane: The Los Angeles Coastal Prairie and Its Vernal Pools.” Urban Wildlands Group, UCLA Department of Geography. Poster presented at 2nd Interface Between Ecology and Land Development in California (Occidental College, Los Angeles, California, April 18-19, 1997)

NATIVE PLANTS

Bornstein, Carol, David Fross and Bart O’Brien. *California Native Plants for the Garden*. Los Olivos, CA: Cachuma Press, 2005.

Rancho Santa Ana Botanic Garden | www.rsabg.org
botanic garden, classes, plant nursery
1500 N. College Ave, Claremont, CA 91711

Theordore Payne Foundation | www.theodorepayne.org
classes, volunteering, and plant nursery
10459 Tuxford Street, Sun Valley, California 91352

tree palette for Culver City | alphabetical order

Acrocarpus fraxinifolius
PINK CEDAR

Afrocarpus (Podocarpus) gracilior
FERN PINE

Alnus rhombifolia
WHITE ALDER

Angophora costata
APPLE GUM

Arbutus 'Marina'
MARINA STRAWBERRY TREE

Archtonophoenix cunninghamiana
KING PALM

Bauhinia variegata
PURPLE ORCHID TREE

Bischofia javanica
BISCHOFIA

Brachychiton populneus
BOTTLE TREE

Brahea armata
MEXICAN BLUE PALM

Brahea edulis
GUADELUPE PALM

Calocedrus decurrens
INCENSE CEDAR

Calodendrum capense
CAPE CHESTNUT

Casuarina cunninghamiana
RIVER SHE-OAK

Cedrela fissilis
BRAZILIAN CEDAR WOOD

Cedrus deodara
DEODAR CEDAR

Ceiba speciosa
SILK FLOSS TREE

Cercidium 'Desert Museum'
DESERT MUSEUM PALO VERDE

Cercis occidentalis
WESTERN REDBUD

Cinnamomum camphora
CAMPHOR TREE

Erythrina crista-galli
COCKSPUR CORAL TREE

Geijera parviflora
AUSTRALIAN WILLOW

Ginkgo biloba
MAIDENHAIR TREE

Jacaranda mimosifolia
JACARANDA

Jubaea chilensis
CHILEAN WINE PALM

Koelreuteria bipinnata
CHINESE FLAME TREE

Lagerstroemia indica
CRAPE MYRTLE

Lophostemon confertus
BRISBANE BOX

Maytenus boaria 'Green Showers'
MAYTEN TREE

Melaleuca linariifolia
FLAXLEAF PAPERBARK

Metrosideros excelsa
NEW ZEALAND CHRISTMAS TREE

Olmediella betschleriana
COSTA RICAN HOLLY

Paulownia tomentosa
EMPRESS TREE

Pinus halepensis
ALEPPO PINE

Pinus pinea
ITALIAN STONE PINE

Pinus torreyana
TORREY PINE

Pistacia chinensis
CHINESE PISTACHE

Platanus racemosa
CALIFORNIA SYCAMORE

Platanus x acerifolia
London Plane Tree

Pyrus kawakamii
Evergreen Pear

Quercus agrifolia
COAST LIVE OAK

Quercus tomentella
ISLAND OAK

Quercus virginiana
SOUTHERN LIVE OAK

Quillaja saponaria
SOAPBARK TREE

Rhus lancea
AFRICAN SUMAC

Sophora japonica
JAPANESE PAGODA TREE

Spathodea campanulata
AFRICAN TULIP TREE

Stenocarpus sinuatus
FIREWHEEL TREE

Stereospermum (Syn. *Radermachera*) *sinica*
CHINA DOLL

Syagrus romanzoffianum
QUEEN PALM

Tabebuia chrysotricha
GOLDEN TRUMPET TREE

Tabebuia impetiginosa
PINK TRUMPET TREE

Tipuana tipu
TIPU TREE

Ulmus parvifolia
CHINESE ELM

Washingtonia robusta
MEXICAN FAN PALM

tree designations

WHAT

The Tree Designations list indicates which species (selected from the Palette) will be planted on each block in the City when a tree is removed. The main goal of the designations process is to select the best species for each planting location in the City.

In some cases, the existing tree was selected to for continued planting in the future. In other cases, a different species was selected. In some situations, there was no predominant existing species, and the plan designates either one of the existing species or another species that was deemed more suitable

WHY

The designations seek to reduce potential infrastructure conflicts, to establish stronger aesthetics for City streets and neighborhoods, to make maintenance more efficient, and to shape a more resilient urban forest overall. The Designations are based on knowledge gained from the existing urban forest, and from current scientific research.

HOW

It is important to emphasize that the Master Plan does not call for the removal or replacement of any particular tree or tree species. The designations list will be used only when a tree needs to be removed. In this way, the species on this list will not be planted all at once; rather, the designations list shapes a process of change over time.

As with the Palette, the City may alter the Designations over time to reflect new information, knowledge, and experience. One key reason the City may choose to deviate from the Designations is to respond an emerging pest or disease.

To determine which species would be designated for each block, the Master Plan Team considered the following questions (criteria):

1. What is the existing species, and is it OK for this site? Is this species “overplanted” in the City?

2. What species would work well with the existing species?

3. What is the parkway size? What is the largest possible tree for this location?

4. Are there overhead wires or other particular conditions?

5. What kind of street is it (residential, commercial, arterial, etc)? What is the urban context (scale, adjacent uses, views, etc)?

PKWY : Width of parkway or tree well in feet UTILS : Overhead wires (if Y) TRAFFIC : R = residential / A = arterial

STREET	ID	FROM	TO	PKWY	UTILS	TRAFFIC	PRIMARY EXISTING SPECIES	NUMBER	NEW PROPOSED SPECIES	COMMENTS
"A" STREET	Tree wells	9500	9599			R	Lophostemon confertus	7	Lophostemon confertus	Plant new trees in DG and lengthen tree wells
ADAMS BL		5800	5999	3	N	A	Ficus microcarpa 'nitida'	8	Angophora costata/Rhus lancea under utility lines	
ALBRIGHT AV	Median	3900	3999	8	N	R	Syagrus romanzoffianum	1	Tabebuia impetiginosa	
ALBRIGHT AV		3800	4299	5	N	R	Ulmus parvifolia	80	Ulmus parvifolia	
ALETTA AV		11000	11099	3	N	R	Vacant site	11	Maytenus boaria 'Green showers'	
ALETTA AV - E SIDE		10900	10998	3	N	R	Vacant site	5	Quillaja saponaria	
ALETTA AV - W SIDE		10901	10999	3	Y	R	Ulmus parvifolia	6	Maytenus boaria 'Green showers'	
ALLA RD		3990	4010	3	N	R	Ficus microcarpa 'nitida'	1	Tabebuia impetiginosa	Applies only to portion of street within city limits
ARIZONA AV		10800	10899	3	N	R	Callistemon citrinus	8	Tabebuia impetiginosa	Priority
ARVEE ST		4100	4199	3	N	R	No trees	0	N/A	
ASTAIRE AV	No Prkwy			N/A		R	No trees	0	N/A	
ATLANTIC AV		11800	11999	5	N	R	Magnolia grandiflora	12	Cinnamomum camphora	Alt: Quercus tomentella
AUGUSTIN LN	Private			N/A		R	N/A	0	N/A	
BAGLEY AV		3806	3806	6			Cinnamomum camphora	6	Cinnamomum camphora	Lengthen tree wells, plant trees in DG. Alt: Pyrus kawakamii
BALDWIN AV		4000	4299	8	N	R	Brachychiton populneus	24	Afrocarpus (Podocarpus) gracilior	Include Alnus rhombifolia for creekside end of street at time of planting
BALLONA LN	Private			N/A		R	N/A	0	N/A	
BANKFIELD AV	No Prkwy	5700	5799	N/A		A	No trees	0	N/A	
BARMAN AV		10700	11299	5	N	R	Magnolia grandiflora	123	Tabebuia impetiginosa	
BEETHOVEN ST		3990	4011	3	N	R	Washingtonia robusta	7	Rhus lancea	Lengthen tree wells, 'Applies only to portion of street within city limits
BENTLEY AV		3800	3999	8	N	R	Vacant site	26	Casuarina cunninghamiana	
BERNARDO RD	No Prkwy	10800	10899	N/A		R	No trees	0	N/A	
BERRYMAN AV		5300	5598	3	Y	R	Ulmus parvifolia	10	Lagerstroemia indica 'Natchez'	Where parkway and tree wells are very narrow, plant Lagerstroemia 'Natchez'
BERRYMAN AV		5401	5599	8	N	R	Ulmus parvifolia	9	Koelreuteria bipinnata (see comments)	Where parkway and tree wells are very narrow, plant Lagerstroemia 'Natchez'
BERRYMAN AV		5100	5299	2	N	R	Ulmus parvifolia	22	Rhus lancea	
BERRYMAN AV		4000	4299	5	N	R	Ulmus parvifolia	60	Ulmus parvifolia	
BLACKWELDER ISLAND				15+			Washingtonia robusta	16	Erythrina crista-galli	
BLACKWELDER ST	No Prkwy	5800	5999	N/A		A	No treea	0	N/A	
BLAIRSTONE DR	No Prkwy	5900	5999	N/A		R	No trees	0	N/A	
BLANCO WY	No Prkwy	5300	5499	N/A		R	Vacant site	1	N/A	
BLEDSOE AV		4000	4199	5	N	R	Magnolia grandiflora	43	Acrocarpus fraxinifolius	
BOISE AV		4000	4099	5	N	R	Pinus canariensis	8	Olmediella betschleriana	Use male trees. 'Alt: Lophostemon confertus
BOUNTY LN	Private			N/A		R	N/A	0	N/A	

KEY

PKWY : Width of parkway or tree well in feet UTILS : Overhead wires (if Y) TRAFFIC : R = residential / A = arterial

STREET	ID	FROM	TO	PKWY	UTILS	TRAFFIC	PRIMARY EXISTING SPECIES	NUMBER	NEW PROPOSED SPECIES	COMMENTS
BRADDOCK DR		9600	9799	5	Y	R	Cedrus deodara	11	Arbutus 'Marina'	
BRADDOCK DR		9601	9799	5	N	R	Cedrus deodara	3	Arbutus 'Marina'	
BRADDOCK DR		9900	10130	8	Y	R	Pyrus kawakamii	9	Arbutus 'Marina'	
BRADDOCK DR		9901	10131	8	N	R	Pyrus kawakamii	8	Arbutus 'Marina'	
BRADDOCK DR		10150	10699	3	N	R	Ficus microcarpa	10	Lagerstroemia indica	
BRADDOCK DR	Median	11200	11299	5	N	R	Syagrus romanzoffianum	1	Jubaea chilensis	Alt: Dombeya cacuminum
BRADDOCK DR		10700	10999	5	N	R	Ulmus parvifolia	77	Ulmus parvifolia	
BRADDOCK DR		11000	11299	5	N	R	Ulmus parvifolia	76	Ulmus parvifolia	
BRISTOL PKWY		6200	6399	3	N	R	Pinus canariensis	48	Pinus halepensis	
BUCKINGHAM PKWY		5800	5899	3	N	R	Podocarpus gracilior	36	Afrocarpus (Podocarpus) gracilior	
BUCKINGHAM PKWY		5900	6299	3	N	R	Cupaniopsis anacardioides	43	Ginkgo biloba "Autumn Gold'	
BURCHARD AV	No Prkwy	5700	5799	N/A		R	No trees	0	N/A	
BUSH WY		5600	5699	5	N	R	Phoenix canariensis	14	Brahea armata	Alt: Brahea edulis
BUTTERFIELD CT	Private			N/A		R	N/A	0	N/A	
CAMBRIDGE WY		5600	5699	8	N	R	Cupaniopsis anacardioides	14	Tipuana tipu	
CAMPBELL DR		4200	4210	5	N	R	Washingtonia robusta	3	Cedrela fissilis	
CANFIELD AV		3800	3899	3	N	R	Washingtonia robusta	4	Rhus lancea	
CANTERBURY DR		5701	6299	5	N	R	Cupaniopsis anacardioides	26	Calocedrus decurrens	
CANTERBURY DR		5700	6299	3	N	R	Pinus canariensis	41	Ginkgo biloba "Autumn Gold'	
CARDIFF AV		3800	3899	3	N	A	Jacaranda mimosifolia	8	Lophostemon confertus	
CAROL CT	No Prkwy	3900	3999	N/A		R	No trees	0	N/A	
CAROLINE AV		3300	3499	5	N	R	Ulmus parvifolia	12	Koelreuteria bipinnata	
CARSON ST		8800	9099	5	N	R	Ficus microcarpa 'Nitida'	37	Koelreuteria bipinnata	
CASCADE CT	Private			N/A		R	N/A	0	N/A	
CATTARAGUS AV		3300	3499	5	N	R	Pinus canariensis	14	Koelreuteria bipinnata	
CATTARAGUS AV		3200	3299	3	N	R	Washingtonia robusta	2	Metrosideros excelsus (East side)/Washingtonia robusta (west side)	Lengthen tree wells
CENTER ST		4100	4199	8	N	R	Magnolia grandiflora	36	Bischofia javanica	alt: Bauhinia variegata 'candida'
CENTINELA AV	Median	6000	6199	5	N	A	Juniperus chinensis 'Torulosa'	5	Calocedrus decurrens	
CENTINELA AV		5900	6199	5	N	A	Pinus canariensis	10	Calocedrus decurrens	Lengthen tree wells
CENTINELA AV		4100	4199	3	Y	A	Podocarpus macrophyllus	5	Rhus lancea	Lengthen/add tree wells
CENTINELA AV		4101	4199	5	N	A	Vacant site	5	Rhus lancea	Lengthen/add tree wells
CENTINELA AV		5901	6199	5	Y	A	Podocarpus macrophyllus	16	Rhus lancea	
CHARLES AV		4000	4199	3	N	R	Lagerstroemia indica	13	Lagerstroemia indica	
CHARLES AV		4001	4199	3	Y	R	Lagerstroemia indica	13	Lagerstroemia indica	
CHASE AV		4100	4110	5	N	R	Ficus microcarpa 'nitida'	2	Olmediella betschleriana	Use male trees. Alt: Tipuana tipu
CIMARRON LN	Private			N/A		R	N/A	0	N/A	
CLARINGTON AV	LA Prkwy			N/A		A	N/A	0	N/A	
CLARMON PL		10700	10899	2	N	R	Lagerstroemia indica	12	Olmediella betschleriana	Use male trees. Alt: Rhus Lancea
COLLEGE AV		3800	3899	3	N	R	Ulmus parvifolia	31	Ulmus parvifolia	
COLONIAL AV		4000	4099	3	N	R	Ulmus parvifolia	24	Ulmus parvifolia 'Dynasty'	
COMEY AV		5900	5999	3	N	R	Washingtonia robusta	2	Metrosideros excelsus	Lengthen tree wells
COMMONWEALTH AV		4100	4499	3	N	R	Ficus microcarpa 'Nitida'	31	Geijera parvifolia	

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STREET	ID	FROM	TO	PKWY	UTILS	TRAFFIC	PRIMARY EXISTING SPECIES	NUMBER	NEW PROPOSED SPECIES	COMMENTS
COMMONWEALTH CIR	No Prkwy	4500	4599	N/A		R	No trees	0	N/A	
COOGAN CIR	No Prkwy	4000	4099	N/A		R	No trees	0	N/A	
COOLIDGE AV		5400	5499	2	N	R	Lagerstroemia indica	3	Lagerstroemia indica	
COOLIDGE AV		4000	4299	5	N	R	Ulmus parvifolia	64	Ulmus parvifolia	
COOMBS AV		4000	4399	5	N	R	Ulmus parvifolia	29	Tipuana tipu	
COPPERFIELD LN	Private			N/A		R	N/A	0	N/A	
CORINTH AV		4200	4299	5	N	R	Washingtonia robusta	2	Pyrus kawakamii	Applies only to portion of street within city limits
CORPORATE PT	No Street			N/A		N/A	N/A	0	N/A	
CORRYNE PL		5600	5699	3	N	R	Washingtonia filifera	4	Brahea armata	Alt: Brahea edulis
CORRYNE PL		5601	5699	3	Y	R	Washingtonia robusta	2	Brahea edulis	Alt: Brahea armata
COTA ST		5100	5399	5	Y	R	Eucalyptus globulus	13	Koelreuteria bipinnata	
COTA ST		5101	5399	5	N	R	Pittosporum undulatum	1	Koelreuteria bipinnata	
CRANKS RD	No Prkwy	10600	10799	N/A		R	No trees	0	N/A	
CRESTVIEW RD	No Prkwy	3800	3899	N/A	N	R	No Trees	0	N/A	
CULVER BL		9900	10198	3	N	A	Archontophoenix cunninghamiana	22	Archontophoenix cunninghamiana, add Jacaranda in (N) tree wells	Lengthen tree wells, add (N) long tree wells
CULVER BL	Bike Trail	10900	11250	15+	N	A			Cercidium 'Desert Museum', Cercis occidentalis	
CULVER BL		10900	10998	3	Y	A	Geijera parviflora	4	Geijera parvifolia	
CULVER BL		11001	11311	3	N	A	Acacia baileyana 'Purpurea'	6	Geijera parvifolia	
CULVER BL		11000	11310	3	Y	A	Geijera parviflora	14	Geijera parvifolia	
CULVER BL		10701		8		A	Juniperus chinensis 'Torulosa'	51	Ginkgo biloba	replace same
CULVER BL		9200	9799	5	N	A	Jacaranda mimosifolia	113	Jacaranda mimosifolia	
CULVER BL		9901	10199	3	N	A	Jacaranda mimosifolia	29	Jacaranda mimosifolia, Add Archontophoenix in (N) tree wells	Lengthen tree wells
CULVER BL		10700	10899	8	N	A	Pinus canariensis	24	Pinus torreyana	
CULVER BL	Median	10700	10899	8	N	A	Pinus canariensis	15	Pinus torreyana	
CULVER BL	Median	11001	11311	5	N	A	Pinus canariensis	6	Pinus torreyana	
CULVER BL		10200	10698	3	Y	A	Jacaranda mimosifolia	43	Replace Jacaranda w/ Jacaranda, replace others w/ Angophora costata	
CULVER BL	Median	9300	9799	8	N	A	Jacaranda mimosifolia	7	Spathodea campanulata	
CULVER BL	Median	9900	10199	3	N	A	Pinus canariensis	2	Spathodea campanulata	
CULVER BL	Median	10200	10699	5	N	A	Syagrus romanzoffianum	10	Tabebuia impetiginosa	
CULVER BL		10901	10999	3	N	A	Tabebuia impetiginosa	8	Tabebuia impetiginosa	
CULVER CENTER		3800	3899		N	A	No Trees	0	N/A	
CULVER PARK DR		11200	11599	3	N	R	Ulmus parvifolia	73	Ulmus parvifolia 'Drake'	
CULVER PARK PL		5500	5599	2	N	R	Ficus microcarpa 'nitida'	2	Rhus lancea	
CULVIEW ST	No Prkwy	5900	5999	N/A		R	N/A	0	N/A	
DAUPHIN ST		5800	5899	3	N	R	Lagerstroemia indica	3	Lagerstroemia indica	Cut tree wells west side of st.
DAVID AV		5800	5899	3	N	R	Washingtonia robusta	3	Bauhinia variegata	Lengthen tree wells
DAWES AV		5100	5299	2	N	R	Podocarpus macrophyllus	14	Rhus lancea	

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DELMAS TER		3800	3899	3	N	R	Ficus microcarpa 'Nitida'	7	Geijera parvifolia	Lengthen tree wells
DESHIRE PL		10700	10899	3/6	N	R	Liquidambar styraciflua	18	Pistacia chinensis	
DILLER AV		5400	5499	3	N	R	Pinus canariensis	8	Casuarina cunninghamiana	
DILLER AV		11400	11599	3	N	R	Pinus canariensis	13	Casuarina cunninghamiana	
DOBSON WY		5200	5399	5	N	R	Pinus canariensis	29	Casuarina cunninghamiana	
DOVERWOOD DR		5800	5899	3	N	R	Trachycarpus fortunei	60	Calodendrum capense	+ Interplant Calodendrum when funds become available
DUQUESNE AV	Tree wells	3900	3999	2	N	A	Jacaranda mimosifolia	3	Jacaranda mimosifolia	
DUQUESNE AV		4001	4099	3	N	A	Lagerstroemia indica	12	Jacaranda mimosifolia on City Hall block, Lagerstroemia indica elsewhere	
DUQUESNE AV		4100	4399	3	N	A	Lagerstroemia indica	60	Lagerstroemia indica	
EAST BL		4239	4270	3	N	R	Phoenix canariensis	4	Quercus agrifolia	
EASTHAM DR	No Prkwy	3500	3699	N/A		A	No trees	0	N/A	
EL RINCON WY	No Prkwy	5700	5799	N/A		R	No trees	0	N/A	
ELENDA ST		4000	4199	5	N	R	Ficus microcarpa 'Nitida'	27	Geijera parvifolia	
ELENDA ST		4200	4499	16+	N	R	Ficus microcarpa 'Nitida'	51	Pinus pinea	
EMERALD WY	Private			N/A	N	R	N/A	0	N/A	
EMPORIA AV		5100	5299	5	N	R	Schinus terebinthifolius	10	Lophostemon confertus	
EMPORIA AV		5300	5499	3	N	R	Ulmus parvifolia	16	Pistacia chinensis	
EMPORIA PL		11600	11699	3	Y	R	Ulmus parvifoia	3	Pyrus kawakamii	
ERNEST AV		5800	5899	3	N	R	Washingtonia robusta	3	Arbutus 'Marina'	Lengthen tree wells
ESTERINA WY	No Prkwy	10600	10799	N/A	N	R	No trees	0	N/A	
ETHELDO AV		5280	5499	5	N	R	Melaleuca linariifolia	8	Melaleuca linariifolia	
EVEWARD RD	No Prkwy	5700	5799	N/A	N	R	No trees	0	N/A	
EXPOSITION BL		8800	8899	3	Y	A	Vacant site	1	Rhus lancea	
FAIRBANKS WY		5000	5199	5	N	R	Magnolia grandiflora	39	Quercus virginiana	
FAIRBANKS WY		10800	11199	5	N	R	Magnolia grandiflora	63	Quercus virginiana	
FAIRFAX AV		2401	2699	3	N	A	Ficus microcarpa 'Nitida'	8	Casuarina cunninghamiana	
FARRAGUT DR		9500	9699	5	N	R	Cedrus deodara	18	Cedrela fissilis	alt: Podocarpus latifolius
FARRAGUT DR		9901	10199	8	Y	R	Vacant site	16	Erythrina crista-galli	
FARRAGUT DR		11100	11199	3	N	R	Metrosideros excelsus	4	Metrosideros excelsus	
FARRAGUT DR		10201	10699	8	N	R	Lagerstroemia indica	5	Quercus virginiana	
FARRAGUT DR		9900	10199	8	N	R	Washingtonia robusta	8	Quillaja saponaria	alt: Robinsonella cordata
FARRAGUT DR		10200	10699	8	Y	R	Ficus microcarpa 'nitida'	8	Rhus lancea	
FARRAGUT DR		10700	10899	5	N	R	Ulmus parvifolia	22	Ulmus parvifolia	
FAY AV		3200	3299	4	N	R	No Trees	0	Metrosideros excelsus	
FAY AV		3300	3499	5	N	R	Ulmus parvifolia	53	Ulmus parvifolia	
FLAXTON ST		10700	10899	7	N	R	Liquidambar styraciflua	34	Pistacia chinensis	
FOX HILLS DR	No Pkwy	6000	6100	N/A	N	A	No trees	0	N/A	
FOX HILLS MALL	No Street			N/A			No trees	0	N/A	
FRANKLIN AV		11200	11299	2	N	R	Podocarpus macrophyllus	22	Rhus lancea	
FRANKLIN AV		11100	11199	2	N	R	Ficus microcarpa 'Nitida'	6	Tabebuia chrysotricha	
FRANKLIN AV		10700	10899	5	N	R	Ulmus parvifolia	36	Ulmus parvifolia	
GALVIN ST		10800	10899	3	N	R	Ficus microcarpa 'Nitida'	15	Lophostemon confertus	

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GALVIN ST		10700	10799	5	N	R	Lophostemon confertus	17	Lophostemon confertus	
GARFIELD AV		11100	11199	3	N	R	Ficus microcarpa 'Nitida'	17	Geijera parvifolia	
GARFIELD AV		10700	10899	5	N	R	Jacaranda mimosifolia	46	Jacaranda mimosifolia	
GARFIELD AV		11200	11299	2	N	R	Lagerstroemia indica	16	Lagerstroemia indica	
GARLAND DR	No Prkwy	10700	10899	N/A	N	R	No trees	0	N/A	
GASLIGHT LN	Private			N/A		R	N/A	0	N/A	
GIRARD AV		3800	3899	8	N	R	Ulmus parvifolia	19	Angophora costata	
GLENCOE AV		3900	3999	5	N	R	Lophostemon confertus	18	Lophostemon confertus	DG
GLOBE AV		4100	4399	3	N	R	Ficus microcarpa 'Nitida'	31	Quercus tomentella	
GLOBE AV		3800	3899	5	N	R	Ulmus parvifolia	8	Ulmus parvifolia	Alt: Afrocarpus (Podocarpus) gracilior
GLOBE AV		3900	4099	3	N	R	Ulmus parvifolia	50	Ulmus parvifolia	Alt: Afrocarpus (Podocarpus) gracilior
GRANDVIEW BL		4200	4210	5	N	R	Podcarpus gracilior	4	Koelreuteria bipinnata	
GRANDVIEW BL		4000	4199	5	N	R	Podocarpus gracilior	6	Koelreuteria bipinnata	
GRANDVIEW BL		4001	4199	5	Y	R	Ficus microcarpa 'Nitida'	4	Koelreuteria bipinnata	Add tree wells
GRANDVIEW BL		3900	3999	5	Y	R	No Trees	0	N/A	
GRANT AV	Private			N/A		R	N/A	0	N/A	
GRAYRIDGE DR		11200	11399	3	N	R	Magnolia grandiflora	22	Bauhinia variegata	
GREEN VALLEY CIR		5600	6099	3	N	R	Pinus canariensis	43	Calocedrus decurrens	
GREEN VALLEY CIR		6200	6699	3	N	R	Pinus canariensis	15	Calocedrus decurrens	
HAMMACK ST		11700	11799	5	N	R	Ulmus americana	3	Koelreuteria bipinnata	
HANNUM AV		6300	6399	3	N	A	Podocarpus gracilior	24	Afrocarpus (Podocarpus) gracilior	Lengthen tree wells
HANNUM AV		5700	6099	3	N	A	Podocarpus gracilior	73	Afrocarpus (Podocarpus) gracilior	Lengthen tree wells
HANNUM AV	Median	6000	6099	5	N	A	Eucalyptus sp.	5	Paulownia tomentosa	
HANNUM AV		11200	11399	3	N	R	Phoenix canariensis	68	Afrocarpus (Podocarpus) gracilior	
HANNUM AV	Median	6300	6399	5	N	A	Syagrus romanzoffianum	25	Tabebuia chrysotricha	
HARGIS ST		6000	6099	5	N	R	Ulmus parvifoia	2	Pistacia chinensis	
HARTER AV		4000	4199	3	N	R	Ulmus parvifolia	31	Ginkgo biloba 'Autumn Gold'	
HARTER AV		4301	4599	5	N	R	Ficus microcarpa 'Nitida'	2	Ginkgo biloba 'Autumn Gold'	
HARTER AV		4300	4499	5	Y	R	Liquidambar styraciflua	9	Ginkgo biloba 'Autumn Gold'	
HAVELOCK AV	No Prkwy	11200	11299	N/A		R	No trees	0	N/A	
HAYDEN AV		3500	3699	3	N	A	Pyrus kawakamii	10	Jacaranda mimosifolia	
HAYDEN PL	No Prkwy	8600	8699	N/A		A	Eucalyptus globulus	40	N/A	
HAYTER AV		11200	11299	5	N	R	Ulmus parvifolia	8	Cinnamomum camphora	Alt: Quercus virginiana
HELMS AV		3300	3499	5	N	R	Pinus canariensis	12	Calocedrus decurrens	
HELMS AV		3501	3699	5	N	R	Geijera parviflora	5	Olmediella betschleriana	Use male trees. 'Alt: Geijera parvifolia
HELMS AV		3500	3699	5	Y	R	Ulmus parvifolia	6	Olmediella betschleriana	Use male trees. 'Alt: Geijera parvifolia
HEPBURN CIR	No Prkwy	10700	10799	N/A		R	No trees	0	N/A	
HERBERT ST		11300	11599	5	Y	R	Vacant site	23	Olmediella betschleriana	Use male trees. 'Alt: Arbutus 'marina'
HERBERT ST		11301	11599	5	N	R	Vacant site	15	Olmediella betschleriana	Use male trees. 'Alt: Arbutus 'marina'
HERBERT ST		12200	12399	2	N	R	Podocarpus macrophyllus	24	Tabebuia chrysotricha	
HERBERT WY	No Prkwy	12200	12299	N/A		R	No trees	0	N/A	
HERITAGE PL	Private			N/A		R	N/A	0	N/A	
HETZLERS RD	Private			N/A		R	N/A	0	N/A	

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HIGUERA ST		8400	8499	7	Y	R	Cupaniopsis anacardioides	11	Angophora costata (south side) /Maytenus boaria (north side)	
HIGUERA ST		8500	8699	3	Y	R	Magnolia grandiflora	10	Bauhinia variegata	
HIGUERA ST		3800	3899	3	N	A	No Trees	0	N/A	
HIGUERA ST		3900	4199	3	N	R	Platanus acerifolia	26	Platanus x acerifolia 'Columbia'	Lengthen tree wells
HIGUERA ST	Median	8500	8699	5	N	R	Magnolia grandiflora	11	Tabebuia impetiginosa	
HIGUERA ST	Median	3900	4199	3	N	R	Nerium oleander	3	Tabebuia impetiginosa	
HILL RD	No Prkwy	5900	5999	N/A		R	No Trees	0	N/A	
HINES AV		3000	3099	3	N	R	Washingtonia robusta	2	Brahea Armata	Alt: Brahea edulis
HOKE AV	No Prkwy	3800	3899	N/A		A	No trees	0	N/A	
HOLLOW CORNER RD	Private			N/A		R	N/A	0	N/A	
HOLLYVIEW TER	No Prkwy	3800	3899	N/A		R	No trees	0	N/A	
HOWARDVIEW CT	No Prkwy	3800	3899	N/A	N	R	No Trees	0	N/A	
HUBBARD ST		9000	9099	5	N	R	'Rotundiloba'	7	Pistacia chinensis	
HUBBARD ST		8900	8999	5	Y	R	Ulmus parvifolia	28	Ulmus parvifolia	
HUCK FINN LN	Private			N/A		R	N/A	0	N/A	
HUGHES AV		3800	3899	4	N	R	Syagrus romanzoffianum	4	Cercidium 'Desert Museum' / Calodendrum capense (see comments)	Replace Syagrus and Podocarpus macrophyllus with Cercidium 'Desert Museum,' replace Magnolias with Calodendrum capense
HUNTLEY AV		4400	4599	5	N	R	Magnolia grandiflora	14	Calodendrum capense	
HUNTLEY AV		4100	4399	5	N	R	Ulmus parvifolia	26	Ulmus parvifolia	
HUNTLEY PL		11200	11299	3	N	R	Ulmus parvifolia	15	Rhus lancea	
HURON AV		4300	4441	5	N	R	Liquidambar styraciflua	8	Pistacia chinensis	
HURON AV		4000	4299	5	N	R	Magnolia grandiflora	13	Pistacia chinensis	
HURON AV		3800	3999	3	N	R	Magnolia grandiflora	51	Stereospermum (Radermachera) sinica	
HUTCHINSON AV		3200	3299	3	N	R	Washingtonia robusta	4	Geijera parvifolia	
INCE BL		3800	3899	3	N	A	Lophostemon confertus	12	Lophostemon confertus	
INCE BL		3901	4299	3	N	A	Vacant site	1	Lophostemon confertus	
INCE BL		3900	4299	3	Y	A	Magnolia grandiflora	12	lines/Lophostemon confertus	Lengthen tree wells
INDIANWOOD RD	Private			N/A		R	N/A	0	N/A	
INGLEWOOD BL		3990	4010	3	Y	A	Lagerstroemia indica	5	Lagerstroemia indica	
IRVING PL		4050	4299	8	N	R	Cedrus deodara	51	Cedrus deodara	
IRVING PL	Wells	4000	4040	3	N	R	Podocarpus macrophyllus	8	Rhus lancea	
IVY WY	No Prkwy	5900	5999	N/A	N	R	No Trees	0	N/A	
JACKSON AV		4000	4398	8	Y	R	Pinus canariensis	15	Rhus lancea	Under power lines
JACKSON AV		4001	4099	8	N	R	Pinus canariensis	14	Tipuana tipu	
JACKSON AV		4101	4399	8	N	R	Syagrus romanzoffianum	22	Tipuana tipu	Include Alnus rhombifolia for creekside end of street at time of planting. Plant outside fence if possible
JACOB ST		6000	8699	2	N	R	Podocarpus macrophyllus	32	Lagerstroemia indica	Lengthen tree wells
JACOB ST		6001	8699	2	Y	R	Podocarpus macrophyllus	29	Lagerstroemia indica	Lengthen tree wells
JANISANN AV		5300	5499	5	N	R	Jacaranda mimosifolia	26	Jacaranda mimosifolia	
JASMINE AV		4101	4199	8	N	R	Ceratonia siliqua	17	Cinnamomum camphora	alt: Quercus virginiana

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JASMINE AV		4100	4199	8	Y	R	Cinnamomum camphora	10	Rhus lancea	
JASMINE AV		4200	4599	8	N	R	Ulmus parvifolia	96	Ulmus parvifolia	
JEAN PL	No Prkwy	3800	3899	N/A		R	No trees	0	N/A	
JEFFERSON BL	Wells	6001	9200	5	Y	A	Pinus canariensis	12	Casuarina cunninghamiana	Utilize banks of creek for planting
JEFFERSON BL		10200	10699	3	N	A	Pinus canariensis	62	Casuarina cunninghamiana	Extend tree wells
JEFFERSON BL		10700	10810		N	A	Ficus microcarpa 'Nitida'	11	Casuarina cunninghamiana	
JEFFERSON BL		10917	11199	5	N	A	Syagrus romanzoffianum	3	Casuarina cunninghamiana	
JEFFERSON BL		10812	11198	3	N	A	Podocarpus macrophyllus	19	Casuarina cunninghamiana	Lengthen tree wells
JEFFERSON BL		11400	11499	2	N	A	Podocarpus macrophyllus	14	Casuarina cunninghamiana	
JEFFERSON BL	Median	10200	10699	8	N	A	Pinus canariensis	23	Ginkgo biloba "Princeton sentry'	Alt: Ginkgo biloba 'Saratoga'
JEFFERSON BL	Median	10900	11199			A	Liquidambar styraciflua	8	Ginkgo biloba "Princeton sentry'	
JEFFERSON BL	Tree Wels	9300	9800	N/A	Y	A	Lagerstroemia indica	16	Lagerstroemia indica	
JEFFERSON BL	Median	6001	9200	5	N	A	Lophostemon confertus	4	Lophostemon confertus	Add medians
JEFFERSON BL		10701	10915	8		A	Ulmus parvifolia	43	Ulmus parvifolia	
JEFFERSON BL	No Prkwy	9200	9299	N/A	Y	A	No Trees	0		
JEFFERSON BL		9801	9815	8	Y	A	No Trees?	24		
JEFFERSON BL	No Prkwy	9800	10199	3		A				
JORDAN WY		5100	5199	3	N	R	Pinus canariensis	13	Calocedrus decurrens	
KALEIN DR		5300	5399	5	N	R	Podocarpus gracilior	8	Metrosideros excelsus	
KAREN CIR	No Prkwy	5100	5199	N/A		R	Ulmus parvifolia	4		
KELMORE ST		10736	10999	5	N	R	Ficus microcarpa 'Nitida'	23	Cinnamomum camphora	Alt: Afrocarpus (Podocarpus) gracilior
KELMORE ST		10700	10999	5	N	R	Pistacia chinensis	3	Pistacia chinensis	
KELMORE ST		10700	10735	5	N	R	Liquidambar styraciflua	8	Pistacia chinensis	
KENSINGTON RD		4300	4320	8	N	R	Phoenix canariensis	3	Tipuana tipu	
KENSINGTON WY		5600	5699	3	N	R	Cupaniopsis anacardioides	11	Lophostemon confertus	
KENYON AV	No Prkwy	4100	4110	3		R	No Trees	0	Lophostemon confertus	Cut tree wells
KERR WY	No Prkwy	9600	9699	N/A		R	N/A	0	N/A	
KEYSTONE AV		4300	4399	8	N	R	Schinus terebinthifolius	49	Spathodea campanulata	
KEYSTONE AV		4100	4299	8	N	R	Ulmus parvifolia	62	Ulmus parvifolia	
KINSTON AV		5100	5299	5	Y	R	Vacant site	9	Lagerstoemia indica	
KINSTON AV		5300	5700	3	N	R	Ficus microcarpa 'Nitida'	17	Lagerstoemia indica	
KINSTON AV		5101	5299	5	N	R	Vacant site	5	Pistacia chinensis	
KINSTON AV		*10900*	*11099*	*5*	*Y*	*R*	*Ficus microcarpa 'Nitida'*	*20*	Pistacis chinensis (E side) / Melaleuca linarifolia (W side)	
KRUEGER ST		*8900*	*9099*	*5*	*N*	*R*	*Ulmus parvifolia*	*43*	Ulmus parvifolia	
LA CIENEGA AV		*3200*	*3299*	*3*	*N*	*A*	*Syagrus romanzoffianum*	*2*	Jacaranda mimosifolia (east side)/Lagerstroemia indica (west side)	
LA CIENEGA BL	No Prkwy	*3800*	*3899*	*N/A*		*A*	*No trees*	*0*	N/A	
LA CIENEGA BL		*2700*	*3099*	*3*	*N*	*A*	*Ficus microcarpa 'Nitida'*	*14*	Sophora japonica	Median suggested
LA FAYETTE PL		*4040*	*4299*	*8*	*N*	*R*	*Cedrus deodara*	*45*	Cedrus deodara	
LA FAYETTE PL		*4000*	*4030*	*3*	*N*	*R*	*Podocarpus macrophyllus*	*10*	Jacaranda mimosifolia	Remove tree grates, lengthen tree wells

KEY

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STREET	ID	FROM	TO	PKWY	UTILS	TRAFFIC	PRIMARY EXISTING SPECIES	NUMBER	NEW PROPOSED SPECIES	COMMENTS
LA SALLE AV		4000	4299	8	N	R	Pinus canariensis	33	Cinnamomum camphora	alt: Quercus virginiana. 'Include Alnus rhombifolia for creekside end of street at time of planting
LAMARR AV	No Prkwy	3900	4099	N/A		R	No Trees	0	N/A	
LANDMARK ST	No Prkwy	3900	3999	N/A		A	No trees	0	N/A	
LANTANA LN	Private			N/A		R	N/A	0	N/A	
LE BOURGET AV		4100	4499	8	N	R	Syagrus romanzoffianum	62	Cinnamomum camphora / Jubaea chilensis at park	Alt for Camphor: Quercus Virginiana. Interplant Jubea as soon as possible
LEAHY ST	No Prkwy	4600	4699	N/A		R	No Trees	0	Alnus rhombifolia	Plant on city property at end of street
LEEVIEW CT	No Prkwy	3800	3899	N/A		R	No Trees	0	N/A	
LENAWEE AV		3800	3899	5	N	R	Vacant site	3	Melaleuca linariifolia	
LENAWEE AV		3900	3999	2	N	R	Vacant site	10	Tabebuia chrysotricha	
LINCOLN AV		4000	4299	8	N	R	Ficus microcarpa 'Nitida'	78	Cinnamomum camphora	Alt: Quercus virginiana. 'Include Salix lasiolepis, S. laevigata, or S. gooddingii for creekside end of street at time of planting
LINDA WY	No Prkwy	6000	6099	N/A		R	No trees	0	N/A	
LINDBLADE DR		4200	4212	3	N	R	Ficus microcarpa 'Nitida'	3	Olmediella betschleriana	Use male trees. Alt: Lophostemon confertus
LINDBLADE ST		9000	9098	3	Y	R	Catalpa speciosa	2	Melaleuca linariifolia	
LINDBLADE ST		9001	9099	3	N	R	Platanus acerifolia	13	Platanus x acerifolia 'Columbia' /Quercus agrifolia	
LINDBLADE ST		8900	8999	3	Y	A	Ficus microcarpa 'Nitida'	2	Quercus agrifolia	
LINDBLADE ST		10800	11199	5	N	R	Ulmus parvifolia	101	Ulmus parvifolia	
LOUISE AV		12500	12699	3	Y	R	Phoenix canariensis	1	Rhus lancea	
LUCERNE AV		9300	9699	5	N	R	Ficus microcarpa 'Nitida'	15	Casuarina cunninghamiana	Sites not under utilities
LUCERNE AV		9000	9099	5	Y	R	Geijera parviflora	8	Geijera parvifolia	
LUCERNE AV		9001	9099	5	N	R	Phoenix canariensis	4	Geijera parvifolia	
LUCERNE AV		9301	9699	5	Y	R	Ficus microcarpa 'Nitida'	4	Rhus lancea	Sites under utilities
LUGO WY	No Prkwy	10600	10799	N/A		R	No trees	0	N/A	
LYCEUM AV		3990	4010	5	N	R	Ficus microcarpa 'Nitida'	2	Lagerstroemia indica	Applies only to portion of street within city limits
MACHADO RD	Median	5500	5599	5	N	A	cunninghamiana	6	Paulownia tomentosa	
MACHADO RD		5500	5599	3	N	A	Syagrus romanzoffianum	21	Syagrus romanzoffianum	Lengthen tree wells
MADISON AV		3900	3900	3	N	A	Jacaranda mimosifolia	7	Jacaranda mimosifolia	
MADISON AV	Median	3900	3900	5	N	A	Syagrus romanzoffianum	22	Sophora japonica	
MADISON AV		4000	4299	8	N	R	Phoenix canariensis	41	Tipuana tipu	Include Salix lasiolepis, S. laevigata, or S. gooddingii for creekside end of street at time of planting
MAIN ST		3800	3899	5	N	A	Cinnamomum camphora	15	Cinnamomum camphora	Lengthen tree wells, plant trees in DG. Alt: Pyrus kawakamii
MALAT WY		11200	11399	3	N	R	Liquidambar styraciflua	28	Ginkgo biloba "Autumn Gold'	
MARCASEL AV		4190	4199	8	N	R	Phoenix canariensis	2	Rhus lancea in small parkways/ Quercus agrifolia in large parkways	

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STREET	ID	FROM	TO	PKWY	UTILS	TRAFFIC	PRIMARY EXISTING SPECIES	NUMBER	NEW PROPOSED SPECIES	COMMENTS
MARIETTA AV		10900	10999	3	Y	R	Ficus microcarpa 'Nitida'	9	Stenocarpus sinuatus	Plant at 15' oc
MATTESON AV	No Prkwy	11100	11199	N/A	N	R	No Trees	0	N/A	
MATTESON AV		11000	11099	5	N	R	Magnolia grandiflora	5	Quercus virginiana	
MATTESON AV		11001	11330	5	Y	R	Magnolia grandiflora	5	Rhus lancea	
MATTESON AV		10901	10999	3	Y	R	No Trees?		Tabebuia chrysotricha	
MATTESON AV		10900	10999	3	N	R	Ulmus parvifolia	14	Ulmus parvifolia at school/Tabebuia chrysotricha	
MAXELLA AV	Median	12700	12799	15+	N	R	Ulmus parvifolia	7	Erythrina crista-galli	
MAYTIME LN	Private			2			N/A	0	N/A	
MCCONNELL BL		4100	4399	3	N	R	Tabebuia impetiginosa	37	Tabebuia impetiginosa	
MCDONALD ST		11200	11430	6	N	R	Magnolia grandiflora	28	Quercus virginiana	
MCDONALD ST		11480	11699	6	N	R	Robinia pseudoacacia	15	Quercus virginiana	
MCDONALD ST		11100	11199	3	N	R	Podocarpus macrophyllus	6	Tabebuia impetiginosa	
MCLAUGHLIN AV		4248	4280	5	N	R	Eucalyptus polyanthemos	2	Casuarina cunninghamiana	
MCMANUS AV		3200	3299	5	N	R	Washingtonia robusta	3	Arbutus 'Marina'	
MCMANUS AV		3300	3499	5	N	R	Ulmus parvifolia	41	Ulmus parvifolia	
MEIER ST		3990	4099	5	N	R	Pyrus calleryana	4	Cinnamomum camphora	Applies only to portion of street within city limits. Alt: Pyrus kawakamii
MELVIL ST	No Prkwy	6100	6199	5	Y	R			Geijera parvifolia	Add long tree wells if possible
MENTONE AV		4300	4499	8	N	R	Ficus microcarpa 'Nitida'	30	Angophora costata	
MENTONE AV		4100	4299	8	N	R	Ulmus parvifolia	64	Ulmus parvifolia	
MESMER AV	LA Prkwy			3			N/A	0	N/A	
MICHAEL AV		3990	4010	3	N	R	Washingtonia robusta	4	Rhus lancea	Applies only to portion of street within city limits
MIDWAY AV		3900	3999	6	Y	R	Ficus benjamina	2	Quercus virginiana	
MIDWAY AV		3800	3899	5	N	R	Pinus canariensis	12	Stereospermum (Radermachera) sinica	
MILDRED AV		4100	4399	5	N	R	Bauhinia variegata	31	Bauhinia variegata	
MILTON AV		4100	4199	5	N	R	Pinus canariensis	15	Casuarina cunninghamiana	
MINERVA AV		4000	4199	5	N	R	Ulmus parvifolia	53	Ulmus parvifolia	
MITCHELL AV	LA Prkwy						N/A	0	N/A	
MOLONY RD	No Prkwy	10700	11099				No trees	0	N/A	
MOORE ST	LA Prkwy	3900	4099	5	N	R	Vacant site	16	Koelreuteria bipinnata	Applies only to portion of street within city limits
MOTOR AV		4300	4499	7	N	R	Ficus microcarpa 'Nitida'	29	Quercus agrifolia	
MOTOR AV		4100	4299	8	N	R	Ulmus parvifolia	52	Ulmus parvifolia / Jubaea chilensis at park	Interplant Jubea as soon as possible
NATIONAL BL	Median	8501	8699	5	N	A	Platanus x acerifolia	19	Platanus x acerifolia 'Columbia'	
NATIONAL BL	No Prkwy	8500	8849	5					Platanus x acerifolia 'Columbia'	
NEOSHO AV		4100	4110	5	N	R	Ulmus parvifolia	6	Jacaranda mimosifolia	
NORTH DR	Private						N/A	0	N/A	
NORTHGATE ST		10700	10799	8	N	R	Lophostemon confertus	35	Lophostemon confertus	

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STREET	ID	FROM	TO	PKWY	UTILS	TRAFFIC	PRIMARY EXISTING SPECIES	NUMBER	NEW PROPOSED SPECIES	COMMENTS
OCEAN DR		10700	11099	5	N	R	Ficus microcarpa 'Nitida'	23	Quercus tomentella	Alt: Jacaranda mimosifolia. Replace non-native species along NE side (no houses) w/ Populus fremonii, Alnus rhombifolia at time of planting.
OREGON AV		10700	10899	3	N	R	Ulmus parvifolia	31	Tabebuia impetiginosa	
ORVILLE ST		11100	11139	2	N	R	Podocarpus macrophyllus	8	Rhus lancea	
ORVILLE ST		11200	11299	3	N	R	Podocarpus macrophyllus	16	Stenocarpus sinuatus	
ORVILLE ST		11140	11199	8	N	R	Jacaranda mimosifolia	8	Tipuana tipu	
OVERLAND AV		4100	4399	3	Y	A	Ficus microcarpa 'Nitida'	29	Tabebuia impetiginosa	
OVERLAND AV		3801	3899	5	N	A	Callistemon citrinus	16	Metrosideros excelsus	Add medians?
OVERLAND AV		3900	4098	5	Y	A	Callistemon citrinus	24	Metrosideros excelsus/ Replace Lophostemon confertus w/ same	
OVERLAND AV		3901	4099	3	N	A	Archontophoenix	18	excelsus/Archontophoenix cunninghamiana replaces w/like	
OVERLAND AV	No Prkwy	11200	11299				No trees	0	N/A	
OVERLAND AV	Median	5300	5499		N	A	Eucalyptus citriodora	2	Platanus racemosa	
OVERLAND AV	Median	5100	5199		N	A	Ficus microcarpa 'Nitida'	2	Platanus racemosa	
OVERLAND AV		10700	11199	5	Y	A	Quercus ilex	23	Quercus virginiana	
OVERLAND AV	Median	3900	4099	3	N	A	Chorisia speciosa	4	Sophora japonica	
OVERLAND AV		4101	5499	7	N	A	Ficus microcarpa 'Nitida'	65	Tipuana tipu at plunge, Arbutus 'Marina' elsewhere	Festuca rubra underplanting tipus at plunge, DG in parkway
PARK AV		10400	10499	3	N	R	Phoenix canariensis	3	Tabebuia impetiginosa south side/ Jubea chilensis at park	Interplant Jubea as soon as possible
PATOM DR		11400	11599	5	N	R	Magnolia grandiflora	27	Calodendrum capense	
PATOM DR		11200	11399	5	N	R	Liquidambar styraciflua	27	Ginkgo biloba "Autumn Gold'	
PEARSON ST	No Prkwy	4600	4699	N/A			No Trees	0	Alnus rhombifolia	Plant on city property at end of street
PERHAM DR	No Prkwy	3800	3899	N/A	Y	R	No Trees	0	N/A	
PERRY DR	No Prkwy	5800	5899				No trees	0	N/A	
PICKFORD WY		5000	5199	6	N	R	Cupaniopsis anacardioides	18	Afrocarpus (Podocarpus) gracilior	
PICKFORD WY		10800	11199	6	N	R	Cupaniopsis anacardioides	40	Afrocarpus (Podocarpus) gracilior	
PIGOTT DR	No Sdwlk	11100	11199	15+	N	R	Vacant site	4	Afrocarpus (Podocarpus) gracilior	
PLAYA CT	No Prkwy	11200	11299				No trees	0	N/A	
PLAYA ST	Median	11200	11399	3	N	A	Pinus canariensis	14	Acrocarpus fraxinifolius	
PLAYA ST		11200	11399	4	Y	A	Podocarpus gracilior	21	Jacaranda mimosifolia	
POINSETTA CT	No Prkwy	9000	9099	5			No trees	0	N/A	
PORT RD		11301	11799	3	Y	R	Ulmus americana	8	Stereospermum (Radermachera) sinica	
PORT RD		11500	11799	8	N	R	Ulmus americana	17	Tipuana tipu	
PROSPECT AV		3800	3999	3	N	R	Magnolia grandiflora	19	Tabebuia impetiginosa	
PURDUE AV		5100	5299	2	N	R	Podocarpus macrophyllus	21	Rhus lancea	
RAINBOWS END	Private			3			N/A	0	N/A	
RAINTREE CIR	Private			5			N/A	1	N/A	
RANCH RD		10600	10799	5	N	R	Ficus microcarpa 'Nitida'	9	Cinnamomum camphora	Alt: Quercus tomentella
REDWOOD AV		3900	4010	5	N	R	Vacant site	12	Geijera parvifolia	

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STREET	ID	FROM	TO	PKWY	UTILS	TRAFFIC	PRIMARY EXISTING SPECIES	NUMBER	NEW PROPOSED SPECIES	COMMENTS
REID AV		3000	3199	5	N	R	*Ulmus parvifolia*	40	Ulmus parvifolia	
REVERE PL		4200	4299	11	N	R	*Fraxinus velutina*	18	Cinnamomum camphora	Alt: Angophora costata. 'Include Alnus rhombifolia for creekside end of street at time of planting
RHODA WY		5000	5199	8	N	R	*Ulmus parvifolia*	7	Ulmus parvifolia 'Dynasty'	
RHODA WY		10900	11199	8	N	R	*Ulmus parvifolia*	45	Ulmus parvifolia 'Dynasty'	
ROBERTS AV		3100	3299	3	N	R	*Schinus terebinthifolius*	32	Arbutus 'Marina'	
ROBERTSON BL		3700	3799	3	N	A	*Pinus canariensis*	20	Ginkgo biloba "Autumn Gold'	Lengthen tree wells, interplant if possible
ROSABELL ST		4000	4099	5	N	R	*Vacant site*	13	Cinnamomum camphora	Alt: Geijera parvifolia
RUDMAN DR		11200	11399	5	N	R	*Podocarpus macrophyllus*	23	Lophostemon confertus	
RYANDALE DR		11200	11299	3	N	R	*Cupaniopsis anacardioides*	26	Stenocarpus sinuatus	
SALEM VILLAGE CT	Private						*N/A*	0	N/A	
SALEM VILLAGE DR	Private						*N/A*	0	N/A	
SALEM VILLAGE PL	Private			2			*N/A*	0	N/A	
SAWTELLE BL		3800	4199	9	N	A	*Magnolia grandiflora*	74	Angophora costata	Alt: Afrocarpus (Podocarpus) gracilior
SAWTELLE BL		5100	5899		Y	A	*Jacaranda mimosifolia*	32	Jacaranda mimosifolia	
SAWTELLE BL		4300	4399	3	N	A	*Vacant site*	4	Metrosideros excelsus	
SAWTELLE BL		4200	4299	10	N	A	*Magnolia grandiflora*	21	Pinus pinea	
SCHAEFER ST		3500	3699	5	N	R	*Tipuana tipu*	50	Tipuana tipu	+ Alt: Koelreuteria bipinnata
SCHOOL ST	Private	9500	9599	3	N	R	*N/A*	0	N/A	
SEGRELL WY		11200	11599	4	N	R	*Cupaniopsis anacardioides*	40	Cedrela fissilis	
SELMARAINE DR		5600	5699	5	N	R	*Washingtonia filifera*	7	Brahea armata	Alt: Brahea edulis
SELMARAINE DR		5100	5499	2/3	N	R	*Quercus ilex*	17	Tabebuia chrysotricha	
SENTNEY AV		2901	3099	5	Y	R	*Pinus canariensis*	6	Arbutus 'Marina'	Include Alnus rhombifolia for creekside end of street at time of planting
SENTNEY AV		2900	3099	5	N	R	*Pinus canariensis*	7	Pinus torreyana	Include Alnus rhombifolia for creekside end of street at time of planting
SEPULVEDA BL		6200	6299	3	N	A	*Podocarpus gracilior*	3	Afrocarpus (Podocarpus) gracilior	Remove conc tree grates
SEPULVEDA BL		5691	6099	5	Y	A			Pistacia chinensis	Lengthen tree wells, add long tree wells, grove planting in tree wells.Recommend Angophora costata for adj. caltrans fwy slope.
SEPULVEDA BL		3801	4399	5	Y	A	*Platanus acerifolia*	12	Platanus x acerifolia 'Columbia'/ Pyrus kawakamii under lines	Stormwater mitigation plan
SEPULVEDA BL		4401	4599	3	Y	A	*Platanus acerifolia*	35	Platanus x acerifolia 'Columbia'/ Pyrus kawakamii under lines	Stormwater mitigation plan
SEPULVEDA BL		3800	4598	5	Y	A	*Platanus acerifolia*	14	Platanus x acerifolia 'Columbia'/ Pyrus kawakamii under lines	Stormwater mitigation plan
SEPULVEDA BL		5100	5680	3	N	A			Pyrus kawakamii	Can medians be added? (w/ Tipuana tipu) Lengthen tree wells when doing new planting

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STREET	ID	FROM	TO	PKWY	UTILS	TRAFFIC	PRIMARY EXISTING SPECIES	NUMBER	NEW PROPOSED SPECIES	COMMENTS
SEPULVEDA BL	Median	5700	6099		N	A	Lophostemon confertus	15	Tipuana tipu	
SEPULVEDA BL	Median	5600	5699		N	A			Tipuna tipu	
SHEDD TER	No Prkwy	3900	3999				No Trees	0	N/A	
SHERBOURNE DR		3200	3299	5	N	R	Washingtonia robusta	2	Pistacia chinensis - w side/Washingtonia robusta - e side	
SHERBOURNE DR		3300	3499	3	N	R	Ulmus parvifolia	32	Ulmus parvifolia	
SHORT AV	LA Prkwy			2			N/A	0	N/A	
SHOWBOAT LN	Private						N/A	0	N/A	
SHOWBOAT PL	Private			5			N/A	0	N/A	
SKELTON CIR	No Prkwy	4000	4099				No trees	0	N/A	
SLAUSON AV		5400	5599		N	A	Pinus canariensis	19	Afrocarpus (Podocarpus) gracilior	Remove conc tree grates
SLAUSON AV		5601	6099	2	Y	A	Podocarpus gracilior	66	Afrocarpus (Podocarpus) gracilior	
SLAUSON AV		6100	6299	5	N	A	Podocarpus gracilior	13	Afrocarpus (Podocarpus) gracilior	
SLAUSON AV		5100	5399	18	N	R	Cedrus deodara	41	Pinus pinea	
SLAUSON AV		6300	6399	3	N	A	Podocarpus macrophyllus	12	Pyrus kawakamii	
SLAUSON AV	Median	5400	5599	15	N	R	Myoporum laetum	7	Brahea armata/Ceiba speciosa	
SLAUSON AV	Median	6001	6099	8	N	A	Syagrus romanzoffianum	12	Tabebuia impetiginosa	
SMILEY DR	No Prkwy	5800	5999				No trees	0	N/A	
SOUTH DR	Private			3			N/A	0	N/A	
SPAD PL		3800	3899	2	N	R	Lagerstroemia indica	12	Lagerstroemia indica	
ST JAMES DR	Private						N/A	0	N/A	
ST LOUIS CT	Private			5			N/A	0	N/A	
STAR CIR	No Prkwy	4500	4599	3			No trees	0	N/A	
STELLAR DR	No Prkwy	8400	8599	8			No trees	0	N/A	
STEPHON TER	No Prkwy	10700	10799	3			No trees	0	N/A	
STEVENS AV		11200	11399	3	N	R	Phoenix canariensis	38	Rhus lancea	
STEVENS CIR	No Prkwy	5100	5199	3			No trees	0	N/A	
STEVER CT	No Prkwy	5700	5799	3			No trees	0	N/A	
STEVER ST		10800	10999	3	N	R	Ficus microcarpa 'Nitida'	26	Rhus lancea	
STONEVIEW DR	No Prkwy	3900	5999	N/A		R	No Trees	0	N/A	
STONEY CREEK RD	Private			5			N/A	0	N/A	
STUBBS LN	No Prkwy	10700	10701	5			No trees	0	N/A	
STUDIO DR		5000	5400	5	N	R	Ficus microcarpa 'Nitida'	24	Brachychiton populneus	
SUMMERTIME LN	Private						N/A	0	N/A	
SUMNER WY		5600	5699	5	N	R	Cupaniopsis anacardioides	18	Lophostemon confertus	
TARA TERR	Private			5			N/A	0	N/A	
TELLEFSON RD	No Prkwy	5700	5999	2			No trees	0	N/A	
TILDEN AV		3800	3999	5	N	R	Ficus microcarpa 'Nitida'	13	Cinnamomum camphora	Alt: Quercus tomentella
TILDEN AV		4000	4199	5	N	R	Ficus microcarpa 'Nitida'	27	Rhus lancea	
TIMBERLAKE TER	Private			2			N/A	0	N/A	
TIVOLI AV		3990	4010	3	N	R	Ficus microcarpa 'Nitida'	1	Geijera parvifolia	Applies only to portion of street within city limits
TOMPKINS WY	Private			3			N/A	0	N/A	
TULLER AV		3800	4099	4	N	R	Magnolia grandiflora	20	Cinnamomum camphora	Alt: Angophora costata

KEY

PKWY : Width of parkway or tree well in feet UTILS : Overhead wires (if Y) TRAFFIC : R = residential / A = arterial

STREET	ID	FROM	TO	PKWY	UTILS	TRAFFIC	PRIMARY EXISTING SPECIES	NUMBER	NEW PROPOSED SPECIES	COMMENTS
TULLER AV		4300	4399	2	N	R	*Ficus microcarpa 'Nitida'*	20	Stenocarpus sinuatus	
TULLER AV		4100	4299	3	N	R	*Ficus microcarpa 'Nitida'*	13	Tabebuia impetiginosa	end of street
UPLANDER WY	No Prkwy	5700	5899				*No trees*	0	N/A	
VAN BUREN PL		4000	4299	9	N	R	*Cedrus deodara*	26	Cedrus deodara	Include Alnus rhombifolia for creekside end of street at next planting
VAN BUREN PL		3900	3999	4	N	R	*Liquidambar styraciflua*	3	Pistacia chinensis	
VELVET LN	Private						*N/A*	0	N/A	
VENICE BL		10700	11399		N	A	*Podocarpus macrophyllus*	57	Platanus x acerifolia 'Columbia'	Enlarge tree wells, 6x6 min
VER HALEN CT	No Prkwy	3800	3899	N/A	N	R		0	N/A	
VICKSTONE CT		5800	5899	2	N	R	*No trees*	11	Tabebuia chrysotricha	residents to open up parkways
VINTON AV		4300	4499	7	N	R	*Ficus microcarpa 'Nitida'*	44	Angophora costata	
VINTON AV		4100	4299	8	N	R	*Ulmus parvifolia*	78	Ulmus parvifolia	
VIRGINIA AV		10701	10899	5	Y	R	*Jacaranda mimosifolia*	15	Jacaranda mimosifolia (North side) / Maytenus boaria (South side)	
VIRGINIA AV		10500	10700	4	N	R	*Ficus microcarpa 'Nitida'*	11	Quillaja saponaria	
WADE ST	1-ft Pkwy	4000	4100	1					Tabebuia chrysotricha	Can parkways be cut?
WAGNER ST		10800	11199		N	R	*Ulmus parvifolia*	96	Ulmus parvifolia	
WALGROVE AV		3900	3999	5	N	R	*Magnolia grandiflora*	9	Olmediella betschleriana	Use male trees. 'Alt: Rhus lancea
WALNUT AV	LA Prkwy			3	Y	R	*Lophostemon confertus*	27	Lophostemon confertus	CC Prkwy east side. 'Remove tree grates w/new planting. Use DG.
WARNER DR	No Prkwy	8400	8599				*No trees*	0	N/A	
WASATCH AV		4000	4099	8	N	R	*Ulmus parvifolia*	23	Ulmus parvifolia	
WASHINGTON BL	Median	5900	8699		N	A	*Tipuana tipu*	72	campanulata	
WASHINGTON BL		5700	5899	3	N	A	*Washingtonia robusta*	42	Washingtonia robusta / Koelreuteria bipinnata	When funds are available, interplant (e) Washingtonia w/ Koelreuteria. 6' long cutout min
WASHINGTON BL		8700	8998	3	N	A	*Washingtonia robusta*	63	Platanus x acerifolia 'Columbia'	As per Washington National Master Plan
WASHINGTON BL		10200	13454	3	N	A	*Washingtonia robusta*	383	Washingtonia robusta / Koelreuteria bipinnata	When funds are available, interplant (e) Washingtonia w/ Koelreuteria. 6' long cutout min
WASHINGTON BL		5900	8699	3	N	A	*Washingtonia robusta*	99	Washingtonia robusta / Lophostemon confertus	
WASHINGTON BL		9000	9398	3	N	A	*Washingtonia robusta*	10	Washingtonia robusta /Jacaranda mimosifolia	
WASHINGTON BL		9001	9399	3	N	A	*Washingtonia robusta*	13	Washingtonia robusta /Jacaranda mimosifolia	
WASHINGTON BL		9701	10199	3	N	A	*Washingtonia robusta*	14	Washingtonia robusta, Jacaranda mimosifolia	Replace Jacaranda and Washingtonia with same.
WASHINGTON PL		11300	11650	5	N	A	*Vacant site*	26	Angophora costata	Alt: Afrocarpus gracilior
WASHINGTON PL	Median	11000	12699		N	A	*Syagrus romanzoffium*	10	Brahea armata	Alt: Brahea edulis

KEY

PKWY : Width of parkway or tree well in feet UTILS : Overhead wires (if Y) TRAFFIC : R = residential / A = arterial

STREET	ID	FROM	TO	PKWY	UTILS	TRAFFIC	PRIMARY EXISTING SPECIES	NUMBER	NEW PROPOSED SPECIES	COMMENTS
WASHINGTON PL		12000	12799		N	A			Calocedrus decurrens	Alt: Cedrus deodara
WASHINGTON PL	Median	11000	11299	5	N	A	Washigntonia robusta	6	Ceiba speciosa	Lengthen tree wells
WASHINGTON PL		11000	11299	3	N	A	Washigntonia robusta	33	Lagerstroemia indica	Lengthen tree wells
WATSEKA AV		3800	3899	3	N	R	Podocarpus macrophyllus	10	Ginkgo biloba	Lengthen tree wells
WESLEY ST		3500	3699		N	R	Geijera parviflora	21	Geijera parvifolia	
WESLEY ST		3400	3499		Y	R	Ficus microcarpa (removed?)	5	Rhus lancea	
WESTWOOD BL		5000	5199	5	N	R	Cupaniopsis anacardioides	17	Cinnamomum camphora	Alt: Geijera parvifolia
WESTWOOD BL		10900	11199	5	N	R	Cupaniopsis anacardioides	31	Cinnamomum camphora	Alt: Geijera parvifolia
WESTWOOD BL		3800	3899	3	N	R	Cassia leptophylla	29	Tabebuia chrysotricha	
WHITBURN ST		10700	10999		N	R	Pistacia chinensis	30	Pistacisa chinensis	
WILDERNESS LN	Private						N/A	0	N/A	
WILLAT AV	No Prkwy						No Trees	0	N/A	
WINDSOR WY		5600	5699	5	N	R	Cupaniopsis anacardioides	16	Lophostemon confertus	
WOOLFORD ST		11100	11299	2	N	R	Podocarpus macrophyllus	24	Rhus lancea	
WRIGHT TERR	No Prkwy	6000	6099	N/A	N	R	No Trees	0	N/A	
WRIGHTCREST DR		5800	5999	3	N	R	Ficus microcarpa 'Nitida'	19	Tabebuia chrysotricha	
YOUNGWORTH RD	No Prkwy	10600	10699				No Trees	0	N/A	
ZANJA ST		13300	13399	3	N	R	Syagrus romanzoffium	7	Metrosideros excelsus	

companion species for common existing trees

The following pages were developed by the consultant team as a tool to aid the designation process; the City could use this tool to select different designations in case the original designated species is determined to be unsuitable. Each grouping of species provides potential options for replacement species that would work well with the existing species because of similarities in form, stature, leaf type, etc; in other cases, the potential replacement species offers different, complementary qualities such as seasonal bloom or color.

CHINESE ELM (*ULMUS PARVIFOLIA*) PALETTE: Potential companion / replacement species

Existing species

Ulmus parvifolia
CHINESE ELM
40-60 x 50-70 D
6

Potential replacement species

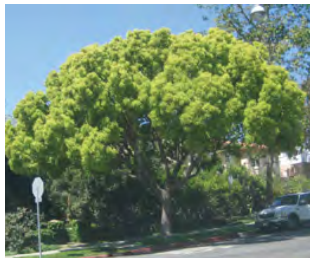
Geijera parvifolia
AUSTRALIAN WILLOW
25-30 x 20-25 EG
5

Jacaranda mimosifolia
JACARANDA
25-40 x 15-30 D (B)
5

Pistacia chinensis
CHINESE PISTACHE
30-60'x 30-60'
5

Tabebuia impetiginosa
PINK TRUMPET TREE
25-50 x 25-50 D (B)
5

Angophora costata
APPLE GUM
40-60 x 15-30 EG
6



Cinnamomum camphora
CAMPHOR TREE
to 60 x to 60 EG
6

Koelruteria bipinnata
CHINESE FLAME TREE
20-40 x 20-40 D (B)
8

Tipuana tipu
TIPU TREE
25-50 x 30-55 D
8

SOUTHERN MAGNOLIA (*MAGNOLIA GRANDIFLORA*) PALETTE: Potential companion / replacement species

Existing species

Magnolia grandiflora
SOUTHERN MAGNOLIA
80 x 60 EG (8)

Potential replacement species

Arbutus 'Marina'
ARBUTUS
to 30 x to 30 EG (4)

Melaleuca linearifolia
FLAXLEAF PAPERBARK
20'-30' x 15'-25' (4)

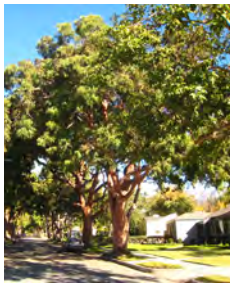
Bauhinia variegata
PURPLE ORCHID TREE
30' x 30' (5)

Metrosideros excelsus
NEW ZEALAND CHRISTMAS TREE
30-40 X 30-40 EG (5)

Olmediella betschleriana
COSTA RICAN HOLLY
25-35' x 15-20' (5)

Tabebuia impetiginosa
PINK TRUMPET TREE
25-50 x 25-50 D (B) (5)

Calodendrum capense
CAPE CHESTNUT
20-40' x 20-40' (5)



Angophora costata
APPLE GUM
30' x 30' 40-60 x 15-30 EG (6)

Bischofia javanica
TOOG, BISHOPWOOD
50 x 50 EG (7)

Afrocarpus gracilior
FERN PINE
20-60 x 20-60 EG (8)

Lophostemon confertus
BRISBANE BOX
30-45 x 25 EG (8)

Quercus virginana
SOUTHERN LIVE OAK
40' t x 40' w EG (8)

INDIAN LAUREL FIG (*FICUS MICROCARPA* 'NITIDA') PALETTE: Potential companion / replacement species

Existing species

Ficus microcarpa 'Nitida' 8
INDIAN LAUREL FIG
to 40 x to 40 EG

Potential replacement species

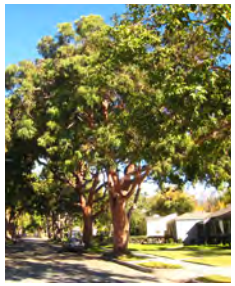
Arbutus 'Marina' 4
ARBUTUS
to 30 x to 30 EG

Metrosideros excelsus 5
NEW ZEALAND CHRISTMAS TREE
30-40 X 30-40 EG

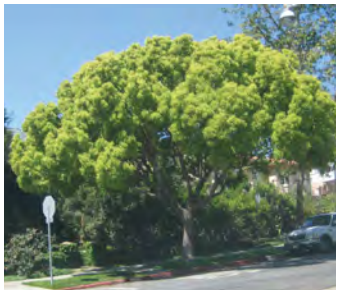
Olmediella betschleriana 5
COSTA RICAN HOLLY
25-35' x 15-20'

Calodendrum capense 5
CAPE CHESTNUT
20-40' x 20-40' 30' x 30'

Cedrela fissilis 5
BRAZILIAN CEDAR WOOD
40-50 x 40-50 EG



Angophora costata 6
APPLE GUM
40-60 x 15-30 EG



Cinnamomum camphora 6
CAMPHOR TREE
to 60 x to 60 EG

Bischofia javanica 7
TOOG, BISHOPWOOD
50 x 50 EG

Afrocarpus gracilior 8
FERN PINE
20-60 x 20-60 EG

Lophostemon confertus 8
BRISBANE BOX
30-45 x 25 EG

Quercus virginana 8
SOUTHERN LIVE OAK
40' t x 40' w EG

CANARY ISLAND PINE (*PINUS CANARIENSIS*) PALETTE: Potential companion / replacement species

Existing species

Pinus canariensis
CANARY ISLAND PINE
50-80 x 20-35 EG (6)

Potential replacement species

Casuarina cunninghamiana
RIVER SHE-OAK
to 70' t x 30' w EG (6)

Pinus halepensis
ALEPPO PINE
30-60 x 20-40 EG (8)

Pinus torreyana
TORREY PINE
40-60' X 30-50' EG (8)

Cedrus deodara
DEODAR CEDAR
to 80 x 35-40 EG (8)

Calocedrus decurrens
CALIFORNIA INCENSE CEDAR
35' t x 15' w EG (5)

pest vulnerability matrix: 10 most common existing species

The Pest Vulnerability Matrix (PVM) is a tool for analyzing the overall susceptibility of a group of trees (in this case, Culver City's urban forest) to existing insect pests and diseases. The PVM uses a color code that allows for quick visual analysis of the threat level for individual species, as well as for the group as a whole. The PVM is helpful for comparing the different species and the pests that threaten them in order to prevent a situation where the majority of the urabn forest in composed of species that are susceptible to the same pest(s) or disease(s). Fortunately, this is not the case in Culver City: based on the PVM, there are relatively few problematic pests for the ten most common existing species. However, the **polyphagous shothole borer** is an emerging pest that could threaten many important species; research is ongoing to evaluate this pest and to find strategies to control it.

KEY

Table layout explained	**Tree species** are listed in COLUMNS - one genus per column, tree name at the very top. The **Insects, Diseases, and Secondary pests** are listed in ROWS, labeled (**I**, **D**, **S**) at the left edge of table. Number 1 in a cell indicates that the pest/disease is found on that tree species; the cell color indicates severity (minor, moderate, severe: **yellow**, **orange**, **red**), while the white stripes indicate that not all the species in that tree genus are equally susceptible (that is, the tree genus contains resistant species/cultivars) Note: We suggest that you focus on the **red** and the **orange** cells, which indicate potentially significant pest problems. The yellow cells are informative, but often indicate pests that are not too important in planning an urban forest.
Minor problems, and **emerging pests**	Font color indicates two special categories of pests. **Green font** indicates organisms that do not ordinarily cause damage to trees. These rows can be sorted to the top of your analysis by using column B where codes MD, MI, and MS are used to denote a minor insect, disease, or secondary pest; the rows can then be deleted. **Blue font** indicates pests that have not yet been detected in California. These rows can also be removed from analysis (if you prefer to focus on the current pests).
Table calculations explained	PVM generates three metrics. (1) **Pest count** is simply the number of pests that affect a particular tree species. (2) **Pest overlap** is the percentage of all the pests in the table that affect a particular tree species. (3) **% of Tree Species affected** (i.e. "Host overlap") is the percentage of all the trees in the table that are affected by a particular pest. Notice that metrics 2 and 3 will change as tree species are removed from the table.

I or D or S	Minor	Probable Cause ↓	*Cupaniopsis* **Cupaniopsis** (Cupaniopsis anacardioides), Carrot wood	*Ulmus amer.* **Elm: American + European** (Ulmus spp.)	*Ulmus par.* **Elm - Chinese** elm (Ulmus parvifolia)	*Ulmus new* **Elm - new cultivars** (Frontier, etc.) (Ulmus spp.)	*Eucalyptus* **Eucalyptus** (Eucalyptus spp.), Gum	*Ficus* **Ficus** (Ficus spp.), Fig, Indian laurel, Laurel fig	*Jacaranda* **Jacaranda** (Jacaranda spp.)	*Magnolia* **Magnolia** (Magnolia spp.), Tulip tree	*Arecaceae2* **Palm, California Fan** (Washingtonia filifera)	*Pinus 1* **Pine**: Alep., Bish., Canar., Coulter, Gr., Italia., Knobc., Monter., Ponder., Shore., Torrey	*Podocarpus* **Podocarpus** (Podocarpus spp.), African **fern pine**, **Yew pine**
		Pest overlap →	**0%**	**26%**	**21%**	**18%**	**24%**	**18%**	**5%**	**13%**	**13%**	**39%**	**5%**
		Pest count →	**0**	**10**	**8**	**7**	**9**	**7**	**2**	**5**	**5**	**15**	**2**
		Proportion of all trees	3%	6%	6%	3%	6%	9%	4%	6%	8%	8%	6%
I		**Soft scales**: Black, Brown, Citricola, Cottony cushion; Fruit lecanium; Nigra		1	1	1		1		1	1		
D		**Armillaria root rot** or Oak root fungus.		1			1	1				1	
I		**Aphids** - OTHER: Braggia spp., Aphis sp., Sitobion sp. Euthoracaphis, Dilachnus		1	1	1			1			1	
D		Powdery Mildew (combined)		1	1	1	1			1			
I		**Defoliating caterpillars**: Redhumped; Elm; Leafrollers; Loopers; Tortrix; Webworm		1	1	1	1			1			
D		**Root** and **crown rot**, Phytophthora sp. or Pythium					1	1				1	
I		**Armored scales**: Greedy; Latania; Oleander; San Jose; Oystershell; Walnut								1	1		1
D		**Verticillium wilt**, Verticillium albo-atrum, V. dahliae.		1	1	1							
I		**Waxy aphids**: Eriosoma; Stegophila; Ash leaf curl; **Asian Wooly Hackberry Ap.**		1	1	1							
I		**Greenhouse thrips**								1	1		
D		**Dutch elm disease**.		1	1								
D		Bacterial **leaf scorch**, Xylella fastidiosa.		1					1				
I		**Cuban laurel thrips**; Toyon Thrips.						1					
I		**Whiteflies**						1					
I		**Ficus Gall Wasps**						1					

Lophostemon **Tristania** (Lophostemon conferta), **Brisbane box**; (Tristaniopsis laurina), Watergum	*% Tree species affected*	**Proportion of tree population affected**	Notes	Problem Description	Expanded Cause
0%					
0					
2%					
	50%	***38%***		Sticky honeydew and blackish sooty mold on fruit, leaves, and twigs. Plant growth may be slow. Branches may die back.	Soft scales: Black scale, Brown soft scale, Citricola scale, Cottony cushion scale; European fruit lecanium; Nigra scale;
	33%	***28%***	Common with overwatering; check species/cultivar!	Leaves discolor, stunt, wilt, or drop prematurely. Basal trunk discolored and may die. Minute white fungus growths may be visible beneath bark or on soil.	Armillaria root rot or Oak root fungus. Present in many soils. Favored by warm, wet soil. Persists for years in infected roots.
	42%	***27%***	Aphids - other, includes gall	Sticky honeydew, sooty mold, or cast skins. Flowers drop prematurely or distort.	Aphids - OTHER: Braggia spp., Aphis sp., Sitobion sp. Aphis pomi; Bean aphid; California laurel aphid, Euthoracaphis umbellulariae; Arborvitae aphid, Dilachnus tujafilinus; Oleander aphid, Aphis nerii.
	42%	***26%***	Common, but rarely damaging		Powdery Mildew (combined) Erysiphe, Microsphaera, Oidium, Phyllactinia, Podosphaera, Uncinula
	42%	***26%***	Multiple insects, similar effects	Leaves chewed on scattered terminals. Caterpillars feeding in groups.	Defoliating caterpillars: Redhumped cat.; Spiny Elm Cat.; Western tiger swallowtail, Papilio rutulus; Fruittree leafroller; oblique-banded leafroller; Omnivorous looper; Orange tortrix; mimosa webworm
	25%	***23%***	Usually a problem in nurseries, sometimes in lanscapes	Brown, yellow, or wilted leaves. Roots or basal stem may be dark, decayed. Plant may die.	Root and crown rot, Phytophthora sp., Pythiom root rot. Pathogen favored by excess soil moisture and poor drainage.
	25%	***20%***	Must ID species; many are not important	Brownish, grayish, tan, or white encrustations on bark. Rarely, plant parts may die back.	Armored scales: Greedy scale; Latania scale; Oleander scale; San Jose scale; Oystershell scale; Walnut scale, Diaspidiotus (=Quadraspidiotus) juglansregiae
	25%	***15%***	Rare but deadly	Leaves brown, fade, yellow, or wilt, often scattered throughout canopy. Foliage may appear sparse, undersized. Plants may grow slowly. Branches die. Entire plant may die.	Verticillium wilt, Verticillium albo-atrum, V. dahliae. Soil-dwelling fungi that infect through roots.
	25%	***15%***	Problem on hackberry	Wood swellings (galls), cottony, waxy material on branches and roots.	Woolly aphids: Eriosoma lanigerum; Stegophila quercicola; Phyllaphis fagi; Ash leaf curl; **Asian W Hackberry**,
	17%	***14%***	More troublesome than other thrips	Stippled, bleached, or reddened leaves with varnishlike specks on undersides.	Greenhouse thrips. Slender black adults or yellow nymphs.
	17%	***12%***	Spread by bark beetles and root grafts.	Foliage yellows then wilts, usually first in one part of canopy. Curled, dead brown leaves remain on tree.	Dutch elm disease, Ophiostoma novo-ulmi. Fungus spread by bark beetles and root grafts.
	17%	***10%***	Important on **Oleander**	Leaves brown around edges and sometimes between veins.	Bacterial leaf scorch, Xylella fastidiosa. A bacterium spread by leafhoppers that occurs in the eastern U.S., but there is disagreement whether X. fastidiosa strains in California affect ash.
	8%	***9%***		Stippled or bleached leaves, varnishlike excrement specks on undersides.	Cuban laurel thrips; Toyon Thrips. Tiny, slender, blackish or yellowish insects.
	8%	***9%***	Usually not important; except **Giant whitefly**	Sticky honeydew and blackish sooty mold on foliage. Tiny, powdery white mothlike insects.	Whiteflies, including Bandedwinged w/fly, Trialeurodes abutilonea; Giant w/fly; Greenhouse w/fly; Nesting w/fly, Paraleyrodes minei; Silverleaf w/fly. Nymphs are oval, flattened. Adults are whitish mothlike insects.
	8%	***9%***			

I or D or S	Minor	Probable Cause ↓	*Cupaniopsis* **Cupaniopsis** (Cupaniopsis anacardioides), Carrot wood	*Ulmus amer.* **Elm: American + European** (Ulmus spp.)	*Ulmus par.* **Elm - Chinese** elm (Ulmus parvifolia)	*Ulmus new* **Elm - new cultivars** (Frontier, etc.) (Ulmus spp.)	*Eucalyptus* **Eucalyptus** (Eucalyptus spp.), Gum	*Ficus* **Ficus** (Ficus spp.), Fig, Indian laurel, Laurel fig	*Jacaranda* **Jacaranda** (Jacaranda spp.)	*Magnolia* **Magnolia** (Magnolia spp.), Tulip tree	*Arecaceae2* **Palm, California Fan** (Washingtonia filifera)	*Pinus 1* **Pine**: Alep., Bish., Canar., Coulter, Gr., Italia., Knobc., Monter., Ponder., Shore., Torrey	*Podocarpus* **Podocarpus** (Podocarpus spp.), African **fern pine**, **Yew pine**
		Pest overlap →	**0%**	**26%**	**21%**	**18%**	**24%**	**18%**	**5%**	**13%**	**13%**	**39%**	**5%**
		Pest count →	**0**	**10**	**8**	**7**	**9**	**7**	**2**	**5**	**5**	**15**	**2**
		Proportion of all trees	3%	6%	6%	3%	6%	9%	4%	6%	8%	8%	6%
D		**Sooty Canker**						1					
I		**Elm leaf beetle**.		1		1							
D		**Diamond Scale**, Phaeochoropsis neowashintoniae.									1		
D		**Pink Rot** (Gliocladium) on palms									1		
D		**Pitch canker** or Pine pitch canker.										1	
I		**Adelgids**: Cooley spruce gall adelgid, Pine bark adelgid, Hemlock adelgid										1	
I		**Bark beetles - Dendroctonus**										1	
I		**Bark beetles - Ips**										1	
I		**Gall midges**										1	
I		**Silverspotted tiger moth**, **Tussock moths**.										1	
I		**Pine needle scale**, Chionaspis pinifoliae.										1	
I		**Pine twig weevil**										1	
I		**Conifer sawflies, Cypress sawfly**.										1	
I		**Sequoia pitch moth**										1	
I		**Mediterranean pine engraver,** *Orthotomicus erosus*										1	
I		**Redhaired pine bark beetle,** *Hylurgus ligniperda*										1	
D		**Root rot,** Phellinus noxius											1
I		**Polyphagous shothole borer** (*Euwallacea* spp) + *Fusarium euwallaceae*					1						

Lophostemon **Tristania** (Lophostemon conferta), **Brisbane box**; (Tristaniopsis laurina), Watergum	*% Tree species affected*	Proportion of tree population affected	Notes	Problem Description	Expanded Cause
0%					
0					
2%					
	8%	*9%*			
	17%	*9%*		Leaves skeletonized, some small holes. Leaves turn yellow, brown, and drop prematurely.	Elm leaf beetle. Adults greenish with black, longitudinal stripes. Larvae black to green, £1/4 inch long.
	8%	*8%*	Moist, cool regions: coast and marine influenced-valleys.	Foliar disease. Dark, water-soaked spots turn black and grow to shiny, diamond-shaped fruiting bodies. Leaves yellow, brown, then die prematurely. Older, lower leaves most affected.	Phaeochoropsis neowashintoniae
	8%	*8%*	Deadly	Leaf stalk bases rot and die. Terminal bud dies. Infected tissue may be covered with pink spores. Trunk cankers on Queen palm (Syagrus romanzoffiana).	Pink Rot, Gliocladium vermoeseni. Fungal disease most serious on plants of low vigor and when fronds are wet. Wounds facilitate pathogen entry and disease
	8%	*8%*	Monterey pine, mostly	Dead branches with clinging needles, mostly in upper canopy. Trunk cankers and branches exuding copious pitch.	Pitch canker or Pine pitch canker. A fungal disease; Fusarium oxysporum.
	8%	*8%*	Rare	Terminals galled, brown, light green, or purplish. Needles may have yellow spots. May be cottony or waxy material on bark or needles.	Adelgids: including Cooley spruce gall adelgid, Pine bark adelgid, Hemlock adelgid
	8%	*8%*	Try to identify to genus; look at galleries		Bark beetles - Dendroctonus
	8%	*8%*	Try to identify to genus; look at galleries		Bark beetles - Ips
	8%	*8%*		Leaflets terminate in podlike galls. Foliage browns and drops prematurely.	Gall midges
	8%	*8%*		Chewed needles, may be webbed with silk.	Silverspotted tiger moth, Lophocampa argentata (family Arctiidae); Tussock moths. Dark, hairy larvae, £1 1/4 inches, may have colorful hairs or spots. Adults brownish to tan moths and may have silvery spots.
	8%	*8%*		Needles pale, mottled, or chlorotic.	Pine needle scale, Chionaspis pinifoliae. White, immobile armored scales about 1/16 inch long. Suck sap.
	8%	*8%*		Terminals distorted, chewed, dead. Foliage may become busy, crooked. Roots or the basal trunk may be injured.	Pine twig weevil
	8%	*8%*		Chewed needles.	Conifer sawflies, Cypress sawfly. Green larvae £1 inch long, on needles.
	8%	*8%*		Prominent pitch masses on trunk	Sequoia pitch moth
	8%	*8%*		Orthotomicus erosus. Bark beetle, exotic. Affects both pine PVMs partially	Affects P. eldarica, halepensis, canariensis, coulteri, pinea, radiata, brutia, strobus, sylvestris, echinata, elliottii, taeda, palustris, rigida, virginiana. Afgan, Aleppo, Canary I, Coulter, Italian S, Monterey, Turkish, Eastern white, Scots, Shortleaf, Slash, Loblolly, Longleaf, Pitch, Virginia
	8%	*8%*		Hosts: Pines (Pinus spp.): Aleppo, Austrian, Brutia, Canary Island, eastern white, Italian stone, maritime, Mexican weeping, Monterey, Montezuma, Scots, slash	
	8%	*6%*			
	8%	*6%*			

			Cupaniopsis	*Ulmus amer.*	*Ulmus par.*	*Ulmus new*	*Eucalyptus*	*Ficus*	*Jacaranda*	*Magnolia*	*Arecaceae2*	*Pinus 1*	*Podocarpus*
I or D or S	Minor	Probable Cause ↓	**Cupaniopsis** (Cupaniopsis anacardioides), Carrot wood	**Elm: American + European** (Ulmus spp.)	**Elm - Chinese** elm (Ulmus parvifolia)	**Elm - new cultivars** (Frontier, etc.) (Ulmus spp.)	**Eucalyptus** (Eucalyptus spp.), Gum	**Ficus** (Ficus spp.), Fig, Indian laurel, Laurel fig	**Jacaranda** (Jacaranda spp.)	**Magnolia** (Magnolia spp.), Tulip tree	**Palm, California Fan** (Washingtonia filifera)	**Pine**: Alep., Bish., Canar., Coulter, Gr., Italia., Knobc., Monter., Ponder., Shore., Torrey	**Podocarpus** (Podocarpus spp.), African **fern pine**, **Yew pine**
		Pest overlap →	**0%**	**26%**	**21%**	**18%**	**24%**	**18%**	**5%**	**13%**	**13%**	**39%**	**5%**
		Pest count →	**0**	**10**	**8**	**7**	**9**	**7**	**2**	**5**	**5**	**15**	**2**
		Proportion of all trees	3%	6%	6%	3%	6%	9%	4%	6%	8%	8%	6%
D		**Anthracnose**: Apiognomonia; Cylindrosporium; Marssonia; Glomerella; Colletotrichum					1						
I		**Psyllids** (combined)					1						
I		**Eucalyptus longhorned borers**.					1						
I		**Leaf beetles**, **Flea beetles**, Altica spp., Chrysomela spp., Plagiodera spp					1						
D		Chinese **elm anthracnose**.			1								
I		**Asian Ambrosia Beetle**, Xylosandrus crassiusculus		1	1	1		1		1			
I		**Asian Longhorned Beetle** Anoplophora glabripennis		1	1	1							
I		**Eucalyptus snout beetle**, Gonipterus scutellatus					1						

Lophostemon **Tristania** (Lophostemon conferta), **Brisbane box**; (Tristaniopsis laurina), Watergum	*% Tree species affected*	Proportion of tree population affected	Notes	Problem Description	Expanded Cause
0%					
0					
2%					
	8%	*6%*	Multiple pathogens, similar symptoms	Leaves brown, dead areas along veins. Leaves on lower branches commonly are more severely affected. Pale blotches or irregular, black, tarlike spots on leaves. Leaves may drop prematurely.	Anthracnose, Apiognomonia errabunda. Fungal disease active in the spring. Also including Cylindrosporium juglandis, Colletotrichum acutatum, Marssonia californica, M. juglandis, Glomerella cingulata. Fungi favored by wet conditions.
	8%	*6%*	Unsightly, but not all are too damaging	Honeydew & blackish sooty mold on foliage. May be tiny whitish caps or funnel-shaped waxiness on leaves. New shoots may be distorted, covered with whitish, waxy strands.	Psyllids, including Blue gum psy., Ctenarytaina eucalypti; Lemongum lerp psy., Eucalyptolyma maideni; Euphyllura olivina; Redgum lerp psy.; Spottedgum psy., Cryptoneossa triangula. Tiny gray, green, or orange nymphs. Adults like tiny cicadas.
	8%	*6%*	2 species, one under biocontrol.	Leaves discolor and wilt. Dead tree or dying limbs. Broad galleries beneath bark.	Eucalyptus longhorned borers. Adults reddish brown with yellow on the back. Larvae whitish. Both £1 inch long.
	8%	*6%*		Skeletonized leaf surfaces. No silk. Adding unknown leaf beetle- Eucalyptus to this.	Leaf beetles, Flea beetles, Altica spp., Chrysomela spp., Plagiodera spp. Adults dark or metallic, oval, £3/8 inch long. Larvae are dark, £1/2 inch long. Leaf beetles, including Altica bimarginata; California willow beetle, Melasomida californica.
	8%	*6%*	Can be deadly	Foliage with irregular, black, tarlike spots. Premature leaf drop. Perennial cankers on limbs and trunk. Dieback.	Chinese elm anthracnose. A fungal disease affecting only Chinese (evergreen) elm (Ulmus parvifolia).
	42%	*29%*	Not yet in CA	Holes with stuck-together frass protruding (like toothpicks); kill trees	Asian Ambrosia Beetle, Xylosandrus craissiusculus
	25%	*15%*	Not yet in CA	Holes in trunk	Asian Longhorned Beetle Anoplophora glabripennis
	8%	*6%*	Rare - under biocontrol	Leaves chewed. Leaves with scraped surface, winding discolored trails, or elongate holes.	Eucalyptus snout beetle, Gonipterus scutellatus. Reddish brown adult weevils and legless, yellowish green larvae with a slimy coating.

tree management guidelines for Culver City

The Tree Care Guidelines included in these appendices are technical standards for the City to use in managing their urban forest. They are based on arboricultural industry standards set forth by the American Standards National Institute (ANSI) and the International Society of Arboriculture Best Management Practices. We acknowledge the Urban Tree Foundation for their excellent work in developing planting details and specifications.

This Plan is meant to be dynamic. The City will review and revise these Guidelines every ten years to reflect current Best Management Practices and the fields of Urban Forestry and Arboriculture.

OUTLINE

1.1 CITY TREE INVENTORY

A. TREE SITE AND GROWSPACE

The tree site is where the tree will be planted. It will typically be in the "parkway," the area between the sidewalk and curb. The tree site may comprise cut-outs in adjacent concrete, or the parkway may be a long strip of turfgrass, low groundcover, or bare soil. The growspace is the soil volume into which the tree will develop, and consists of area below ground as well as the space allotted above ground. Growspace is always considered in tree selection. Harkening back to the adage of the 1980s "Right Tree for the Right Place," urban foresters strive to choose the most appropriate species for the size of the growspace. Trees too large for a growspace may require root pruning as they grow large; large growspaces provide an opportunity to increase canopy cover and capitalize on the environmental benefits that large trees provide.

B. CANOPY SIZE

Adjacent building size, setback, and business owners' needs (e.g., signage visibility) are considered when choosing tree form and ultimate canopy size. Because one of the goals of this Plan is to increase canopy cover, we encourage the largest possible tree for large growspaces.

C. LAND USE AND TRAFFIC CONSIDERATIONS

Downtown Business and Commercial Districts have different criteria than residential neighborhoods. Trees chosen for these districts should be tolerant of being "limbed-up" to forestall damage by trucks and buses, flower and fruit drop should be a consideration on streets used for parking, and trees tolerant of pollution and help mitigate pollution should be used for high-traffic corridors. Shade and comfort of pedestrians are a high priority.

D. MICROCLIMATE AND GROWING CONDITIONS

Some trees are adapted to grow in windy environments and others need protection from wind. Some trees grow better in inland conditions and some thrive at the coast. Growing conditions for each street are evaluated. Ideally, young trees will be irrigated for the first year, tapering off to little water or no water when established.

1.2 SELECTING NURSERY STOCK

A. TYPES OF NURSERY STOCK

- Container (Plastic or Wood)
- Ball and Burlap (rarely used; palm trees are typically delivered "B and B")

Container material is the most common type of nursery stock in California.

B. SELECTING QUALITY CONTAINER NURSERY STOCK

Trees shall meet the following minimum standards. The City retains the right to inspect the root mass from a sample tree of each species. Contractors shall adhere to the most recent version of ANSI A300 (Part 6)-2012 (American National Standard for Tree Care Operations – Tree, Shrub, and Other Woody Plant Management – Standard Practices (Planting and Transplanting), and ANSI Z60.1-2014 (American Standard for Nursery Stock).

Tree planting specifications include, but are not limited to:

- All nursery stock shall be correctly identified by genus, species, and, if applicable, cultivar as ordered or shown on planting plans.

- All nursery stock shall, at time of shipment, be substantially free of damaging insects and diseases, in good living condition, and typical in habit for the species in the region of the country in which it is grown.

- All trees shall have a single, relatively straight trunk with a good taper and branch distribution vertically, laterally and radially with a live crown ratio (distance from bottom of canopy to tree top/tree height) of at least 60%.

- Caliper measurement, if specified, shall be taken six inches above the ground level for field grown stock and from the soil line for container grown stock. If the caliper measured at six inches is four and one-half inches or more, the caliper shall be measured at 12 inches above the ground level, soil line, or root flare, as appropriate. Seldom are tree trunks perfectly round. The most accurate measurement will result from the use of a diameter tape.

- All branches in the canopy shall be less than 2/3 the trunk diameter and free of included bark, codominant stems, or substantially weak branch attachments.

- Bid specifications for trees to be used as street trees shall include the minimum height of the lowest branch, or the height to which the trunk shall be free of branches, which shall bear a relationship to the size and kind of tree so that the crown of the tree is in good balance with the trunk.

Examples:
Platanus x *acerifolia*, 2 in. cal., 12 to 14 ft., trunk free of branches 6 ft.
Quercus virginiana, 3. in. cal., 14 to 16 ft., lowest branch 7 ft.

- The root ball of all trees shall be moist throughout and the crown shall show no signs of moisture stress (e.g., wilted, shriveled, or dead leaves).

- The tree shall be well-rooted in the soil mix, and the base of the trunk (root crown) should be visible and not buried. When the container is removed, the root ball shall remain intact. When the tree is lifted, the trunk and root system shall move as one.

- No tree shall be accepted that is root bound, shows evidence of girdling or kinking roots, or has roots protruding above the soil.

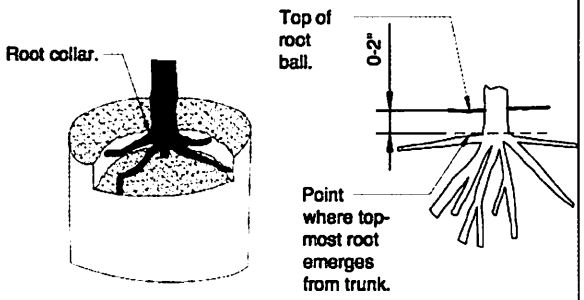
- No tree shall be accepted that has roots greater than 1/5 the size of the trunk diameter growing out of the bottom of the container.

See Detail 1 on the facing page, regarding root observations in container stock.

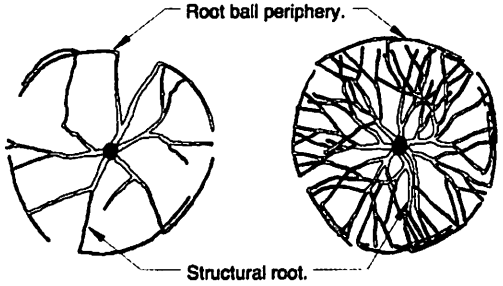
C. CONTRACT GROWING

As part of the City's commitment toward species diversity, this Plan recommends a number of new introductions. Some of these species have either fallen out of favor or are not commonly available in wholesale nurseries. Many nurseries will grow trees in their facility until they are large enough to plant in the landscape: "contract growing". As more cities specify rarely planted (but worthy) species, we will see a natural increase in nursery availability.

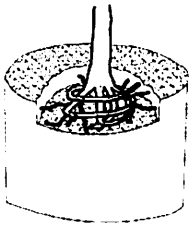
ACCEPTABLE



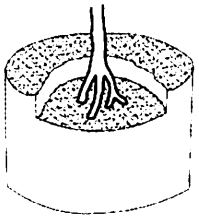
The point where top-most root(s) emerges from the trunk (root collar) should be within the top 2" of substrate. The root collar and the root ball interior should be free of defects including circling, kinked, ascending, and stem girdling roots. Structural roots shall reach the periphery near the top of the root ball.



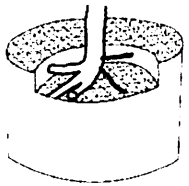
Roots radiate from trunk and reach side of root ball without deflecting down or around.



Structural roots circle interior of root ball. No structural roots are horizontal and reach the root ball periphery near the top of the root ball.

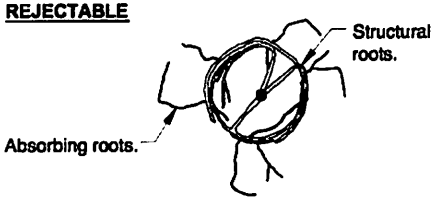


Structural roots descend into root ball interior. No structural roots are horizontal and reach the root ball periphery near the top of the root ball.

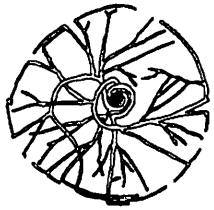


Structural roots primarily grow to one side.

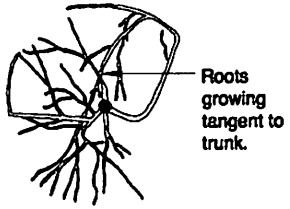
REJECTABLE



Only absorbing roots reach the periphery near the top of the root ball. Structural roots mostly wrap or are deflected on the root ball interior.



Structural roots circle and do not radiate from the trunk.



Structural roots missing from one side, and/or grow tangent to trunk.

Notes:

1- Observations of roots shall occur prior to acceptance. Roots and substrate may be removed during the observation process; substrate/soil shall be replaced after observation has been completed.

2- Small roots (¼" or less) that grow around, up, or down the root ball periphery are considered a normal condition in container production and are acceptable however they should be eliminated at the time of planting. Roots on the periperhy can be removed at the time of planting. (See root ball shaving container detail).

3- See specifications for observation process and requirements.

1 **ROOT OBSERVATIONS DETAIL - CONTAINER**

1.3 TREE PLANTING

A. LOCATING NEW STREET TREES

Recommended guidelines for street tree spacing:

- 30'-35' on center
- 30' from the corner property line
- 20'-25' on center for smaller statured trees
- 10' from driveway approaches
- 10' from light poles
- 5' from utility meter boxes

Street trees should not be planted when:

- the tree would interfere with the growth of other trees in the area.

- the tree could block views of oncoming traffic.

B. SIZE OF NEW STREET TREES

The minimum size for a new street tree shall be 24-inch box. Trees in smaller-sized containers are subject to drying out, do not recover well from damage, and are typically too small statured for new street tree plantings.

C. PREPARING THE PLANTING SPACE

Remove any turfgrass or other groundcover from the parkway. Bermudagrass in particular should be removed to a depth of at least one foot; underground shoots (rhizomes) are deep and wide-spreading. Generally, a soil analysis is not necessary, however, it may be recommended if previous plantings in a certain location performed poorly. In that case, amend the soil based on the recommendations from the laboratory results. Amending the soil and adding fertilizer tablets is an outdated practice and is typically unnecessary.

The minimum distance between an excavated area or an open trench and any tree should be 1' or 6" for every 6" of trunk diameter measured at 4-1/2' above existing grade.

Redirect roots in backfill areas where possible. When encountering large, main lateral roots, expose roots beyond excavation limits as required to bend and/or redirect them without breaking. Do not allow exposed roots to dry out before replacing. Provide temporary earth cover or pack with peat moss and wrap with burlap. Water and maintain in a moist condition.

Recommended Turf Removal Process
Water the area three days prior to removing the turf to make the soil easier to manage. The soil should be moist but not soggy.

Use a sod-cutting machine or a flat edge spade to slice just under the grass and pull the turf back while severing the roots of the grass just below the soil line.

Cut the turf into parallel strips using an edger or sharp spade (with square edge). Be sure to keep strip sizes small and manageable, approximately 1' wide by 2' long. Shake off excess topsoil.

Care shall be taken to avoid disturbing the roots of adjacent trees. All excavation under the dripline of any tree shall be done manually with hand tools or with an Air Spade®. Excavated turf and soil shall be deposited in trucks and taken to the landfill. Do not deposit, even temporarily, on unprotected natural grade. (Common bermudagrass produces seeds that remain viable in soil for at least 2 years.)

D. PLANTING PROCEDURES

- All planting locations shall be checked for underground conflicts. Dig Alert shall be notified and all underground utilities flagged prior to any excavation.

- The final depth of the planting hole is determined by the depth and firmness of the rootball and other characteristics of the site. Depth shall not exceed the depth of the rootball. To prevent settling, the soil directly beneath the rootball should be undisturbed.

- The planting hold width shall be a minimum of 1.5 times the diameter of the rootball, or soil surrounding the upper 1/3 of the planting hole should be loosened to a width of 1.5 times the rootball diameter. The sides of the planting hole should be loose.

- The container shall not be removed by pulling or leveraging the trunk of the tree.

- After removing the tree from the container, any circling, matted, or kinked roots should be straightened or severed.

• Backfill should be similar to the soil at the planting site or amended to achieve a specific objective. Organic amendments incorporated into backfill and/or surrounding soil should not exceed 10 percent by volume. Eliminate all air pockets while backfilling the planting pit by watering the soil as the tree is being laid into the hole. Do not compact the backfill by tamping it down. Only add fertilizer or amendments if a soil analysis indicates a nutrient deficiency. Build a water retention berm at the minimum the extent of the dripline to capture irrigation and prevent runoff. Immediately after planting the tree, water it thoroughly by filling the water retention basin twice.

• All trees shall be staked with two wooden lodge poles and two ties per pole. The minimum diameter of a lodge pole should be 2"; 36" and 48" box trees may require poles with a greater diameter. Place the tree ties at (1/3) and (2/3) of the trunk height. Drive the stake into the ground approximately 24 to 30" below grade, taking care not to penetrate the root ball.

• Mulch shall be applied near, but not touching, the trunk out to the perimeter of the planting. Initial depth of organic mulch shall be between 2 and 4 inches. Mulch conserves soil moisture, provides protection from extreme temperatures, and prevents damage from string trimmers.

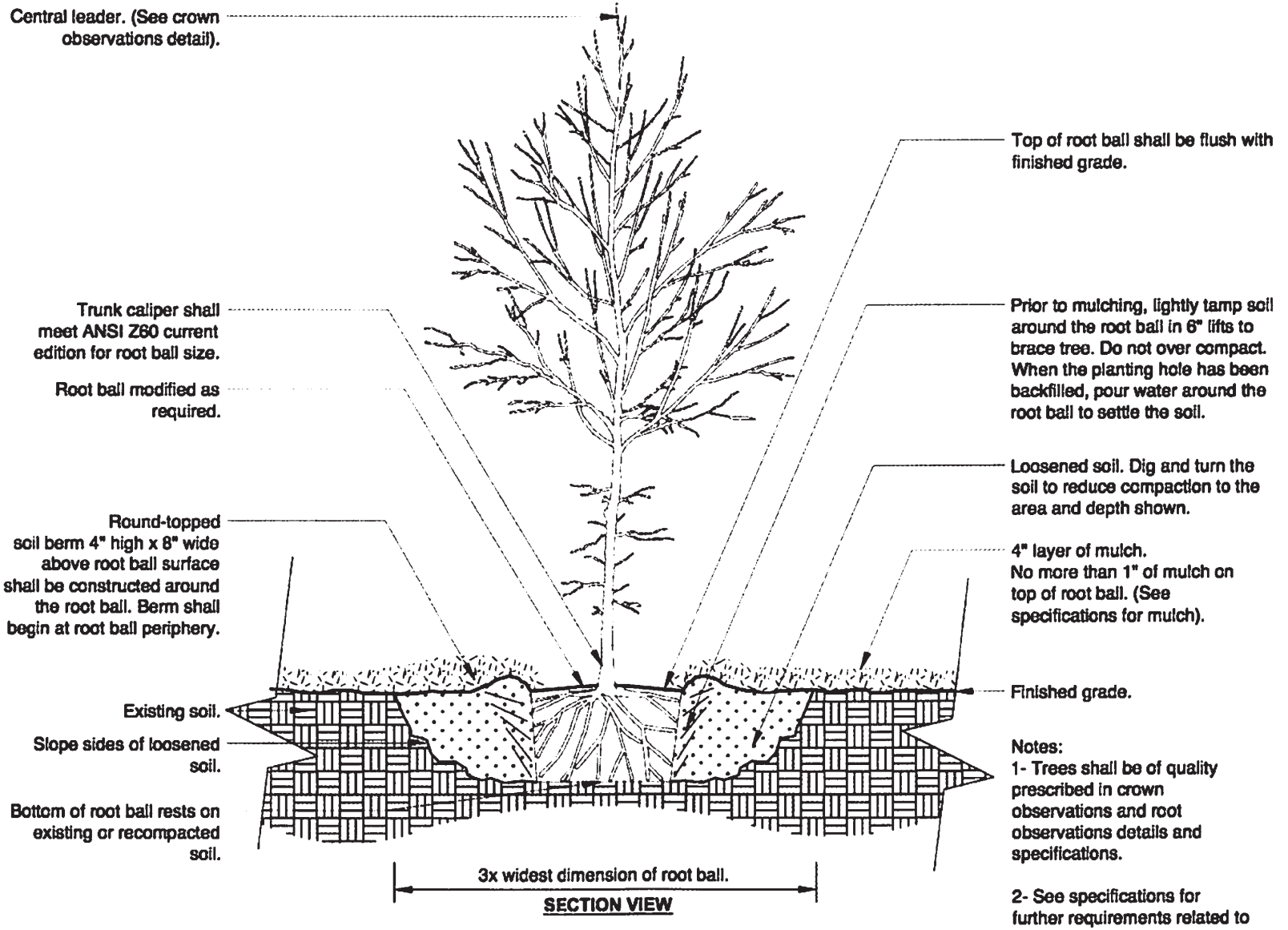
• The soil around the new tree shall be kept moist, but not saturated, by watering at least once a week during the cooler winter months and twice a week during the hot summer months. New trees should be supplementally watered for at least one year post-planting.

• Street trees are owned and maintained by the City. However, residents can also play an important role in keeping parkway trees healthy. The City will provide residents with information on newly planted trees.

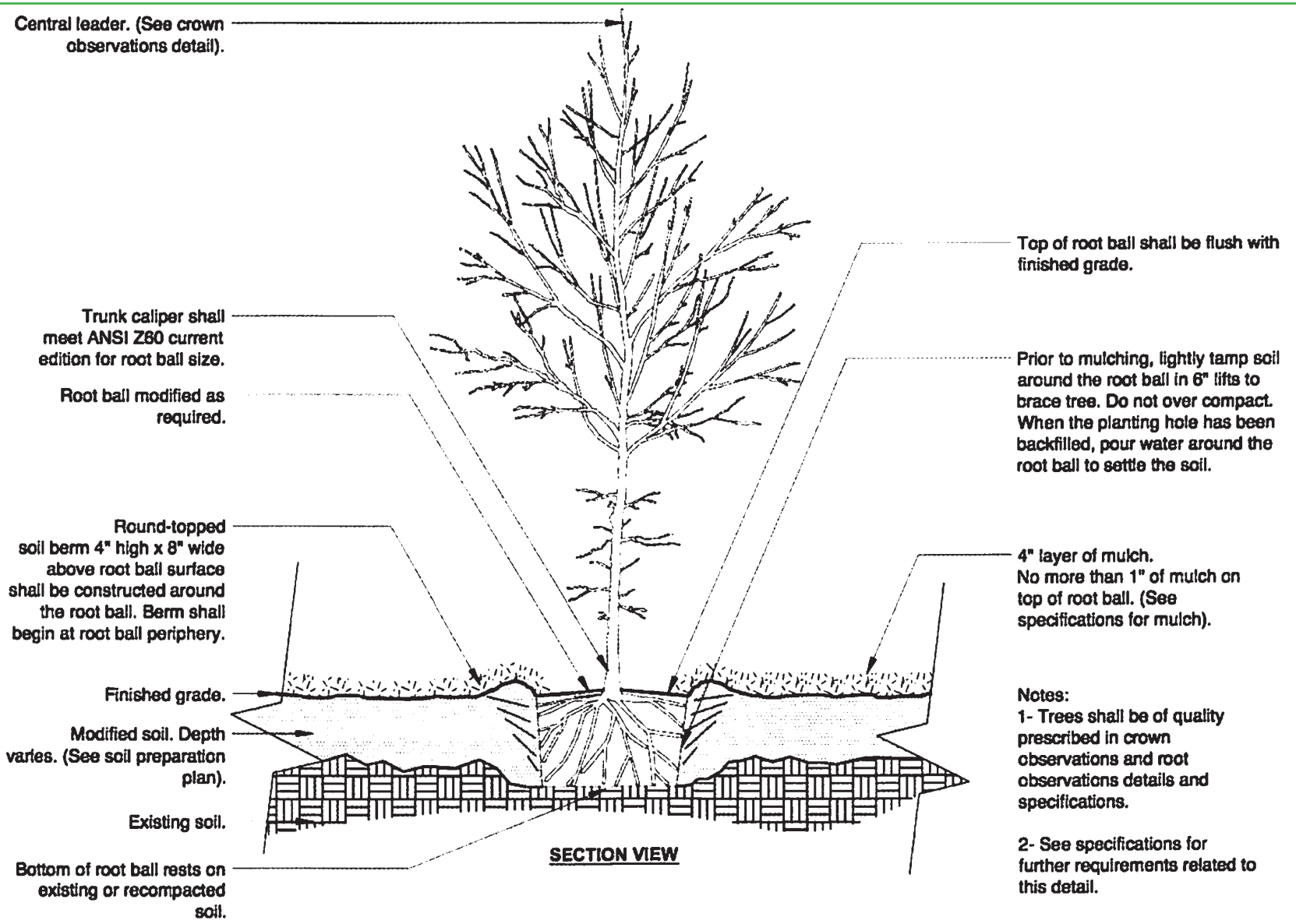
E. TIMING OF PLANTING

In southern California's mild climate, container trees can be planted any time. However, spring and early fall are considered optimum planting seasons, because the new tree can acclimatize before the hot months of summer and if planted in the fall, can develop new roots before the next growing season.

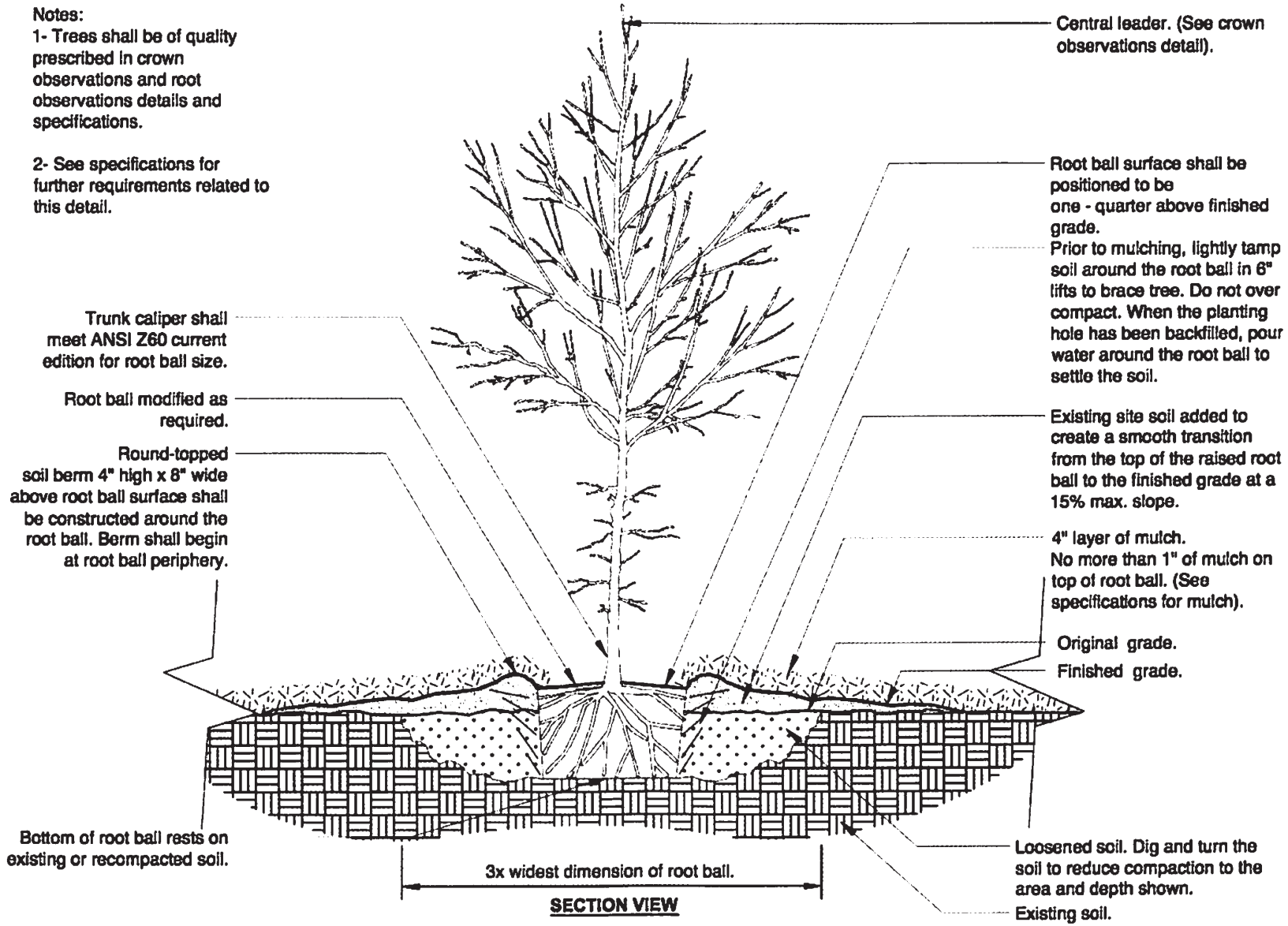
See Details 2, 3, 4 and 5 on the following pages regarding planting trees.



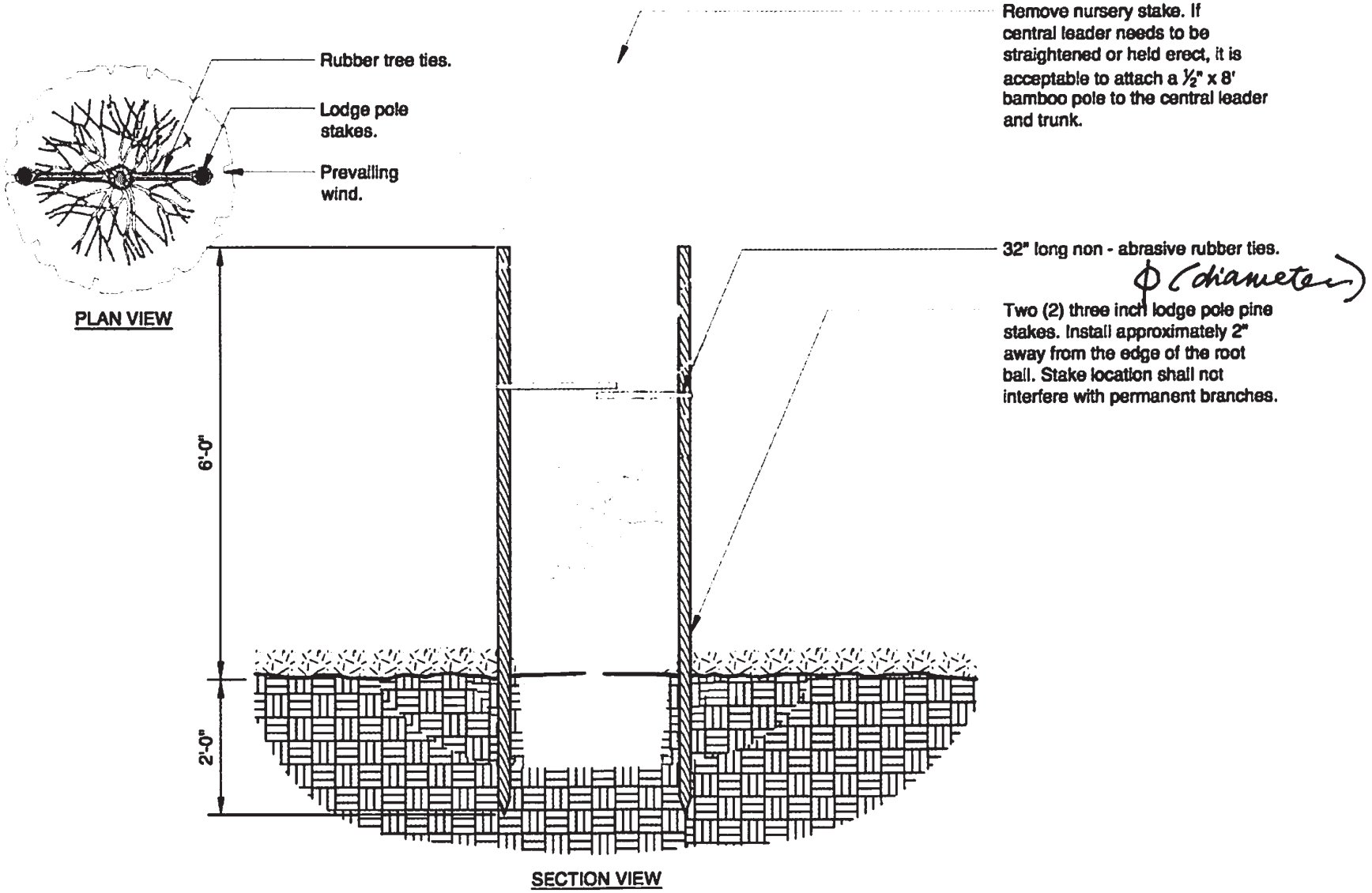
2 TREE w/ BERM (EXISTING SOIL NOT MODIFIED)



3 TREE w/ BERM (EXISTING SOIL MODIFIED)



4 TREE IN POORLY DRAINED SOIL



5 TREE STAKING - LODGE POLES (2)

1.4 EARLY TREE CARE

A. PRUNING AND TRAINING YOUNG TREES

Cultivating a strong branching structure is the best insurance that a tree will grow properly and uniformly, resulting in fewer structural problems at maturity. Proper pruning when young is an ongoing process during the first three to seven years after planting. The following measures shall be used for cultivating the branching structure of young trees:

- Prune newly planted trees to one central leader by shortening competing stems. All lateral branches and stems should be shorter than the central leader after pruning.

- Small diameter (pencil size) stems that are the same size as the leader can occur in the top half of the crown, even on high-quality nursery stock. These could eventually develop into codominant stems if they are not pruned at planting. Either shorten (subordinate) or remove one of the codominant stems. Codominant stems are forked branches nearly the same size in diameter, arising from a common junction. They lack a normal branch union and are prone to breakage

- Retain and shorten lower branches to nourish and protect the trunk, and to help develop proper trunk taper. The lower branches can be removed when they start to interfere with pedestrian or vehicular traffic, ideally when they are small enough to be removed with hand loppers (avoiding the large wound the removal of a large branch would make).

- Select the lowest branch that will become the first permanent branch. These branches should have a wide angle of attachment and should be smaller in diameter than the trunk.

- Reduce upright stems/shoots and branches back to lateral branches.

See Details 6, 7 and 8 on the following pages, regarding training young trees.

B. WATERING YOUNG TREES

Regular moisture allows new trees to grow properly and to develop uniform foliage and shoot growth, while irregular watering forces trees to produce only the amount of foliage that can be sustained by minimal or infrequent amounts of moisture. Roots from a containerized tree obviously extend only to the limits of the container and tend to dry out quickly. Until roots begin to develop in the permanent planting space, consistent irrigation is critical.

Water should be applied using a low pressure application, trickle from a hose, or soaker hose. Irrigation is often applied via a water truck. Use low water volume, and add water long enough to saturate the rootball and planting area.

Lawn sprinklers are not considered an acceptable method of applying irrigation to newly planted trees.

The initial watering frequency must be checked by monitoring the soil moisture (with a probe or other tool). Temperature and humidity will affect watering frequency, and as the weather and seasons change, the irrigation frequency may change. For example, irrigation may be effectively applied twice a week during the fall (except in cool or rainy weather) and every few days during hot, dry summer periods.

As a general guideline, trees should be watered:

- 1 to 3 months after planting: 4 times per month or as necessary

- 4 to 6 months after planting: 2 times per month or as necessary

- 7 to 12 months after planting: 1 time per month or as necessary

C. FERTILIZING YOUNG TREES

Trees are rarely deficient in any nutrient besides Nitrogen. Trees should not be fertilized unless a soil or foliar analysis reveals deficiency.

D. REMOVING STAKES

Tree stakes are intended to be temporary and are only necessary until the tree can reasonably be expected to stand on its own (typically two-three years). The timing of seasonal winds (e.g., Santa Anas) and extreme weather should be considered prior to removing stakes. A simple “shake test” can be used to help determine if stakes can be removed.

KEY FACTS ABOUT TREE ROOTS:

• A tree's root mass is its foundation and provides the structural support it needs to remain standing upright. Overwatering leads to damage to that foundation and can affect tree stability.

• Most, if not all, of a tree's roots are found in the upper two feet of the soil surface.

• The roots of a street tree can extend up to four times the diameter of its canopy, which places much of the root mass in a front yard landscape. Regularly watering a front yard landscape (discourages) deep rooting.

• Deep and/or infrequent watering encourages a deeper and healthier root system.

• Tree roots do not "seek" water; they expand in girth and length where conditions are favorable for growth.

• Overwatering interferes with the roots' ability to exchange oxygen and can lead to root rot and ultimate tree decline. Conversely, the root ball of a newly planted tree should never be allowed to totally dry out.

KEY FACTS ABOUT WATERING STREET TREES:

• Trees in Culver City require different amounts of water at different times of the year. Most trees in Culver City's urban forest are species that flourish in a moderate, Mediterranean climate typified by long, hot summers and mild winters with moderate rainfall. Many species found in Culver City do not require regular watering and actually thrive when they receive minimal amounts. Other species can become diseased if they receive irrigation during the summer months. Mature or established trees usually require only infrequent watering. Please refer to the City's Parkway Ordinance.

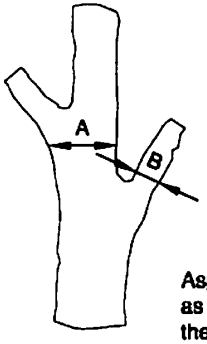
• Water directed onto the trunk can aggravate wood decay, especially if there are wounds at the base of the tree. This eventually weakens the trunk and can lead to tree failure.

• Water trees deeply and infrequently; try to wet the soil between 3 and 6 inches, staying at least three feet or more (for mature trees) from the trunk. In a mature tree, the water-absorbing roots are found closer to the edge of the dripline.

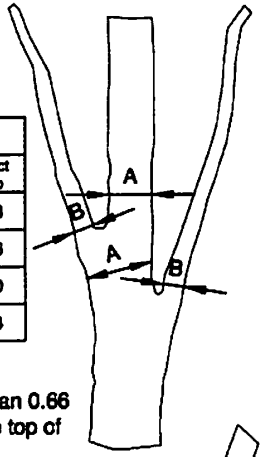
• Older trees are sensitive to increased amounts of water, so while it sometimes seems prudent to water more, this is often harmful to a tree, especially an older tree that has adapted to receiving less moisture. It is important to know the species' characteristics: for example, if a particular species is susceptible to root disease, it is important to make sure that the tree is not overwatered.

ACCEPTABLE

Aspect ratio is less than 0.66.

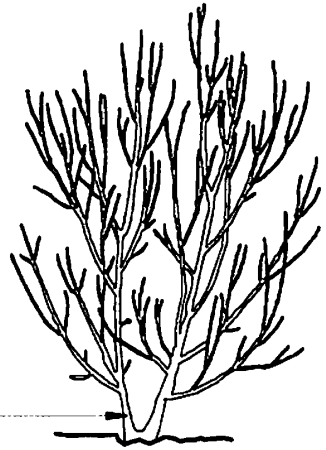


Example		
A	B	Aspect Ratio
1.50"	0.50"	0.33
2.50"	0.90"	0.36
2.0"	1.00"	0.50
2.50"	1.60"	0.64

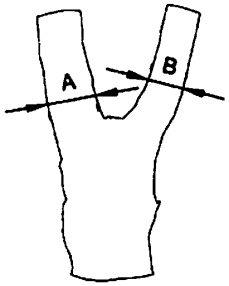


Aspect ratio of B:A less than 0.66 as measured 1" above the top of the branch union.

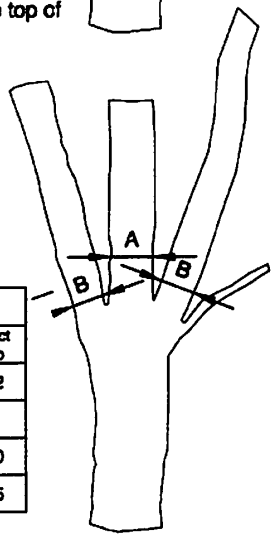
REJECTABLE



Aspect ratio is greater than 0.66.



Example		
A	B	Aspect Ratio
2.50"	1.60"	0.72
2.0"	2.0"	1.0
2.50"	2.0"	0.80
4.0"	3.0"	0.75



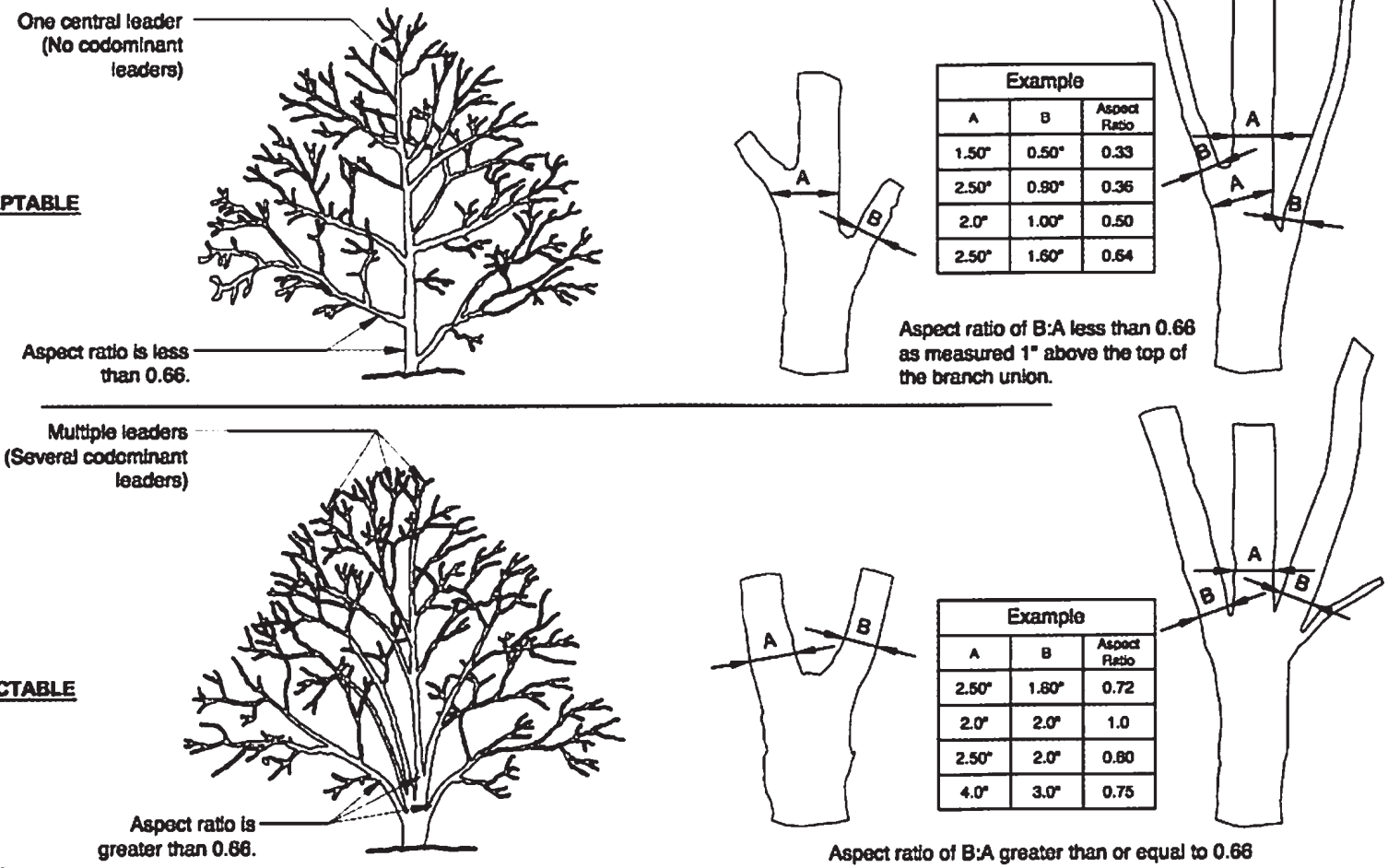
Aspect ratio of B:A greater than or equal to 0.66 as measured 1" above the top of the branch union.

Notes:

1- Aspect ratio shall be less than 0.66 on all branch unions. Aspect ratio is the diameter of branch (B) divided by the diameter of the trunk (A) as measured 1" above the top of the branch union.

2- Any tree not meeting the crown observations detail may be rejected.

5 **CROWN OBSERVATION DETAIL - MULTI**

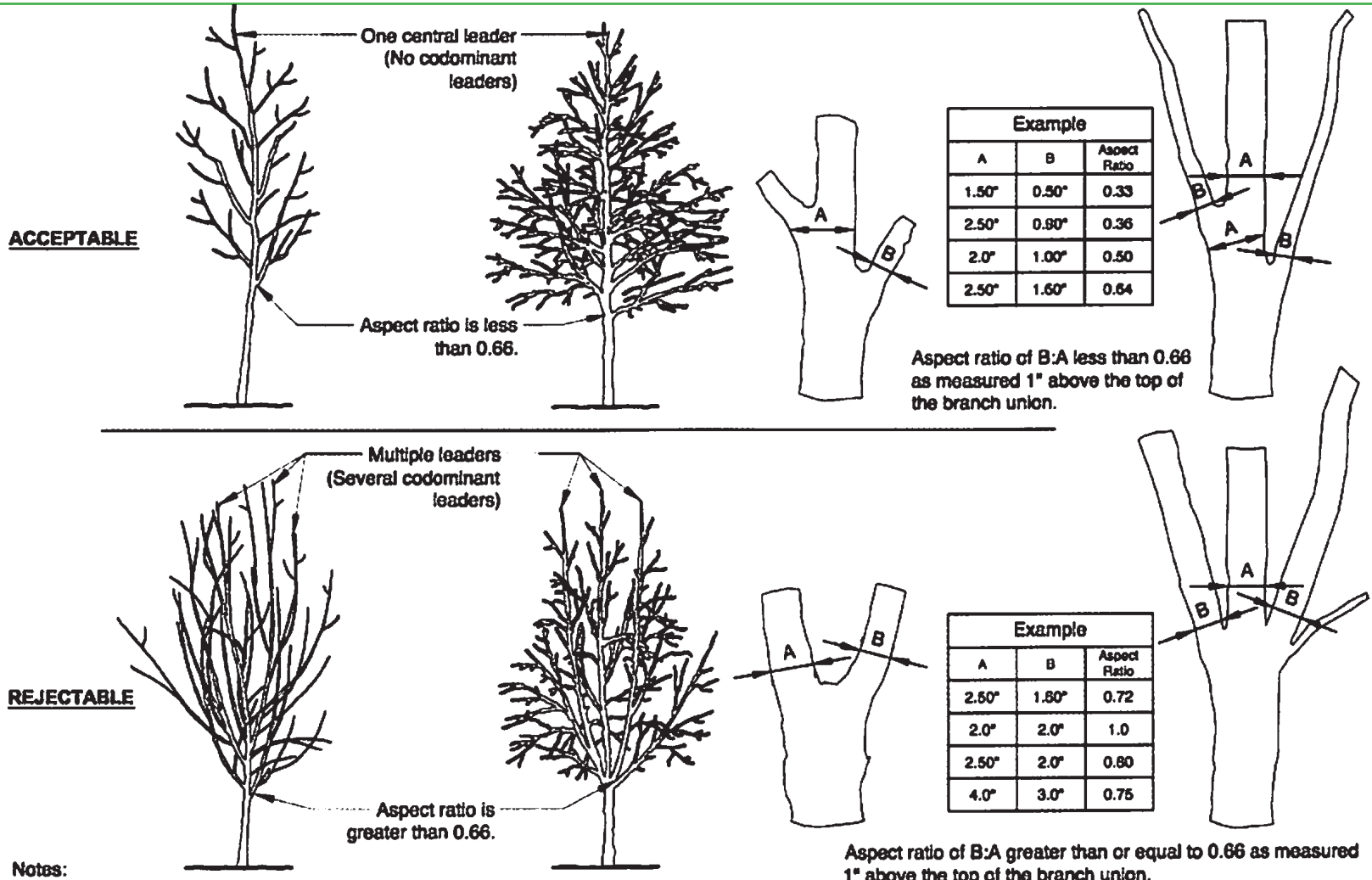


Notes:

1- Aspect ratio shall be less than 0.66 on all branch unions. Aspect ratio is the diameter of branch (B) divided by the diameter of the trunk (A) as measured 1" above the top of the branch union.

2- Any tree not meeting the crown observations detail may be rejected.

6 CROWN OBSERVATIONS - LOW BRANCHED



Notes:

1- Aspect ratio shall be less than 0.66 on all branch unions. Aspect ratio is the diameter of branch (B) divided by the diameter of the trunk (A) as measured 1" above the top of the branch union.

2- Any tree not meeting the crown observations detail may be rejected.

7 CROWN OBSERVATIONS - HIGH BRANCHED

1.5 PRUNING

A. OVERVIEW

Tree pruning/removal contractors retained by the City of Culver City shall adhere the standards set forth in the latest version of the American National Standards Institute (ANSI) A300 (Part 1) -2008 Pruning, ANSI Z133.1, Safety Requirements, and the International Society of Arboriculture Best Management Practices. The most recent versions of these standards shall be kept on file and available for public reference at City Hall and the City Library.

The Director of Public Works may authorize (without posting or permit) the removal of a City right-of-way tree if it is found to be in poor health or is deemed hazardous. The Director is also authorized to grant permission for public improvements adjacent to City trees.

Pruning Objectives
Pruning objectives typically include:
- Risk reduction
- Health management
- Clearance
- Structural improvement/correction
- Aesthetic improvement
- Restoration

Overview of Pruning Operations
Trees located in the public right-of-way are pruned to encourage long-term vitality and enhance public safety.

Types of pruning treatments, include, but are not limited to, the following (see below for further explanation of each treatment):

- Structural pruning of young trees to develop good conformation and strong branch attachments.

- Removal of dead and dying branches (crown cleaning).

- Pruning to restore the form of a tree after improper pruning, storm damage, or limb failure (crown restoration).

- Reducing the size of limbs to limit size or reduce end weight on heavy branches (crown reduction).

- Neglected trees may require crown restoration or the removal or end weight reduction of individual limbs.

- Pruning after a natural disaster or storm event to restore tree structure.

- Clearance pruning to establish clear sightlines and safe passage for vehicles, bicycles and pedestrians.

- Utility line clearance.

B. PRUNING TREATMENTS

i. Structural Pruning of Young Trees

Typically performed on newly planted trees to develop good form, these strategies are utilized in the pruning of all trees:

- Develop or maintain a dominant leader (when appropriate for the species)
- Identify lowest branch in the permanent canopy

- Prevent branches below the permanent canopy from growing upright or too large

- Space main branches along a dominant trunk

- Keep all branches less than one-half the trunk diameter

- Suppress growth on branches with bark inclusions[1]

ii. Crown Cleaning

This pruning treatment consists of the removal of dead, dying, crowded, weakly attached and low-vigor branches and water sprouts from the entirety of the tree crown. Care must be used to avoid stripping branches of all foliage at the interior of the tree crown. This practice, known as “lion tailing’’ disrupts the structural integrity of the tree, making it subject to limb and branch failure, especially during high winds. 10-15% of the foliage is typically removed; at no time shall more than 25% of foliage volume be removed.

1. The University of Florida: http://hort.ifas.ufl.edu/woody/structural-pruning-flash.shtml

iii. Crown Restoration

Restoration pruning is remedial pruning for a tree that has been topped, vandalized, over-pruned, or broken in a storm. Restoration pruning typically involves several pruning treatments over a period of many years.

iv. Crown Thinning

Thinning is a form of pruning that reduces the density of canopy in order to increase air movement through the crown and increase light under the canopy, but still retain the wind damping effects of branch massing. Thinning must be performed carefully, leaving interior foliage and concentrating on the outer two-thirds of the canopy. An even distribution of foliage shall be maintained throughout the canopy. Removal of all sucker growth may not be necessary. Because thinning can reduce a tree's natural wind damping effect, this type of pruning is becoming less popular.

v. Crown Reduction

Crown reduction is the selective removal of branches to reduce the height or spread of a tree. This type of pruning employs reduction cuts rather than heading cuts. Crown reduction may be used to reduce end weight on trees that are imbalanced, in utility line clearance, and in other types of clearance pruning. This type of pruning is often employed when preserving older trees in urban areas.

vi. Restoring Damaged Trees

After a storm, Public Works staff shall evaluate trees as needed to determine the best pruning methods to restore the tree's structure and health. Under the direction of the Department of Public Works, trees showing signs of imminent failure may be removed immediately.

- First, prune or remove broken and cracked branches. Leaving the tree imbalanced is preferable to removing too much live canopy, as long as the remaining weight does not pose an unreasonable risk.

- Heading cuts, or cuts that leave a stub, may be necessary to preserve canopy after a storm event. These cuts should not be used on healthy, undamaged trees.

- Storm damaged trees may require reconstructive pruning over the span of several years to recover.

vii. Clearance Pruning

Clearance pruning consists of the selective shortening or removal of limbs to provide vertical clearance and visibility for bicycles, pedestrians, vehicles, lights, signs, and structures. Selected branches may be subordinated by shortening them so that they can be removed later. The ratio of live crown to clear trunk remaining after pruning should be no less than fifty percent (50%). Only those branches that need to be removed to achieve the established height clearance standard are typically pruned. All pruning cuts are taken to the nearest lateral found above the set minimum height standard.

- Trees that line sidewalks or park pathways shall have limbs and branches raised to a minimum of 8' above finish grade. Limbs may be retained below this minimum elevation as long as they do not interfere with pedestrian or vehicle traffic, do not otherwise create a safety risk, and conform to the natural shape of the species.

- Trees that line streets should have branches and limbs raised gradually from 8' at the curb to 14' over travel lanes. The branch structure should create an arch over the street when completed.

- Trees shall be maintained for streetlight and/or signage clearance by removing selected limbs to create an open canopy that will allow increased light and visibility. Only those branches that need to be removed to attain the desired amount of visibility should be pruned. All pruning cuts are made at the nearest lateral away from the structure that is to be cleared. Severe pruning treatments are not allowed.

viii. Utility Clearance Pruning

Utility line clearance is regulated by the California Public Utilities Commission and standards are based on the type of hardware affixed to the lines. Regulations include General Order 95 Rule 35: Tree Pruning and ANSI A300. Utility companies subcontract utility line clearance operations to a qualified tree service. The following shall be considered when pruning street trees for utility line clearance:

- Each species of tree has a slightly different branch collar where a proper cut should be made. Utility line clearance contractors are required to know the species and understand where on the branch to prune.

- Flush cuts and stub cuts are not allowed.

- The amount of wood taken in a season shall not exceed twenty-five percent (25%) of the entire tree canopy. This percentage may be adjusted based on the age, health, and tree species. Older, stressed trees may perform better if pruning occurs over several years rather than all in one year.

- To avoid damage from sunburn injury, pruning shall not expose the bark tissue of the interior trunk and branches.

Line-clearance tree workers are trained to work around high voltage conductors. The United States Occupational Safety and Health Act (OSHA) and the American National Standards Institute (ANSI) have established minimum distances from electrical conductors that are maintained by tree workers. All line-clearance work involving City trees shall adhere to these standards as well as the most recent version of the utility pruning standards established by the International Society of Arboriculture (ISA) and the Utility Arborists Association (UAA).

The following guidelines are designed to maintain required clearance of public trees from high voltage distribution and transmission lines, with a minimum of re-sprouting and fewer pruning cycles.

- Tree growth adjacent to utility lines should be managed with lateral or directional pruning (thinning cuts). Directional pruning removes a branch from the trunk or large lateral branch growing away from the conductor.

- Heading cuts are prohibited.

- Pruning cuts should be determined by structure and branching habit of the species. Branches should not be arbitrarily cut to a pre-established clearance limit.

- All trees should be examined for hazards prior to line clearance work. Hanging branches and dead wood should be removed first.

- The use of climbing spikes on live trees is prohibited. Only dead trees may be climbed with spikes.

- Whenever possible, trees should be allowed to attain a normal height, with the crown developing away from high voltage conductors to develop a V-shaped canopy structure.

- When foliage loss on a branch exceeds 1/2, it should be removed from the parent stem.

- Final drop-crotch cuts should be made outside of the branch bark ridge on the main stem or lateral branch. The remaining branch shall be no smaller than 1/3 the size of the branch being removed. The removed portion should be pruned to direct the remaining growth away from the conductors.

- The use of multiple small diameter cuts to create an artificially uniform crown form, commonly known as “rounding over,” is not an acceptable pruning practice for utility line clearance.

Notification to City
Utility companies are required to notify the City five working days prior to any maintenance activity on any public tree.

As an alternative to individual prior notifications for each maintenance activity, the utility may submit an annual notification of maintenance activities to the City. This notification shall include, but is not limited to, the following:

- List of facilities
- Schedule of work
- Extent of maintenance activities
- List of protected public trees that might be affected

Utilities may take emergency action on any public tree without giving advance notice when immediate action is required to protect the public or the utility’s employees, to prevent damage or destruction of facilities and property, or to effect expeditious reinstatement of utility service following an interruption. Any utility taking this type of emergency action is required to notify the City of such action within 72 hours of commencement of the action.

ix. Palm Pruning

Palm pruning should be performed when fronds, fruit, or loose petioles may create a dangerous condition.

- Live, healthy fronds should not be removed.

- Live, healthy fronds above the horizontal shall not be removed. Exception: Palms encroaching on electrical supply lines.

• Fronds removed shall be severed close to the petiole base without damaging living trunk tissue.

• Palm peeling (shaving) shall consist of only the dead frond basses at the point they make contact with the trunk without damaging living trunk tissue.

• Sterilized handsaws shall be used to prune all palms of the Phoenix genus. Chainsaws shall never be used.

• Chainsaws shall not be used on any palm species susceptible to pathogens that can be spread by chainsaws.

• Trunks may not be skinned unless directed by the Department of Public Works.

C. LIMITING THE SPREAD OF PATHOGENS

Trees with known pathogens that can be spread with pruning tools shall be pruned using additional cautionary practices. The following practices shall be employed when working on City trees with known pathogens:

• To avoid the spread of pathogens to other trees, pruning tools shall be sterilized before pruning another tree. Acceptable sterilization methods include fifty percent (50%) bleach solution for ten minutes or handheld butane torch heating for fifteen seconds per side.

• Wood infected with disease shall be handled and disposed of in a manner that minimizes the possibility of transmission of that disease. This may include transporting greenwaste in covered containers.

D. TIME OF YEAR FOR PRUNING

Ideally, tree pruning activities are timed to minimize tree stress and to decrease the risk of infestation and disease. Pruning when insects are active should be avoided if at all possible.

• Hazardous trees may be pruned at any time.

• Trees with thin bark should not be pruned in the late spring/summer.

• If the tree has known root damage, pruning may be delayed until the deadwood becomes apparent, usually within one to three (1-3) years after injury.
• If possible, eucalyptus and pine should only be pruned between November and April, when wood boring insects are less active.

• As a rule, some fast growing tree species (eucalyptus, ficus, Chinese elm) require more frequent pruning than other species (magnolia, Canary Island pine).

Migratory Bird Treaty Act (MBTA)
The Migratory Bird Treaty Act (MBTA) protects all common wild birds found in the United States except the house sparrow, European starling, feral pigeon, and resident game birds such as pheasant, grouse, quail, and wild turkey. MBTA makes it unlawful for anyone to kill, capture, collect, possess, buy, sell, trade, ship, import, or export any migratory bird including feathers, parts, nests, or eggs. The California Department of Fish and Wildlife regulations contain specific measures regarding natural resource management. For example, Section 3505 states it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird that is protected under the MBTA. The code further protects all birds of prey, such as hawks and owls and their eggs and nests from any form of take.

If active nests are observed, their location should be discussed with the tree trimming crew, and the site clearly marked (with flagging) a reasonable distance away from the actual nest. T he tree or structure supporting the nest should not be disturbed, such as through trimming or removal, until the nestlings have fledged (as confirmed by a qualified biologist).

The City has a voluntary moratorium that prohibits tree trimming or removal between April 1 and May 31. The exception to this would be if a tree presents a public safety hazard and must be pruned or removed to mitigate that hazard.

E. ROOT PRUNING

Root pruning is often performed to control the size of the root mass or to alter the direction of surface roots. If not performed properly, root pruning can cause significant damage or create structural instability, thus increasing a tree's potential for failure. Removal of large roots can also remove lateral and smaller absorptive roots, affecting the tree's ability to absorb water and nutrients. The closer root cuts are to the trunk, and the older or less vigorous the condition of the tree, the greater the potential for the tree's decline and possible structural failure.

Tree roots shall not be pruned or otherwise impacted (e.g., soil compacted over them) until all other alternatives have been explored. The Department of Public Works shall be notified prior to any operation known or suspected to involve cutting or impacts of more than:

• Twenty-five percent of the roots located in the TPZ or any roots over two inches (2") located in the Critical Root Zone (CRZ). The CRZ is the area around the trunk where roots essential for tree health and stability are located; the Tree Protection Zone (TPZ) is an arborist-defined area surrounding the trunk intended to protect roots and soil within the CRZ and beyond.

• Root pruning shall be done under the supervision of the Arborist of Record (AOR) or the City's authorized representative. Root pruning shall follow ANSI standards and Best Management Practices.

• Prior to pruning, roots shall be exposed using the least injurious excavation method.

• A pruning cut that removes a root at its point of origin should not cut into the trunk or parent root.

• Smaller pruning cuts shall be preferred, and the final cut should result in a flat surface with adjacent bark firmly attached.

• All roots to be pruned or removed shall be cut cleanly with sharp pruning tools.

• Wound dressings are unnecessary and shall not be used on cut roots. The root bark ridge (similar in structure and function to a branch bark ridge) shall be preserved.

• Directional root pruning (pruning to follow the route or growing pattern of existing roots) shall be used to help minimize root decay and encourage root growth away from hardscape. Shorten roots back to another fork at least 1/3 the size of the root to be removed. Roots are cut to a large lateral and, if possible, cut back to a root that is growing downward or in a favorable direction. The pruned root ends will be less likely to re-sprout, since a large lateral can assume the new terminal role.

• All pruning tools shall be sterilized either between trees with either a 10% bleach solution or blowtorch.

F. ROOT PRUNING FOR SIDEWALK REPAIRS

Root pruning shall be supervised by Department of Public Works staff or their authorized representative. All work on roots shall be done carefully, using hand or hand-held power tools only, to reduce future sidewalk problems and to preserve the health and structural stability of trees. Removing or damaging anchoring roots and the root crown (the transition zone from trunk to roots) is prohibited.

Procedures for Root Pruning Directly Next to Sidewalks

• Small root bundles can be the source of future sidewalk problems. These should be removed during the repair.

• All roots that contribute significantly to anchorage should be preserved. Roots approved for removal shall be cut, if possible, to downward growing lateral roots that are at least 1/3 the size of the root being removed.

• All roots larger than two inches in diameter are to be preserved unless their removal is absolutely necessary. Pruning or removal of roots two inches or larger should only be done under the supervision of Public Works staff or authorized representative.

• Preservation of large roots may require reducing the sidewalk width near the root crown. Sidewalks may require bridging or ramping in order to preserve roots and allow for future root growth.

• Root shaving is allowed under limited conditions and with the supervision of the Public Works staff or authorized representative. The objective is to reduce the thickness of roots without severing the root completely. Root shaving is sometimes performed using sharp pruning tools or carbide tipped chainsaw blades. At no time shall root shaving be done with an axe or "chopping" tool.

• After root pruning, canopy pruning to reduce canopy size shall be considered by the Public Works staff or authorized representative; any and all pruning should comply with the latest version of ANSI Standards and ISA Best Management Practices.

• When repairing or replacing sidewalks, the damaged hardscape area plus an additional

distance to the adjacent concrete score line defines the root removal boundaries. Targeted tree roots and other roots within these boundaries can be removed to a maximum depth of 4" below the finished sidewalk grade and a maximum of 4" below the gutter plate.

G. RESIDENT NOTIFICATION FOR PRUNING WORK

The contractor providing the service shall employ a City-approved notification system to all residents affected by the work. To properly respond to resident concerns and/or phone calls, the City shall be apprised of:

- Location(s) of the work
- Schedule of work
- Extent of maintenance activities
- List of public trees that might be affected

Temporary 'No Parking' signs shall be installed at adequate spacing to properly notify residents and motorists of the activity. At no time shall signs be nailed to trees; signs may be taped to trees, always removing the signs when the work is complete.

1.6 TREE PROTECTION DURING CONSTRUCTION

A. OVERVIEW

Development activities adjacent to trees must be conducted with great care and thoughtful planning. The most common types of injuries are:

Root cutting or damage – roots systems of trees are extensive and often asymmetric. It is difficult to know the exact location and depth of roots. Roots are damaged by:

- Excavation equipment cutting roots during grade changes or other activities
- Trenching equipment used for gas, water, sewer, electrical, cable TV, irrigation, and other utility installations
- Burial of debris
- Fill soil over roots and altered water tables

Soil compaction
Most soil compaction results from vehicle and equipment traffic, although foot traffic and water impact may contribute to a lesser extent. Compaction severity depends on the force per area unit applied to the soil, frequency of application, surface cover, soil texture, and soil moisture. Compacted soils permit less root growth and biological activity as a result of reduced aeration, higher mechanical resistance to root penetration, and slowed water movement.

Mechanical injury to the trunk, major roots, and crown
When these conductive and protective tissues are damaged, the capacity of the tree to transport water, nutrients, and carbohydrates, is reduced. Also, barriers to pathogen entry are compromised, leading to future structural concerns.

Root collar covered by fill soil
In natural settings this area is free of soil and mulch. Often in construction areas the trunk becomes buried by soil. This soil may facilitate infection by various fungi and encourage stem-girdling roots on younger trees. Depending on tree species, ong-term decline and death may result from the burying of the root collar.

B. TREE PROTECTION ZONES

Before construction commences on a given project, Tree Protection Zones shall be established around all City trees. The Critical Root Zone is the area around the trunk where roots essential for tree health and stability are located; the Tree Protection Zone (TPZ) is an arborist-defined area surrounding the trunk intended to protect roots and soil within the CRZ and beyond. There are many methods for determining size for a TPZ: the dripline method uses the tree canopy to define the boundary of the TPZ; the entire area within the dripline is considered the TPZ. The TPZ shall be surrounded by protection fencing.

- STAGING: No stockpiling, storage, or placement of project materials or excavated soils shall occur within the TPZ, either temporarily during construction or permanently.

• GRADING: All cut, fill and/or building foundation work shall be located a distance from the outside edge of the trunk of any remaining tree at least three to five times the trunk diameter measured at 4.5 feet above grade (dbh) of the affected tree, unless the Certified Arborist under contract to the applicant determines a lesser distance is adequate. No changes in grade may occur within the TPZ.

• OTHER TREES: Damage to the roots of adjacent trees is prohibited.

• TREE PROTECTION PRACTICES: All approved construction work within the TPZ of any tree scheduled for preservation shall observe the following minimum tree protection practices:

-Hand trenching at point of grade cuts closest to the trunk to expose roots 2" and larger. Large roots can be cut only with permission of the Arborist of Record (AOR) or the City's authorized representative. In situations where rock or unusually dense soil prevents hand trenching, the Department of Public Works Department may approve use of mechanical equipment. Such work shall be monitored by the Arborist of Record (AOR) or the City's authorized representative.

-The minimum distance between the trunk and any open trench or excavation shall be 1' or 6" for every 6" of trunk diameter measured at 4-1/2' above existing grade, whichever is greater.

-Excavated soil shall be deposited in trucks to be hauled off-site or temporarily stored on 1" plywood outside the TPZ. No soil should be stored, even temporarily, on unprotected natural grade.

-Typically, a layer of organic mulch is applied to the TPZ. During the construction phase maintain a layer of mulch 2 – 4" deep within the TPZ. This will help to relieve soil compaction, improve aeration, enhance moisture retention and reduce temperature extremes. Mulch should remain at least one foot away from the trunk of the tree. Mulch generally consists of shredded leaves or bark, pine straw, peat moss, wood chips or composted greenwaste

-In cases where the mulch will be removed after construction, an absorbent tarp or heavy cloth secured by stakes may be used to cover the new grade cuts within the TPZ. Mulch can then be spread over the tarp or cloth.

-Planting around trees to remain must take into consideration the specific water requirements of the trees in order to prevent damage to the tree from over- or under-watering. An area 2' in diameter from the base of the tree trunk should be kept free from other plants, to improve the tree's access to oxygen and nutrients. Weed control under trees to remain should be performed carefully to avoid adverse effects on the health of the trees. A list of plants suitable for under-planting should be submitted to the Director for approval during the plan check phase of the project.

See Detail 8 on the following page, regarding the Tree Protection Zone.

C. ROOT PROTECTION DURING CONSTRUCTION

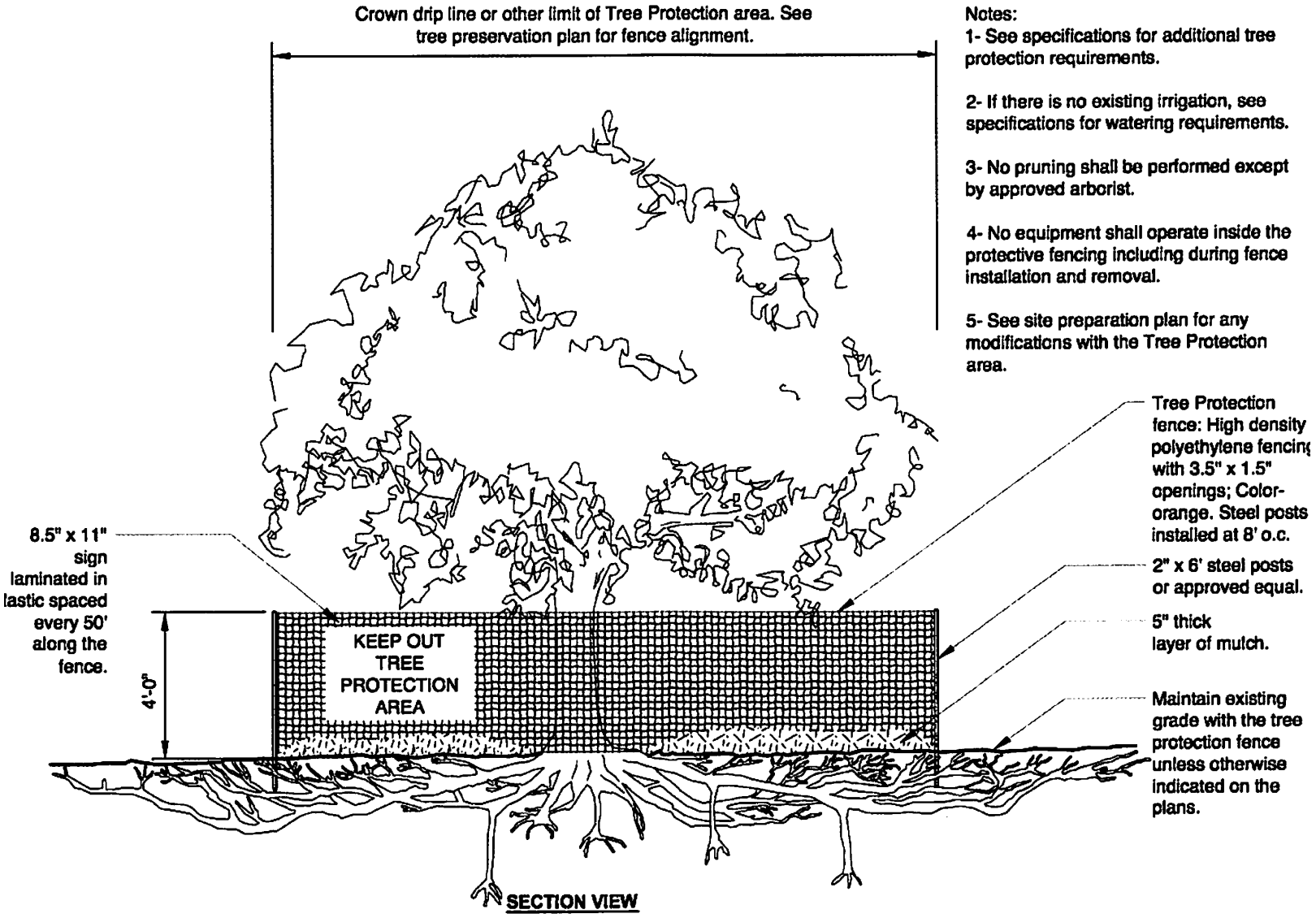
• The majority of a tree's roots is found in the top two feet of the soil profile, and extend asymmetrically as far as conditions are favorable for growth. Parkway and median trees have a very small ratio of root mass to canopy. Roots within approximately five to ten feet (5' to 10') of the trunk act as anchor or stabilizing roots. As roots extend outward towards the edge of the canopy larger roots taper to smaller, pencil-sized roots. Both buttress and absorptive roots are critical to the overall health of the tree and act to stabilize and conduct water and nutrients.

• Protect exposed roots by wrapping in burlap (or other) and keeping moist.

• Permitted cutting of roots shall be performed with a handsaw, cutting perpendicular to the root to expose the least amount of surface area as possible. Roots shall not be ripped or torn by backhoe, ditching machine, or similar grading equipment.

• Redirect roots in backfill areas where possible. Large lateral roots can be exposed beyond excavation limits and bent and redirected.

• Temporarily support and protect roots from damage until they are permanently relocated and covered with soil.



8 TREE PROTECTION ZONE

D. SIDEWALKS, CURBS, GUTTERS, DRAINS, ASPHALT PAVING AND OTHER IMPROVEMENTS

- Prior to pouring concrete sidewalks, curbs, inlets, ramps and driveway approaches, place a sheet of plastic that is six mil or thicker over the grade within affected portions of the TPZ. The plastic will provide a non-leaching barrier between the concrete, soil and roots.

- Limit grading to a maximum of two inches of fill over natural grade within the CRZ . Fill should consist of sandy loam topsoil; clay soils shall not be used as fill. When using fill soil, the existing surface to receive fill should be scarified or roughened prior to filling. Any filling operation should not occur during water saturated soil conditions.

- Alternative base course materials may be used upon approval from the City. Engineered structural soil mix is an alternative where hardscape is to be installed near new or existing trees.

- Masonite forms are preferred for curb and gutter construction because they minimize excavation. This method should be used in the CRZ. Where appropriate, use curbs with discontinuous footings to maintain natural grade near the base of trees adjacent to the curb and to minimize injury to roots and trunk bases.

- Typar BioBarrier® may be used between the curb and tree roots to help inhibit root growth that may exploit small cracks in the curb.

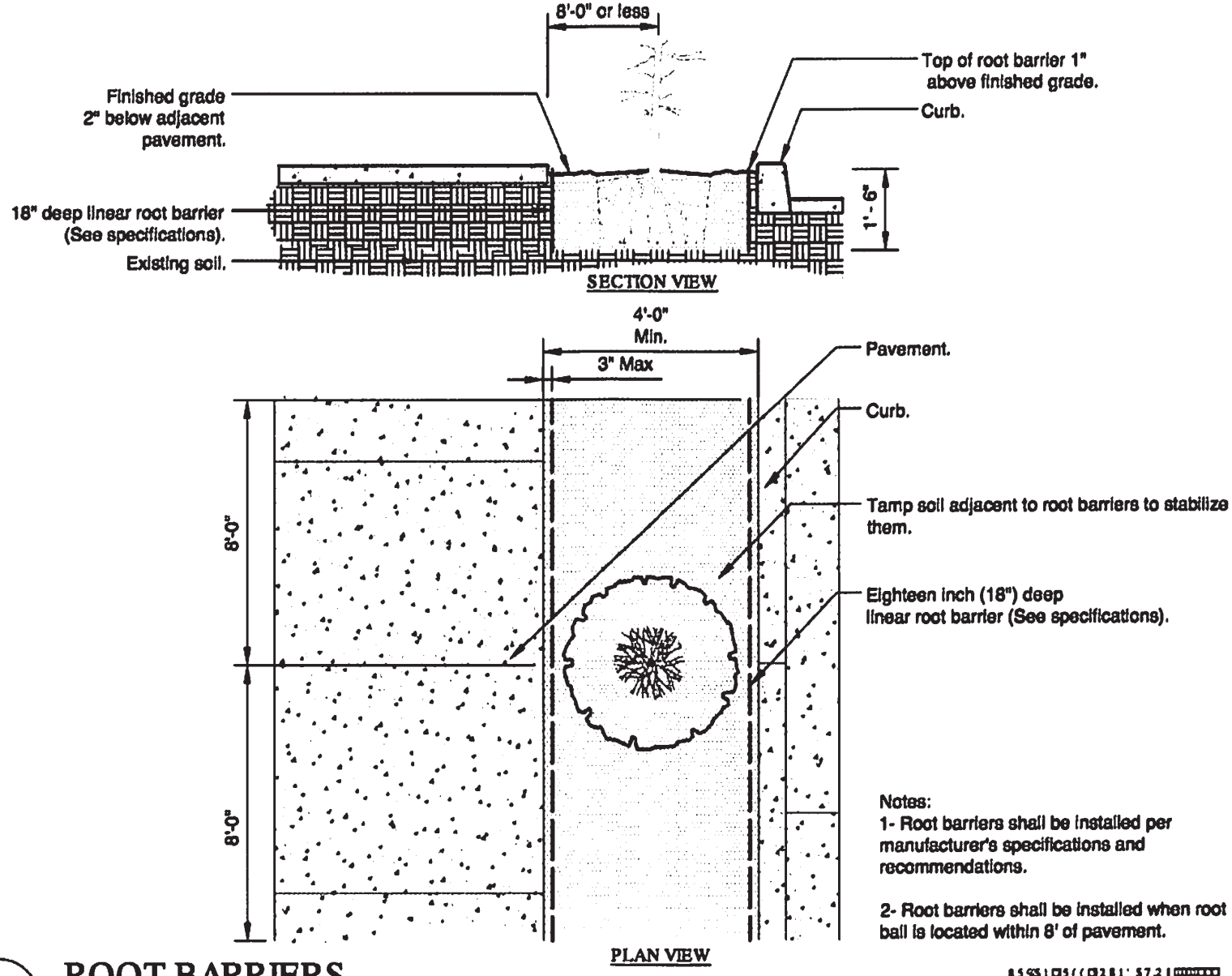
- Provide for easy concrete removal and replacement where roots may cause sidewalk cracking in the future, by installing an expansion joint on both sides of the root or by etching the concrete on either side of the root to allow that particular section to be broken out and replaced.

- The compaction rating for the replacement walkway should not exceed 80% proctor density. Tree roots will continue to slowly add girth every year; therefore, the base material needs to be malleable (e.g., suitable subgrade aggregates, crushed granite, or compacted sand) to prevent a fulcrum or pressure point that can crack or heave the walkway.

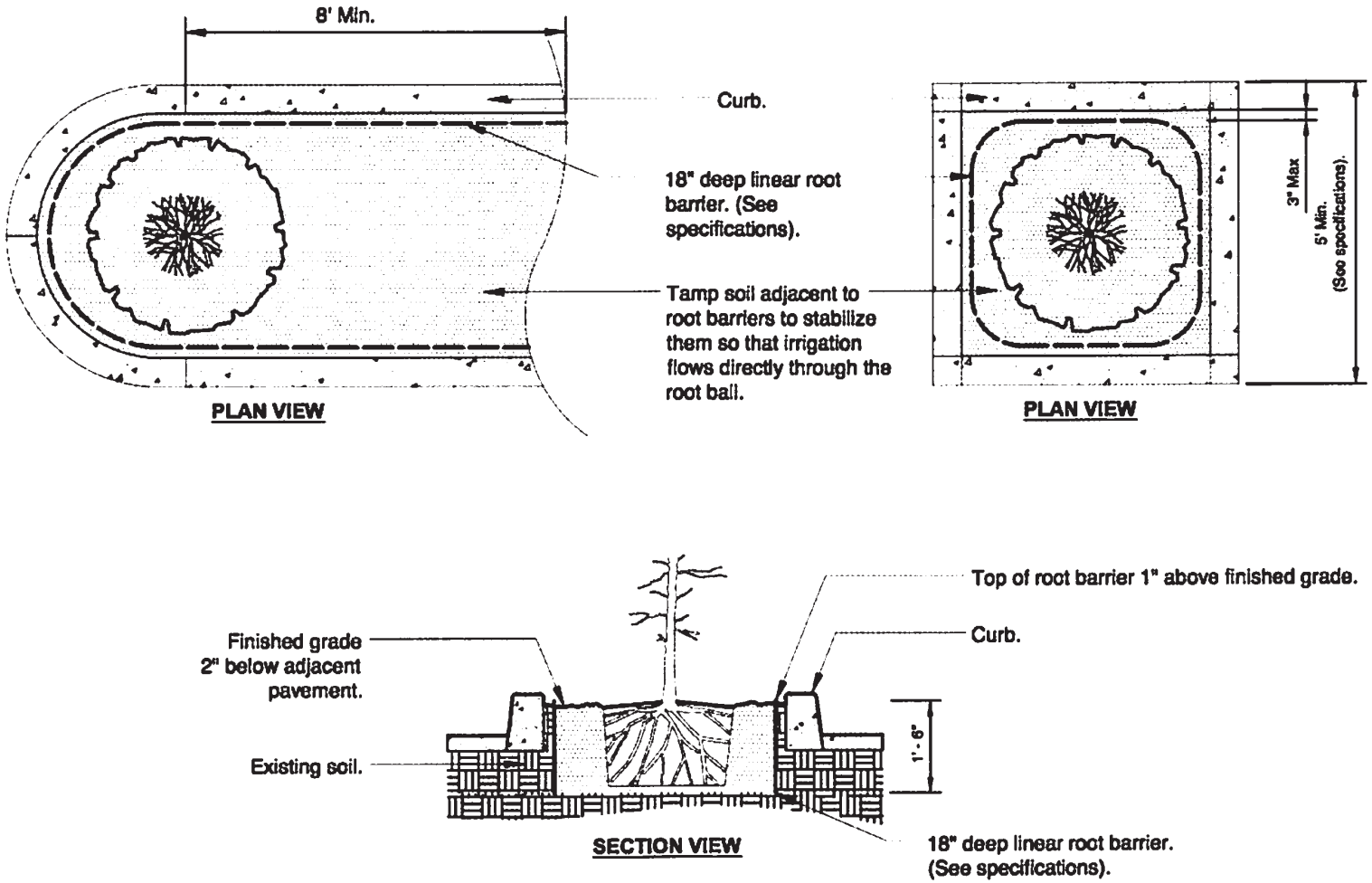
- Rubber sidewalks have proven to be an excellent alternative to concrete sidewalks, and are especially useful in situations where tree roots regularly uplift the concrete. Made from actual recycled rubber tires, they are fabricated in square “tiles,” and fitted together to create a level-walking surface. There are “channels” on the underneath side of the tiles, allowing roots to grow into those spaces rather than breaking concrete. If roots begin to displace the tiles, they can easily be lifted, roots pruned, and the tiles replaced. Each square foot of rubber sidewalk diverts one passenger tire from the landfill.

- Permeable sidewalk materials should always be considered. Permeable paving reduces urban runoff and permits groundwater recharge into the soils below. Some applications even reduce heat accumulation around buildings. Some proven materials are porous concrete, interlocking pavers, decomposed granite, or re-purposed old concrete (urbanite). Permeable paving may be built as a standalone feature, or in coordination with other streetscape and stormwater management features, such as street trees, bioretention planters, or sidewalk landscaping.

See Details 9 and 10 on the following pages, regarding the use of root barriers adjacent to hardscape.



9 ROOT BARRIERS



Notes:
1- Root barriers shall be installed per manufacturer's specifications and recommendations.

2- Root barriers shall be installed when root ball is located within 8' of pavement.

10 ROOT BARRIERS - PARKING LOT ISLANDS

1.7 Contractor Standards for Tree Work

The Public Works Department oversees contractor operations. Contractors who are hired to work for the City or who obtain permits to prune City trees shall comply with the City's contract requirements throughout the term of the contract or until the work has been completed.

Requirements for Working under City Contracts
The Contractor should be in the business of providing full service urban forest maintenance programs to governmental agencies and/or municipalities that include, but are not limited to, the pruning, removal and replacement of trees. Experience should include the prevention of disease transmission between trees, protection of wildlife, and current industry standards for pruning and planting.

Contractors shall meet the following minimum requirements:

- C-27 or C61/D49 Contractors license in good standing with the California State Contractor's License Board

- Employ an Arborist who is certified by the International Society of Arboriculture (ISA)

- The Contractor must hold Workers' Compensation & Employer's Liability Insurance, Commercial General Liability Insurance, and Business Automobile Liability Insurance.

- The Contractor shall be familiar with and have a clear understanding of the City's Pruning Guidelines as defined in this Plan.

- The Contractor shall follow all guidelines as detailed in the most current ANSI A300 Standards for Tree Care Operations, including

- ANSI A300 Part 1 (2008)

- ANSI Standard Z133.1 (2006) Safety Requirements

- International Society of Arboriculture Best Management Practices (current edition)

- If the flow of traffic is to be disrupted on streets and highways, the Contractor should use the current California Manual on Uniform Traffic Control Devices (MUTCD) and the Work Area Traffic Control Handbook (WATCH) from the American Public Works Association (APWA) .

1.8 INSPECTION AND REMOVAL

A. TREE INSPECTION

Resident Requests
Requests for pruning or maintenance outside the regularly scheduled pruning cycle shall be considered on an individual basis. Public Works staff will inspect the tree for hazardous conditions and general health.

B. SERVICE REQUESTS

Special circumstances may warrant pruning for a City tree outside of the regularly scheduled pruning cycle. Examples include:

- Energized utility line clearance.
- Pruning to clear a sign, storefront, traffic signal, or streetlight.
- Pruning to clear a structure or roadway or to provide line-of-sight.
- Pruning to remove a hanging or broken branch.

All applications for tree removal from undeveloped property or relative to development are subject to the provisions of the most current version of the City of Culver City Tree Removal and Mitigation Policy.

Before any street improvements in any new subdivision of real property in the City are accepted by the City, the subdivider enters into a subdivision improvement agreement and must provide the City with a bond in an amount equal to the total cost for purchasing and planting of all trees to be planted along all streets in such subdivision.

The subdivider is responsible for the planting of the trees at the proper time as determined by their urban forester and approved by the Department of Public Works. If the subdivider fails to plant the trees as directed, the bond is forfeited to the City and the City will plant such trees.

D. RISK ASSESSMENT

In urban and developed areas where people could be injured, property damaged, and activities disrupted, tree conflict or tree failure is an important concern of any municipality. Decisions about whether a tree inspection is required or what level of assessment is appropriate should be made with consideration for what is reasonable and proportionate to the specific conditions and situations.

Fortunately, serious damage, injury, or death from tree failure is relatively uncommon. Tree failures during normal weather conditions are often predictable and preventable. However, any tree, whether it has visible weaknesses or not, will fail if the forces applied exceed the strength of the tree or its parts[2].

Tree risk assessment is the systematic process for identifying, analyzing, and evaluating tree risk. Three levels of tree risk assessment are defined in ISA's Best Management Practices:

Level 1: Limited visual
Level 2: Basic
Level 3: Advanced

The City of Culver City may employ one or more of these levels on an ongoing basis; the City may choose to subcontract this work to a Qualified Tree Risk Assessor (TRAQ), an International Society of Arboriculture-sponsored qualification.

2. Dunster, Julian A., E. Thomas Smiley, Nelda Matheny, and Sharon Lilly. 2013. Tree Risk Assessment Manual, Champaign, Illinois: International Society of Arboriculture.

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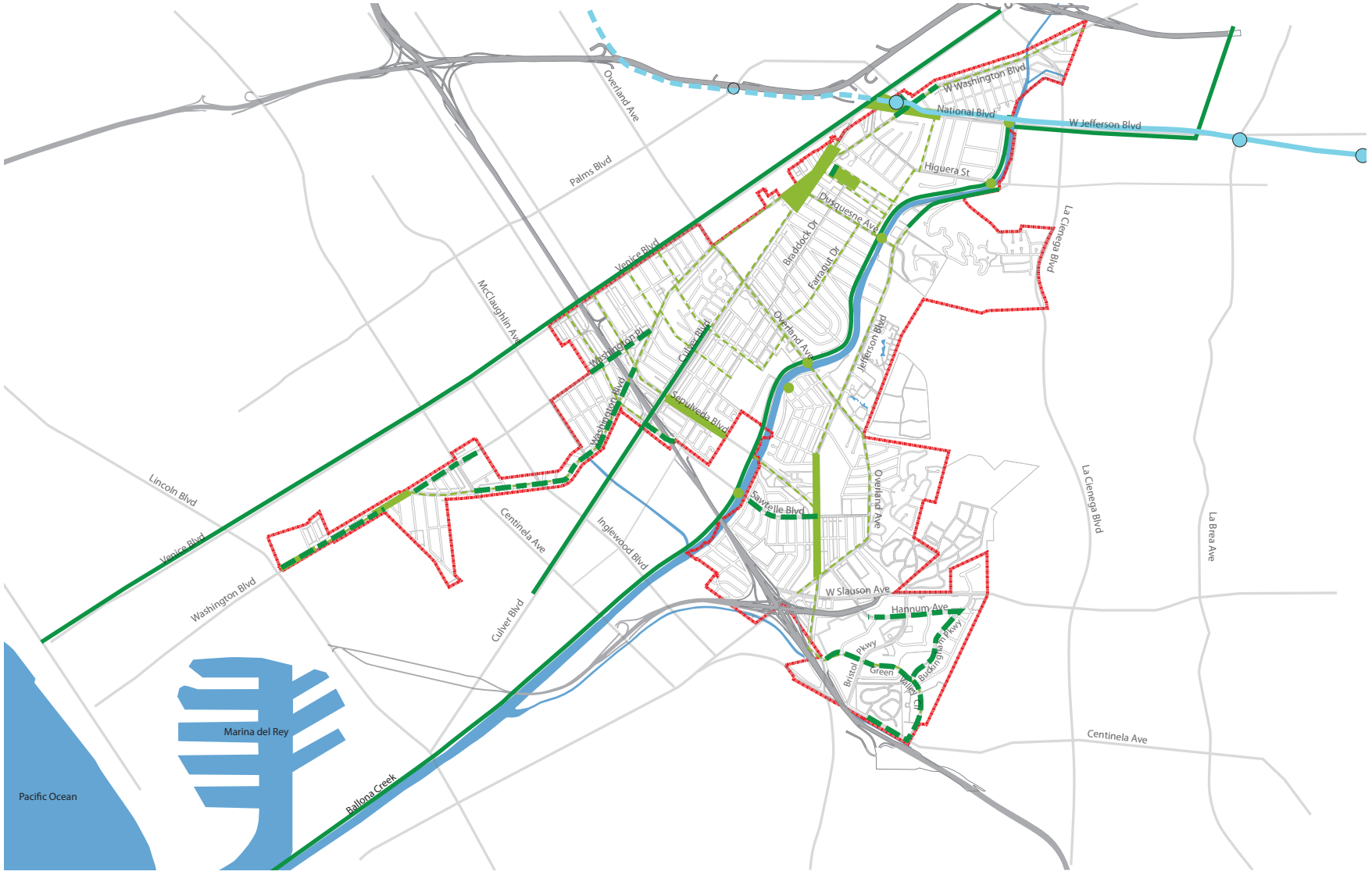
additional mapping

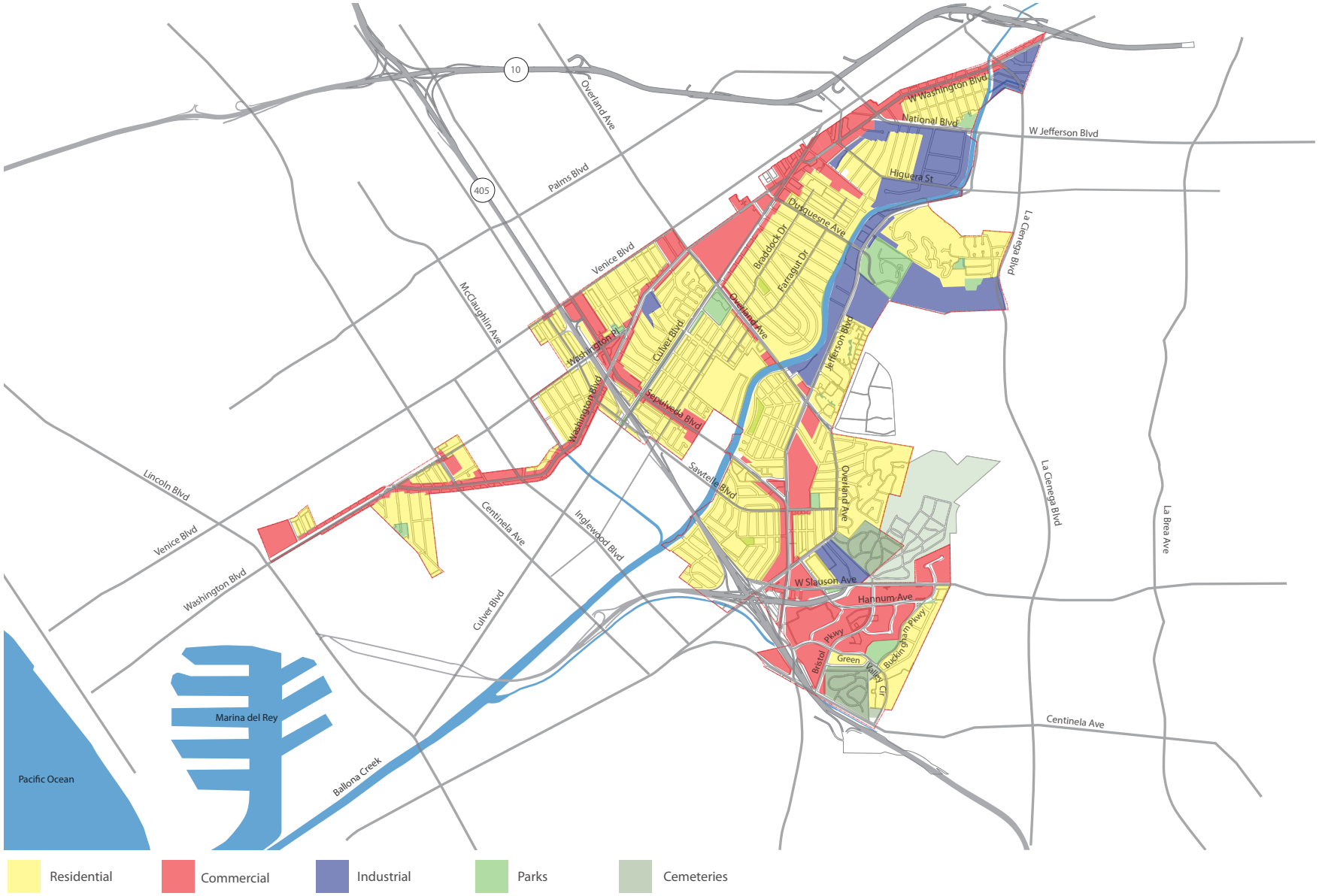
CIRCULATION: Bicycle, pedestrian, and light rail

The Urban Forest Master Plan is coordinated with the Bicycle and Pedestrian Master Plan, which proposes the bicycle lanes and pedestrian areas and corridors indicated here. To promote cycling and walking, trees in these areas were selected to provide shade and to aid in wayfinding.

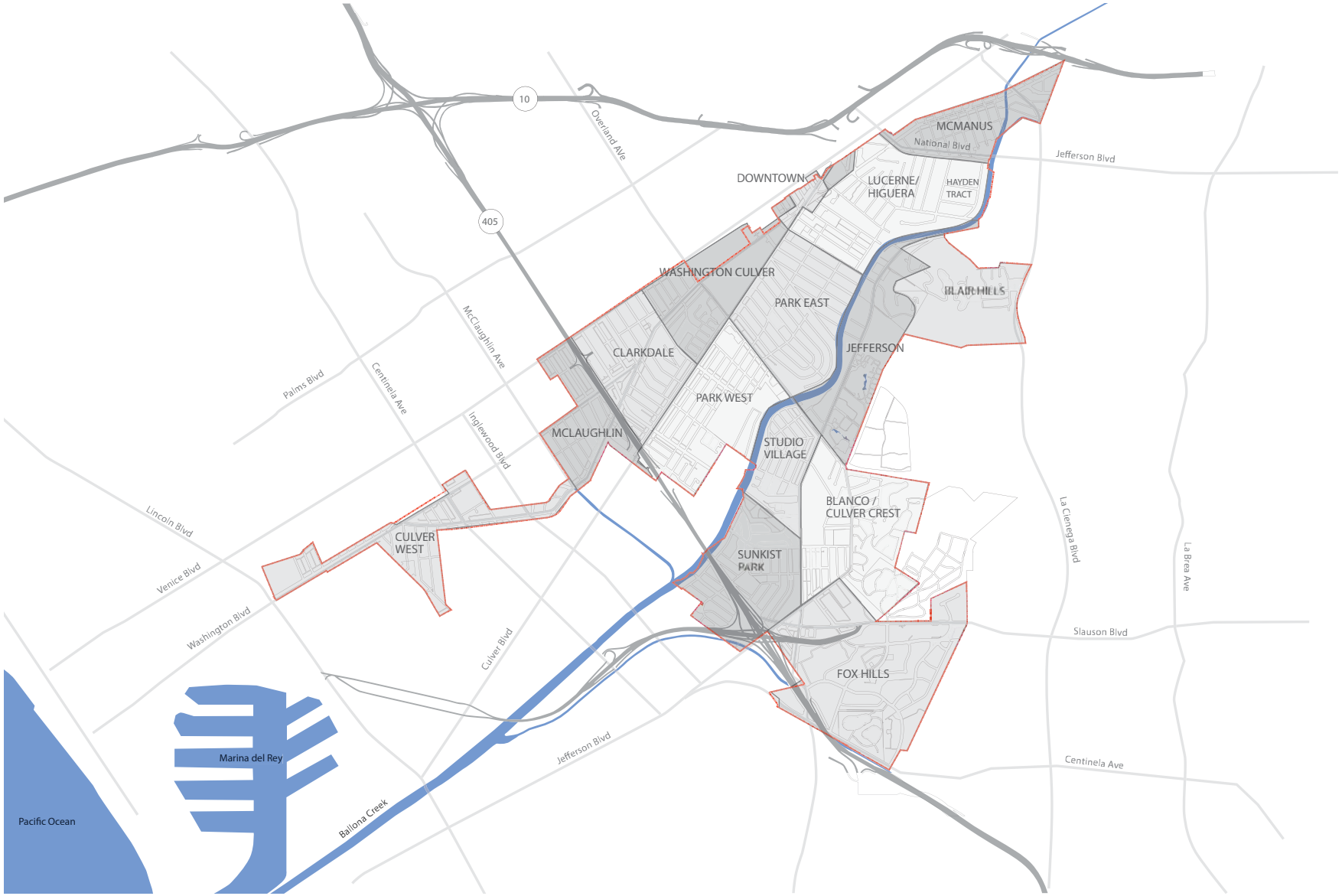


LAND USE / ZONING

Commerical uses are concentrated along the major corridors: Washington Blvd, Culver Blvd, Slauson Ave, Sepulveda Ave, and the southwest part of Jefferson Blvd. Industrial uses are concentrated in the northeast part of the city along Jefferson Blvd and Ballona Creek.

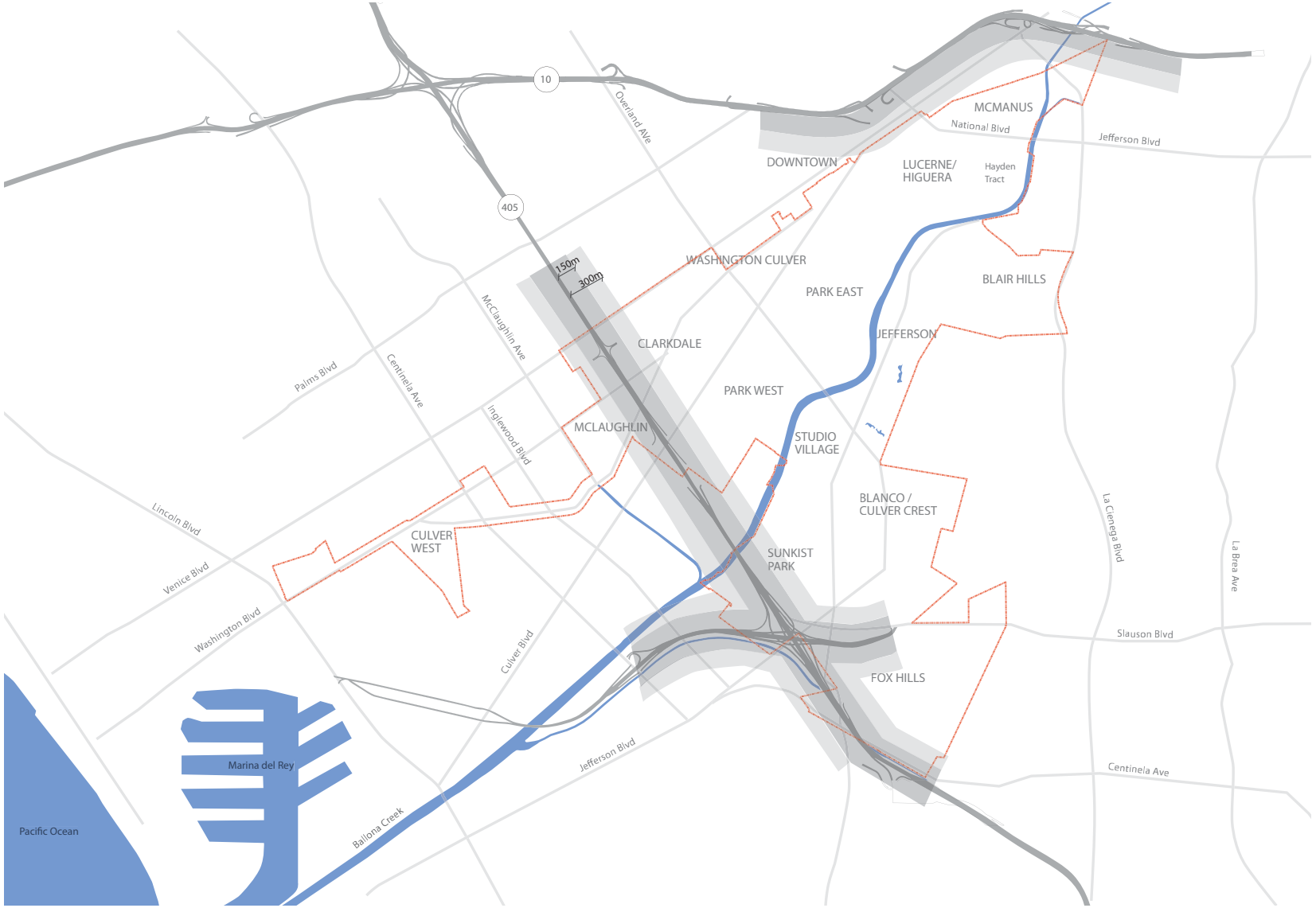


NEIGHBORHOODS



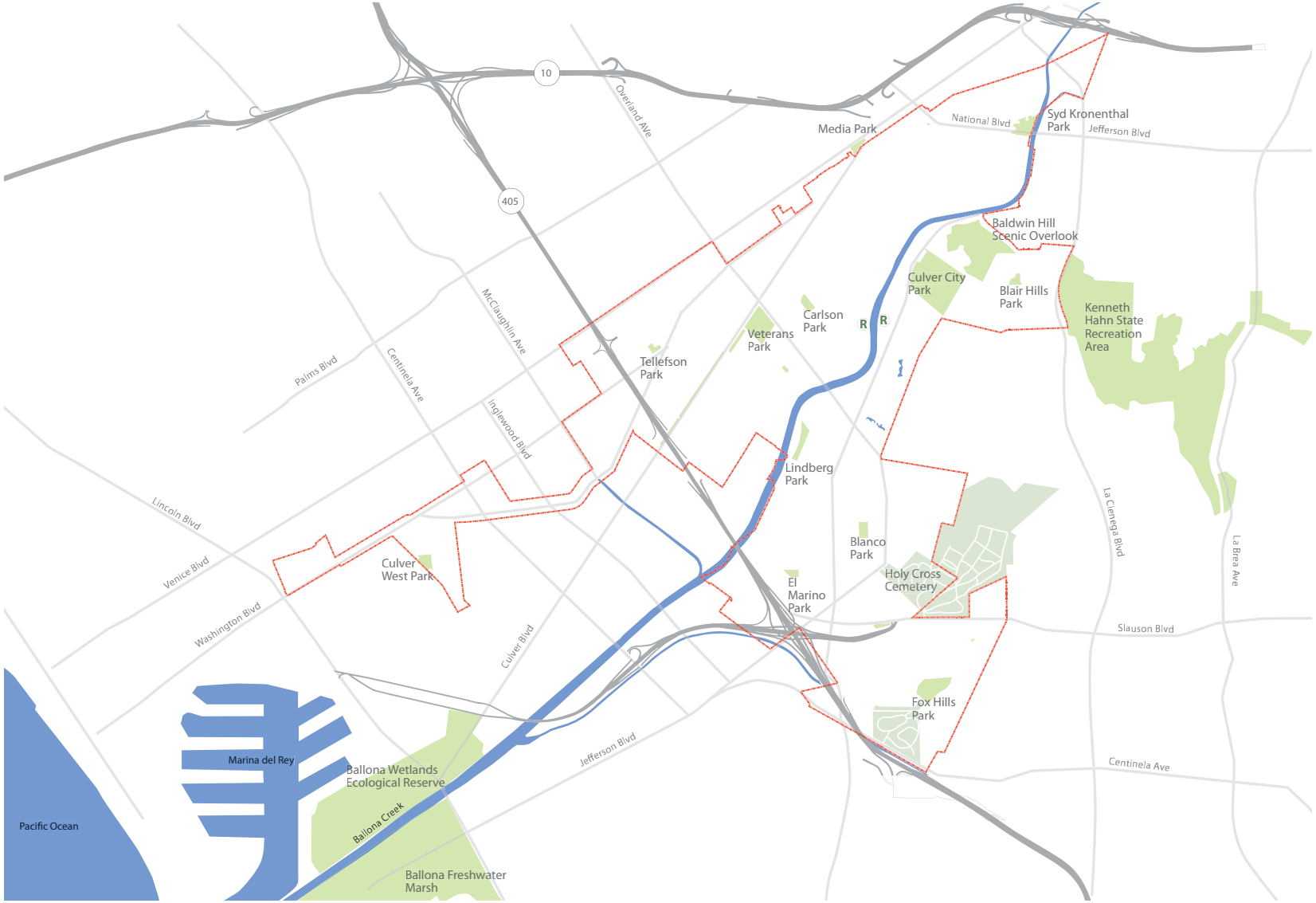
FREEWAY POLLUTION

Pollution concentrations are often highest within 150 meters of the road; and often remain elevated as far as 300-500 meters from the road (McPherson et al, “Integrating Vegetation and Green Infrastructure into Sustainable Transportation Planning,” 2013).



PARKS AND WATERWAYS

Culver City contains a dispersed network of small parks as well as the linear recreation paths along Ballona Creek. While the amount of City parkland does not meet the City's own goal of 10 acres per 1000 residents, residents also enjoy access to parks directly adjacent to the City.



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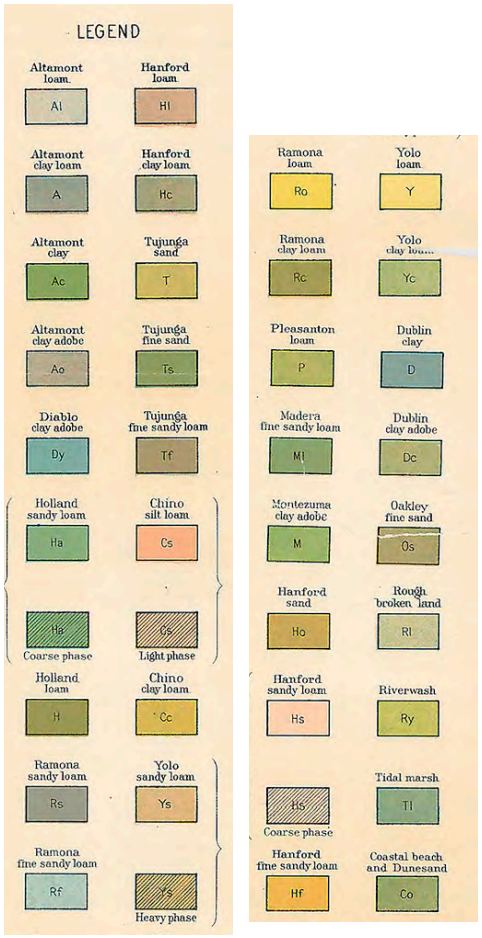

Culver City Urban Forest Survey

We Want to Hear From You!

Over the next year, Culver City will be working with a team of landscape architects, arborists, and ecologists to develop an Urban Forest Master Plan. The Plan will establish a comprehensive vision for supporting a healthy, robust urban forest in Culver City and will include long-term goals as well as day-to-day tree management practices. Our team will be inviting the public to participate at several steps along the way, including this survey, and future public meetings. We look forward to hearing from you!

1. In your opinion, what is the most important goal for Culver City's urban forest?

- ☐ More trees
- ☐ More frequent maintenance
- ☐ More community education/involvement
- ☐ More species and age diversity in order to withstand pests, diseases, and climate change
- ☐ Other:_____

2. The urban forest provides diverse, important benefits to the City and its residents. From this list, please check the three benefits that are most important to you:

- ☐ Improves overall quality of life in Culver City
- ☐ Makes beautiful places in the City
- ☐ Displays ornamental flowers, leaves, and bark
- ☐ Provides habitat + strengthen urban ecology
- ☐ Improves people's physical+ mental health
- ☐ Improves air quality
- ☐ Improves water quality
- ☐ Provides shade
- ☐ Reduces electric bills
- ☐ Improves property values + local economy
- ☐ Calms traffic + encourage walking and biking
- ☐ Other:_____

3. While the urban forest provides many benefits, we also face some problems and challenges caring for trees and plants in the city. From this list, check each item that is a concern for you:

- ☐ Sidewalk damage
- ☐ Pollen / allergies
- ☐ Leaves, flowers, or fruits dropping
- ☐ Not enough trees and plants
- ☐ Not enough trees in these areas or neighborhoods: _____
- ☐ Trees need more frequent maintenance
- ☐ Limbs falling
- ☐ Tree roots damaging pipes
- ☐ Blocking signs / stores / views / lights
- ☐ Other:_____

4. What is the best way to communicate information about the urban forest, trees, and tree care to you?

- ☐ Internet - written information
- ☐ Internet - videos
- ☐ Workshops / classes
- ☐ Volunteer activities
- ☐ Community events
- ☐ Email
- ☐ Mailing
- ☐ Other:_____

5. Would you like to receive news and updates about Culver City's urban forest and the planning process?

If so, please write your email (if none, please write phone number):_____

What is the **Urban Forest?**

Urban **PLANTS**

Urban **PLACES**

Urban **ENVIRONMENT**

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Don Hodel, input into Tree Palette

WEB RESOURCES

- Street Tree Selection Guide, City of Los Angeles Urban Forestry Division www.ci.la.ca.us/boss/UrbanForestryDivision/StreetTreeSelectionGuide.htm
- San Marcos Growers | www.smgrowers.com
- Las Pilitas Nursery | www.laspilitas.com
- Urban Forestry Ecosystems Institute (UFEI) | www.ufei.org
- SelecTree: A Tree Selection Guide (CalPoly San Luis Obispo / UFEI): http://selectree.calpoly.edu/

glossary

ADAPTIVE MANAGEMENT APPROACH
The principle of accommodating changes and unforeseen events without forcing changes to strategic goals and key objectives.

A systematic process for continually improving management policies and practices by learning from the outcomes of previously employed policies and practices.

AIR QUALITY MANAGEMENT DISTRICT (AQMD)
The air pollution control agency for the urban portions of Los Angeles, Riverside, and San Bernardino counties and for all of Orange County. Also known as South Coast Air Quality Management District, or South Coast AQMD.

COST-BENEFIT ANALYSIS
A type of economic evaluation in which both the costs and benefits of different interventions are expressed in monetary units and are compared to each other to establish balance betwen investments and returns.

BEST MANAGEMENT PRACTICES (BMP)
A practice or combination of practices determined by a state or an agency to be the most effective and practical means (technological, economic, and institutional) of controlling point and non-point source pollutants at levels compatible with environmental quality.

BIOGENIC VOLATILE ORGANIC COMPOUNDS (BVOC)
Organic compounds produced by living organisms that readily evaporates into the air, and that react with other chemicals in the presence of sunlight. VOCs contribute to ozone production. Trees emit BVOC; the rate of emission increased during hot weather.

BIOSWALE
A linear, shallow depression in the landsacpe designed to convey storm water. Bioswales can absorb low flows, or carry larger amounts of water to storm sewer inlets or directly to surface waters. Bioswales improve water quality by enhancing infiltration of the first flush of storm water runoff and filtering the large storm flows they convey.

BRANCH COLLAR
Wood tissue that forms around the base of a branch between the main stem and the branch. Usually as a branch begins to die the branch collar begins to increase in size.

CALLUS
New growth made by the cambium layer around all of a wound.

CAMBIUM LAYER
Growing point between the bark and sapwood.

CARBON SEQUESTRATION
Removal of carbon from the air by living trees and plants to be stored in their cells through the process of photosynthesis. Carbon sequestration by trees reduces the effects of climate change.

CAVITY
A hollow space in a tree trunk or branch, typically the result of decay that followed injury.

COMPACTION
The process of compressing soil particles, which reduces pore space. Compaction also refers to the resulting condition of the soil. Compaction reduces the amount of space in soil for air, water, and organic matter; which reduces the health of the soil and the ability of roots to penetrate the soil.

COMPLETE STREETS
Streets designed and operated to enable safe, attractive, and comfortable access and travel for all users, including pedestrians, bicyclists, motorists and public transport users of all ages and abilities.

CONIFER
A tree that produces cones. Note that this is not the same as “evergreen,” because some conifers are not evergreen, and vice versa.

CONTINUOUS IMPROVEMENT CYCLE
A concept that recognizes the ongoing nature of progress. Instead of viewing the Master Plan as a static document and a final result, it is seen rather as a significant step forward that will be implemented, reviewed, and evaluated over time.

CRITICAL ROOT ZONE
The area around the trunk where roots essential for tree health and stability are located

CUT BACK
Specified reduction of the overall size of the tree or individual branches, but may include the overall reduction of the sides as well as the top of the tree.

DIAMETER AT BREAST HEIGHT (DBH)
Measurement standard for trees taken four and a half feet (4 1⁄2’) Height (DBH) from finish grade.

DECIDUOUS TREE
A tree that naturally sheds its leaves seasonally.

DECLINING TREE
A tree that is in a poor state of health due to any combination of reasons such as old age, poor growing conditions, insect infestation decay, root rot, vandalism, drought or poor cultural practices.

DORMANT
A condition of non-active growth. Deciduous trees are considered to be dormant from the time the leaves fall until new foliage begins to appear.

ECOSYSTEM SERVICES
Benefits that ecosystems an/or wildlife provide to people.

ENDEMIC
In ecology, a species or higher taxonomic unit found only within a specific area.

EVAPOTRANSPIRATION
the evaporation of water molecules from the surfaces of plants, soil, and other objects. (Landscape Ecology, Forman, Godron)

EVERGREEN TREE
A tree that has leaves in all seasons. These trees can be broadleaved, conifers or palms.

EXPANSIVE SOILS
Clayey materials can undergo relatively large volume changes in response to fluctuations in water content. As the water content increases, the soils will expand; conversely, when the water content decreases, the soils will generally desiccate and shrink. Expansive soils or soft bedrock swell when wetted and shrink as they dry out; therefore, they are one of the most prevalent causes of damage to buildings and structures.

GAP-GRADED SOIL (syn.: STRUCTURAL SOIL)
Soil consisting chiefly of small uniformly sized and angular stones (80%) and soil (20%). Once compacted, structural soil can support root growth and is also stable enough to support pavement.

GENUS
One of the basic units of biological classification and a taxonomic rank, above species and below family. All species are given a two-part name (binomial, also called “scientific name” or “botanical name” which includes the genus (capitalized) followed by the species (not capitalized).

GIRDLING ROOTS
Located above or below ground level, whose circular growth around the base of the trunk or over the individual roots applies pressure to the bark area, thereby choking or restricting the flow of sap.

GEOGRAPHIC INFORMATION SYSTEM (GIS)
A system that contains geographical reference information for all data included in its collections.

A GIS captures, stores, manipulates, analyzes, manages, and presents all types of geographically referenced data.

GREEN STREETS
Streets, parkways and sidewalks designed to capture storm water runoff and infiltrate it through paved and landscaped areas, utilizing permeable materials and drought-tolerant plants, in order to improve water quality and replenish groundwater supplies.

GREEN INFRASTRUCTURE
An interconnected network of protected land and water that supports native species, maintains natural ecological processes, sustains air and water resources and contributes to the health and quality of life for communities and people.

GRAY INFRASTRUCTURE
A city’s physical elements such as buildings, roads, and utilites, all of which are vital to a community. Gray elements are also impervious, forcing stormwater to run off roofs, parking lots, and streets into stormwater sewer systems. (Planning the Urban Forest: Ecology, Economy, and Community Development, James C. Schwab, General Editor, American Planning Association, 2009.)

GROWSPACE
The volume of soil in which tree roots can grow. The most visible measure of growspace is the area visible at the surface (the size of the tree well or parkway). However, growspace also extends below ground, and may be limited by subsurface conditions like soil compaction.

HABITAT
A place where the physical and biological elements of ecosystems provide a suitable environment including the food, cover, and space resources needed for plant and animal livelihood. (EPA)

HAZARD ASSESSMENT
Identifying the risks associated with trees involving the following three components: 1) a tree with a potential to fail, 2) an environment that may contribute to that failure, and 3) a target that may be damaged (i.e. person or property).

HAZARD TREE
A tree (or part of a tree) that has a high potential for failure and hitting a nearby target because of dead or dying foliage, branches, roots or trunk.

HARDSCAPE
Paved area surrounding a tree or adjacent to a tree; such as a sidewalk, street, curb, gutter, driveway, planter wall, retaining wall, walkway etc.

HEAT ISLAND EFFECT
Rise in atmospheric temperatures in urban and suburban areas due to isolating air pollutants as well as reflected heat off of buildings, asphalt, and concrete surfaces. (Up By Roots, James Urban)

INFRASTRUCTURE
The basic physical organization of a city’s capital assets (e.g. sewer, utility, transportation systems) needed for operational function within a city.

INTERPLANTING
Adding a new tree in a space between existing trees

LIONS TAILING
The removal of all inner foliage from a particular branch displacing the weight to the end of the branch giving the branch the appearance of a lion’s tail.

LIFTING
The removal of lower branches for under clearance.

MONOCULTURE
Continuous stands of the same plant (tree) species. A large number of the same plants in a city or region. (Up By Roots, James Urban)

NATIVE (plant)
plants indigenous to a region. Naturally occurring and not introduced by humans.

California's native plants have evolved in California over a long period of time and have co-evolved with animals, fungi, and microbes, to form a complex network of relationships. They are the foundation of our native ecosystems, or natural communities. (California Native Plant Society)

PARKWAY
That portion of a public street right-of-way lying between the curb and sidewalk.

PRECUT/PRECUTTING
The removal of the branch at least 6" beyond the finished cut, to prevent splitting into parent stem or branch.

PRUNING
The removal of dead, dying, diseased, live interfering, objectionable and weak branches in a scientific manner.

PRUNING STANDARDS
Pruning Standards which have been adopted by the International Society of Arboriculture (ISA) and/or the National Arborists Association (NAA).

RAIN GARDEN
A rain garden is a planted landscape designed to collect rain water from impermeable surfaces (roofs, paved areas, etc). In a rain garden, rain water is cleansed as it filters through the soil and plant roots. Rain gardens reduce the amount of rain water that runs over impermeable surfaces in the city, collects pollutants, and then drains to the Creek and Bay. Rain gardens are designed to detain and/or retain rain water. Water that is detained is held temporarily in the garden before it is drained into the pipes; this allows time for the water to be cleansed, and reduces the instance of storm drains backing up into the street. Water that is retained is allowed to infiltrate completely into the soil; this allows the water to be cleansed by plant roots and other natural processes and then to replenish the groundwater supply, an important water resource.

RIPARIAN
Areas adjacent to rivers, steams and watersheds with a differing density, diversity, and productivity of plant and animal species relative to nearby uplands.

RUNOFF
The portion of rainfall, melted snow or irrigation water that flows across roof and ground surfaces and eventually is returned to streams. In cities, runoff often picks up pollutants from the air, roofs, and streets, and carries them to them into the storm drain and eventually into rivers, lakes, bays, and oceans. torm water often becomes contaminated with pollutants such as pesticides, fertilizers, animal droppings, trash, food waste, automotive by products and other toxic substances that are part of our urban environment.

SOIL STRUCTURE
The arrangement of soil particles into aggregates and larger structures in natural soil.

SPECIES
One of the basic units of biological classification and a taxonomic rank. A species is often defined as the largest group of organisms where two hybrids are capable of reproducing fertile offspring, typically using sexual reproduction. All species are given a two-part name (binomial, also called "scientific name" or "botanical name" which includes the genus (capitalized) followed by the species (not capitalized).

SPECIFICATIONS
Precise written documents created to establish detailed constructions methods to be carried out by contractors.

SUBGRADE
The soil underneath a constructed surface or areas where soils for planting are to be installed.

SUCKERS
Abnormal growth of small branches usually not following the general pattern of the tree.

SUSTAINABILITY
Meeting the needs of the present without compromising the ability of future generations to meet their own needs.

STREET TREES
Trees planted in tree wells and parkways along city streets, roads, boulevards and alleys. These trees are owned and maintained by the city. Street trees provide diverse benefits to the City, its residents, and the urban environment.

STRUCTURAL SOIL
CU Structural Soil-- Developed by Cornell University (Ithaca, New York), this patented soil formula consist chiefly of small uniformly sized and angular stones (80 percent) and soil (20 percent) that, once compacted, can support root growth as well as stability for pavement. The heavy clay loam used within the voids of the stone remains relatively uncompacted. (Up By Roots, James Urban)

THINNING OUT
The removal of live branches to reduce wind resistance and to create more space.

TOPPING
Means the same as Cut Back.

TRACING
Careful cutting of the bark along the lines of sap flow to encourage closure and to be the outline of the wound area.

TRANSPIRATION
Transpiration is the process by which moisture is carried through plants from roots to small pores on the underside of leaves, where it changes to vapor and is released to the atmosphere. Transpiration is essentially evaporation of water from plant leaves. Studies have revealed that about 10 percent of the moisture found in the atmosphere is released by plants through transpiration. The remaining 90 percent is mainly supplied by evaporation from oceans, seas, and other bodies of water (lakes, rivers, streams). (USGS – water science)

TREE
Trees, plants, or shrubs. shall mean woody perennial plant which usually has (but is not limited to) a single dominant trunk and has a mature height of fifteen (15) feet or more, or has a trunk diameter of four (4) inches or more measured at twenty four (24) inches above finish grade.

TREE WELL
Square or rectangular planting area in the sidewalk

TRIMMING
The same as pruning.

UNDERSTORY
Trees and plants that naturally grow or adapt to live below a mature tree canopy.

URBAN FOREST
The ecosystem of plants and people in the city.

URBAN FORESTRY
A planned and programmatic approach to the development and maintenance of the urban forest, including all elements of green infrastructure within the community, in an effort to optimize the resulting benefits in social, environmental, public health, economic, and aesthetic terms, especially when resulting from a community visioning and goal setting process.

The art, science, and technology of managing trees and forest resources in and around urban community ecosystems for the physiological, sociological, economic, and aesthetic benefits trees provide society.

WATERSHED
The area of land from which rainfall (and/or snow melt) drains into a stream or other water body. Watersheds are also sometimes referred to as drainage basins or drainage areas. Ridges of higher ground generally form the boundaries between watersheds.

WETLANDS
An area that is saturated by surface or ground water with vegetation adapted for life under those soil conditions, as swamps, bogs, fens, marshes, and estuaries. (EPA)
Wildlife corridor A pathway or habitat linkage that connects discreet areas of natural open space otherwise separated or fragmented by urbanization. Such a corridor allows animals to move between remaining habitats and provides escape routes from fire, predators and human disturbances.