State of the Urban Forest
Sunnyvale Trees

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February 16, 2021

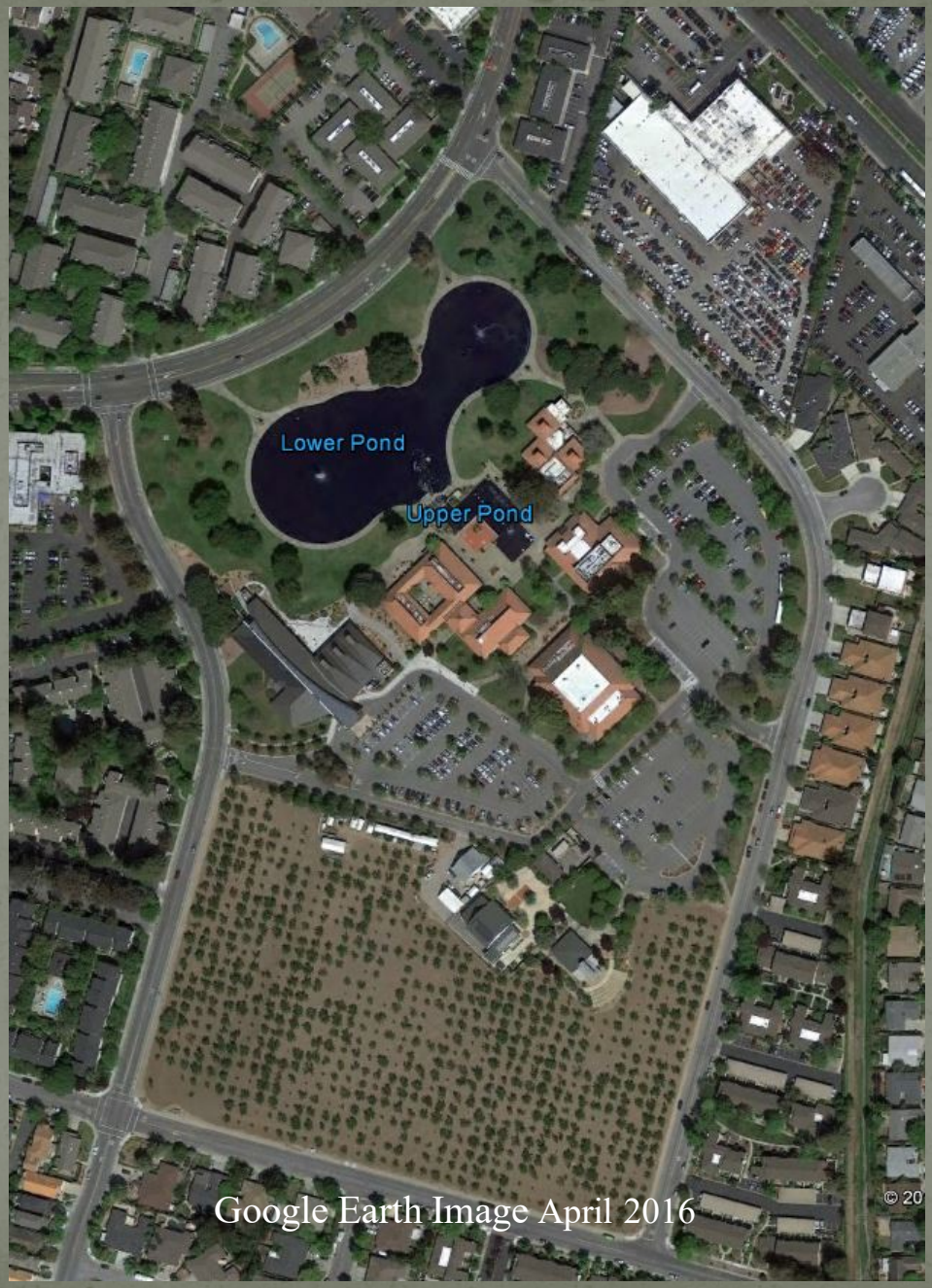

Trees in Sunnyvale
• Why Trees?
• Urban Forestry Management Plan
• State of the Urban Forest

Why Trees?

Platanus racemosa - California Sycamore

Why Not?


Community Center Oak Tree



Google Earth Image April 2016

Google Earth Image September 1948

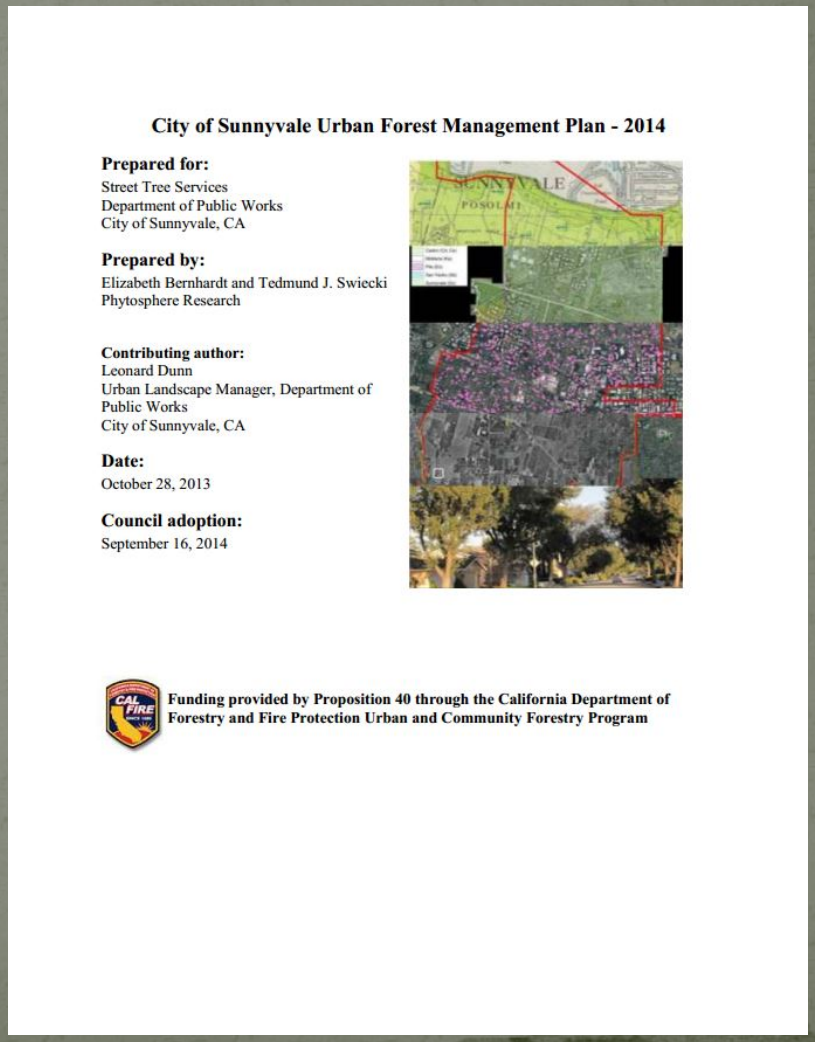
A Sense of Place

A Sense of Place

Among the Trees on Murphy Avenue

Urban Forest Management Plan

- Strategic Plan
- Action Plans



City of Sunnyvale Urban Forest Management Plan - 2014

Prepared for:
Street Tree Services
Department of Public Works
City of Sunnyvale, CA

Prepared by:
Elizabeth Bernhardt and Tedmund J. Swiecki
Phytosphere Research

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Date:
October 28, 2013

Council adoption:
September 16, 2014

Funding provided by Proposition 40 through the California Department of Forestry and Fire Protection Urban and Community Forestry Program

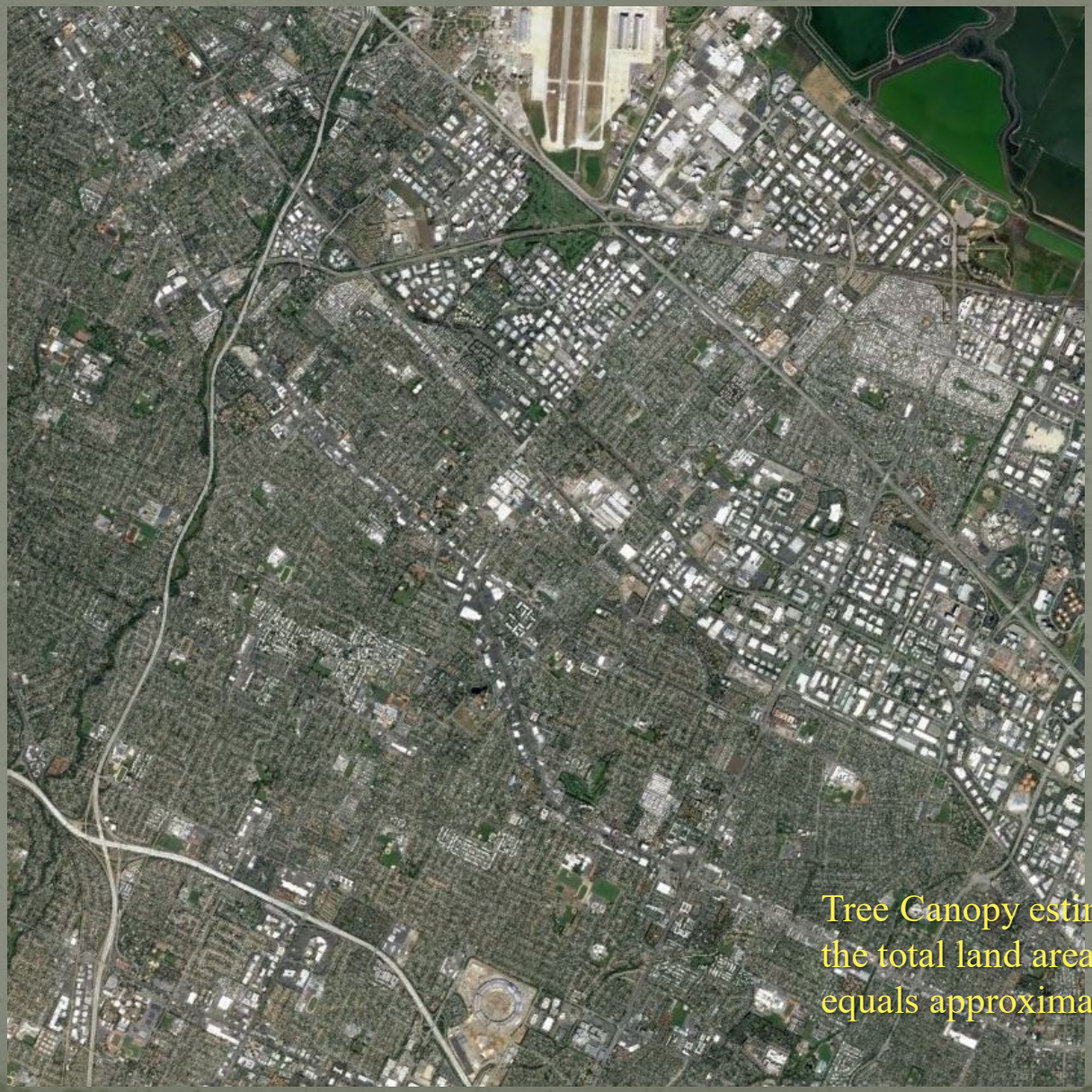
Strategic Plan

- Increase tree canopy cover to maximize ecosystem benefits provided by the urban forest.
- Choose and locate new trees in all vacant planting spaces to maximize tree-related benefits and minimize maintenance costs
- Develop an urban forest canopy that is stable over the long term.
- Maintain city trees appropriately to maximize benefits and minimize hazard, nuisance, hardscape damage, and maintenance costs.
- Facilitate collaboration among City departments related to issues and projects involving trees.
- Foster community support for maintaining and improving Sunnyvale's urban forest.
- Encourage proper tree management on private property

Satellite View

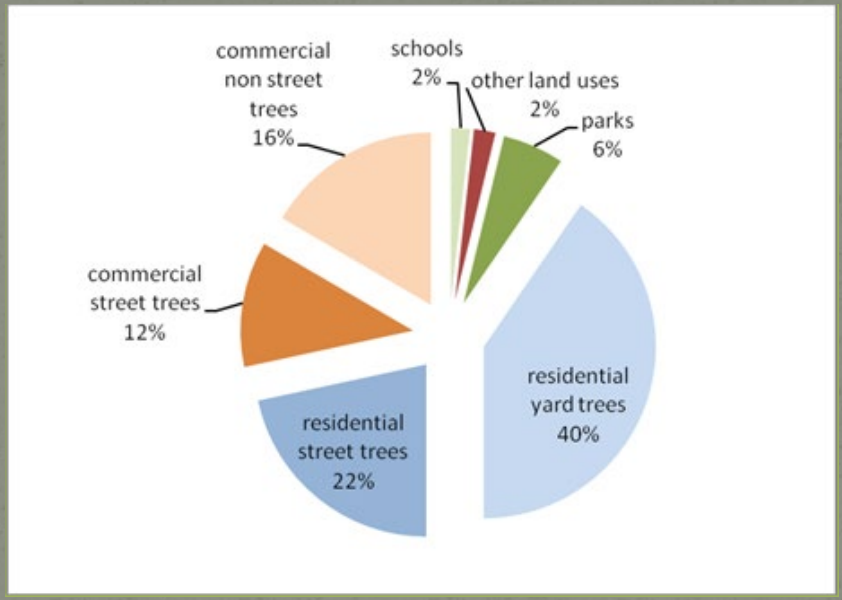
San Francisco Bay Area

Increase Tree Canopy Cover



Tree Canopy estimated at 18.4% of the total land area at 2007 , this equals approximately 231, 000 trees

Where are all the trees?



- Residential land uses — 62% of total city canopy cover
- Commercial/industrial land uses — 28% of total city canopy cover
- Parks, schools, and other city-owned land— 10% of total city canopy cover

According to this analysis, although residential areas cover 43% of the City, trees in residential areas account for 62% of Sunnyvale's tree canopy.

How do we compare?

- Seattle, Los Angeles, Rocklin, CA = 18%
- Menlo Park = 24%
- Palo Alto = 37.6%
- Atherton = 48 %

In an analysis of canopy cover of twenty-one California cities (Rowntree and Kerkman – 1997) only five cities and towns had canopy covers greater than 18%

Why is this? Distribution of available land for trees.
More trees can be planted in residential zones, i.e. more open space available for trees.

What's our canopy cover goal?

Our Urban Forest Management Plan sets a goal of 20.5%

What does that translate to? 29,000 new trees.

How can we get this done?

A measured plan:
Plant all available vacant street tree sites = 5,000
Commercial and Industrial zones = 14,000
Residential zones = 15,000

How can this be done?

Sunnyvale Urban Forest Management Plan Implementation Timeline

Competed or Ongoing Actions

- Community support for maintaining and improving the Urban Forest –
  - Sunnyvale Urban Forest Association (SUFA) (11/2014) activities include:
    - Public tree walks at Civic Center and various parks
    - Urban Forest speakers hosted at the Library, open to the public
    - Right-of-Way surveys for open planting sites along City streets
    - Developed Sunnyvale Tree Challenge with mayor and city mgr.
- Identify new ROW planting sites
  - SUFA completed a survey of San Miguel Neighborhood and identified 400+/- vacant sites.
    - 200 + trees were planted as a result of the surveys
    - Surveys of various neighborhoods will be conducted annually.
    - Surveys by city staff on an ongoing basis
- Revise ROW tree species planting lists to match long term goals
  - Revised 2016 to include trees suited to Sunnyvale's Mediterranean climate
  - Continue to research and explore tree species suited to Sunnyvale
- Explore grants and other possible outside funding sources
  - Cal Fire, U.S. Forest Service, U.S. EPA, U.S. Dept. of Transportation
- Update street tree database
  - CIP Project 832750 City Maintained Tree Inventory Study awaiting award of contract
  - Urban Tree Canopy Assessment – Pending

Proposed Next Actions

- Develop Tree Planting Plans
  - Increase UTC for current- 18% of the goal of 21% UTC
    - 20,000 trees required of entire city, Plant out over 20 yrs.
    - 14,000 trees in residential - street trees + private property
    - 16,000 trees in commercial/industrial – street trees + private
    - Review street tree database for listed vacant site.
    - Verify vacant sites. Delete sites unsuited for street planting
    - Plant out vacant sites over a 5-year plan, at least 20% per year
    - Specify and purchase tree watering equipment

- Facilitate collaboration among City departments
  - Currently working with Planning Department and Engineering Division of Public Works on a variety of topics
- Review and update Sunnyvale street tree municipal code: 13.16 CITY TREES
- Develop street tree protection policy – Identify street tree being damaged
- Identify issues impeding implementation of the UFMP
- Coordinate with ESD regarding Climate Action Plan

Long Term Actions

- Develop Urban street tree maintenance plan, set standard pruning cycle according to industry standards. (used to define ongoing funding requirements)
- Research and search for ongoing funding sources
  - Funding for ongoing maintenance activities
  - Funding for new tree planting to meet long term 21% UTC goal
- Research a “Tree Fund” to set aside funds for tree planting on private property
  - Review SUFA’s outreach to other cities and their policy or program
- Monitor and refine ongoing efforts
  - Currently ongoing

Trees Species Selection

What do we have and what should we be planting?

Current Street Tree Inventory is about 38,000

Three species make up 29% of the inventory 10,750

Magnolia, Liquidambar, Chinese Pistache

Eleven species make up 52% of the inventory 18,920

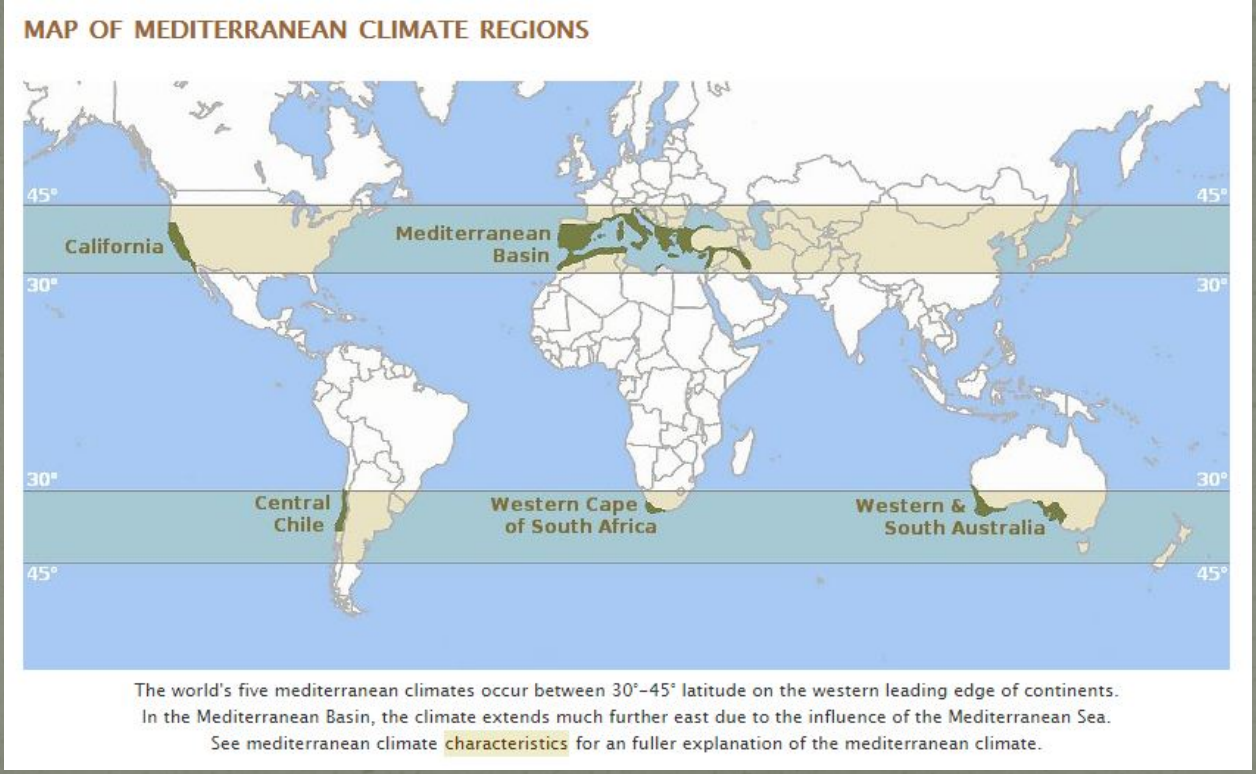
Ginkgo, Holly Oak, Sycamore, Redwood, Tristaniopsis, Camphor, Liriodendron, Afrocarpus

Thirty-one species make up 80% of the inventory 29,300

Trees Species Selection

Tree Species Goals:

Species from Mediterranean Climate Zones



Trees Species Selection

Tree Availability

Sunnyvale along with other California communities are demanding tree species more adapted to our Mediterranean Climate:

Major wholesale tree growers have limited supply of such tree species. Growers are working on increasing supply as well as introducing new species to the trade.

We must be patient but we will get there.

Planting and Maintenance Issues

Site Limitations

Tree Requirements

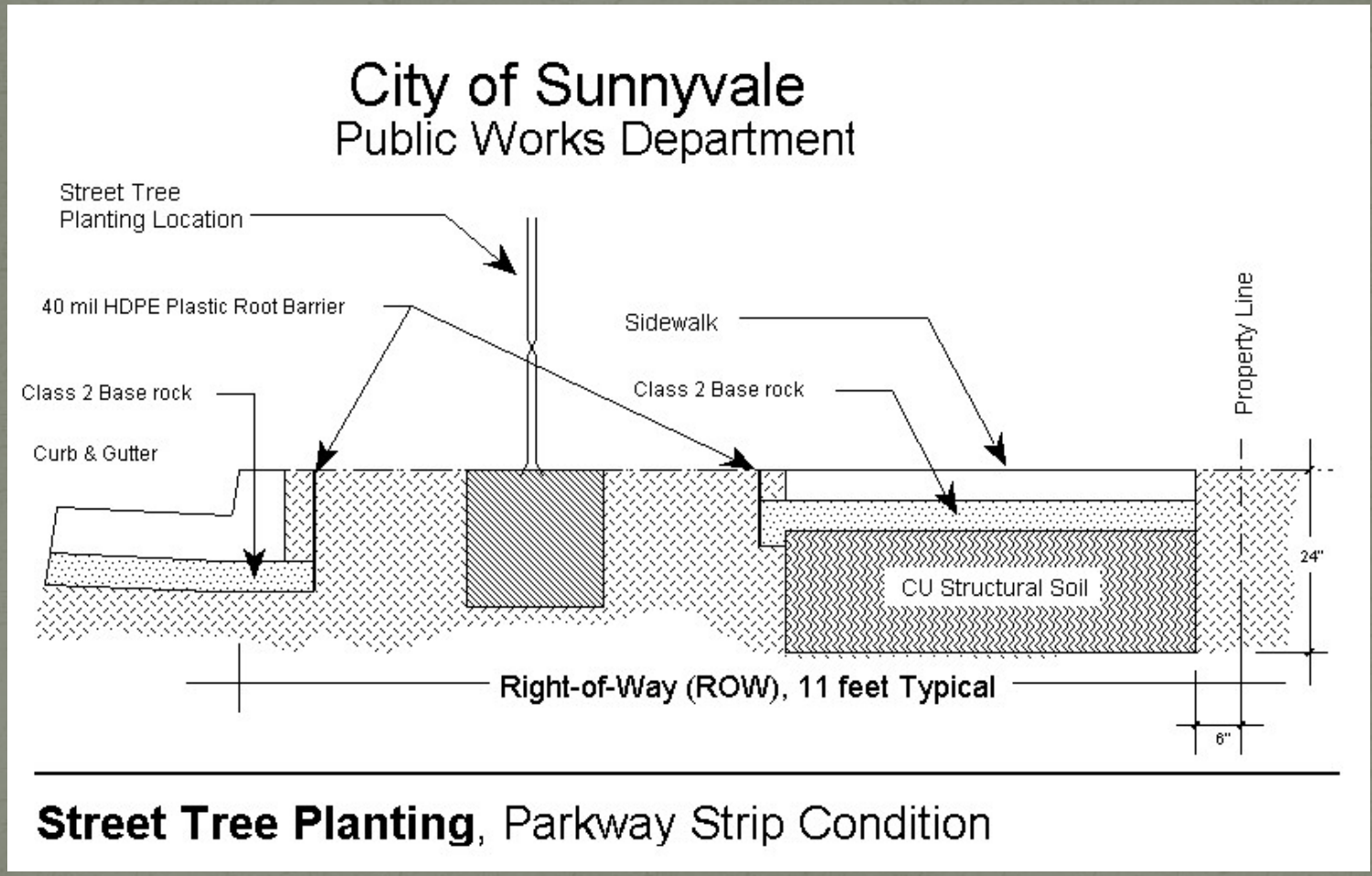
Property Owner preference/resistance

Financial Resources

Tree Root Development

Ginkgo biloba

Public Right-of-Way a Place for Trees



Sidewalk with Parkway Strip

Quercus ilex - Holly Oak

Monolithic Sidewalks

Liriodendron tulipifera – Tulip Tree

Limited Planting Space

Climate Change & World Population

Perspective on People and the Effects to our World

- 1700 = 583,000,000
- 1800 = 905,000,000
- 1900 = 1,578,000,000 < Population triples in 200 yrs.
- 1960 = 3,026,000,000 < Population doubles in 60 yrs.
- 1976 = 4,000,000,000
- 1987 = 5,000,000,000
- 1999 = 6,000,000,000 < Population doubles in 39 yrs.
- 2012 = 7,000,000,000
- 2018 = 7,675,000,000 < Population today
- 2025 = 8,200,000,000
- 2050 = 9,800,000,000

Ecosystem Benefits from Trees

Benefits of Urban Street Trees from Dan Burden, Walkable Communities, Inc.

- **Traffic Calming** – Reduced traffic speeds appropriate to urban conditions
- **Safer Walking Environments** – Delineation of pedestrian areas versus vehicular. Trees can be protective physical barriers.
- **Planting Strips Created** – more separation between cars and people
- **Increased Security** – A more pleasant walking environment encourages more people activity. Sense of ownership and pride – increased surveillance
- **Improved Business** – Treescaped streets show 20% higher income stream
- **Better Stormwater Management** – Trees absorb the first 30% of most precipitation. Open soil allows for water infiltration. Storms events have reduced stream flows, less sedimentation
- **Tree Canopy Protection for People** – For light and moderate rains, pedestrians find less need for rain protection. UV light interception; less need for sun blocks. 5 to15 degree temperature reduction in the shade of trees

Ecosystem Benefits from Trees

- **Reduce Harm from Vehicle Emissions** – Automobile exhaust is a major public health concern. Trees trap particulates and reduce impacts from exhaust gases
- **Efficient Transformation of Pollutants** – Trees in street proximity absorb 9 times more pollutants than more distant trees, converting harmful gases into oxygen and other natural compounds
- **Lowered Urban Air Temperatures** – Concrete and asphalt streets and parking lots are known to raise air temperatures 3-7 degrees. Shaded streets can reduce energy bills by 15-35% as well as make the environment more pleasant for people and cars.
- **Lowered Ozone** – Car exhaust forms ozone more readily over hot streets without tree shade
- **Aesthetic Pleasing Environments** – Trees are of a few street making elements that can transform barren parking areas and massive vertical walls into more comfortable spaces.
- **Screen Necessary Street Features** –Trees screen utility poles, light poles, and other right-of-way features or least lessen their obtrusiveness.

Ecosystem Benefits from Trees

- **Improved Health** – Trees in general impact people's perceptions, lowering blood pressures, improving overall emotional and psychological health
- **Travel Time Perception** – Research has demonstrated a mental perception of increased travel time over barren treeless road trips. A pleasant trip appears to go by faster
- **Reduced Road Rage** – This associated with same psychological effects attributed to traffic calming
- **Added Value to Adjacent Homes and Businesses** – Research has shown a 1% increase in the sale price of a home with large front yard tree. Business properties also show higher values
- **Longer Asphalt Pavement Life** – Research (Modesto, CA) has shown longer pavement life in the shade of trees of 40-60%.
- **Provides O_2, Sequesters CO_2** – Photosynthesis sequesters CO_2 and produces O_2 – We are dependent on trees from the day we take our first breath to our last.
- **Connection to Nature and the Human Senses** – Street trees help people connect to the living world. No man-made products can give the sense of place as do trees

Urban Forestry Partners

Affiliates in Urban and Community Forestry:

- International Society of Arboriculture – Western Chapter
- Arbor Day Foundation – Tree City USA
- Alliance for Community Trees – National Advocacy Organization
- California Urban Forests Council – BAUFEC
- American Forests – Community ReLeaf
- Local Government Commission – Non-Profit – Elected Officials
- California ReLeaf – Statewide Non-Profit network of local groups
- Canopy – Local Non-Profit Tree Advocacy Organization – Palo Alto
- Friends of the Urban Forest – Local Non-Profit – San Francisco
- Our City Forest – Local Non-Profit – San Jose
- Sunnyvale Urban Forest Advocates – Sunnyvale
- Urban Forest Ecosystems Institute – Cal Poly, SLO

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