

**RESOLUTION NO. 68-24 (CM)**

**A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF WATSONVILLE ADOPTING THE WATSONVILLE URBAN FOREST MANAGEMENT PLAN 2024**

**WHEREAS**, the City Council authorized the submittal of an application for CAL FIRE Urban Forestry Program grant funds on April 14, 2020, by Resolution No. 46-20 (CM). Following the application, the City was awarded a \$700,000 grant from The CAL FIRE Urban & Community Forestry Program in August 2020; and

**WHEREAS**, during its meeting on May 11, 2021, the City Council adopted Resolution No. 141-21 (CM), awarding a contract to Davey Resource Group, Inc. (DRG), in an amount not to exceed \$268,664, as the consultant selected through an RFP process to provide consultant services to assist the City in developing an Urban Forest Management Plan, Tree Protection Ordinance and other related services to meet the requirements of a CAL FIRE funded grant project; and

**WHEREAS**, at this same meeting, the City Council adopted Resolution No. 142-21 (CM), approving a contract with Watsonville Wetlands Watch, in the amount of \$349,800 for Urban Forestry Services and to assist with tree planting, Urban Forest Management Plan Development, and grant administration/reporting to meet objectives for the Watsonville Community Forest Project; and

**WHEREAS**, the Watsonville Community Forestry Project developed and implemented comprehensive urban forest management activities evaluating current urban forest resources, identified locations, opportunities, and needs for urban forest expansion activities, developed appropriate policies to sustain and enhance urban forest resources within the City of Watsonville over time and

implemented urban forest expansion activities in a way that advances these efforts; and

**WHEREAS**, Davey Resource Group, Inc., with the assistance of Watsonville Wetlands Watch and City staff, have delivered the City of Watsonville Urban Forest Management Plan pursuant to the contract, to serve as a guiding document for City staff and the community.

**NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF WATSONVILLE, CALIFORNIA, AS FOLLOWS:**

1. This action is not subject to review under the California Environmental Quality Act (CEQA) pursuant to Public Resources Code Section 21000, et seq. and the CEQA Guidelines (14 Cal. Code Regs. §§ 15000 et. seq.), including without limitation, Public Resources Code section 21065 and California Code of Regulations 15378 as this is not a “project” that may cause a direct, or reasonably foreseeable indirect, physical change in the environment and because the action constitutes organizational or administrative activities of governments that will not result in direct or indirect physical changes in the environment. Additionally, even if a “project,” the action would be exempt under the “common sense” exception (14 Cal. Code Regs. § 15061(b)(3)) because it can be seen with certainty that there is no possibility that this action may have a significant effect on the environment.

2. That the Watsonville Urban Forest Management Plan 2024, a copy of which is attached hereto and incorporated herein by this reference, is hereby adopted.

The foregoing resolution was introduced at a regular meeting of the Council of the City of Watsonville, held on the 23<sup>rd</sup> day of April, 2024, by Mayor Pro Tempore Orozco, who moved its adoption, which motion being duly seconded by Member Montesino, was upon roll call carried and the resolution adopted by the following vote:

AYES: COUNCIL MEMBERS: Clark, Dutra, Montesino, Orozco, Parker, Salcido, Quiroz-Carter

NOES: COUNCIL MEMBERS: **None**

ABSENT: COUNCIL MEMBERS: **None**

<p><b>ATTEST:</b></p> <p>DocuSigned by:</p> <p><u>Irwin Orlitzky</u></p> <p>95926F9A882E4F.A...</p> <p><b>City Clerk</b></p>	
--	---

4/30/2024 | 2:16 PM PDT

Date

**APPROVED AS TO FORM:**

DocuSigned by:  
  
C0E26B96468341A...  
**City Attorney**

Vanessa Quiroz-Carter, Mayor

I, Irwin I. Ortiz, City Clerk of the City of Watsonville, do hereby certify that the foregoing Resolution No. 68-24 (CM) was duly and regularly passed and adopted by the Watsonville City Council at a meeting thereof held on the 23<sup>rd</sup> day of April, 2024, and that the foregoing is a full, true and correct copy of said Resolution.

Irwin Ortiz  
95926F9A882E4FA...

Date 4/30/2024 | 2:16 PM PDT



# Watsonville URBAN FOREST MANAGEMENT PLAN

2024

## ACKNOWLEDGEMENTS

### WATSONVILLE CITY, CITY COUNCIL

Vanessa Quiroz-Carter- Mayor  
Maria Orozco- Pro Tempore  
Eduardo Montesino- Council Member  
Kristal Salcido- Council Member  
Casey K. Clark- Council Member  
Jimmy Dutra- Council Member  
Ari Parker- Council Member

### PARKS AND RECREATION COMMISSION

### CITY DEPARTMENTS

PARKS AND COMMUNITY SERVICES  
PUBLIC WORKS AND UTILITIES  
COMMUNITY DEVELOPMENT

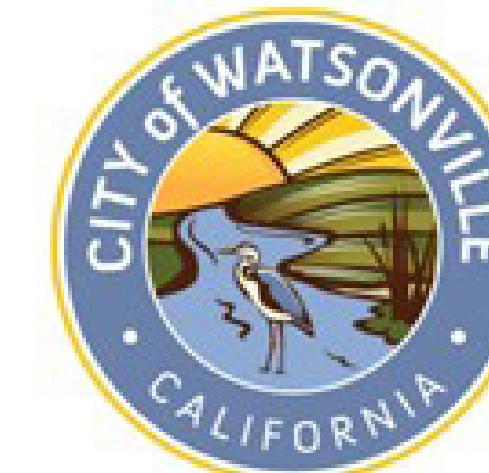
### COMMUNITY STAKEHOLDERS

WATSONVILLE WETLANDS WATCH  
PAJARO VALLEY UNIFIED SCHOOL DISTRICT  
CAL FIRE  
REGENERATION PAJARO VALLEY  
COMMUNITY HEALTH TRUST OF PAJARO VALLEY  
REAL ESTATE PROFESSIONALS OF WATSONVILLE  
COMMUNITY MEMBERS  
COMMUNITY FOUNDATION OF SANTA CRUZ COUNTY  
RODGERS-REPASS FAMILY FOUNDATION  
PAJARO CHAMBER OF COMMERCE



### FUNDING

Funding for this project was provided by the California Department of Forestry and Fire Protection as part of the California Climate Investments Program.



### PREPARED BY

DAVEY RESOURCE GROUP, INC  
[www.davey.com/drg](http://www.davey.com/drg)

### PHOTO CREDITS

COMMUNITY MEMBERS  
CITY OF WATSONVILLE  
DAVEY RESOURCE GROUP, INC  
WATSONVILLE WETLANDS WATCH



# TABLE OF CONTENTS



ACKNOWLEDGEMENTS.....	2	COLLABORATIVE STAKEHOLDER ENGAGEMENT.....	80
EXECUTIVE SUMMARY.....	6	COMMUNITY ENGAGEMENT .....	82
INTRODUCTION.....	10	TREE CARE AND PLANTING PLAN.....	88
BENEFITS FROM TREES AND CANOPY .....	12	EVALUATE AND ADJUST .....	94
HISTORY OF THE URBAN FOREST .....	14	MONITORING AND MEASURING RESULTS .....	94
IMPLEMENTATION PLAN.....	16	REPORTING .....	95
<b>BACKGROUND.....</b>	<b>48</b>	<b>APPENDIX A: REFERENCES .....</b>	<b>96</b>
URBAN FOREST RESOURCE .....	48	APPENDIX B: TECHNICAL GUIDE.....	98
GEOGRAPHIC DISTRIBUTION OF TREE CANOPY.....	48	APPENDIX C: METHODOLOGY FOR ASSESSING TREE CANOPY EQUITY .....	100
ENVIRONMENTAL BENEFITS .....	58	APPENDIX D: SUSTAINABILITY INDICATORS.....	102
CANOPY GOALS AND CANOPY POTENTIAL.....	60	APPENDIX E: SOIL VOLUME AND TREE STATURE .....	106
PLANTING PRIORITIES.....	60	APPENDIX F: ALTERNATIVE PLANTER DESIGNS.....	107
COMMUNITY TREE RESOURCE .....	62	APPENDIX G: TREE PROTECTION ZONES.....	110
URBAN FORESTRY OPERATIONS .....	65	APPENDIX H: COMMUNITY ENGAGEMENT RESULTS.....	114
URBAN FORESTRY PROGRAM FUNDING.....	68	ONLINE COMMUNITY SURVEY.....	116
URBAN FOREST PARTNERS .....	68		
PARTNERS.....	68		
POLICY AND REGULATION .....	70		
ANALYSIS OF SUSTAINABILITY INDICATORS .....	76		
CONCLUSIONS.....	76		
<b>PLAN DEVELOPMENT.....</b>	<b>80</b>		

# EXECUTIVE SUMMARY



Nestled in the Pajaro Valley, the City of Watsonville is bordered by agricultural fields, orchards, and the Pajaro River. Wetlands are found throughout the Pajaro Valley, which is home to hundreds of species of birds, fish, and mammals. Wetlands and other natural resources are also present in the built areas of the community, where there is a diverse, growing population of urban trees. Watsonville's urban forest (comprising trees on both public and private property) provides many valuable benefits to the community. These benefits are critical to sustaining the quality of life in the community.

Currently, Watsonville has an average tree canopy of 9.4% (412 acres) comprised of both public and private trees (Watsonville Tree Canopy & Land Cover Assessment Summary Report, 2022). The potential for tree canopy may be as high as 30%. To date, this resource is storing 13,590 tons of carbon in woody and foliar biomass, valued at \$2.3 million.

Community trees are the publicly-owned subset of the urban forest. The City manages 4,504 inventoried community trees along streets, in parks, and at City facilities. In addition, while not yet included in the inventory, there are more community trees in wetlands, wetland buffers and other open space areas where the City, Watsonville Wetlands Watch, and community volunteers steward and provide minimal care to maintain a natural habitat. Annually, Watsonville's inventoried community trees provide quantifiable environmental benefits to the community valued at \$22,810. Benefits include reducing stormwater runoff (\$3,273), carbon sequestration (\$5,368), and improvements to air quality (\$14,169). This is a conservative estimate of the benefits from trees, as it does not account for socioeconomic and human health benefits.

The Municipal Code includes provisions intended to protect private and community trees.

The Urban Forest Management Plan (UFMP) is a roadmap for managing community trees and growing the urban forest and tree canopy over the next 50 years. It supports the community's desire for preserving and improving the health, value, and the environmental benefits of trees and tree canopy. The development process for the UFMP included establishing a baseline for the structure and value of existing urban forest resources, including tree canopy and inventoried community trees (Table 1). The process also analyzed urban forest programming, including staffing, services, and funding. Urban forest managers, key partners, and community stakeholders were engaged to identify the challenges and opportunities facing Watsonville's urban forest and to explore possible solutions and objectives for the UFMP.

## Key Challenges and Opportunities:

- Sustainable funding for urban forest operations
- Drought and climate change pose challenges for tree health and urban forest resiliency
- Heat island effects have a greater impact on areas with lower canopy and contribute to residents vulnerability to heat stress
- Canopy cover is lower than average along residential streets and in residential neighborhoods
- Current maintenance for community trees is inconsistent and primarily reactive
- No long-term planting plan
- Limited space available for new community trees due to existing infrastructure constraints
- Existing irrigation infrastructure further limits potential planting sites
- Historical tree plantings included species that are inappropriate for the local climate and/or specific sites
- Ordinances currently provide limited protections for trees in the public rights-of-way and on private property
- Watsonville qualifies for Tree City USA designation
- Skilled City staff and strong existing environmental programs that support the administration of a comprehensive urban forestry program

Watsonville's urban forestry program is fortunate to have the support of the community and local nonprofit organizations, including Watsonville Wetlands Watch. The group has been a leader in tree planting efforts across the community, planting nearly 500 trees over the last five years alone, and was instrumental in acquiring the grant funding from CAL FIRE that supported the development of the UFMP. Many communities with more established urban forestry programs strive to grow partnerships like the one the City has formed with Watsonville Wetlands Watch. In addition, City staff responsible for caring for community trees have worked for the City for their entire careers and have demonstrated a vested interest in nurturing the urban forest. Together, the City and its nonprofit partners have made important steps to develop an urban forestry program, with a strong focus on equity and enhancement of the urban forest and its associated benefits.

The Implementation Plan in the UFMP presents goals, objectives, and actions to grow the urban forestry program and enhance the services provided to the community. Since the UFMP is a long-term guiding document, regularly monitoring and reviewing progress towards goals and objectives will be important.

The UFMP identifies five goals and 40 objectives to manage and grow Watsonville's urban forest over the next 50 years (Table 2).

The UFMP goals reflect Watsonville's vision for the future of the urban forest and promote the preservation of health, value, services, and sustainability of this important resource. Each goal is supported by comprehensive objectives and actions and includes target dates and touchpoints to engage with the community. The timeline for accomplishing objectives is flexible and meant to be adjusted based on emerging opportunities and in response to changes in funding and staffing resources.

The Implementation Plan identifies specific actions for measuring progress and achievements. Ultimately, the success of the UFMP will be measured by the community's level of satisfaction with the services provided and the condition and contribution of the urban forest.

Table 1: Benchmarks

Tree Canopy Cover (public and private trees, 2021)		
<b>Structure</b>		
Overall Tree Canopy Cover	9.40%	
Carbon Stored to Date	13,590 tons	\$2.3 million
<b>Annual Benefits</b>		
Carbon Sequestration	688 tons	\$117,326
Air Quality	13.30 tons	\$121,582
Avoided Stormwater Runoff	5.20 million gallons	\$90,967

City Tree Resource (inventoried public trees, 2021)		
<b>Structure</b>		
Number of Trees	4,504	
Number of Unique Species	182	
Species exceeding 10%	none	
Carbon Stored to Date	1,247 tons	\$212,596
Replacement Value		\$10.9 million
Number of Vacant Sites	138	
<b>Annual Benefits</b>		
Air Quality	.99 tons	\$14,169
Carbon Sequestration	31.50	\$5,368
Stormwater Management	366,271 gallons	\$3,273

<sup>1</sup> The 2022 inventory collection identified empty planting sites.

Table 2: Plan Goals and Objectives

Goals	Reach or exceed 30% overall tree canopy cover	Grow a sustainable and resilient community tree resource	Enhance the livability and character of the community	Encourage stewardship of the urban forest	Celebrate the urban forest
Objectives	Reach or exceed 15% overall tree canopy cover by 2043	Provide proactive maintenance for all community trees to reduce costs and promote efficiency	Prioritize planting trees in areas with less than average canopy cover, especially in areas of the City that are environmentally and/or socially disadvantaged	Foster relationships with local community partners to implement the goals and objectives of the Urban Forest Management Plan	Engage the community in urban forestry programming
	Increase tree canopy cover on public property	Follow integrated pest management (IPM) protocols and best management practices for managing pests and disease	Adopt the Urban Forest Management Plan to guide long-term management of the urban forest	Create opportunities for the community to assist in improving the urban forest	Become a Tree City USA
	Increase tree planting on private property	Increase contractor oversight	Establish minimum tree canopy cover percentages for new development through City ordinance	Develop a workforce training program for tree planting, care, and establishment	Promote awareness of the care and value of trees and the urban forest
	Work with the community to establish canopy goals for neighborhoods, City rights-of-way, land use, Downtown, and schools	Explore the use of an inventory management software which can be accessed by both City staff and contractors	Communicate the vision and provide continual updates to the community on progress on meeting goals and objectives		
	Monitor changes in tree canopy cover	Designate a position within the City or hire a contractor who is an ISA Certified Arborist (at minimum) that is responsible for providing guidance and policy recommendations for urban forest operations	Increase stocking level to 100% in the community tree resource in 5 years		
	Preserve and protect trees in open space	Revise and amend Municipal Code to promote the protection of community trees	Use best available climate science to inform management and increase resilience of the urban forest		
	Increase and ensure equitable distribution of tree canopy and urban forest resources to mitigate extreme heat and pollution burdens in areas that are environmentally and/or socially disadvantaged	Plant the right trees in the right places	Establish the goals of the Urban Forest Management Plan into visionary and planning documents, including the General Plan and the Climate Action Adaptation Plan		
	Adopt a tree ordinance that promotes the protection of both City trees and trees on private property	Formulate a long-term tree planting program	Revise and update the UFMP to respond to changing conditions and community needs over the next 50 years		
	Use trees and canopy to address urban heat islands	Update and maintain the Street Tree List from the Urban Green Plan to consider long-term climate resiliency and suitability for Watsonville	Update standards to accommodate for tree planting space and maximize soil volume to accommodate large trees wherever possible		
		Create a wood utilization plan	Use trees to reduce localized flooding and improve water quality in downstream wetlands and receiving waters		
		Formalize emergency response procedures	Identify the costs of implementing the various goals of the plan so that a budget can be developed		
		Establish predictable and stable funding for the community tree resource			
		Provide outreach and education on updates to the tree preservation ordinance			
		Work with utility providers to maintain trees and replace problematic trees where possible			



WE NEED MORE TREES AND PLANTS TO HELP  
KEEP DOWN THE HEAT.

-SURVEY RESPONDENT

# INTRODUCTION



Watsonville is located on the central coast of California in the Pajaro Valley of Santa Cruz County and sits between the Santa Cruz mountains to the northeast and Monterey Bay to the west. Agriculture is an important industry for the community which is surrounded by a lush patchwork of agricultural lands. The Pajaro River flows westward through the city and through a riparian area with dense tree canopy before it empties into the Monterey Bay National Marine Sanctuary. The Pajaro River Watershed and Watsonville Slough System are defining features in Watsonville.

With a history of recurring flooding, the river has deposited fertile and nutrient-dense soils in the Pajaro Valley. However, flooding has also had devastating impacts. Areas along Corralitos Creek have been especially hard hit by flooding. An atmospheric river system that occurred in early winter of 2022 and early spring of 2023, brought more than 20 inches of rain to the community, which resulted in severe local flooding. With a changing climate, storm events like atmospheric rivers are likely to become more frequent and intense (NOAA 2023), bringing an increased risk of flooding and landslides. With thoughtful planning, trees and canopy can augment stormwater management and flood risk reduction initiatives.

The poverty rate in Watsonville is 12.9%, which is higher than the US average of 11.6% (US Census Bureau, 2020), and a significant portion of the community is especially vulnerable to extreme heat and flooding brought on by climate change. Currently, 75% of streets in Watsonville have less than 10% tree canopy cover, including in many residential neighborhoods (Watsonville Tree Canopy & Land Cover Assessment Summary Report, 2022). Greater incorporation of shade trees at the neighborhood level can help to reduce stormwater runoff and flooding and cool homes during extreme heat.

The community recognizes that trees and canopy cover are vital components of a thriving community. Trees are especially important for mitigating the consequences of climate change, including reducing urban heat islands and combating extreme heat events. Watsonville's Urban Forest Management Plan (UFMP) was developed to communicate the importance of trees and tree canopy and to share the community's vision for the future urban forest. The goals and objectives presented in the UFMP are a reflection of the ideas of the community and the City that were shared during the development of the UFMP.





# BENEFITS FROM TREES AND CANOPY

Trees in the urban forest work continuously to mitigate the effects of urbanization and development and protect and enhance lives within the community. Healthy trees are vigorous, producing more leaf surface and canopy cover area each year. The amount and distribution of leaf surface area are the driving force behind the urban forest's ability to produce services (i.e., benefits) for the community (Clark et al, 1997).

## Benefits include:

### STORMWATER MANAGEMENT AND WATER QUALITY



- Trees intercept rain during storm events, which reduces and slows runoff (Xiao et al. 1998).
- Trees that intercept raindrops can lessen the impact and erosion of barren soils.
- Tree roots and decomposed leaf litter increase the capacity and rate of soil infiltration by rainfall and snow melt, which can further reduce the flow and volume of stormwater runoff that can cause erosion, pollute water bodies, and threaten aquatic life (McPherson et al. 2002).

### CARBON DIOXIDE REDUCTION



- Trees reduce carbon dioxide (CO<sub>2</sub>) in the atmosphere through the growth and sequestration of CO<sub>2</sub> in woody and foliar biomass.
- Trees can reduce CO<sub>2</sub> emissions by lowering the demand for energy and thereby reducing the consumption of natural gas and the generation of electric power.

### AIR QUALITY



- Trees protect and improve air quality by filtering and intercepting particulate matter (PM<sub>2.5</sub>), including dust, pollen, and smoke until precipitation rinses the particulates off of the leaves and bark onto the ground.
- Trees absorb harmful gaseous pollutants like ozone (O<sub>3</sub>), nitrogen dioxide (NO<sub>2</sub>), and sulfur dioxide (SO<sub>2</sub>) and some VOCs. (Karl, 2010; Science Now, 2010).
- Trees that shade parked cars can reduce the formation of ozone (O<sub>3</sub>) which is accelerated at higher temperatures.
- Trees produce oxygen through photosynthesis.

### ECONOMIC ACTIVITY



- Trees in retail areas promote better business by stimulating more frequent and extended shopping and shoppers are willing to pay more for goods (Wolf, 2005).

### AESTHETICS



- Trees beautify the urban landscape and provide privacy for homes.
- Trees contribute to increased property values (Theriault et al. 2002).
- Neighborhoods with more tree cover in urban areas tend to have better overall health, including reduced rates of obesity, type 2 diabetes, high blood pressure, and asthma (Ulmer et al. 2016).

### ENERGY SAVINGS



- When trees transpire, water converts to water vapor, thereby cooling the air using solar energy that would otherwise result in heating of the air (Heisler, 1986; Ellison et al. 2017; Huang et al. 1990; Lyle, 1996).
- Trees that shade dwellings and hardscapes reduce the energy needed to cool the building with air conditioning (Akbari et al. 1997).

### NOISE REDUCTION



- Trees with larger trunk diameters are better at abating traffic noise than synthetic barriers (Ow and Ghosh 2017).

### JOB CREATION



- More than 500,000 people are employed as a result of urban forestry activities (Thompson et al. 2021).

### GREEN ROOFS



- Green roofs planted with trees are greater contributors to air quality than green roofs planted with shrubs and grasses (Currie and Bass 2008).

### HEALTH



- When people are exposed to nature, including trees, they can experience improvements in mental and physical health, including lower incidence of depressive symptoms and increased capacity and recovery time (Kuo, 2001; Sherer, 2003; Jennings et al. 2016; Ulrich, 1984).
- Greater tree density has been attributed to reductions in hospital admissions and deaths due to reduced air pollution (Tiwary et al. 2009).
- Leaf litter from trees, especially species that are allelopathic (toxic to other plants), can suppress weeds and reduce the use of herbicides (Chen et al. 2013).
- Greater tree species diversity may enhance immune function and reduce mortality risks of diseases associated with proper immune function (Giancinto et al. 2021).

### ACADEMICS



- Students exposed to nature (including trees) experience greater academic success, whereas students who lack views of natural features (including trees) experience decreased student performance (Matsuoka, 2010).
- High schools with a higher density of tree cover within a 1-mile radius are positively associated with higher ACT scores and students were more on track for graduation and prepared for college (Li et al. 2019).

### WILDLIFE



- Trees and forest lands provide important habitat for mammals, birds, fish, and other aquatic species (habitat for foraging, nesting, spawning, etc.). Flowering trees provide pollen and nectar, which offer pollinators additional food sources.
- Having many different types of tree species attracts greater biodiversity (Pena et al, 2017; Haddad et al, 2015).
- Green corridors, such as wooded streets and riparian areas, allow for wildlife movement and dispersal (Fernandez-Juricic, 2000; Dwyer et al, 1992).

## PUBLIC SAFETY

- Trees and "park-like" surroundings increase neighborhood safety by relieving mental fatigue and feelings of violence and aggression that can occur as an outcome of fatigue (American Planning Association, 2003).
- People who live near outdoor greenery (including trees) tend to be more familiar with nearby neighbors, socialize with those neighbors more frequently, and express greater feelings of community and safety than residents lacking nearby green spaces (American Planning Association, 2003).
- Trees and landscape planted near homes can reduce the incidence of domestic crimes by up to 25% (Kuo, 2001).
- Tree canopy cover has been linked to reduced crime rates, even after adjusting for a number of other variables, such as median household income, level of education, and rented versus owner-occupied housing (Gilstad-Hayden et al. 2015; Troy et al. 2012).
- Trees increase walkability and opportunities for additional physical activity which has been shown to lower overweight and obesity cases, and increase social cohesion (Ulmer et al. 2016).

## URBAN HEAT ISLAND

- Trees that shade sidewalks, asphalt, buildings, and other impervious surfaces reduce the amount of radiant energy absorbed and stored by these hardscapes and thereby reduce the heat island effect, a term that describes the increase in urban temperatures in relation to surrounding locations (Akbari et al, 1997; McDonald et al. 2016).

## FOOD FORESTS

- Foraging for nuts and fruits from trees provides opportunities for increasing food security and food sovereignty (Bunge et al. 2019).



## HISTORY OF THE URBAN FOREST

The people of Watsonville have a deep physical, social, spiritual, and cultural connection to the trees in the community. This connection first began with the Ohlone people, who for more than 10,000 years lived on the land and relied on the acorns of oak trees as a primary source of food and the willows for the construction of their homes ([City of Watsonville](#); [Santa Cruz County](#)).

The first European explorers found their way to the valley in 1769. Notes from the Gaspar de Portolá expedition include descriptions of coast redwood trees in the area. Juan Crespi of the expedition, named the area that is now Pinto Lake the (land of lakes and hazelnuts) because of an abundance of hazelnut trees ([City of Watsonville](#)). By the end of the 1700's the Spanish founded three missions around the Pajaro Valley. Many Ohlone people died from European diseases like smallpox during this time. Those who survived lost their cultural traditions because of the missions. And their land was given to Mexican citizens and claimed for grazing rights. With the loss of the land, ancestral land management techniques like burning the grasslands stopped ([Santa Cruz County](#)). Without periodic fires, hazelnut trees became rare in central California, as fire has been shown to be important for their growth and production (Marks-Block et al, 2019 ).

Logging further shaped the landscape. In the 1840s, a large-scale logging industry was established in the area of Pinto Lake, which resulted in a shift in plant communities in the area. Areas that were once dominated by redwood, hazelnut, willow scrub, and oak woodland transitioned to open grassland and open-range habitat types ([City of Watsonville](#)). With the California Gold Rush of 1848, waves of migration brought greater demands for agriculture. Immigrants from other countries filled this need by growing and harvesting crops. Among those immigrants

were Louis and Stephen Martinelli, who established their first apple orchard in Watsonville. Together, the duo founded S. Martinelli and Co., which would later become one of the most well-known apple cider companies in the US.

In 1935, the Watsonville Japanese Association donated 238 cherry trees to the City of Watsonville as a show of "friendship, mutual respect, and understanding". These trees were planted at schools, City playgrounds, churches and a cemetery. In the years following, the group continued to distribute another 1,000 cherry trees to residents (Jones, 2011). The last known surviving tree from this important tree-planting campaign was outside of the Watsonville High School cafeteria. After the tree died, the local chapter of the Japanese American Citizen League donated a replacement tree to the school in 2013.

In 1986, the City adopted an ordinance, which sought to protect historic trees in the community. The adoption of the ordinance and other advocacy for historic trees, have contributed to the protection of several old and historic trees in the community. In fact, one of Watsonville's oldest trees, a pepper tree planted in 1864 on Beach Street, was repeatedly saved from removal because of community advocates (Mize, 2018). The tree was removed in 2018 due to safety concerns (Hannula, 2018).

In 1990, when developers proposed building 800 homes on the uplands of Struve Slough, community members sought to protect the habitat, which includes several species of native trees. The group was successful in protecting the wetlands and came to form Watsonville Wetlands Watch (WWW) (Watsonville Wetlands Watch, 2023). The formation of WWW and other successful community projects, like the planting of a school orchard at Ohlone Elementary School in 2009, are examples of the community's will power and reflect peoples' appreciation for the natural environment and the benefits of trees (Little, 2010).

In an effort to promote city-wide tree planting, the Urban Greening Plan was adopted in 2012. The plan included goals to plant 40,000 new trees and improve existing low canopy cover, which reflects the community's commitment to enhancing and preserving the urban forest. The Urban Greening Plan contributed to the awarding of a grant to the Watsonville Wetlands Watch and the City of Watsonville in 2018 from the California Department of Forestry and Fire Protection's Urban and Community Forestry Program, which provided the funds to plant 300 new trees. Subsequent funding from State and local sources has enabled the increase of these tree-planting efforts.

In 2021, with an urban forestry grant from CAL FIRE, the City collected an inventory of community trees on streets, parks, and at City facilities. The inventory, which collected 4,642 trees and planting sites, included the GIS location and other valuable information about each tree, including species, size, condition, and maintenance needs. The inventory was used in conjunction with i-Tree Eco to develop an in-depth analysis of the structure, composition, and benefits provided by Watsonville's community trees (Watsonville, CA Urban Forest Resource Analysis, 2022).

Along with the inventory collection of community trees, tree canopy and other land cover on both public and private property were mapped using high-resolution aerial images. The assessment maps the location and extent of tree canopy and estimates the quantifiable benefits provided by the urban forest, including reducing stormwater runoff, improving air quality, and sequestering carbon from the atmosphere (Watsonville, CA Tree Canopy & Land Cover Assessment Summary Report, 2022).

With an updated inventory, resource analysis, tree canopy assessment, and community advocates for the environment and trees, Watsonville has a strong foundation for a comprehensive management plan to guide the development of an advanced urban forestry program.





CONNECTION WITH THE NATURAL WORLD  
IMPROVES THE LIVES OF RESIDENTS IN EVER-  
DENSELY DEVELOPED CITIES.

-SURVEY RESPONDENT

# IMPLEMENTATION PLAN



The Implementation Plan details the goals, objectives, and actions for Watsonville's UMP. Many objectives support more than one goal and these are denoted with an asterisk (\*). The UMP is a dynamic tool that can and should be adjusted in response to available resources and changes in community expectations. The UMP serves as a day-to-day guide for planning, policy-making and is intended to be reviewed regularly for progress on goals and objectives and to ensure that the recommended action steps are integrated into annual work plans.

Each objective identifies a suggested timeframe for accomplishing associated actions. In addition to a timeframe, a priority is assigned to communicate the urgency of addressing the objective:

- High—An objective that is critical to protecting existing community assets and reducing/managing risk
- Medium—An objective that further aligns programming and resource improvements that have been identified as desirable by the community, partners, and/or urban forest managers, but that may require additional investment
- Low—An objective that is visionary or represents an increase in current service levels

Objectives also include ratings on impact which denotes the outcome of an objective in meeting community needs:

## Impact

- High—An objective with an anticipated outcome that will provide benefits to community members and result in more equitable distribution of trees, canopy, environmental benefits, and/or tree services.
- Medium—An objective with an anticipated outcome that may provide benefits to community members and result in more equitable distribution of trees, canopy, environmental benefits, and/or tree services.
- Low—An objective with an anticipated outcome that may result in benefit to community members, but may not result in more equitable distribution of trees, canopy, environmental benefits, and/or tree services.

A cost range provides managers with an estimate of the budget required to implement each objective:

- \$ (<\$10,000)
- \$\$ (\$10,000-\$50,000)
- \$\$\$ (\$50,000-\$100,000)
- \$\$\$\$ (>\$100,000)





# GOAL: REACH OR EXCEED 30% OVERALL TREE CANOPY COVER

## RATIONALE:

The 2012 Urban Greening Plan set a goal of 40% canopy cover. However, considering existing tree canopy and pervious surfaces, it is estimated that the city can support at most 30% canopy cover. Participants at a community meeting indicated that they supported a canopy goal of 30% in 20 years. Based on the existing land cover and the community's support, a goal of 30% overall tree canopy cover should be adopted.

## RISK:

Without a tree canopy cover goal, the community is at risk of stagnation or losses to tree canopy and the associated benefits.

## BENEFIT:

With increased canopy cover comes increased benefits.

### OBJECTIVE:

Reach or exceed overall tree canopy cover by 2043\*

### ACTIONS:

- Annually plant 600-800 trees over the next 20 years
- Use TreeKeeper Canopy to identify potential planting areas
  - Explore mechanisms in the Story Map to allow community members to request trees in specific areas of the community

PRIORITY:

HIGH

IMPACT:

HIGH

TIMEFRAME:

5-10 YEARS

COST:

\$\$\$\$

### OBJECTIVE:

Increase tree canopy cover on public property

### ACTIONS:

- Review canopy cover within the rights-of-way at least every 10 years
- Work with the community to establish a canopy goal for the rights-of-way to reduce the urban heat island effect
- Continue to plant trees at City parks
  - Incorporate more opportunities for trees in streetscapes, parking lots, seating areas, walkways, and near buildings

PRIORITY:

HIGH

IMPACT:

HIGH

TIMEFRAME:

1-10 YEARS

COST:

\$\$\$

\*-Objective supports more than one goal. \$- (<\$10,000) \$\$- (\$10,000-\$50,000) \$\$\$-(\$50,000-\$100,000) \$\$\$\$- (>\$100,000)

**OBJECTIVE:**  
**Increase tree planting on private property**

**ACTIONS:**

- Encourage tree planting on private property behind the sidewalk in areas where parkways are too narrow for street trees
- Emphasize the importance of planting the right tree in the right place on private property
- Continue to provide free fruit and shade trees for residents through the Watsonville Wetlands Watch partnership and grant programs
  - Explore additional nonprofit and community partnerships that could result in increased tree canopy
- Consider partnering with the local utility provider to incentivize property owners to strategically plant shade trees to reduce energy costs
- Encourage private property owners to maintain existing trees
  - Provide education on tree planting and maintenance
  - Provide education on the benefits of trees to encourage residents to plant trees on private property

**PRIORITY:**

**HIGH**

**IMPACT:**

**HIGH**

**TIMEFRAME:**

**1-10 YEARS**

**COST:**

**\$**

**OBJECTIVE:**

**Work with the community to establish canopy goals for neighborhoods, City rights-of-way, land use, Downtown, and schools**

**ACTIONS:**

- Define sustainable annual planting goals and the necessary funding required to achieve and maintain desired levels of planting on public property
  - Keep records of available planting sites
  - Remove stumps after tree removals to make the site available for a replacement planting
  - Seek to expand planting areas through modifications to construction designs
  - Optimize planting areas in Capital Improvement Projects
  - Use TreeKeeper Canopy® to prioritize planting in areas with less than average tree canopy
- Use TreeKeeper Canopy to establish tree canopy goals and determine the number of trees that need to be planted in the specified timespan to meet the goals
  - Explore mechanisms in the Story Map to allow community members to request trees in a particular area
- Educate the community on the importance of private trees in reaching canopy goals
  - Provide materials on how to care for trees to encourage preservation of existing trees on private property
  - Promote planting the largest statured trees possible
  - Increase awareness on how the urban forest can help the community face changes in climate
  - Encourage the use of best management practices

**PRIORITY:**

**HIGH**

**IMPACT:**

**HIGH**

**TIMEFRAME:**

**1-2 YEARS**

**COST:**

**\$**

**OBJECTIVE:**  
**Monitor changes in tree canopy cover**

**ACTIONS:**

- Conduct a land cover assessment at least every 10 years to evaluate progress on canopy cover goals
  - Adjust 20 year canopy cover goal as needed depending on the changes in the distribution of tree canopy cover
  - Reassess local canopy goals in response to patterns of expansion and/or loss of tree canopy
  - Host meetings at local events to gather community input on canopy goals and potential planting locations
  - Use aerial imagery and remote sensing to map changes to the extent and location of tree canopy and other land cover and assess progress on tree canopy goals at least every 10 years
- Revisit the overall canopy goal of 15% in 2043

<b>PRIORITY:</b>	MEDIUM
<b>IMPACT:</b>	HIGH
<b>TIMEFRAME:</b>	5-10 YEARS
<b>COST:</b>	\$

**OBJECTIVE:**  
**Preserve and protect trees in open space\***

**ACTIONS:**

- Strategically plant trees to encourage regional habitat connectivity and wildlife corridors
- Identify opportunities to retain dead standing trees wherever possible to serve as wildlife habitat
  - Set up perimeter fencing to discourage occupancy underneath trees selected for habitat retention

<b>PRIORITY:</b>	HIGH
<b>IMPACT:</b>	HIGH
<b>TIMEFRAME:</b>	1-10 YEARS
<b>COST:</b>	\$

**OBJECTIVE:**

**Increase and ensure equitable distribution of tree canopy and urban forest resources to mitigate extreme heat and pollution burdens in areas that are environmentally and/or socially disadvantaged\***

**ACTIONS:**

- Use land cover data in the public rights-of-way to further explore possible disparities in distribution of canopy cover
- Utilize TreeKeeper Canopy® to identify areas with lower tree canopy cover
  - Work with local neighborhoods to develop appropriate tree canopy cover goals
- Conduct outreach efforts in neighborhoods to identify where local communities want trees planted and where they are not wanted
  - Plant all available planting sites in the public rights-of-way, especially in neighborhoods with lower tree canopy
  - Replace trees as that have been removed
- Continue to provide education on the benefits of trees to encourage residents to plant trees on private property
  - Explore more opportunities to provide free or inexpensive trees to plant on private property
- Collaborate with nonprofits involved in creating a more equitable urban forest
  - Continue to partner with Watsonville Wetlands Watch on tree planting and adoption, tree care, and urban forest education for the community
- Develop an incentive program for tree planting, establishment, maintenance, and replacement to reduce economic barriers to participation in tree canopy establishment
- Increase tree planting and establishment on public schools and other areas with less than average tree canopy cover
- Encourage tree planting and establishment in areas where persons are environmentally and/or socially disadvantaged to promote public health and reduce pollution burdens
- Use the City's Tree Fund to support tree planting projects that promote canopy equity

<b>PRIORITY:</b>	<b>HIGH</b>
<b>IMPACT:</b>	<b>HIGH</b>
<b>TIMEFRAME:</b>	<b>1-5 YEARS</b>
<b>COST:</b>	<b>\$</b>

**OBJECTIVE:**

**Adopt a tree ordinance that promotes the protection of both City trees and trees on private property\***

**ACTIONS:**

- Encourage the community to nominate trees for heritage tree designation to preserve trees on private property
- Emphasize protecting and preserving heritage trees as defined by the pending adoption of a tree ordinance

**PRIORITY:****HIGH****IMPACT:****HIGH****TIMEFRAME:****1-2 YEARS****COST:****\$****OBJECTIVE:**

**Use trees and canopy to address urban heat islands\***

**ACTIONS:**

- Use TreeKeeper Canopy® to identify areas with higher surface temperatures and low tree canopy to prioritize planting areas
- Improve parking lots with planter spaces that can support large stature trees
  - Plant the largest tree possible
- Provide education to private parking lot owners about the benefits of planting trees to reduce heat islands
  - Include information on how trees that shade hardscape can extend the life of asphalt and concrete
- Revise design standards for newly constructed parking lots
  - Require the construction of planter spaces with minimum soil volumes
  - Establish a minimum number of tree plantings per parking spaces
  - Plant the largest statured tree possible for the site
  - Allow substitutions for solar arrays to support community solar
- Adopt a new ordinance that requires attainment of at least 15% tree canopy cover after 15 years in new residential developments

**PRIORITY:****HIGH****IMPACT:****HIGH****TIMEFRAME:****2-10 YEARS****COST:****\$\$\$**



# Goal: GROW A SUSTAINABLE AND RESILIENT COMMUNITY TREE RESOURCE

## RATIONALE:

Trees are living organisms, whose health and structure is affected by numerous biotic and abiotic factors. The needs of trees can vary depending on their age. Regular care for all community trees and continual planting in the public rights-of-way will ensure that the resource is sustained for future generations and is more resilient to pests and pathogens and changes in climate.

## RISK:

Without regular care, trees are more vulnerable to pests and pathogens and may develop structural problems that can pose a risk to public safety. Many structural issues, if left unchecked, can grow into more expensive issues as the trees mature. In some instances, these issues may be impossible to correct and require the tree to be removed before it has reached its full potential.

## BENEFIT:

If trees are regularly maintained, they can live longer and provide more benefits to the community. When new trees are planted, it ensures that mature trees will have successors and the benefit stream will not be disrupted. Planting new trees also presents an opportunity to select species of trees that are performing better in the local climate and are less susceptible to existing and emerging pests.

### OBJECTIVE:

**Provide proactive maintenance for all community trees to reduce costs and promote efficiency\***

### ACTIONS:

- Develop a 10-year work plan to address all priority and routine maintenance
  - Use the inventory to identify priority and routine maintenance
  - Update the inventory to reflect current maintenance needs
  - Consider species that may require more frequent maintenance (e.g., Texas red oak, Chinese pistache, etc.)
  - Consider areas of town that may require more frequent pruning cycles (e.g., along bus routes, downtown)
  - Provide training pruning for young trees every 2-years to avoid more expensive maintenance as trees age
  - Include park trees in maintenance plan
- Adjust annual maintenance schedules to consider available funding

PRIORITY:	HIGH
IMPACT:	HIGH
TIMEFRAME:	5-10 YEARS
COST:	\$\$\$

\*-Objective supports more than one goal. \$- (<\$10,000) \$\$- (\$10,000-\$50,000) \$\$\$-(\$50,000-\$100,000) \$\$\$\$- (>\$100,000)

- Project costs for completing maintenance
  - Establish maintenance zones to complete maintenance in grids
    - Use the grids to project annual costs
      - Publish pruning cycle schedules and maps on the City website
      - Add the last year the pruning cycle was completed
      - Restructure maintenance zones as trees are planted or removed to distribute trees evenly across maintenance zones
      - Identify budgetary needs for equipment (e.g., trucks, lift trucks, chippers, trailers with winches)
      - Identify budgetary shortfalls
    - Program in annual inspections to proactively identify risks
      - Update the inventory as inspections occur
        - Monitor the condition of trees and use this data to identify high performing or maladapted species to guide future planting
      - Increase frequency of inspections in heavily used public spaces
      - Notify property owners of maintenance needs for community trees that are not maintained by the City
  - Include annual tree plantings
    - Use the inventory to track the stocking levels and identify available planting locations
    - Incorporate tree plantings that are funded through grants
      - Build on existing planting project plans in the Green Infrastructure Plan to develop an overall Tree Planting Plan to optimize available funds for tree planting
    - Program training pruning for young trees every 2 years to avoid more expensive maintenance as trees age
    - Include irrigation costs in order to water trees and remain compliant with MWELO
    - Provide water to trees even during periods of drought
  - After the 10-year work plan is complete and as funds permit, strive to maintain trees every 5 to 7 years



**OBJECTIVE:****Follow integrated pest management (IPM) protocols and best management practices for managing pests and disease****ACTIONS:**

- Monitor for pests and pathogens, especially pests and pathogens like emerald ash borer, invasive shot hole borer, and sudden oak death
  - Engage in trainings about integrated pest management for key pests
- Look for signs of pest/pathogens during regular tree inspections
- Incorporate non-chemical strategies to decrease susceptibility to pests and pathogens
  - Select cultivars with known resistance for pests and disease
  - Integrate biological and cultural controls into pest management programs
- If chemical treatments are required, follow best management practices:
  - Read the label
  - Avoid application on flowering plants
  - Prevent the recurring use of the same pesticide and mode of action to control pests
  - Monitor weather conditions to avoid impacts from drifting chemicals
  - Monitor environmental conditions and match them to the product to maximize efficacy
- Publish articles and fact sheets about common pest issues on the City website
- Consider revising the Interim Pesticide Use & Notification Policy to require notifications after trunk injections

<b>PRIORITY:</b>	<b>HIGH</b>
<b>IMPACT:</b>	<b>HIGH</b>
<b>TIMEFRAME:</b>	<b>1-3 YEARS</b>
<b>COST:</b>	<b>\$-\$\$</b>

**OBJECTIVE:****Increase contractor oversight****ACTIONS:**

- Require contractors to conduct all tree work in accordance with ANSI A300, Z133, and Z60.1
- Require the crew leads for contractors to be Certified Tree Workers or a Certified Arborist
- Assign staff to monitor and review work completed by contractors for quality assurance
- Require contractors to update the inventory records for community trees
  - Update tree condition and diameter as maintenance occurs

<b>PRIORITY:</b>	<b>HIGH</b>
<b>IMPACT:</b>	<b>MEDIUM</b>
<b>TIMEFRAME:</b>	<b>1-3 YEARS</b>
<b>COST:</b>	<b>\$\$</b>

**OBJECTIVE:**

Explore the use of an inventory management software which can be accessed by both City staff and contractors

**ACTIONS:**

- Require updates when performing tree work
  - Update/record attributes, including species, diameter, and condition
  - Use this data to identify high or low performing species to guide future planting
- Monitor condition of trees
- Consider use of an inventory management system that allows for a public interface, to allow community members to explore the tree species in the community
- Confirm risk levels before removing large, mature trees
  - Use new technologies to determine the extent of decay and potential risk of large, mature trees in high use areas (e.g., internal decay testing equipment)
  - Continue to use ISA Certified Arborists, either contracted or in-house, to assess trees
  - Use safety zones to prevent targets

**PRIORITY:****MEDIUM****IMPACT:****MEDIUM****TIMEFRAME:****1-2 YEARS****COST:****\$****OBJECTIVE:**

Designate a position within the City or hire a contractor who is an ISA Certified Arborist (at minimum) that is responsible for providing guidance and policy recommendations for urban forest operations

**ACTIONS:**

- Establish a dedicated city arborist position
- Responsibilities of the City Arborist and/or hired contractor to include:
  - Contract monitoring for tree care providers
  - Design review
  - Inspection and monitoring of tree protection zones
  - Review of tree removal permits

**PRIORITY:****HIGH****IMPACT:****HIGH****TIMEFRAME:****1-2 YEARS****COST:****\$\$-\$\$\$**

**OBJECTIVE:****Revise and amend Municipal Code to promote the protection of community trees\*****ACTIONS:**

- Prohibit the removal of community trees without a permit
  - Establish criteria for evaluating requests for the removal of community trees
  - Provide resources on best management practices for pruning trees on the City website
- Require tree protection zones for trees that will be retained that may be affected by construction activities
  - Monitor compliance with tree protection zones
  - Order a stop work order for noncompliance
- Require mitigation for the removal of otherwise healthy trees
  - Establish a replacement ratio for every health tree removed
  - Require replacement trees be maintained in perpetuity
    - Replacement trees should be trees of similar size and stature as the tree that is removed
      - Replacement tree species should be selected from the Street Tree List
    - Replace requisite replacement trees if the tree(s) dies
  - Allow in-lieu fees for when replacement trees are not feasible or desired
    - Deposit in-lieu fees into a Tree Fund
- Define adjacent property owner responsibilities for the care and maintenance of community trees
  - Define irrigation of street trees as a responsibility of adjacent property owners
- Enhance methods for cost recovery in the case of tree removals or improper tree maintenance consistent with City policies and practices
- Develop a Tree Fund and allocate the funds to planting and maintaining the community tree resource
  - Deposit monies received from illegal removals or other penalties into the fund
  - Deposit monies collected from in-lieu fees into the fund

<b>PRIORITY:</b>	<b>HIGH</b>
<b>IMPACT:</b>	<b>HIGH</b>
<b>TIMEFRAME:</b>	<b>1-3 YEARS</b>
<b>COST:</b>	<b>\$</b>

**OBJECTIVE:****Plant the right trees in the right places\*****ACTIONS:**

- Diversify plantings at genus level, as many pests threaten multiple species within a genus
- Consider large stature trees where planting space allows to maximize benefits
  - Consider alternative species if conflicts with gray infrastructure are a concern
  - Consider species water usage and drought tolerance
- Decrease reliance on most prevalent species, including London plane trees
- Decrease reliance on species known to cause issues such as maintenance difficulties or other community concerns
- Locate and consolidate utilities where possible and plan planting locations

<b>PRIORITY:</b>	<b>HIGH</b>
<b>IMPACT:</b>	<b>HIGH</b>
<b>TIMEFRAME:</b>	<b>1-5 YEARS</b>
<b>COST:</b>	<b>\$</b>

**OBJECTIVE:**  
**Formulate a long-term tree planting program\***

**ACTIONS:**

- Develop a tree planting plan and include tree planting as part of annual maintenance
  - Plan for succession with species that are performing well
  - Prioritize planting trees in medians with existing irrigation systems
  - Develop a weekly watering schedule to provide water to trees planted in medians without irrigation systems
  - Track the number of trees planted each year
  - Report the number of trees planted and the species in the State of the Urban Forest Report
  - Calculate the carbon sequestration estimates using i-Tree Planting Calculator
  - Build on previously-identified planting sites in the Urban Greening Plan to identify planting locations
  - Identify potential planting sites both in the short and long term
  - Explore the expansion of planting sites in rights-of-way
  - Set standards for soil volume to increase size of trees and growth potential
  - Consider long term goals of succession and climate resiliency
  - Use an updated tree species list for species selection
- Plant trees in the rights-of-way where residents request trees
  - Develop an online request form for residents to request a tree be planted
  - Update the inventory or another database to track tree planting requests
  - Update tree planting standards to be consistent with current industry standards and to save on planting costs
    - Plant trees in accordance with ANSI A300
    - Plant trees in sites with adequate soil volumes, to allow trees to reach mature size and canopy spread
    - Avoid the use of root barriers
- Prioritize tree planting and replacement in areas with lower tree canopy cover
  - Plant the largest statured species possible for the site to increase shade over hardscape
    - Adapt species selection to reflect the values by different cultural neighborhoods
- Continue to partner with Watsonville Wetlands Watch for community tree planting

<b>PRIORITY:</b>	<b>MEDIUM</b>
<b>IMPACT:</b>	<b>HIGH</b>
<b>TIMEFRAME:</b>	<b>1-3 YEARS</b>
<b>COST:</b>	<b>\$\$</b>

**OBJECTIVE:****Update and maintain the Street Tree Planting Palette from the Urban Greening Plan to consider long-term climate resiliency and suitability for Watsonville****ACTIONS:**

- Monitor species performance and periodically update a Street Tree Planting Palette to include species that are performing well and exclude species that are performing poorly
  - Introduce tree species that are suitable for the current and predicted future climate
    - Tie the climate change projections for Watsonville (e.g., changes in temperature and precipitation) to the current climate of a comparable city and explore their species palette
  - Communicate and coordinate with foresters in the region to share information on the greatest vulnerabilities and species that may be best adapted
  - Stay up to date with potential pest and disease threats

**PRIORITY:****HIGH****IMPACT:****HIGH****TIMEFRAME:****1-5 YEARS****COST:****\$****OBJECTIVE:****Create a wood utilization plan****ACTIONS:**

- Explore opportunities to repurpose the wood with the community
  - Assess the feasibility of a local wood waste or re-use program for urban trees
  - Consider public art projects
  - Consider opportunities for the production and use of biochar
  - Explore partnerships with local end users for lumber and artisanal uses
  - Explore the use of urban trees as biofuel
  - Use wood chips in landscapes at City facilities
- Continue to partner with contracting arborists to recycle/reuse wood from large removals

**PRIORITY:****LOW****IMPACT:****MEDIUM****TIMEFRAME:****5-10 YEARS****COST:****\$**

**OBJECTIVE:**  
**Formalize emergency response procedures**

**ACTIONS:**

- Amend existing emergency response plan to include procedures for:
  - Debris storage and staging areas
  - Emergency communications
  - Provide training to staff on safety as it relates to emergency events and the dangers that may exist as a result of tree and/or branch failures

<b>PRIORITY:</b>	<b>HIGH</b>
<b>IMPACT:</b>	<b>HIGH</b>
<b>TIMEFRAME:</b>	<b>1-5 YEARS</b>
<b>COST:</b>	<b>\$</b>

**OBJECTIVE:**  
**Establish predictable and stable funding for the community tree resource\***

**ACTIONS:**

- Identify existing revenue streams to support Urban Forestry, including the General Fund
- Consider alternative revenue sources, including:
  - Capital Improvement Project Budgets
  - Bonds
  - Voter approved funding initiatives
  - Land Development Mitigation
  - Corporate sponsorships to fund tree plantings
  - Land Development Fees
  - Service Fees (e.g., stormwater utility fees)
  - Public health initiatives
  - Explore carbon markets (e.g., City Forest Credits)
- Divert funds collected from violations of a tree preservation ordinance to a Tree Fund that is dedicated to planting trees and providing maintenance to community trees
- Continue to explore grant opportunities in urban forestry, public health, affordable housing, and environmental justice
- Explore interest in the development of a Tree Management District to fund tree maintenance

<b>PRIORITY:</b>	<b>HIGH</b>
<b>IMPACT:</b>	<b>HIGH</b>
<b>TIMEFRAME:</b>	<b>1-5 YEARS ONGOING</b>
<b>COST:</b>	<b>\$-\$\$\$</b>

**OBJECTIVE:****Provide outreach and education on updates to the tree preservation ordinance\*****ACTIONS:**

- Encourage private property owners to volunteer their trees for “heritage tree” designation
  - Identify trees on private property that may be candidates for “heritage tree” designation
  - Keep an inventory of “heritage trees”
    - Explore the creation of a digital “heritage tree” walking tour for trees located in front yards or on City property
    - Advertise the tour on the City website to promote participation
- Develop an FAQ about the new ordinance on the City website once adopted

**PRIORITY:****HIGH****IMPACT:****HIGH****TIMEFRAME:****1-2 YEARS  
ONGOING****COST:****\$****OBJECTIVE:****Work with utility providers to maintain trees and replace problematic trees where possible****ACTIONS:**

- Revise the Street Tree Planting Palette to identify trees that are “utility friendly”

**PRIORITY:****HIGH****IMPACT:****HIGH****TIMEFRAME:****1-2 YEARS  
ONGOING****COST:****\$**

# Goal: ENHANCE THE LIVABILITY AND CHARACTER OF THE COMMUNITY

## RATIONALE:

More than 90% of respondents to the community survey agreed that trees are important to their quality of life. A community with trees promotes greater well-being and helps to provide a better quality of life.

## RISK:

Urban areas without trees are noisier, have worse air quality, and are hotter. All can contribute to urban fatigue. Fatigue and stress can negatively affect a person's health and increase their likelihood of developing disease.

## BENEFIT:

Trees help people have a greater social connection with their neighbors and feel safer in their neighborhoods. Transportation corridors with trees increase the walkability and help to encourage the use of public transportation. Additionally, improvements in air quality can result in improved public health and reductions in heat islands can help reduce extreme temperatures that contribute to heat illnesses.

### OBJECTIVE:

Prioritize planting trees in areas with less than average canopy cover, especially in areas of the City that are environmentally and/or socially disadvantaged\*

### ACTIONS:

- Plant trees to shade public spaces that have a high amount of impervious surfaces such as streetscapes, parking lots, near buildings, plazas, and other seating areas
  - Plant trees to shade pedestrian corridors and improve walkability
  - Incorporate median plantings when possible
  - Support tree canopy to increase wildlife habitat and provide corridors that connect greenspaces to allow for wildlife movement
- Develop policies around parking lot shade
  - Require minimum shade requirements for the reconstruction or construction of parking lots
  - Consider parking lot canopies as potential community solar array locations to allow for greater tree planting on individual parcels and decrease conflicts with street trees
  - Consider use alternative planter designs to allow for more space for tree planting and for the planting of larger trees, especially in hardscaped areas such as rights-of-way
- Emphasize retaining and incorporating trees in development and redevelopment projects
  - Use tree protection zones during construction
  - Use alternative designs and material to avoid tree removal or root pruning (Appendix G).
  - Promote tunneling/boring for utility line installation to decrease tree and overhead utility conflicts
- Plant evergreen and deciduous trees to create visual interest

PRIORITY:	HIGH
IMPACT:	HIGH
TIMEFRAME:	2-10 YEARS
COST:	\$\$\$

\*-Objective supports more than one goal. \$- (<\$10,000) \$\$- (\$10,000-\$50,000) \$\$\$-(\$50,000-\$100,000) \$\$\$\$- (>\$100,000)

**OBJECTIVE:****Adopt the Urban Forest Management Plan to guide long-term management of the urban forest\*****ACTIONS:**

- Communicate the vision and provide continual updates to the community on progress on meeting goals and objectives

**PRIORITY:****HIGH****IMPACT:****HIGH****TIMEFRAME:****1-2 YEARS****COST:****\$****OBJECTIVE:****Establish minimum tree canopy cover percentages for new development through City ordinance\*****ACTIONS:**

- Require new developments to attain a minimum of 15% tree canopy cover after 15 years through retention of existing trees, planting new trees, or a combination of the two
- Require a specific amount of “open space” or green space where trees can be planted
- Require replacement planting for trees removed due to development
  - If trees must be planted off-site, establish a list of approved sites for these trees
- Increase access to greenspace
  - Increase opportunities for community access and exposure to natural environments in an urbanized area through tree planting
  - Use trees to shade and soften hardscape areas, such as plaza, public spaces, parking lots, near buildings, and other pedestrian walkways
  - Identify areas that have the potential to be converted into pocket parks
  - Partner with schools to provide tree canopy in schoolyards
  - Continue adding green landscape areas where possible

**PRIORITY:****HIGH****IMPACT:****HIGH****TIMEFRAME:****1-5 YEARS****COST:****\$**

**OBJECTIVE:**

**Communicate the vision and provide continual updates to the community on progress on meeting goals and objectives\***

**ACTIONS:**

- Update the community on the progress of the UFMP annually through a State of the Urban Forest Report
  - Inform the community about the achievements of the UFMP
  - Identify the status of funding for goals and objectives
  - Communicate any challenges with meeting the goals and objectives
  - Report changes on tree canopy and other land cover
  - Distribute the State of the Urban Forest Report through the City website
  - Invite the community to provide feedback on progress
  - Explore mechanisms to gather community comments
- Review and measure attainment of the UFMP
  - Conduct a tree canopy and land cover assessment every 10 years or if pest infestations or other natural disasters occur that significantly affect tree canopy
    - Use i-Tree Canopy or remote sensing (aerial imagery) to map the distribution of tree canopy and other land cover
    - Review changes in distribution across zoning, neighborhoods, parks, rights-of-way, and parking lots
    - Consider results during UFMP review and adjust goals, objectives, and action steps as needed
    - Report changes in the State of the Urban Forest Report
    - Incorporate these changes into the UFMP and articulate changes on benchmark values
  - Conduct a Resource Analysis every 5 to 10 years
    - Use i-Tree Eco to analyze the structure, composition, and benefits of the community tree resource
    - Review changes to species diversity and benefits
    - Consider results during UFMP review and adjust goals, objectives, and action steps as needed
    - Report changes in the State of the Urban Forest Report
    - Incorporate these changes into the UFMP and articulate changes on benchmark values

<b>PRIORITY:</b>	<b>HIGH</b>
<b>IMPACT:</b>	<b>HIGH</b>
<b>TIMEFRAME:</b>	<b>1-10 YEARS</b>
<b>COST:</b>	<b>\$-\$\$</b>

- Provide opportunities for community input to see how the UMP is addressing the communities needs and pivot as needed
  - Consider having Parks team members attend public gatherings to facilitate direct communication
  - Use surveys and other engagement methods to solicit community input
  - Consider community feedback during UMP review and adjust goals, objectives, and action steps as needed

**OBJECTIVE:**  
**Increase stocking level to 100% in the community tree resource in 5 years**

**ACTIONS:**

- Use the tree inventory to locate available planting spaces
  - Plant available planting sites
  - Remove stumps to open up available planting sites
- Update the tree inventory to indicate sites that have been planted and to track trees that have been removed
  - Replace trees that are removed
- Use the priority planting analysis to identify new planting sites in areas where tree canopy cover is low

<b>PRIORITY:</b>	<b>HIGH</b>
<b>IMPACT:</b>	<b>HIGH</b>
<b>TIMEFRAME:</b>	<b>5 YEARS ONGOING</b>
<b>COST:</b>	<b>\$\$</b>

**OBJECTIVE:**

**Use best available climate science to inform management and increase resilience of the urban forest\***

**ACTIONS:**

- Incorporate goals from the UFMP into updates of the 2030 Climate Action and Adaptation Plan (CAAP)
- Consider tracking tree plantings to estimate carbon reductions using USFS i-Tree tools
- Incorporate trees into stormwater management systems wherever possible
- Select species that are more appropriate for projected climatic conditions

**PRIORITY:****HIGH****IMPACT:****HIGH****TIMEFRAME:****1-2 YEARS****COST:****\$\$****OBJECTIVE:**

**Establish the goals and objectives of the Urban Forest Management Plan into guiding and visionary documents, including the General Plan and the Climate Action and Adaptation Plan\***

**ACTIONS:**

- Integrate the goals and objectives of the Urban Forest Management Plan into guiding and visionary documents, including the General Plan and the Climate Action and Adaptation Plan\*
  - Amend existing City plans, guiding and visionary documents, and policies with the UFMP
  - Incorporate trees into other planning documents

**PRIORITY:****MEDIUM****IMPACT:****MEDIUM****TIMEFRAME:****1-2 YEARS****COST:****\$\$\$**

**OBJECTIVE:**

Revise and update the UFMP to respond to changing conditions and community needs over the next 50 years\*

**ACTIONS:**

- Review and revise goals and objectives as needed every 10 years
  - Revise goals and objectives and associated action steps as needed
  - Adjust targets as necessary

**PRIORITY:****MEDIUM****IMPACT:****MEDIUM****TIMEFRAME:****10 YEARS ONGOING****COST:****\$****OBJECTIVE:**

Update standards to accommodate for tree planting space and maximize soil volume to accommodate large trees\*

**ACTIONS:**

- Clarify and make complete standards for maintaining a certain level of pervious surface on private property
- Include requirements for certain number of tree wells/planters and amount of pervious surface per given length of sidewalk
- Include use of aggregate materials and alternate materials in sidewalk construction standards
- Incorporate medians, park strips, and pervious surface wherever possible (consider adding these features to existing streets which have space for them)
  - Reduce hardscape wherever possible by converting hardscape into pervious surface for tree planting

**PRIORITY:****MEDIUM****IMPACT:****HIGH****TIMEFRAME:****10 YEARS ONGOING****COST:****\$**

**OBJECTIVE:**

**Use trees to reduce localized flooding and improve water quality in downstream wetlands and receiving waters\***

**ACTIONS:**

- Identify areas with high stormwater runoff and low tree canopy in TreeKeeper Canopy to prioritize planting areas
  - Encourage the planting of trees on private property in these areas
  - Protect existing trees in these areas
- Plant the largest statured species possible
  - Consider planting evergreen and semi evergreen species in these areas to optimize year-round stormwater capture

<b>PRIORITY:</b>	<b>HIGH</b>
<b>IMPACT:</b>	<b>HIGH</b>
<b>TIMEFRAME:</b>	<b>1-2 YEARS ONGOING</b>
<b>COST:</b>	<b>\$\$</b>

**OBJECTIVE:**

**Identify the costs of implementing the various goals of the plan so that a budget can be developed**

**ACTIONS:**

- Identify existing revenue streams to accomplish plan objectives, including:
  - Taxes
  - Assessments
  - Special Tax districts
- Consider alternative revenue sources, including:
  - Land Development Fees
  - Stormwater Utility Fees
  - Service Fees (other)
- Other funding mechanisms, including:
  - Capital Improvement Project Budgets
  - Bonds
  - Land Development Mitigation
  - Grants

<b>PRIORITY:</b>	<b>HIGH</b>
<b>IMPACT:</b>	<b>HIGH</b>
<b>TIMEFRAME:</b>	<b>1-5 YEARS</b>
<b>COST:</b>	<b>\$</b>

OLD TREES ARE VALUABLE TO PROTECT US FROM  
CLIMATE CHANGE.

-SURVEY RESPONDENT



# GOAL: ENCOURAGE STEWARDSHIP OF THE URBAN FOREST

## RATIONALE:

Survey results revealed that the community has strong interest in volunteering to plant and/or care for trees. Survey respondents also expressed a willingness to plant trees on their own property if provided a free tree and guidance on how to plant it. Less than 9% of Watsonville is made up of public property. The greatest opportunity for tree canopy expansion and retention is through the community stewarding the urban forest by caring for existing trees and planting new trees on their property.

## RISK:

Relying on the City to plant trees in public areas will likely result in at most a hundred acres of tree canopy. Trees in public spaces, while beneficial, do not necessarily provide direct benefits to residents, such as reductions in energy costs. Without the community stewarding the urban forest by planting trees, maintaining existing trees, and advocating for their preservation, tree canopy is likely to decline, along with its associated benefits.

## BENEFIT:

With the community's help, more trees can be planted in more places. With proper care, trees can live longer and provide more direct benefits to the people who plant them.

### OBJECTIVE:

**Foster relationships with local community partners to implement the goals and objectives of the UFMP\***

### ACTIONS:

- Continue to collaborate with community partners to increase awareness of the urban forest and facilitate participation in tree planting and stewardship activities
  - Continue to partner with Watsonville Wetlands Watch for community tree planting and early establishment
- Continue to collaborate with local tree advocacy groups on grant opportunities
- Collaborate with Pajaro Valley Unified School District and Watsonville Wetlands Watch and promote school programs
  - Provide Parks team members to help support learning modules about urban forestry in local schools
  - Work with local schools to respond to irrigation bans for turf and implement green school yards that have more park-like settings with trees and mulched areas

PRIORITY:	HIGH
IMPACT:	HIGH
TIMEFRAME:	1-2 YEARS
COST:	\$

\*-Objective supports more than one goal. \$- (<\$10,000) \$\$- (\$10,000-\$50,000) \$\$\$-(\$50,000-\$100,000) \$\$\$\$- (>\$100,000)

**OBJECTIVE:****Create opportunities for the community to assist in improving the urban forest\*****ACTIONS:**

- Consider a permanent volunteer program through which volunteers can sign up to regularly care for trees
  - Explore a Volunteer Program for tree care and maintenance similar to Tree Amigos in San Jose
  - Offer a training program for volunteers that results in them earning progressive titles so that they can perform higher levels of tree care, help guide other volunteers or lead volunteer events
    - Training includes education on growing trees in nurseries, proper tree planting, stewardship, maintenance, watering, and volunteer coordination
- Explore opportunities to use citizen science to collect urban forestry data
- Explore creating a tree stewardship program or Adopt-a-park/Adopt-a-tree programs

**PRIORITY:****MEDIUM****IMPACT:****HIGH****TIMEFRAME:****1-5 YEARS****COST:****\$****OBJECTIVE:****Develop a workforce training program for tree planting, care, and establishment****ACTIONS:**

- Continue to foster youth job training and career and technical education programs, like the Watsonville Wetlands Watch's Climate Corps Leadership Institute
- Partner with the Pajaro Valley Unified School District on career and technical education programs to support the implementation of this plan
- Collaborate with local workforce development partners to build career training programs and skills enhancement in the field of urban forestry

**PRIORITY:****MEDIUM****IMPACT:****HIGH****TIMEFRAME:****1-5 YEARS****COST:****\$**

# GOAL: CELEBRATE THE URBAN FOREST

## RATIONALE:

Acknowledging the benefits of the urban forest promotes appreciation for trees and encourages the community to actively participate in its stewardship.

## RISK:

Without celebration, awareness of the urban forest may decrease. If people are unaware of the importance of the urban forest, they are unlikely to support the use of resources to maintain and care for it.

## BENEFIT:

By regularly celebrating the urban forest, the community is more educated about its importance and more likely to advocate for the necessary resources to care for it.

## OBJECTIVE:

Engage the community in urban forestry programming\*

## ACTIONS:

- Continue to provide urban forestry programming information on the City website
- Provide a FAQ sheet about urban forest policies and the tree preservation ordinance
- Publish articles and fact sheets about common pest issues on the website
- Regularly update City events calendar to advertise urban forestry events
- Translate tree information materials into other languages, to allow for greater accessibility
- Ensure all volunteer programs and education are culturally relevant for the Watsonville community
- Continue to sponsor and promote tree-related events, the benefits of trees, and the importance of tree care
- Include tree-related information in the City's social media presence
- Explore the use of pop-up events
- Cater outreach and engagement to youth to engage with community members who may not be reached through other outreach methods
- Promote student participation in tree-related events
- Partner with schools to promote tree-related activities
- Coordinate Arbor Day events with local schools
- Explore a drop-in program for youth in environmental education, including urban forestry topics

PRIORITY:	MEDIUM
IMPACT:	MEDIUM
TIMEFRAME:	1-5 YEARS ONGOING
COST:	\$\$

\*-Objective supports more than one goal. \$- (<\$10,000) \$\$- (\$10,000-\$50,000) \$\$\$-(\$50,000-\$100,000) \$\$\$\$- (>\$100,000)

**OBJECTIVE:****Become a Tree City USA****ACTIONS:**

- Apply for Tree City USA designation
  - File an annual report to Arbor Day Foundation to maintain designation
  - Apply for Gold Leaf Awards to recognize achievements/improvements in the urban forest
- Continue to spend at least \$2 per capita on trees
- Adopt the revised tree ordinance
- Designate the Community Development Department as having the legal responsibility for the care of all City trees
- Observe and have a formal proclamation of Arbor Day

**PRIORITY:****HIGH****IMPACT:****MEDIUM****TIMEFRAME:****1 YEARS  
ONGOING****COST:****\$**

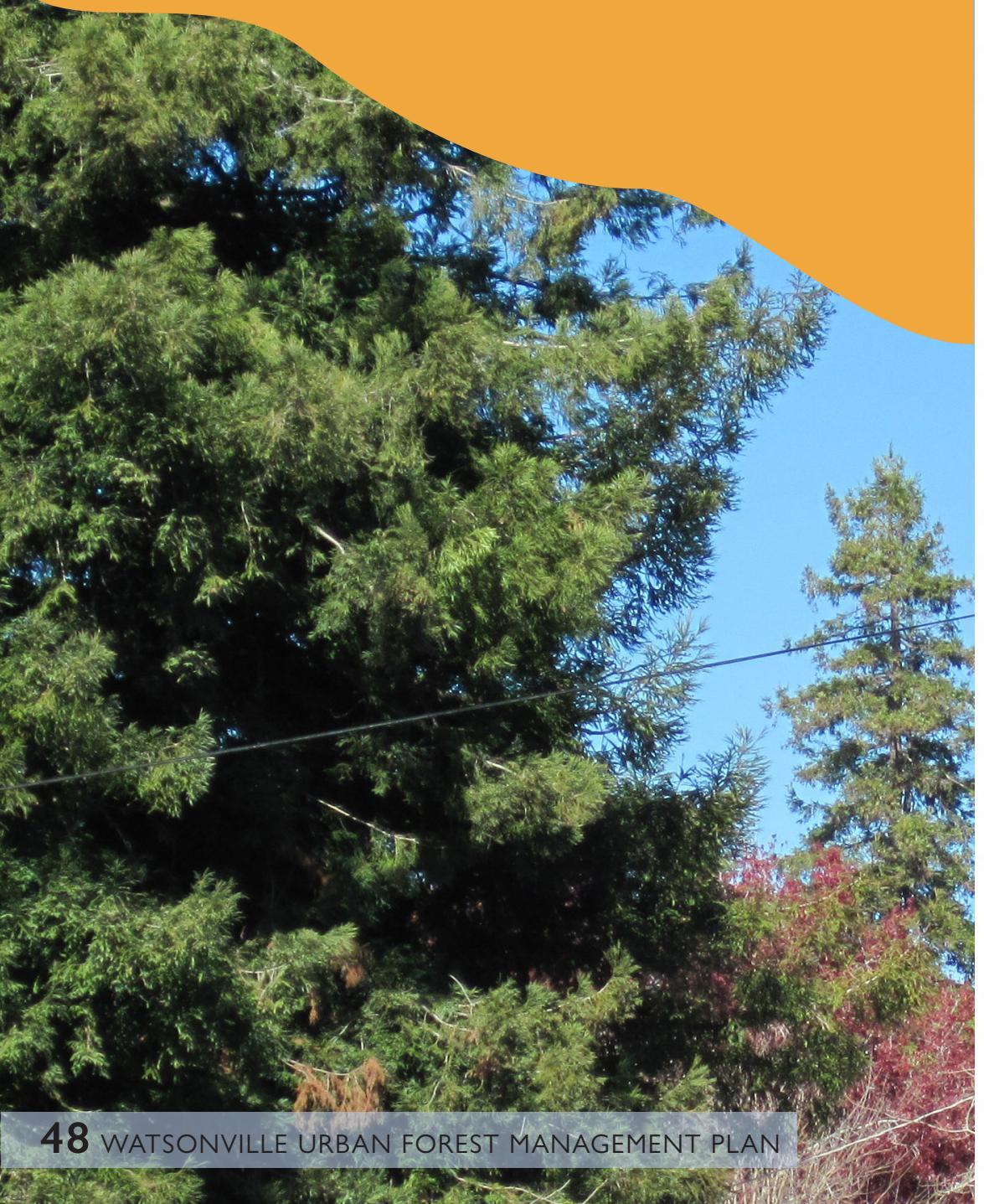
**OBJECTIVE:****Promote awareness of the care and value of trees and the urban forest\*****ACTIONS:**

- Distribute an annual State of the Urban Forest Report
  - Inform the community about the achievements of the UFMP
    - Identify the status of funding for goals and objectives
  - Communicate any challenges with meeting the goals and objectives
  - Distribute the State of the Urban Forest Report through the City website
  - Invite the community to provide feedback on progress
    - Explore mechanisms to gather community comments
- Lead regular campaigns to educate property owners on their responsibilities in caring for City trees
- Provide educational materials to residents about tree health and the frequency of tree maintenance
  - Distribute materials through the City website, social media, and in print on a variety of educational topics, including:
    - How to water trees during drought
    - How to plant a tree
    - How to care for trees during transitions from turf to xeric landscapes
    - Tree Planting Palette
    - Right tree, right place
    - Planting guidance for tree benefit optimization
  - Expand educational efforts to digital media
    - Explore creating videos on watering techniques, landscaping techniques, preferable plant species, FAQ videos, etc.
    - Consider developing visual digital media content
- Use interactive tree activities to engage the community
- Consider creating a virtual tree walk/scavenger hunt of notable/historic trees in the community
  - Use tree tags on trees to communicate benefits of specific trees in the community
  - Consider digital mapping tools or QR codes to provide information about historic trees

<b>PRIORITY:</b>	<b>HIGH</b>
<b>IMPACT:</b>	<b>HIGH</b>
<b>TIMEFRAME:</b>	<b>1-2 YEARS ONGOING</b>
<b>COST:</b>	<b>\$</b>



# BACKGROUND

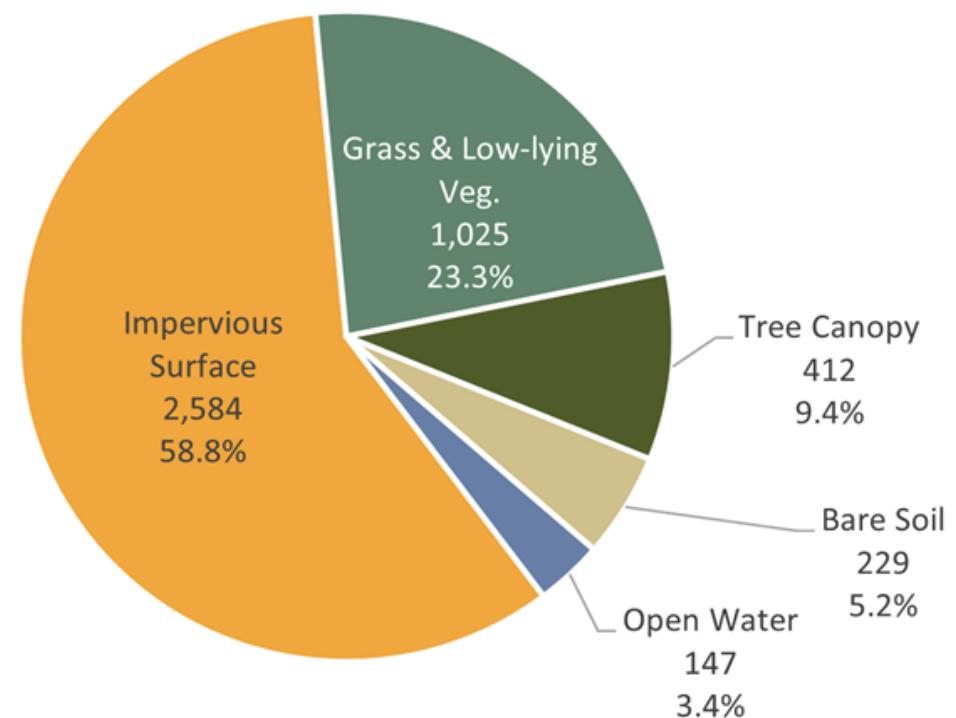


Understanding the existing conditions at the time of the development of the Urban Forest Management Plan (UFMP) is important to developing objectives and corresponding action steps to meet plan goals. Each of the following sections summarizes Watsonville's urban forest in 2022 as it relates to the geographic distribution of tree canopy, the community tree resource, urban forestry operations and funding, partners, policies and regulations, and the Sustainability Indicators.

## URBAN FOREST RESOURCE

Watsonville encompasses approximately 6.9 square miles (4,397 acres). Nearly 412 acres are covered by tree canopy, for an average canopy cover of 9.4% (Figure 1). Impervious surfaces (e.g., roads, parking lots, structures, etc.) make up 58.8% of the total land cover and 23.3% are pervious surfaces, such as bare ground, turf, or other low-lying vegetation. The community tree resource (i.e., public trees) provides an estimated 30 acres of canopy (Watsonville Community Tree Resource Analysis, 2022). Tree canopy extends beyond property lines and so do the benefits, which are enjoyed by the whole community. The more tree canopy, the more benefits to the community.

Figure 1: Tree Canopy and Land Cover



## GEOGRAPHIC DISTRIBUTION OF TREE CANOPY

Tree canopy is the layer of leaves, branches, and stems of trees and other woody plants that cover the ground when viewed from above. Understanding the location and extent of tree canopy is critical to developing and implementing sound management strategies that will promote the smart growth and resiliency of Watsonville's urban forest and the services that it provides to the community. A tree canopy assessment provides a bird's-eye-view of the entire urban forest and includes consideration of tree canopy along with other primary land covers, including impervious surface, low-lying vegetation, bare soils, and water. This information helps managers better understand tree canopy in relation to other geospatial data, including distribution of tree canopy, geopolitical patterns, and potential planting areas. The analysis was used in conjunction with data on community demographics (i.e., census data) to better understand the distribution of tree canopy as it relates to these other available metrics and to establish a baseline for assessing change.

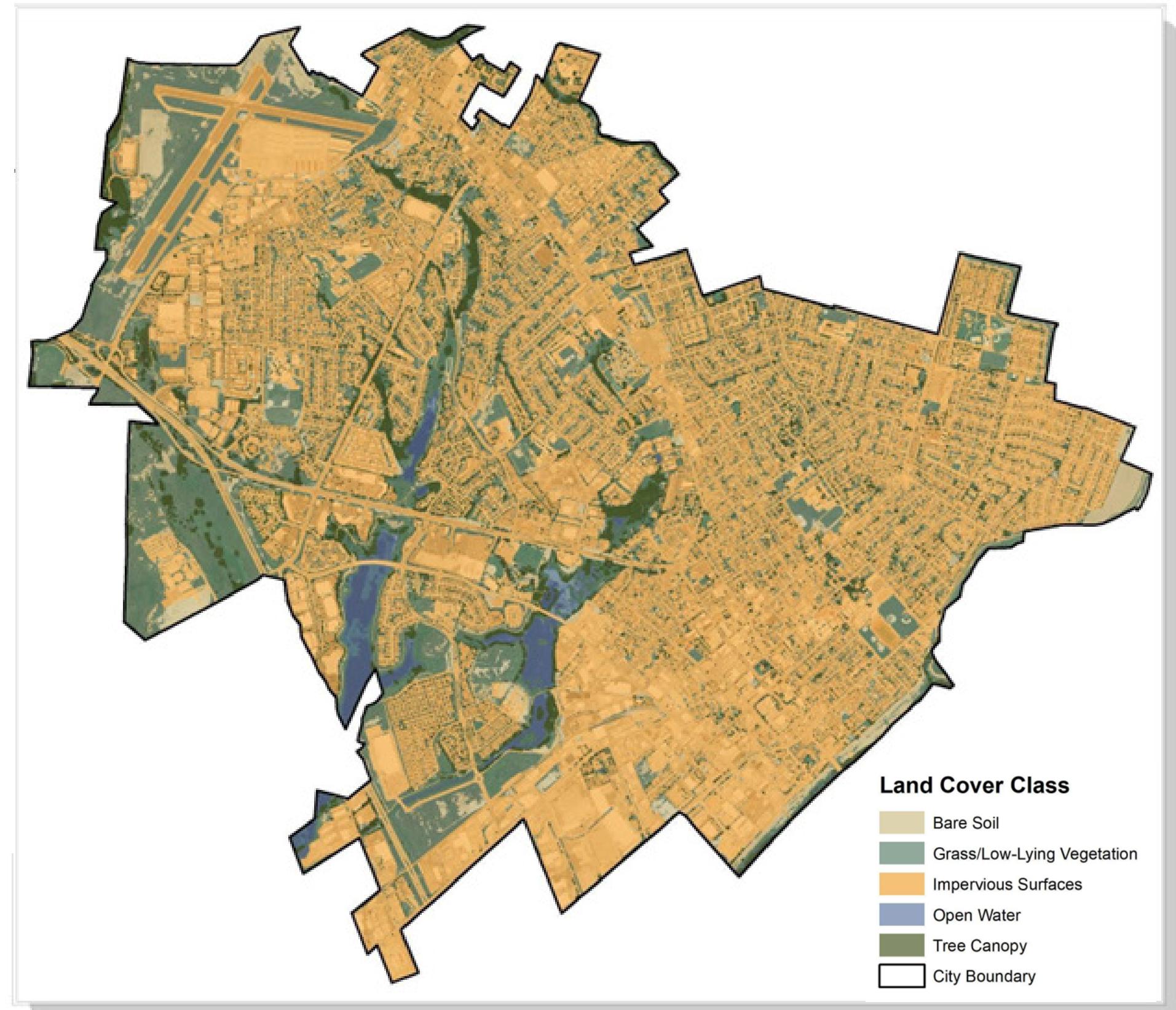
## LAND COVER SUMMARY

Watsonville encompasses approximately 6.9 square miles (4,397 acres). Currently, the overall tree canopy covers approximately 9.4% of this overall area. In addition to tree canopy, Watsonville's land cover includes 58.8% impervious surface, 23.3% grass and low-lying vegetation, 5.2% bare soil, and 3.4% open water (Table 3). Considering the current canopy cover (412 acres) and pervious surfaces that could support tree planting (excluding cemeteries, ball fields and other areas), Watsonville has the potential to reach a canopy cover of 30%.

Table 3: Land Cover in Watsonville

Land Cover Class	Acres	% of Land Cover
Impervious Surface	2,584	58.80
Grass & Low-lying Veg.	1,025	23.30
Tree Canopy	412	9.40
Bare Soil	229	5.20
Open Water	147	3.40
<b>Total</b>	<b>4,397</b>	<b>100.00%</b>

Map 1: Watsonville Land Cover Classification as of June 2023



LET'S RESTORE AS MUCH NATURAL HABITAT AS WE POSSIBLY CAN!

-SURVEY RESPONDENT



## TREES HELP REDUCE FLOODING

Flooding events have occurred throughout Watsonville's history. Levee systems have been engineered to help manage flooding in the Pajaro River Valley (Pajaro River Watershed), but have proven to be insufficient after decades of numerous flooding events which have resulted in significant economic damages and loss of life. Recently, the Pajaro Regional Flood Management Agency was created to update the Pajaro River levee to withstand a 100-year flood. Although, the Pajaro River Flood Risk Management Project is not expected to begin construction on the levee until 2025. Recent "atmospheric rivers" brought severe flooding to areas that are not within flood zones, which suggests that more localized efforts to manage flooding is needed.

Along with Watsonville's proximity to the Pajaro River and sloughs, the lack of tree canopy is a contributing factor to flooding in the community. With nearly 59% of the overall land cover made up of impervious surfaces, there is limited opportunity for rainfall to absorb into the ground. Furthermore, many neighborhoods lack adequate tree canopy and have large areas of compacted soils. The water has nowhere to go but into streets and subsequently run off into storm drains.

Not only can the runoff from storm events result in flooding, but it can impact local water quality. The runoff can cause erosion of the banks of rivers, creeks, and sloughs in the area. This erosion can introduce a lot of sediments and pollutants to the water supply, reducing water quality. Additionally, sewage systems can become overwhelmed with water and result in sewage leaking into waterways.

Neighborhoods with trees along streets, not only improve the aesthetics but also serve a functional role in stormwater management. The bark and leaves of trees can hold large volumes of rainfall and can help clean it, before particulate matter enters the water supply. Trees along waterways can help slow flood waters, reduce erosion, and filter harmful runoff from the surrounding land. By expanding tree canopy over impervious surfaces, there is a greater opportunity for precipitation to be captured by tree canopy, instead of pooling on hardscape and overwhelming storm drains.



## TREE CANOPY BY LAND USE AS OF JUNE 2023

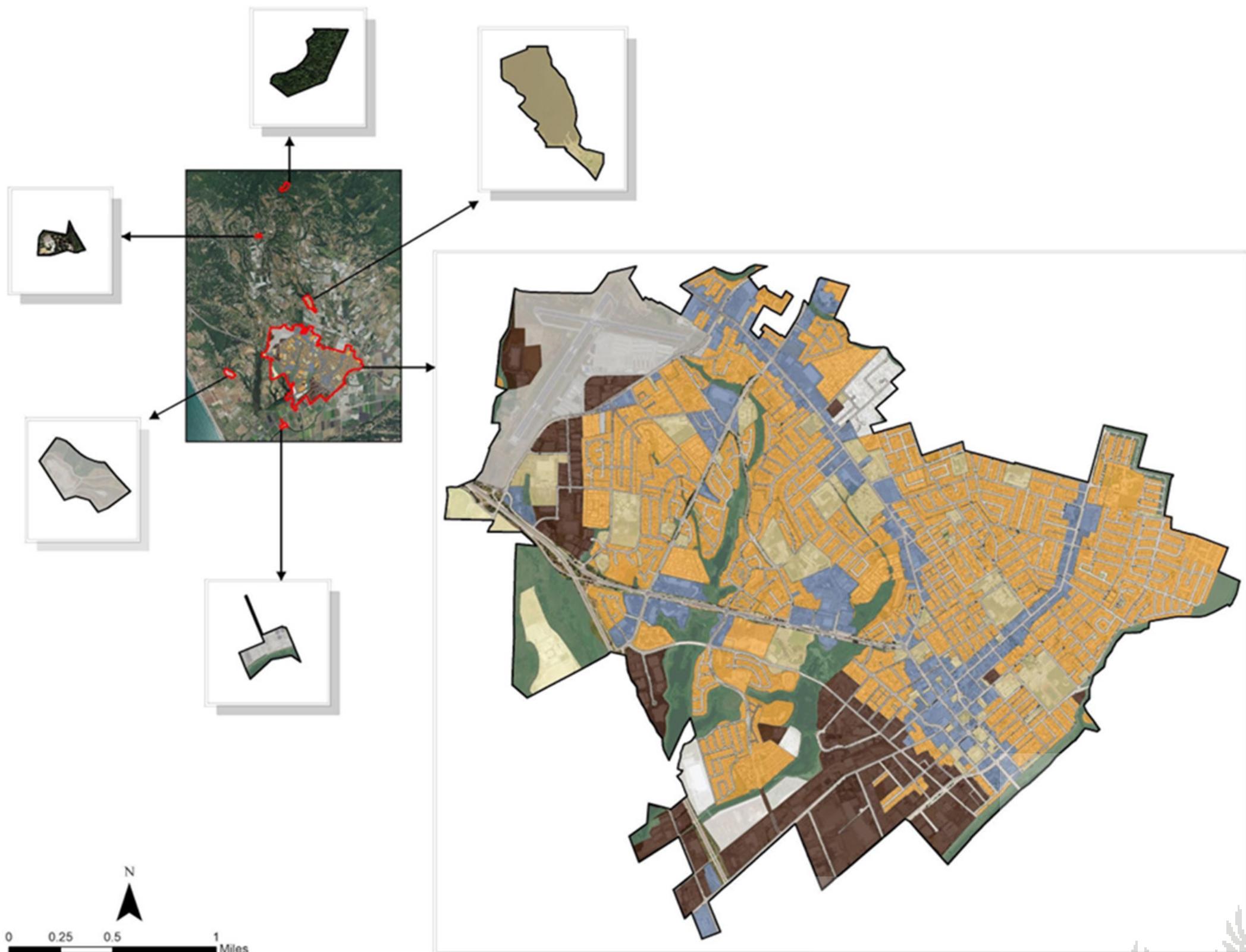
Map 2: Tree Canopy by Land Use as of June 2023

Tree canopy cover and canopy potential can vary widely within a city depending on land use. Residential land use covers the most area in Watsonville (1,531 acres) and has an average canopy cover of 8.9%. Residential areas have the potential to support more than 37% canopy cover, which indicates there is considerable opportunity for tree planting and preservation on private property. While the City cannot directly influence private tree planting, current efforts such as free tree programs encourage private tree planting and will result in an increase in canopy cover for private land use.

Areas classified as commercial land use have below-average canopy cover (less than 6%), but have nearly 156 acres that could potentially support additional tree plantings. Increasing tree planting on commercial properties, through regulatory or other avenues, could help to meet the estimated potential canopy cover of 19%. While there are opportunities to expand canopy across all land use designations, the City has the greatest influence over tree planting and tree preservation on public land and facilities (31.5% potential canopy). The City also will have greater influence on planting in open spaces, parks, and in public rights-of-way (ROW), despite related challenges with space availability.

### Land Use

<span style="background-color: #6b8e23; border: 1px solid black; display: inline-block; width: 15px; height: 15px;"></span>	Environmental Mgmt.
<span style="background-color: #8c7b4d; border: 1px solid black; display: inline-block; width: 15px; height: 15px;"></span>	Agriculture
<span style="background-color: #4a7ebb; border: 1px solid black; display: inline-block; width: 15px; height: 15px;"></span>	Commercial
<span style="background-color: #f0f0a0; border: 1px solid black; display: inline-block; width: 15px; height: 15px;"></span>	Coastal Zone
<span style="background-color: #333333; border: 1px solid black; display: inline-block; width: 15px; height: 15px;"></span>	Industrial
<span style="background-color: #c8c880; border: 1px solid black; display: inline-block; width: 15px; height: 15px;"></span>	Public/Quasi-Public
<span style="background-color: #ffcc00; border: 1px solid black; display: inline-block; width: 15px; height: 15px;"></span>	Residential
<span style="background-color: #f0f0f0; border: 1px solid black; display: inline-block; width: 15px; height: 15px;"></span>	Specific Plan Area
<span style="background-color: #cccccc; border: 1px solid black; display: inline-block; width: 15px; height: 15px;"></span>	Transportation, Communication, Utilities
<span style="border: 1px solid black; display: inline-block; width: 15px; height: 15px;"></span>	City Boundary



## CANOPY BY SCHOOLS

Watsonville has 25 school properties, when combined they span 231 acres. School properties have 12.8 acres of tree canopy and 5.5% canopy coverage which is below the average canopy cover throughout the rest of the community. In addition, tree canopy varies greatly by school type (Table 4). Public schools have lower canopy cover than private schools (3.9% versus 16.7% canopy cover). There is potential for increased tree canopy at nearly all of the school properties. The City should explore ways to partner with schools to increase canopy cover. Students benefit when school properties have ample tree canopy cover. Access to green infrastructure has been shown to heighten student performance by increasing attention spans and reducing stress levels. Furthermore, tree canopy has been shown to increase activity levels and reduce the risk of physical and mental health illnesses (Li and Sullivan, 2016).

Table 4: Tree Canopy by Schools

School Property Type	Number of Schools	Acres	Canopy Acres	Canopy %
Administrative Offices	1	1.75	0.05	2.67
Adult Education	1	0.30	0.00	0.00
Private School	7	29.72	4.96	16.70
Community College	2	2.42	0.11	4.37
Elementary School	8	68.00	4.31	6.34
High School	2	75.26	1.32	1.75
Middle School	3	51.84	1.95	3.76
SELPA School	1	2.00	0.09	4.29
<b>Total</b>	<b>25</b>	<b>231.27</b>	<b>12.78</b>	<b>5.53%</b>



## CANOPY BY STREET RIGHTS-OF-WAY

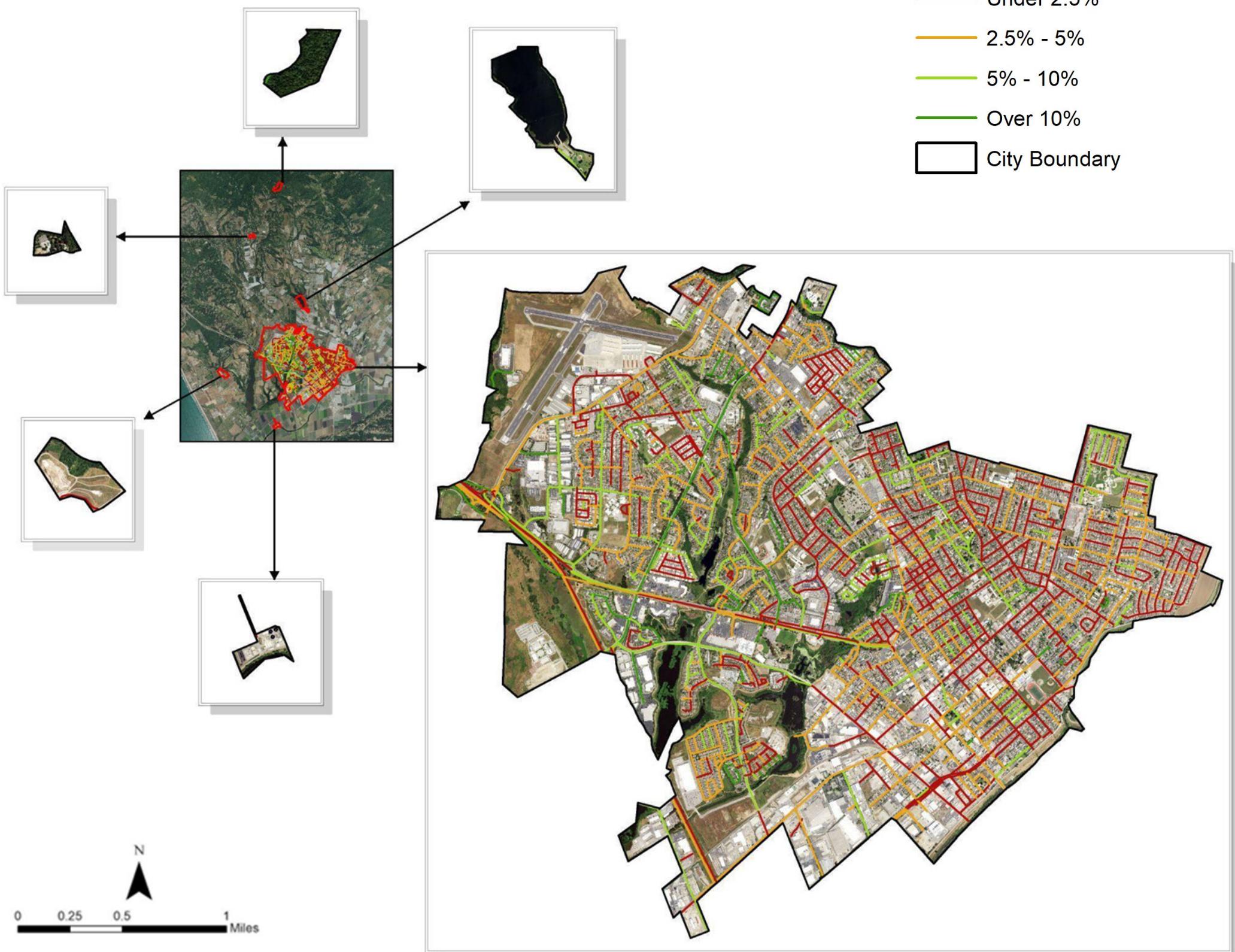
The City maintains trees in the public rights-of-way (ROW). By planting in ROW, urban forest managers have an opportunity to not only support citywide canopy goals but also increase equitable distribution of canopy throughout the city where ROW canopy is limited. In Watsonville, the land area in ROW covers approximately 693 acres and has an average canopy cover of 5.5%.

The highest level of canopy cover in ROW within the main city boundary is along Manfre Road (47.9%). Generally, other ROW areas with relatively high canopy cover are seen along major streets and boulevards, such as Freedom Boulevard, South Green Valley Road, and Ohlone Parkway.

**While a number of connecting streets have moderate to high canopy levels, more than three-quarters of ROW in Watsonville have less than 10% canopy cover.** A majority of these low-canopy ROW areas fall within residential neighborhoods, and are particularly concentrated in the southeast portion of the city. For example, East Lake Ave (Highway 152) is a major connector route that runs through several neighborhoods in eastern Watsonville. While this street has 15.9 acres of total ROW area, only 0.2 acres are identified as having canopy for approximately 1% average canopy cover.

Tree canopy can be increased in areas of ROW such as East Lake Ave through private tree programs which include outreach, education, and discounted or free trees. The City can increase ROW planting by ensuring a high stocking level and working to create more planting space for community trees in ROW. Infrastructure improvements can increase ROW planting availability, including developing planting space in medians, creating more tree wells in sidewalks, and developing park strips. There are an estimated 127 acres of total available planting space in Watsonville ROW (Tree Canopy & Land Cover Assessment, 2022).

Map 3: Tree Canopy by Rights-of-Way



## TREE CANOPY AND EQUITY

Trees and tree canopy can mitigate the impacts of urban heat islands and flooding. The distribution of tree canopy and how tree canopy relates to other socioeconomic metrics and indicators of health can be explored by comparing tree canopy cover and data from the U.S.Census and CalEnviroScreen (Appendix C). However, the results of this analysis for Watsonville were inconclusive, as all but one census tract and more than 50% of Census Block Groups in the city are shared with adjacent communities. These results do not deny that inequities exist. According to American Forests' [Tree Equity Score](#), the City has a composite score of 67, which suggests that the health, economic, and climate benefits of trees are not equitably distributed throughout the community. Tools like TreeKeeper Canopy® can be used to dynamically explore opportunities for tree planting and tree preservation to bridge gaps in tree canopy coverage, especially in areas where tree canopy is below the city average or where there are vulnerable populations based on environmental and social criteria. Further exploration, such as ground truthing, can help determine the areas in greatest need of trees and tree canopy.

The CalEnviroScreen tool determined Watsonville to have a significant percentage of residents living in disadvantaged communities (DAC) or areas with high pollution burdens. Compared to neighboring communities, Watsonville has the highest percentage of low income residents and the lowest tree canopy cover. Within Watsonville, the surface temperatures are highest in the census tract northwest of Airport Boulevard and tracts that are northeast of Lincoln Street. Increasing canopy cover in these areas can lessen the effects of urban heat islands and reduce adverse health events for vulnerable populations. Because of Watsonville's proximity to the coast, it is not projected to experience as intense extreme heat events as areas further inland (CAAP, 2021). Nonetheless, patterns in tree canopy should be investigated to prioritize actions that will resolve inequities within the community.

Perhaps the biggest threat to Watsonville is flooding, this risk is exacerbated by climate change. According to the Watsonville Local Hazard Mitigation Plan (2020), there will likely be fewer total days of precipitation, but days with precipitation will be wetter. Atmospheric rivers, like those occurring from storms in winter of 2022-2023, are expected to increase under projected climatic conditions. These and other extreme precipitation events will likely result in flooding. In Watsonville, people who self-reported Latino or Hispanic Origins tend to live in census tracts with higher concentrations of stormwater runoff, which can contribute to flooding.

At an overall city-wide level, tree canopy plays a role in reducing runoff and urban heat islands (Livesley et al. 2016). Trees are beneficial in watersheds, because of their role in capturing some of the water and reducing the volume of water that enters creeks, streams, and rivers. With less water flowing into creeks, streams, and rivers, flooding risks can be reduced. In this way, trees serve as "green infrastructure" to help with the task of absorbing and filtering stormwater (Carmichael et al. 2019). More tree canopy cover and green spaces in areas where people live and work can also help address issues of "heat equity" and provide relief to those who are most at risk during heat waves (EPA, 2012).

## DISADVANTAGED COMMUNITIES

The California Environmental Protection Agency (CalEPA, 2022) has identified census tracts across California as "disadvantaged communities". Disadvantaged communities are areas that experience excessive environmental pollution and/or environmental hazards. Because of excessive pollution and other environmental hazards, many of the people in these areas have worse health outcomes than other communities in the state. The purpose of identifying disadvantaged communities is to direct funds from Senate Bill 535 to programs that benefit disadvantaged communities and improve public health.

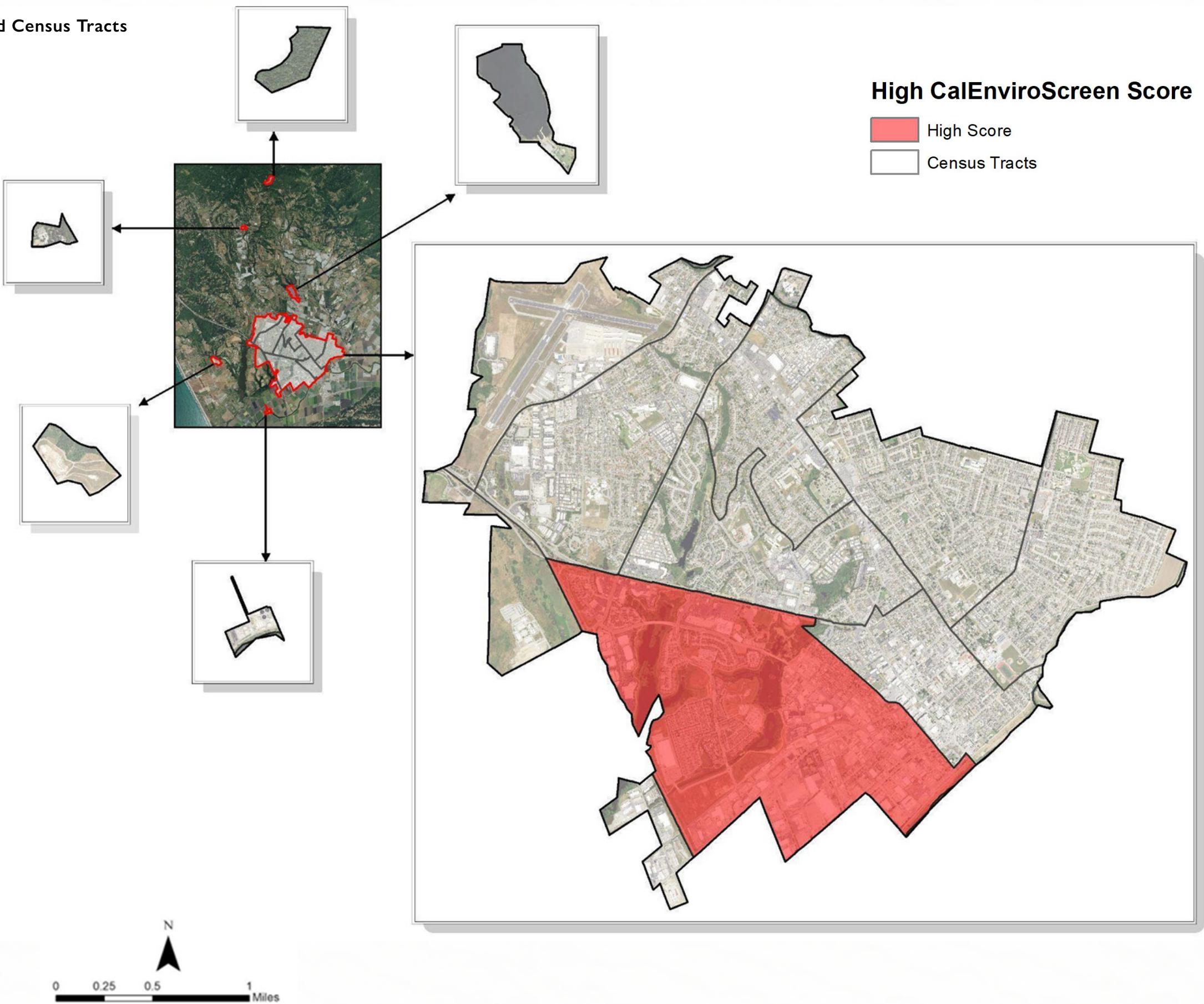
To identify disadvantaged communities, the Office of Environmental Health Hazard Assessment (OEHHA) as part of CalEPA's environmental justice program developed a screening tool known as CalEnviroScreen. CalEnviroScreen scores census tracts based on the following indicators:

- Exposure (e.g., air quality, traffic, drinking water contaminants, etc.)
- Environmental Effects (e.g., hazardous waste generators and facilities, impaired water bodies, etc.)
- Sensitive Populations (e.g., asthma, cardiovascular disease, and low birth weight infants, etc.)
- Socioeconomic Factors (e.g., educational attainment, poverty, unemployment, etc.)

The scores are then used to determine a census tracts' overall pollution burden or CalEnviroScreen Score. The higher the score, the more disadvantaged the community. In Watsonville, two census tracts are considered "disadvantaged", with Cumulative CalEnviroScreen 3.0 scores in the 80th percentile. Approximately 27% of Watsonville's population reside in these two census tracts.



Map 4: Disadvantaged Census Tracts



## CANOPY BY PARKS

Watsonville has 29 parks spanning 147.4 acres, 17.6 of these acres are tree canopy. The average canopy cover in all of the parks is 12% (Table 5) and there is potential to increase canopy cover up to 34.1%. The parks are categorized by:

- Community Parks seven parks that together encompass 126 acres and have an average of 9.9% canopy cover
- Neighborhood Parks six parks that together encompass 10.3 acres and have an average of 31.6% canopy cover
- Pocket Parks 16 parks that together encompass 10.3 acres and have an average of 18.1% canopy cover
- Community Garden- one park (the future Loma Vista Dr Park) encompasses more than a half acre and has an average of 3.4% canopy cover

Of the community parks, Pinto Lake Park is the largest park spanning 78.7 acres. However, a large portion of Pinto Lake Park is open water and therefore not plantable (60.6 acres). With many built attractions (i.e., tennis court, basketball court, community center, and skate park), Ramsay Park has 19.4% canopy cover and the greatest amount of impervious surface (7.4 acres). There are many areas where trees cannot be planted in Ramsay Park as they would inhibit the designated use, such as soccer fields. Not considering these areas, Ramsay Park has 6.6 acres of plantable space. Tree planting and preservation efforts could increase canopy coverage to 14.1%. Several community parks, including Ramsay Park and Franich Park, have ample opportunities for additional tree planting and could help to increase the overall canopy cover.

Table 5: Tree Canopy by Parks

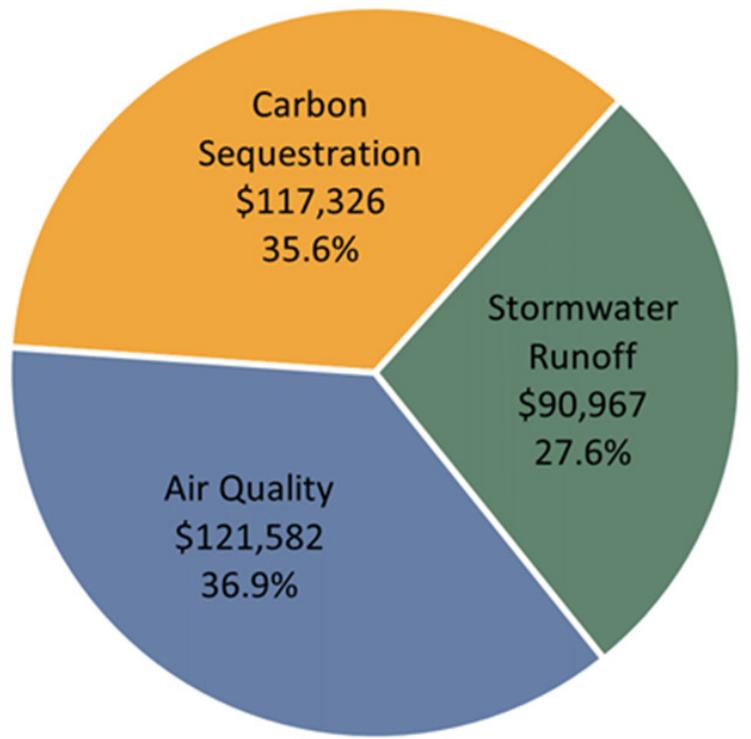
Park Name	Acres	Canopy Acres	Canopy %
Community Park	125.98	12.41	9.85
Pinto Lake Park	78.71	5.95	7.57
Ramsay Park	24.26	4.70	19.38
Franich Park	14.02	0.66	4.72
Seaview Park	6.27	0.99	15.71
Ramsay Park Tennis Courts	1.46	0.01	1.00
Las Brisas Park	1.00	0.08	7.56
Emmett Courts Park	0.26	0.03	10.37
<b>Neighborhood Park</b>	<b>10.53</b>	<b>3.32</b>	<b>31.55</b>
Callaghan Park	2.64	0.52	19.59
Hope Dr Park	2.46	0.22	8.85
Peace Dr Park	2.44	1.50	61.49
Crestview Park	2.01	0.91	45.41
River Park	0.98	0.18	17.88
<b>Pocket Park</b>	<b>10.30</b>	<b>1.86</b>	<b>18.06</b>
Joyce-McKenzie Park	1.72	0.10	6.04
City Plaza	1.40	0.37	26.27
Muzzio Park	1.12	0.19	16.80
Hazelwood Park	1.07	0.20	18.91
Flodberg Park	1.06	0.14	13.35
Marinovich Park	1.03	0.19	18.59
Future Davis Ave Park	0.51	0.00	0.39
Brentwood Park	0.40	0.00	0.00
Riverside Mini Park	0.34	0.04	12.23
Atri Park	0.32	0.16	49.29
Kearney Park	0.29	0.14	48.01
Bronte Park	0.28	0.25	88.65
Arista Park	0.27	0.04	14.62
Memorial Park	0.22	0.08	34.65
Cherry Blossom Park	0.15	0.04	26.75
Victorian Park	0.13	0.00	0.92
<b>Community Garden</b>	<b>0.60</b>	<b>0.02</b>	<b>3.42</b>
Community Garden/Future Loma Vista Dr Park	0.60	0.02	3.42
<b>Total</b>	<b>147.41</b>	<b>17.61</b>	<b>11.95%</b>



## ENVIRONMENTAL BENEFITS

To date, Watsonville's urban forest has stored 13,590 tons of carbon in woody and foliar biomass, valued at over \$2.3 million. Annually, Watsonville's trees provide quantifiable benefits totaling \$329,875 to stormwater, air quality, and carbon sequestration.

Figure 2: Environmental Benefits from the Urban Forest



### Stormwater Runoff

The urban forest intercepts 5.2 million gallons of stormwater annually, protecting ground and surface water supplies from harmful pollutants and flooding, for a total of \$90,967.

### Air Quality

The urban forest decreases ozone ( $O_3$ ), nitrogen dioxide ( $NO_2$ ), sulfur dioxide ( $SO_2$ ), and particulate matter ( $PM_{10}$ ) resulting in annual air quality improvements, valued at \$121,582.

### Carbon Sequestration

The urban forest annually sequesters 688 tons of carbon dioxide ( $CO_2$ ) from the atmosphere, valued at \$117,326.

TREES ARE LOVELY AND PROVIDE SHADE  
-SURVEY RESPONDENT



## LARGE TREES: BIG BENEFITS

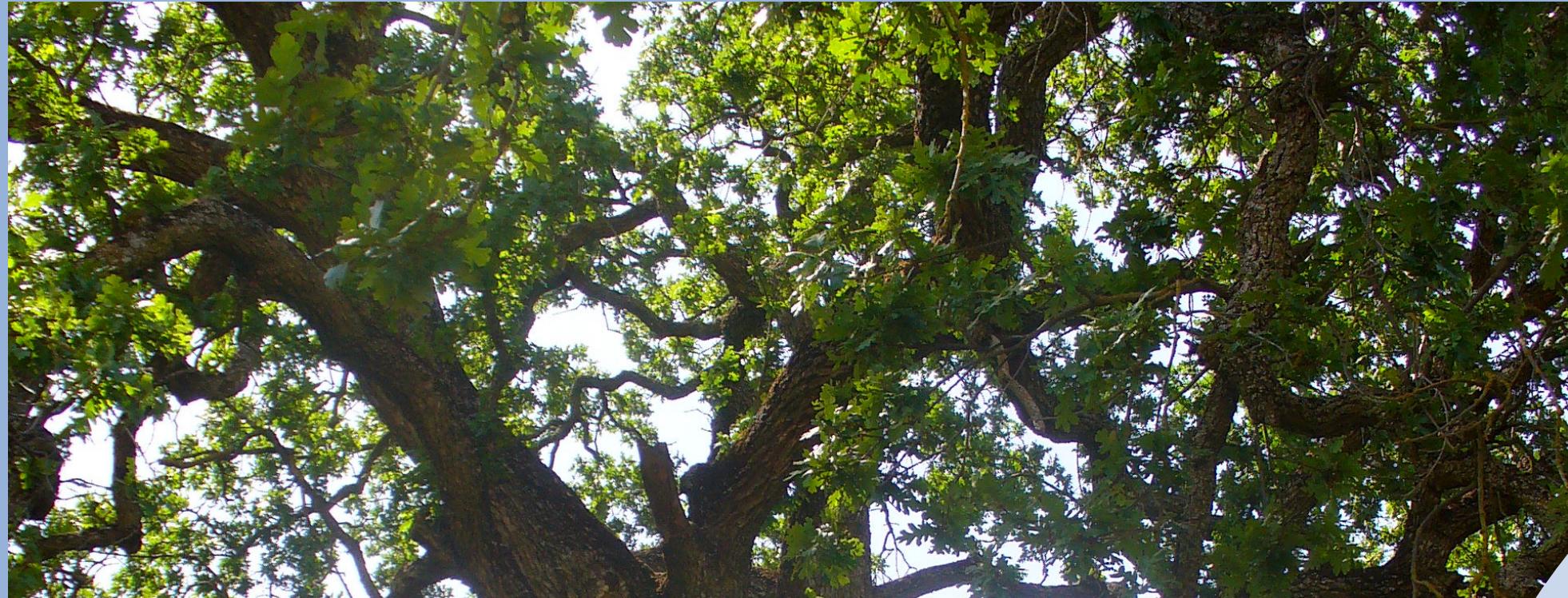
Large, mature trees contribute the greatest amount of environmental benefits, yet are threatened by environmental stressors, habitat loss, and removal. Trees are long-lived organisms, many species commonly live 500 years, and the long-lived species up to 8,000 years. There are many reasons to support the preservation of old, iconic trees. Old trees and their benefits are not easy to replace because they take significant lengths of time to develop. Also complicating their longevity is the fact that trees in urban environments have limited lifespans.

### Some benefits of old trees include:

- Supporting ecological and biological processes such as:
  - Wildlife habitat
  - Carbon sequestration
  - Nutrient cycles and nutrient “hotspots”
  - Distribution of plant and animal species
  - Recruitment and succession of their species
- Contributing greater environmental benefits
- Enhancing beauty and emotional/spiritual connection

Large old trees provide significant carbon storage in an era with high atmospheric greenhouse gas concentrations and unproportionate amounts of carbon being released into the atmosphere from burning fossil fuels. The preservation of large trees is important in helping combat this phenomenon because large old trees continue to actively fix carbon in greater amounts than smaller trees. In other words, large trees are disproportionately important carbon sinks (Stephenson et al, 2014). This, coupled with the carbon used in planting and logging younger trees make their conservation important for gains in carbon storage.

Lindenmayer and Laurance (2017) recognize that “large old trees are among the most imperiled organisms on earth and that their protection demands innovative approaches to management and monitoring over unprecedented time frames.” The importance of preserving mature, significant trees through historic or heritage tree ordinances is more important than ever. These trees may be removed because they are perceived as a health or safety hazard. A paradigm shift is needed where communities reconsider health and safety in a way that allows both the large tree to remain and the community to be safe. This could include creating buffer zones around large, mature trees, and using new technologies to determine the extent of decay and potential risk in high use areas and safety zones to prevent targets.



## CANOPY GOALS AND CANOPY POTENTIAL

The percentage of canopy cover in the community is based on the amount of acreage of tree canopy that covers the overall land. Setting canopy goals is an important step in urban forest management and can help to ensure the quality of life and sustainability of a community. While the tree canopy potential for Watsonville is currently 30%, this value does not consider the potential for other land cover (e.g., infill development, impervious surfaces planted with trees, etc.). Agricultural land is common in Watsonville. Some of these areas will inevitably be developed to include structures, roads, and parking lots that will compete with trees for space. The population of the community is increasing, and development will likely continue to expand and create more competition for trees.

Table 6 provides a side-by-side comparison of potential canopy goals over a 20 year period as projected by TreeKeeper Canopy®. The primary factors that influence the number of trees that need to be planted annually are the size of trees planted, the ratio of small, medium and large trees, and mortality rates (the percentage of trees that die annually).

Table 6: Canopy Goal Projections

Projection	1	2	3	4	5	6	7	8
Goal Percentage	15%	15%	20%	20%	20%	20%	15%	15%
Timeframe	20	20	20	20	20	20	20	20
Mortality rate	3%	3%	3%	3%	3%	3%	3%	5%
Ratio (Small:Medium:Large)	40:30:30	40:30:30	40:30:30	40:30:30	30:30:40	20:40:40	20:40:40	20:40:40
Small crown size (ft)	20	25	20	25	25	25	20	20
Medium crown size (ft)	30	35	30	35	35	35	30	30
Large crown size (ft)	40	45	40	45	45	45	40	40
Total trees to plant	15,700	11,600	29,700	21,800	19,500	18,500	13,000	13,200
Trees planted annually	787	578	1,485	1,091	976	925	650	660

Considering the existing land cover and development pressures, a goal of 15% tree canopy cover by 2043 is likely attainable but will require the commitment and support of the community. This goal can be achieved by planting approximately 600-800 trees every year over the next 20 years and by preserving existing trees, which is within the City's current capacity.

Canopy goals can be tailored to specific land use, such as residential areas or open spaces. A determinant for actually reaching canopy goals is dependent on the willingness of the community to accomplish and sustain these goals. Expansion of the canopy cannot be accomplished through planting trees on public property alone; it also requires the preservation and conservation of existing trees and new tree planting on private property. Approximately 41% of tree canopy is in residential land use, which makes tree canopy expansion on private property especially important to reach the community's tree canopy goal. This means support and collaboration from private property owners are needed to preserve and expand tree canopy.

## PLANTING PRIORITIES

Planting trees increases canopy cover and replaces trees that are removed. However, not all areas are suitable for planting and funds are often limited. While "Right Tree, Right Place" is important to practice at the site level, managers should also consider where planting trees will provide the greatest return on investment and meet the goals of the local community.

As a part of the development process for the UMP, a GIS-based tree canopy and land cover assessment mapped the location and extent of existing tree canopy in Watsonville and identified other areas where new trees and canopy might be added. The assessment identified nearly 950 acres where there is potential for planting additional trees. These areas exclude areas like agricultural land, cemeteries, and ball fields where trees are not desired. Prioritizing these potentially plantable areas can help ensure that new tree planting projects are strategically planned to maximize available funds and meet community needs. To aid in this process, TreeKeeper® Canopy, an interactive GIS interface tool, allows forestry managers and interested members in the community to identify potential planting areas. Priority can be placed on certain variables to address a variety of social concerns, including:

- Reducing stormwater runoff
- Reducing surface temperatures and heat islands
- Improving air quality
- Reducing erosion
- Tree equity
- Low income populations
- Populations with high rates of Black, Indigenous, and other people of color
- Low canopy cover
- High canopy potential
- High population density (per square mile)

## TREEKEEPER CANOPY

[TreeKeeper Canopy](#) is a public-facing website that can be explored by community members who want to better understand canopy trends as they relate to different land cover and socioeconomic factors. Watsonville's urban forest canopy data (public and private) can be used to make data-driven decisions on tree planting and maintenance that have the most return on investment. Future tree planting programming and outreach and education efforts can be prioritized in identified areas to improve the equitable distribution of tree canopy.

### This tool allows users to:

- Quickly observe data from canopy assessments
- Prioritize and plan tree plantings using environmental and social equity data
- Create custom tree canopy goals and projections
- Share the benefits and promote the value of the urban forest

Resources for tree planting are often limited. Using planting priorities to identify planting locations can help maximize available resources, guide strategic planting to achieve specific objectives, and meet community needs. TreeKeeper Canopy's "Prioritize" tool can be used to explore geographic areas of interest throughout Watsonville where trees could potentially be planted on both public and private property. Planting can be prioritized and weighted by vulnerability parameters for social and environmental criteria. Depending on planting objectives, the areas recommended for priority planting will shift. For instance, the planting areas that have the highest planting priority to address stormwater runoff may not be the same areas for higher priority planting to address surface temperatures.

TreeKeeper Canopy's "Plant" tool can estimate tree planting and maintenance costs, which consider the size of trees planted and mortality rates. Urban forest managers or interested community members and/or groups can develop tree planting plans that include canopy goals, projections for the number of trees to be planted over a period of time, and estimated planting and maintenance costs. While planting plans do not guarantee that funding will be available to support larger planting efforts, they can serve as a tool to advocate for funds to accomplish planting objectives. Additionally, if funding sources do become available, planting plans can help allocate those funds appropriately to meet community needs. For example, if funding for stormwater mitigation were to become available, TreeKeeper Canopy could be used to identify planting sites that would provide the greatest benefit to reducing stormwater runoff.



I'M SO PROUD OF ALL THE PEOPLE THAT ARE  
INTERESTED IN TAKING CARE OF OUR COMMUNITY!  
-SURVEY RESPONDENT

## COMMUNITY TREE RESOURCE

Community trees (publicly managed trees along streets, parks, and at City facilities) play an important role in Watsonville. The community tree resource provides numerous tangible and intangible benefits to residents, visitors, neighboring communities, and the surrounding Pajaro Valley. People in the community value this resource and recognize it as integral to the livability and comfortability of the community.

### RESOURCE STRUCTURE

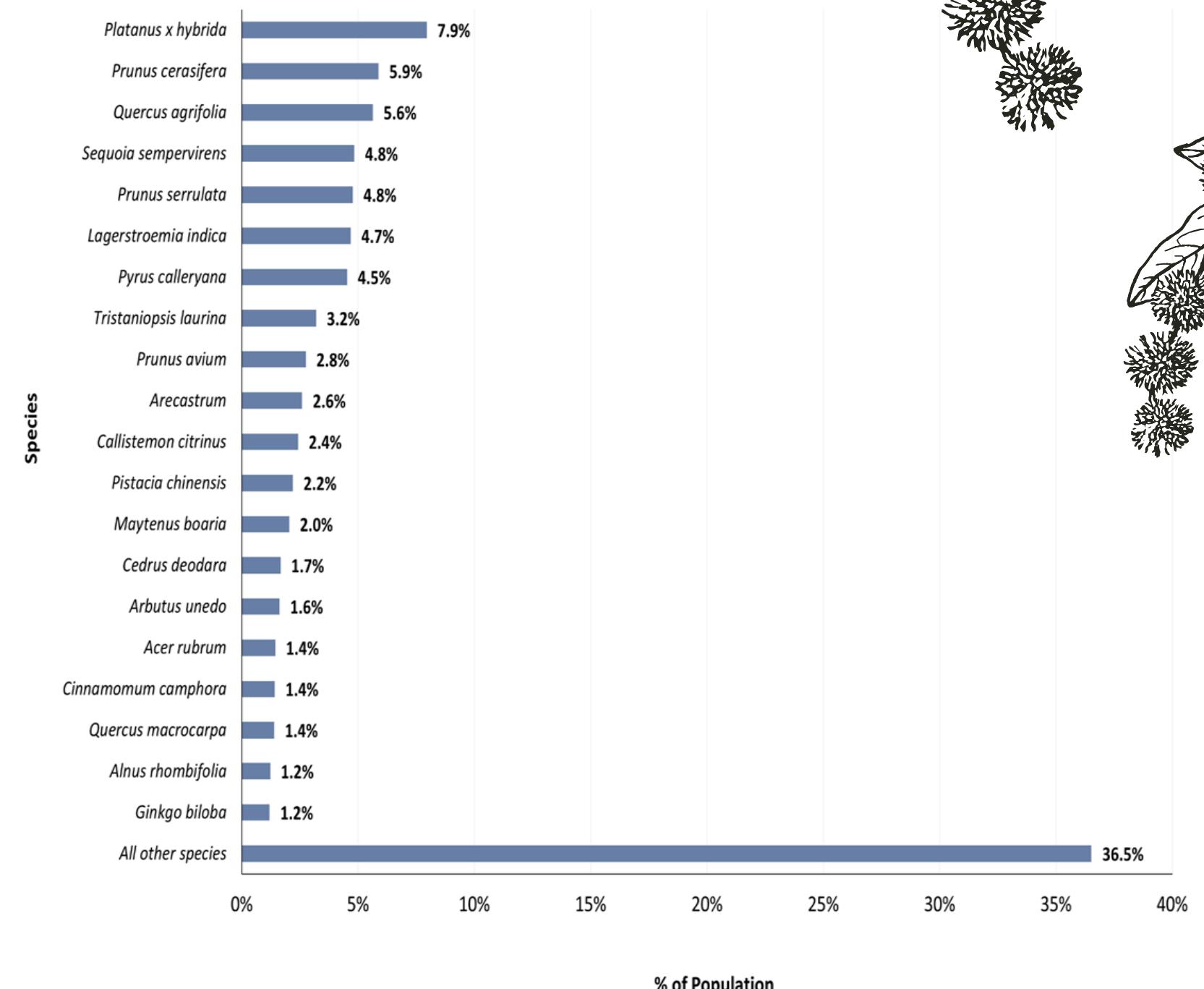
Watsonville's community tree inventory includes 4,504 trees and 138 available planting sites (2021). The following information characterizes Watsonville's community tree resource:

- The most common species is *Platanus x hybrida* (London planetree, 8.0%), followed by *Prunus cerasifera* (cherry plum, 5.9%), and *Quercus agrifolia* (coastal live oak, 5.6%) (Figure 3).
- 62.7% of trees are less than 8 inches in diameter (DBH) and 6.9% of trees are larger than 24 inches in diameter, indicating an established age distribution.
- Community trees provide approximately 29.6 acres of canopy cover which accounts for 0.7% of the total land area.
- The current stocking level is 97%, based on 138 available planting sites (including 40 vacant sites and 98 stumps) and 4,504 existing trees.
- Replacement of all 4,504 community trees with trees of equivalent size, species, and condition, would cost more than \$10.9 million.
- Community trees are storing more than 1,247 tons of carbon (CO<sub>2</sub>) in woody and foliar biomass to date.
- The annual quantifiable benefits provided by community trees totals \$22,810, an average of \$5.06 per tree. These benefits include pollution removal (\$14,169), carbon sequestration (\$5,368), and avoided stormwater runoff (\$3,273). These benefits do not include energy use benefits and other intangible benefits to the community.

One limitation of the summary is that it does not fully account for all of the benefits provided by the community tree resource. Some benefits could not be included in the analysis such as reductions in energy use (electricity and natural gas) through shading and climate effects. Other benefits are intangible and/or difficult to quantify such as increases in property values and impacts on psychological and physical health, crime, and violence.

Empirical evidence of these benefits does exist (Wolf, 2007; Kaplan and Kaplan, 1989; Ulrich, 1986), but there is limited knowledge about the physical processes at work and the complex nature of interactions make quantification imprecise. Tree growth and mortality rates are highly variable. A true and full accounting of benefits and investments must consider variability among sites (e.g., tree species, growing conditions, maintenance practices) throughout the City and variability in tree growth. In other words, trees are worth far more than one can ever quantify!

Figure 3: Most Prevalent Species (>1% of Population)



## SPECIES DIVERSITY

There are 182 unique species in the community tree resource. The species diversity in Watsonville is slightly less than the mean of 185 species reported from 18 California communities (Muller and Bornstein 2010). The three most predominant species represent 19.5% of the population.

Maintaining diversity in a community tree resource is important. The dominance of any single species or genus can have detrimental consequences in the event of storms, drought, disease, pests, or other stressors that can severely affect a community tree resource and the flow of benefits and costs over time. Catastrophic pathogens, such as Dutch elm disease (*Ophiostoma ulmi*), emerald ash borer (*Agrilus planipennis*), Asian longhorned beetle (*Anoplophora glabripennis*), and sudden oak death (*Phytophthora ramorum*) are some examples of unexpected, devastating, and costly pests and pathogens that highlight the importance of diversity and the balanced distribution of species and genera. In addition to these pests, there is a growing concern for polyphagous shot hole borer (PSHB) (*Euwallacea spp.*), a new pest complex that has devastated urban forests in Southern California due to its wide host range (Eskalen, 2015).

In light of significant pests and diseases, many cities are opting to increase tree species diversity to improve resilience. The widely used 10-20-30 rule of thumb states that an urban tree population should consist of no more than 10% of any one species, 20% of any one genus, and 30% of any one family (Clark et al, 1997; Santamour, 1990). While this rule does ensure a minimum level of diversity, it may not encourage enough genetic diversity to adequately support resilience. Therefore the 10-20-30 rule should be considered a minimum goal. Managers should always strive to increase the range of representation among species and genera within an urban forest. Among Watsonville's community tree population, no current species or genera exceed this rule of thumb.

To increase species diversity and promote greater resilience in the overall resource, future tree planting should focus on increasing diversity and reducing reliance on overused species. As over-predominant species are removed and replaced, new species should be introduced when possible. New species should be resistant to the known pest issues that currently pose a threat to the region. In addition, consideration should be given to species that withstand higher temperatures and periods of drought.

## RIGHT TREE, RIGHT PLACE

The practice of installing the optimal species for a particular planting site is known as the "Right Tree, Right Place". This philosophy considers the effects of tree growth on existing and planned utilities, existing landscapes, and other infrastructure. Factors to consider include planter size, soil characteristics, water needs, as well as the intended role and characteristics of the species. By considering the long-term consequences of planting a particular tree in a particular place, conflicts and premature removal of trees can be avoided.

Historically, proper consideration for species selection and planting location has not always been provided. Some species were planted heavily at different periods in the history of Watsonville's urban forestry program, including small-stature trees in rights-of-way. A few of these species are costly to maintain, some are poorly suited to the local climate, and others such as small-stature trees are limited in the benefits they provide. City staff and involved stakeholders aim to develop an updated species list for future planting focused on climate readiness and suitability for Watsonville. This list should also consider the past performance of certain tree species when determining future species selection. For example, London plane tree, the most prevalent species in the inventory (8%), is known to cause problems in planters and is costly to maintain as a result. Palm species are also included in the top ten most prevalent species in the inventory. Palms are known to be fast-growing and are aesthetically pleasing, but do not provide the same environmental benefits as trees yet require more maintenance.

Like many communities, Watsonville experiences tree-hardscape conflicts. Small tree wells and narrow park strips contribute to the roots of trees growing underneath sidewalks and cause lifting and heaving. These restricted spaces also contribute in limiting species selection to smaller stature trees, as well as limiting the growth potential of larger stature species. To avoid such conflicts in the future, species with a reputation for hard-scape conflicts should be reserved for better-suited, open areas with adequate space for root spread and growth (Appendix E). However, tree wells and park strips should be increased in size to accommodate larger stature species where possible.



## STOCKING LEVEL

The stocking level indicates how many planting sites within the community contain trees, versus those available for tree planting. With a stocking rate of 97%, Watsonville has an opportunity to fill 40 vacant planting sites and remove 138 stumps to plant new trees.

## RELATIVE AGE DISTRIBUTION

The age distribution of the urban forest is a key indicator and driver of maintenance needs (Richards, 1982/83). The relative age distribution can be approximated by considering the diameter at breast height (DBH) range of the overall inventory. Trees with smaller diameters tend to be younger. Palms do not increase in diameter over time, so they are not considered in this analysis. In palms, height more accurately correlates to age and mature height varies among palm species.

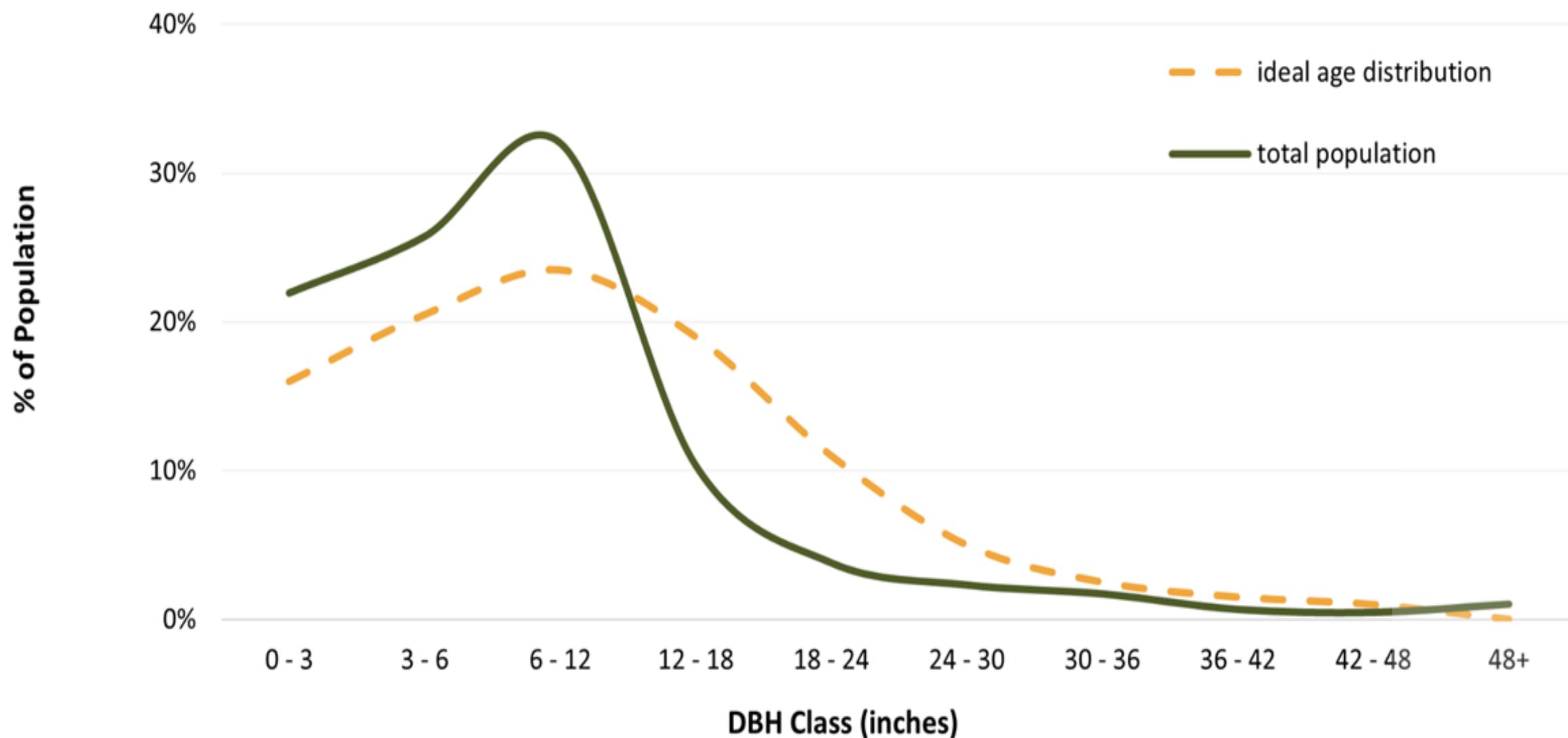
The age distribution of Watsonville's community tree resource (excluding palms) shows a mostly established population with a large number of young, recently planted trees.

Trees in the smaller diameter classes (8 inches or less in diameter) represent 62.7% of the overall inventory. Trees less than three inches in diameter represent 21.9% of the overall population, indicating a recent increase in new tree planting. However, more than a third of those plantings are small-statured species which do not have the same benefit potential as medium or large-stature trees. The costs of maintenance can be reduced over time through training pruning. Training, defined as the selective pruning of small branches to influence the future shape and structure of a young tree, is critical at this stage to prevent costly structural issues and branch failures as these young trees mature into their final size in the landscape.

Trees in the medium-diameter classes (between 8 and 18 inches in diameter) represent more than 33% of the overall inventory. These trees are generally established and are a mixture of young, large- and medium-stature tree species and mature small-stature species. This age group is a positive indicator of future benefits since large shade trees typically provide more shade, pollutant uptake, carbon sequestration, and rainfall interception than small trees.

Trees in the larger diameter class (>24 inches) represent 6.9% of the overall inventory. In general, this group of trees requires more regular inspections and routine maintenance as they mature. Planting enough trees to plan for the succession of trees that are mature and reaching the end of their useful life is important for maintaining the flow of benefits.

Figure 4: Relative Age Distribution



## URBAN FORESTRY OPERATIONS

Watsonville has a total of 4,504 community trees along streets, in City parks, and at City facilities. Responsibilities for tree care are shared between the departments of Parks and Community Services, Public Works, Watsonville Wetlands Watch (WWW), and residents and homeowners associations (HOA). Parks has a small in-house crew. Although there currently is a Certified Arborist on staff, the City does not have a dedicated city arborist and staff are not required to possess the International Society of Arboriculture Certified Arborist or other professional tree care licenses. Parks team members participate in weekly safety tailgates and records of participation are kept on file. Team members receive additional training on the proper use and maintenance of equipment.

Parks and Public Works are supported by contracted services in the care of community trees. The Parks Director manages tree work contracts, including monitoring to ensure trees are not over-pruned.





The following graphic summarizes the primary services provided to community trees:

#### Tree planting:

- Primarily funded through grants
- Planting projects mostly in parks, public rights-of-way (where feasible), and schools
- Tree-planting programs
  - Adopt a Tree
  - Commemorative Tree & Bench
- Species selected from Urban Greening Plan (2012)



#### Pruning operations:

- Proactive clearance and visibility pruning (all other pruning is reactionary)
- Root pruning to address infrastructure conflicts as needed



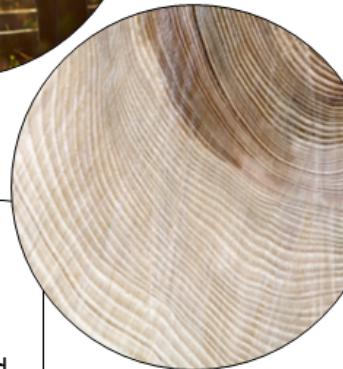
#### Tree establishment:

- Mulch replacement and stake monitoring and adjustment
- Tree replacement
- Watering of newly planted trees



#### Tree removal:

- Contractors complete most removals (Parks will remove smaller trees)
- Stumps are removed upon request
- Debris generated from removals diverted to greenwaste



#### Pest management:

- Pest management provided by Parks
- Preventative measures and pruning used to control pests
- Primary pests managed:
  - Aphids
  - Scale insects
  - Anthracnose



### Tree Care Operations

#### Service requests:

- Residents can call or email the city for services and evaluations
  - Response expected within 24-48 hours
  - Onsite inspection within 1-2 weeks



#### Emergency response:

- City-wide emergency response plan details all roles and responsibilities
- Parks and contractors respond to downed limbs and trees



I FULLY SUPPORT MORE TREE PLANTINGS AND  
TREE PROTECTIONS.

- SURVEY RESPONDANT



## URBAN FORESTRY PROGRAM FUNDING

Maintenance of community trees is provided by both in-house and contracted services and is supported by the General Fund, Landscape and Lighting Maintenance Districts (LLMD) and Measure Y. The General Fund provides most of the funding for the care of street trees. Measure Y supports tree work in parks and in areas that benefit the public that are adjacent to parks. Other trees that are within the LLMDs are maintained by those specific district funds.

The City has a Carbon Fund, which can be used by the City to implement projects that reduce GHG emissions. Projects must have a direct or indirect GHG emissions reduction identified and should align with the priorities identified in the CAAP. Although there are no projects currently funded, the Carbon Fund may provide another source of funds for tree management.

Grants have been incredibly beneficial for the City's tree-planting program. However, grant funding is not predictable. Grants require staff to identify grant opportunities and then apply for funding. Some urban forest grants support tree planting but do not provide funding for long-term maintenance. While grants are helpful for boosting urban forestry programming and accomplishing specific tasks (e.g., developing the UFMP), grants are not a long-term solution for funding urban forest management.



## URBAN FOREST PARTNERS

While the maintenance and care of community trees is primarily the responsibility of the Parks and Community Services Department, the Public Works Department, and Watsonville Wetlands Watch, other internal departments and teams share responsibility for tree management, regulation, advocacy, and planning.

### PARKS AND COMMUNITY SERVICES

Watsonville Parks and Community Services department manages trees in parks as well as in streets. The Department cares for trees in Watsonville's 26 parks which cover 143 acres. Parks and Community services also care for 350 street trees which are concentrated downtown. The department performs tree inspections, maintenance, and tree inventories. Parks and Community Services also oversee contract tree pruning and street and sidewalk conflicts.

### PUBLIC WORKS AND UTILITIES

The Public Works department addresses the maintenance and repair of streets and sidewalks in the public rights-of-way. Historically, the department had greater responsibility over community trees, especially for trees in the public rights-of-way area. In 2012, the Public Works department developed the Urban Greening Plan which included the Urban Street Trees Program. As a result of shifting responsibilities, Public Works now has less of a role in the urban forest and indirectly manages trees when tree and infrastructure conflicts arise and/or during environmental projects.

The department maintains open space areas, wetlands, and an extensive trail system that spans seven miles across City parks. While in the past trees have not been included in street development or stormwater management projects, Public Works is taking the initiative to incorporate trees into these projects.

### COMMUNITY DEVELOPMENT

Community Development is tasked with performing development reviews and long-term community planning. The department ensures development projects and building activity comply with zoning and building codes, General Plan policies, the California Environmental Quality Act, and community values. Projects including improvements to public rights-of-way often involve trees and tree removals.

## PARTNERS

The urban forest impacts everyone in the community. The benefits of community trees go beyond property lines and the responsibility for their care is shared amongst many groups, including property owners, volunteers, nonprofit organizations, City departments, and tree care professionals. Engagement with urban forest collaborative partners was an integral part of the development of the UFMP.

### WATSONVILLE WETLANDS WATCH

Watsonville Wetlands Watch (WWW) is a non-profit organization that has worked in the Pajaro Valley since 1991 to preserve and restore wetlands and watershed areas to improve environmental and community health outcomes and to educate youth and community about the value of the Pajaro Valley's natural environment. They operate out of the Fitz Wetlands Educational Resource Center on the Pajaro Valley High School campus, where they have a native plant and tree nursery. WWW has been an important partner of the City in the development of the City's Urban Greening Plan and its implementation as well as maintenance and care of the City's wetlands, trails, and open spaces. Since 2018, WWW has partnered with the City to achieve the goal of increasing tree canopy cover in Watsonville by developing tree planting programs, community volunteer programs for urban forestry, a tree adoption program for private residents, and educating the community about tree care and establishment. WWW also operates the Climate Corps Leadership Institute, a job training and academic pathway program for high school-aged youth to learn about and participate in urban forestry, watershed restoration, and climate action work.

### PAJARO VALLEY UNIFIED SCHOOL DISTRICT

The City and Watsonville Wetlands Watch have identified opportunities for tree planting within local school districts in Watsonville. Pajaro Valley Unified School District partnered with Watsonville Wetlands Watch in 2019 to achieve the goals of preserving, restoring and growing Watsonville's urban forest. The Green Careers Middle School Program, put on by Watsonville Wetlands Watch, provides educational opportunities for students in the Pajaro Valley Unified School District to explore local environmental careers.

## REGENERACIÓN PAJARO VALLEY

The local non-profit RegeneraciOn was founded in 2016 to address the community's need to organize for climate justice action. The organization's mission is centered on the principle that climate change is a social justice issue that must be addressed through local advocacy and action. Regeneracion has participated in several projects since then, including murals within the city, the showing of environmental justice films, and holding the Climate of Hope forum, an interactive event where speakers and community members can shed light on climate change issues affecting the community.

## CAL FIRE

CAL FIRE Urban Forestry Program works to advance the development of sustainable urban and community forests throughout California. Through the program, CAL FIRE provides technical expertise, as well as administers State and Federal grants throughout California communities to advance urban forestry efforts ([fire.ca.gov](http://fire.ca.gov)). CAL FIRE encourages cities to commit to avoiding any net loss of canopy.

## PACIFIC GAS AND ELECTRIC

Tree and utility conflicts are a common source of concern for electric providers. Trees that grow into power lines can cause electrical outages and fires. They can even conduct an electric shock to someone who comes into contact with a tree that is contacting a high-voltage line.

In California, all utility providers are subject to General Order 95; Rule 35 Vegetation Management (California Public Utilities Commission, revised 2012) and FAC-003-2 Transmission Vegetation Management (NERC), which outline requirements for vegetation management in utility easements. These requirements include clearance tolerances for trees and other vegetation growing in proximity to overhead utilities.

Many street trees located under power lines are too large for the site, requiring extreme pruning to maintain clearance. Selecting small-stature tree species that are utility-friendly for planting sites in utility rights-of-way can minimize the need for these maintenance activities.

## COMMUNITY HEALTH TRUST OF PAJARO VALLEY

The Community Health Trust is a 501(c)3 nonprofit healthcare foundation that advocates and provides for health and wellness in the Pajaro Valley. The first 501(c)3 healthcare foundation in the Pajaro Valley, the organization aims to provide equal opportunity for improving health through comprehensive means of healthy lifestyles, choices and activities. The nonprofit offers direct programs including the Diabetes Health Center, a prescription program for those facing food insecurity (VeggieRx), and a farmers market centered on health and wellness (El Mercado). Indirectly, the organization manages grants and funds for local organizations to improve wellness and equity in the Pajaro Valley. The organization prides itself on being an excellent community partner, and has collaborated on several projects, including the Carey-Davis Community Gardens and the Community Orchard.

Trees help improve public health in many ways, including reducing air pollution such as particulate matter (smoke), managing climate-related health impacts, such as reducing heat islands and improving public safety. In addition, exposure to nature, such as trees, has been shown to have a positive impact on human health and wellness by improving mental and physical health.



## TREE AMIGOS

**Our City Forest** is a non-profit organization, born out of the Silicon Valley, that has been a leader in urban forestry and environmental stewardship. It has created an incredible program that brings specialized tree knowledge to volunteers. Empowering the community through a free five-week course, volunteers learn how to plant and care for trees. This program is known as “Tree Amigos”. Through Tree Amigos, anyone interested can sign up to become stewards/caregivers for City trees and receive the training. Participants earn a Tree Amigo title if they attend a full five-week course on urban tree care. Courses in the Tree Amigos program include education on how trees are raised in the nursery, background on Our City Forest programs, proper tree planting, tree stewardship and maintenance, water conservation, and volunteer coordination. Tree Amigos serve as mentors and leaders to the large number of daily volunteers who sign up with Our City Forest. Programs such as this one can make a big difference in the community by ensuring trees are being planted and cared for which would reduce strain on City staff and budgets.



## POLICY AND REGULATION

Urban forest management operations are influenced by and subject to regulations, policies, and guidance from federal, state, and local direction. The following section provides a summary of the regulatory and guiding policies explored during the development of this Plan. Additional regulations and policies may also apply.

### FEDERAL AND STATE LAW

#### Endangered Species Act

Signed in 1973, the Endangered Species Act provides for the conservation of species that are endangered or threatened throughout all or within a significant portion of their range, as well as the conservation of the ecosystems on which they depend. The listing of a species as endangered makes it illegal to “take” (i.e., harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to do these things) that species. Similar prohibitions usually extend to threatened species.

#### Migratory Bird Treaty Act (MBTA)

Passed by Congress in 1918, this Act defines that it is unlawful to pursue, hunt, take, capture, kill, possess, sell, purchase, barter, import, export, or transport any migratory bird, or any part, nest, or egg of any such bird, unless authorized under a permit issued by the Secretary of the Interior.

The Migratory Bird Treaty Act can impact forestry operations during times when birds are nesting, which may delay work in order to avoid violating the MBTA.

#### California Urban Forestry Act

Section 4799.06-4799.12 of the California Public Resources Code defines a chapter known as the California Urban Forestry Act. The Act defines trees as a “vital resource in the urban environment and as an important psychological link with nature for the urban dweller.” The Act also enumerates the many environmental, energy, economic, and health benefits that urban forests provide to communities.

The purpose of the Act is to promote urban forest resources and minimize the decline of urban forests in the state of California. To this end, the Act facilitates the creation of permanent jobs related to urban forestry, encourages the coordination of state and local agencies, reduces, or eliminates tree loss, and prevents the introduction and spread of pests. The Act grants the authority to create agencies and mandates that urban forestry departments shall provide technical assistance to urban areas across many disciplines (while also recommending numerous funding tools to achieve these goals).



## Model Water Efficient Landscape Ordinance (MWELO)

To promote the conservation and efficient use of water and to prevent the waste of water, a Model Water Efficient Landscape Ordinance (MWELO) was adopted in 2009 and later revised in 2015. The Ordinance requires increases in water efficiency standards for new and retrofitted landscapes through the use of more efficient irrigation systems, greywater usage, and onsite stormwater capture. It also limits the portion of landscapes that can be covered in turf.

## California Global Warming Solutions Act

In 2006, the California Global Warming Solutions Act (Assembly Bill 32) was implemented to reduce greenhouse gas emissions. Through this Act, California was the first state in the nation to initiate long-term measures to help mitigate the effects of climate change through improved energy efficiency and renewable technology. California approached the goal to reduce emissions to 1990 levels by 2020 through direct regulations, market-based approaches, voluntary measures, policies, and programs. The 2015 update set targets to reduce greenhouse gas emissions to 40 percent below 1990 levels by 2030.

## California Solar Shade Control Act

Passed in 1978, California's Solar Shade Control Act supported alternative energy devices, such as solar collectors, and required specific and limited controls on trees and shrubs. Revised in 2009, the Act restricted the placement of trees or shrubs that cast a shadow greater than ten percent of an adjacent existing solar collector's absorption area upon the solar collector surface at any one time between the hours of 10:00 a.m. and 2:00 p.m.

The Act exempts trees or shrubs that were:

- Planted prior to the installation of a solar collector
- Trees or shrubs on land dedicated to commercial agricultural crops
- Replacement trees or shrubs that were planted prior to the installation of a solar collector and subsequently died or were removed (for the protection of public health, safety, and the environment) after the installation of a solar collector
- Trees or shrubs subject to City and county ordinance

## WATSONVILLE MUNICIPAL CODE

Watsonville City Municipal Code has seven chapters that include provisions which impact trees, tree care, or the urban forest:

### Chapter 5 Coastal Zone Implementation Plan

The Coastal Zone Implementation Plan outlines separate and exclusive regulations for lands designated as the Coastal Zone to protect coastal visual resources, environmentally sensitive habitat areas, water resources, and more. The chapter sets forth guidelines to plant native trees and shrubs in buffer zones to environmentally sensitive habitat areas, as well as to non-agricultural development which lies in the Coastal Zone. When invasive exotic species are present, this chapter calls for replacing them with native species. As part of 9-5.705 Regulations, all nonagricultural development should include native vegetation (i.e., trees) that are "consistent with a transition to natural landform", and that provide screening from Highway 1 and other coastal zone roads. This section also requires all nonagricultural development in the Coastal Zone to include a landscape plan detailing that all plantings (including trees) be kept in good growing condition and all invasive species be removed from the site.

### Chapter 7 Removal of Weeds and Debris

Per Chapter 11 of the Municipal Code, titled "Removal of Weeds and Debris", weeds and debris, including dead trees, is declared a public nuisance. Property owners are required to abate weeds and dead trees. If the property owner fails to abate the public nuisance, the Fire Chief may remove the public nuisance at the owner's expense as ordered by Council resolution.

### Title 7, Chapter 11 Street Trees

Chapter 11 of Title 7 of Municipal Code, defines "street tree" as any tree on a City street. The chapter delineates street trees as either being "approved street trees" or "unapproved street trees". Unapproved street trees are trees that were planted in the improper place, infested with pests or disease, or are a hazard to public health and safety.

Per the chapter, the Director of Public Works is authorized to and responsible for the supervision of the maintenance for all street trees. Permits are required for anyone who wishes to plant street trees, and to trim or remove a street tree, regardless if a tree is approved or unapproved.

Chapter 11 also defines a public nuisance regarding street trees, which can be any tree growth that interferes with public infrastructure or improvements, vines growing over any street tree, or infested or diseased trees. When a public nuisance exists, chapter 11 requires the property owner to abate the nuisance. If a private property owner fails to comply with a public nuisance work order, charges may be imposed on the private property owner equaling the cost of abatement.

### Title 7, Chapter 13 Preservation of Historical Trees

Chapter 13 of the Municipal Code describes regulations on historical trees and the process of designating a historical tree. The Parks and Recreation Department and the Recreation and Parks Commission determine which trees are worthy of preservation, and recommend to the City Council which trees to designate as historical. Any person who wishes to trim, alter, or remove a designated tree, must seek the approval of the commission and acquire a permit from the City to perform such work.

### Title 10, Chapter 2 Park Rules and Regulations

Chapter 2, Section 10 of Title 10 prohibits damage to park trees, including carving, cutting, or removal. Affixing rope, wire, signs, or animals to park trees is also unlawful.

### Title 13, Chapter 7 Subdivision Improvements, Article 2. Design Standards, Section 13

Per the Design Standards, all streets and public ways within and bordering divisions of land shall be planted with trees. Trees in these areas shall be maintained by the subdivider or subsequent owners of said lots. Additionally, existing trees that meet a certain size threshold shall be retained and protected during construction. If such trees are damaged or removed, then the trees shall be replaced with the number, type and size determined by the Director.

### Title 14, Chapter 14 Zoning, Section 14

The Zoning Chapter outlines laws and development requirements for each district. Street trees are explicitly required in industrial areas for the purpose of screening but otherwise trees are not explicitly required in zones. General development plans for Planned Development Districts are required to include the location and type of existing trees that are planned for removal.

## WATSONVILLE GENERAL PLAN

Watsonville is in the process of updating its general plan, called the Watsonville General Plan 2050. The plan will set forth goals and planning guidelines for the community. The addition of street trees along streets and boulevards is one request by the community that is considered in the plan.

## WATSONVILLE URBAN GREENING PLAN (2012)

The Watsonville Urban Greening Plan was developed in 2012 to address increasing concerns over climate change and to identify opportunities for reducing greenhouse gas emissions. The plan also addresses low canopy cover in the city with a goal to plant 40,000 trees with the Urban Street Trees Program. The Plan includes seven primary elements, which include:

- Citywide pedestrian and bicycle trails system
- Urban Street Trees Program
- Community Gardens
- Plant palette and Landscaping Guidelines and Policies
- Landscape restoration projects (to reduce heat island effects)
- Green Roof and cool roof projects
- Stormwater features, such as the use of cool paving materials to mitigate heat island effects and maintain water quality

## URBAN STREET TREES PROGRAM

The Urban Street Trees program was initiated in 2012 as part of the Urban Greening Plan. The plan was formed to address low canopy cover in the city, at the time 7.8%. The plan set a base goal to plant 8,000 trees, but also a larger goal to plant 40,000 more trees over the following ten years. The plan document outlines a Street Tree Program Framework, which describes different zones for tree planting. It identifies several opportunities for planting, including front yards, mixed-use streets, through widening sidewalks and planting in the roadway (stormwater management zones, tree islands, and planting strips.) The document highlights specific streets and locations in Watsonville which would benefit from the increased tree canopy. The plan includes an approved street tree list, which is divided into three “influence zones” of agricultural, cultural, and native habitats.

## WATSONVILLE 2030 CLIMATE ACTION AND ADAPTATION PLAN (2021)

The Watsonville Climate Action and Adaptation Plan supports the Climate-Safe California Campaign’s goal of negative-net emissions by 2030. While ambitious, Watsonville will set an example for other communities by adopting this plan. A number of programs are outlined, which aim to reduce greenhouse gas emissions to below 80% of the levels reached in 1990 over the next ten years, which would meet the state legal target. In order to meet climate goals, the City divides initiatives into three categories:

- Climate action/mitigation, through reducing emissions;
- Climate adaptation, by preparing for increased effects of climate change, including wildfires;
- Climate restoration, or removing atmospheric carbon and restoring natural ecosystems.

Tree planting programs are a central component of the climate restoration strategy, as they remove and sequester atmospheric carbon, as well as provide several other climate benefits. These goals aim to restore the climate, while perhaps gradually, to its natural state before human interference.

## GREEN INFRASTRUCTURE PLAN

Green infrastructure projects help prevent water runoff and reduce surface temperatures. Water is slowed down, spread out and sinks into the ground instead of flowing into storm drains. Green infrastructure can be implemented in parking lots, parks, open spaces, streets, and schools. The goals of the Green Infrastructure Plan are to:

- Protect water quality
- Reduce urban heat island effects
- Build climate and community resiliency
- Design complete streets to encourage alternative transportation and pedestrian safety

The plan emphasizes that every project has the capacity to incorporate green infrastructure and the City may demand more from the engineering designs, including integrating green roofs, permeable pavements, and detention pond retrofits. The plan suggests making revisions to development standards and specifications and evaluating strategic tree planting.

## LOCAL HAZARD MITIGATION PLAN

The Local Hazard Mitigation Plan differentiates the various hazards that are relevant to Watsonville and provides mitigation strategies for these hazards. High wind is one potential hazard described in the plan. Wind can be categorized on the Beaufort scale, which groups wind speed from 0-12. As found in the plan, at the “10” level, trees are uprooted and considerable damage can occur. In a vulnerability assessment section of the plan, the heat island effect is showcased as a secondary hazard associated with climate change. Heat islands were assessed using satellite imagery overlaid with the tree canopy. “Hotspots” are identified, where heat mitigating actions can be taken such as increasing tree canopy. Overall, mitigation actions are separated into categories, including “flood mitigation”, “infrastructure”, and “green.” The Green category includes tree planting programs as one strategy to reduce certain hazards, such as wildfire, flood, and climate change.

## **WATSONVILLE SCENIC TRAILS NETWORK RESTORATION PLAN**

The Scenic Trails Network Restoration Plan supports the Trails & Bicycle Management Plan, which calls to add 33 miles of new trails to the existing Wetlands Trail System in Watsonville. This plan is not only focused on trails, but it also plans to create more native landscape areas. According to the document, more native landscape areas can be added through low-impact development, and urban beautification projects, as well as by creating nature parks. Nature parks attempt to restore and represent the local environment and habitat as it was before human alteration. New nature parks can be created on unused City parcels, or existing parks can be modified to be more like the natural ecosystem. The use of native plantings, including trees, is emphasized for their value to local ecosystems, in stormwater management, and in reducing carbon footprint.

Fieldwork was done for the plan in 2011 and 2012, which assessed local habitat, habitat resource inventory, and invasive plant species, though these were limited to trail corridors.

Riparian areas near the Pajaro River and trail system are characterized by woody forests of cottonwood, willow, alder, elderberry, box elder, and sycamore trees.

## **STORMWATER POST CONSTRUCTION STANDARDS**

Performance requirement 3 of Post Construction Standards, entitled "Runoff Retention", specifies runoff requirements for development and redevelopment. Redevelopment projects must retain half the pre-project runoff of impervious surface that is removed. All projects must prevent runoff up to the 95th percentile 24-hour rainfall event and do this with infiltration, storage, rainwater harvesting and/or evapotranspiration. This document presents 20 LID Developmental standards, which include standards on vegetative cover and trees. Certain qualifying projects must meet additional requirements, known as 'site Design Measures.' One of these measures is the requirement to conserve natural areas, including existing trees.

## **SIDEWALK PARKWAY STRIP MAINTENANCE PROGRAM**

This document defines the area of the sidewalk, park strip, curb and gutter and states the adjacent property owner is responsible for maintaining these areas. Maintenance can include, but is not limited to, weed abatement, sidewalk buckling, and the maintenance of trees or shrubs in this area. Per Municipal Code Title 7, Chapter 2, the property owner is liable for injuries as a result of the sidewalk not being maintained by the property owner. Sidewalk hazards from street tree roots and sidewalk buckling are included as liable hazards. The City also requires any obstacles in the parkway strip area to be removed, including tree stumps. If repairs require any modification to street trees, the property owner is required to acquire a permit to complete such work, per Title 7, Chapter 11.

## **6TH CYCLE HOUSING ELEMENT**

This document identifies residential and commercial land that is either vacant or underutilized. This document has the potential to be a useful tool in identifying opportunities for future tree planting, which can further the goals of the Urban Street Tree Program.

## **PARKS MANAGEMENT PLAN (2009)**

A park tour was taken in 2009 to assess the needs of Watsonville parks. A number of recommended improvements were procured following this, including uniform signing, weekend maintenance staffing, amenity updates, and tree planting. During the Management Plan development process, two community workshops were held to gain community input. Community members who participated were in favor of more trees in parks for shade as well as for pinatas. During a senior focus group, participants also voiced their desire for more trees in parks. This plan also mentions the need to address a tree fungus problem in Joyce-Mckenzie Park.

## **PARKS STRATEGIC PLAN (SUPPLEMENT OF MASTER PLAN)**

The Parks Strategic Plan was initiated in 2019 as an update to the 2009 Parks Mastert Plan. The section on future plans and programs, it includes the goal to "Revise and adopt a new Tree Ordinance and Urban Forest Management Plan to effectively manage the City's trees." Each park is considered and given suggested recommendations. At Ramsay Park, the public supported preserving old and mature trees but called for the removal of large shrubs and overgrown trees that block views of the plaza. This plan design preserves healthy, mature trees and also adds key tree species at focal locations. However, some mature trees that were in poor health were removed.

## **DOWNTOWN WATSONVILLE SPECIFIC PLAN**

The Downtown Watsonville Specific Plan provides regulations and standards for the development of downtown as they align with General Plan goals and objectives. Adopted in October 2023, the plan serves as a comprehensive guide and policy resource for developers, property owners, the City, and decision-makers. The City's vision with the plan is to celebrate the historic roots of the area while connecting it with nearby industrial and residential areas to create a walkable, economically vibrant Downtown. Specific objectives include adding mixed-use developments throughout the area, concentrating development near transit stops or centers to reduce automobile use, and providing additional strategies to increase multimodal transportation to and from the downtown area.

## **DOWNTOWN COMPLETE STREETS PLAN**

The Downtown Watsonville Specific Plan will work in conjunction with the Complete Streets Plan to make streets more accessible and safer for all users. The Complete Streets Plan includes proposed improvements for streets such as Main Street, Brennan Street and Union Street. These proposed improvements include increasing the width of sidewalks and adding street trees along the sidewalks.



## POLLINATORS

Ornamental pears attract a wide variety of insect pollinators including bees, wasps and flies. Avoiding applying pesticides to trees that are insect-pollinated, such as ornamental pears, promotes pollinator health. Pollinators are essential to plant and animal life. The pollination of landscape plants and economically important fruit and nut-producing crops results in many economic, environmental, and socioeconomic benefits. The most abundant and common group of pollinators are insects (US Fish & Wildlife, 2020).

In many cases we take pollination services for granted, but because of the recent decline in pollinators, attention has shifted toward finding pest management practices that promote pollinator health. One of the most controversial topics in the decline of pollinators is the use of pesticides. Insect physiology is similar whether the insect is a pest/insect we want to kill or a pollinator/insect we want to protect. Therefore, the use of insecticides typically impacts species that we do not intend to harm, such as pollinator and predator non-target insects. The side effects can be lethal or cause long-term effects. Pesticides can be present in the environment through plant exudates, dust, or water that pollinators and predatory insects come in contact with (Johnson, 2015). Furthermore, water-soluble pesticides, some of which are commonly used pesticides for ornamental trees and plants (e.g., neonicotinoids) are present in the floral parts of plants that are frequented by pollinators (Goulson et al, 2015).

Several changes can be made in order to decrease the impact pesticides have on pollinator health. Limiting or not using the use of pesticides on flowering trees and following label directions are some important ways we can protect pollinators. Following pesticide labels to determine when it is appropriate to treat the plant (i.e., avoiding insecticide applications when the plant is in bloom, considering wind speed/direction, and neighboring plants in bloom) (Purdue Extension, 2016).

It is important to note that these essential, but often overlooked insects are also threatened by other causes such as disease, habitat alteration, and fragmentation that occurs in conjunction with “human endeavor” (development of cities, towns, agricultural fields, and pastures). There is not one group responsible for the management of habitat fragmentation or the use of pesticides in our landscapes and food systems, we are all accountable and can promote the protection of pollinators.



## INTEGRATED PEST MANAGEMENT (IPM) PROGRAM SUMMARY AND REVIEW

The IPM Summary and Review provides a consolidated review of the City's pest management activities and:

- Introduces the City's IPM Committee, which consists of City staff from the departments that are responsible for pest control operations
- Details the primary pests on public lands (public rights-of-way, public parks, and open space, wetlands, and trails)
- Details the City's efforts to manage pests on public lands
- Recommends ways to enhance the City's IPM program
- Includes the Interim Pesticide Use & Notification Policy as an attachment

The *Interim Pesticide Use & Notification Policy* serves as the City's IPM policy until a more formal plan is in place. The main focus of the *Interim Pesticide Use & Notification Policy* is to reduce pesticide use. It explains the recent ban on the use of glyphosate herbicides, the introduction of integrated pest management guidelines, and the requirements for training and posting notifications when pesticides are used.

## PUBLIC IMPROVEMENT STANDARDS (2013)

The Public Improvement Standards are construction standards for all new developments in Watsonville. The standards are currently being revised to best fit the goals of Watsonville and the community.

## SAN FRANCISCO PUBLIC UTILITIES COMMISSION CONSTRUCTION BEST MANAGEMENT PRACTICES HANDBOOK (2013)

Per Municipal Code, developers are required to prevent erosion during construction and control pollution and limit runoff. The Public Works and Utilities Department adopted the San Francisco Public Utilities Commission Construction Best Management Practices Handbook (2013) to define the City's requirements. The standards include some guidance for tree preserving existing vegetation and protecting trees through impact barriers and fencing. These measures are not consistent with current ANSI A300 Part 5 standards for protecting trees during construction.

## MULTI-FAMILY CONDOMINIUM AND TOWNHOUSE DEVELOPMENT STANDARDS AND MULTI-FAMILY RENTAL DEVELOPMENT STANDARDS (1987)

Standards for multi-family unit construction in Watsonville include provisions for incorporating trees and landscaping into development. Standards include the requirement for 20% of any multi-family project to be landscaped and be provided with an irrigation system. The document also requires landscaping to be a mix of trees, shrubs and ground cover. All greenery and landscaping should consider the existing vegetation of the site, be consistent with neighboring vegetation as appropriate, enhance the experience of the site, and mitigate the effects of pavement and buildings. The standards require that trees be planted along streets consistent with adjacent properties and neighborhoods. All projects must comply with the City Historic Tree Ordinance and specify any large trees that are proposed for removal. Specimen trees, described as equal or larger than 20 inches DBH, must be preserved unless special permission is given to modify these standards.

Standards also require trees to be planted in parking lots to provide shade, at regular intervals throughout the parking lot and at the end of parking rows. The City also requires open space be provided on-site as a natural break from dense development, which may include landscaping or existing natural features of the site.

## WESTSIDE INDUSTRIAL STREETSCAPE GUIDELINES (2004)

The Westside Industrial Streetscape Guidelines provide plans and specifications for improving this major industrial zone in the city. The Westside area is the oldest and largest industrial area in Watsonville and is a center of economic activity. This area also acts as a main thoroughfare into the city, being located between Highway 1 and downtown, but lacks many modern amenities such as complete sidewalks, street trees, and street landscaping. The goal of the Westside Industrial Guidelines is to create a more attractive entrance to the city by improving related public facilities while also retaining its purpose as an industrial area. Points of concern for this area include safety regarding a high volume of industrial traffic, limited ROW space, and limited space for frontage landscaping. The guidelines also caution against planting trees in front of food-related businesses as they may promote pests and introduce sanitation issues. Further concerns were documented about street trees disrupting visibility and sight lines for large trucks. While considering these limitations, recommended improvements in the guidelines include adding planting strips and medians in ROW containing trees. They also include adding street trees along sidewalks and in front of businesses as part of "frontage landscaping," where appropriate. Specific recommendations and diagrams including street trees were given for each particular site.

In addition to the above recommendations, a tree list was provided for use in the industrial area. Trees in this list were selected for specific criteria, including:

- To reduce conflict with trucks, trees with limited spread, trees that grow tall enough with few low-hanging branches, or small trees
- Trees that do not produce fruit
- Trees that have been proven to perform well in the local environment of the central coast



# ANALYSIS OF SUSTAINABILITY INDICATORS

The Sustainability Indicators is a tool based on the Characteristics of Urban Forest Sustainability as defined in the 1997 Journal of Arboriculture article "A Model of Urban Forest Sustainability", which describes specific criteria that can be used in conjunction with measurable indicators to evaluate sustainability (Clark et al., 1997). To identify goals and areas where the urban forestry program can be improved, managers can regularly assess, evaluate, and indicate the current performance levels of the urban forest through the Sustainability Indicators. While the Sustainability Indicators are a useful tool for assessing the current status of an urban forest program, it does not necessarily provide a comprehensive review of all the areas in which a program could be improved. The Sustainability Indicators do provide an opportunity for managers to benchmark their current conditions and understand how they can be improved to meet industry recommendations and then establish performance measures to improve the effectiveness of their management approach (Kenney, et al 2011). The criteria for the Sustainability Indicators were used as a reference to assess the current urban forestry practices in the City and provided the framework for describing what current urban forest management looks like and steps to advance urban forest management. Overall, Watsonville's urban forestry program is performing at a low (Table 7) level and a detailed report of the results of the assessment can be found in Appendix D.

Table 7: Sustainability Indicators Summary

Indicators of a Sustainable Urban Forest		Assessed Performance Level		
		Low	Medium	High
<b>The Trees</b>	Urban Tree Canopy	x		
	Equitable Distribution		x	
	Size/Age Distribution	x		
	Condition of Public Trees - Streets, Parks			x
	Condition of Public Trees - Natural Areas	x		
	Trees on Private Property		x	
	Species Diversity			x
	Suitability	x		
	Soil Volume	x		
<b>The Players</b>	Neighborhood Action	x		
	Large Private & Institutional Landholder Involvement	x		
	Green Industry Involvement	x		
	City Department/Agency Cooperation			x
	Funder Engagement		x	
	Utility Engagement	x		
	State Engagement	x		
	Developer Engagement		x	
	Public Awareness		x	
	Regional Collaboration	x		
<b>The Management Approach</b>	Tree Inventory			x
	Canopy Assessment			x
	Management Plan	x		
	Risk Management Program		x	
	Maintenance of Publicly-Owned Trees (ROWS)	x		
	Maintenance of Publicly-Owned Natural Areas		x	
	Planting Program	x		
	Tree Protection Policy		x	
	City Staffing and Equipment		x	
	Funding	x		
	Disaster Preparedness & Response			x
	Communications			x
Totals		15	9	7

## THE TREES

Overall, Watsonville has a low-performance level in *The Trees*, but the program has categories with high-performance ratings, thanks to the completion of the citywide tree inventory and the diversity of the community tree population.

Watsonville has a current canopy cover of 9.4% according to Tree Canopy Cover and Land Cover Assessment (DRG). In 2012, the Urban Greening Plan estimated the overall canopy cover to be 7.8%. The Urban Greening Plan sought to increase canopy cover through an effort to plant 40,000 trees. Planting efforts began in 2017 with the support of grants and a partnership with Watsonville Wetlands Watch to plant trees across streets, parks, schools, and on private property. Sustaining these efforts and adopting a tree canopy cover goal will bring the program to the next performance level.

While an analysis of canopy cover across census tracts did not find major disparities in canopy cover, analysis of canopy cover in ROW showed significantly low canopy cover in residential areas. This suggests that historically, planting efforts and outreach have not specifically targeted disparities in tree canopy cover or benefits. Current outreach and planting efforts are aimed at addressing low canopy cover, which based on the Tree Canopy Cover and Land Cover Assessment is consistently low across the community. Engagement geared towards working with neighborhoods with a lower tree canopy cover to develop localized tree canopy goals and planting projects will bring the program to the next performance level. Engagement should include providing materials in the languages spoken by neighborhood groups and be conducted at venues where community members naturally congregate (e.g., houses of worship, farmers markets, block parties, etc.).

While the inventory of community trees is meeting minimum diversity thresholds, susceptibility to pests and pathogens, the presence of invasive species in the inventory, and trees having been planted in sites that were not necessarily the right species or the right places affect the program's resilience to climate change. Maintaining the inventory and continuing to practice the philosophy of "right tree, right place" will help to improve the performance level in the future.

## THE PLAYERS

The City is performing at a low level in *The Players*, but achieves high performance when it comes to department cooperation. Watsonville has established strong partners in Watsonville Wetlands Watch and other organizations which have provided valuable grants to grow the urban forest, which has included tree adoption events and free tree giveaways. This partnership and other partnerships, will be important for elevating the performance level in the neighborhood action category. Greater neighborhood-level engagement will be important for setting localized tree canopy goals and for accomplishing the goals of the Urban Forest Management Plan.

The results of the online survey that was conducted during the development of the Urban Forest Management Plan revealed that nearly 100% of survey respondents recognize the important role of trees in the environment. This suggests that the community as a whole generally appreciates trees. However, because the Municipal Code does not prohibit the removal of otherwise healthy trees in the rights-of-way, trees are not seen as critical infrastructure. Revisions to the Municipal Code, which define criteria for the removal of trees in the rights-of-way will be a way to demonstrate that trees in the public rights-of-way are a community asset.



## THE MANAGEMENT APPROACH

The Management approach is the area where the City has the highest performance level, where the City is meeting medium and high-performance levels in more than half of the categories.

With the GIS-based tree inventory and a land cover assessment using high-resolution aerial imagery, the City has a strong understanding of the composition of community trees and the extent of public and private tree canopy. Primary maintenance needs of trees were one of the data specifications that was collected during the 2022 tree inventory. Trees were not evaluated for risk during the inventory. Trees are being primarily managed reactively outside of the downtown area and main thoroughfares. Completing risk assessments on community trees and establishing risk thresholds for managing risk will be important for increasing the performance level in the risk management program category. Similarly, developing a management plan that provides cyclical maintenance for all community trees will ensure that trees are managed proactively, instead of in reaction to resident requests.

In the last five years, the City has benefited from numerous grants, which have provided the necessary funding for tree planting. Because grants are not a stable source of funding, tree planting is contingent on available grant funding. Identifying a stable source of funding to regularly plan and provide the necessary care to new and established trees will be important for bringing the performance in the planting program category up to the medium or high-performance level. Currently, Landscape Lighting Maintenance Districts (LLMD) fund maintenance for a small subset of the community tree resource. Creating a Tree Management District that is specific to funding tree maintenance by district, may be a means to generate a stable source of funds for trees within residential areas.

Most community trees are maintained on a reactionary basis. Historically the City has only maintained trees in parks, medians, at City facilities, the downtown area, and along arterial roads when visibility and clearance issues arise. Street trees adjacent to residential homes have been the responsibility of the property owners, which has resulted in variable levels of care. The City has not had a management plan. But through the adoption of the UFMP, the City has a means to estimate costs for proactively caring for all street trees in the community and taking that responsibility off of the adjacent property owner. The benefits of this transition are twofold, as it not only alleviates the costs of tree care maintenance on property owners, but it also elevates the standard of care that is provided to all street trees.



## CONCLUSIONS

Watsonville's urban forestry program provides a strong foundation for maintaining and managing the urban forest and growing tree canopy for a resilient and sustainable future. The community and the program have benefitted from the partnership with Watsonville Wetland Watch (WWW). WWW provides invaluable support for educational programming and stewardship of the urban forest throughout the community. Sustaining this partnership and identifying other organizations and community partners may open up other funding opportunities, including grants geared towards promoting public health. Additionally, because the City is small, interdepartmental communication is effective. The responsibilities for the care of community trees are shared between Parks and Public Works and are well understood. The departments are successful in working with one another to address tree-related service requests.

In the last five years, grant funding has supported the planting of new trees in the community, with more planned for the next three years. While they will continue to seek grant funding to supplement the urban forestry program, stable funding is needed to ensure that there is a long-term tree-planting program.

In addition to funding, identifying places to plant trees on public property will likely continue to be a challenge in the future. The 2022 inventory identified 138 available planting sites. The Tree Canopy Cover and Land Cover Assessment determined that parks, City facilities, and the rights-of-way have low tree canopy cover and have the potential to support higher levels of tree canopy cover. To increase tree canopy in residential areas, new planting sites will need to be identified. To increase overall tree canopy cover, many trees will need to be planted on private property. Prioritizing planting with TreeKeeper Canopy presents an opportunity to identify potential planting areas where residents and the City and its partners can define priority planting areas to address community needs, including increasing tree canopy in areas with lower median incomes, heat islands, and/or to improve stormwater capture.

Future tree plantings should continue to consider "Right Tree, Right Place". Climate resiliency will be greatly improved by selecting species of trees that are appropriate for projected conditions and that help further diversify the forest and reduce susceptibility to emerging and existing pests and pathogens. Regularly evaluating species performance and making revisions to the City's species list will be important to adapt to a changing climate. Furthermore, there should be a focus on evaluating individual planting sites to determine where large-stature trees can be planted without creating future conflicts with utilities and other infrastructure.

The City's "Preservation of Historic Trees" chapter in the Municipal Code was adopted to encourage the preservation of important trees by the community. However, some revisions are needed to improve clarity and application, including clarifying the process for designating trees as historic, which may have deterred some residents from participating in the program. Additionally, per Chapter 11, street trees may be removed so long as an encroachment permit has been approved. Revisions to both ordinances are imperative for improving protections for community trees, as well as preserving tree canopy.

Trees in the open space require minimal maintenance and are primarily managed when adjacent to trails. Other community trees receive more regular care, especially in the downtown area and along major thoroughfares. Adjacent homeowners and homeowners associations are responsible for the maintenance of community trees in residential planting strips and front yards. With current funding levels, Watsonville cannot feasibly provide care for all community trees. Cities that regularly maintain all trees within the public rights-of-way tend to have fewer tree failures. Increased urban forestry funding would allow the City to assume responsibility for the maintenance of street trees to promote tree health, establish more uniform tree care across the community, reduce the likelihood of unexpected and expensive maintenance, reduce barriers, and incentivize more tree planting. Developing and following a proactive work plan that provides care to all community trees every 5 to 7 years will support long-term tree health and benefits along with reducing risk factors.

The urban forest program is supported by contracted services for community trees. New contracts should require that all tree care operations are performed in accordance with ANSI Standards. Future agreements should cite ANSI standards and Parks staff should continue to monitor contractors to ensure that standards for tree care are being met.

Tree City USA is an initiative of the Arbor Day Foundation to green urban areas through enhanced tree planting and care (Arbor Day Foundation, 2019). Currently, Watsonville meets all four requirements of Tree City USA. Applying for Tree City USA is a great way to recognize the urban forestry program and increase awareness of the urban forest.

Arbor Day Foundation Tree City USA designation requirements:

- Spending at least \$2 per capita on the urban forest
- Having a community tree ordinance
- Maintaining a tree board or department
- Celebrating Arbor Day

Small program changes will improve Watsonville's scores on urban forest Sustainability Indicators and advance the program to a higher performance level. Adoption of the UFMP (which includes an overall canopy goal), will increase the assessed performance level in two categories.

The urban forest is a community asset. With appropriate care and planning, Watsonville trees and canopy cover will continue to benefit future generations. The goals and objectives of the UFMP will ensure urban forest resources receive appropriate support and will encourage sustainable stewardship in a way that is consistent with community values. The success of the plan is dependent on its ability to meet the community's needs.





I BELIEVE IN THE IMPORTANCE OF TREE CARE AND MAINTENANCE AND HOPE IT CAN BE INCLUDED AS PART OF THE MANAGEMENT PLAN.

-SURVEY RESPONDENT



# PLAN DEVELOPMENT



Understanding how the community values the urban forest and the benefits most appreciated by residents and other stakeholders is important for developing a plan that meets the needs of the community. The development of the Urban Forest Management Plan (UFMP) included virtual interviews with collaborative stakeholders, an electronic survey, virtual community meetings, pop-up events, and a project landing page.

## STAKEHOLDER ENGAGEMENT

Internal and external stakeholders were asked to share their perspectives on the management, policies, and priorities during the development of the UFMP through virtual interviews and questionnaires.

Ten collaborative stakeholder groups were identified by City staff and Watsonville Wetlands Watch for the development of the UFMP. These collaborators included:

- City of Watsonville Departments:
  - Parks and Community Services
  - Public Works and Utilities
  - Community Development
- Community and Regional Collaborators:
  - CAL FIRE
  - Watsonville Wetlands Watch
  - Board of Directors for Watsonville Wetlands Watch
  - Watsonville Parks and Recreation Commission
  - Community Health Trust of the Pajaro Valley
  - Regeneración Pajaro Valley
  - Real-estate Professionals
  - Pajaro Valley Unified School District
  - Pajaro Valley Chamber of Commerce

## COLLABORATIVE STAKEHOLDER INPUT

Collaborative Stakeholders identified the following key challenges and opportunities for Watsonville's urban forest, including:

1. Enhancing tree canopy
  - a. Committing to a tree canopy goal and replacing trees that are removed
  - b. More trees on public and private property
  - c. Preservation of native species and avoiding planting invasive/non-native trees or trees that are susceptible to pests and disease
  - d. Equitably distributing trees and tree canopy to ensure that everyone benefits
2. Tree planting
  - a. Tree and site selection due to pest vulnerabilities, small planting sites, and overhead utilities
  - b. Identifying tree species that will survive in future projected climates
  - c. Residents/businesses may be reluctant to plant trees due to maintenance concerns and/or visibility of the frontages of the business or visibility of lighting and/or security cameras
  - d. Residents tend to prefer smaller-statured tree species or fruit trees over larger-statured trees that provide more benefits
  - e. A public area for fruit trees or planting fruit trees in existing community gardens
  - f. Free trees to encourage tree planting on private property
  - g. Providing establishment care (e.g., irrigating, staking, training pruning) for newly planted trees, especially during drought or at sites without automated irrigation
  - h. Design standards for tree planting in new developments
  - i. High-density housing with limited space for tree plantings
  - j. Thresholds for review of landscape designs in redevelopment projects

3. Community tree maintenance
  - a. Developing an Urban forest Program and implementing young tree care maintenance
  - b. Maintaining an inventory of city trees
  - c. Contractor agreements do not require adherence to ANSI standards
    - i. Contractors are not required to be Certified Arborists
  - d. Weed abatement in park strips, including lack thereof or use of herbicides
  - e. Developments where the responsibility of sidewalk repairs and maintenance for street trees is the responsibility of the homeowners association
4. Funding
  - a. Providing the necessary resources to provide a stable long-term tree planting AND long-term maintenance program
  - b. Continuing to search for grant opportunities that support urban forestry
5. Education and outreach
  - a. Education to help the community understand the importance of trees and enhancing the environment
  - b. Educational materials for residents about how to care for trees
  - c. Partnering with other programs that focus on health, including the Police Activities League and community gardens
  - d. Engaging with youth and highlighting employment opportunities in urban forestry and other green jobs
  - e. Lack of awareness of responsibilities for the care of street trees adjacent to private property on the part of property owners
  - f. Celebrate our natural areas
6. Protecting trees and tree canopy
  - a. Tree ordinance does not prohibit the removal of street trees
  - b. A tree protection ordinance to protect private trees of a certain size to enhance existing tree canopy



**NATIVE TREES SHOULD BE PROTECTED.**  
-SURVEY RESPONDENT

## COMMUNITY ENGAGEMENT

The development of the UFMP included an inclusive strategy for engagement and outreach. A project landing page was established at the start of the project. The page could be translated into multiple languages using Google Translate.

The community was invited to three virtual meetings to discuss the development of the UFMP and the tree preservation ordinance. Two presentations were held virtually through the project landing page and through Zoom. Participants were asked a series of questions during the presentations to help facilitate discussion about the urban forest. Recordings of the presentations were posted on the project landing page, which allowed community members to participate after the events if they were unable to attend the meetings.

Three pop-up events were held on July 22nd, July 23rd, and August 19th of 2022 at the Watsonville Farmers Market and at Watsonville Wetlands Watch Tree Adoption Workshops. DRG and City staff were present to give community members an opportunity to provide their feedback in person and with interpretative services to capture the opinions of Spanish speakers. The events gave individuals a chance to take the online survey by scanning QR codes, taking the survey on tablets, or with paper copies.

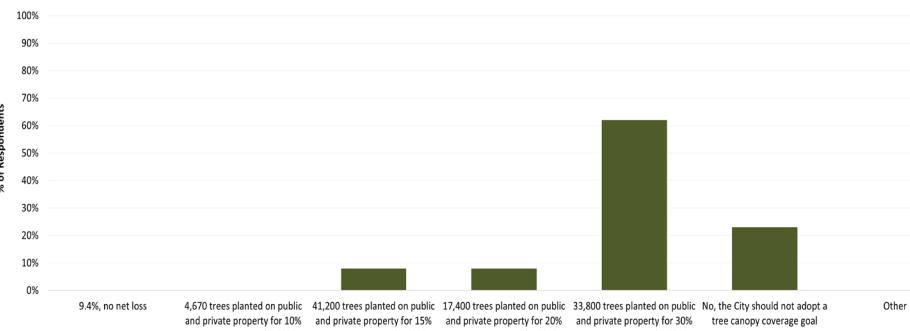
## VIRTUAL PRESENTATION POLL QUESTIONS

Two virtual meetings were held on August 11th, 2022 and August 24th, 2022. The following summarizes those presentations and the resulting feedback received from participants:

During the August 11th meeting, the presentation was focused on discussing the development of the UFMP. In total, 13 people participated in the live event. A recording of the meeting was available on the project landing page and viewers were able to participate in poll questions after the original presentation. Throughout the presentation, participants were asked to respond to a series of questions related to the community's perception of trees and the urban forest, the care of community trees, tree planting, and interest in education and outreach. Participants were invited to ask questions and provide feedback through a comment box. The following summarizes the key findings from the presentation. For the complete results to poll questions asked during the presentation, see Appendix H.

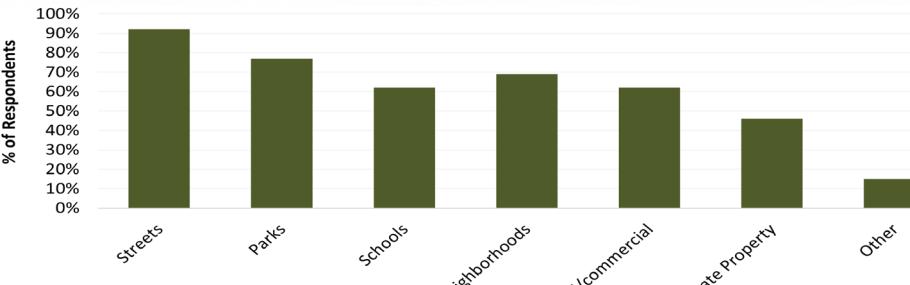
Participants in the meeting indicated strong support (62%) for a canopy goal of 30% by 2042, which would require the planting of nearly 34,000 trees on both public and private property (Figure 5).

**Figure 5: What tree canopy coverage goal should the City adopt?**



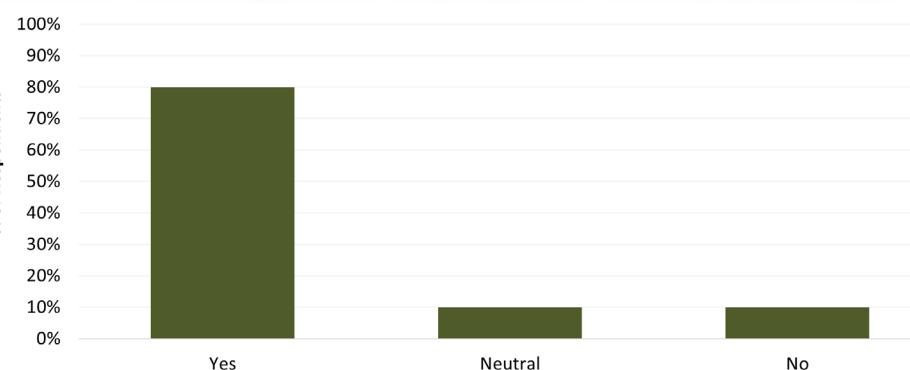
When asked, "Where do you want more trees planted", 92% of participants selected streets, followed by 77% parks (Figure 6).

**Figure 6: Where do you want more trees planted?**

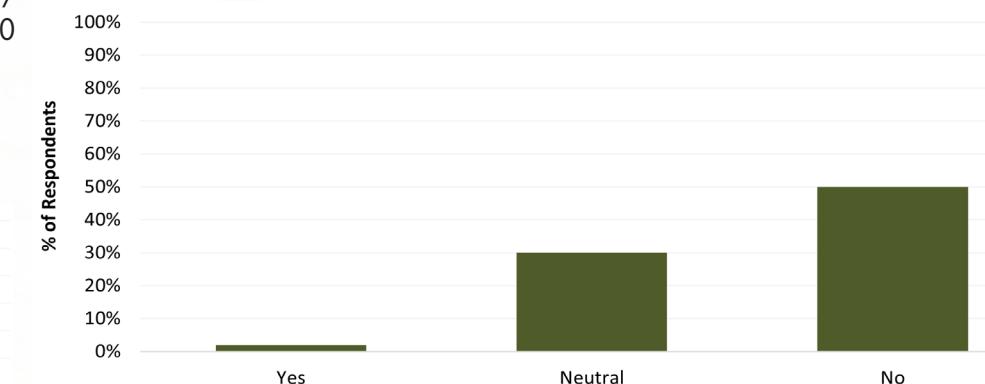


When participants were asked about their satisfaction with the care of trees in the sidewalk, 50% said "no" (Figure 7). In contrast, 80% of participants said "yes" they were satisfied with the care of park trees (Figure 8).

**Figure 7: Are you satisfied with the care of trees in the sidewalk?**



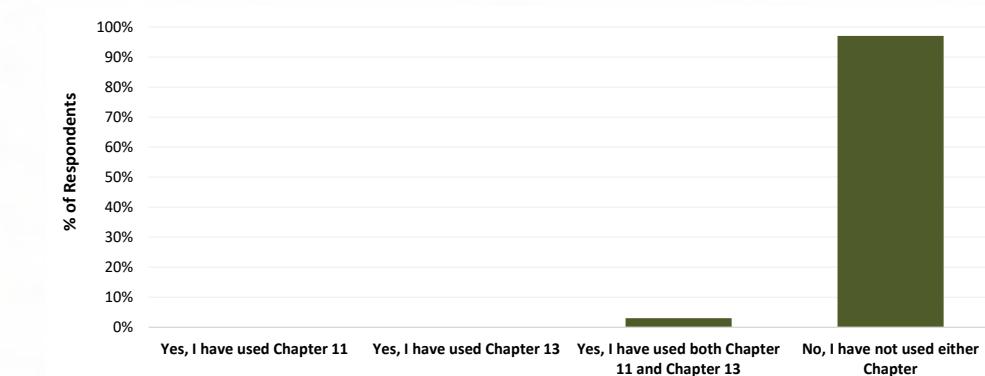
**Figure 8: Are you satisfied with the care for park trees?**



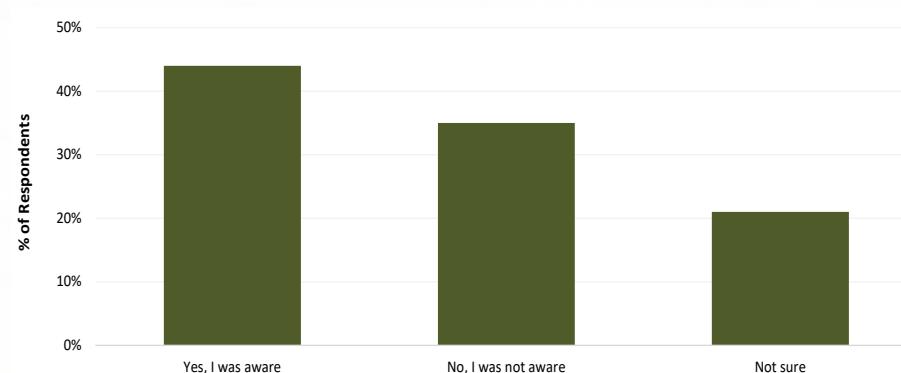
During the August 24th meeting, the focus of the presentation was to discuss existing protections for trees in the community and potential additional protection for trees and tree canopy in the community. In total, 34 people participated in the live presentation. A recording was available on the project webpage. Poll questions were asked during the meeting to help facilitate discussion about tree protection. Participants were invited to ask questions and to provide feedback through a comment box. The following summarizes the key findings from the presentation. For the complete results of poll questions asked during the presentation, see Appendix H.

Respondents were asked to indicate their familiarity with the existing ordinances that pertain to trees in the community, Chapter 11 Street Trees and Chapter 13 Preservation of Historical Trees. Nearly 100% of participants had not used either chapter (Figure 9). Similarly, less than half of respondents were aware that trees in the rights-of-way are protected and that permits are required to prune or remove trees in the rights-of-way (Figure 10, Figure 11).

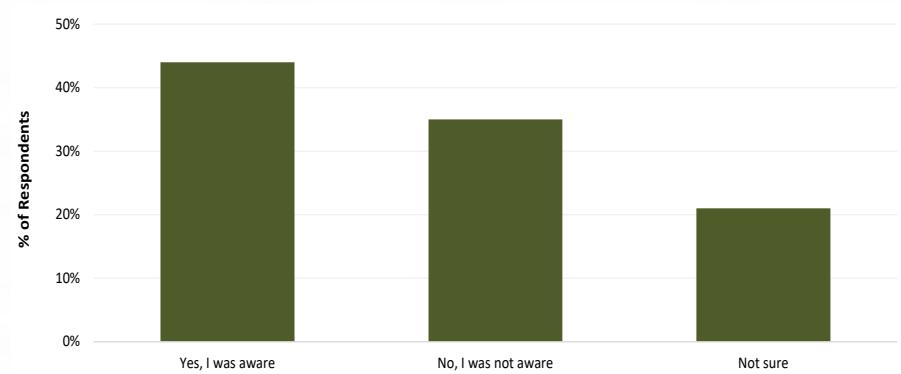
**Figure 9: Have you used Chapter 11 Street Trees and/or Chapter 13 Preservation of Historical Trees in the Municipal Code?**



**Figure 10: Are you aware that trees in the rights-of-way are protected?**

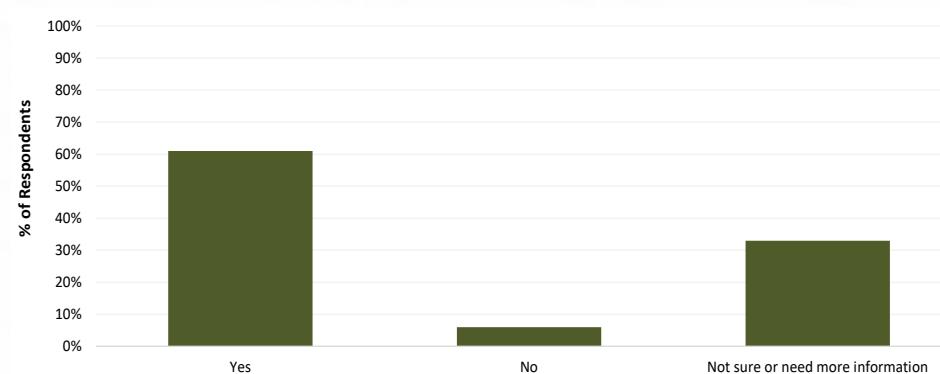


**Figure 11: Are you aware that a permit is required to prune or remove a tree in the rights-of-way?**



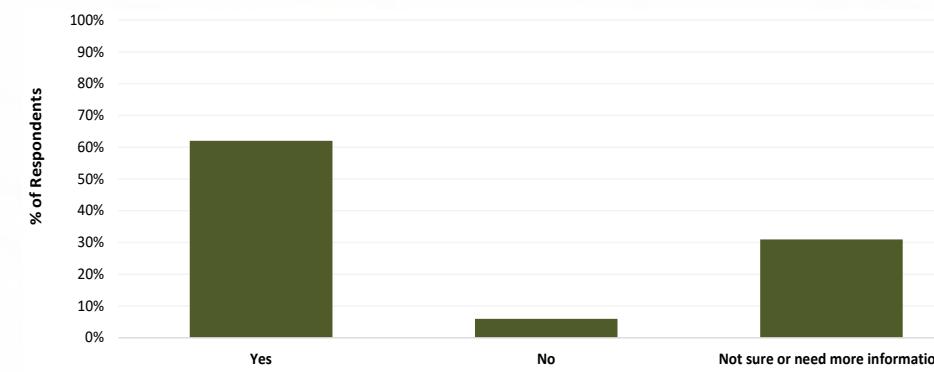
More than 61% of respondents were in favor of street trees only being removed if the trees meet certain criteria (e.g., condition, concern for public safety, etc.) (Figure 12).

**Figure 12: Should street trees only be removed if they meet certain criteria (e.g., condition, concern for public safety, etc.)?**

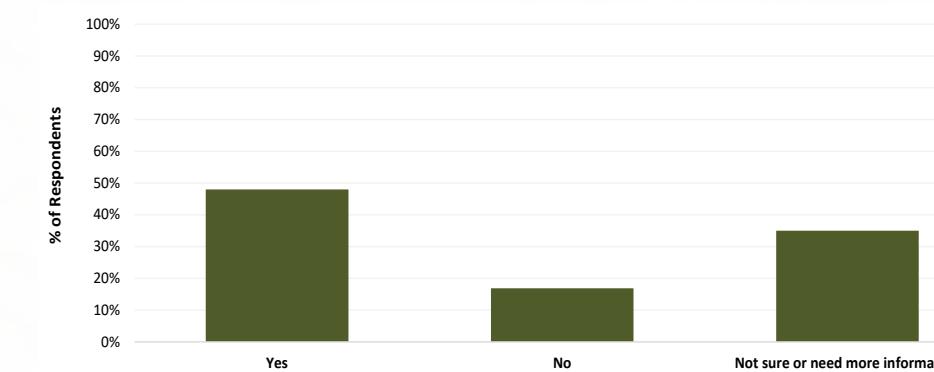


To understand the community's perceptions on protecting trees and tree canopy, participants were asked whether persons who remove or irreparably damage street trees should be penalized and 62% said "yes" (Figure 13). When asked about whether private trees should be protected from removal, less than 50% of respondents said "yes" (Figure 14). When asked which trees should be protected on private property, 80% of respondents supported the protection of historical or culturally significant trees. More than 60% of respondents also supported protected native trees and species that provide wildlife habitat (Figure 15).

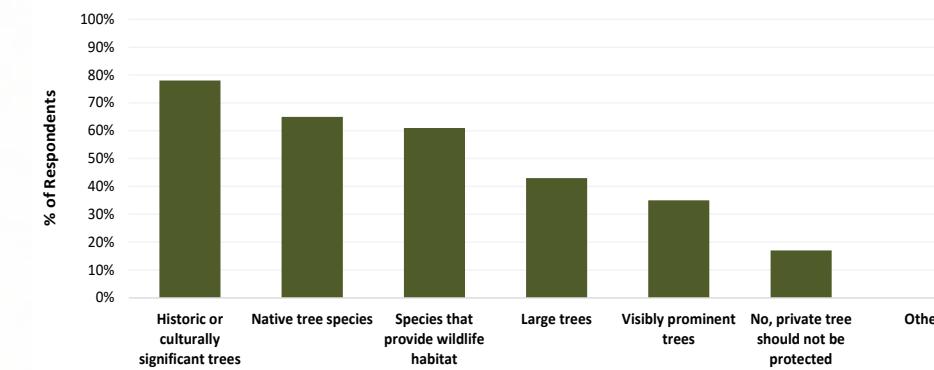
**Figure 13: Should persons that remove or irreparably damage street trees be penalized?**



**Figure 14: Should private trees be protected from removal?**

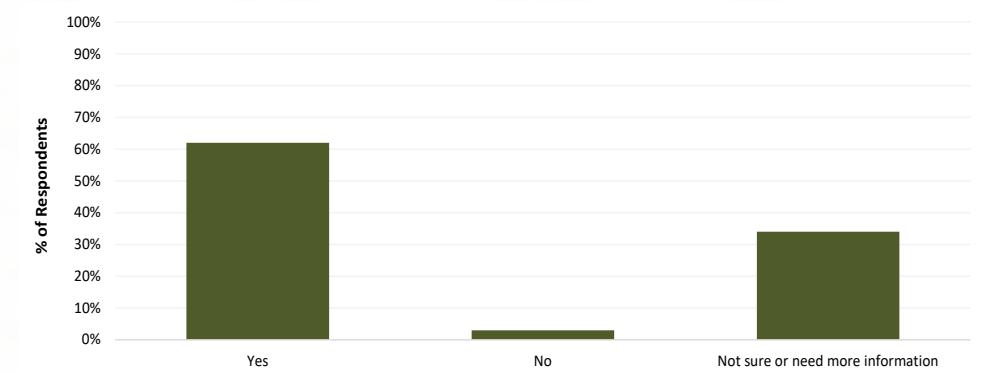


**Figure 15: If yes, which trees should be protected?**



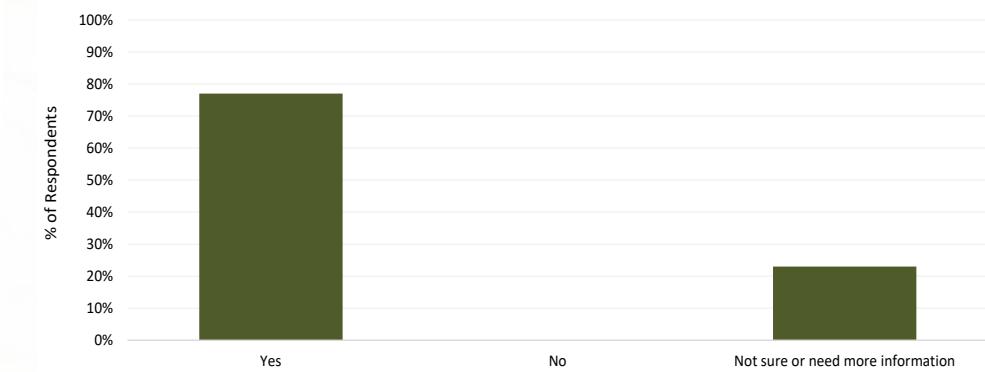
Sometimes trees need to be removed. To gauge the community's support for mitigating the loss of trees that are removed, respondents were asked "Would you support mitigation measures for otherwise healthy trees that are removed (e.g., replacement trees)". More than 60% said "yes" (Figure 16).

**Figure 16: Would you support mitigation measures for otherwise healthy trees that are removed (e.g., replacement trees)?**



Some ordinances have provisions that divert money collected from penalties for violations of the ordinance into a tree fund. Tree funds can be designated for specific uses that benefit the urban forest, including tree planting, maintenance, and purchase of property to protect existing trees. Among participants, 77% responded "yes" when asked "Would you support the creation of a Tree Fund that could be used to plant trees, maintain City trees, and/or purchase existing trees" (Figure 17).

**Figure 17: Would you support the creation of a Tree Fund that could be used to plant trees, maintain City trees, and/or purchase existing trees?**





## ONLINE COMMUNITY SURVEY

The online survey was available in English and Spanish. Other languages could be translated using Google Translate. The survey included a series of questions, including questions about demographics, views about tree benefits, awareness of the urban forest program, expectations for public tree maintenance and planting, views on incentivizing tree preservation and planting on private property, and the preferred topics and methods for public education and outreach. The survey was open from July 17th, 2022 through February 13th, 2023. During that time, 245 people participated in the survey. The following summarizes the key findings from the online survey. For complete results, see Appendix H.

The majority of respondents agreed that the city needs more trees (78%) (Figure 18). Yet, only 12% of respondents agreed that the City is planting enough new trees (Figure 19). When respondents were asked if they felt trees are spread evenly across Watsonville, 44% disagreed (Figure 20). Responses to another question revealed that 78% of respondents want equity to be considered in urban forestry decisions (e.g., areas with the least amount of trees should be given the most attention with new plantings and tree care) (Figure 21). More than 59% of respondents indicated that they agreed that certain trees in the community should be protected from removal (e.g., large, native, historic, and/or old trees) (Figure 22).

Figure 18: I feel that... More trees are needed

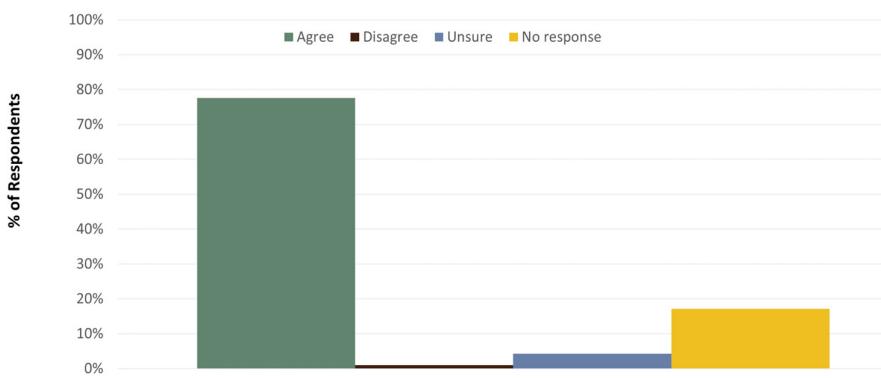


Figure 19: I feel that... The City is planting enough new trees

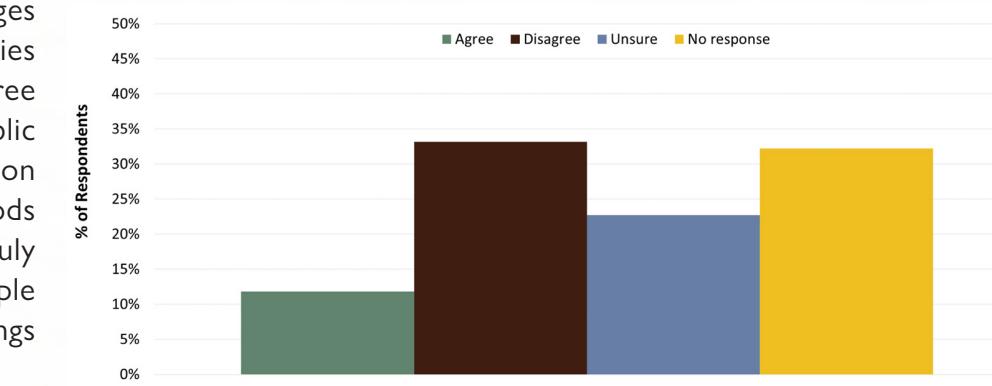
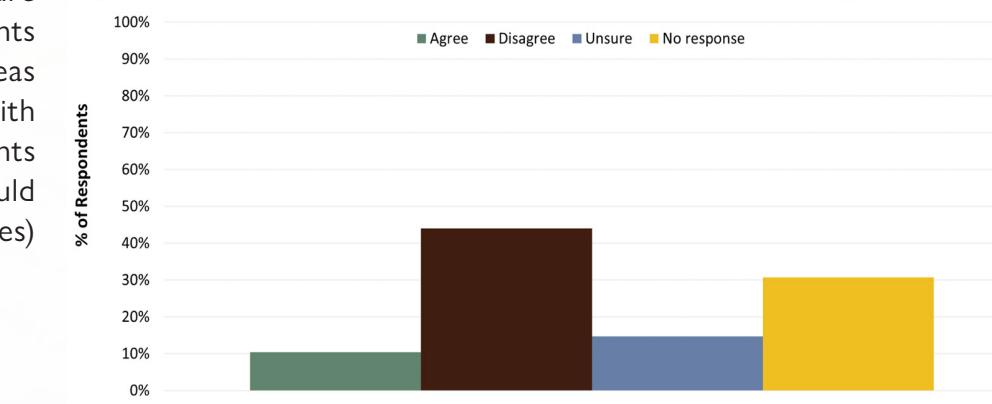
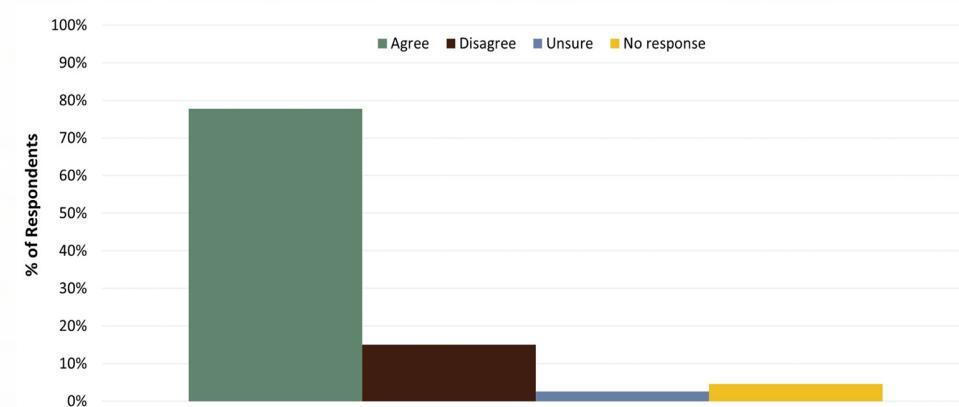


Figure 20: Trees are spread evenly across Watsonville

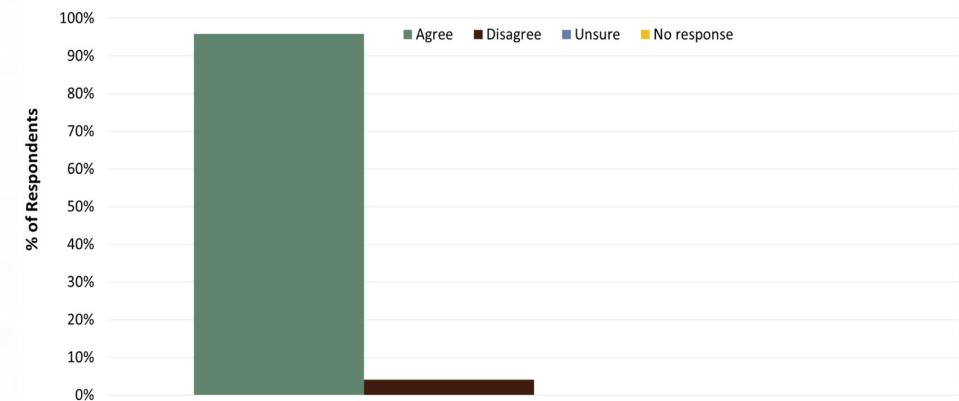


**Figure 21: Equity to be considered in urban forestry decisions (e.g., areas with the least amount of trees should be given the most attention with new plantings and tree care)**



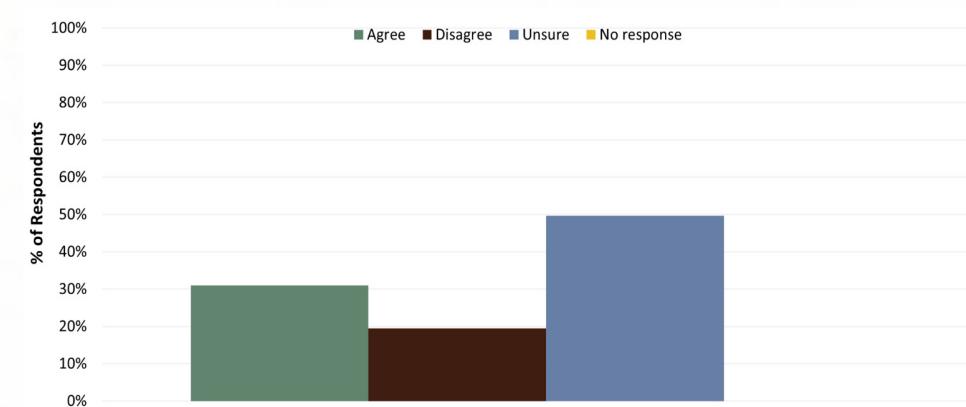
To understand what the community values about trees, the survey asked respondents to indicate whether they agree with a series of statements about why the respondent might value trees. Nearly 96% of respondents indicated that they valued trees because they provide shade (Figure 22). Other benefits were also widely valued by respondents (Appendix H).

**Figure 22: I value trees because... They provide shade**

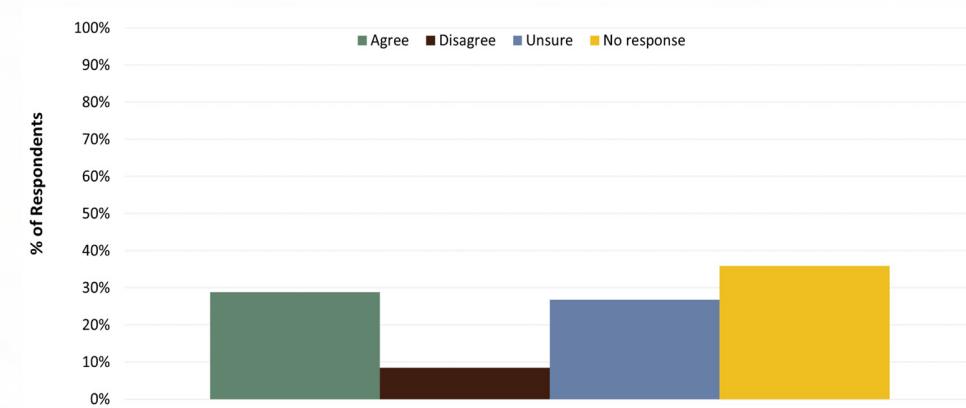


Sometimes people have concerns about trees. To understand why the community might not want trees, respondents were asked to indicate “agree”, “disagree”, or “unsure” with a series of statements. Half of the respondents indicated that they were unsure if trees worried them because of the potential risk to people or property. Nearly 29% of respondents indicated that they “agreed” with the statement “Trees worry me because... They may require maintenance I'm unable or unwilling to provide”.

**Figure 23: Trees worry me because... They may pose risks to people or property**

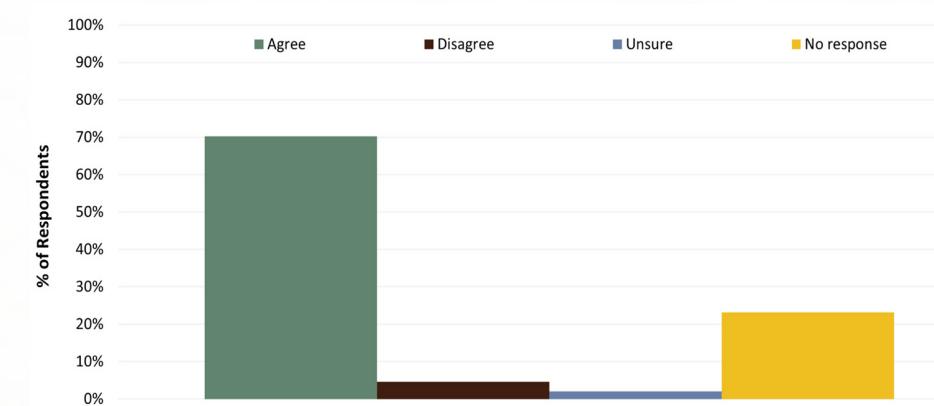


**Figure 24: Trees worry me because... They may require maintenance I'm unable or unwilling to provide**

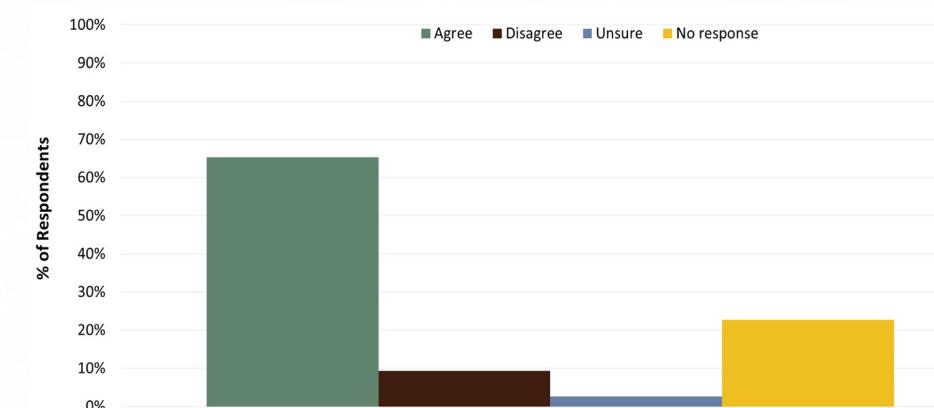


Education and outreach is important for preserving and enhancing the urban forest. Understanding the community's preferred methods of outreach and the educational topics that the community is most interested in is helpful for prioritizing resources for urban forest programming. Respondents were asked to indicate “agree”, “disagree”, or “unsure” with a series of statements. More than 70% agreed that they wanted information on events that teach people how to plant and maintain trees (Figure 25). Similarly, 65% agreed that they wanted information on how to plant and care for trees to be available on the City website (Figure 26). Results from the survey showed that the majority of respondents have an interest in volunteering to plant or care for trees and plant trees on their own properties if provided a free tree and guidance on how to plant it (Figure 27 and Figure 28).

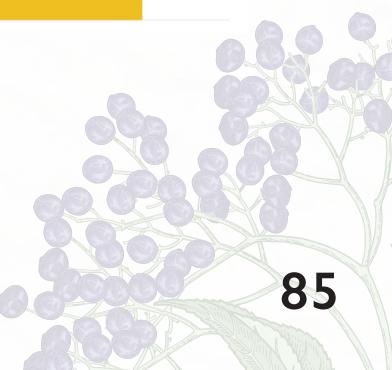
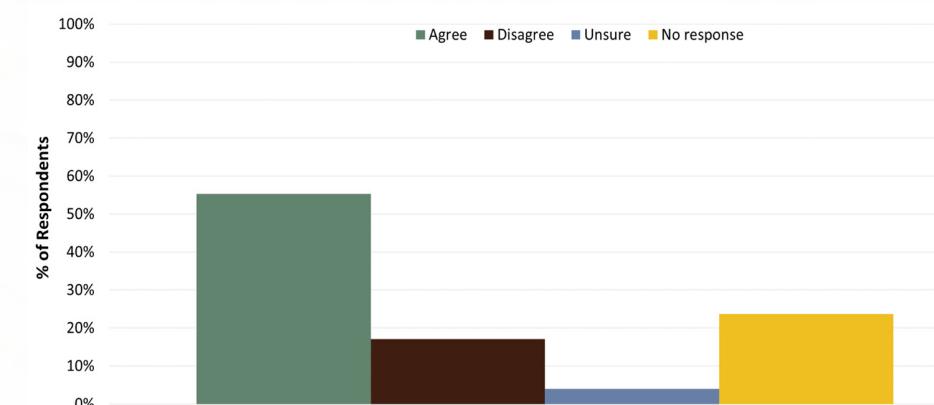
**Figure 25: I want... Information on events that teach people how to plant and maintain trees**



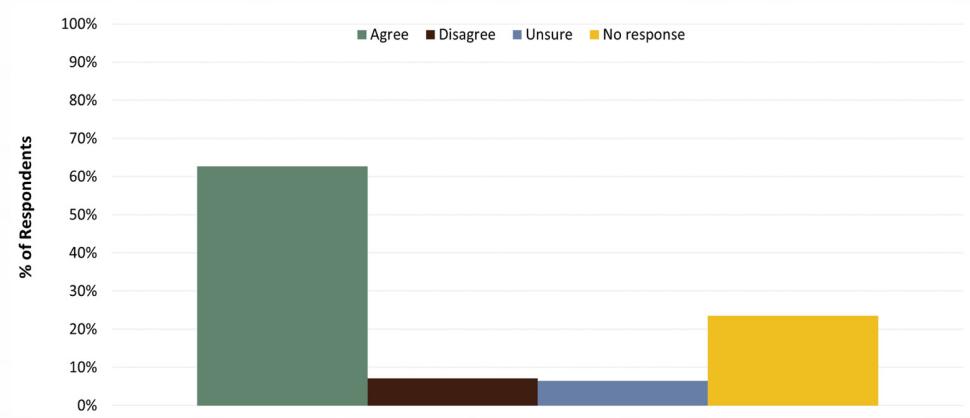
**Figure 26: I want... The City website to have information on how to plant and care for trees**



**Figure 27: I want... To volunteer to plant or care for public trees**

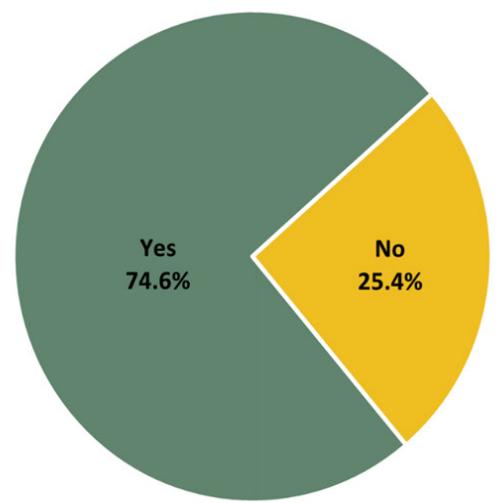


**Figure 28: I want... A free tree to plant on my own property and guidance on how to plant it**

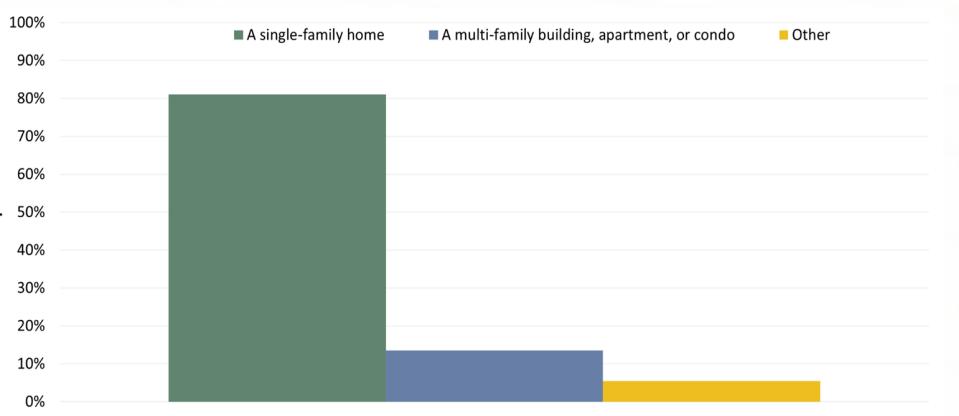


Respondents were asked to participate in a series of questions to share more about themselves. These questions were asked to help gauge the reach of engagement and outreach for the development of the UFMP. Respondents were given the option to opt out of responding to these questions and more than 70% chose to do so. Of those who responded, nearly 75% indicated that they live in Watsonville (Figure 29). More than 73% of respondents indicated that they lived in a single-family home and 61% indicated that they owned their own home (Figure 30). More than half of respondents described themselves as white or Caucasian, followed by 21% describing themselves as Hispanic or Latino. This is a unique community in that 80% of the people who live in the community consider themselves Latino.

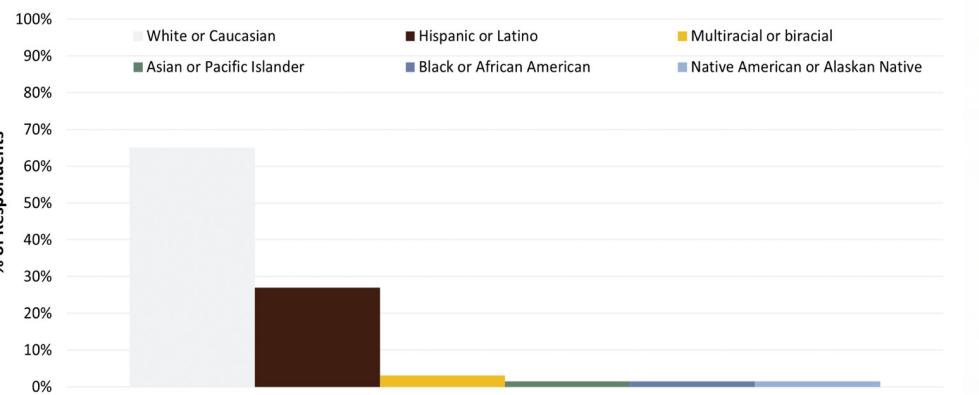
**Figure 29: Do you live in Watsonville?**



**Figure 30: Describe your living situation.**



**Figure 31: Describe your race/ethnicity.**





## TREE CARE AND PLANTING PLAN

Industry recommends that trees are maintained at least every 5 to 7 years. Due to budget constraints, roughly two-thirds of community trees have been maintained by the City. More than 1,500 trees have been the responsibility of the adjacent property owner. Some trees, like trees in the downtown area, have received more frequent maintenance (every 3 to 4 years) to ensure that clearance and visibility are maintained. Palms are an example of a maintenance-intensive tree, where some palm species require biannual pruning of fronds.

The 2022 inventory of community trees, included the collection of maintenance needs. Most trees that were collected required routine maintenance. Providing maintenance to community trees on a cyclical basis is an efficient means of projecting tree care costs and spreading those costs over time. Additionally, cyclical maintenance allows managers to predict when trees will receive service. If maintenance cycles are published, service requests from residents can be greatly reduced. When trees are regularly maintained and inspected, trees are generally healthier and risks can be proactively identified and addressed. Additionally, work plans can include plans for annual tree planting. By tracking trees that are removed, trees can be programmed into the annual tree planting plan and quickly replaced. Young trees greatly benefit from training pruning, which should occur every year for 2 to 3 years after establishment to develop appropriate structures.

To address the maintenance needs identified during the inventory, including priority maintenance needs (e.g., removals, pruning to remove hazardous limbs and deadwood), the following tables provides an example work plan for addressing maintenance for the trees that are currently maintained by the City. Trees in the downtown area and along major corridors have historically been pruned more frequently. As such, trees in these areas are on a 4-year maintenance plan. All other trees, including trees in neighborhoods and City parks are on a 7-year maintenance plan. Additionally, a tree planting plan has been developed to plan for the planting costs and to identify available planting sites (e.g., vacant sites, or sites where a tree or stump was removed). Once trees receive maintenance, trees should then be incorporated back into the cycle. In other words, trees that are pruned in the first year, should be scheduled for maintenance 5 to 7 years into the future. The tables on the following pages are examples of 7-year planting and work plans for street trees that are City-maintained and community trees in the Downtown Area, Ramsay Park, and along main arterial roads. These tables include cost estimates for priority maintenance, routine maintenance and planting, which is an increase over current service levels.

Table 8: Planting Plan

		Complete All Planting				Year 1			Year 2			Year 3			Year 4			Year 5			Year 6			Year 7			Total 7-
Tree Planting	Vacant Sites	\$500	138	\$69,000	\$500	20	\$10,000	\$500	20	\$10,000	\$500	20	\$10,000	\$500	20	\$10,000	\$500	20	\$10,000	\$500	20	\$10,000	\$500	20	\$10,000	\$70,000	
	Replacement Trees	\$500	279	\$139,500	\$500	33	\$16,500	\$500	40	\$19,800	\$500	43	\$21,500	\$500	43	\$21,250	\$500	41	\$20,250	\$500	37	\$18,600	\$500	43	\$21,600	\$139,500	
	Structural Prune	\$300	417	\$125,100	\$300	0	\$0	\$300	0	\$0	\$300	53	\$15,900	\$300	60	\$17,880	\$300	63	\$18,750	\$300	114	\$34,050	\$300	120	\$36,030	\$122,610	
Tree Planting Activity Total(s)		834	333,600		53	\$26,500		60	\$29,800		116	\$47,400		122	\$49,130		123	\$49,000		171	\$62,650		183	\$67,630	\$332,110		
		Complete All Planting				Year 1			Year 2			Year 3			Year 4			Year 5			Year 6			Year 7			Total 7-
Tree Planting Costs	Cost Grant Total	\$333,600				\$26,500			\$29,800			\$47,400			\$49,130			\$49,000			\$62,650			\$67,630			\$332,110
	Current Annual Planting/Establishment Budget	\$352,853				\$50,408			\$50,408			\$50,408			\$50,408			\$50,408			\$50,408			\$50,408			\$352,853
	Shortfall/Gap	\$19,253				\$23,908			\$20,608			\$3,008			\$1,278			\$1,408			-\$12,243			-\$17,223			\$20,743
Tree Planting Activity Total(s)																											

Table 9: Example 7-Year Work Plan for All Other City-maintained Trees

Estimated Costs for Each Activity		Complete All Maintenance				Year 1			Year 2			Year 3			Year 4			Year 5			Year 6			Year 7			Total 7-Year Work Plan
Maintenance Activity	Diameter	Cost/tree	# of Trees	Total Cost	Cost/tree	# of Trees	Total Cost	Cost/tree	# of Trees	Total Cost	Cost/tree	# of Trees	Total Cost	Cost/tree	# of Trees	Total Cost	Cost/tree	# of Trees	Total Cost	Cost/tree	# of Trees	Total Cost	Cost/tree	# of Trees	Total Cost	# of Trees	
Priority Pruning (Priority 1 & 2)	0 - 3	\$300	2	\$600	\$300	2	\$600	\$315	0	\$0	\$331	0	\$0	\$347	0	\$0	\$365	0	\$0	\$383	0	\$0	\$402	0	\$0	\$600	
	4 - 6	\$300	5	\$1,500	\$300	5	\$1,500	\$315	0	\$0	\$331	0	\$0	\$347	0	\$0	\$365	0	\$0	\$383	0	\$0	\$402	0	\$0	\$1,500	
	7 - 12	\$900	7	\$6,300	\$900	1	\$900	\$945	0	\$0	\$992	0	\$0	\$1,042	0	\$0	\$1,094	0	\$0	\$1,149	0	\$0	\$1,206	0	\$0	\$900	
	13 - 18	\$900	3	\$2,700	\$900	3	\$2,700	\$945	0	\$0	\$992	0	\$0	\$1,042	0	\$0	\$1,094	0	\$0	\$1,149	0	\$0	\$1,206	0	\$0	\$2,700	
	19 - 24	\$900	0	\$0	\$900	0	\$0	\$945	0	\$0	\$992	0	\$0	\$1,042	0	\$0	\$1,094	0	\$0	\$1,149	0	\$0	\$1,206	0	\$0	\$0	
	25 - 32	\$1,800	0	\$0	\$1,800	0	\$0	\$1,890	0	\$0	\$1,985	0	\$0	\$2,084	0	\$0	\$2,188	0	\$0	\$2,297	0	\$0	\$2,412	0	\$0	\$0	
	33 - 36	\$1,800	1	\$1,800	\$1,800	1	\$1,800	\$1,890	0	\$0	\$1,985	0	\$0	\$2,084	0	\$0	\$2,188	0	\$0	\$2,297	0	\$0	\$2,412	0	\$0	\$1,800	
	37 - 42	\$2,400	0	\$0	\$2,400	0	\$0	\$2,520	0	\$0	\$2,646	0	\$0	\$2,778	0	\$0	\$2,917	0	\$0	\$3,063	0	\$0	\$3,216	0	\$0	\$0	
	43 +	\$2,400	1	\$2,400	\$2,400	1	\$2,400	\$2,520	0	\$0	\$2,646	0	\$0	\$2,778	0	\$0	\$2,917	0	\$0	\$3,063	0	\$0	\$3,216	0	\$0	\$2,400	
Activity Total(s)			19	\$15,300		13	\$9,900		0	\$0		0	\$0		0	\$0		0	\$0		0	\$0		0	\$0	\$9,900	
Training Pruning	0 - 3	\$300	694	\$208,200	\$300	0	\$0	\$315	347	\$109,305	\$331	347	\$114,770	\$347	347	\$120,509	\$365	347	\$126,534	\$383	0	\$0	\$402	0	\$0	\$471,118	
	4 - 6	\$300	524	\$157,200	\$300	262	\$78,600	\$315	262	\$82,530	\$331	262	\$86,657	\$347	262	\$90,989	\$365	0	\$0	\$383	0	\$0	\$402	0	\$0	\$338,776	
	7 - 12	\$300	170	\$51,000	\$300	170	\$51,000	\$315	0	\$0	\$331	0	\$0	\$347	0	\$0	\$365	0	\$0	\$383	0	\$0	\$402	0	\$0	\$51,000	
Activity Total(s)			1,388	\$416,400		432	\$129,600		609	\$191,835		609	\$201,427		609	\$211,498		347	\$126,534		0	\$0		0	\$0	\$860,894	
Routine Pruning (Large & Small)	0 - 3	\$300	247	\$74,100	\$300	0	\$0	\$315	0	\$0	\$331	0	\$0	\$347	0	\$0	\$365	0	\$0	\$383	0	\$0	\$402	247	\$99,301	\$247	
	4 - 6	\$300	587	\$176,100	\$300	0	\$0	\$315	0	\$0	\$331	0	\$0	\$347	0	\$0	\$365	176	\$64,215	\$383	411	\$157,327	\$402	0	\$0	\$221,542	
	7 - 12	\$900	1,142</td																								

**Table 10: Street Trees City Maintained**

Estimated Costs for Each Activity		Year 1			Year 2			Year 3			Year 4			Year 5			Year 6			Year 7			Total 7-Year Work Plan		
Maintenance Activity	Diameter	Cost/tree	# of Trees	Total Cost	Cost/tree	# of Trees	Total Cost	Cost/tree	# of Trees	Total Cost	Cost/tree	# of Trees	Total Cost	Cost/tree	# of Trees	Total Cost	Cost/tree	# of Trees	Total Cost	Cost/tree	# of Trees	Total Cost	Total 7-Year Work Plan		
Priority Pruning (Priority 1 & 2)	0 - 3	\$300	0	\$0	\$315	0	\$0	\$331	0	\$0	\$347	0	\$0	\$365	0	\$0	\$383	0	\$0	\$402	0	\$0	\$0		
	4 - 6	\$300	1	\$300	\$315	0	\$0	\$331	0	\$0	\$347	0	\$0	\$365	0	\$0	\$383	0	\$0	\$402	0	\$0	\$300		
	7 - 12	\$900	1	\$900	\$945	0	\$0	\$992	0	\$0	\$1,042	0	\$0	\$1,094	0	\$0	\$1,149	0	\$0	\$1,206	0	\$0	\$900		
	13 - 18	\$900	1	\$900	\$945	0	\$0	\$992	0	\$0	\$1,042	0	\$0	\$1,094	0	\$0	\$1,149	0	\$0	\$1,206	0	\$0	\$900		
	19 - 24	\$900	0	\$0	\$945	0	\$0	\$992	0	\$0	\$1,042	0	\$0	\$1,094	0	\$0	\$1,149	0	\$0	\$1,206	0	\$0	\$0		
	25 - 32	\$1,800	0	\$0	\$1,890	0	\$0	\$1,985	0	\$0	\$2,084	0	\$0	\$2,188	0	\$0	\$2,297	0	\$0	\$2,412	0	\$0	\$0		
	33 - 36	\$1,800	0	\$0	\$1,890	0	\$0	\$1,985	0	\$0	\$2,084	0	\$0	\$2,188	0	\$0	\$2,297	0	\$0	\$2,412	0	\$0	\$0		
	37 - 42	\$2,400	0	\$0	\$2,520	0	\$0	\$2,646	0	\$0	\$2,778	0	\$0	\$2,917	0	\$0	\$3,063	0	\$0	\$3,216	0	\$0	\$0		
	43 +	\$2,400	0	\$0	\$2,520	0	\$0	\$2,646	0	\$0	\$2,778	0	\$0	\$2,917	0	\$0	\$3,063	0	\$0	\$3,216	0	\$0	\$0		
Activity Total(s)			3	\$2,100		0	\$0		0	\$0		0	\$0		0	\$0		0	\$0		0	\$0	\$2,100		
Training Pruning	0 - 3	\$300	0	\$0	\$315	0	\$0	\$331	0	\$0	\$347	0	\$0	\$365	0	\$0	\$383	0	\$0	\$402	0	\$0	\$0		
	4 - 6	\$300	45	\$13,920	\$315	69.6	\$21,924	\$331	0	\$0	\$347	58	\$20,143	\$365	0	\$0	\$383	0	\$0	\$402	0	\$0	\$35,844		
	7 - 12	\$300	63	\$18,900	\$315	0	\$0	\$331	63	\$20,837	\$347	0	\$0	\$365	0	\$0	\$383	0	\$0	\$402	0	\$0	\$39,737		
Activity Total(s)			109	\$32,820		70	\$21,924		63	\$20,837		58	\$20,143		0	\$0		0	\$0		0	\$0	\$39,737		
Routine Pruning (Large & Small)	0 - 3	\$300	17	\$5,100	\$315	17	\$5,355	\$331	17	\$5,623	\$347	17	\$5,904	\$365	17	\$6,199	\$383	17	\$6,509	\$402	17	\$6,834	\$22,277		
	4 - 6	\$300	36	\$10,800	\$315	36	\$11,340	\$331	36	\$11,907	\$347	36	\$12,502	\$365	26	\$9,481	\$383	46	\$17,613	\$402	36	\$14,473	\$43,528		
	7 - 12	\$900	53	\$47,700	\$945	53	\$50,085	\$992	53	\$52,589	\$1,042	53	\$55,219	\$1,094	53	\$57,980	\$1,149	53	\$60,879	\$1,206	56	\$67,541	\$208,354		
	13 - 18	\$900	30	\$27,000	\$945	0	\$0	\$992	0	\$0	\$1,042	0	\$0	\$1,094	0	\$0	\$1,149	40	\$45,946	\$1,206	43	\$51,862	\$27,000		
	19 - 24	\$900	0	\$0	\$945	0	\$0	\$992	0	\$0	\$1,042	11	\$11,460	\$1,094	11	\$12,034	\$1,149	11	\$12,635	\$1,206	11	\$13,267	\$12,034		
	25 - 32	\$1,800	0	\$0	\$1,890	0	\$0	\$1,985	20	\$39,690	\$2,084	20	\$41,675	\$2,188	19	\$41,570	\$2,297	0	\$0	\$2,412	0	\$0	\$81,260		
	33 - 36	\$1,800	6	\$10,800	\$1,890	11	\$20,790	\$1,985	5	\$9,923	\$2,084	0	\$0	\$2,188	0	\$0	\$2,297	0	\$0	\$2,412	0	\$0	\$41,513		
	37 - 42	\$2,400	7	\$16,800	\$2,520	7	\$17,640	\$2,646	0	\$0	\$2,778	0	\$0	\$2,917	0	\$0	\$3,063	0	\$0	\$3,216	0	\$0	\$34,440		
	43 +	\$2,400	11	\$26,400	\$2,520	11	\$27,720	\$2,646	0	\$0	\$2,778	0	\$0	\$2,917	0	\$0	\$3,063	0	\$0	\$3,216	0	\$0	\$54,120		
Activity Total(s)			160	\$144,600		135	\$132,930		131	\$119,732		137	\$126,760		126	\$127,264		167	\$143,582		163	\$153,977	\$524,525		
Tree Removal & Stump Grinding	0 - 3	\$400	0	\$0	\$420	0	\$0	\$441	2	\$882	\$463	0	\$0	\$486	0	\$0	\$511	0	\$0	\$536	0	\$0	\$563	\$882	
	4 - 6	\$400	0	\$0	\$420	0	\$0	\$441	13	\$5,733	\$463	0	\$0	\$486	0	\$0	\$511	0	\$0	\$536	0	\$0	\$563	\$5,733	
	7 - 12	\$400	0	\$0	\$420	10.8	\$4,536	\$441	7.2	\$3,175	\$463	0	\$0	\$486	0	\$0	\$511	0	\$0	\$536	0	\$0	\$563	\$7,711	
	13 - 18	\$1,100	0	\$0	\$1,155	2	\$2,310	\$1,213	0	\$0	\$1,273	0	\$0	\$1,337	0	\$0	\$1,404	0	\$0	\$1,474	0	0	\$1,548	\$2,310	
	19 - 24	\$1,100	9	\$9,900	\$1,155	0	\$0	\$1,213	0	\$0	\$1,273	0	\$0	\$1,337	0	\$0	\$1,404	0	\$0	\$1,474	0	0	\$1,548	\$9,900	
	25 - 32	\$1,200	3	\$3,600	\$1,260	0	\$0	\$1,323	0	\$0	\$1,389	0	\$0	\$1,459	0	\$0	\$1,532	0	\$0	\$1,608	0	0	\$1,689	\$3,600	
	33 - 36	\$1,200	2	\$2,400	\$1,260	0	\$0	\$1,323	0	\$0	\$1,389	0	\$0	\$1,459	0	\$0	\$1,532	0	\$0	\$1,608	0	0	\$1,689	\$2,400	
	37 - 42	\$1,500	1	\$750	\$1,575	0	\$0	\$1,654	0	\$0	\$1,736	0	\$0	\$1,823	0	\$0	\$1,914	0	\$0	\$2,010	0	0	\$2,111	\$750	
	43 +	\$1,600	0	\$0	\$1,680	0	\$0	\$1,764	0	\$0	\$1,852	0	\$0	\$1,945	0	\$0	\$2,042	0	\$0	\$2,144	0	0	\$2,251	500	
Activity Total(s)			15	\$16,650		13	\$6,846		22	\$9,790		0	\$0		0	\$0							\$33,286		
Maintenance Summary																									
All Maintenance Activity Grand Total		287			217			216		195			126			167			163				1,177		
Cost Grand Total				\$196,170			\$161,700			\$150,359			\$146,903			\$127,264			\$143,582			\$153,977	\$933,051		
Annual Budget																									
Current Annual Maintenance Budget					\$164,394				\$164,394				\$164,394				\$164,394				\$164,394			\$1,150,758	
Shortfall/Gap					-\$31,776				-\$2,694				-\$14,035				-\$17,491				-\$20,812			-\$10,417	-\$217,707

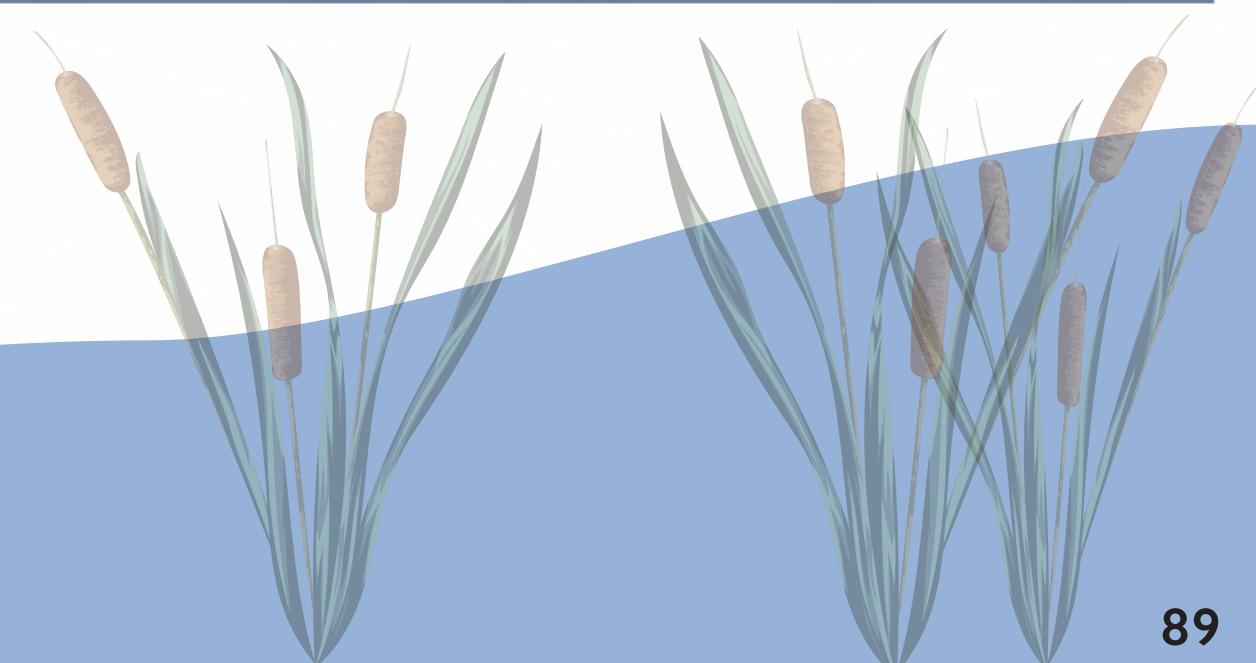


Table 11: Example Work Plan for Community Trees in the Downtown Area, Ramsay Park, and along main arterial roads

Estimated Costs for Each Activity		Complete All Maintenance				Year 1			Year 2			Year 3			Year 4			Total 4-Year Work Plan	
Maintenance Activity	Diameter	Cost/tree	# of Trees	Total Cost	Cost/tree	# of Trees	Total Cost	Cost/tree	# of Trees	Total Cost	Cost/tree	# of Trees	Total Cost	Cost/tree	# of Trees	Total Cost	Total 4-Year Cost		
Priority Pruning (Priority 1 & 2)	0 - 3	\$300	0	\$0	\$300	0	\$0	\$315	0	\$0	\$331	0	\$0	\$347	0	0	\$0		
	4 - 6	\$300	1	\$300	\$300	1	\$300	\$315	0	\$0	\$331	0	\$0	\$347	0	0	\$300		
	7 - 12	\$900	3	\$2,700	\$900	3	\$2,700	\$945	0	\$0	\$992	0	\$0	\$1,042	0	0	\$2,700		
	13 - 18	\$900	0	\$0	\$900	0	\$0	\$945	0	\$0	\$992	0	\$0	\$1,042	0	0	\$0		
	19 - 24	\$900	0	\$0	\$900	0	\$0	\$945	0	\$0	\$992	0	\$0	\$1,042	0	0	\$0		
	25 - 32	\$1,800	0	\$0	\$1,800	0	\$0	\$1,890	0	\$0	\$1,985	0	\$0	\$2,084	0	0	\$0		
	33 - 36	\$1,800	0	\$0	\$1,800	0	\$0	\$1,890	0	\$0	\$1,985	0	\$0	\$2,084	0	0	\$0		
	37 - 42	\$2,400	0	\$0	\$2,400	0	\$0	\$2,520	0	\$0	\$2,646	0	\$0	\$2,778	0	0	\$0		
	43 +	\$2,400	1	\$2,400	\$2,400	1	\$2,400	\$2,520	0	\$0	\$2,646	0	\$0	\$2,778	0	0	\$2,400		
Activity Total(s)			5	\$5,400		5	\$5,400		0	\$0.00		0	\$0.00		0	\$0.00	\$5,400		
Training Pruning	0 - 3	\$300	251	\$75,300	\$300	0	\$0	\$315	50	\$15,750	\$331	101	\$33,406	\$347	100	34728.75	\$83,885		
	4 - 6	\$300	109	\$32,700	\$300	58	\$17,400	\$315	51	\$16,065	\$331	0	\$0	\$347	0	0	\$33,465		
	7 - 12	\$300	42	\$12,600	\$300	32	\$9,600	\$315	5	\$1,575	\$331	5	\$1,654	\$347	0	0	\$12,829		
Activity Total(s)			402	\$120,600		90	\$27,000		106	\$33,390.00		106	\$35,059.50		100	\$34,728.75	\$130,178		
Routine Pruning	0 - 3	\$300	26	\$7,800	\$300	0	\$0	\$315	0	\$0	\$331	16	\$5,292	\$347	10	3472.875	\$8,765		
	4 - 6	\$300	60	\$18,000	\$300	20	\$6,000	\$315	0	\$0	\$331	20	\$6,615	\$347	20	6945.75	\$19,561		
	7 - 12	\$900	372	\$334,800	\$900	93	\$83,700	\$945	83	\$78,435	\$992	103	\$102,202	\$1,042	93	96893.2125	\$361,230		
	13 - 18	\$900	188	\$169,200	\$900	47	\$42,300	\$945	47	\$44,415	\$992	47	\$46,636	\$1,042	47	48967.5375	\$182,318		
	19 - 24	\$900	78	\$70,200	\$900	18	\$16,200	\$945	20	\$18,900	\$992	20	\$19,845	\$1,042	20	20837.25	\$75,782		
	25 - 32	\$1,800	66	\$118,800	\$1,800	10	\$18,000	\$1,890	10	\$18,900	\$1,985	20	\$39,690	\$2,084	26	54176.85	\$130,767		
	33 - 36	\$1,800	13	\$23,400	\$1,800	0	\$0	\$1,890	7	\$13,230	\$1,985	6	\$11,907	\$2,084	0	0	\$25,137		
	37 - 42	\$2,400	15	\$36,000	\$2,400	7	\$16,800	\$2,520	8	\$20,160	\$2,646	0	\$0	\$2,778	0	0	\$36,960		
	43 +	\$2,400	40	\$96,000	\$2,400	20	\$48,000	\$2,520	20	\$50,400	\$2,646	0	\$0	\$2,778	0	0	\$98,400		
Activity Total(s)			858	\$874,200		215	\$231,000		195	\$244,440.00		232	\$232,186.50		216	\$231,293.48	\$938,920		
Tree Removal & Stump Grinding	0 - 3	\$400	8	\$3,200	\$400	0	\$0	\$420		\$0	\$441	4	\$1,764	\$463	4	1852.2	\$3,616		
	4 - 6	\$400	6	\$2,400	\$400	0	\$0	\$420	3	\$1,260	\$441	3	\$1,323	\$463	0	0	\$2,583		
	7 - 12	\$400	28	\$11,200	\$400	5	\$2,000	\$420	7	\$2,940	\$441	7	\$3,087	\$463	9	4167.45	\$12,194		
	13 - 18	\$1,100	18	\$19,800	\$1,100	5	\$5,500	\$1,155	4	\$4,620	\$1,213	4	\$4,851	\$1,273	4	5093.55	\$20,065		
	19 - 24	\$1,100	8	\$8,800	\$1,100	4	\$4,400	\$1,155	4	\$4,620	\$1,213	0	\$0	\$1,273	0	0	\$9,020		
	25 - 32	\$1,200	4	\$4,800	\$1,200	4	\$4,800	\$1,260	0	\$0	\$1,323	0	\$0	\$1,389	0	0	\$4,800		
	33 - 36	\$1,200	1	\$1,200	\$1,200	1	\$1,200	\$1,260	0	\$0	\$1,323	0	\$0	\$1,389	0	0	\$1,200		
	37 - 42	\$1,500	0	\$0	\$1,500	0	\$0	\$1,575	0	\$0	\$1,654	0	\$0	\$1,736	0	0	\$0		
	43 +	\$1,600	0	\$0	\$1,600	0	\$0	\$1,680	0	\$0	\$1,764	0	\$0	\$1,852	0	0	\$0		
Activity Total(s)			73	\$51,400		19	\$17,900		18	\$13,440.00		18	\$11,025.00		17	\$11,113.20	\$53,478		
Total Costs																			
All Maintenance Activity Grand Total		1,338				386			319			413			346			1,464	
Cost Grand Total				\$1,051,600			\$298,400			\$291,270			\$297,124			\$281,650		\$1,168,444	

		Complete All Maintenance				Year 1			Year 2			Year 3			Year 4				
		0 - 3	\$300	0	\$0	\$300	0	\$0	\$315	0	\$0	\$331	0	\$0	\$347	0	0		
City Wide Routine Pruning Palms		4 - 6	\$300	4	\$1,200	\$300	9	\$2,700	\$315	0	\$0	\$331	9	\$2,977	\$347	0	0		
		7 - 12	\$300	51	\$15,300	\$300	34	\$10,200	\$315	0	\$0	\$331	34	\$11,246	\$347	\$13	\$4,515		
		13 - 18	\$300	52	\$15,600	\$300	11	\$3,300</											



## PLAN GOALS

Based on the review of urban forestry operations, policies and regulations, discussions with collaborative partners, and input from the community, the UFMP identified five goals that represent what the community wants for the future urban forest. The goals include comprehensive objectives to adequately manage the urban forest in a timely, cost-effective, and efficient manner. This includes growing the current resource through tree planting and replacement programs to support the stability of the urban forest and maximize environmental, social, and economic benefits from trees and tree canopy. Additionally, the objectives recognize the importance of engaging the community in the implementation of the UFMP to develop “sweat equity” and to ensure that the needs of the community are being met. As such, community engagement is integral to successfully achieving the goals and objectives for the future of Watsonville’s urban forest.



### Reach or exceed 30% overall tree canopy cover

Canopy goals are important to gauge if the UFMP is effective and being implemented properly. Watsonville has the potential to support as high as 30% tree canopy cover, but there are many unknown factors that contribute to the feasibility of that level of canopy. Engagement with the community at the neighborhood level is critical to meeting incremental increases in the tree canopy. Objectives for this goal include tracking changes in the tree canopy and periodic adjustments to tree canopy cover goals to address the city's changing needs.

### Grow a sustainable and resilient community tree resource

A resilient and healthy urban forest provides benefits for all members of the community. Objectives for this goal include providing proactive maintenance to all community trees, revising Municipal Code to promote the protection of existing trees, planting the right tree in the right place, formulating a long-term tree planting program, and providing stable and consistent funding.

### Enhance the livability and character of the community

Trees reduce the stress of the urban environment, can cool urban heat islands, reduce stormwater runoff and associated flooding risks, and provide a sense of place within the community. Tree-lined streets in residential areas is especially important for providing these direct benefits to the neighborhoods in most need. Objectives for this goal include prioritizing the planting of trees in areas with lower tree canopy cover, updating design standards to accommodate the planting of larger trees, developing a long-term planting program, and regularly reviewing and updating the goals of the UFMP to respond to community needs.



### Encourage stewardship of the urban forest

A sense of personal responsibility within the community can encourage members to be stewards of the urban forest. Objectives for this goal include fostering relationships with tree advocacy groups to implement the goals and objectives of the UFMP, creating opportunities for the community to improve the urban forest, and building awareness of the urban forest.

### Celebrate the urban forest

Special events like Arbor Day can bring the community together over a common goal and increase engagement in urban forestry programming. Such activities can promote appreciation for community trees and result in advocacy for the resources that are necessary to plant more trees and provide the resources required to care for existing trees and urban forests. Objectives for this goal include engaging the community in urban forestry programming and becoming a Tree City USA.



WE NEED MORE TREES PLANTED IN WATSONVILLE  
AS WELL AS LOCAL FLOWERS THAT WILL  
SURVIVE IN OUR ENVIRONMENT.

-SURVEY RESPONDENT



# EVALUATE AND ADJUST



With appropriate care and planning, the urban forest is an asset that has the potential to increase in value over time. As young trees mature and their leaf surface and canopy grow, so too will the overall benefits and value of the community's urban forest. The objectives and strategies of the UFMP are intended to support this process in an appropriate manner that encourages the sustainable stewardship of community trees with consideration for safety, cost efficiency, community values, and equitable distribution of benefits. The UFMP includes strategies for measuring the success of the plan over time.

## MONITORING AND MEASURING RESULTS

Through talking with community partners and those within the urban forestry program, a set of goals were created to meet the strong demand for protecting and enhancing the urban forest. The success of these goals is largely dependent on creating objectives and strategies to meet the targets outlined in the UFMP as well as monitoring the progress of these action steps.

### ANNUAL REVIEW

The UFMP is an active tool that will guide management and planning decisions over the next 50 years. Its goals and actions will be reviewed annually for progress and integration into an internal work plan. The UFMP presents a long-range vision and target dates are intended to be flexible in response to emerging opportunities, available resources, and changes in community expectations. Therefore, each year, specific areas of focus should be identified, which can inform budget and time requirements for urban forest managers.

### RESOURCE ANALYSIS

With a Resource Analysis, Watsonville can identify quantitatively the value of the composition of community trees, the annual benefit provided to the community, replacement value, and benefit versus investment ratios. With this information, Watsonville can improve health (condition), species diversity, annual benefits, and overall resource value of its tree resource. When a resource analysis is conducted every five years, the City can illustrate progress and success toward plan goals. A five-year Resource Analysis review is a possible way to monitor progress on efforts to increase diversity through a list of tree species appropriate for a variety of different spaces and landscapes.

### CANOPY ASSESSMENT

With the recent Tree Canopy Cover & Land Cover Assessment, Watsonville has a baseline tree canopy for the entire urban forest, which allows for continuous monitoring of trends in the canopy cover on private property. A 10-year canopy assessment can be done to track changes as the plan is implemented and compared against the baseline.

### COMMUNITY SATISFACTION

Plan results will be measured through increased benefits and value in the community tree resource and the preservation and eventual increase in canopy cover over time. Attainment of the objectives and strategies will support better tree health, greater longevity, and a reduction in tree failures. However, one of the greatest measurements of success for the UFMP will be its level of success in meeting community expectations for the care and preservation of the community tree resource. Community satisfaction can be measured through surveys and will be evidenced by public support for realizing the objectives of the plan. Community satisfaction can also be gauged by the level of engagement, support for forestry programs and development of community partnerships.

## REPORTING

Completion of this plan is the first step towards achieving the vision for Watsonville's urban forest. Continual monitoring, analysis, and revisions will help forest managers keep stakeholders informed and engaged. By organizing data into specific components (for example, Urban Forest Reports, and Community Satisfaction Surveys), it will be possible to revise specific areas of weakness and buttress areas of strength. Revisions to the plan should occur with major events, such as newly discovered pests or diseases, or significant policy and regulation changes. A complete formal revision should occur in unison with major municipal projects, such as the General Plan. It is important to remember that the Watsonville Urban Forest Management Plan is a living document that should adapt to new conditions.

## STATE OF THE URBAN FOREST REPORT

The purpose of the report is to provide structural and functional information about the urban forest (including the municipal forest) and recommend strategies for its proactive management, protection, and growth.



# Appendix A: References

Akbari, H., Kurn D. M., Bretz S. E., & Hanford J. W. (1997). "Peak power and cooling energy savings of shade trees." *Energy and Buildings* 25:139–148.

Borg, J. and Schoellhmer, J. Pajaro Valley History. N.D. Retrieved from: <https://www.cityofwatsonville.org/450/Pajaro-Valley-History>

Carmichael, C., Danks C., & Vatovec C. (2019) "Green Infrastructure Solutions to Health Impacts of Climate Change: Perspectives of Affected Residents in Detroit, Michigan, USA." *Sustainability*. 11(20):5688. <https://doi.org/10.3390/su11205688>

Chandler, T. J. (1965). *The Climate of London*. Hutchinson.

Chen, Fang & Peng, Shaolin & Chen, Bao-Ming & Ni, Guangyan & Liao, Huixuan. (2013). "Allelopathic potential and volatile compounds of Rosmarinus officinalis L. against weeds." *Allelopathy Journal*. 32. 57-66.

City of Watsonville. (n.d.) "Habitat Restoration and Enhancement Assessment and Plan for Trails Corridors City of Watsonville Trails & Bicycle Master Plan." Retrieved January 17, 2023 from <https://www.cityofwatsonville.org/DocumentCenter/View/2918/Watsonville-Scenic-Trails-Network-Restoration-Plan-PDF?bidId=>

Clark, J.R., Matheny, N.P., Cross, G., Wake, V., 1997. "A Model of Urban Forest Sustainability." *J Arbor* 23(1):17-30.

Dwyer, J.F, McPherson, E.G., Schroeder, H.W., and Rowntree, R.A. 1992. "Assessing the Benefits and "Costs of the Urban Forest." *Journal of Arboriculture* 18(5): 227-234.

Ellison, D., Morris, C.E., Locatelli, B., Sheil, D., Cohen, J., Murdiyarso, D., Gutierrez, V., Van Noordwijk, M., Creed, I.F., Pokorny, J. & Gaveau, D. (2017). "Trees, forests and water: Cool insights for a hot world." *Global Environmental Change*, 43: 51-61.

Eskalen, A. 2015. "Polyphagous and Kuroshio Shot Hole Borers." <http://ucanr.edu/blogs/blogcore/postdetail.cfm?postnum=19197>

Fernández-Juricic E. (2000) "Avifaunal use of linear strips in an urban landscape." *Conservation Biology* 14: 513-521

Gilstad-Hayden, K., Wallace, L.R., Carroll-Scott, A., Meyer, S.R., Barbo, S., Murphy-Dunning, C., and Ickovics, J.R. 2015. "Research note: Greater tree canopy cover is associated with lower rates of both violent and property crime in New Haven, CT." *Landscape and Urban Planning*, 143, 248-253.

Goulson, D., Nicholls, E., Botás, C., & Rotheray, E. L. 2015. "Bee declines driven by combined stress from parasites, pesticides, and lack of flowers." *Science*, 347(6229).

Haddad, N.M., Brudvig, L.A., Clobert, J., Davies, K.F., Gonzalez, A., Holt, R.D., Lovejoy, T.E., Sexton, J.O., Austin, M.P., Collins, C.D. and Cook, W.M., 2015. "Habitat fragmentation and its lasting impact on Earth's ecosystems." *Science Advances*, 1(2), p.e1500052.

Heisler G.M. (1986). "Energy Savings with Trees." *J. Arbor* 12(5):113–125.

Huang, Y. J., Akbari, H., & Taha, H. (1990). "The wind-shielding and shading effects of trees on residential heating and cooling requirements". *ASHRAE Winter Meeting*, American Society of Heating, Refrigerating and Air-Conditioning Engineers. Atlanta, Georgia. ASHRAE proceedings, 96(1).

Hukill, T. (n.d.) "The Ohlone People of Santa Cruz County." Retrieved January 17, 2023 from <https://www.santacruz.org/blog/the-ohlone-people-of-santa-cruz-county/>

Jennings, V., Gaither, C.J. (2015). "Approaching Environmental Health Disparities and Green Spaces: An Ecosystem Services Perspective." *Int. J. Environ. Res. Public Health*. 1952-1968.

Jones, Donna (2011.) "Cherry tree blossoms with history: Gifts from the Japanese community brought beauty to Watsonville." Retrieved from: <https://www.santacrus sentinel.com/2011/04/07/cherry-tree-blossoms-with-history-gifts-from-the-japanese-community-brought-beauty-to-watsonville/>

Karl, Tom, P. Harley, L. Emmons, B. Thornton, A. Guenther, C. Basu, A. Turnipseed, K. Jardine. "Efficient Atmospheric Cleansing of Oxidized Organic Trace Gases by Vegetation." October 2010. Retrieved on 11/9/2010 from <http://www.sciencemag.org/cgi/content/abstract/330/6005/816>

Kaplan R., and Kaplan S. 1989. *The Experience of Nature: A Psychological Perspective*. Cambridge University Press.

Kenney, W. A., van Wassenaer, P. J., & Satel, A. L. (2011). "Criteria and indicators for strategic urban forest planning and management." *Arboriculture & Urban Forestry*, 37(3), 108-117.

Koch, M. (1973). *Santa Cruz County: Parade of the Past*. Fresno, CA: Valley Press. p. 11. ISBN 9780913548165.

Kuo, F.E. & Sullivan, W.C. (2001). "Environment and crime in the inner city: Does vegetation reduce crime?" *Environment and Behavior*, 33(3), pp. 343-367.

Legal Information Institute. 2022. Redlining. Retrieved December 06, 2022 from <https://www.law.cornell.edu/wex/redlining#>

Li, D.; Sullivan, W.C. 2016. "Impact of views to school landscapes on recovery from stress and mental fatigue." *Landscape and Urban Planning*. 148:149-158.

Lindenmayer, D. B. & Laurance, W. F. 2017. The ecology, distribution, conservation and management of large old trees. *Biol. Rev. Camb. Philos. Soc.* 92, 1434–1458.

Little, Jane Braxton. 2010. "Fruit Trees: Planting Health in Urban California". *California Trees*. Vol 18, No. 2. Retrieved from: <https://californiareleaf.org/wp-content/uploads/2009/10/CalTreesSummer2010web.pdf>

Livesley, S. J., McPherson, E. G., & Calfapietra, C. (2016). "The urban forest and ecosystem services: impacts on urban water, heat, and pollution cycles at the tree, street, and city scale." *Journal of environmental quality*, 45(1), 119-124.

Lyle, J.T., (1996). *Regenerative Design for Sustainable Development*. John Wiley & Sons.

Matsuoka, R. H. (2010). "Student performance and high school landscapes: Examining the links." *Landscape and Urban Planning*. 97(4), 273-282.

Marks-Block, T., Lake, F. K., & Curran, L. M. (2019). "Effects of understory fire management treatments on California hazelnut, an ecocultural resource of the Karuk and Yurok Indians in the Pacific Northwest." *Forest Ecology and Management*, 450, 117517. <https://doi.org/10.1016/j.foreco.2019.117517>

Menendian, S., Gailes, A., & Gambhir, S. (2021). "The roots of structural racism: Twenty-first century racial residential segregation in the United States."

Muller, R. N., & Bornstein, C. (2010). "Maintaining the diversity of California's municipal forests." *Journal of Arboriculture*, 36(1), 18.

NOAA. 2023. "Atmospheric Rivers: What are they and how does NOAA study them?" January 11, 2023. Retrieved from: <https://research.noaa.gov/article/ArtMID/587/ArticleID/2926/Atmospheric->

Rivers-What-are-they-and-how-does-NOAA-study-them

Pena, J. C. C., Martello, F., Ribeiro, M.C., Armitage, R.A., Young, R.J., and Rodrigues, M. (2017). Street trees reduce the negative effects of urbanization on birds. *PLOS ONE* 12(3): e0174484. <https://doi.org/10.1371/journal.pone.0174484>

Purdue Extension. 2016. Protecting pollinators. Retrieved from <https://extension.entm.purdue.edu/publications/POL-4/POL-4.html>

Roman, L.A. 2014. How many trees are enough? Tree death and the urban canopy, Scenario 04: Building the urban forest. <https://scenariojournal.com/article/how-many-trees-are-enough/>

Santamour, F. (1990). Trees for urban planting: Diversity, uniformity, and common sense. *Proceedings of the 7th Conference of Metropolitan Tree Improvement Alliance*. 7.

Science Now. 2010. "Tree Leaves Fight Pollution." [sciencemag.org](http://news.sciencemag.org/sciencenow/2010/10/tree-leaves-fight-pollution.html). Retrieved 11/05/2010 from <http://news.sciencemag.org/sciencenow/2010/10/tree-leaves-fight-pollution.html>

Sherer, P.M. (2003). Why America Needs More City Parks and Open Space. San Francisco: The Trust for Public Land. Retrieved from: [http://www.tpl.org/content\\_documents/parks\\_for\\_people\\_Jan2004.pdf](http://www.tpl.org/content_documents/parks_for_people_Jan2004.pdf)

Stephenson, N. L., Das, A. J., Condit, R., Russo, S. E., Baker, P. J., Beckman, N. G., ... & Zavala, M. A. (2014). Rate of tree carbon accumulation increases continuously with tree size. *Nature*, 507(7490), 90-93. Retrieved from: <https://www.nature.com/articles/nature12914>

Thériault, M., Kestens, Y., & Des Rosiers, F. (2002). The impact of mature trees on house values and on residential location choices in Quebec City.

Threlfall, C. G., Williams, N. S., Hahs, A. K., & Livesley, S. J. (2016). "Approaches to urban vegetation management and the impacts on urban bird and bat assemblages." *Landscape and Urban Planning*. 153, 28-39.

Troy, Austin; Grove, J. Morgan; O'Neil-Dunne, Jarlath. 2012. "The relationship between tree canopy and crime rates across an urban rural gradient in the greater Baltimore region." *Landscape and Urban Planning*. 106: 262-270.

Ulrich, R.S. 1986. "Human Responses to Vegetation and Landscapes." *Landscape and Urban Planning*. 13, 29-44.

University of Birmingham. (2016). Flooding alleviated by targeted tree planting and river restoration, scientists discover. Retrieved from <https://www.birmingham.ac.uk/news/2016/flooding-alleviated-by-targeted-tree-planting-and-river-restoration-scientists-discover>

U.S Census Bureau QuickFacts Watsonville city, California. (2021). Retrieved January 17, 2023 from <https://www.census.gov/quickfacts/watsonvillecitycalifornia>

US Fish & Wildlife. 2020. "Pollinators." Retrieved from [https://www.fws.gov/pollinators/PollinatorPages/AboutPollinators.html#:~:text=Insects%20\(bees%2C%20wasps%2C%20moths,et%20al.%2C%201996\).](https://www.fws.gov/pollinators/PollinatorPages/AboutPollinators.html#:~:text=Insects%20(bees%2C%20wasps%2C%20moths,et%20al.%2C%201996).)

United States Forest Service. 2004. The large tree argument: The case for large-stature trees vs small stature trees. Arborilogical. USFS Center for Urban Forest Research Pacific Southwest Research Station, USDA Forest Service, and the Southern Center for Urban Forestry Research & Information. Retrieved from: <https://www.arborilogical.com/articles/all-articles/article-repository/2014/january/the-large-tree-argument-the-case-for-large-stature-trees-vs-small-stature-trees/>

Watsonville Local Hazard Mitigation Plan: Hazard Identification and Risk Assessment. July 2020. City of Watsonville. Retrieved from: <https://www.cityofwatsonville.org/DocumentCenter/View/15463/City-of-Watsonville-Local-Hazard-Mitigation-Plan>

Watsonville Tree Canopy & Land Cover Assessment Summary Report. 2022. City of Watsonville.

Wolf, K.L. (1999). Grow for the gold: Trees in business districts. *Tree Link bulletin of the Washington DNR Community Forestry Program Number 14*. Washington State Department of Natural Resources. Olympia, WA. 4 pp

Wolf, K.L. 2007. "City trees and property values." *Arborist News*. 16(4):34-36

Xiao, Q., McPherson, E.G., Simpson, J.R., Ustin, S.L. 1998. "Rainfall Interception by Sacramento's Urban Forest." *Journal of Arboriculture*. 24(4): 235-244.



# Appendix B: Technical Guide

## ANSI STANDARDS

ANSI A300 standards represent the industry consensus on performing tree care operations. The standards can be used to prepare tree care contract specifications.

ANSI A300 Pruning Standard-Part 1, 2017

ANSI A300 Soil Management-Part 2, 2011

ANSI A300 Support Systems Standard-Part 3, 2013

ANSI A300 Construction Management Standard-Part 5, 2012

ANSI A300 Transplanting Standard-Part 6, 2012

ANSI A300 Integrated Vegetation Management Standard-Part 7, 2012

ANSI A300 Root Management Standard-Part 8, 2013

ANSI A300 Tree Risk Assessment Standard a Tree Failure-Part 9, 2017

ANSI A300 Integrated Pest Management-Part 10, 2016

Includes guidelines for implementing IPM programs, including standards for Integrated Pest Management, IPM Practices, tools and equipment, and definition.

ANSI Z133 Safety Standard, 2017

Reviews general safety, electrical hazards, use of vehicles and mobile equipment, portable power hand tools, hand tools and ladders, climbing, and work procedures.

## BEST MANAGEMENT PRACTICES

*Best Management Practices, Tree Pruning.* Companion publication to the ANSI A300 Part 1: Tree, Shrub, and Other Wood Plant Maintenance – Standard Practices, Pruning.

*Integrated Pest Management, Second Edition, P. Eric Wiseman, and Michael J. Raupp, 2016*

Provides a comprehensive overview of the basic definitions, concepts, and practices that pertain to landscape Integrated Pest Management (IPM). The publication provides specific information for designing, planning, and implementing an IPM program as part of a comprehensive Plant Health Care (PHC) management system, including topics such as:

- IPM Concepts and Definitions
- Action Thresholds
- Monitoring Tools and Techniques
- Preventive Tactics
- Control Tactics
- Documentation and Recordkeeping

*Integrated Vegetation Management, Second Edition, Randall H. Miller, 2014*

A guide to the selection and application of methods and techniques for vegetation control for electric rights-of-way projects and gas pipeline rights-of-way. Topics included: safety, site evaluations, action thresholds, evaluation, and selection of control methods, implementing control methods, monitoring treatment and quality assurance, environmental protection, tree pruning and removal, and a glossary of terms.

*Lightning Protection Systems, Third Edition, E. Thomas Smiley, A. William Graham, Jr, and Scott Cullen, 2015*

Describes proper installation and maintenance of lightning protection systems that can effectively prevent serious lightning damage to trees. It also serves as a companion publication for American National Standard for Tree Care Operations—Tree, Shrub and Other Woody Plant Management—Standard Practices (Lightning Protection Systems).

*Managing Trees During Construction, Third Edition, Nelda Matheny, Dr. E. Thomas Smiley, Ryan Gilpin, and Dr. Richard Hauer, 2023*

Describes tree conservation and preservation practices that help to protect selected trees throughout the construction planning and development process so that they will continue to provide benefits for decades after site disturbance, including planning phase, design phase, pre-construction phase, construction phase, and post-construction phase.

*Reducing Infrastructure Damage by Tree Roots, Larry Costello and Katherine S. Jones, 2003*

Provides a comprehensive reference on tree and infrastructure conflicts, containing up-to-date descriptions and assessments of methods used to reduce damage. The information guides tree managers, planners, and engineers to create effective management plans.

*Root Management, Laurence R. Costello, Gary Watson, E. Thomas Smiley, and Richard Hauer, Second Edition, 2023*

Recommended practices for inspecting, pruning, and directing the roots of trees in urban environments to promote their longevity, while minimizing infrastructure conflicts.

Special companion publication to the ANSI A300 Part 8: Tree, Shrub, and Other Woody Plant Management—Standard Practices (Root Management)

*Tree Injection, Shawn Bernick, and E. Thomas Smiley Second Edition, 2022*

Provides guidance for arborists who use tree injection to systemically treat trees for pest problems, nutrient deficiencies, or growth regulation.

*Tree Planting, Second Edition, Gary Watson, 2014*

Provides processes for tree planting, including site and species selection, planting practices, post planting pruning, and early tree care. Other topics included are time of planting, nursery stock: types, selection, and handling, preparing the planting hole, planting practices, root loss and new root growth, redevelopment of root structure, pruning, palms, after planting, final inspection, and a glossary of terms.

*Tree Pruning*, Third Edition, Sharon J. Lilly, Edward F. Gilman, and E. Thomas Smiley, 2019

Provides an interpretation of the ANSI 300 Pruning standards that is useful in the specification and practical application of pruning. Includes descriptions and background information on pruning systems, pruning objectives, a tree's response to pruning, types of cuts, work practices, and others.

*Tree Inventories*, Second Edition, Jerry Bond, 2013

Provides considerations for managing large numbers of trees considered as individuals rather than groups and serves as a guide for making informed decisions that align with inventory goals with needs and resources, including inventory goals and objectives, benefits and costs, types, work specifications, and maintaining inventory quality.

*Tree Risk Assessment*, Second Edition, E. Thomas Smiley, Nelda Matheny, and Sharon Lilly, 2017

A guide for assessing tree risk as accurately and consistently as possible, to evaluate that risk, and to recommend measures that achieve an acceptable level of risk, including topics: risk assessment basics, levels and scope of tree risk assessment, assessing targets, sites, and trees, tree risk categorization, risk mitigation: preventive and remedial actions, risk reporting, tree-related conflicts that can be a source of risk, loads on trees, structural defects and conditions that affect the likelihood of failure, response growth, description of selected types of advanced tree risk assessments.

*Tree Shrub Fertilization*, Third Edition, E. Thomas Smiley, Sharon Lilly, and Patrick Kelsey, 2013

Aides in the selection and application of fertilizers for trees and shrubs, including: Essential elements, determining goals and objectives of fertilization, soil testing and plan analysis, fertilizer selection, timing, application, application area, rates, storage and handling of fertilizer, sample fertilizer contract for commercial/ municipal clients.

*Tree Support Systems*, Third Edition, E. Thomas Smiley and Sharon Lilly, 2014

Presents proper installation and maintenance for cabling and bracing branches, guying established trees, and guying and propping newly planted trees. Covers installation and tools needed for methods on both established and newly planted trees.

*Soil Management*, Bryant Scharenbroch, E. Thomas Smiley, and Wes Kocher, 2014

Focuses on the protection and restoration of soil quality that support trees and shrubs in the urban environment, including goals of soil management, assessment, sampling, and analysis, modifications and amendments, tillage, conservation, and a glossary of terms.

*Utility Pruning of Trees*, Geoffrey P. Kempter, 2004

Describes the current best practices in utility tree pruning based on scientific research and proven methodology for the safe and reliable delivery of utility services, while preventing unnecessary injury to trees. An overview of safety, tools, and equipment, pruning methods and practices, and emergency restoration are included.

*Utility Tree Risk Assessment*, John W. Goodfellow, 2020

Guides utility personnel, utility vegetation managers, utility tree risk assessors, and line clearance contractors in assessing tree-related risk to overhead electric utility infrastructure by tree failure as accurately and consistently as possible, and to support decisions related to risk mitigation practices that achieve utility objectives. It also serves as a companion publication to the ANSI A300 Part 9: Tree, Shrub, and Other Woody Plant Management—Standard Practices (Tree Risk Assessment a. Tree Failure).



# Appendix C: Methodology for Assessing Tree Canopy Equity

To explore the distribution of canopy cover across the community and identify disadvantaged areas with lower canopy, tree canopy was mapped by Census Tracts and Census Block Groups and compared with data from the U.S. Census (2020) and data from CalEnviroScreen. These comparisons were graphed using a linear regression. A line of best fit was calculated for each regression scatterplot and the  $R^2$  value was produced for each line of best fit. The  $R^2$  value is defined as the coefficient of determination. In other words, the “R squared” is a goodness-of-fit measure for linear regression models. The value of “R squared” ranges from 0 to 1, with 0 meaning that the model does not explain any of the variation and 1 meaning that the model explains all the variation. In this analysis, “R squared” values of 0.15 and above suggested a relationship.

Figure 32: % Identify as Black/African America

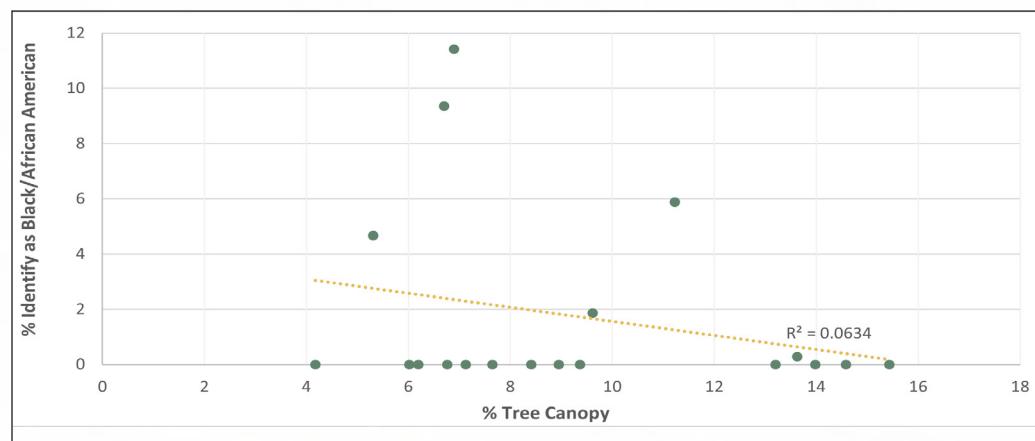


Figure 33: Median Income and Tree Canopy

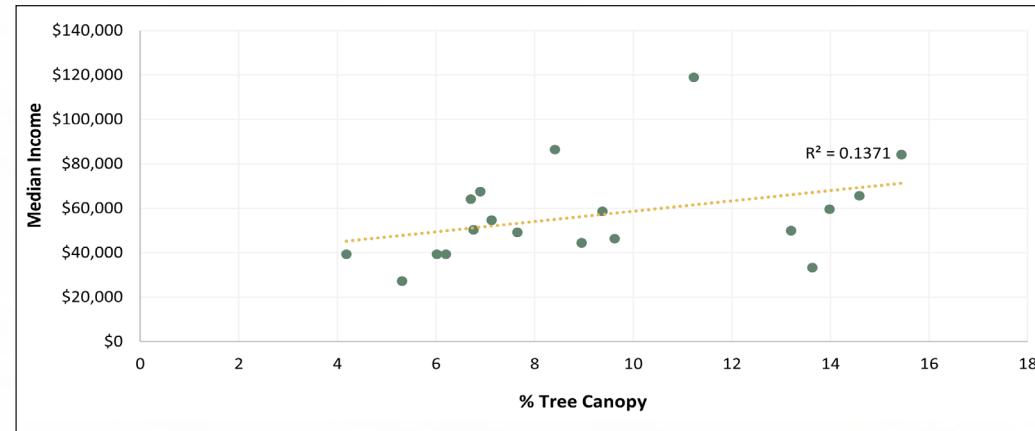


Figure 34: % Identify as American Indian or Native Alaskan

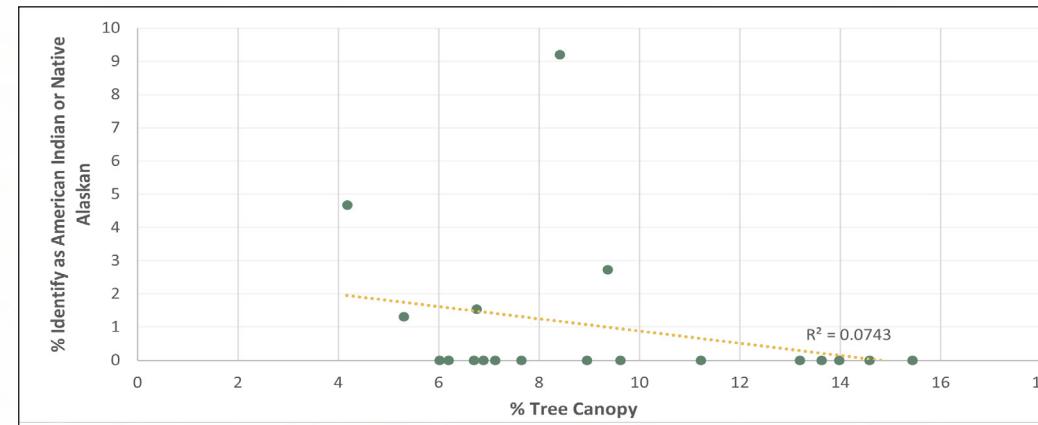


Figure 35: % Identify as Asian

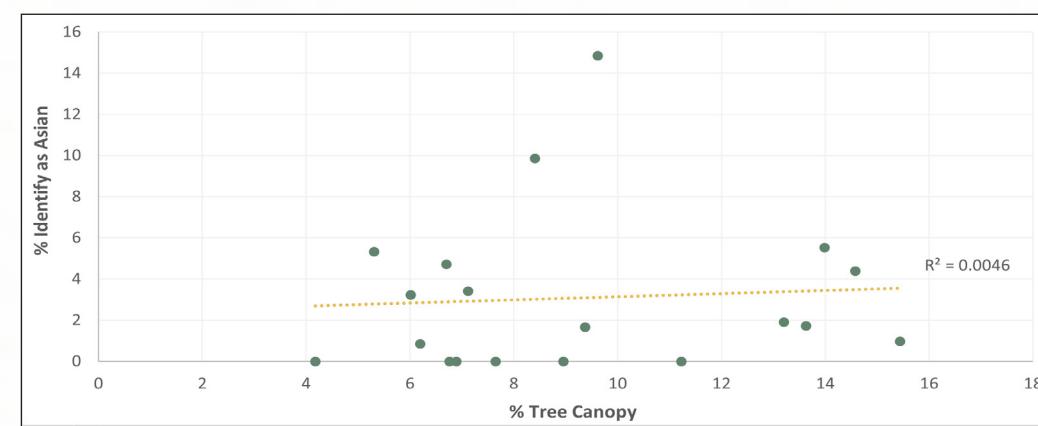


Figure 36: Cumulative CalEnviroScreen 3.0 Score

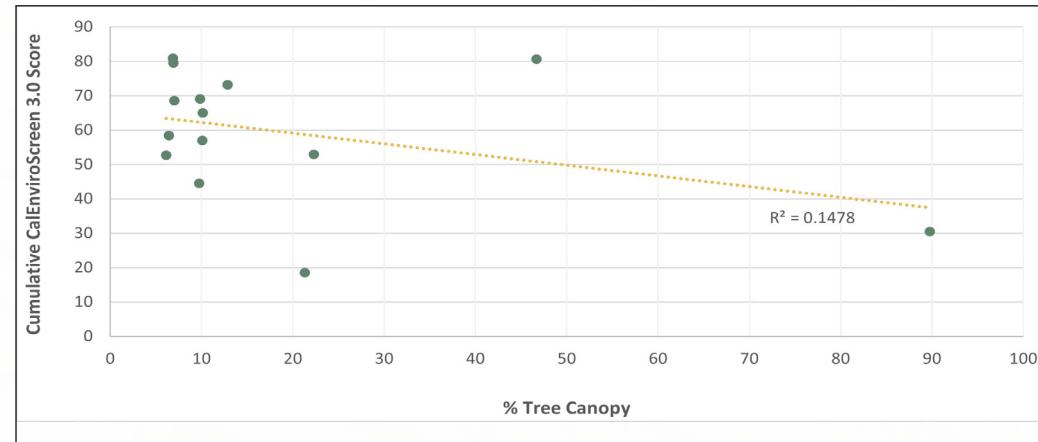


Figure 37: % Identify as White

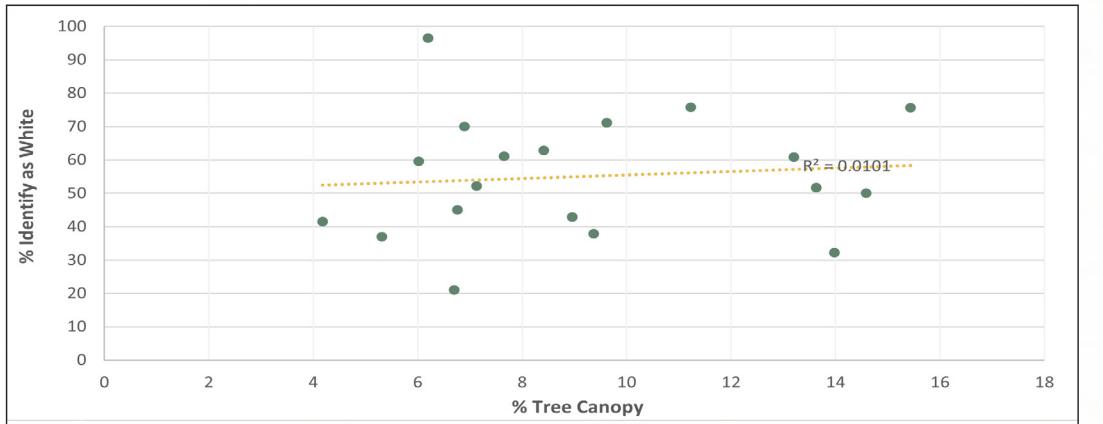


Figure 38: % Identify as Other Race

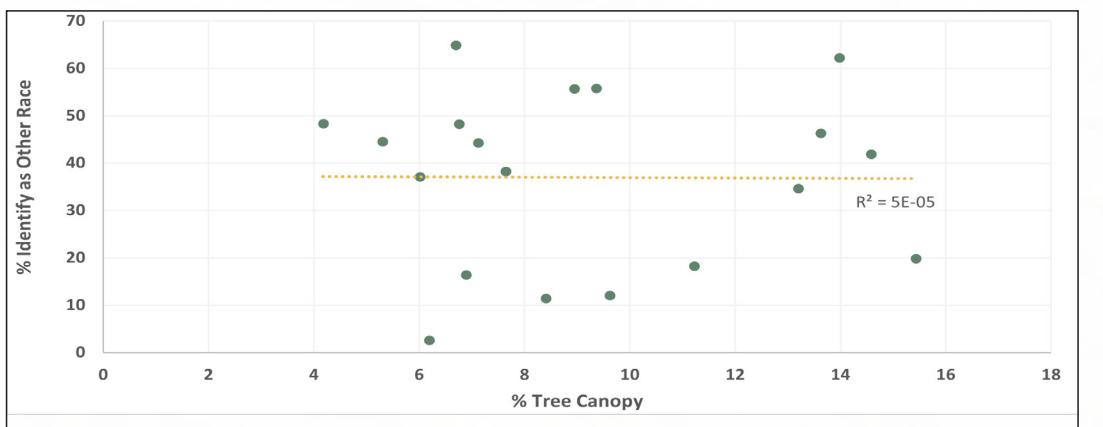
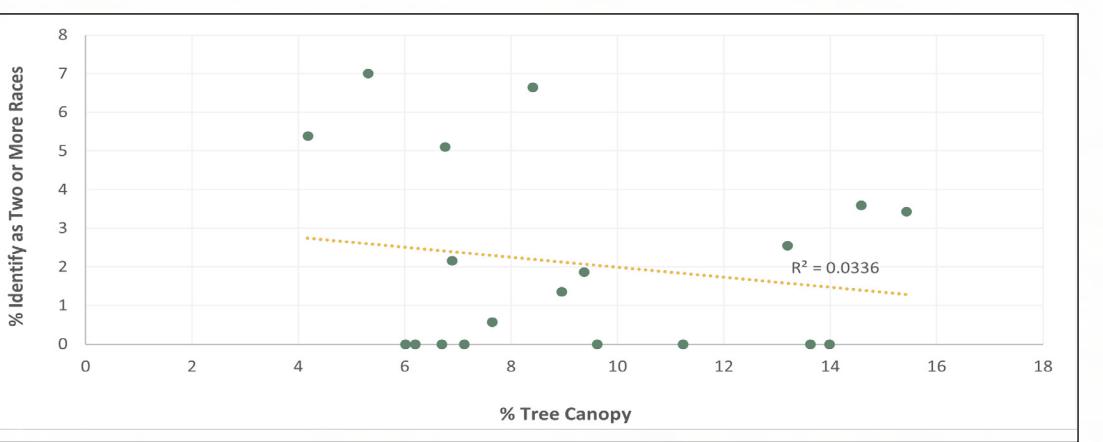


Figure 39: % Identify as Two or More Races



# Appendix D: Sustainability Indicators

Table 12: The Trees

THE TREES					
Indicators of a Sustainable Urban Forest	Overall Objective or Industry Standard	Performance Levels			
		Low	Medium	High	
Urban Tree Canopy	Achieve the desired tree canopy cover according to goals set for the entire city and neighborhoods. Alternatively, achieve 75% of the total canopy possible for the entire city and in each neighborhood.	Canopy is decreasing. - and/or - No canopy goals have been set.	Canopy is not dropping, but not on a trajectory to achieve the established goal.	Canopy goal is achieved, or well on the way to achievement.	
		The average canopy cover is 9.4%. Trends in canopy expansion or reduction are not known. The city has not had a tree canopy goal.			
Location of Canopy (Equitable Distribution)	Achieve low variation between tree canopy and equity factors citywide by neighborhood. Ensure that the benefits of tree canopy are available to all, especially for those most affected by these benefits.	Tree planting and public outreach and education is not determined by tree canopy cover or benefits.		Tree planting and public outreach and education is focused on neighborhoods with low tree canopy.	
		Tree planting and outreach is somewhat driven by providing benefits to disadvantaged communities. However, planting is primarily focused in parks and trees are only planted along streets where it is feasible or the adjacent property owner agrees to adopt the tree.		Tree planting and public outreach and education is focused on neighborhoods with low tree canopy and a high need for tree benefits.	
Age of Trees (Size and Age Distribution)	Establish a diverse-aged population of <b>public</b> trees across the entire city and for each neighborhood. Ideal standard: 0-8" DBH: 40% 9-17" DBH: 30% 18-24" DBH: 20% Over 24" DBH: 10%	No current information is available on size. - OR - Age distribution is not proportionally distributed across size classes at the city level.	Size classes are evenly distributed at the city level, though unevenly distributed at the neighborhood level.	Age distribution is generally aligned with the ideal standard diameter classes at the neighborhood level.	
		Nearly 63% of all community trees are less than 8-inches in diameter, with 6.9% greater than 24 inches in diameter. The overall age distribution of city trees and the species composition, suggests that nearly a quarter of trees were recently planted.			
Condition of Publicly Owned Trees (trees managed intensively)	Possess a detailed understanding of tree condition and potential risk of all intensively-managed, publicly-owned trees. This information is used to direct maintenance actions.	No current information is available on tree condition or risk.	Information from a partial or sample or inventory is used to assess tree condition and risk.	Information from a current, GIS-based, 100% complete public tree inventory is used to indicate tree condition and risk.	
		In 2021, a complete city-wide tree inventory was completed. More than 4,500 trees were collected in parks, along streets, and public facilities. The inventory included the collection of condition and primary maintenance need for community trees.			
Condition of Publicly-Owned Natural Areas (trees managed extensively)	Possess a detailed understanding of the ecological structure and function of all publicly-owned natural areas (such as woodlands, ravines, stream corridors, etc.), as well as usage patterns.	No current information is available on tree condition or risk.	Publicly-owned natural areas are identified in a sample-based "natural areas survey" or similar data.	Information from a current, GIS-based, 100% complete natural areas survey is utilized to document ecological structure and	
		The 2021 inventory did not include the collection of trees in the sloughs or other natural areas. It is estimated that there are between 500-1,000 trees in these areas. Public Works primarily manages the trees adjacent to trails to reduce risk to public safety.		areas survey is utilized to document ecological structure and	
Trees on Private Property	Possess a solid understanding of the extent, location, and general condition of trees on private lands.	No data is available on private trees.	Current tree canopy assessment reflects basic information (location) of both public and private canopy combined.	Detailed information available on private trees. Ex. bottom-up sample-based assessment of trees.	
		The 2022 tree canopy assessment mapped the extent of public and private canopy. A relative canopy health assessment was completed, which identified generalized areas where tree canopy is stressed. However, this does not provide detailed information of the health of trees on private property.			
Diversity	Establish a genetically diverse population of publicly-owned trees across the entire city and for each neighborhood. Tree populations should be comprised of no more than 30% of any family, 20% of any genus, or 10% of any species.	No current information is available on species. - OR - Fewer than five species dominate the entire tree population citywide.	No species represents more than 20% of the entire tree population citywide.	No species represents more than 10% of the entire tree population citywide.	
		No species represents more than 10% of the overall population. The most common genera is <i>Prunus</i> , which represents less than 14% of the overall population. The most common family is the Rosaceae family, which represents less than 20% of the overall population.			
Climate Resilience/Suitability	Establish a tree population suited to the urban environment and adapted to the overall region. Suitable species are gauged by exposure to imminent threats, considering the "Right Tree for the Right Place" concept and invasive species.	No current information is available on species suitability. - OR - Less than 50% of trees are considered suitable for the site.	50% to 75% of trees are considered suitable for the site.	More than 75% of trees are considered suitable for the site.	
		According to i-Tree Eco, 62.1% of trees are susceptible to 36 emerging and existing pests and pathogens in the United States. Nearly 8% of the overall population are considered invasive species. Considering the size of planting sites, many trees likely do not have sufficient soil volume to support the mature growth of trees. This is especially true for large stature species. While current planting efforts are considering "Right Tree for the Right Place", historically this philosophy was likely not applied. Based on these considerations, it is likely that less than half of community trees are not suited for the site.			
Space and Soil Volume	Establish minimum street tree soil volume requirements to ensure there is adequate space and soil for street trees to thrive. Minimum soil volumes by mature size: 1000 cubic feet for large trees; 600 cubic feet for medium trees; 300 cubic feet for small trees.	Minimum street tree soil volumes have not been established.	Minimum street tree soil volume has been established based on mature size of tree.	Minimum street tree soil volumes have been established and are required to be adhered to for all new street tree planting projects.	
		Nearly half of community trees are planted in planting strips or tree wells. Planting strips are typically narrow and tree wells generally have insufficient soil volumes to support large stature trees. Minimal soil volumes have not been established.			

Table 13: The Players

Indicators of a Sustainable Urban Forest	Overall Objective or Industry Standard	THE PLAYERS		
		Low	Medium	High
Neighborhood Action	Citizens understand, cooperate, and participate in urban forest management at the neighborhood level. Urban forestry is a neighborhood-scale issue.	Little or no citizen involvement or neighborhood action.	Some active groups are engaged in advancing urban forestry activity, but with no unified set of goals or priorities.	The majority of all neighborhoods are organized, connected, and working towards a unified set of goals and priorities.
		Watsonville Wetlands Watch has implemented programs to help encourage participation in tree planting events, but there is little or no neighborhood action.		
Large Private & Institutional Landholder Involvement	Large, private, and institutional landholders embrace citywide goals and objectives through targeted resource management plans.	Large private land holders are unaware of issues and potential influence in the urban forest. No large private land management plans are currently in place.	Education materials and advice is available to large private landholders. Few large private landholders or institutions have management plans in place.	Clear and concise goals are established for large private land holders through direct education and assistance programs. Key landholders and institutions have management plans in place.
		There are no large private land management plan currently in place.		
Green Industry Involvement	The green industry works together to advance citywide urban forest goals and objectives. The city and its partners capitalize on local green industry expertise and innovation.	Little or no involvement from green industry leaders to advance local urban forestry goals.	Some partnerships are in place to advance local urban forestry goals, but more often for the short-term.	Long-term committed partnerships are working to advance local urban forestry goals.
		There is little involvement from green industry leaders and the city has limited opportunity to capitalize on local green industry expertise and innovation.		
City Department and Agency Cooperation	All city departments and agencies cooperate to advance citywide urban forestry goals and objectives.	Conflicting goals and/or actions among city departments and agencies.	Informal teams among departments and agencies are communicating and implementing common goals on a project-specific basis.	Common goals and collaboration occur across all departments and agencies. City policy and actions are implemented by formal interdepartmental and interagency working teams on all city projects.
		Because Watsonville is small, departments benefit from cross-team interactivity and collaboration. Departments work together on city projects and cooperate to advance urban forestry goals.		
Funder Engagement	Local funders are engaged and invested in urban forestry initiatives. Funding is adequate to implement citywide urban forest management plan.	Little or no funders are engaged in urban forestry initiatives.	Funders are engaged in urban forestry initiatives at minimal levels for short-term projects.	Multiple funders are fully engaged and active in urban forestry initiatives for short-term projects and long-term goals.
		Cal Fire has provided grant funding for short-term projects and the city has been successful at acquiring other grants from funding sources, but there are no long-term goals.		
Utility Engagement	All utilities are aware of and vested in the urban forest and cooperates to advance citywide urban forest goals and objectives.	Utilities and city agencies act independently of urban forestry efforts. No coordination exists.	Utilities and city agencies have engaged in dialogues about urban forestry efforts with respect to capital improvement and infrastructure projects.	Utilities, city agencies, and other stakeholders integrate and collaborate on all urban forestry efforts, including planning, site work, and outreach/education.
		There is limited coordination and cooperation with utilities to advance urban forest goals.		
Developer Engagement	The development community is aware of and vested in the urban forest and cooperates to advance citywide urban forest goals and objectives.	Little or no cooperation from developers in (or awareness of) municipality-wide urban forest goals and objectives.	Some cooperation from developers and general awareness and acceptance of municipality-wide goals and objectives.	Specific collaborative arrangements across development community in support of municipality-wide goals and objectives.
		Aside from developers meeting minimal landscaping standards that are required by municipal code, but are otherwise unaware of urban forest goals.		
State Engagement	State departments/agencies are aware of and vested in the urban forest and cooperates to advance citywide urban forest goals and objectives.	State departments/agencies and City agencies act independently of urban forestry efforts. No coordination exists.	State department/agencies and City agencies have engaged in dialogues about urban forestry efforts with respect to capital improvement and infrastructure projects.	State departments/agencies, City agencies, and other stakeholders integrate and collaborate on all urban forestry efforts, including planning, site work, and outreach/education.
		Watsonville has benefited from grant funding provided by Cal Fire, which have helped advance urban forestry in the community. However, aside from grant-based projects there is limited coordination.		
Public Awareness	The general public understands the benefits of trees and advocates for the role and importance of the urban forest.	Trees are generally seen as a nuisance, and thus, a drain on city budgets and personal paychecks.	Trees are generally recognized as important and beneficial.	Trees are seen as valuable infrastructure and vital to the community's well-being. The urban forest is recognized for the unique environmental, economic, and social services it provides to the community.
		A community survey conducted from July 17th, 2022 through February 13, 2023 indicates that nearly 100% of survey respondents recognize that trees play an important role in the environment. While the community appreciates trees, trees in the rights-of-way can be removed, so long as the resident acquires an encroachment permit, which is indicative of trees not being seen as infrastructure.		
Regional Collaboration	Neighboring communities and regional groups are actively cooperating and interacting to advance the region's stake in the city's urban forest.	Little or no interaction between neighboring communities and regional groups.	Neighboring communities and regional groups share similar goals and policy vehicles related to trees and the urban forest.	Regional urban forestry planning, coordination, and management is widespread.
		Watsonville have minimal interaction with neighboring communities and regional groups to advance urban forestry in the region.		

Table 14: The Management Approach

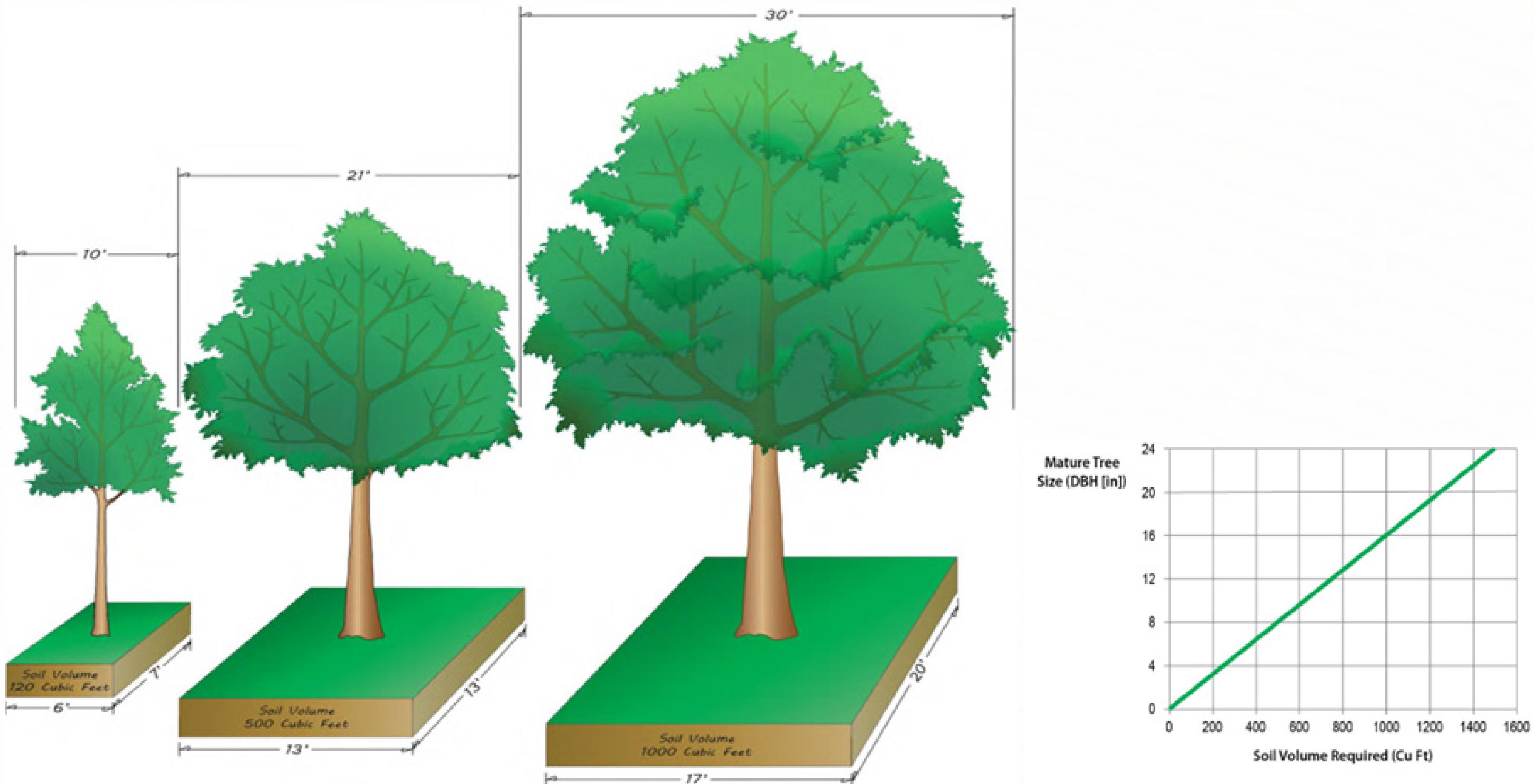
Indicators of a Sustainable Urban Forest	Overall Objective or Industry Standard	THE MANAGEMENT		
		Low	Medium	High
Tree Inventory	Comprehensive, GIS-based, current inventory of all intensively-managed public trees to guide management, with mechanisms in place to keep data current and available for use. Data allows for analysis of age distribution, condition, risk, diversity, and suitability.	No inventory or out-of-date inventory of publicly-owned trees.	Partial or sample-based inventory of publicly-owned trees, inconsistently updated.	Complete, GIS-based inventory of publicly-owned trees, updated on a regular, systematic basis.
		In 2022, the city completed a GIS-based inventory of all trees in parks, along streets, and at city facilities.		
Canopy Assessment	Accurate, high-resolution, and recent assessment of existing and potential city-wide tree canopy cover that is regularly updated and available for use across various departments, agencies, and/or disciplines.	No tree canopy assessment.	Sample-based canopy cover assessment or dated (over 10 years old) high resolution canopy assessment.	High-resolution tree canopy assessment using aerial photographs or satellite imagery.
		In 2022, a high-resolution tree canopy assessment was completed using aerial photographs and satellite imagery.		
Management Plan	Existence and buy-in of a comprehensive urban forest management plan to achieve city-wide goals. Re-evaluation is conducted every 5 to 10 years.	No urban forest management plan exists.	A plan for the publicly-owned forest resource exists but is limited in scope, acceptance, and implementation.	A comprehensive plan for the publicly owned forest resource exists and is accepted and implemented.
		Upon completion of the Urban Forest Management Plan, Watsonville will have a comprehensive plan for managing the urban forest along with objectives to regularly reevaluate goals. However, the city does not currently have a management plan.		
Risk Management Program	All publicly-owned trees are managed for maximum public safety by way of maintaining a city-wide inventory, conducting proactive annual inspections, and eliminating hazards within a set timeframe based on risk level. Risk management program is outlined in the management plan.	Request-based, reactive system. The condition of publicly-owned trees is unknown.	There is some degree of risk abatement thanks to knowledge of condition of publicly-owned trees, though generally still managed as a request-based reactive system.	There is a complete tree inventory with risk assessment data and a risk abatement program in effect. Hazards are eliminated within a set time period depending on the level of risk.
		The 2022 inventory of community trees included the collection of primary maintenance need; however, a formal risk assessment was not completed. Community trees are generally managed reactively.		
Maintenance Program of Publicly-Owned Trees (trees managed intensively)	All intensively-managed, publicly-owned trees are well maintained for optimal health and condition in order to extend longevity and maximize benefits. A reasonable cyclical pruning program is in place, generally targeting 5 to 7-year cycles. The maintenance program is outlined in the management plan.	Request-based, reactive system. No systematic pruning program is in place for publicly-owned trees.	All publicly-owned trees are systematically maintained, but pruning cycle is inadequate.	All publicly-owned trees are proactively and systematically maintained and adequately pruned on a cyclical basis.
		Trees in the downtown area and along main thoroughfares are pruned every three to four years, primarily to maintain clearance and visibility. Other trees are managed reactively. More than 1,500 community trees in parkways and in front yards are the responsibility of the adjacent property owner to maintain and likely receive in-adequate maintenance as a result.		
Maintenance Program of Publicly-Owned Natural Areas (trees managed extensively)	The ecological structure and function of all publicly-owned natural areas are protected and enhanced while accommodating public use where appropriate.	No natural areas management plans are in effect.	Only reactive management efforts to facilitate public use (risk abatement).	Management plans are in place for each publicly-owned natural area focused on managing ecological structure and function and facilitating public use.
		Between 500 and 1,000 trees are in the sloughs and open space areas. Trees in the natural areas are primarily managed to maintain public safety near the trails.		
Planting Program	Comprehensive and effective tree planting and establishment program is driven by canopy cover goals, equity considerations, and other priorities according to the plan. Tree planting and establishment is outlined in the management plan.	Tree establishment is ad hoc.	Tree establishment is consistently funded and occurs on an annual basis.	Tree establishment is directed by needs derived from a tree inventory and other community plans and is sufficient in meeting canopy cover objectives.
		Historically, tree planting has been dependent on grant funding and has not been consistently funded.		
Tree Protection Policy	Comprehensive and regularly updated tree protection ordinance with enforcement ability is based on community goals. The benefits derived from trees on public and private property are ensured by the enforcement of existing policies.	No tree protection policy.	Policies are in place to protect trees, but the policies are not well-enforced or ineffective.	Protections policies ensure the safety of trees on public and private land. The policies are enforced and supported by significant deterrents and shared ownership of city goals.
		Chapter 13 was adopted in 1986 to protect historic trees. However, the ordinance was ineffective at encouraging participation in the voluntary program. The 2005 General Plan offers protections for native trees during development if those trees are located within the riparian corridor as defined in municipal code.		
City Staffing and Equipment	Adequate staff and access to the equipment and vehicles to implement the management plan. A high-level urban forester or planning professional, strong operations staff, and solid certified arborist technicians.	Insufficient staffing levels, insufficiently-trained staff, and/or inadequate equipment and vehicle availability.	Certified arborists and professional urban foresters on staff have some professional development but are lacking adequate staff levels or adequate equipment.	Multi-disciplinary team within the urban forestry unit, including an urban forestry professional, operations manager, and arborist technicians. Vehicles and equipment are sufficient to complete required work.
		Parks is teamed by staff who have been with the city through the entirety of their careers. Although Parks currently has a certified arborist on staff, the credential is not a requirement.		
Funding	Appropriate funding in place to fully implement both proactive and reactive needs based on a comprehensive urban forest management plan.	Funding comes from the public sector only and covers only reactive work.	Funding levels (public and private) generally cover mostly reactive work. Low levels of risk management and planting in place.	Dynamic, active funding from engaged private partners and adequate public funding are used to proactively manage and expand the urban forest.
		While the community has benefited from numerous grants, such opportunities are not stable. Most urban forestry programming is funded through the General Fund and primarily funds reactive work only.		
Disaster Preparedness & Response	A disaster management plan is in place related to the city's urban forest. The plan includes staff roles, contracts, response priorities, debris management and a crisis communication plan. Staff are regularly trained and/or updated.	No disaster response plan is in place.	A disaster plan is in place, but pieces are missing and/or staff are not regularly trained or updated.	A robust disaster management plan is in place, regularly updated and staff is fully trained on roles and processes.
		Watsonville is vulnerable to flooding. In response to this risk, the city has had a robust disaster management plan and staff are regularly trained on roles and processes.		
Communication	Effective avenues of two-way communication exist between the city departments and between city and its citizens. Messaging is consistent and coordinated, when feasible.	No avenues are in place. City departments and public determine on an ad-hoc basis the best messages and avenues to communicate.	Avenues are in place but used sporadically and without coordination or only on a one-way basis.	Avenues are in place for two-way communication, are well-used with targeted, coordinated messages.
		Residents can communicate concerns about trees to parks by emailing or calling Parks. The city communicates with residents through social media and email blasts.		



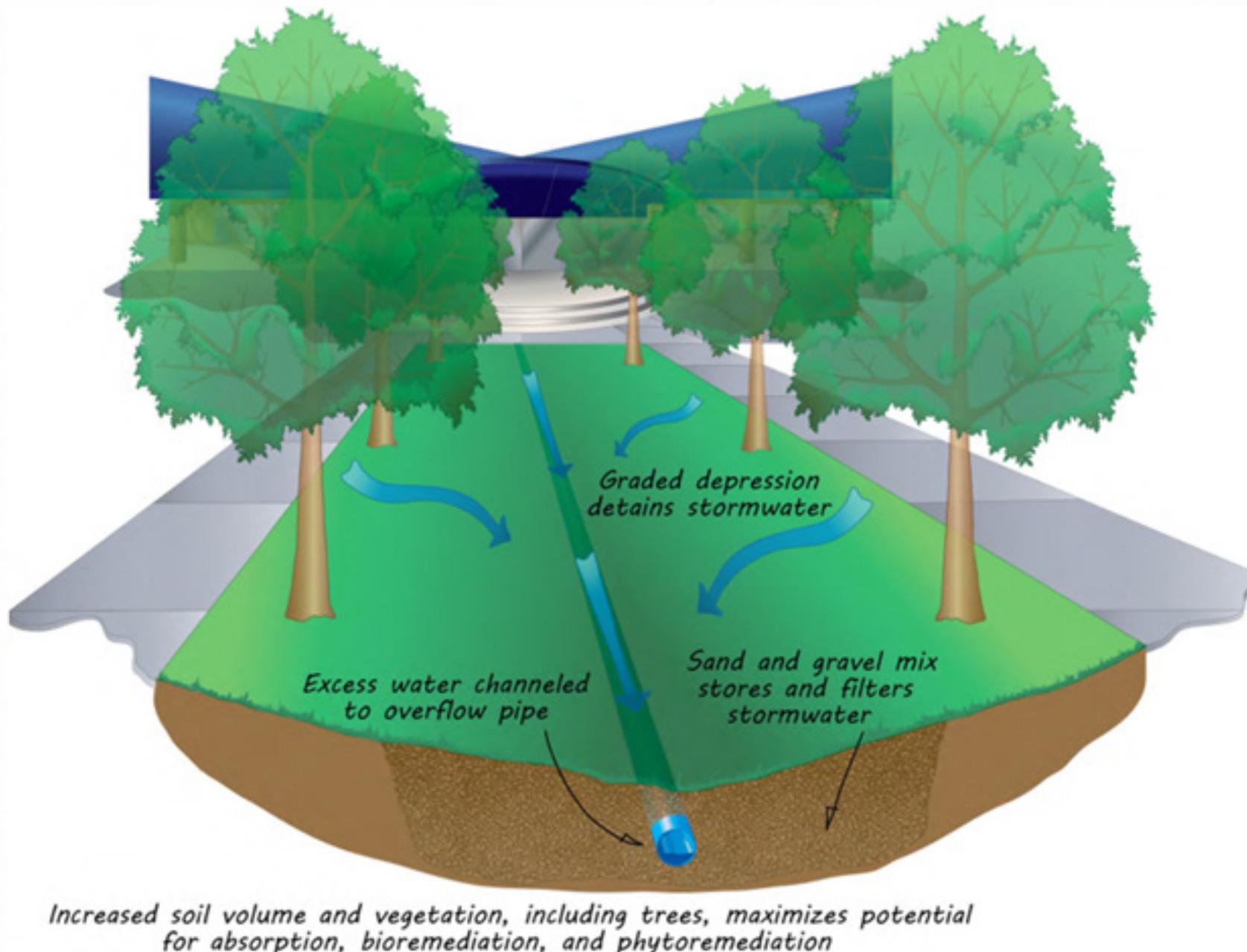
THIS IS A MAJOR UNDERTAKING THAT REQUIRES, PLANNING, FUNDING, COLLABORATION, AND PERSEVERANCE. I APPLAUD WETLANDS WATCH AND THE CITY OF WATSONVILLE'S EFFORTS AND FULLY SUPPORT THEM. OTHER COMMUNITIES WHO HAVE UNDERTAKEN SIMILAR EFFORTS HAVE HAD STELLAR RESULTS BENEFITING THE COMMUNITY AS A WHOLE. I AM PLEASED TO BE APART OF THE EFFORT.  
-SURVEY RESPONDENT

# Appendix E: Soil Volume and Tree Stature

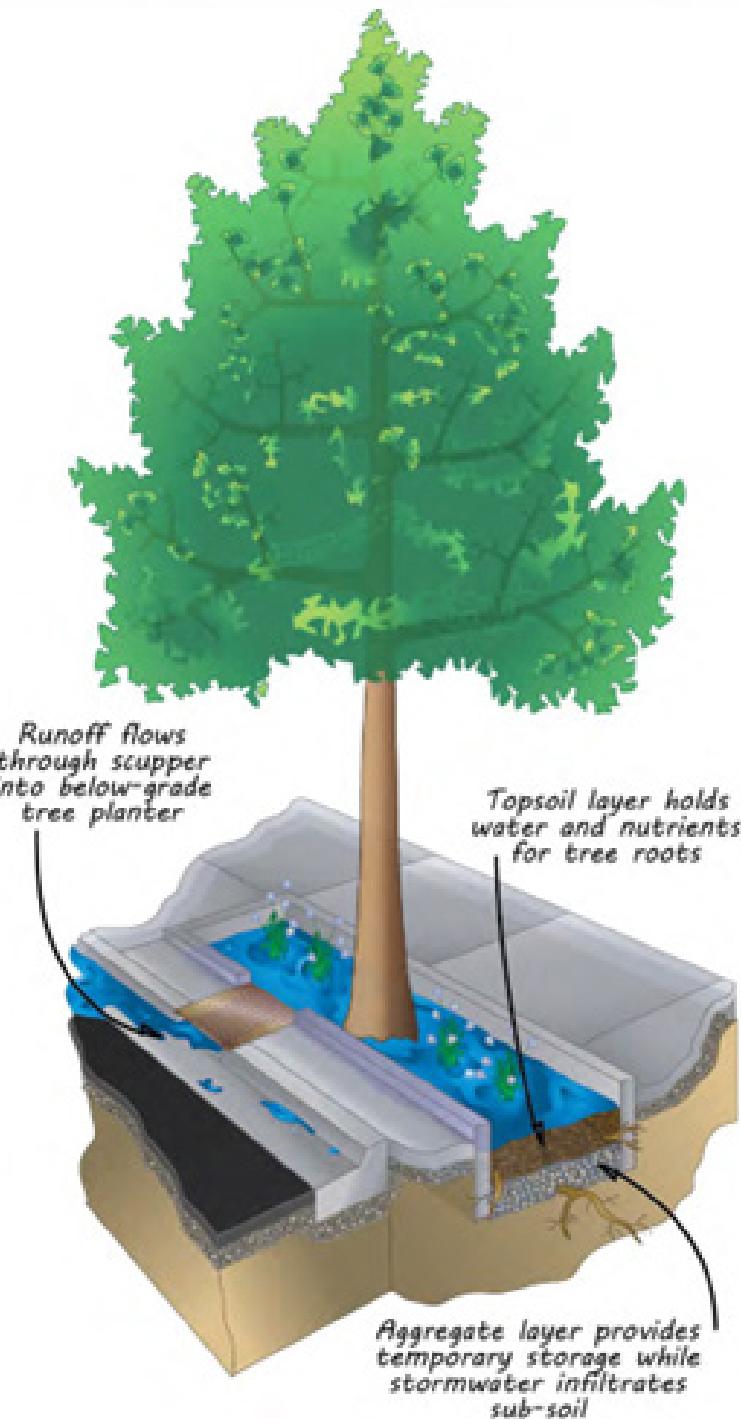
Tree growth is limited by soil volume. Larger stature trees require larger volumes of uncompacted soil to reach mature size and canopy spread (Casey Trees, 2008)



# Appendix F: Alternative Planter Designs

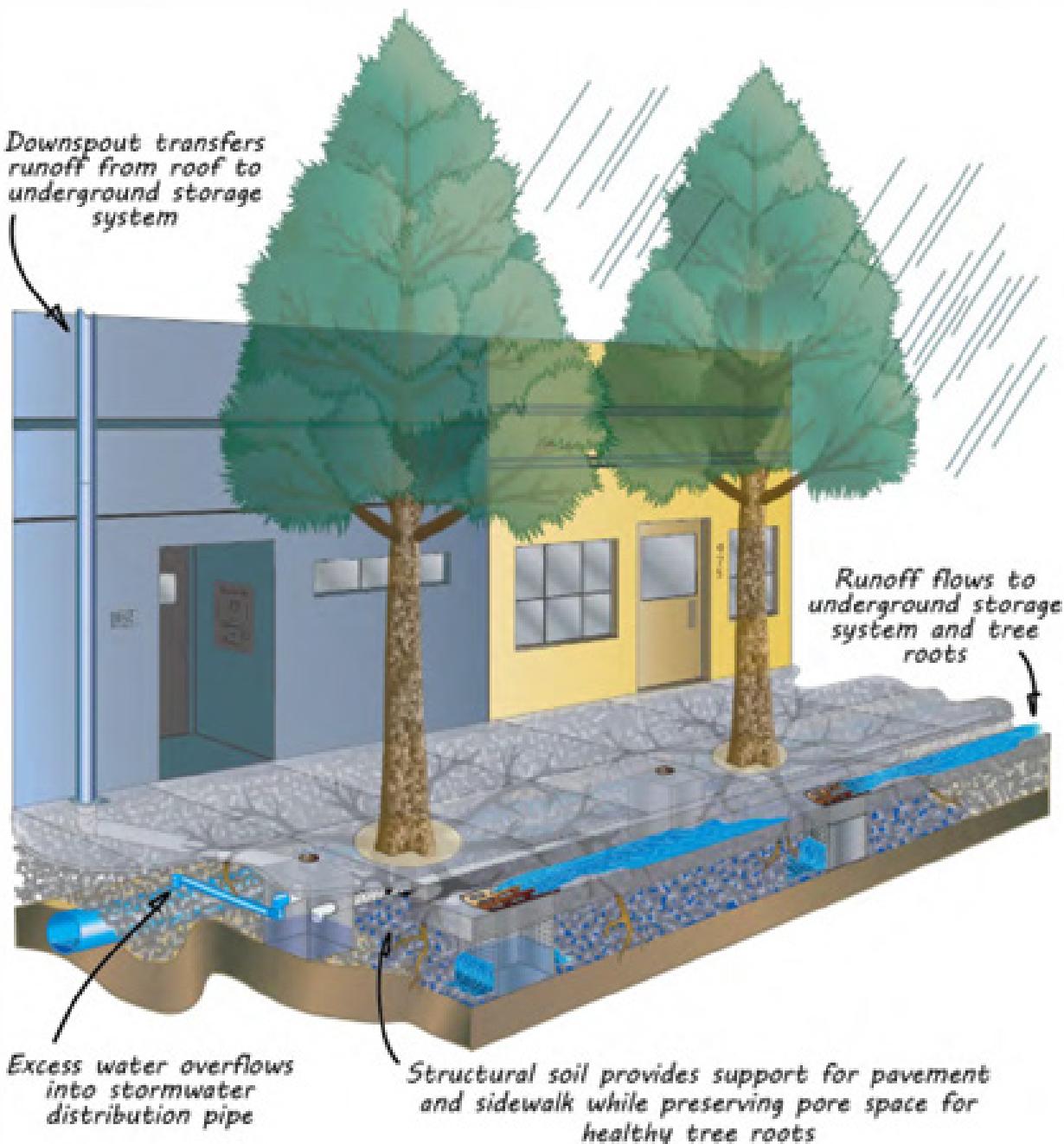


**Above:** Bioswales are landscaped drainage areas with gently sloped sides designed to provide temporary storage while runoff infiltrates the soil. They reduce off-site runoff and trap pollutants and silt.

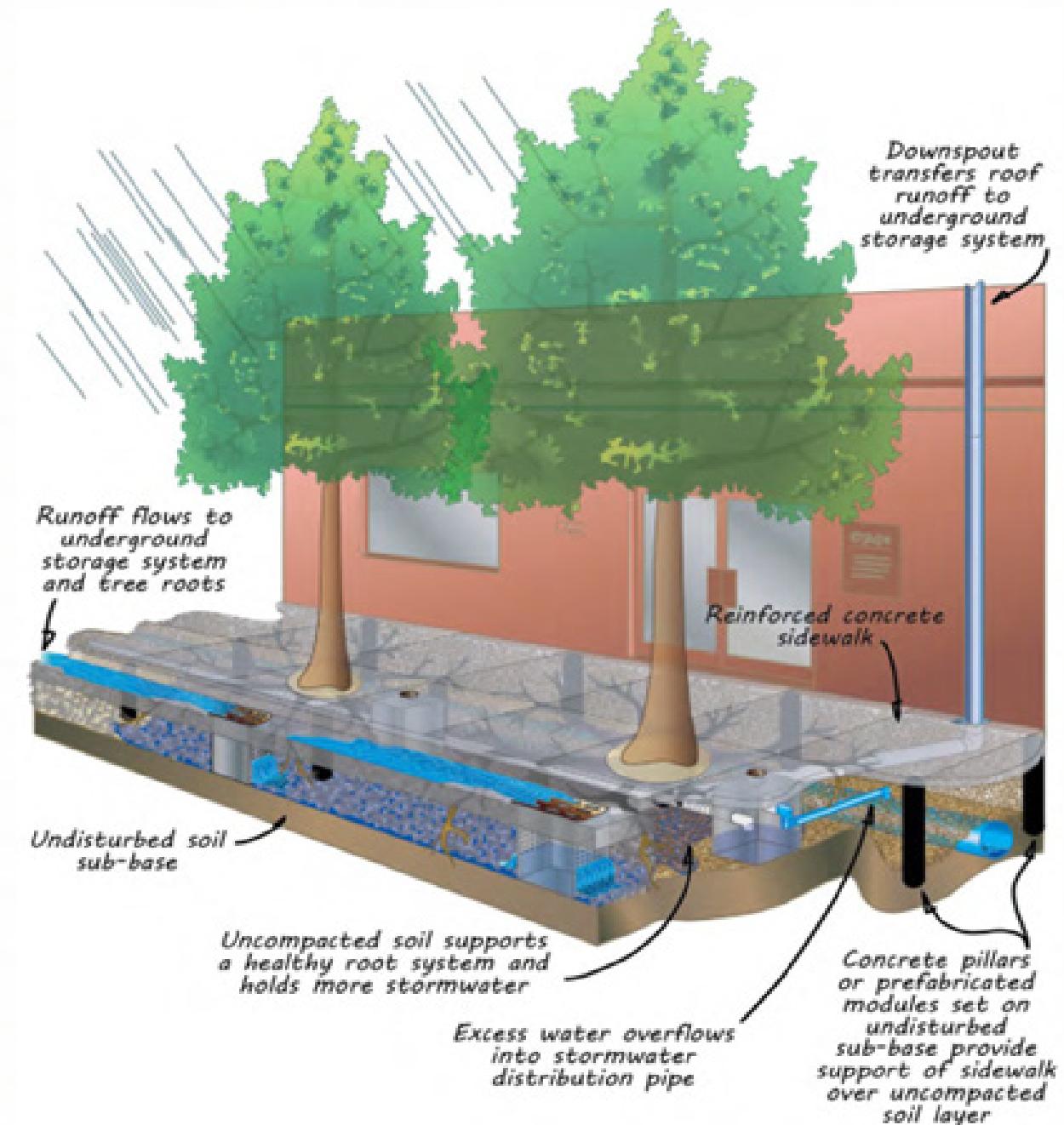


**Above:** Stormwater tree pits are designed to collect runoff from streets, parking lots, and other impervious areas. Stormwater is directed into scuppers that flow into below-grade planters that then allow stormwater to infiltrate soils to supplement irrigation.

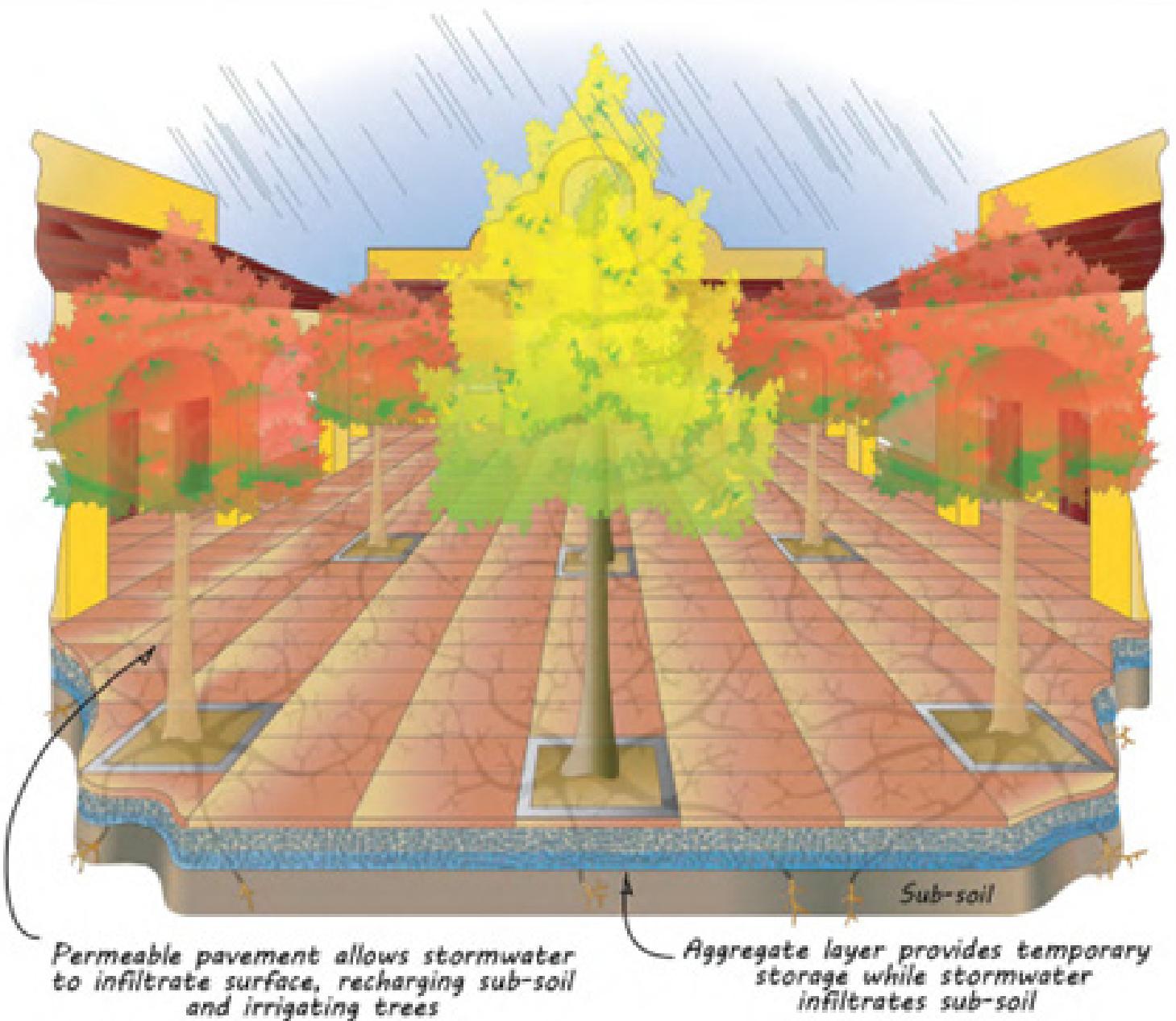




**Above:** Structural soil is a highly porous, engineered aggregate mix, designed for use under asphalt and concrete as a load-bearing and leveling layer. The created spaces allow for water infiltration and storage, in addition to root growth.

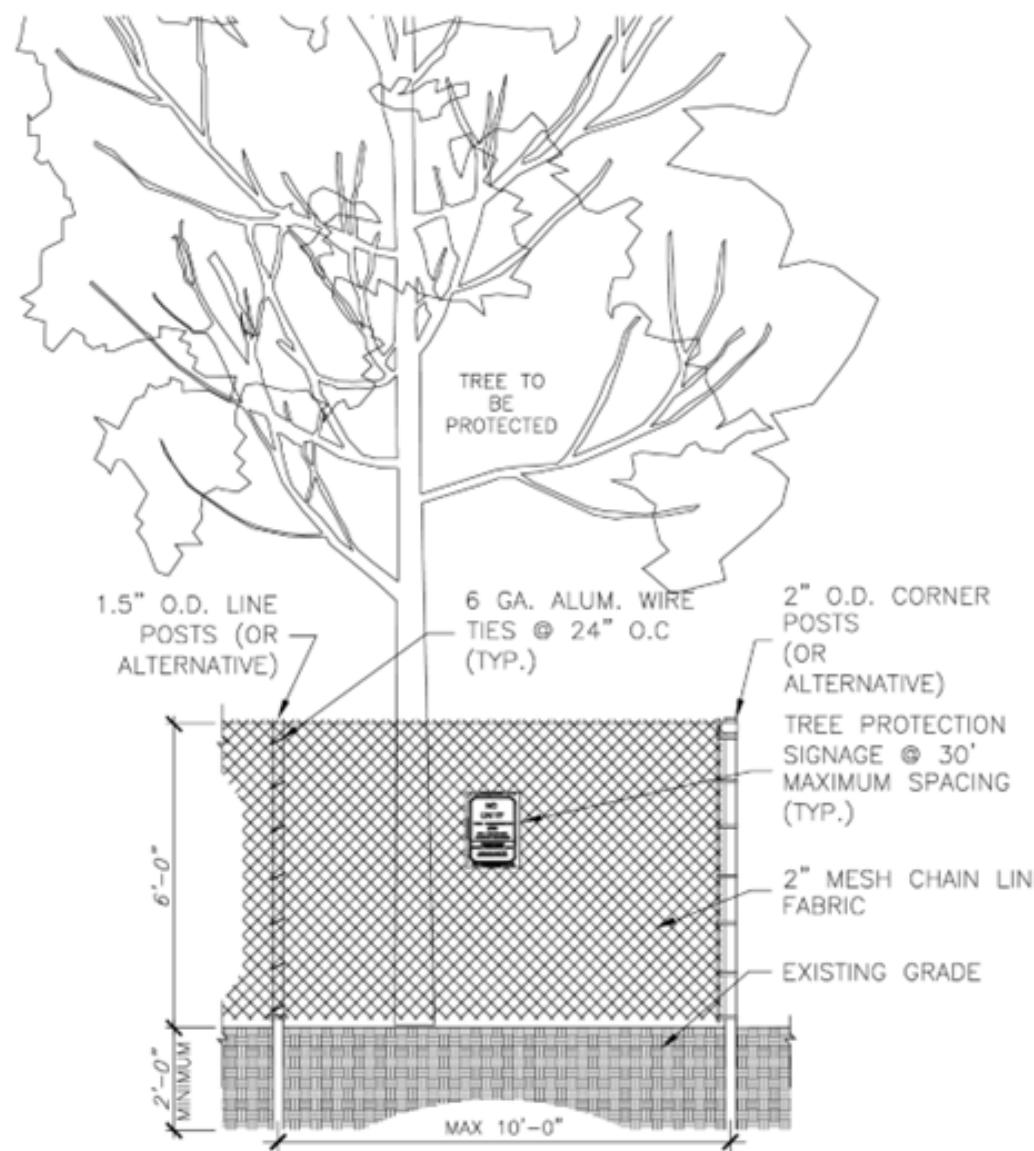


**Above:** Suspended sidewalks use pillars or structured cell systems to support reinforced concrete, increasing the volume of uncompacted soil in subsurface planting areas and enhancing both root growth and stormwater storage.



**Above:** Permeable pavements allow stormwater and oxygen to infiltrate the surface, promoting tree health and groundwater recharge.

# Appendix G: Tree Protection Zones



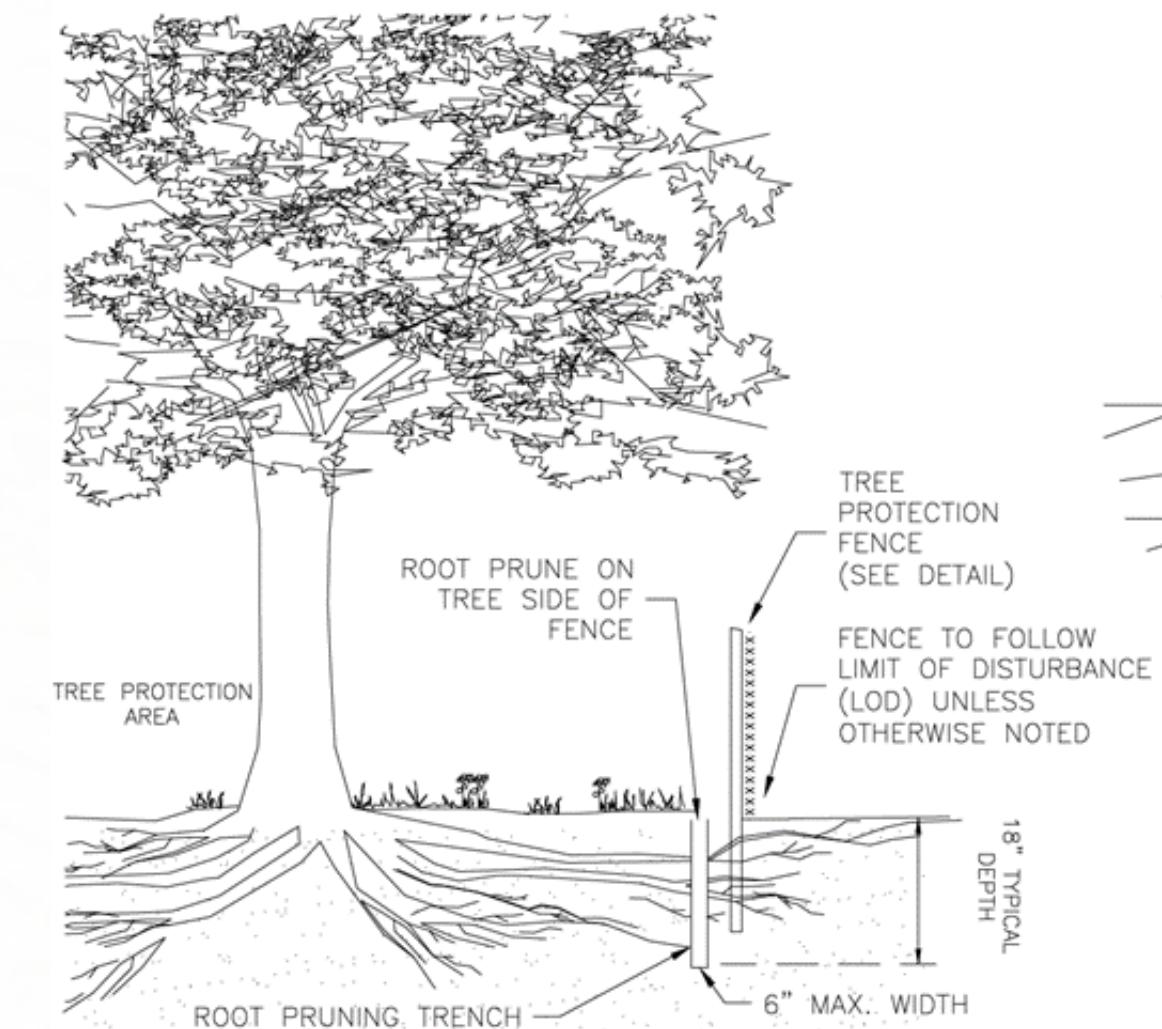
NOTES:

1. TREE PROTECTION FENCE SHALL BE INSTALLED PRIOR TO ANY SITE WORK, CLEARING OR DEMOLITION.
2. SUPER SILT FENCE MAY BE USED IN LIEU OF WELDED WIRE FOR TREE PROTECTION PROVIDED IT IS INSTALLED AND MAINTAINED AS A TREE PROTECTION MEASURE AND IS POSTED WITH TREE PROTECTION SIGNS.
3. TREE PROTECTION FENCE SHALL BE MAINTAINED THROUGHOUT CONSTRUCTION. REMOVE FENCE ONLY WITH APPROVAL AND AFTER ALL SITE WORK HAS BEEN COMPLETED.

1  
TP1

CHAIN LINK TREE PROTECTION FENCE (TYPICAL)

SCALE: NTS



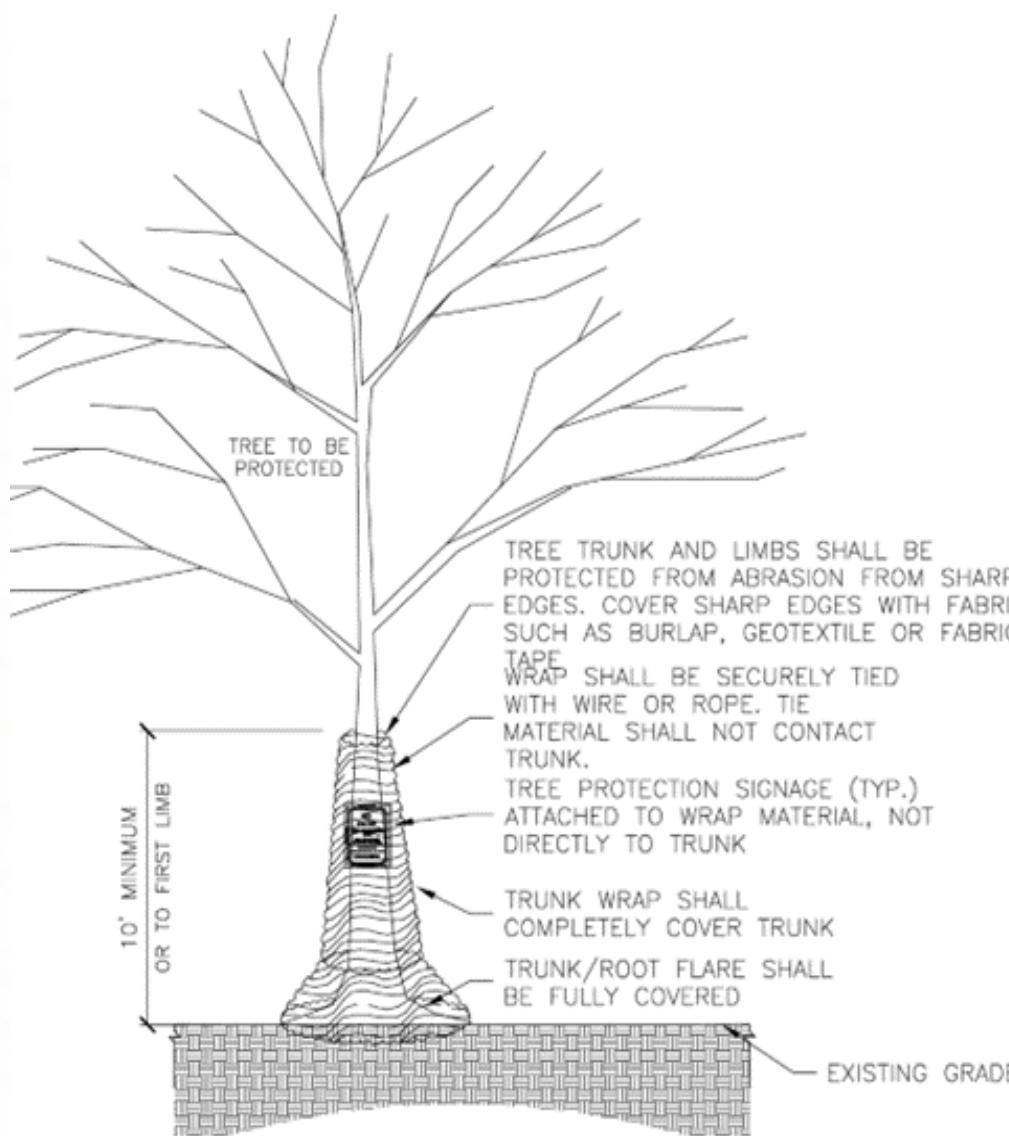
NOTES:

1. TREE PROTECTION AREA WILL BE DETERMINED AS PART OF THE PLAN REVIEW PROCESS. EXACT LOCATION, DEPTH AND METHODS OF ROOT PRUNING TO BE DETERMINED IN THE FIELD BY PROJECT ARBORIST.
2. EXACT LOCATION OF TREE PROTECTION AREAS SHALL BE STAKED OR FLAGGED PRIOR TO TRENCHING.
3. TRENCH SHOULD BE BACKFILLED IMMEDIATELY OR INCORPORATED WITH SILT FENCE INSTALLATION.
4. ROOTS SHOULD BE SEVERED BY TRENCHER, VIBRATORY PLOW OR APPROVED EQUIVALENT. ROOTS OVER 1.5" DIAMETER SHOULD BE CLEANLY CUT BY HAND. ROOT PRUNING ADJACENT TO SPECIMEN TREES MAY REQUIRE SOIL REMOVAL BY SUPERSONIC AIR TOOL TO MINIMIZE TREE AND ROOT IMPACTS.

2  
TP1

ROOT PRUNING (TYPICAL)

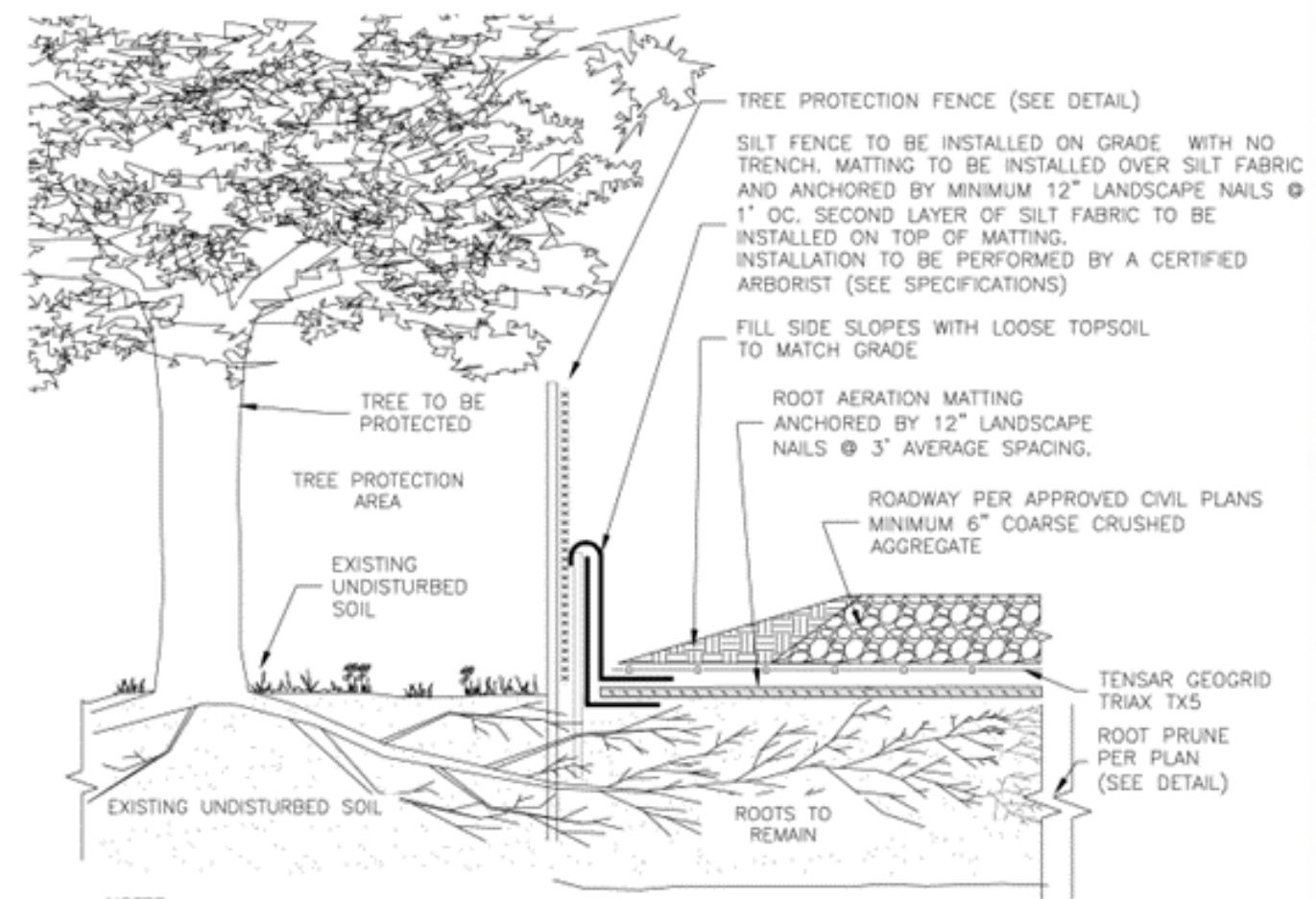
SCALE: NTS



NOTES:

1. TRUNK WRAP MATERIAL SHALL BE DOUBLE SIDED GEOCOMPOSITE, GEONET CORE WITH NON-WOVEN COVERING (SUCH AS TENAX TENDRAIN 770/2) OR APPROVED EQUIVALENT.
2. WRAP SHALL BE INSTALLED BY A CERTIFIED ARBORIST.
3. WRAP SHALL BE INSTALLED PRIOR TO ANY SITE WORK, CLEARING OR DEMOLITION.
4. WRAP SHALL BE MAINTAINED THROUGHOUT CONSTRUCTION. REMOVE WRAP ONLY WITH APPROVAL AND AFTER ALL SITE WORK HAS BEEN COMPLETED.
5. WRAP SHALL BE REMOVED PROMPTLY AFTER CONSTRUCTION.
6. MAJOR SCAFFOLD LIMBS MAY ALSO REQUIRE THIS PROTECTION AS DIRECTED BY THE PROJECT ARBORIST.

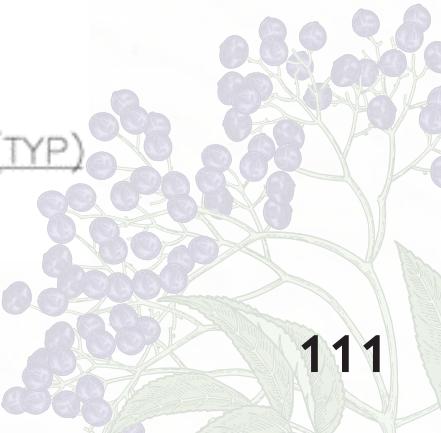
3 TREE TRUNK & LIMB PROTECTION WRAP (TYP)  
TP1 SCALE: NTS

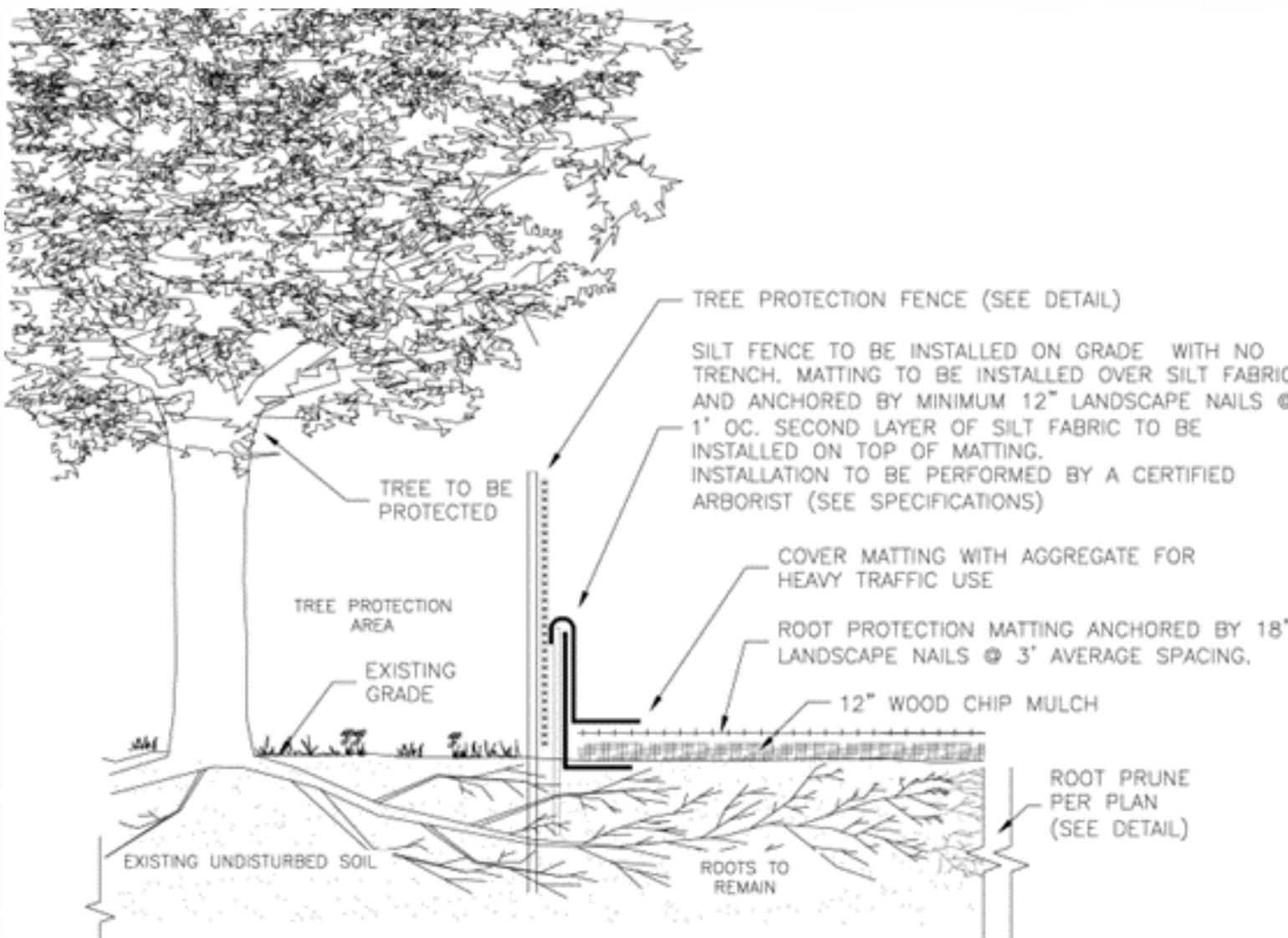


NOTES:

1. MATTING MATERIAL SHALL BE DOUBLE SIDED GEOCOMPOSITE, GEONET CORE WITH NON-WOVEN COVERING (SUCH AS TENAX TENDRAIN 770/2) OR APPROVED EQUIVALENT.
2. RAM SHALL BE ANCHORED BY 12" LANDSCAPE NAILS @ 3' AVERAGE SPACING.
3. RAM SHALL BE INSTALLED BY A CERTIFIED ARBORIST EXPERIENCED WITH THESE SYSTEMS.
4. ANY REQUIRED SITE PREPARATION/GRADING TO BE DONE USING SSAT TO MINIMIZE ROOT DAMAGE.
5. ALL ADJACENT WORK SHALL BE SUPERVISED BY CERTIFIED ARBORIST.
6. GEORGRID SHALL BE TENSAR TRIAX TX5 OR APPROVED SUPERIOR.
7. AGGREGATE FILL SHALL BE TAPERED TO MATCH EXISTING GRADE WHOLLY ON RAM MATERIAL.
8. GEORGRID AND RAM PLACEMENTS SHALL BE OVERLAPPED BY 2'.
9. TOPSOIL MAY BE PLACED LOOSELY ON SIDE SLOPES AS REQUIRED TO MATCH GRADE. TOPSOIL SHALL NOT BE COMPAKTED. RAM MUST EXTEND TO DAYLIGHT AND MAY BE TRIMMED AT FINAL TOE OF SLOPE.
10. SILT FENCE SHALL NOT BE TRENCHED AND MUST BE COORDINATED WITH ARBORIST FOR INSTALLATION.
11. EQUIPMENT/TRAFFIC SHALL NOT TRAVEL DIRECTLY ON RAM/GEORGRID. TRAFFIC MAY TRAVEL ON FINAL FILL ONLY.

4 ROOT AERATION MATTING WITH GEORGRID FOR ROADWAY (TYP)  
TP1 SCALE: NTS

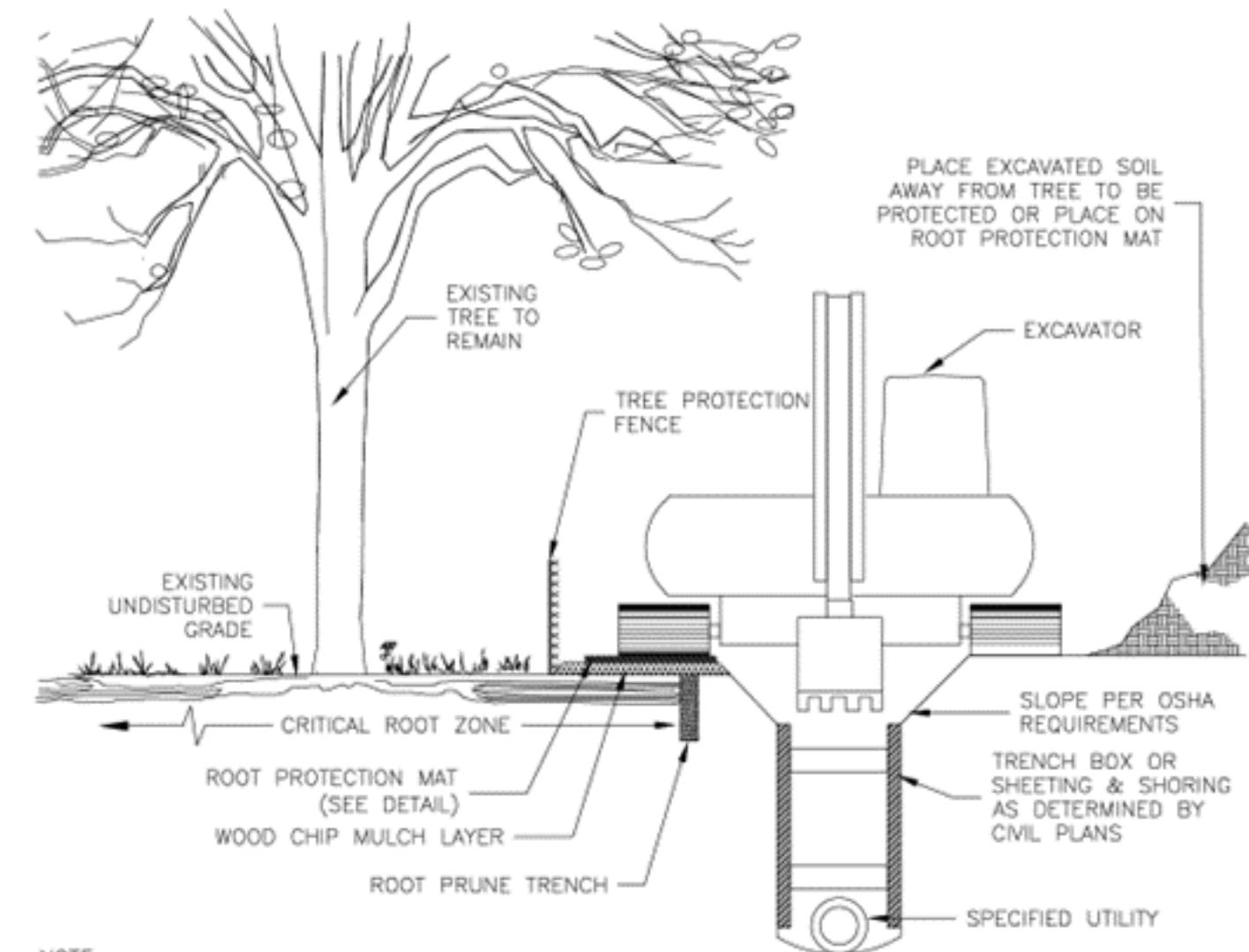




5  
TP1

TEMPORARY ROOT PROTECTION MATTING (TYPICAL)

SCALE: NTS



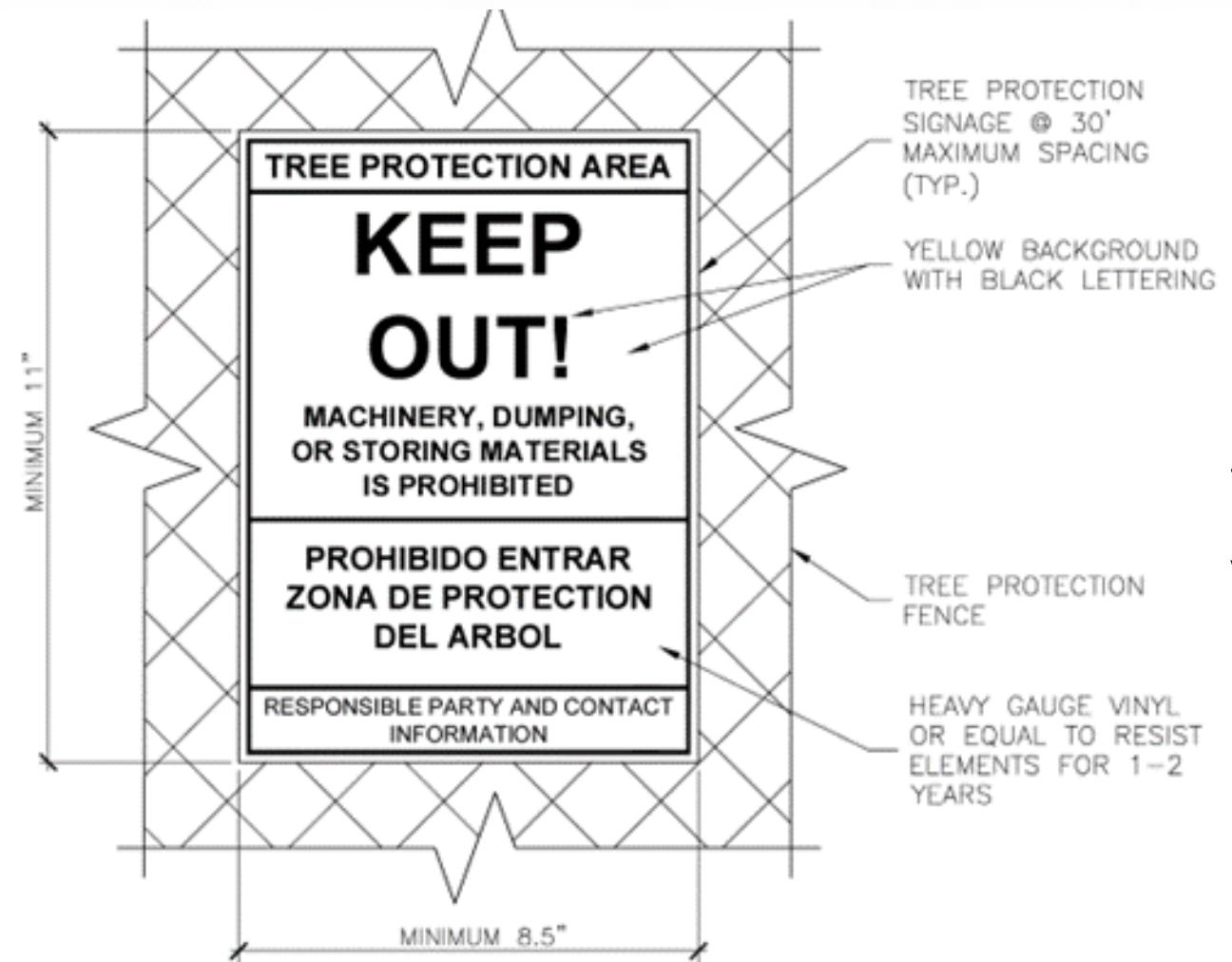
NOTE:

1. EXACT RPM DIMENSIONS TO BE DETERMINED BY PROJECT ARBORIST
2. ARBORIST TO COORDINATE WITH SITE SUPERINTENDENT FOR PIPE LAYOUT, DEPTH, SIZE OF EQUIPMENT, WIDTH OF TRENCH, AND OVERDIG TO DETERMINE LOCATION AND LAYOUT OF TREE PROTECTION.
3. ARBORIST TO COORDINATE WITH SITE SUPERINTENDENT FOR OVERHEAD CLEARANCE ISSUES. MAY REQUIRE SELECT PRUNING OR TEMPORARY GUYING.
4. ARBORIST TO MONITOR BACK FILL AND RESTORATION ADJACENT TO PROTECTED TREES.

6  
TP1

TREE PROTECTION FOR UNDERGROUND UTILITY (TYP)

SCALE: NTS



NOTES:

1. SIGNS TO BE ATTACHED TO TREE PROTECTION FENCE OR POSTS AT READABLE LEVEL.
2. 30' MINIMUM SPACING AVERAGE ADJUSTED FOR MAXIMUM READABILITY.
3. MINIMUM ONE SIGN FOR SMALL TREE PROTECTION AREAS.
4. SIGNS MAY BE REMOVED FROM RESIDENTIAL LOTS UPON ISSUANCE OF USE AND OCCUPANCY.
5. SIGNS TO REMAIN ON NON RESIDENTIAL SITES FOR MAINTENANCE PERIOD.

7  
TP1

TREE PROTECTION AREA SIGN (TYPICAL)

SCALE: NTS

I FEEL THAT THERE COULD BE MORE TREES SPREAD EVENLY ACROSS WATSONVILLE  
-SURVEY RESPONDENT



# Appendix H: Community Engagement Results

## VIRTUAL PRESENTATION 1: URBAN FOREST MANAGEMENT PLAN

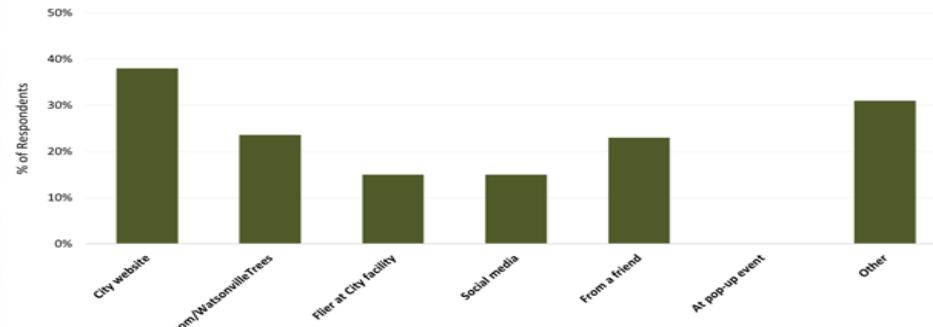


Figure 40: How did you hear about the presentation?

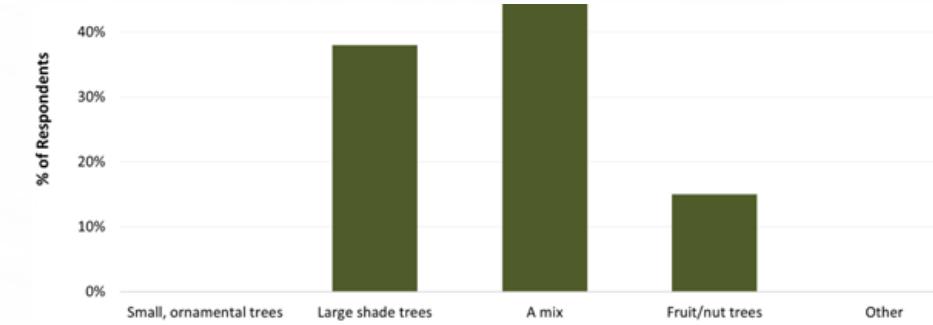


Figure 41: If there is space, would you prefer:

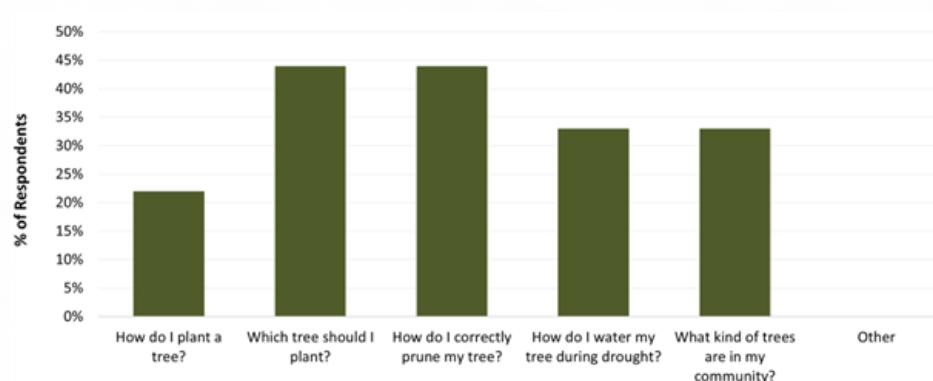


Figure 42: What educational topics about trees interest you?

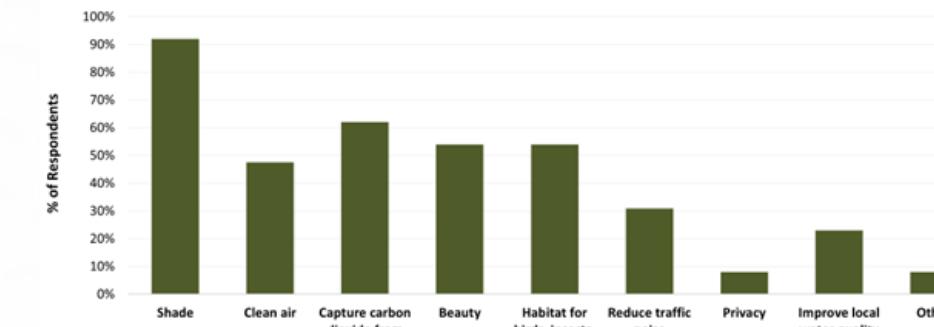


Figure 43: What benefits of trees are most important to you (select three)?

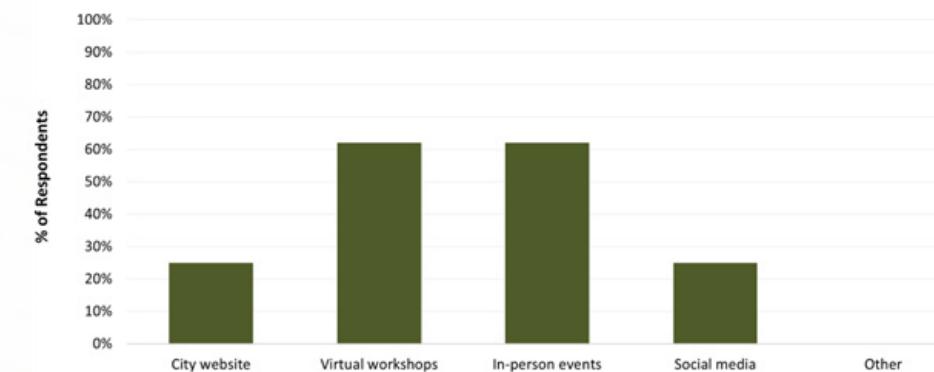


Figure 44: What methods of outreach do you prefer?

**Table 15: Is there something you would like to see done differently in urban forestry in general?**

<p>Is there something you would like to see done differently in urban forestry in general?</p> <p>We need the City government, specifically City Council to allocate sufficient funds to Parks &amp; Rec to properly, regularly scheduled maintain not only the trees but the MEDIANs throughout the City without taxing residents.</p>
<p>Please work with residents to provide education about the benefits of trees. So many residents in this city need to understand how trees benefit us and make our City more beautiful!</p>
<p>Yes I would really like to see a cooperation between Santa Cruz Master gardeners program and Watsonville Urban Forest Management in a project implementing the beautification of the the trails around the slough and wetlands. A botanical garden with beautiful fall color deciduous trees and beautiful cherry blossom trees would attract more locals and tourists to the area improving the local economy. I think that it is possible and we can look at UC Davis as an example and model what can be possible. I usually leave the area when I decide to go out for a walk or to want to see or spend the day somewhere beautiful. I would like to see benches, picnic tables where I can have lunch and go on a leisurely walk.</p>
<p>A few years back I read an article in travel magazine where the East Coast brought in 4 billion dollars from fall color seekers. I would love to see more trees with beautiful fall color like the scarlet oak and many more.</p>

## **VIRTUAL PRESENTATION 2: TREE PRESERVATION ORDINANCE**

**Table 16: Is there anything else you wish to share about your goals for tree preservation?**

<p>Is there anything else you wish to share about your goals for tree preservation?</p> <p>Protection for trees on street and common place</p> <p>Since trees provide a great benefit for the entire community, it is important to maintain a fund to preserve the trees.</p>
---



## ONLINE COMMUNITY SURVEY- ADDITIONAL RESULTS

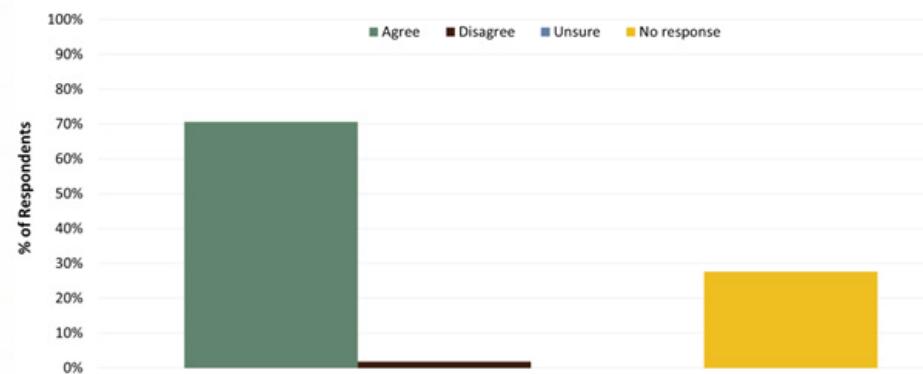


Figure 45: I value trees because... They beautify my neighborhood

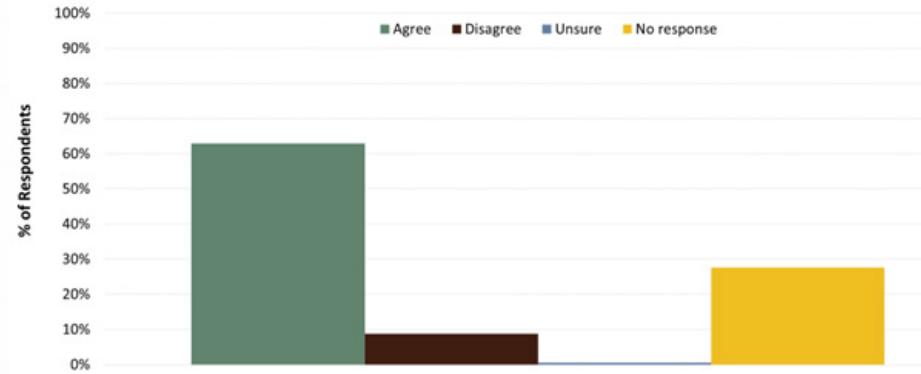


Figure 48: I value trees because... They improve local water quality

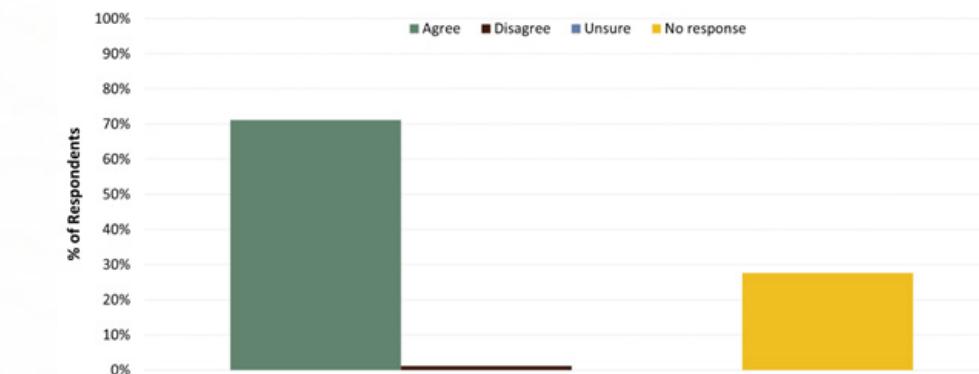


Figure 51: I value trees because... They benefit birds, wildlife, and ecosystems

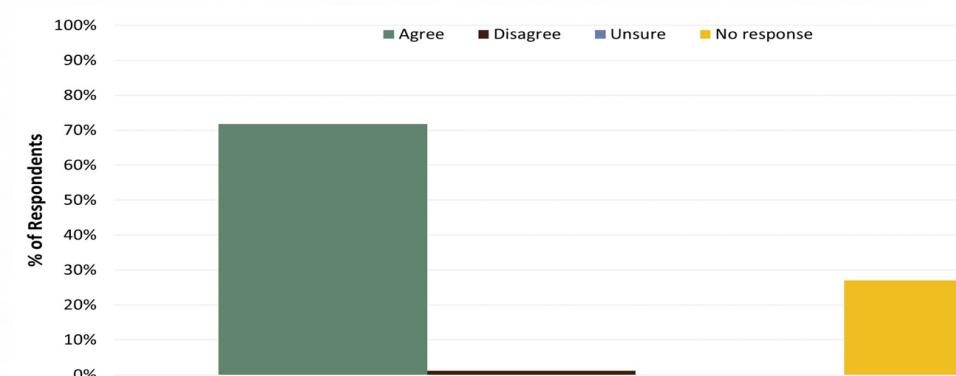


Figure 46: I value trees because... They clean the air

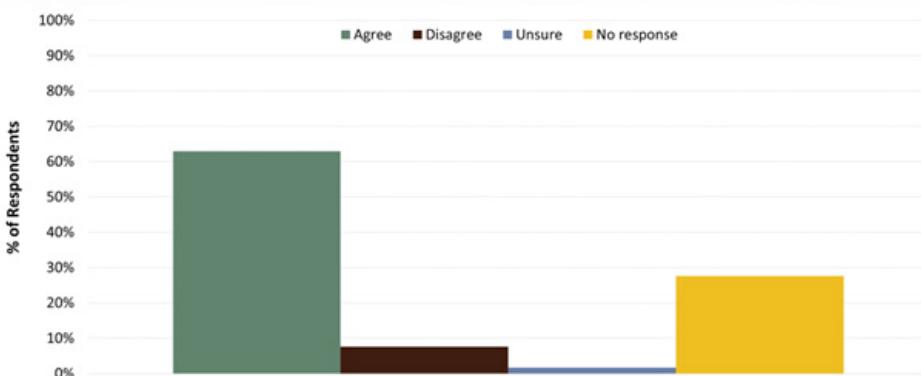


Figure 49: I value trees because... They reduce traffic noise

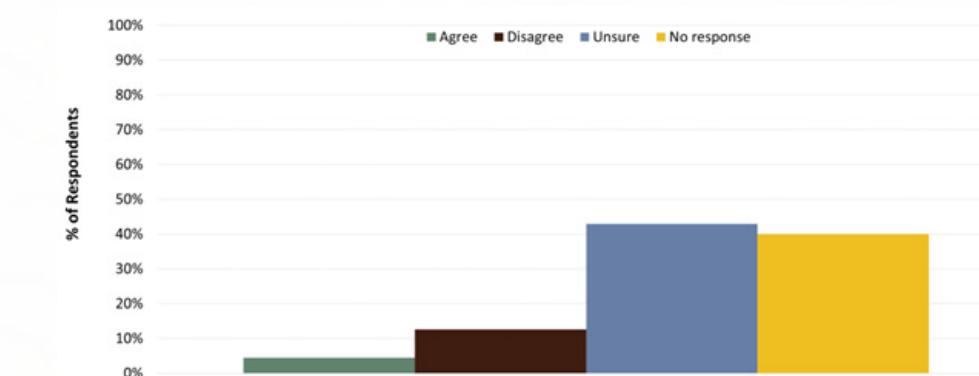


Figure 52: Trees worry me because... I have an outstanding request for street tree maintenance that has gone unfulfilled

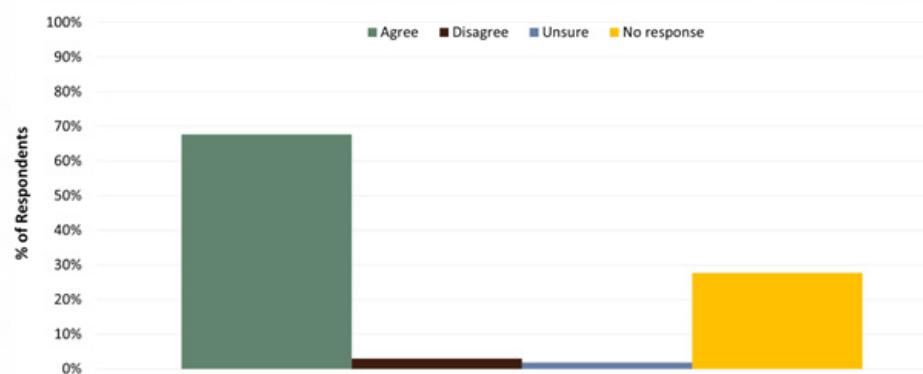


Figure 47: I value trees because... They provide mental/spiritual/cultural benefits

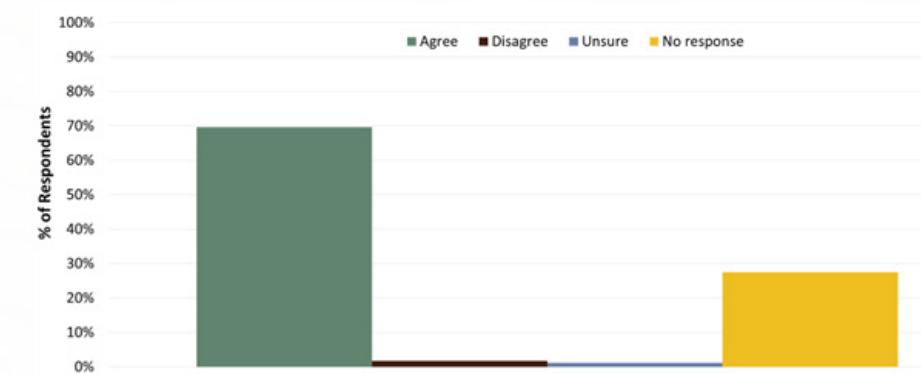


Figure 50: I value trees because... They capture carbon dioxide from the air and help fight climate change

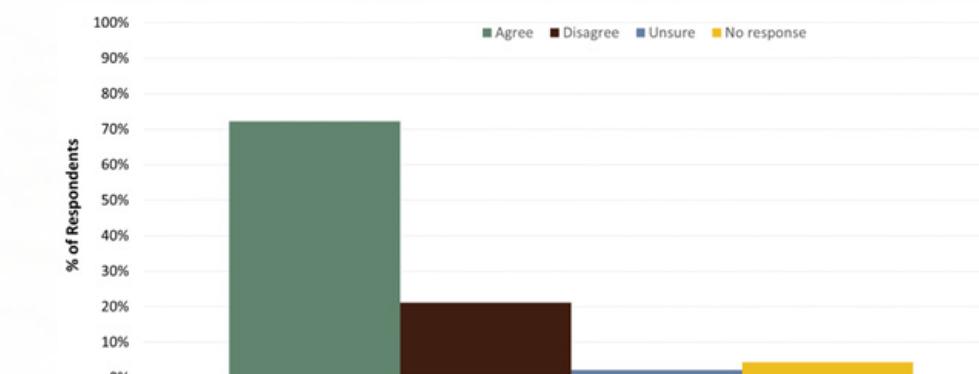


Figure 53: I know... The City maintains park trees and trees in the Downtown area

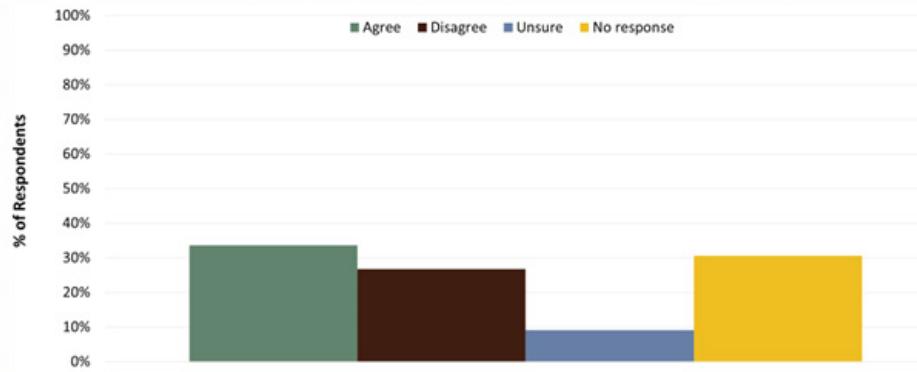


Figure 54: I know... The City provides opportunities for the public to learn about trees

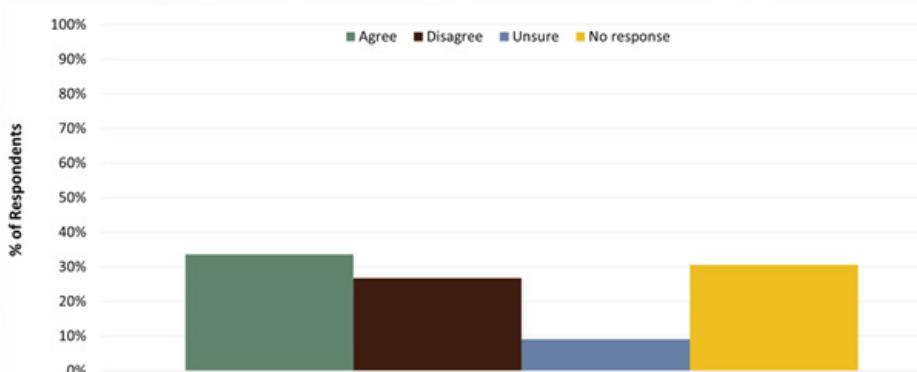


Figure 57: I know... The City provides tree planting or tree care activities for volunteers

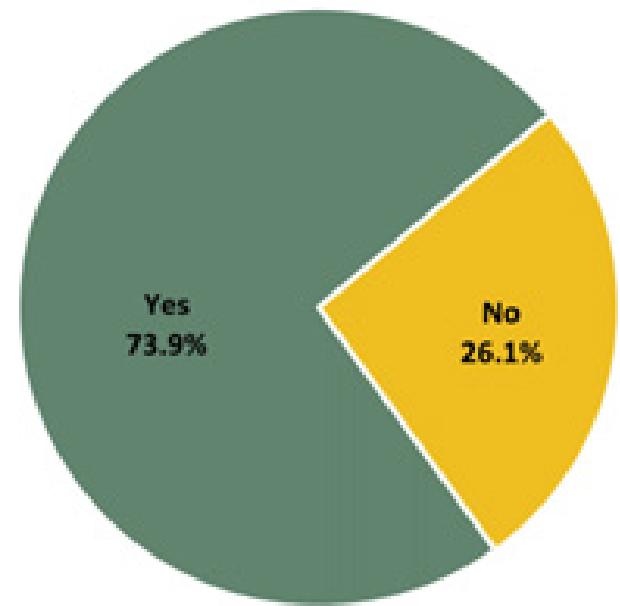


Figure 60: Do you own your home (if you are under 18, do your parents/guardians own your home)?

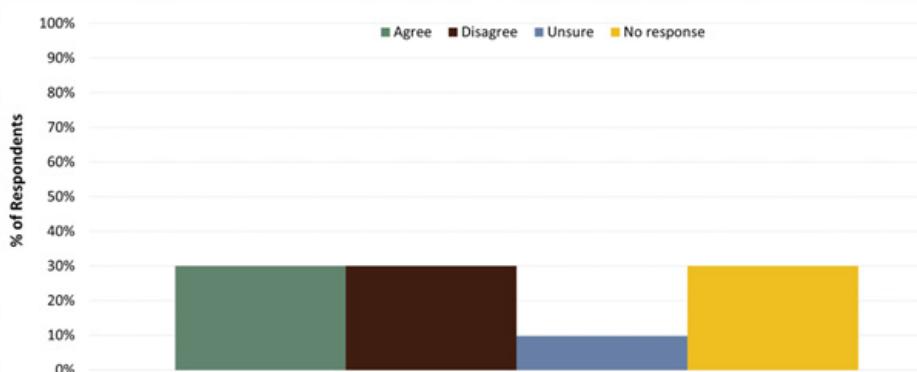


Figure 55: I know... The City provides tree planting or tree care activities for volunteers

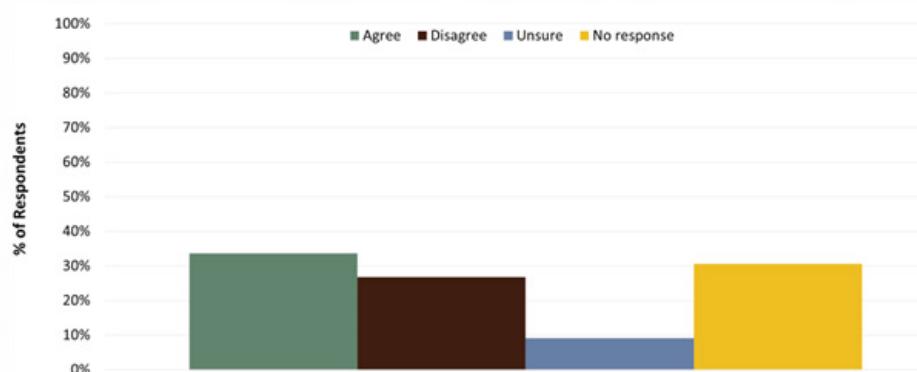


Figure 58: I know... I need a permit to prune or remove street trees

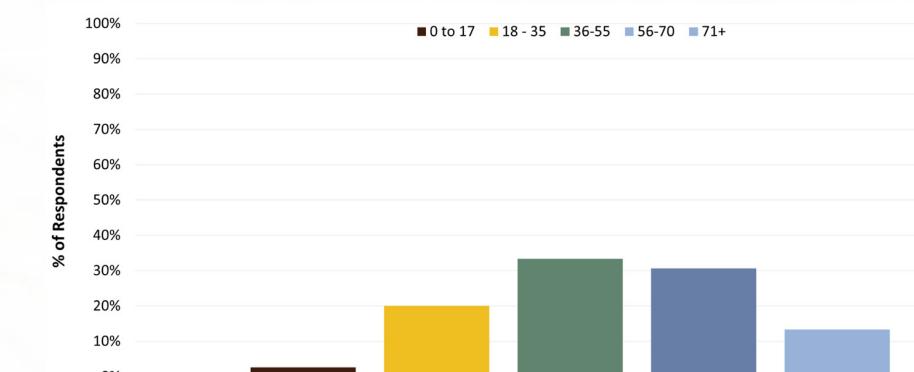


Figure 61: Describe your age.

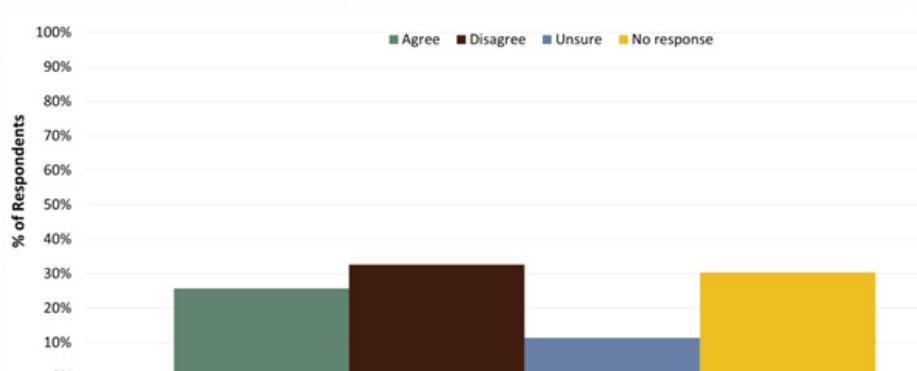


Figure 56: I know... I need a permit to prune or remove street trees

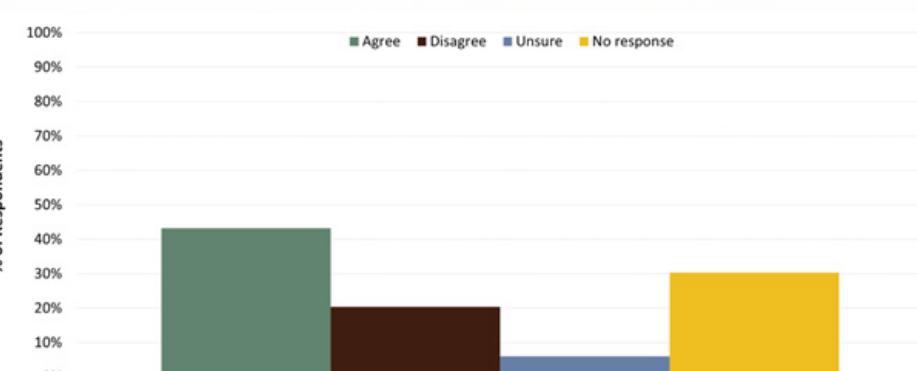


Figure 59: I know... That City Council can designate trees of special character or historical or aesthetic interest or value

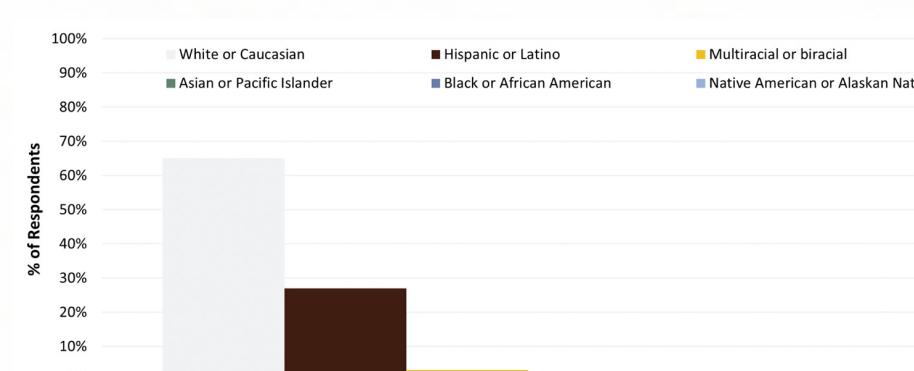


Figure 62: Describe your race/ethnicity.

**Table 16: Comments From Respondents**

<p>Comment</p> <p>New trees will benefit future Watsonville generations. They lower carbon footprint by reducing transportation of food since it is grown in our own yard! I DO agree! They provide shade and oxygen I like the sound of wind rustling through leaves on trees. I also appreciate fruit and nut trees for giving us food, I believe that trees draw down carbon from the atmosphere. They are lovely and provide shade Trees further reduce heat intensification on the ground surface. They further produce much needed oxygen and purify the air we breath. They also provide homes for small animals and birds. There are many more benefits that should be noted. Supply building materials and fuel Studies show that treed communities tend to have less crime, are cleaner, have more neighborly connection between residents, better educational outcomes for students living there, less use of air conditioning, less health issues ( with the exception of pollen ) are more beautiful - in addition to Co2 issues. Trees in neighborhoods provide a pleasant and calming atmosphere, and invite people to slow down and enjoy their beauty. Trees counter the "heat island effect" in cities, and provide habitat for wildlife. Thank you for doing this! They are beautiful to look at I am pissed that The City of Watsonville hired tree trimmers in JULY It is AGAINST nature, during the hottest parts of the month at a DOG PARK! What the hell were you thinking? Take classes on when nature is to be touched it don't bother at all! Trees only collect carbon from the atmosphere until they are removed or die. Urban trees not in parks provide very very tiny fraction of the carbon capture of a real forest. This questionnaire is confusing on a phone. My only option is other? That aside, there are lots of reasons why I value trees. Environmental reasons like absorbing carbon or helping with heat island effect, aesthetic, functional reasons like screening. I'm happy the city is getting community feedback, but regardless of the outcome, hope that staff and consultants prioritize trees preservation and They are homes for birds and other animals and insects needed in our area to balance nature. Shade, beauty, nature's own recycling are important.</p>	<p>Comment</p> <p>Places that already have some trees could be infilled with more trees, providing an example to residents of how trees can beautify &amp; improve the environment in their own neighborhoods. I am concerned that some trees are dangerous in high winds or fires. For nature to be respected, trees included, the seasons need to be understood! Only if the City Parks Department is willing to step up, take accountability for learning seasons and the trees needs themselves will anything matter! In person outreach is always better than a website when a change that is to be maintained is the desired outcome. Who will be responsible for caring for the trees? The city? Neighbors? Homeowners? Renters? more trees and no wackandhackers!!!! Need to train arborists. I am going to plant a tree we I redo my front yard free trees that match my area would be nice. dwarf trees, fruit trees are just an idea We need to educate people about the value of trees, how important they are for our eco-systems, and our ancestral &amp; spiritual connections to them. Colonization has distanced people from nature to the point that many people (including my own Mexican people) don't value trees. We need to start with our children. Elementary school programs and field trips to forests. Parent education. Community incentives. Existing (and increasing) density w/in city limits is working against increasing tree #s on private land. New developments are currently not required to leave room for trees. Trees are an important part of the effort to control climate change. People are happier when they have trees in their neighborhoods. Web site can recommend best trees for the local area, but tree care seems to be beyond what a city web site should provide. Maybe the city could dedicate funding for the library to acquire more books and other materials on local tree selection and care. They may regularly maintain the trees in the DOWNTOWN area but they don't maintain the medians in the neighborhoods and trees planted in them. Before starting a another major project on Riverside/129 and 152 Parks/Rec must regularly maintain neighborhood medians on a SCHEDULED basis. Lots of money was spent to upgrade medians in the City but apparently the City did not provide a maintenance budget. The medians are gateways throughout our town to the City Center where visitors, business people and prospect home buys pass - the way they look is not inviting at all.</p>
<p>Comment</p> <p>Trees help reduce soil erosion and wash off Beautification if our streets and communities besides the benefits to our environment is a win-win scenario. Need trees to breathe Too much concrete and rock yards We need more trees and plants to help keep down the heat. They provide habitat for many living things which is so crucial in this age of extinction. I feel disappointed because in my neighborhood we have overhead wires that require us to either cut down our trees or see them butchered by the city They are beauty and home for many other creatures too! Tree canopy in Watsonville does not compare favorably with cities of similar size. In a city composed of a majority Hispanic population this is a negative mark that corresponds with multiple studies recently finding that low-income and minority neighborhoods tend to have tree deficits compared with other urban and metropolitan areas. Rectifying these disparities must include education campaigns to create awareness among populations of the effects of trees on urban environments. Trees make cities look more beautiful and improve humans' well-being. Essential habitat for birds, mammals, insects Trees help reduce temperatures and mitigate the worst effects of climate change. There are many studies showing how important trees are to mitigate effects of climate change, and connection with the natural world improves the mental health of residents in cities. Connection with the natural world improves the lives of residents in ever-densely developed cities. They mitigate the "heat island effect" of concrete buildings, roads. They provide a sanctuary for human and wildlife, they sooth the soul by their beauty and the sound from the wind blowing through them. They provide oxygen and clean the air, they keep the city at cooler temperature than without trees. I think sometimes trees aren't planted in a specific area because it's inhospitable to trees. People need help making trees a part of any landscape, which includes tree type, how to plant, and how to sustain it. Do not take property rights away from people regarding tree removal. Private property needs to stay private. You may force tree removal prior to implementing an ordinance.</p> <p>Removal of dangerous trees In filling trees in addition to planting in areas without trees currently is important to make sure we get the canopy we are looking for all over the city.</p>	<p>A few years ago a whole bunch of mature trees were removed along Rodriguez St. (same side of street as the fire station, in front of shops like the produce market (Vicki's?) etc. Why? Planting appropriate SHADE trees throughout the City enhances the environment, climate and beauty of ALL of Watsonville's neighborhoods. It is imperative that there be sufficient FUNDS to REGULARLY MAINTAIN the trees. Trees that have been planted in the MEDIANs throughout the City NEIGHBORHOODS in the past 5 have been neglected as have the MEDIANs themselves. The plantings in the MEDIANs throughout the City are badly neglected. They are overgrown with HUGE weeds 2-3 feet tall and in desperate need of REGULAR pruning of plants - all the money spent to beautify these medians is going to waste because they are NOT cared for on a regular basis - hit and miss - they require at least quarterly weeding and pruning - better would be monthly. The medians all over the city are gateways to our town.....the first things that visitors, tourists, prospective businesses and prospective homebuyers see. The way they look now does encourage these folks. I applaud the Parks and Rec team for all they are doing to try to beautify our town and neighborhoods but they are seriously shortstaffed and underfunded. They need FULL TIME experienced workers and funds to pay them. This money should not come from an added tax. It is within the City Council's power to allocate ongoing funds to allow Parks/Rec to meet their goals. It is time to spend money on the medians all over town - more than enough has been spent on Parks and youth activities - especially Ramsay Park and the Wetlands. City Council TAKE CARE OF YOUR NEIGHBORHOOD GREEN BELTS.. Emily was here I'm so proud of all the people that are interested in taking care of our community!</p>

Comment
Places that already have some trees could be infilled with more trees, providing an example to residents of how trees can beautify & improve the environment in their own neighborhoods.
I am concerned that some trees are dangerous in high winds or fires.
For nature to be respected, trees included, the seasons need to be understood! Only if the City Parks Department is willing to step up, take accountability for learning seasons and the trees needs themselves will anything matter!
In person outreach is always better than a website when a change that is to be maintained is the desired outcome. Who will be responsible for caring for the trees? The city? Neighbors? Homeowners? Renters?
more trees and no wackandhackers!!!! Need to train arborists.
I am going to plant a tree we I redo my front yard free trees that match my area would be nice. dwarf trees, fruit trees are just an idea
We need to educate people about the value of trees, how important they are for our eco-systems, and our ancestral & spiritual connections to them. Colonization has distanced people from nature to the point that many people (including my own Mexican people) don't value trees. We need to start with our children. Elementary school programs and field trips to forests. Parent education. Community incentives.
Existing (and increasing) density w/in city limits is working against increasing tree #'s on private land. New developments are currently not required to leave room for trees.
Trees are an important part of the effort to control climate change. People are happier when they have trees in their neighborhoods.
Web site can recommend best trees for the local area, but tree care seems to be beyond what a city web site should provide. Maybe the city could dedicate funding for the library to acquire more books and other materials on local tree selection and care.
They may regularly maintain the trees in the DOWNTOWN area but they don't maintain the medians in the neighborhoods and trees planted in them. Before starting a another major project on Riverside/129 and 152 Parks/Rec must regularly maintain neighborhood medians on a SCHEDULED basis. Lots of money was spent to upgrade medians in the City but apparently the City did not provide a maintenance budget. The medians are gateways throughout our town to the City Center where visitors, business people and prospect home buys pass - the way they look is not inviting at all.
A few years ago a whole bunch of mature trees were removed along Rodriguez St. (same side of street as the fire station, in front of shops like the produce market (Vicki's?) etc. Why?
Planting appropriate SHADE trees throughout the City enhances the environment, climate and beauty of ALL of Watsonville's neighborhoods. It is imperative that there be sufficient FUNDS to REGULARLY MAINTAIN the trees. Trees that have been planted in the MEDIANs throughout the City NEIGHBORHOODS in the past 5 have been neglected as have the MEDIANs themselves. The plantings in the MEDIANs throughout the City are badly neglected. They are overgrown with HUGE weeds
2-3 feet tall and in desperate need of REGULAR pruning of plants - all the money spent to beautify these medians is gong to waste because they are NOT cared for on a regular basis - hit and miss - they require at least quarterly weeding and pruning - better would be monthly. The medians all over the city are gateways to our town.....the first things that visitors, tourists, prospective businesses and prospective homebuyers see. The way they look now does encourage these folks.
I applaud the Parks and Rec team for all they are doing to try to beautify our town and neighborhoods but they are seriously shortstaffed and underfunded. They need FULL TIME experienced works and funds to pay them. This money should not come from an added tax. It is within the City Council's power to allocate on going funds to allow Parks/Rec to meet their goals. It is time to spend money on the medians all over town - more than enough has been spent on Parks and youth activities - especially Ramsay Park and the Wetlands. City Council TAKE CARE OF YOUR NEIGHBORHOOD GREEN BELTS..
Emily was here
I'm so proud of all the people that are interested in taking care of our community!

Comment
Old trees are valuable to protect us from climate change.
Depending on the species of trees
We need more trees planted in Watsonville as well as local flowers that will survive in our environment
Please plant a lot of native oaks. They support more than 187 species, mostly insects, the most of any native plant or tree, per Doug Tallamy, author of Nature's Best Hope.
Watsonville should begin planting Miyawaki-method mini-forests around town near schools which can adopt them. We are fortunate to have many resources locally for native plants and habitat restoration materials.
I feel that there could be MORE trees spread evenly across Watsonville.
No
Tree are very important part of the Cities ecosystem. More tree should be planted along East Lake, Main Street, Green Valley Road, and Freedom Blvd. More tree should also be planted within all parking lots.
Yes we need more trees. Great concept but definitely Watsonville wetlands project is great. I've walked the community with a couple other people in my neighborhood and actually signed people up to receive a call from the wetlands project here in Watsonville. it's a great program. I have one of their free fruit trees. I'd love to see more trees here in Watsonville as well as having them work with Michael Johnson with the Landscape rebate project. It made such a difference when we went door-to-door volunteering in my neighborhood to people sign up to be contacted for getting a tree from the Watsonville wetlands project. The response was really good with that personal touch and out reach.
The sustainability of trees in the Watsonville area can be better achieved through partnerships that include elements of appropriate funding, community education, special projects and events, and a continual focus on this very important resource.
Native trees should be planted. Non-natives like eucalyptus should be removed.
Additional trees should be installed in large shopping center parking areas.
We need more trees in the freedom blvd. This part of town looks neglected in comparison to the senior living communities.
Native trees should be protected.
If the government forbids the removal of a tree on private property, they should pay for its maintenance and use of the land.
The area adjacent to the airport on buena vista needs environmental attention by the city.
Depends upon the health and condition, and the city to take on the financial responsibility
Watsonville is not known as a canopy city and that's disappointing. Many other cities around are canopy cities.
More trees please; but most of all STOP THE SPRAYING OF CHEMICALS....so humans, animals and plants can thrive!!! If you spray living things with eventually decay and stay (that way) because it will be too late to turn it around.
Yes it's good to have some regulations around protecting trees on private property, but this can also go too far — as it is in City of Santa Cruz, where the "heritage tree" ordinance makes it VERY hard to get a tree removal permit approved.
The city should not decide on private properties
Any tree planting program needs to focus on native trees and appropriate companion plants, bushes, understory species to provide for the return of wildlife and support biodiversity.
Better air





# Watsonville

## URBAN FOREST MANAGEMENT PLAN

### 2024

