



**OROVILLE PARK COMMISSION
OROVILLE PLANNING COMMISSION
OROVILLE ARTS COMMISSION**
Council Chambers, 1735 Montgomery St
Oroville, CA 95965
Special Joint Meeting
OCTOBER 12, 2015
5:00 P.M.
AGENDA

*This meeting may be broadcast remotely via audio and/or video conference
at the following address:
Cota Cole, LLP, 2261 Lava Ridge Court, Roseville, California 95661.*

ROLL CALL

Oroville Park Commission: Commissioners Campbell, Prouty, Sehorn, Vice Chairperson Conn, Chairperson Lawrence

Oroville Planning Commission: Commissioners Brand, Britton, Chapman, Jenkins, Vang, Vice Chairperson Durling, Chairperson Robison

Oroville Arts Commission: Commissioners Britton, Tamori, Vandervort, Wilcox, Chairperson Conn

PLEDGE OF ALLEGIANCE

RECOGNITION OF INDIVIDUALS WHO WISH TO SPEAK ON AGENDA ITEMS

This is the time the Commission will invite anyone in the audience wishing to address the Commission on a matter that is on the agenda to state your name and the agenda item on which you wish to speak. When that item comes up on the agenda, you will be asked to step to the podium, repeat your name and give your address for the record, and make your presentation. Under Government Code Section 54954.3 the time allotted for presentations may be limited.

PRESENTATIONS – None

CONSENT CALENDAR - None

REGULAR BUSINESS

1. OROVILLE AREA URBAN GREENING PLAN – staff report

The Commissions may consider sending a recommendation to the City Council for acceptance of the Oroville Area Urban Greening Plan. **(Donald Rust, Director of Community Development)**

Commission Action Requested: **Send a recommendation to the City Council to accept the Oroville Area Urban Greening Plan.**

DISCUSSION ITEMS - None

ITEMS FOR FOLLOW-UP - None

DIRECTOR'S REPORT

A verbal report may be given by the Community Development Director

COMMISSIONERS' ANNOUNCEMENTS/REPORTS - None

MONTHLY REPORTS - None

CORRESPONDENCE - None

HEARING OF INDIVIDUALS ON NON-AGENDA ITEMS

This is the time the Chairperson will invite anyone in the audience wanting to address the Commission on a matter not listed on the agenda to step to the podium, state your name and address for the record, and make your presentation. Presentations will be limited to 5 minutes. **The Commission is prohibited by State Law from taking action or engaging in possible discussion on any item presented if it is not listed on the agenda, except under special circumstances as defined in the Government Code.**

ITEMS FOR THE NEXT AGENDA

ADJOURNMENT

The meeting will be adjourned. The next regular meeting of the City of Oroville Arts Commission will be held on Monday, November 9, 2015, at 3:30 p.m., the City of Oroville Park Commission will be held on Monday, November 9, 2015, at 5:00 p.m., and the next regularly scheduled meeting of the City of Oroville Planning Commission will be held on, Monday November 23, 2015, at 5:00 p.m.

Respectfully submitted by,



Donald Rust, Director
Community Development Department

***** NOTICE *****

If requested, this agenda can be made available in appropriate alternative formats to persons with a disability, as required by Section 202 of the Americans with Disabilities Act of 1990 and the Federal Rules and Regulations adopted in implementation thereof. Persons seeking an alternative format should contact Donald Rust, Director for further information. In addition, a person with a disability who requires a modification or accommodation, including auxiliary aids or services, in order to participate in a public meeting should telephone or otherwise contact Donald Rust, Director as soon as possible and preferably at least 24 hours prior to the meeting. Donald Rust, Director may be reached at 530-538-2433, or at e-mail rustdl@cityoforoville.org, or at the following address: City of Oroville Community Development (Park) Department, 1735 Montgomery Street, Oroville, CA 95965.

**OROVILLE PARK, ARTS AND PLANNING COMMISSION
STAFF REPORT**

TO: CHAIRPERSONS AND COMMISSIONERS

**FROM: DONALD RUST, DIRECTOR (530) 538-2433
LUIS A. TOPETE, ASSOCIATE PLANNER (530) 538-2408
COMMUNITY DEVELOPMENT DEPARTMENT**

RE: OROVILLE AREA URBAN GREENING PLAN

DATE: OCTOBER 12, 2015

SUMMARY

The Commissions may consider sending a recommendation to the City Council for acceptance of the Oroville Area Urban Greening Plan.

BACKGROUND

The study area for the Plan is the Oroville Urban Area, which encompasses both urbanized and undeveloped lands within the incorporated City of Oroville and surrounding unincorporated Butte County. The Oroville Area Urban Greening Plan provides a vision for “greening” the community to improve public health and create a more vibrant and enjoyable outdoor environment, such as by increasing shade for pedestrians and bicyclists, green space for outdoor activities, and green infrastructure for stormwater management. The Plan evaluates existing multimodal transportation infrastructure, recreational space, and the urban forest through data analysis, site analysis, and discussion with community members. Based on this information, the Plan identifies and prioritizes specific opportunities for green interventions. By providing best practices, conceptual designs, and suggestions for phasing, funding, and collaboration, the Plan serves as a guiding document for implementation of greening projects in the greater Oroville community.

Funding for the Plan came through an Urban Greening Grant Program administered by the California Natural Resources Agency and the State of California’s Strategic Growth Council. The Grant Program’s intent is to fund the development of master urban greening plans and construction of urban greening projects that help the State meet its environmental and public health goals. In addition, the current California drought has led the State to pay increased attention to development strategies that conserve and maintain water resources. Butte County led the application for the Urban Greening Grant in cooperation with the City of Oroville and the Feather River Recreation and Park District (FRRPD).

DISCUSSION

While the term “greening” can evoke images of lush plantings supported by plentiful water, in reality “greening” is not the same as “watering.” The greening measures and opportunities recommended in this Plan often are not green in color – frequently they are tan, brown, or gray – and they protect, conserve, and help improve management of water resources rather than exploiting them.

Recommended “greening” improvements under the Plan range from the installation of sidewalks and bicycle lanes (“green” because these measures support non-motorized mobility, air quality, and human health and safety) to “green infrastructure” such as pervious paving or street plantings that are equally flood- and drought-tolerant (“green” because these measures capture stormwater, improve water quality, reduce irrigation water use, and reduce localized flooding). Where plantings are recommended, a hardy array of drought-tolerant plants have been identified in the Plan’s appendices, which also discuss water-conserving irrigation and planting techniques.

Nearly all “greening” improvements recommended in this Plan have multiple benefits: improving the health and safety of people, reducing costs to both governments and taxpayers, protecting and enhancing the natural environment, sustaining the vitality of local businesses, attracting investment to the Oroville area, supporting local property values, and enhancing the quality of life that is essential to any successful community. “Greening” can be a highly cost-effective way to provide these community benefits.

FISCAL IMPACT

Funding for the Oroville Urban Greening Plan was provided by the Strategic Growth Council through the Urban Greening Grant program, funded by Proposition 84, the Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Bond Act of 2006.

By providing best practices, conceptual designs, and suggestions for phasing, funding, and collaboration, the Plan serves as a guiding document for implementation of greening projects in the greater Oroville community. Nothing in this Plan will commit the City to any action or expenditure.

RECOMMENDATIONS

Send a recommendation to the City Council to accept the Oroville Area Urban Greening Plan.

ATTACHMENT

Oroville Area Urban Greening Plan – Public Draft

Oroville Area Urban Greening Plan



Public Review Draft | July 2015





Oroville Area Urban Greening Plan

Acknowledgements

Funding for the Oroville Urban Greening Plan was provided by the Strategic Growth Council through the Urban Greening Grant program, funded by Proposition 84, the Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Bond Act of 2006.

Special thanks to the community members who took time to participate in outreach events and provide feedback about the future of urban greening in their community.

This document was prepared by:





Oroville Area Urban Greening Plan

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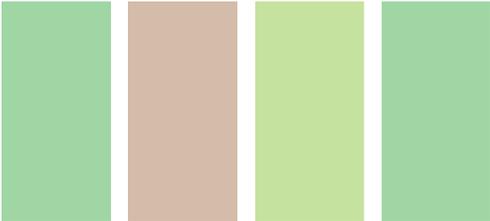
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Oroville Area Urban Greening Plan

Acknowledgements *(continued)*

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Oroville Area Urban Greening Plan

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part I introduction

CONTEXT OF THE URBAN GREENING PLAN

The Oroville Area Urban Greening Plan was developed from 2012 to 2015. During this time, weather and climate conditions ranged from heavy winter rainstorms that caused localized flooding (2012), to an historic, multi-year, and continuing drought (2012-2015) that triggered water use restrictions and the declaration of a state of emergency throughout California. As a result, Oroville community members face a paradox in which water use is restricted while street flooding could return with the next El Nino – even if the drought persists.

The Plan was funded by the Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Bond Act of 2006 (Prop. 84) through the Strategic Growth Council. Planning using Prop. 84 funds is intended to reduce energy consumption, conserve water, improve air and water quality, and provide other community benefits. Urban “greening” addresses these goals, even during extreme conditions such as drought or flooding. While the term “greening” can evoke images of lush plantings supported by plentiful water, in reality “greening” is not the same as “watering.” The greening measures and opportunities recommended in this Plan often are not green in color – frequently they are tan, brown, or gray – and they protect, conserve, and help improve management of water resources rather than exploiting them.

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In fact, nearly all “greening” improvements recommended in this



Oroville Street (2012)



Lake Oroville (2015)



Plan have multiple benefits: improving the health and safety of people, reducing costs to both governments and taxpayers, protecting and enhancing the natural environment, sustaining the vitality of local businesses, attracting investment to the Oroville area, supporting local property values, and enhancing the quality of life that is essential to any successful community. “Greening” can be a highly cost-effective way to provide these community benefits.

BACKGROUND AND PURPOSE

The Oroville Area Urban Greening Plan provides a vision for “greening” the community to improve public health and create a more vibrant and enjoyable outdoor environment, such as by increasing shade for pedestrians and bicyclists, green space for outdoor activities, and green infrastructure for stormwater management. The Plan evaluates existing multimodal transportation infrastructure, recreational space, and the urban forest through data analysis, site analysis, and discussion with community members. Based on this information, the Plan identifies and prioritizes specific opportunities for green interventions. By providing best practices, conceptual designs, and suggestions for phasing, funding, and collaboration, the Plan serves as a guiding document for implementation of greening projects in the greater Oroville community.

Funding for the Plan came through an Urban Greening Grant Program administered by the California Natural Resources Agency and the State of California’s Strategic Growth Council. The Grant Program’s intent is to fund the development of master urban greening plans and construction of urban greening projects that help the State meet its environmental and public health goals. In addition, the current California drought has led the State to pay increased attention to development strategies that conserve and maintain water resources. Butte County led the application for the Urban Greening Grant in cooperation with the City of Oroville and the Feather River Recreation and Park District (FRRPD).

The Oroville area has abundant recreational opportunities and a historic and beautiful downtown. However, the Oroville Urban Area experiences high summer temperatures and arid air conditions, which can make it difficult to enjoy these amenities in the summer. In addition, while the Feather River snakes through the northern part of Oroville with trails and open spaces, other parts of Oroville lack recreational access. Particularly in more economically disadvantaged areas, low rates of car ownership and infrequent bus service indicate a demand for improved bicycle and pedestrian infrastructure. Additionally, County residents have above

average rates of high blood pressure and high cholesterol,¹ so from a public health perspective it is imperative to provide more and better access to outdoor recreation. The Urban Greening Grant Program and the Oroville Area Urban Greening Plan are intended to provide solutions to these complex problems.

BUILDING ON LOCAL ASSETS AND COMMUNITY VISION

Created in partnership between Butte County, the City of Oroville, and the FRRPD, this Plan crosses jurisdictional and agency boundaries in order to connect community members to the existing green amenities that they cherish – parks, trails, schools, and open space. It also identifies future greening opportunities, building on recent planning efforts included in the *Butte County Climate Action Plan* (2014), the *Oroville Community Climate Action Plan* (2015) and *Oroville Balanced Mode Circulation Plan* (2015), and the *Feather River Recreation and Parks District Master Plan* (2011).

Consistent with a commitment made early in the planning process, the Plan does not create any new rules, regulations, or requirements. Instead, it identifies greening opportunities and approaches based on community needs and preferences. A key feature of the Plan is the list of funding sources in Chapter 10. Many of these funding sources are available to schools, community groups, other non-governmental organizations, and even individuals.

Developing this Plan will help Oroville more successfully compete for grants and other external funding sources. An application supported by an existing strategy, partnerships, and a prioritized list of projects that have already been conceptualized and vetted by the community is more likely to receive funding. This Plan can be used as the basis to support future local projects, including guiding City and County decision-making regarding allocation of funds and other local resources. This Plan supports other related plans currently underway, such as the Gateway project, the Las Plumas Avenue Safe Routes to Schools grant, and the extension of the Brad Freeman Trail between the Veterans Memorial and the Green Bridge.

WHAT IS URBAN GREENING?

Urban greening is a multi-benefit approach to solving development problems. It provides increased functionality and efficiency to services and infrastructure while providing civic, environmental, public health, psychological, economic, social, and aesthetic value.

Environmental benefits from urban greening are also often efficient solutions to infrastructure problems. Greening projects



PARKS



TRAILS & OPEN SPACE



COMMUNITY GARDENS



STREET TREES & URBAN FORESTRY



CREEK RESTORATION



CLEAN & GREEN ALLEYS



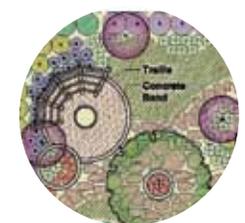
CLEAN & GREEN VACANT LOTS



COMMUNITY CONNECTIONS



STORMWATER MANAGEMENT



STREET PLANTING GUIDELINES

¹ American Community Survey 2005-2009 and California Department of Public Health 2009.

include managing stormwater to reduce flooding through “soft” treatments such as bioswales and on-site retention to improve water quality. They provide habitat for wildlife, encourage people to get out of their cars to improve their health while reducing air pollution, and provide natural solutions that reduce the need for scarce and expensive resources such as water and energy.

Urban greening can also have economic benefits. Street trees, plantings, reduced flooding, and increased safety all improve property values. Areas that support a thriving tourism generator such as Lake Oroville and the Feather River can use improved recreational connections and attractive streetscapes to attract visitors to the downtown to support local business.

Finally, the intrinsic value of nature to human health cannot be overstated. Research has documented multiple benefits from close proximity to tree canopies and green open space, including reduced depression, stress, and anxiety; improved attention span; decreased at-risk behavior among inner-city youth; and improved recovery from illness or injury.^{2,3,4} Increasing open space for exercise and recreation, expanding walking trails, and creating a healthy urban forest will improve the quality of life for Oroville area residents in multiple ways.

URBAN GREENING BENEFITS

A green environment makes a significant impact on the everyday lives of residents. Green spaces provide valuable places for recreation and social engagement, as well as important ecological services. This plan proposes a vision with wide-reaching benefits, including:

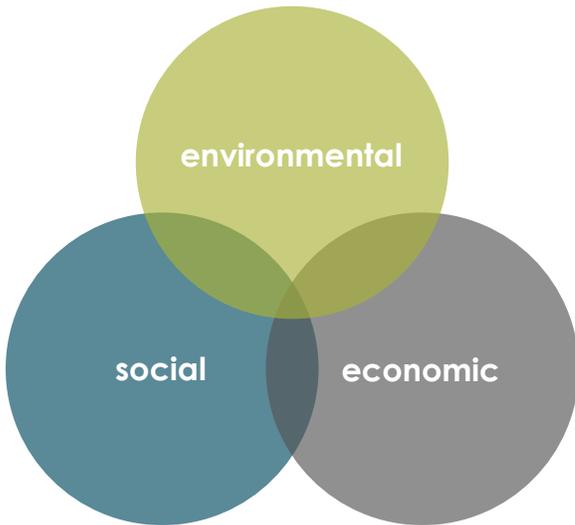
SOCIAL

- **Improved Public Health.** Parks provide locations for outdoor recreation and exercise. Trees and landscape features help clean the urban air and water. Additionally public trails and tree lined streets encourages walking and physical activity.
- **Stress Reduction and Academic Performance.** Parks, open spaces, and plantings in urban areas convey serenity by providing a sensory experience of being surrounded by nature, which helps to reduce stress. Additionally, parks and trees near school grounds facilitate environmental educa-

2 Beyer, Kirsten, Andrea Kaltenbach, Aniko Szabo, F. Javier Nieto, and Kristen Malecki, “Exposure to Neighborhood Green Space and Mental Health: Evidence from the Survey of the Health of Wisconsin,” *International Journal of Environmental Research and Public Health*, March 2014.

3 Kuo, Frances and William Sullivan. “Environment and Crime in the Inner City: Does Vegetation Reduce Crime?” *Environment and Behavior*, Vol. 33 No. 3, May 2001.

4 Stigsdottir, U.K., A.M. Palsdottir, and A. Burls, et al. “Nature-Based Therapeutic Interventions,” *Forests, Trees and Human Health*. Springer, 2011.



tion opportunities and create a healthy setting for learning. Access to green space, opportunities to exercise, and safe pedestrian routes can help students concentrate and focus in school.

- **Community Safety.** Violence and crime rates are lower in areas with nearby trees and landscaping. Furthermore, research has indicated that neighbors have better relationships with each other and that communities are stronger and more cohesive where there is green space, perhaps because people like where they live and feel safer.
- **Community Building.** The presence of a healthy park, planting and pedestrian network, and community-wide efforts to improve public spaces can empower communities to work together to protect and/or expand the pedestrian network, and to build community identity.
- **Walkable Streets.** Shaded paths and trees offer pedestrians a buffer from nearby vehicles, respite from the hot sun, and colorful scenery to enjoy. In addition, trees can provide dramatic view corridors and, when properly planned, facilitate way-finding within an urban area. These are both useful features for a community that wants to attract visitors to the downtown.

ENVIRONMENTAL

- **Water Conservation.** Water in California is valuable and limited. As of 2015, the State is in the fourth year of an extreme drought, considered to be one of the most severe in the last 30 years. Actions are being taken across the State to conserve and protect water resources. Local actions include both water conservation to prevent overuse, as well as water treatment and management to protect water quality. Urban greening, if carefully implemented, can help meet water conservation goals and requirements by emphasizing water-conserving practices, such as low-water use irrigation and drought-tolerant plant species.
- **Wildlife Habitat.** Green infrastructure provides shelter and food for birds and small animals, and root networks are home to a wide array of organisms that provide beneficial soil improvements. A varied plant population supports a wide diversity of habitat, which in addition to being beneficial on a regional and global level, creates a dynamic, educational, and enjoyable environment for humans.
- **Stormwater Management.** Trees and stormwater treatment facilities within parks improve the quality of stormwater by intercepting and filtering stormwater before it reaches the underground water system, thus reducing the total amount of runoff lost to storm drains or contributing to flood events.

- **Improved Air Quality.** Trees and plants can play several roles in improving air quality. The most direct way trees help to improve air quality is by absorbing and filtering air pollutants, such as ozone and nitrogen dioxide, through their leaves or needles. In addition, urban forests reduce air pollution by creating cool microclimates, thereby lowering higher temperatures that can accelerate the production of some air pollutants such as ozone, a precursor to smog. Increased shading can also reduce the demand for air conditioning in buildings, impacting energy need and emissions from energy production at a larger scale. Finally, improved pedestrian and bicycling environments can encourage walking and biking as an alternative to driving, potentially reducing vehicle trips and the associated emissions.
- **Heat Island Mitigation and Temperature Stabilization.** Urban areas can become “urban heat islands” due to the abundance of dark surfaces like asphalt and buildings that absorb and re-radiate the sun’s heat, resulting in higher air temperatures. Green space can reduce this heat island effect by shading parking lots and other surfaces, effectively intercepting the sun’s heat and reducing temperatures through evapotranspiration.

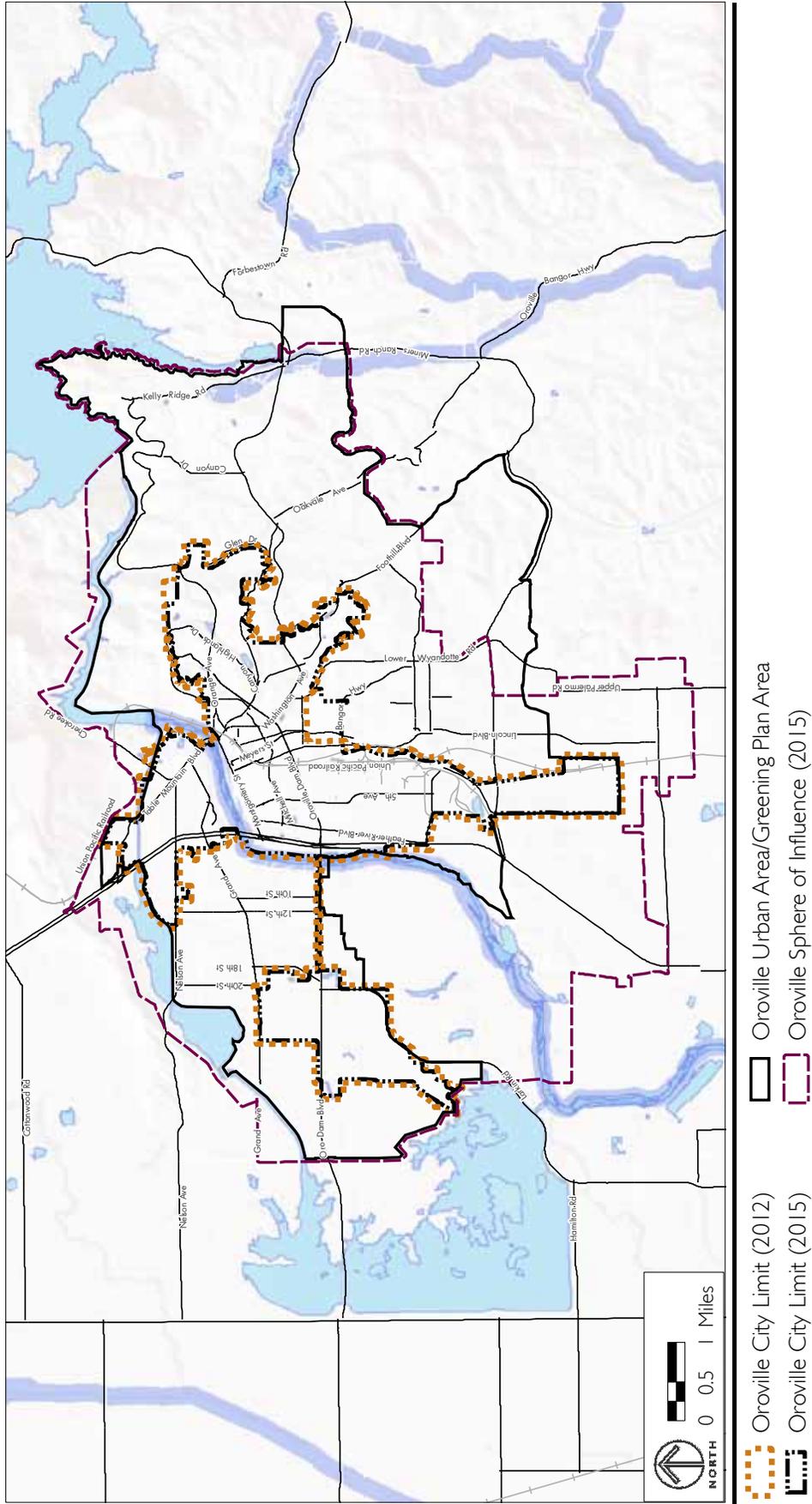
ECONOMIC

- **Energy Conservation and Green Infrastructure.** Trees can help reduce the need for cooling and heating buildings, thereby reducing the cost of operating these systems. In addition, trees are an important component of many green infrastructure projects that reduce costs of stormwater management.
- **Increased Property Value.** Numerous studies have shown a general increase in property value for residential properties near parks and areas with street trees.
- **Increased Activity in Retail Areas.** Small park plazas and street trees can raise the comfort and aesthetic appeal of a shopping street, and thus attract more shoppers to a retail block.

WHAT IS THE OROVILLE URBAN AREA?

The study area for the Plan is the Oroville Urban Area, which encompasses both urbanized and undeveloped lands within the incorporated City of Oroville and surrounding unincorporated Butte County. As shown in Figure 1-1, the Oroville Urban Area encompasses 41 square miles in Butte County. The population of this area is approximately 37,800, and the community is considered severely economically disadvantaged, meaning that Oroville’s median household income is below 60 percent of median household

Figure 3-1: Oroville Urban Area



 Oroville City Limit (2012)
 Oroville City Limit (2015)
 Oroville Sphere of Influence (2015)

income statewide. Oroville's median earnings of \$25,674 are significantly lower than the statewide median of \$37,194, and almost 20 percent of residents live below the poverty level. Oroville has historically served as a center for agriculture, mining, railroads, and manufacturing, attracting resource-based industrial workers, but also creating an unstable job base and a legacy of environmental degradation and inadequate infrastructure.

The Plan includes a focus on the Southside neighborhood, an economically-disadvantaged community located at the edge of the Oroville city limits that is being annexed to the City. Until 2015, this area was unincorporated. Given the high density for an unincorporated community, the lack of City services has been problematic for neighborhood residents. For example, portions of South Oroville have a park acreage ratio as low as 0.01 acres of parks per 1,000 people, and many segments of residential streets are without sidewalks. Yet with car ownership at a low 24 percent of residents, Oroville rivals New York City in pedestrian commuting; currently 5 percent of residents walk to work rather than drive. Because of this historically limited infrastructure and community need, extra attention was given in considering greening opportunities that would improve the quality of life in the Southside neighborhood.

VISION AND GOALS

The urban greening vision and goals are driven by community needs and input, and include ideas specifically identified during the stakeholder interviews and community meetings. These are discussed in more detail in Chapter 2. Together, the goals and vision steered the development of the Urban Greening Plan, and should guide its implementation.

PLAN VISION

Over the course of the planning process, a vision emerged from the community for a greener Oroville area that meets the identified goals for the project:

Oroville is a community that provides safe streets with continuous sidewalks that encourage students to walk to school, shade trees that keep vulnerable residents cool in Oroville's hot summers, and landscaping that greets visitors and encourages them to patronize the historic downtown and other retail areas. Native plantings throughout the community eliminate pests, require minimal water, and support wildlife while beautifying streets, parks, and open spaces. Flooding is reduced through stormwater solutions that are more effective because they replicate natural processes. Residents and visitors of all ages access the area's bountiful recreational opportunities through a complete bicycle and pedestrian network. Adequate and appropriate infrastructure enhances public safety and community pride, and encourages additional investment in the community.

GOALS AND OBJECTIVES

The goals and objectives of the Oroville Area Urban Greening Plan, which are summarized below, were developed to meet both State and local goals of environmental protection and community health.

1 INCREASE PUBLIC HEALTH, COMMUNITY AMENITIES AND QUALITY OF LIFE

- Create new green space
- Increase access to existing green space
- Provide shading to encourage walking and bicycling
- Provide buffers from streets to encourage walking
- Increase access to affordable, fresh food
- Encourage healthy eating habits through agricultural education
- Improve food security with local agriculture
- Clean and green vacant lots and alleys

2 IMPROVE THE LOCAL ECONOMY

- Increase property values
- Increase activity in retail areas
- Provide jobs for local residents
- Encourage private investment

3 IMPROVE GOVERNMENT OPERATIONS

- Reduce infrastructure costs
- Improve stormwater management
- Promote coordination among agencies

4 ENGAGE THE COMMUNITY

- Promote long-term stewardship
- Support community development and empowerment
- Increase positive use of public space, thus reducing crime and vandalism

5 EDUCATE THE COMMUNITY

- Provide information about the multiple benefits of urban greening
- Support environmental and agricultural education

6 PROVIDE OTHER ENVIRONMENTAL BENEFITS

- Improve air quality
- Improve water quality
- Restore habitat (creeks)
- Reduce greenhouse gas emissions
- Adapt to climate change
- Reduce urban summer temperatures

PLAN CONTENTS AND ORGANIZATION

The Plan is divided into three parts: Introduction, Opportunities, and Implementation. Part I, Introduction, includes two chapters that provide an overview of the Plan, establishes the Plan's goals and vision, and outlines the planning process. Part II, Opportunities, is comprised of five chapters that present greening opportunities within distinct themes, including bicycle and pedestrian systems, planting areas and urban forestry, parks and open space, stormwater management, and cleaning and greening vacant areas. Part III, Implementation, provides conceptual site plans for sample greening sites and a discussion of phasing and implementation. A brief description of each chapter is provided below.

PART I: INTRODUCTION

- **Chapter 1, Plan Overview**, provides a summary of and background about the Plan, as well as the goals and vision which guide its development and implementation.
- **Chapter 2, Planning Process**, summarizes the process of developing the Plan, including the community outreach completed.

PART II: OPPORTUNITIES

- **Chapter 3, Bicycle and Pedestrian Systems**, depicts the condition of the existing bicycle and pedestrian facilities, identifies opportunities for strengthening the multimodal system, and provides specific design strategies for the recommended improvements.
- **Chapter 4, Urban Forestry**, focuses on trees and plantings in the community. This chapter also addresses urban forestry management, providing an inventory of the existing urban forest, a summary of its current management, and a vision for enhancing the forest going forward.
- **Chapter 5, Parks and Open Space**, describes existing parks and open spaces, identifies opportunities for creating new parks or enhancing existing spaces, and illustrates potential improvements.
- **Chapter 6, Stormwater Management**, identifies areas that experience flooding and presents best practices and strategies for addressing stormwater issues using low-impact design (LID) features.
- **Chapter 7, Clean and Green: Vacant Lots, Alleys, and Industrial Sites**, describes the types of sites that, if cleaned up, would be ideal sites for urban agriculture, pedestrian circulation, and sustainable stormwater infrastructure demonstration.

PART III: IMPLEMENTATION

- **Chapter 8, Design Concepts**, provides conceptual greening designs for six sample sites selected during the planning process.
- **Chapter 9, Planting Design**, provides planting design guidelines and maintenance recommendations to ensure that new plantings are a long-term asset.
- **Chapter 10, Phasing and Implementation**, recommends potential phasing and programmatic solutions for urban greening, as well as community resources and funding sources for carrying out the vision presented in the Plan.

The planning process for the Oroville Area Urban Greening Plan involved collaboration between County, City, FRRPD, special districts, and community representatives, along with several workshop opportunities for community members to suggest ideas and make recommendations. Participants in the process systematically developed a vision for a greener Oroville, uncovered opportunities for greening projects, evaluated and prioritized greening opportunities, created design concepts, and established a clear plan for implementing key changes. Butte County, in close coordination with its partners, the City of Oroville, and the FRRPD, led this process. The process was also guided by a “Green Team” of agency and local experts which is discussed below. This section provides a summary of the process for developing the Oroville Area Urban Greening Plan.

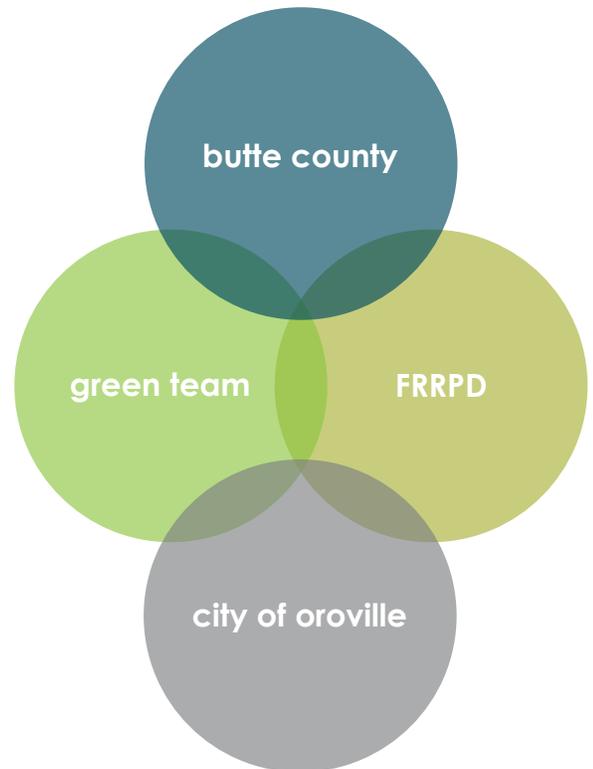
VISION AND GOAL DEVELOPMENT

The purpose of the Urban Greening Grant Program that funded this Plan is to support greening that meets environmental goals and develops healthier communities. Butte County’s application for these funds outlined several objectives that would both meet this purpose and serve residents of the Oroville area. Those objectives formulated the baseline goals that guided the development of the Plan. Through continued public conversation over the course of the planning process, the community’s vision was clarified and strengthened.

KICKOFF MEETING AND AREA TOUR

To initiate the project, representatives from ten different agencies, departments, and organizations attended a kickoff meeting and area tour. The group included representatives from Butte County, the City of Oroville, FRRPD, the Lake Oroville Area Public Utility District (LOAPUD), the Butte Local Agency Formation Commission (LAFCO), and PlaceWorks, the consultant on this Plan.

At the kickoff meeting, attendees provided comments and suggestions pertaining to the project goals, available data, stakeholders, and partners. The tour provided an opportunity to visit areas of the community that residents and agencies have identified in the past as areas for potential greening intervention and discuss initial thoughts on the area’s urban greening needs.





Green Team Tour

CONVENING A GREEN TEAM

The Butte County Development Services Department convened a “Green Team” of local experts to consult on the Plan. The Green Team included representatives from various parks, police, fire, public works and utilities, environmental and public health, economic development, and planning and development agencies. As partner agencies, Butte County, the City of Oroville, and FRRPD were represented, along with regional agencies, such as the Butte County Association of Governments and Butte LAFCO, and special districts like LOAPUD and El Medio Fire Department. The Green Team attended the kickoff meeting.

PRELIMINARY GOALS AND OBJECTIVES

As noted above, the environmental and public health goals of the Urban Greening Grant Program formed the basis for the Oroville Area Urban Greening Plan’s goals and objectives. The Green Team provided additional recommendations, and these were combined to create a comprehensive set of Plan goals and objectives, which are listed in Chapter 1.

EXPLORING GREENING OPPORTUNITIES

To find out what areas of the community are in need of greening interventions, the Green Team, community leaders, and the community at large were invited to submit ideas about sites that the Plan should identify as greening opportunities, i.e. specific sites around the urban area that would benefit from change, including parks, vacant lots, streets, drainage channels, and other locations and infrastructure. Participants were also invited to suggest specific changes they felt would be appropriate for those sites. To assess the community’s greening needs, these suggestions were added to baseline information about the current status of parks, tree canopy, sidewalks, bicycle facilities, flooding, and other data. This resulted in a comprehensive list of greening opportunity sites that were also mapped.

GREEN TEAM

During the kickoff meeting and subsequent outreach from the County, the Green Team provided many greening opportunity ideas. The greening opportunities suggested by the Green Team at the kickoff meeting contributed to the initial list of greening opportunities presented to the community, and Green Team members continued to add suggestions throughout the process that were incorporated into the comprehensive list of opportunity sites.

STAKEHOLDER INTERVIEWS

At the outset of the project, the County, in collaboration with the City, FRRPD, and Green Team, identified stakeholders that should be consulted. The resulting list included representatives from local governments, tribes, schools, cultural organizations, utilities, faith-based organizations, bicycle activists, and other key agencies. These stakeholders were asked an identical list of questions to elicit ideas for greening opportunities. Topics included existing green features that could be enhanced, missing connections between green areas, pedestrian and bicycle infrastructure, schools, parks, community gardens, vacant sites, flooding, cultural sites, economic development, and funding.

COMMUNITY INPUT

Two workshops were held to solicit ideas from the community on greening opportunities. Both workshops started with a presentation about the Urban Greening Plan, included a tour of the Plan area where residents could point out specific sites they considered opportunities for urban greening, and involved a return to the workshop site to discuss those and other potential opportunities.

The first workshop, held at the Veterans Memorial Hall in June 2013, was a citywide workshop, with three separate tour options: the Southside neighborhood, the downtown, and a van tour of a larger area focusing on schools, parks, regional connections. The second workshop, held at the African-American Cultural Center in October 2013, targeted the Southside neighborhood. Residents of this area have particularly low car ownership rates, so the Cultural Center opened its doors to host this second workshop in the neighborhood, where it would be easily accessible. The tour covered the entire Southside neighborhood.

During 2013 and 2014, County staff also solicited feedback about greening opportunities from the following organizations:

- Lake Oroville Area Garden Club
- Osher Life-Long Learning Institute - Oroville
- Oroville Sunrise Rotary
- Oroville Salmon Festival
- City of Oroville Parks Commission
- Butte County Planning Commission

PRELIMINARY LIST OF OPPORTUNITY SITES

A comprehensive list of potential greening opportunities was developed from these workshops, suggestions, and the baseline analysis. The full list is shown in Appendix A, Opportunities Matrix, and are organized into the following categories:

- Recreational Trails
- Pedestrian and Bicycle Systems
- Planting Connections
- Planting Sites
- Existing Parks and Open Spaces
- New Parks and Open Spaces
- Stormwater Management Areas
- Vacant and Industrial Sites to “Clean and Green”



First Community Workshop



Second Community Workshop

EVALUATING GREENING OPPORTUNITIES

After compiling the exhaustive list of greening opportunities, the next step was to prioritize them. Each site on the list represents an opportunity for improvement to someone in the community. However, the purpose of the Urban Greening Plan is to create an implementable strategy that targets feasible projects that will best meet the Plan's goals and have the greatest positive public impact.

EVALUATION MATRIX

A matrix was developed to evaluate each greening opportunity and determine where it should rank in priority for implementation. In addition to consulting the Green Team and the community at large, information about possible funding sources was compiled to help understand the feasibility of funding the various projects, as well as to provide a reference for implementation. The criteria used to evaluate the full list of greening opportunities were technical feasibility, funding feasibility, community and stakeholder interest, ability to provide numerous benefits by meeting multiple goals, issue magnitude, and cost. A detailed description of these criteria is included in the introduction to Part II of this Plan.

GREEN TEAM

The Green Team lent their expertise to the evaluation, particularly in assessing the sites and opportunities based on their experience of technical feasibility and cost. They provided written comments on the evaluation matrix, including suggestions for how sites should be ranked.

COMMUNITY INPUT

A third community workshop was held in November 2013. Attendees were shown the preliminary evaluation matrix and asked to discuss, in small groups, whether they agreed with or wanted to change the evaluation and prioritization.

Attendees were also given a booklet that described design concepts that could be used to green the various opportunity sites, and asked to discuss, write, or draw the design solutions they thought were appropriate. This feedback was incorporated into the final list of greening opportunities and design concepts.

PRIORITY GREENING OPPORTUNITIES

A list of priority greening opportunities was developed iteratively by the County, City, and FRRPD considering Green Team and community input. The final list of priority opportunities is included in the introduction to Part II, and each priority opportunity is described in detail in the topical chapters that follow (Bicycle and Pedestrian Systems; Planting Areas, Parks and Open Space; Stormwater Management; and Clean and Green: Vacant Lots, Alleys, and Industrial Sites). The topical chapters also provide best practices and possible design solutions that could be used to green the priority sites.

PLAN DEVELOPMENT

The Oroville Area Urban Greening Plan is the result of the process described above. The Plan integrates the robust community and stakeholder input into the comprehensive list of greening opportunities and an in-depth exploration of the priority opportunities, including typical design solutions, conceptual designs, and implementation steps.

CONCEPTUAL SITE DESIGNS

Out of the prioritized greening opportunities, the County, City, and FRRPD selected six key sites to receive conceptual designs, as shown in Chapter 8. These designs integrated the community feedback on design concepts received during the second communitywide workshop. Those concepts were further developed and illustrated in plan view, in section view, and/or as “before and after” visual simulations.

URBAN FORESTRY MANAGEMENT PLAN

During the course of data collection and analysis, an opportunity arose to conduct additional analysis of the area’s urban forest. Additional funding was acquired to amplify the Plan’s discussion of greening via street plantings. Therefore, the Plan includes a management plan for Oroville’s urban forest, which is based on an inventory of City street trees recently conducted by the City. This additional work was consistent with the feedback heard from the community throughout the process.

PLANT PALETTE

Feedback from community members also showed strong interest in limiting plantings to the most hardy and drought-tolerant species and lowest possible use of water. The Plant Palette (Appendix D) was therefore revised and updated to reflect these issues.

PHASING AND IMPLEMENTATION

The evaluation conducted to select the priority greening opportunities led to a phasing plan that allows the County, City, and FRRPD to focus first on the projects that are most feasible, provide the most benefit to the community, have obtainable funding, and are likely to garner support from community partners.

PLAN ADOPTION

The Draft Oroville Area Urban Greening Plan was circulated for public review from July to September 2015. Opportunities for the public to review and comment on the draft Plan included a community workshop, a Butte County Board of Supervisors workshop, and review by the Green Team.

The Plan was then revised based on the feedback received through these venues, and published in November 2015. In December 2015, the Plan was reviewed and approved at a Butte County Board of Supervisors hearing, Oroville City Council meeting, and a meeting of the Feather River Regional and Parks District Board.



part II opportunity sites

Part II of the Urban Greening Plan presents the greening opportunities that were identified through the planning process within five distinct themes: bicycle and pedestrian systems, planting areas and urban forestry, parks and open space, stormwater management, and cleaning and greening vacant areas. Each theme is explored in detail in the five separate chapters that comprise Part II. Within each chapter, the priority greening opportunities pertinent to that theme are presented, along with design strategies and solutions that are tailored to the opportunities discussed in the chapter.

This introduction to Part II provides background information about the process to identify the priority greening opportunities that are presented in the subsequent chapters, as well as a summary of all identified priorities.

EVALUATING OROVILLE'S GREENING OPPORTUNITIES

With the help of the community, the Green Team, and other community stakeholders, a comprehensive list of over one hundred opportunities for greening was identified in the Oroville Urban Area. Because there are finite resources to develop these opportunities, to be effective, the Plan must identify the opportunities that will best meet the project goals and benefit the community, and then focus attention on how to implement those priority projects. To narrow the comprehensive list of greening opportunities into a concise list of key priorities, a refined matrix was developed that evaluates each opportunity site based on a variety of criteria.

EVALUATION CRITERIA

The complete evaluation matrix is provided in Appendix A, Opportunities Matrix, and the resulting list of priority greening opportunities is shown on page 24. The following criteria were used to determine where each opportunity should rank in priority for implementation.

TECHNICAL FEASIBILITY

The relative feasibility of each greening opportunity was assessed based on the technical issues related to its implementation. Technical evaluation criteria can vary by type of project and project site, and include the following: conflicts with existing or planned infrastructure; potential for combining the greening opportunity with another project; difficulty of site acquisition or site control; and complexity of coordination required between jurisdictions and agencies.

FUNDING FEASIBILITY

This metric considers the relative number of grant programs that are available, as well as the amount of funding available. Information about possible funding sources was compiled to help understand the feasibility of funding the various projects, as well as to provide a reference for implementation. Projects in the Southside are ranked higher than similar projects located elsewhere due to their possible eligibility for Community Development Block Grant (CDBG) funds. Projects on privately-owned sites are ranked lower than those on public sites because of the limited number of grants for acquisition. Park upgrade projects are ranked higher than new park construction projects because of

the availability of small pots of money for park projects. Finally, recreation projects, particularly those that are focused on the river and tourism, could be eligible for the Supplemental Benefit Fund grant program that is managed by the City, and therefore received higher funding feasibility rankings. For a description of the grant programs considered in this evaluation, see Chapter 10.

COMMUNITY/STAKEHOLDER INTEREST

To determine the relative rankings for community interest, this criterion considers the input the County received via stakeholder interviews, community workshops, and other interviews and outreach. High rankings indicate that many community members have expressed interest in the greening opportunity or similar type of project, location, or addressed need, while Medium or Low rankings indicate that several or only one or a few community members or stakeholders expressed interest, respectively.

MULTI-BENEFITS

This metric considers the extent to which each greening opportunity meets the goals of the Urban Greening Plan. A High ranking indicates that four to six goals are met; Medium indicates that two to three goals are met; Low indicates that one goal is met. See Chapter 1 for the list of goals that were considered.

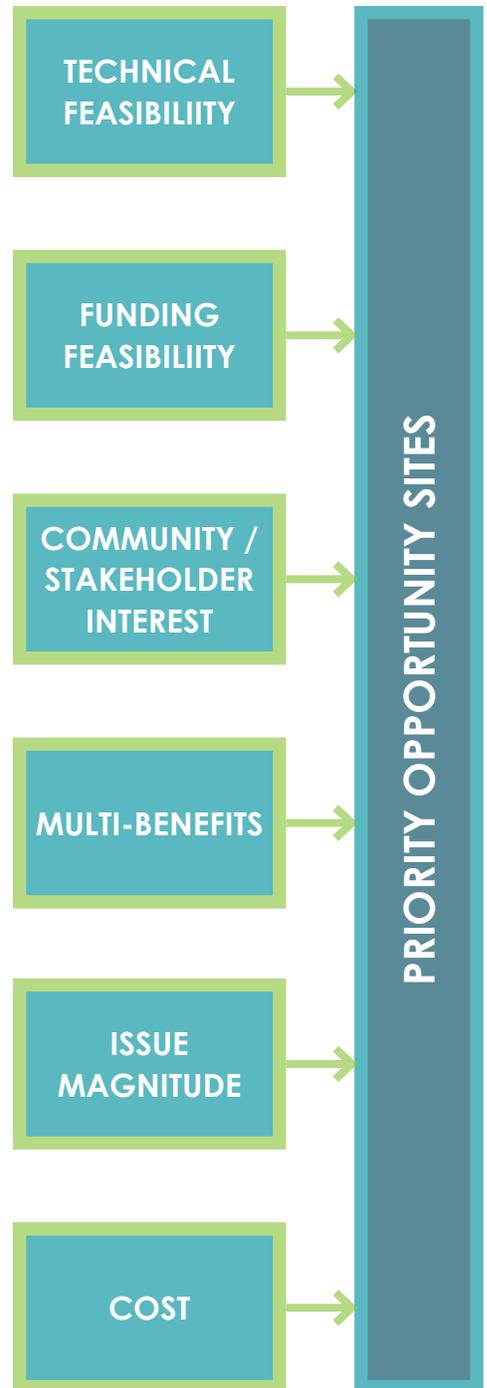
ISSUE MAGNITUDE

The relative rankings are based on the magnitude of the issue or need that is addressed by the greening opportunity. High or Medium rankings indicate that the addressed issue or need has more significant repercussions for the community than those ranked Low. Examples of opportunities receiving High rankings include those addressing safety, improvements to the economically-disadvantaged Southside community, and economic development in the Downtown.

COST

The relative rankings provided in the matrix are based on the following evaluation criteria.

- Low-Cost: Minor or relatively superficial upgrades to existing facilities, such as landscaping or tree plantings.
- Moderate: Significant upgrades to existing facilities, or those not requiring substantial infrastructure, such as reconfiguring a roadway to include planting strips. This ranking also applies to major infrastructure projects that cover a relatively small extent.
- Prohibitive: Major infrastructure, public open space, or other development projects.



PRIORITY GREENING OPPORTUNITIES

Based on the evaluation described above, the resulting list of priority greening opportunities is provided below.

PEDESTRIAN AND BICYCLE SYSTEMS

Recreational Trails

- Connect the gap in the Brad Freeman Trail under the Green Bridge
- Connect Nelson Park to the Thermalito Forebay Picnic Area/Aquatic Center
- Connect the gap between the Brad Freeman Trail and Highway 162

Safe Routes to Schools

- Fill in sidewalk gaps along Fallbrook, Burlington, Columbia, and Wyandotte Avenues
- Improve streets around Las Plumas High School and nearby elementary schools
- Safely link Thermalito schools with residential areas east of Highway 70
- Create a Safe Route to School below the power lines between the Southside neighborhood and Las Plumas High School

Other Pedestrian and Bicycle Improvements

- Improve Myers Street through the Southside neighborhood
- Improve Oro Dam Boulevard between Highway 70 and Spencer Street

PLANTING CONNECTIONS AND SITES

- Add street trees and plantings along Myers Street south of Oro Dam Boulevard
- Beautify the river and levee in the downtown
- Shade El Medio Fire Department event site

PARKS AND OPEN SPACE

- Plant new trees and update the irrigation system at the Nelson ballfields complex
- Build a community garden at the Southside Community Center.

STORMWATER MANAGEMENT

- Address the stormwater system along Oro Bangor Highway and Ithaca Street
- Manage drainage problems at Myers Street and Wyandotte Avenue
- Manage drainage on and at the end of Elgin Road

CLEAN AND GREEN VACANT LOTS AND INDUSTRIAL SITES

- Clean and green vacant Southside lots
- Clean and green Southside alleys

These opportunities are mapped and described in greater detail in the subsequent chapters.

INTRODUCTION

Streets are an important focus of the Urban Greening Plan. A well-designed street can encourage residents and visitors to walk or bicycle; provide access to schools, jobs, shops and recreation; encourage business and real estate investment; provide space for community interaction; and support water quality and stormwater management with appropriate plantings and drainage.

Streets that include sidewalks, bike paths, landscaping, shading and stormwater management are considered “complete” streets that serve the needs of all users, not just automobiles. They contribute to a “multi-modal” transportation network, one that moves people between home, work, jobs, services, school, recreation, and shopping via more than one means including, but not limited to, driving, walking, using transit, bicycling, skateboarding, and using a wheelchair or mobility scooter. This is beneficial both for people who have limited choice in their mode of transportation, such as the very young and those with mobility challenges, as well as people who want to participate in active forms of transportation for health and recreation. This is also beneficial for communities concerned with reducing vehicle miles traveled and the associated injury accident rates and greenhouse gas emissions.

Many streets in the Oroville Urban Area are missing one or many of these complete streets elements, particularly in the Southside neighborhood. Improvements that contribute to complete streets for safety, comfort, economic development, water management, and multi-modal transportation are all within the scope of urban greening. Although all of the elements such as sidewalks and landscaping contribute to complete streets, the landscaping, shading and stormwater management components are addressed in separate sections of this Urban Greening Plan. This section focuses on the pedestrian and bicycle accessibility of Oroville’s streets.

Although they are separate from streets and often considered only for their recreational value, recreational trails can also provide a means of transportation to school, work, or other daily locations. In addition, recreational trails provide opportunities for residents to be active in their outdoor environment, improving the overall health of the community. These trails (e.g. bike trails) also attract recreational visitors from the region, which helps to boost the local economy.

This section addresses these recreational trails in addition to street-based bicycle and pedestrian routes.



Existing Street Conditions in the Oroville Urban Area



Existing Street Conditions in the Southside Neighborhood



Existing Street Conditions Inside the City Limits of Oroville



Corridor with Pedestrian and Bicycle Opportunities.

EXISTING CONDITIONS

Figure 3-1 shows that although many bicycle routes are planned in the Oroville Urban Area, the bulk of the existing routes consist of recreational trails on the outskirts of town. Because these existing trails are along rural and scenic routes separate from the urban core, they are typically used for recreation only. The planned routes focus on connecting existing trails with neighborhoods inside and outside the city, which would allow residents to use them for transportation purposes, as well as gain more access to trails for recreation.

Safe, continuous, and comfortable pedestrian routes to everyday destinations like schools, shopping, and parks are similarly lacking in Oroville. While most neighborhoods inside the city limits have sidewalks, neighborhoods in the unincorporated county, such as the Southside neighborhood, have intermittent sidewalk coverage, as shown in Figure 3-2. Streets within the unincorporated portion of the urban area often do not have consistent sidewalks; they change sides or disappear from block to block, even in areas that are significant routes for students walking to school.

RECOMMENDATIONS

GREENING OPPORTUNITIES

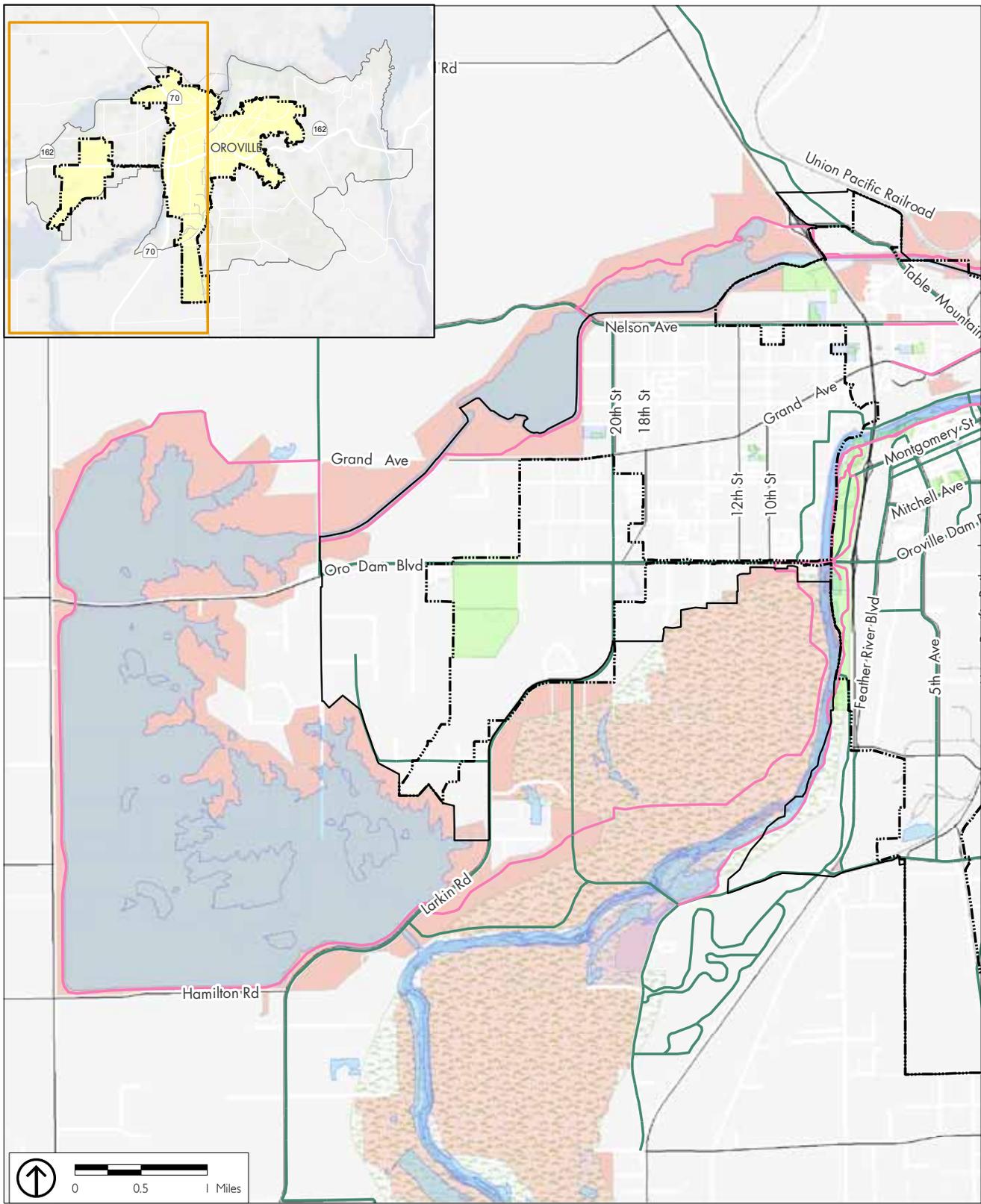
The corridors identified in this section as pedestrian and bicycle opportunities combine a number of safety, beautification, and stormwater improvements to achieve economic, health, safety, and environmental goals along key Oroville area streets. The identified opportunities also include corridors that are off-street, providing recreational access and commuting opportunities on routes that are dedicated to bicycle and pedestrian transportation.

In addition to corridor improvements that are targeted to the community as a whole, there are specific corridors that can be enhanced to improve the lives of children who can walk or bicycle to school (additionally providing benefits to others who use them). Safe Routes to Schools grants provide funds that are dedicated to making walking and bicycling to school safer and more attractive choices for children, improving student safety and encouraging active and healthy lifestyles. The City has received a Safe Routes to School grant for improvements to Oro Dam Boulevard and Stanford Avenue. The County received a similar grant in 2015 for improvements around the Oakdale Heights School. The greening opportunities that address Safe Routes to Schools may involve similar improvements to those in other categories, such as sidewalk improvements, but specifically address the safety of school children.

Because there are already extensive recreational trails in and around Oroville, particularly around the Lake Oroville State Recreation Area, the primary opportunities for recreational trails are focused on improving connections between these trails and the urban area, as well as addressing trail gaps and trail maintenance. For improving recreation opportunities and Safe Routes to School, the community recommended expanding the pedestrian and bicycle trail network in the foothills, over the Feather River, connecting Lake Oroville with the downtown, and along utility and railroad rights-of-way.

Figure 3-3 shows all the pedestrian and bicycle systems opportunities that the community has identified and highlights the priority opportunities.

Figure 3-1: Existing and Planned Bikeways (west Oroville Urban Area)



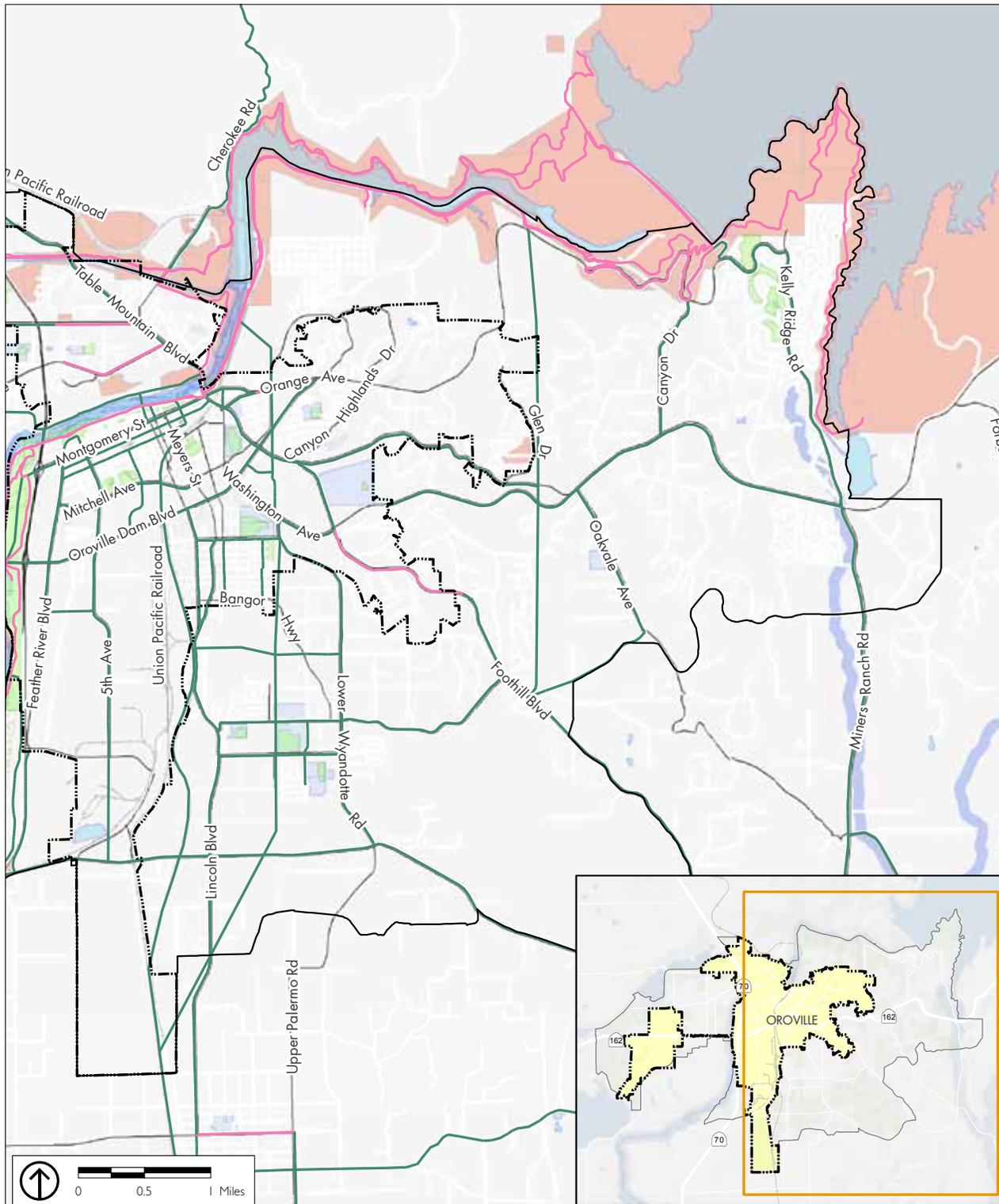
- Bikeways
- Existing
- Planned
- Parks & Ballfields
- Schools
- Oroville Wildlife Area

- State of California Department of Fish and Wildlife Lands
- Other State Owned Land

Source: Butte County 2013 and BCAG 2012.

- Oroville Urban Area
- Oroville City Limit

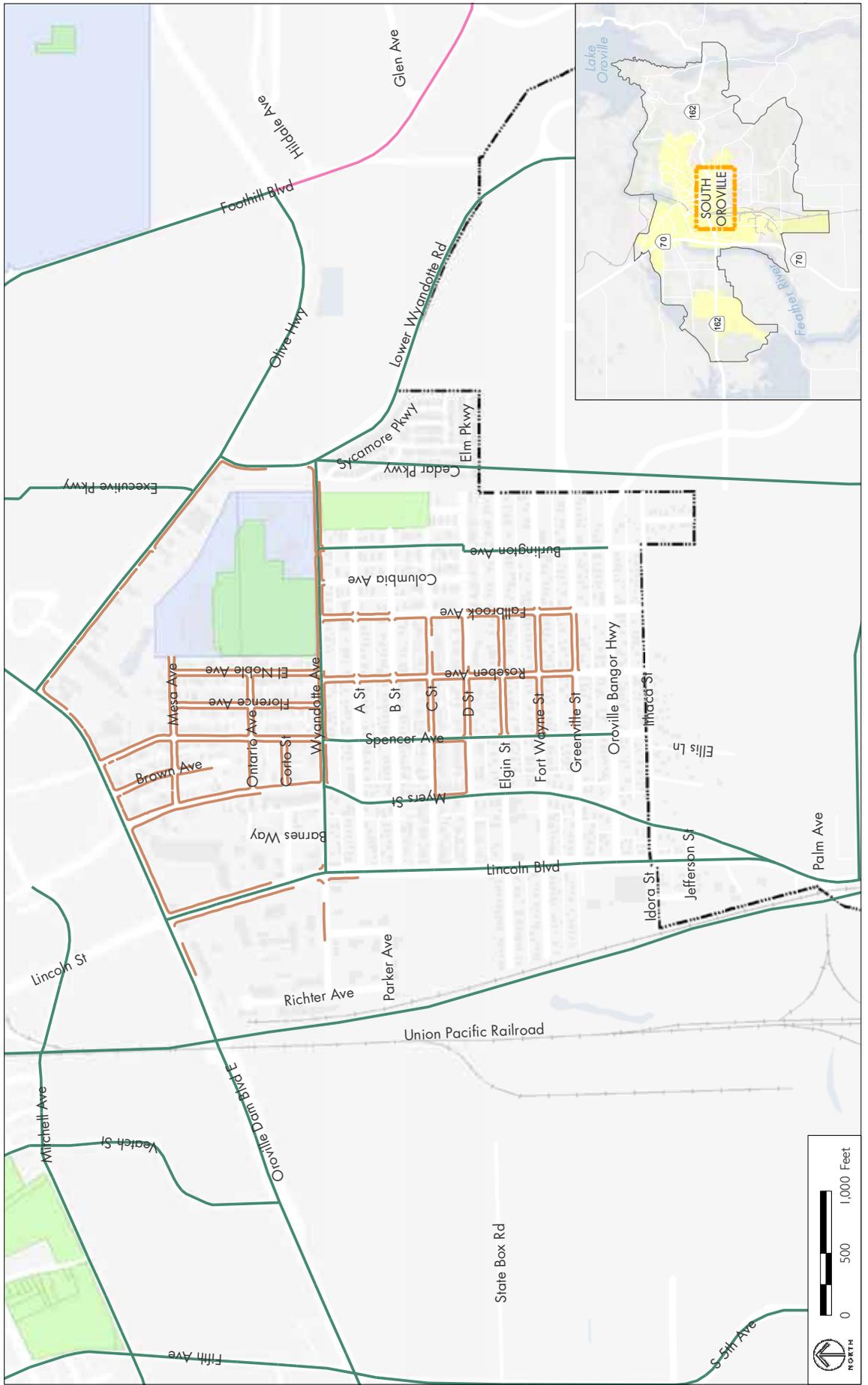
Figure 3-1: Existing and Planned Bikeways (east Oroville Urban Area)



- | | | | |
|----------|------------------------|---|---------------------|
| Bikeways | Parks & Ballfields | State of California Department of Fish and Wildlife Lands | Oroville Urban Area |
| Existing | Schools | Other State Owned Land | Oroville City Limit |
| Planned | Oroville Wildlife Area | | |

Source: Butte County 2013 and BCAG 2012.

Figure 3-2: Existing and Planned Bikeways and Sidewalks - South Oroville



Source: Butte County 2013 and BCAG 2012.



Gap Between the Brad Freeman Trail under the Green Bridge

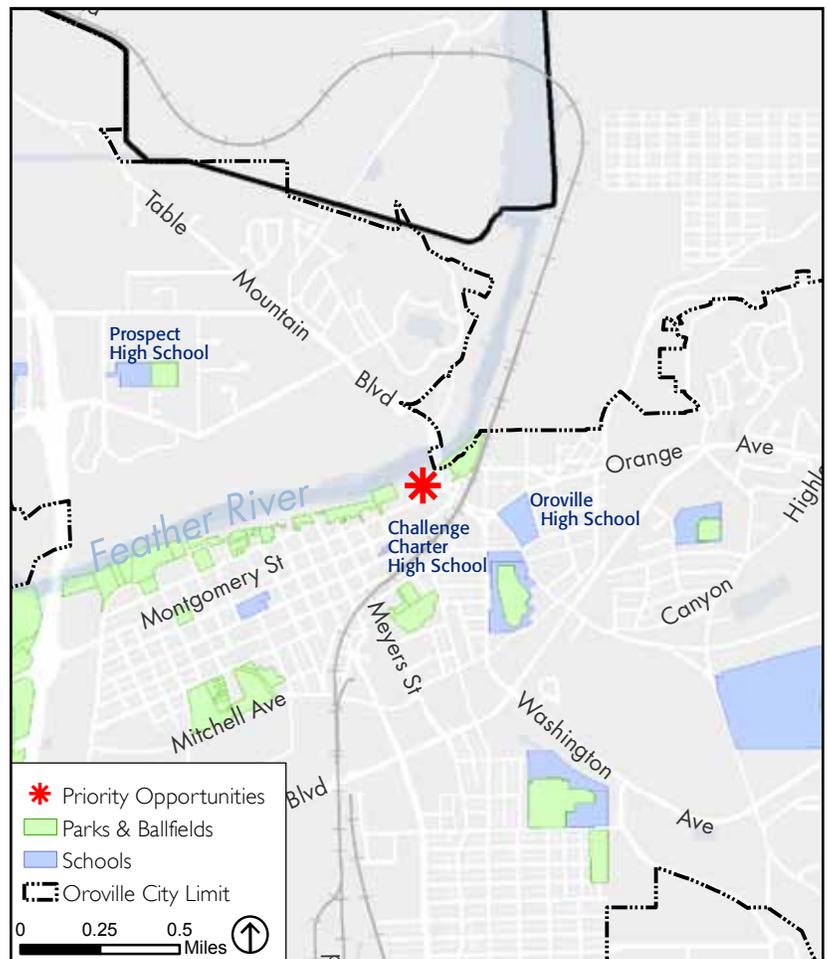
PRIORITY GREENING OPPORTUNITIES

The County, City, and FRRPD have identified the following priority pedestrian and bicycle opportunities in the urban area.

RECREATIONAL TRAILS:

Connect the Gap in the Brad Freeman Trail under the Green Bridge

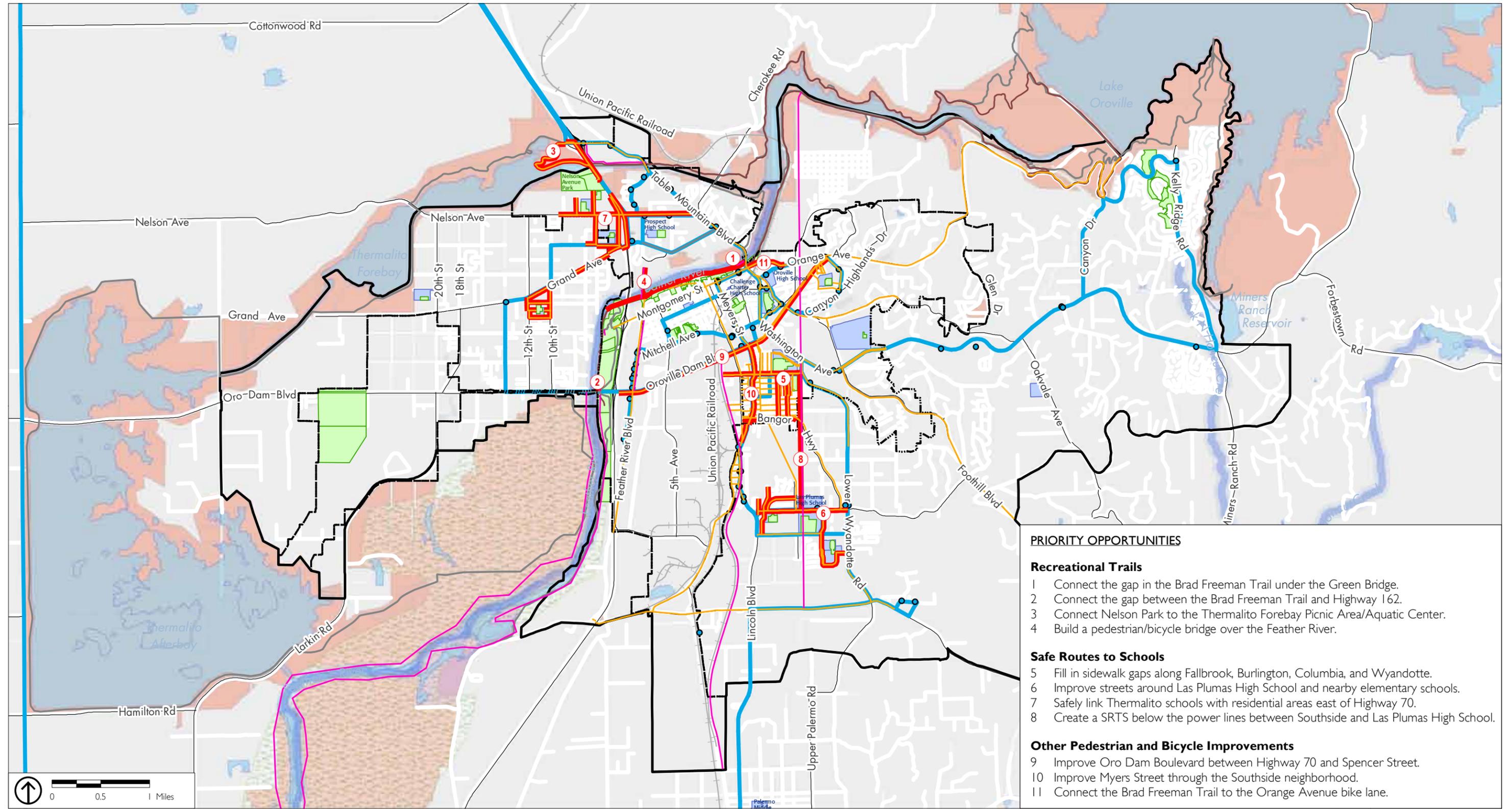
The Brad Freeman Trail is a pedestrian and bicycle trail that provides connections to parks, wildlife, and recreation areas. The trail is intended to be a loop along the Feather River and around the Thermalito Forebay and Afterbay, but there is currently a gap in the trail as it runs under the pedestrian and bicycle bridge adjacent to Table Mountain Boulevard (known as the “Green Bridge”), just behind the planned Memorial Park, between the Veterans Hall and the Nature Center. Because this is a critical link to provide mobility and recreation both in the city and for the FRRPD, there is strong community interest in connecting this gap to complete the loop. During 2014, the FRRPD received funding from the Supplemental Benefits Fund (discussed in Chapter 10) for



Priority Opportunity Site:

Connect the Gap in the Brad Freeman Trail under the Green Bridge

Figure 3-3: Bicycle and Pedestrian System Opportunities



Greening Opportunities
 Pedestrian/Bicycle System
 Recreational Trails
 Priority Trail, Pedestrian, and Bicycle System Opportunities

● Bus Stops
 — Existing Bikeways
 — Brad Freeman Trail
 [Dashed Box] Oroville City Limit
 [Solid Box] Oroville Urban Area
 [Green Box] Parks and Ballfields
 [Blue Box] Schools
 [Light Green Box] Oroville Wildlife Area
 [Purple Box] State of California Department of Fish and Wildlife Lands
 [Orange Box] Other State Owned Land

Source: Butte County 2013 and BCAG 2012.

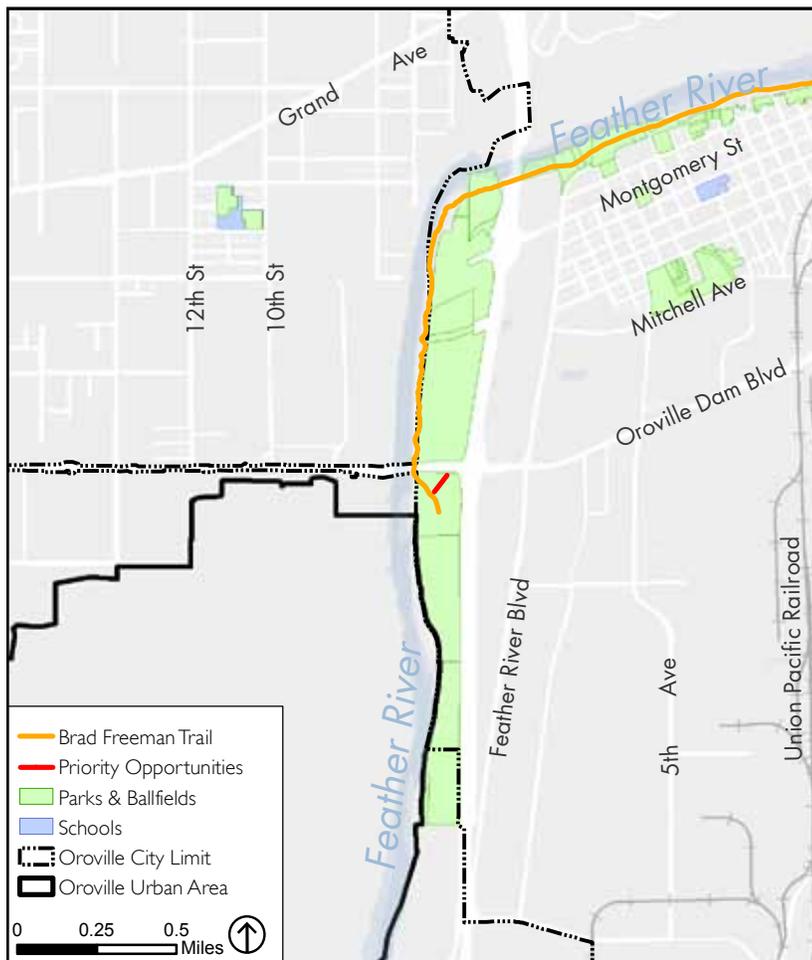
the design of this segment of the trail. This portion of the trail will require right of way access, and, as referenced in the Design Guidelines section of this chapter, needs to meet ADA standards. As of 2015, the FRRPD has developed a design for this section of the trail, to include an overlook with river views, an interpretive panel and bench. Review of the design and environmental impacts are underway.

Connect the Gap between the Brad Freeman Trail and Highway 162

The Brad Freeman Trail runs under the Highway 162/Oro Dam Boulevard bridge and over the Feather River, just west of Highway 70. However, there is no formal connection that allows pedestrians and bicyclists to directly access the Trail, and as a result, Riverbend Park, from this major roadway. There is currently an informal trail that provides access, but the trail is unpaved, unmaintained, and unmonitored, and there are homeless encampments that discourage people from using it. Formalizing this trail would create a better connection to Riverbend Park and the Brad Freeman Trail.



Gap Between the Brad Freeman Trail and Highway 162



Priority Opportunity Site:

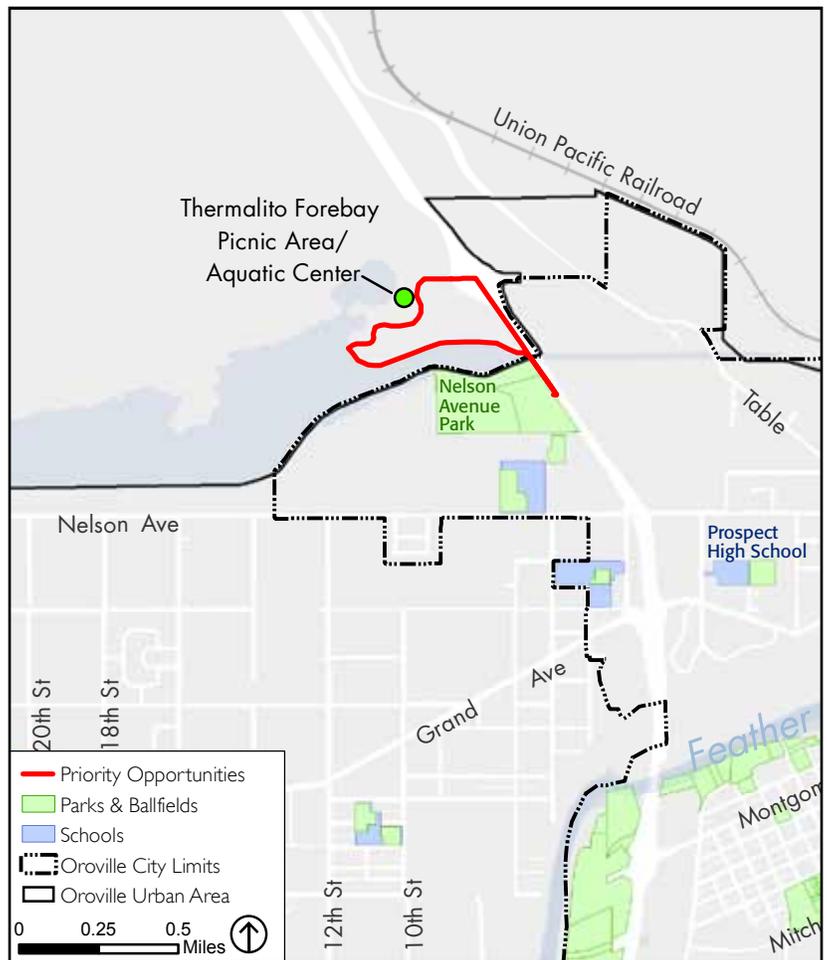
Connect the Gap between the Brad Freeman Trail and Highway 162



Gap Between Nelson Park and the Thermalito Forebay Picnic Area/Aquatic Center

Connect Nelson Park to the Thermalito Forebay Picnic Area/Aquatic Center

Despite being adjacent, Nelson Park and the Thermalito Forebay Picnic Area/ Aquatic Center currently cannot be used as a continuous park because they are separated by a canal. The canal is bridged only by Highway 70, which does not allow pedestrian and bicycle access. This priority opportunity involves constructing an 8- to 12-foot-wide path to connect Nelson Park to the Thermalito Forebay Picnic Area/Aquatic Center, including a bridge over the canal. Not only would this improvement connect the Nelson complex and the potential future water park at the Forebay, making more effective use of the two parks, but it would also provide a connection for all Thermalito residents to safely access the Forebay. While the cost and technical feasibility of building a bridge over the canal (including coordinating with the State) make this project challenging, there is high community interest in this connection, and the project has been considered for support from the Supplemental Benefits Fund.



Priority Opportunity Site:

Connect Nelson Park to the Thermalito Forebay Picnic Area / Aquatic Center

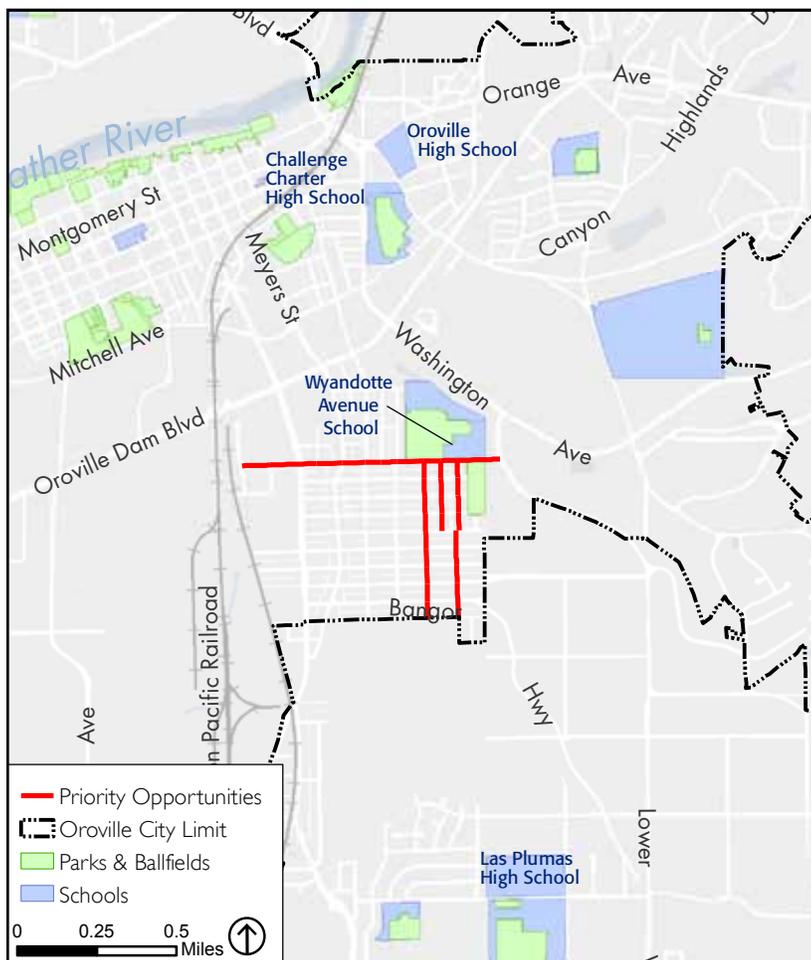
SAFE ROUTES TO SCHOOLS:

Fill in Sidewalk Gaps along Fallbrook, Burlington, Columbia, and Wyandotte Avenues

While Southside is a dense residential neighborhood, its location just outside of the City's service area (until 2015) has meant that sidewalks are not always continuous or complete. Some blocks have sidewalks, while others don't. This results in residents and school children walking in streets or along unsafe or uneven routes. Fallbrook, Burlington, Columbia, and Wyandotte Avenues have all been identified as streets within the Southside neighborhood that are important routes that children use to get to school, but lack sidewalks in certain key areas. Additionally, many of the areas that do have sidewalks have minimal shading and drainage issues that both hinder students from walking to school safely and comfortably in both sun and rain. This priority opportunity will fill in the sidewalk gaps along the identified streets, add appropriate shading, and manage runoff with low-impact design techniques.



Sidewalk Gap in the Southside Neighborhood



Priority Opportunity Site:

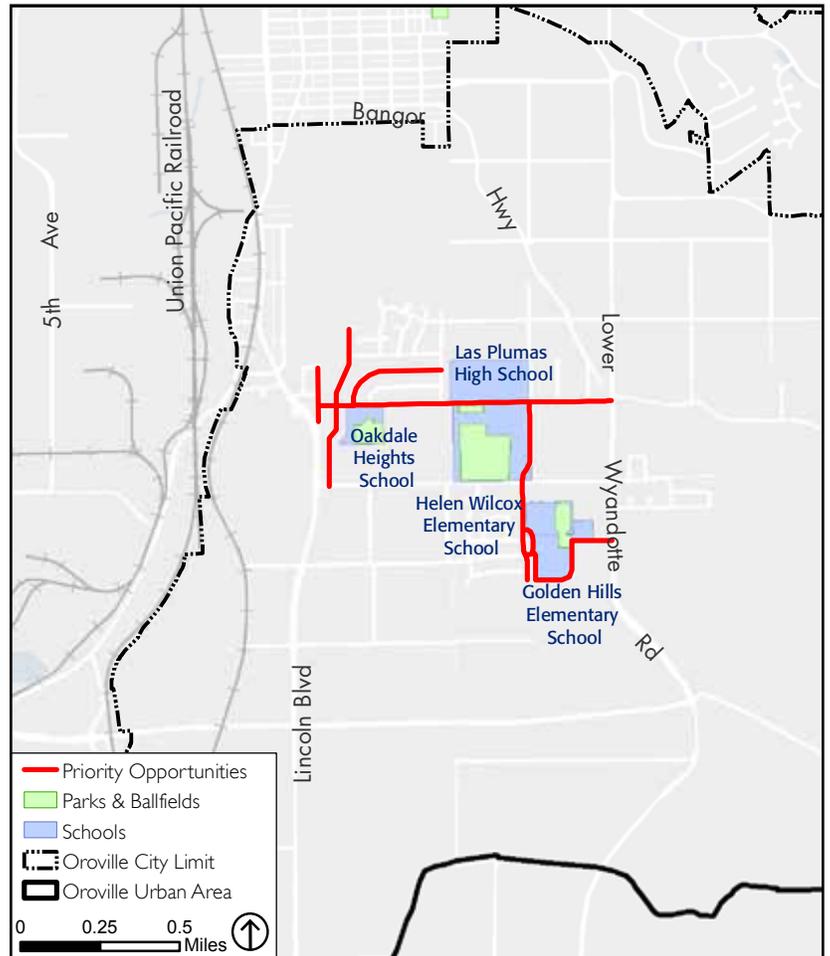
Fill in Sidewalk Gaps along Fallbrook, Burlington, Columbia, and Wyandotte Avenues



Existing Street Conditions Around Las Plumas High School

Improve Streets around Las Plumas High School and Nearby Elementary Schools

Las Plumas High School is located along Las Plumas Avenue, south of Oroville and the Southside neighborhood. There are several elementary schools within a walkable distance from Las Plumas High School, including Oakdale Heights, Helen Wilcox, and Golden Hills Elementary Schools. Many high school students walk younger siblings to these nearby elementary schools, yet the roadway connections lack sidewalks and/or shade. In particular, Las Plumas Avenue has intermittent sidewalks, and those sidewalks tend to be narrow and alternate between different sides of the street from block to block. The community is interested in installing sidewalks, bike paths, and shade trees on Las Plumas Avenue, Autrey Lane, and surrounding residential streets, as well as providing a pedestrian island in front of Las Plumas High School to help students cross the street from the sidewalk and the parking lot that face the school. This priority greening opportunity is also explored through conceptual designs presented in Chapter 8.

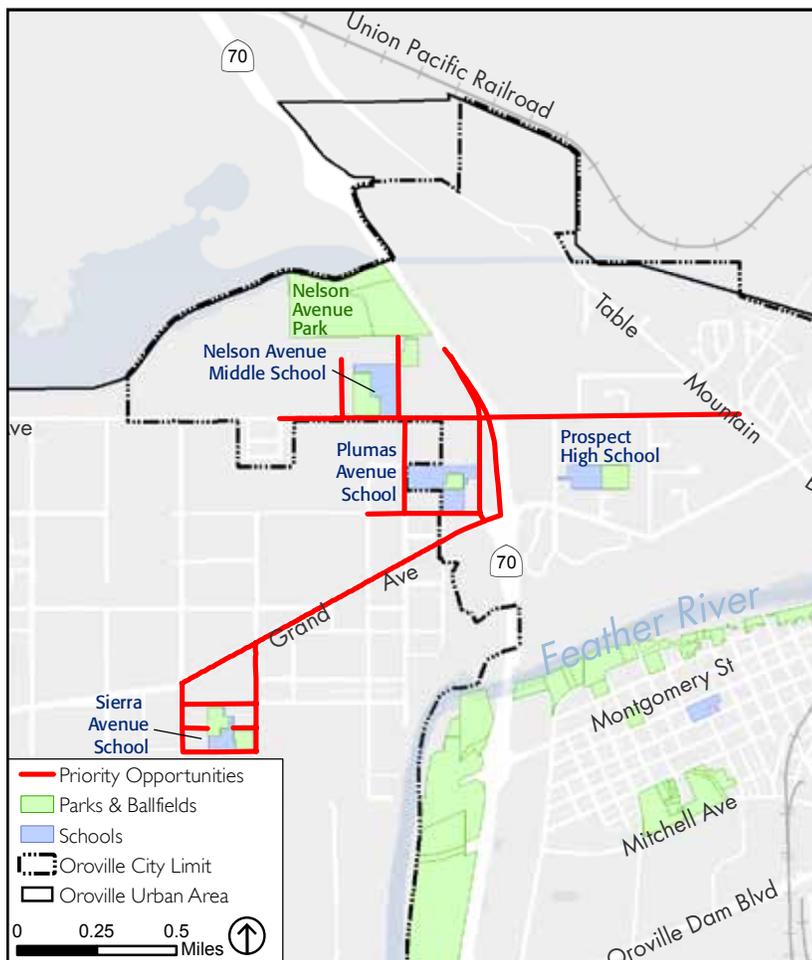


Priority Opportunity Site:

Improve Streets around Las Plumas High School and Nearby Elementary Schools

Safely Link Thermalito Schools with Residential Areas East of Highway 70

The Thermalito neighborhood is located west of Highway 70 and home to the Nelson Avenue Middle School, Plumas Avenue Elementary School, and Sierra Avenue Elementary School. However, many students attend these schools from residential neighborhoods on the east side of Highway 70, including affordable housing, and the connections between these areas are currently unsafe for pedestrians; in fact, there is a history of pedestrian fatalities. Filling in gaps in the sidewalks, planting shade trees, and providing other safety improvements would help make these connections safer and more accessible. Nelson Avenue, Grand Avenue under Highway 70, and areas directly around the schools are particularly important sites for pedestrian safety and aesthetic improvements such as shade, crosswalks, and complete sidewalks.

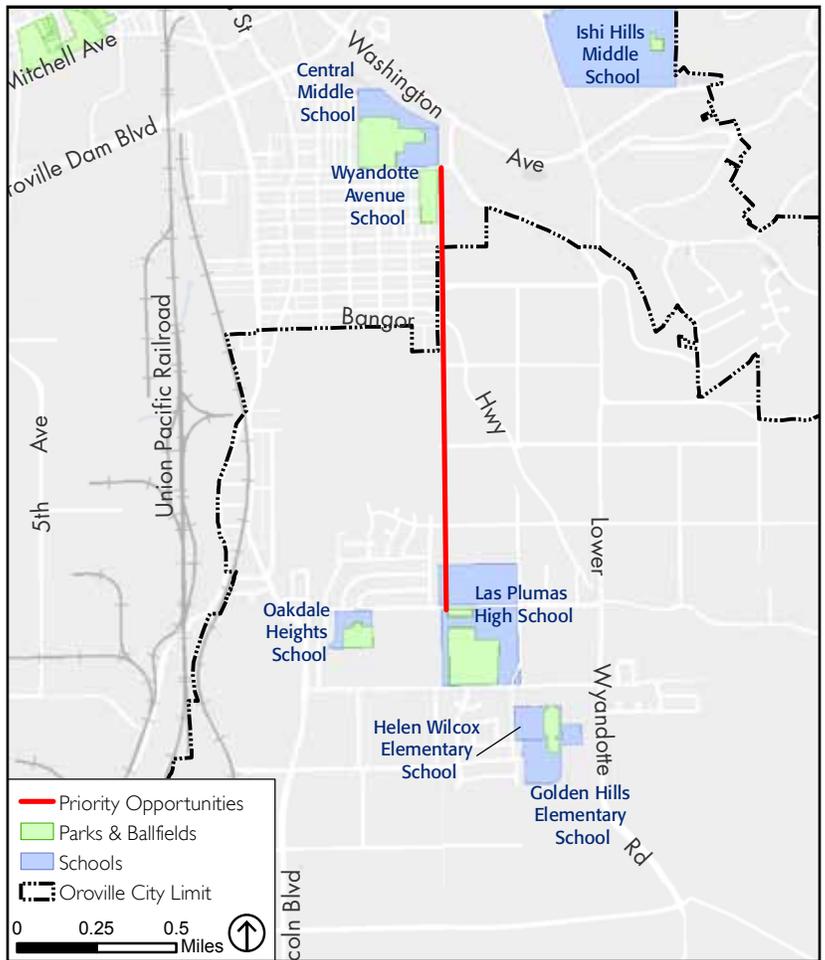


Priority Opportunity Site:

Safely Link Thermalito Schools with Residential Areas East of Highway 70

Create a Safe Route to School below the Power Lines between Southside and Las Plumas High School

Las Plumas High School draws students from the surrounding area, including many who walk from the Southside neighborhood. Some of these students currently use informal paths along undeveloped private parcels where there are public safety concerns. The community is interested in identifying alternative pedestrian and bicycle routes to connect the Southside neighborhood to Las Plumas High School. One possibility is to build a trail along the power transmission line corridor between the Southside neighborhood and Las Plumas High School, allowing students safe transit on foot or by bicycle. This project would require participation by the utility company. This priority opportunity could also link to the conceptual designs for Las Plumas Avenue presented in Chapter 8.



Priority Opportunity Site:

Create a Safe Route to School below the Power Lines between Southside and Las Plumas High School

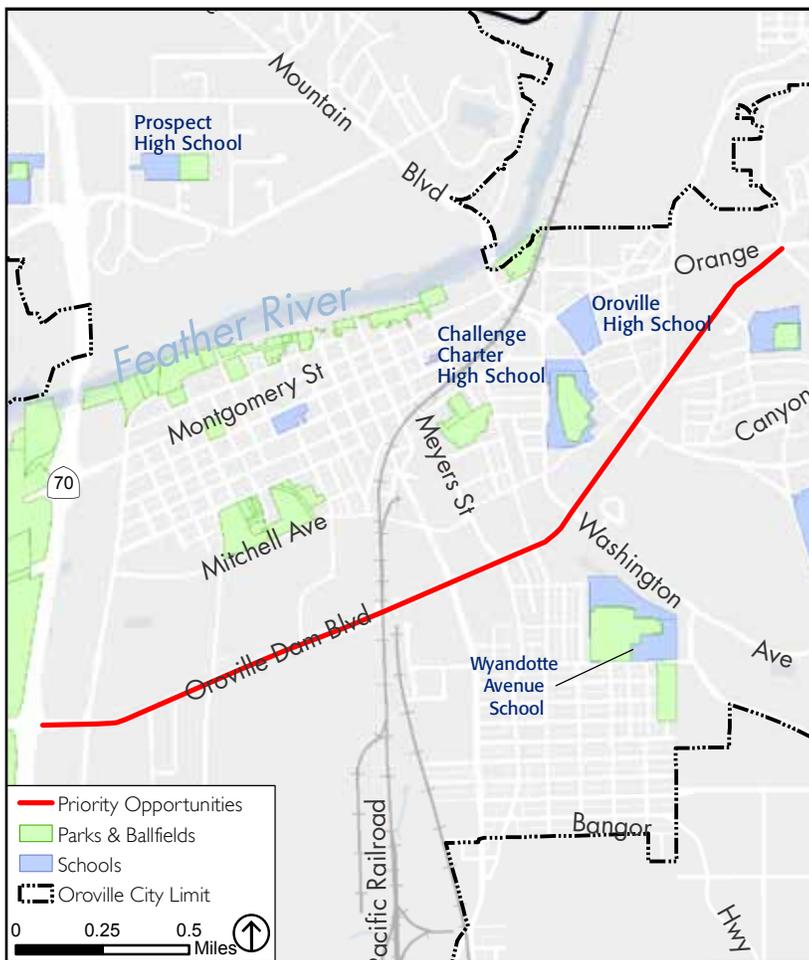
OTHER PEDESTRIAN AND BICYCLE IMPROVEMENTS:

Improve Oro Dam Boulevard between Highway 70 and Spencer Street

Oro Dam Boulevard is a major gateway into Oroville and an important retail corridor through the middle of the city. The community would like it to welcome drivers heading into town from Highway 70 and support multi-modal transportation. Traffic along Oro Dam Boulevard from Highway 70 to Orange Avenue makes travel for bicyclists and pedestrians dangerous, so bike paths or lanes and sidewalks have been prioritized. In addition, as part of these pedestrian and bicycle improvements, this project would include shading and beautification amenities by planting shade trees and flowers along the roadside and in the medians. Costs are moderate, community interest is high, and there is a strong possibility of acquiring funding, particularly for pedestrian and bicycle improvements. This priority greening opportunity is also explored through conceptual designs presented in Chapter 8.



Existing Conditions of Oro Dam Boulevard



Priority Opportunity Site:

Improve Oro Dam Boulevard between Highway 70 and Spencer Street



Existing Conditions at the Myers / Wyandotte Intersection

Improve Myers Street through the Southside Neighborhood

South of Oro Dam Boulevard, Myers Street is the main commercial strip that runs through the Southside neighborhood, with a commercial retail node at Wyandotte Avenue. Despite its role as a main thoroughfare for pedestrians and vehicles and its importance as a historic entryway to Oroville from the south, the street currently lacks landscaping, contains large swaths of asphalt at parking and vacant lots, and is seen by many residents as unsafe due to crime.

There is an opportunity to make Myers Street, particularly at the intersection with Wyandotte Avenue, a gateway to the Southside neighborhood, more welcoming and comfortable for pedestrians, bicyclists, and the community as a whole. Potential improvements include adding street trees and plantings; drainage solutions; pedestrian and bicycle amenities; bus stop shading, shelters, and benches; and safety improvements such as lighting. These investments could better encourage eyes on the street, helping to reduce crime. Improvements should be coordinated with the planned power line undergrounding project along Myers Street, as well as the priority greening opportunity iden-



Priority Opportunity Site:

Improve Myers Street through the Southside Neighborhood

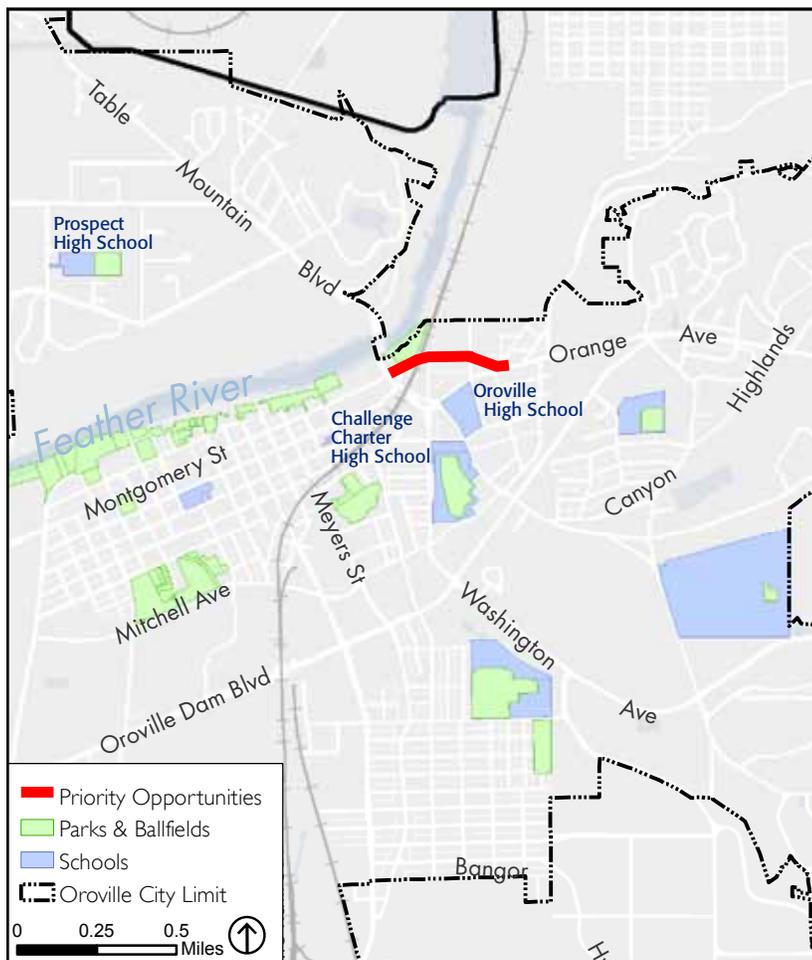
tified in Chapter 6 to address flooding issues at the Myers/Wyandotte intersection. This priority project would formalize this gateway and celebrate the history of the Southside neighborhood. The conceptual design presented in Chapter 8 further explores this concept.

Connect the Brad Freeman Trail to the Orange Avenue Bike Lane

There is an existing bike lane along Orange Avenue that ends at the intersection with Montgomery Street, east of the traffic circle. This bike lane is well-used, but lacks a connection to Downtown and the Brad Freeman Trail. Therefore, an important connection can be made by constructing a bike lane along Montgomery Street between the traffic circle and Orange Avenue. In part due to the topography, this section of Montgomery Street also experiences traffic speeds that are unsafe for pedestrians and bicyclists, so the community has expressed interest in pedestrian improvements, tree plantings for shade, and traffic calming measures to slow traffic. The community expressed strong interest in seeing this project move forward.



End of Bike Lane along Orange Avenue



Priority Opportunity Site:

Connect the Brad Freeman Trail to the Orange Avenue Bike Lane



Local Pedestrian Network

DESIGN GUIDELINES

This section describes and illustrates pedestrian and bicycle guidelines that should be used to inform the planning and design of future improvements. Circulation standards, such as safety and connectivity, encompass all aspects of transportation, including pedestrian and bicycles systems. The following recommendations promote network and circulation improvements in the Oroville Urban Area for pedestrians and bicycle users.

PEDESTRIAN NETWORK IMPROVEMENTS:

These recommended improvements for pedestrians are based upon the federal and State accessibility standards, including the *Americans with Disabilities Act Accessibility Guidelines* (ADAAG) and California Title 24. The *California Disabled Accessibility Guidebook* (CalDAG) synthesizes the recommendations from both sources and is the basis for many of the following guidelines. Similarly, the pedestrian network recommendations are influenced by the State and national standards for transportation design, such as the *California Manual on Uniform Traffic Control Devices* (CA MUTCD) and the American Association of State Highway and Transportation Official's (AASHTO's) *Green Book*.

Pedestrian Crosswalks

Crosswalks benefit both pedestrians and drivers in a number of ways. They prepare drivers for the potential of encountering a pedestrian, provide safe crossing locations, and are important links for pedestrian connectivity. Crosswalk locations should be based on pedestrian needs, safety, and surrounding land use. Well-designed crosswalks are highly visible, compact, and allow for multiple pedestrians to cross in either direction.

While some crossings are controlled by traffic signals or stop signs, others are uncontrolled. The California Vehicle Code states that the driver of a vehicle shall yield the right-of-way to a pedestrian crossing the roadway within any marked or unmarked (not striped) crosswalk at an intersection, except if directed otherwise. It is recommended that marked crosswalks be included at any uncontrolled intersection if the location is further than 300 feet from a controlled crossing location. Pedestrians should also be clearly visible by motorists for at least 250 feet, and enhanced visibility measures should be taken in locations adjacent to major destinations and in locations with potential pedestrian safety concerns.

The narrower a pedestrian crossing, the less time a pedestrian is in potential conflict with vehicles. Pedestrian crossing distances can be kept compact by incorporating tight turning radii, discouraging free right turns, and narrowing roadway width with curb extensions.



Pedestrian Crosswalk: Contental Marking Pattern



Pedestrian Crosswalk: Stamped Asphalt

Curb Extensions

Curb extensions (also known as bulb-outs) extend the sidewalk into the adjacent parking lane, which narrows the roadway and widens the pedestrian way. Curb extensions are beneficial because they improve pedestrian visibility, reduce the distance pedestrians have to walk across an intersection, and allow space for additional pedestrian amenities, such as benches and plantings. Typically, curb extensions are located at intersections, but they can be used for mid-block crossings. They also contribute to traffic calming and reduce the capacity to park illegally at corners and crosswalks. The design of curb extensions should adhere to the following guidelines:

- Maximum 6-foot extension into the street adjacent to parallel parking.
- Maximum 12-foot extension into the street adjacent to diagonal parking.
- Turning radius of curb extension, as it returns into the existing curb, should be approximately 12 to 16 feet.

Additionally, bike lanes should be painted continuously adjacent to the curb extension to avoid conflict.

Pedestrian Signals

Various audio and visual mechanisms located at signalized intersections can better communicate safety information to crosswalk users. Features like signal timing, accessible pedestrian signals (such as audible tones, verbal messages, and/or vibrating surfaces), and other innovative signal types enhance crosswalk safety for pedestrians.

As far as signal timing, the CA MUTCD recommends that controlled crossings should be timed for a walking speed of 3.5 feet per second. However, a pedestrian's walking speed is dependent upon many factors, including age and mobility. Pedestrian signal crossing times should be adjusted accordingly near major activity destinations, at intersections that are unusually long or difficult to navigate, and adjacent to any location that might have a higher proportion of pedestrians with slower walking speeds, such as senior centers. Accessible pedestrian signals (APS) are used to help guide pedestrians with impaired vision and/or hearing.

Sidewalk Width

Sidewalks provide space for more than just the movement of pedestrians. They also accommodate outdoor seating and street furniture. There are four distinct sidewalk zones, which are the curb zone, the furniture/landscape zone, the pedestrian zone, and the frontage zone (see images). These zones are applicable in different locations and have different design requirements, which can vary based on the adjacent uses, such as commercial versus residential. The following are recommended widths for these zones, in order to create safe and comfortable pedestrian movement.



Curb Extension



Pedestrian Signage



Wide Sidewalk in a Commercial Area



Pedestrian Amenities: Site Furnishings and Landscaping



Sidewalk Bulbout for Pedestrian Amenities

- **Curb Zone:** The curb, typically 6 inches in both commercial and residential areas, separates the sidewalk from the parking, biking, and/or travel lanes.
- **Furniture/Landscape Zone:** The portion of the sidewalk used for street trees, landscaping, transit stops, street lights, and site furnishings. In commercial areas, it is 4 to 8 feet wide, and 2 to 4 feet wide in residential areas.
- **Pedestrian Zone:** The portion of the sidewalk for pedestrian travel along the street. In commercial areas, it is 5 to 8 feet wide, and 5 feet wide in residential areas.
- **Frontage Zone:** The area adjacent to the property line which serves as a transition between the public sidewalk and the privately-owned building space. The zone is typically a minimum of 2 feet, but up to 12 feet to accommodate outdoor seating in commercial areas. This zone is not required in residential areas because buildings are typically set back from the property line.

Pedestrian Amenities and Seating

Sidewalk amenities and seating create a welcoming environment for pedestrians. Amenities like trash receptacles, benches, signage, and drinking fountains all contribute to the character and sense of community. Downtown Oroville, including along Myers Street, already includes a number of sidewalk amenities. Additional amenities should be located in areas where they will be used by the highest number of pedestrians, including locations adjacent to major destinations. When locating amenities, it is important to understand that an area’s needs may change over time, and the placement of amenities should allow for flexible use.

The following guidelines should influence the location and choice of amenities:

- Locate amenities in the furniture zone, when possible. They should not impede pedestrian accessibility, and their location should be carefully coordinated with the location of other objects within the sidewalk, such as utility vaults and light poles.
- Place amenities so that they respond to, and don’t hinder, adjacent on-street parking or transit boarding zones.
- Use amenities that are universally accessible.
- Utilize a consistent palette of street furniture and amenities.

Pedestrian Signage

Providing direction and distance information for major destinations can enhance residents’ walking experience and help visitors find their way around the Oroville Urban Area. Informational signs should be installed along heavily-used pedestrian routes.



Pedestrian-Scale Lighting

Pedestrian-scale street lighting will not only help improve security, but also add to the character of the street and neighborhood. Sidewalks and landscaped areas should be lit to enhance safety and comfort. The following guidelines should influence the placement choice of pedestrian-scaled lighting.

- Sidewalks should be illuminated through the use of pedestrian-scaled pole fixtures (10 to 14 feet in height) or fixtures attached to the face of the buildings.
- The type and size of fixtures should be consistent along a single block.
- Pedestrian-scale lighting and/or street lamps should be evaluated for appropriate foot-candles and illumination per street standards.
- Placement of lighting should not interfere with the pedestrian path of travel and should not distract or interfere with vehicular circulation.
- All lighting should be oriented toward the ground, designed to preserve views of the night sky, and minimize glare.

Landscaping

Vegetation contributes to a pleasant pedestrian environment. A tree canopy and landscape buffer along the sidewalk not only enhance aesthetics, but can improve comfort by providing shade and contributing to lower air temperatures. A landscaped median softens the hard features of nearby buildings, adds character, and provides pedestrians with a refuge when crossing the street. Additional guidance regarding landscaping is provided in other sections of this Urban Greening Plan.

BICYCLE NETWORK IMPROVEMENTS:

This section outlines design guidelines and best practices for bicycle facilities recommended for the Oroville Urban Area to improve bicycle safety, street accessibility, and the multimodal network. These guidelines are based on the *Caltrans Highway Design Manual* (HDM), the CA MUTCD, and the *AASHTO Guide for the Development of Bicycle Facilities*, as well as best practices in other communities. These guidelines are intended as a supplement to the previously mentioned documents.

Bikeway planning and design in California typically relies on the guidelines and design standards established by Caltrans as documented in “*Chapter 1000: Bikeway Planning and Design*” of the HDM. Chapter 1000 follows standards developed by AASHTO and the Federal Highway Administration (FHWA), and identifies specific design standards for various conditions. These standards provide a good framework for future implementation, but may not always be feasible given specific constraints. Bikeway design and planning standards are continually changing and expanding. Despite this, most agencies adopt the Caltrans or AASHTO standards as a minimum. Based on the California Streets and Highways Code, Caltrans identifies three types of bikeways, as described and illustrated below.



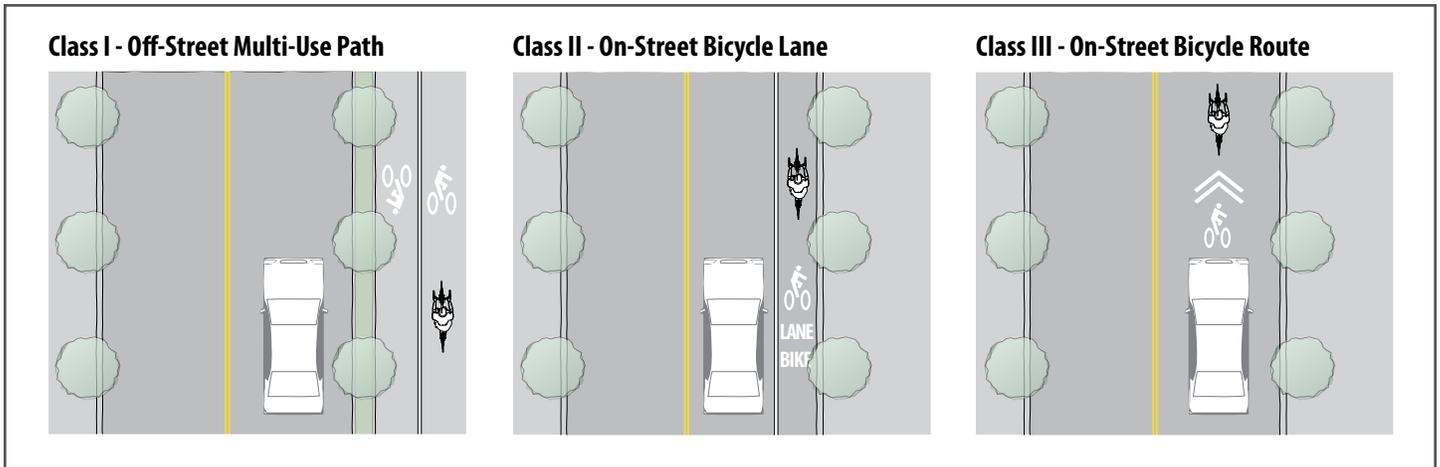
Class II Bike Lane Adjacent to a Dedicated Pedestrian Path



Class II Bike Lane on Street



Bicycle Friendly Boulevard



Caltrans' Bikeway Types

- **Class I – Bike Paths:** Also known as multi-use paths, these are separated from motor vehicle traffic, but may be shared with pedestrians.
- **Class II – Bike Lanes:** These lanes are demarcated in the roadway for the exclusive use of bicycles. Vehicle and pedestrian cross-flow are permitted. The striping is supported by pavement markings and signage.
- **Class III – Bike Route:** These are located on roadways shared with motor vehicles. Bike routes are designated by signage and/or shared roadway bicycle markings (sharrows).

The National Association of City Transportation Officials (NACTO – nacto.org) is creating new guidance specifically for urban streets. NACTO's Urban Street Design Guide and Urban Bikeway Design Guide provide designs and principles for making urban streets safe, inviting, and supportive for businesses, workers, schools, and residents. NACTO designs include cycle tracks, which combine the user experience of a separated path with the on-street infrastructure of a conventional bike lane. By separating cyclists from motor traffic, cycle tracks—particularly protected facilities—can offer a higher level of safety than a conventional bike lane.

Although they are not referenced in the AASHTO guide, NACTO treatments are nearly all permitted under the MUTCD, and are supported by the Federal Highway Administration. NACTO guidance can be used as a basis for creating local street design standards.

Bikeway Widths and Markings

Class I bike paths should be a minimum of 8 feet wide with an additional 2-foot-wide shoulder as required by Caltrans standards. A minimum of 12 feet is preferable when moderate volumes of pedestrian traffic are expected along the path, or if two-way bicycle traffic is expected. A separate path for pedestrians may be appropriate if high volumes of pedestrian traffic are expected. Bike paths with sufficient width for two lanes should have a lane marking, a solid yellow or white stripe to separate the two directions of travel and a dashed line where passing is permitted.

Class II bike lanes adjacent to on-street parallel parking should be a minimum of 5 feet wide for roadways with vehicle speeds of 35 mph or less, a minimum of 6 feet for 40 to 50 mph, and 8 feet for 50 mph or more. Even on low speed roads, many jurisdictions prefer a minimum 6-foot bike lane to allow for parked cars with opening doors. The minimum combined bike lane and unmarked parking stall width should be 12 feet (measured from the curb face to the outside bike lane strip). Bike lane striping assists bicyclists in following a straight path in the street right-of-way. Directional arrows with an accompanying word and/or bicycle symbols should be used to distinguish the bike lane from the adjacent vehicle travel lane. Colored bike lanes are another option for pavement markings that can be used in high-conflict areas to alert motorists to the presence of bicyclists.

Class III bike routes require a 14-foot minimum lane width. Lane width is determined from the edge stripe to the lane line or the gutter joint to the lane line. Striping the bike lane should be considered if 15 feet or more is available for the lane next to the curb line. Streets with speed limits of 40 mph or more should not be designated as Class III bike routes. Pavement markings are not required, but “sharrows” (shared right-of-way) or painted bicycle icons are recommended to signify to drivers that they must share the lane with bicycles.

Bicycle Signage

Wayfinding, destination, or directional information signs should be provided at important locations along bike paths. Alert signs should be installed along bike lanes to indicate “BEGIN” and “END”, with “WRONG WAY” installed on the back of those signs to reinforce the proper flow of bicycle traffic.

Bicycle Parking

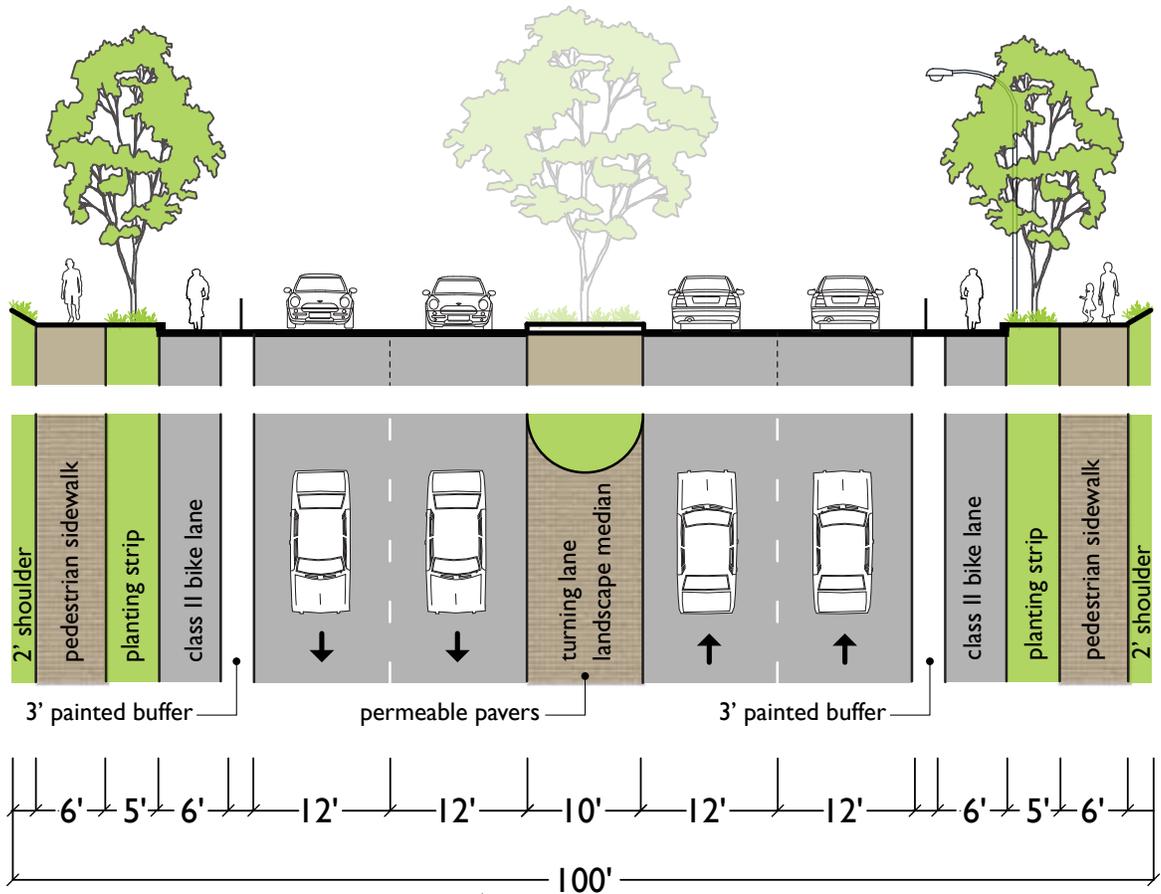
Safe and secure bicycle parking is a critical component to most bicycle trips, and thus in promoting bicycle use. Bicycle racks should be visibly located near intended destinations, such as shopping areas, libraries, schools, and offices. They should be visibly located near destinations and installed either on the sidewalk, outside the pedestrian zone, or in plaza spaces.

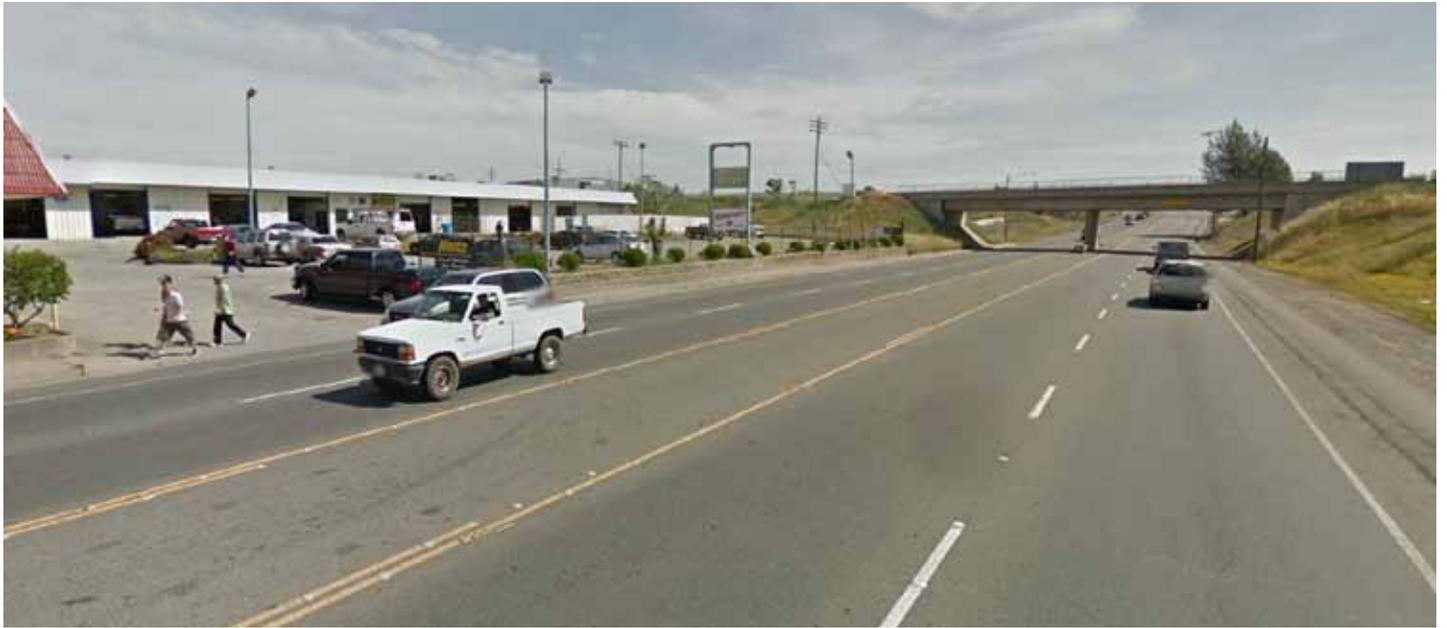
DESIGN SOLUTIONS

The streetscape designs below serve as examples of how the guidelines discussed above can be implemented to promote bicycling and walking in the Oroville area. While they address specific priority opportunity streets, these designs can also be applied to other streets with the same roadway classification and right-of-way (ROW) width. It is important to keep in mind that when the ROW width cannot be expanded, enhancement of one element sometimes comes at the cost of another. In these designs, permeable surfaces are illustrated for both parking stalls and pedestrian sidewalks to improve stormwater management.

100' ROW Highways

Oro Dam Boulevard is a four-lane highway that is approximately 100 feet wide and is improved through the inclusion of a planted median that alternates with a paved turning lane. This creates a safety buffer for vehicles, as well as beautification and an opportunity to create a gateway. Broadleaf trees located in the pedestrian planting strips will increase shade to promote non-motorized forms of transportation.





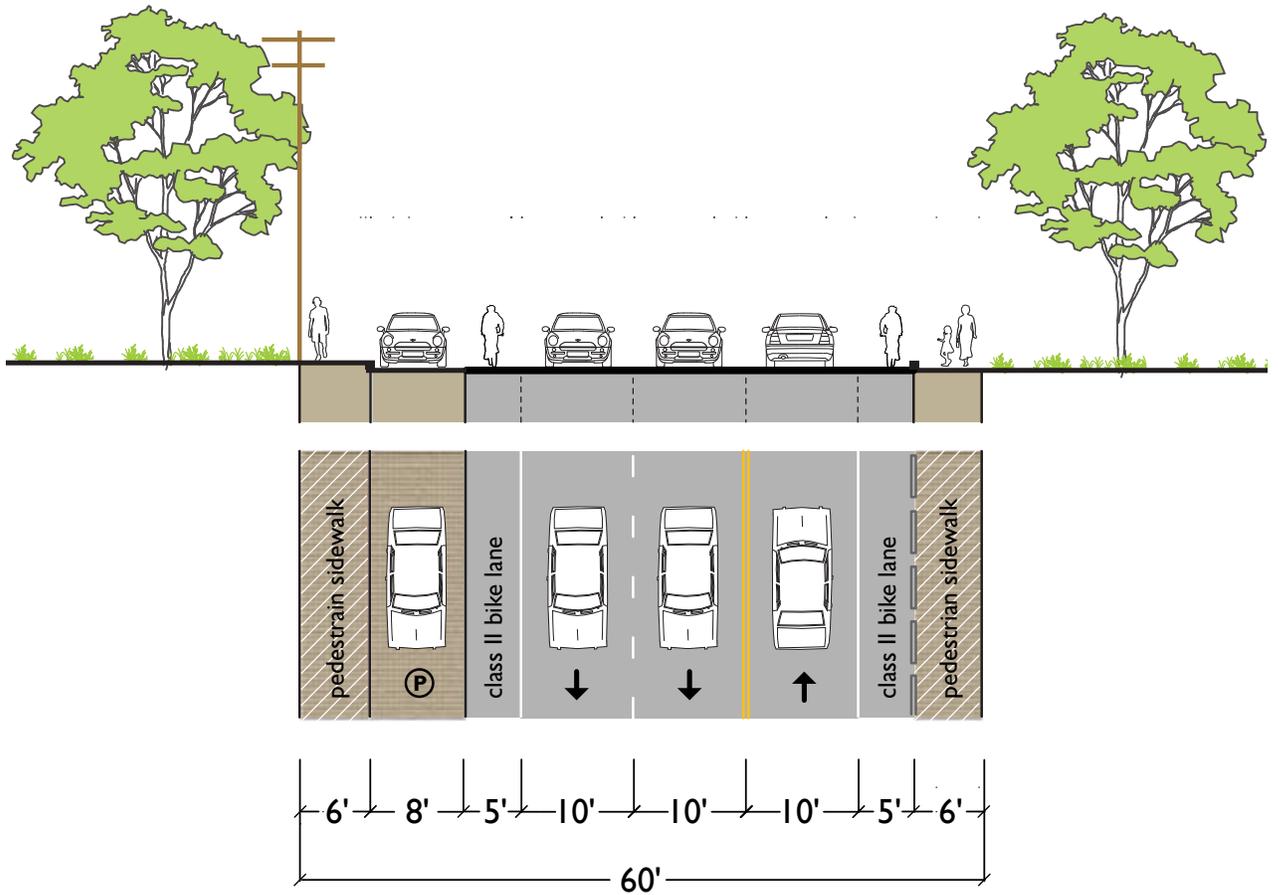
Existing Conditions on Oro Dam Boulevard



Proposed Design Solution for Oro Dam Boulevard

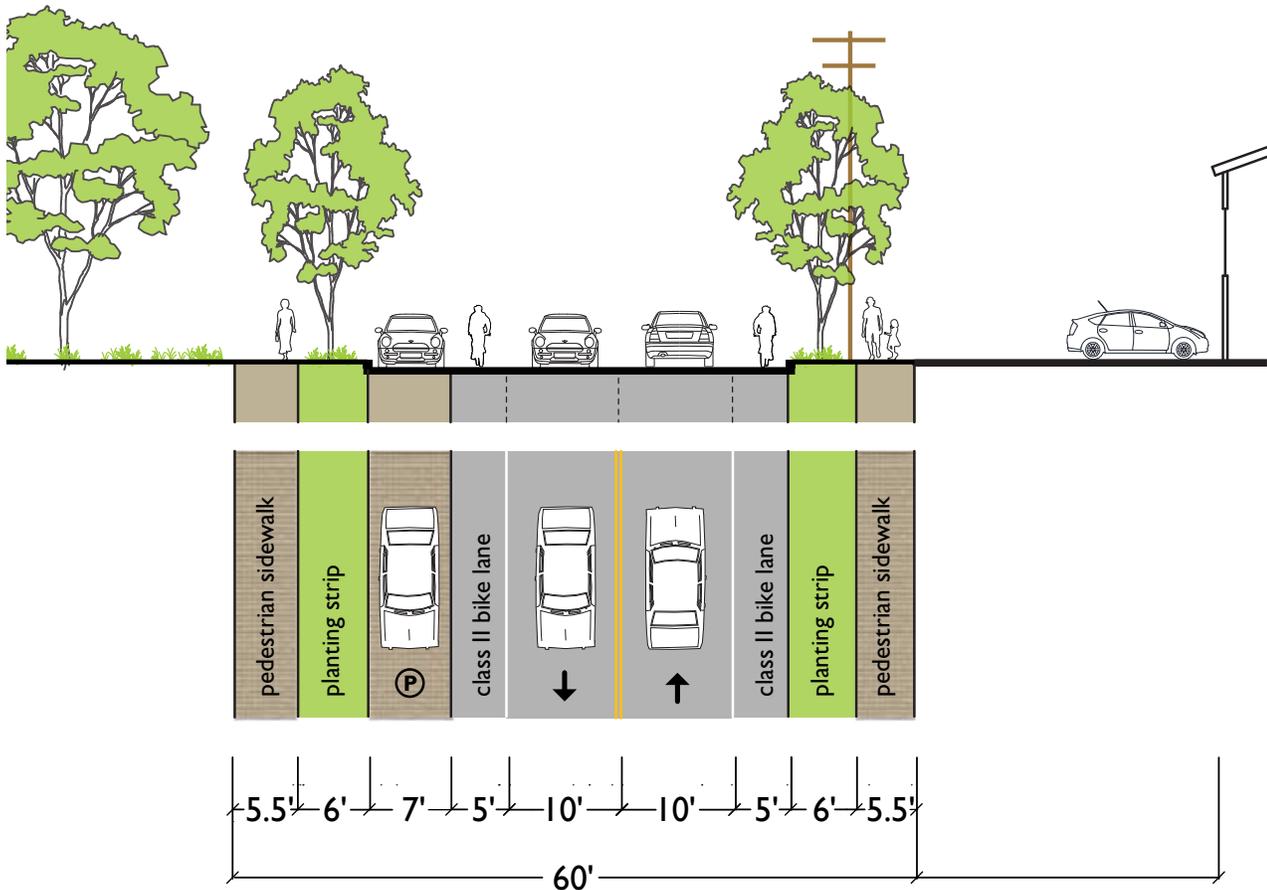
60' ROW Arterials (3 travel lanes)

Arterials, such as Montgomery Street, have three travel lanes, two in one direction and a third in the opposing direction. Class II bike lanes run along either side of the street, while a parallel parking lane is included along one side of the street. Six-foot-wide pedestrian sidewalks run along either side of the roadway to enhance pedestrian safety and walkability.



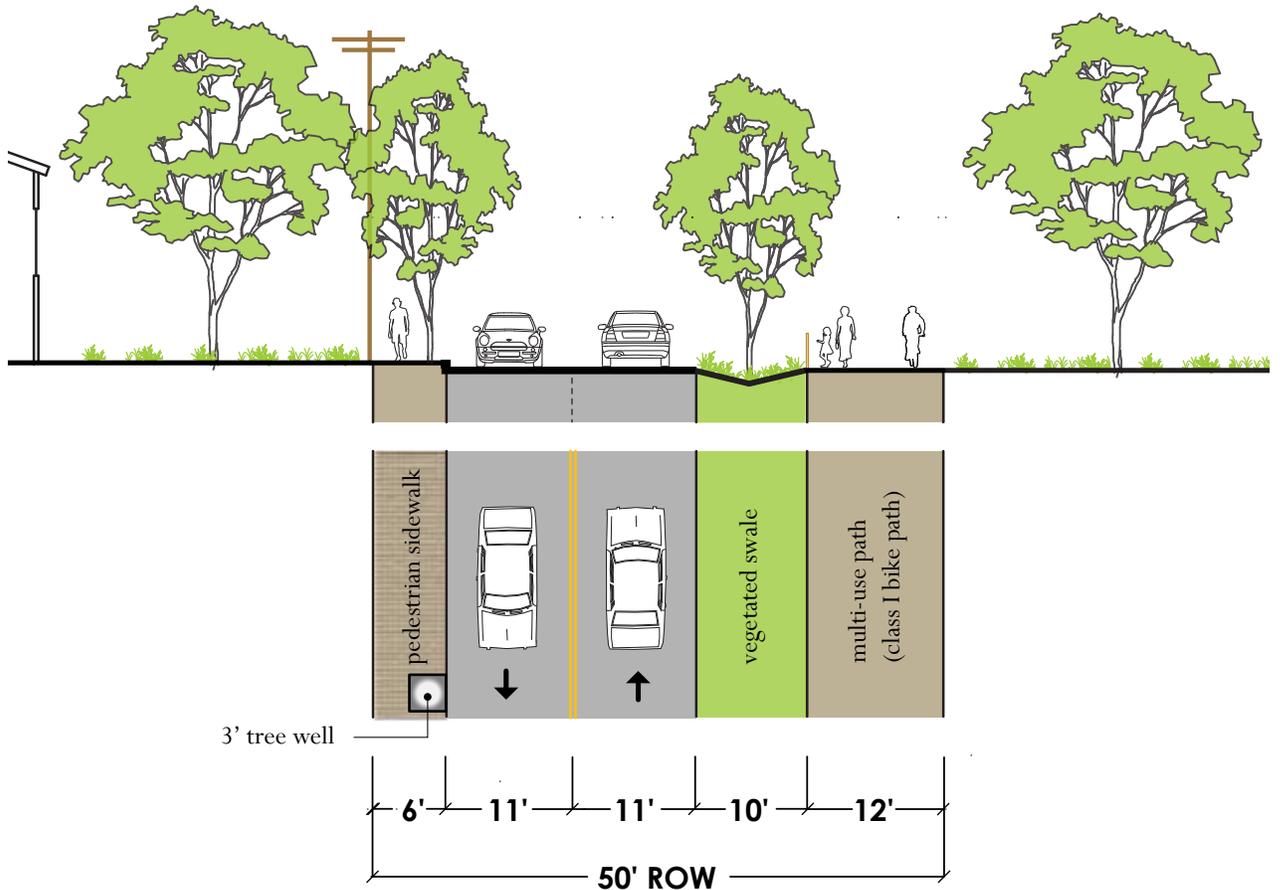
60' ROW Arterials (2 travel lanes)

Arterials, such as Myers Street, are approximately 60 feet wide with one vehicular travel lane in either direction. Planting strips on both sides of the street will help shade bicyclists and pedestrians along the sidewalk. Class II bike lanes on either side of the street will promote bicycle use, while an 8-foot lane situated on one side of the street will provide parallel parking.



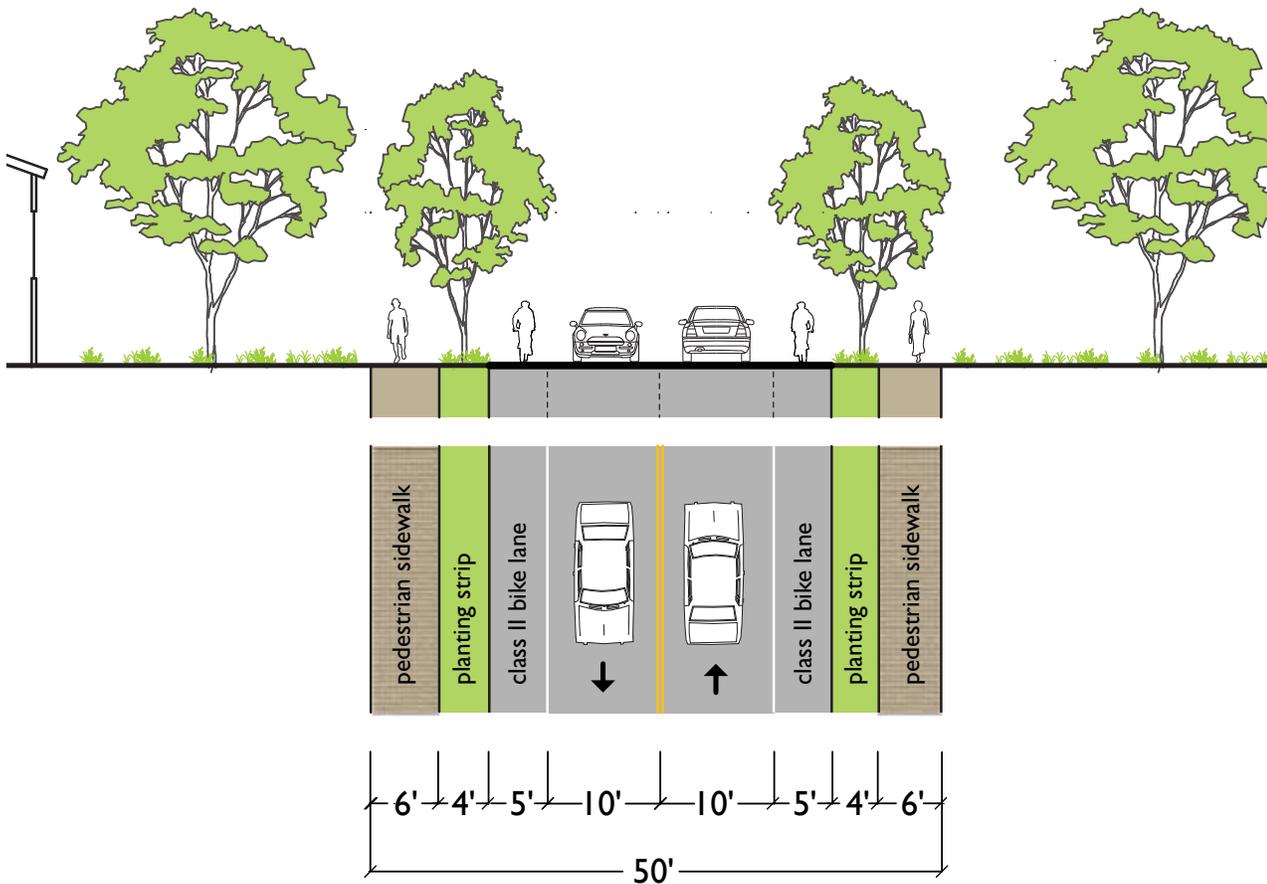
50' ROW Collectors (Class I Bike Path)

Las Plumas Avenue, adjacent to Las Plumas High School, is improved with a 12-foot multi-use trail, which provides safe bicycle and pedestrian movement. An 8-foot swale captures on-site runoff and creates a vehicle and pedestrian buffer. Stormwater drains into the planting strips and swale along either side of the roadway. Street trees in tree grates along the opposite side of the street promote walkability and increase shade.



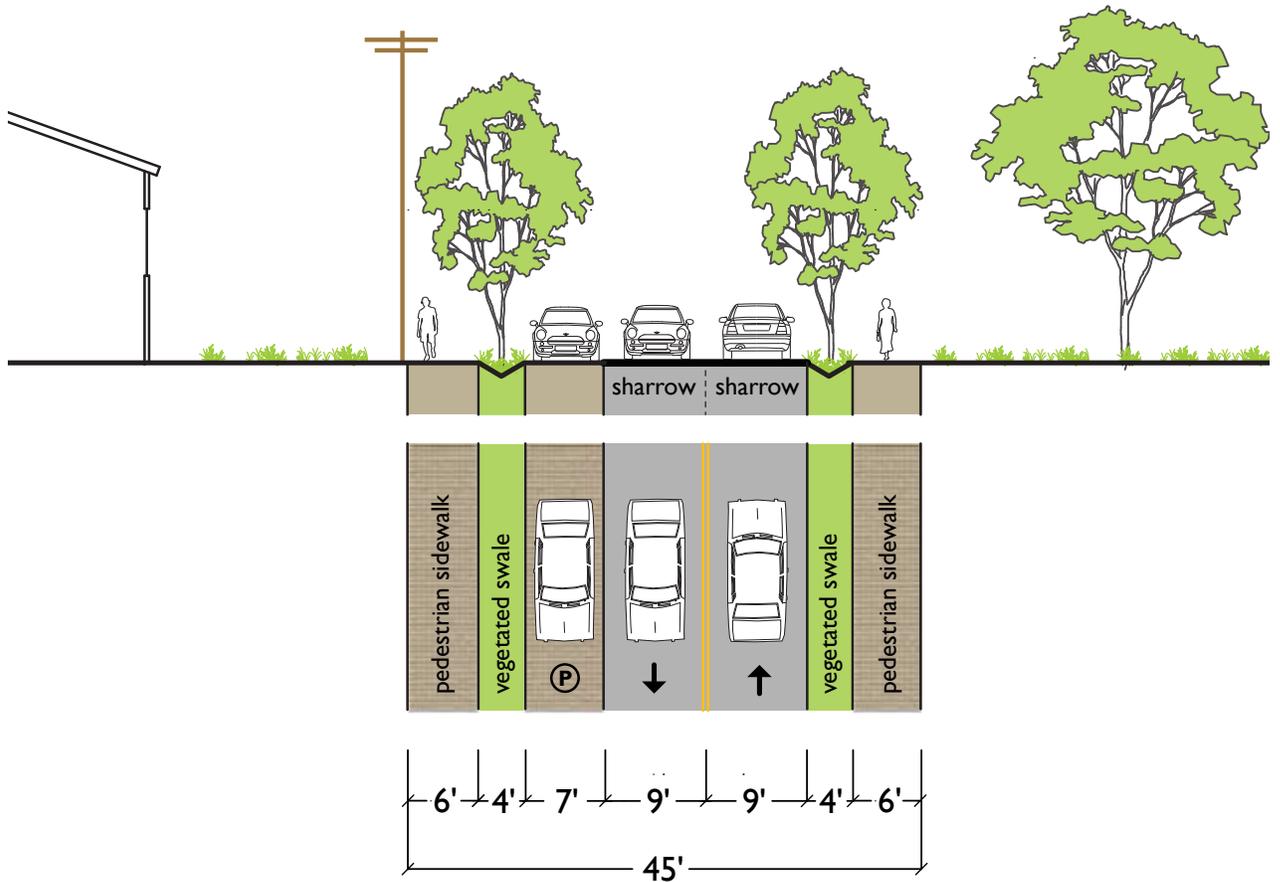
50' ROW Collectors (Class II Bike Lanes)

Fifty-foot collectors, such as Oro-Quincy Highway, incorporate Class II bike lanes along both sides of a two-way street. In addition, 4-foot planting strips are included along either side of the street and provide shade, as well as a buffer for pedestrians on the sidewalk.



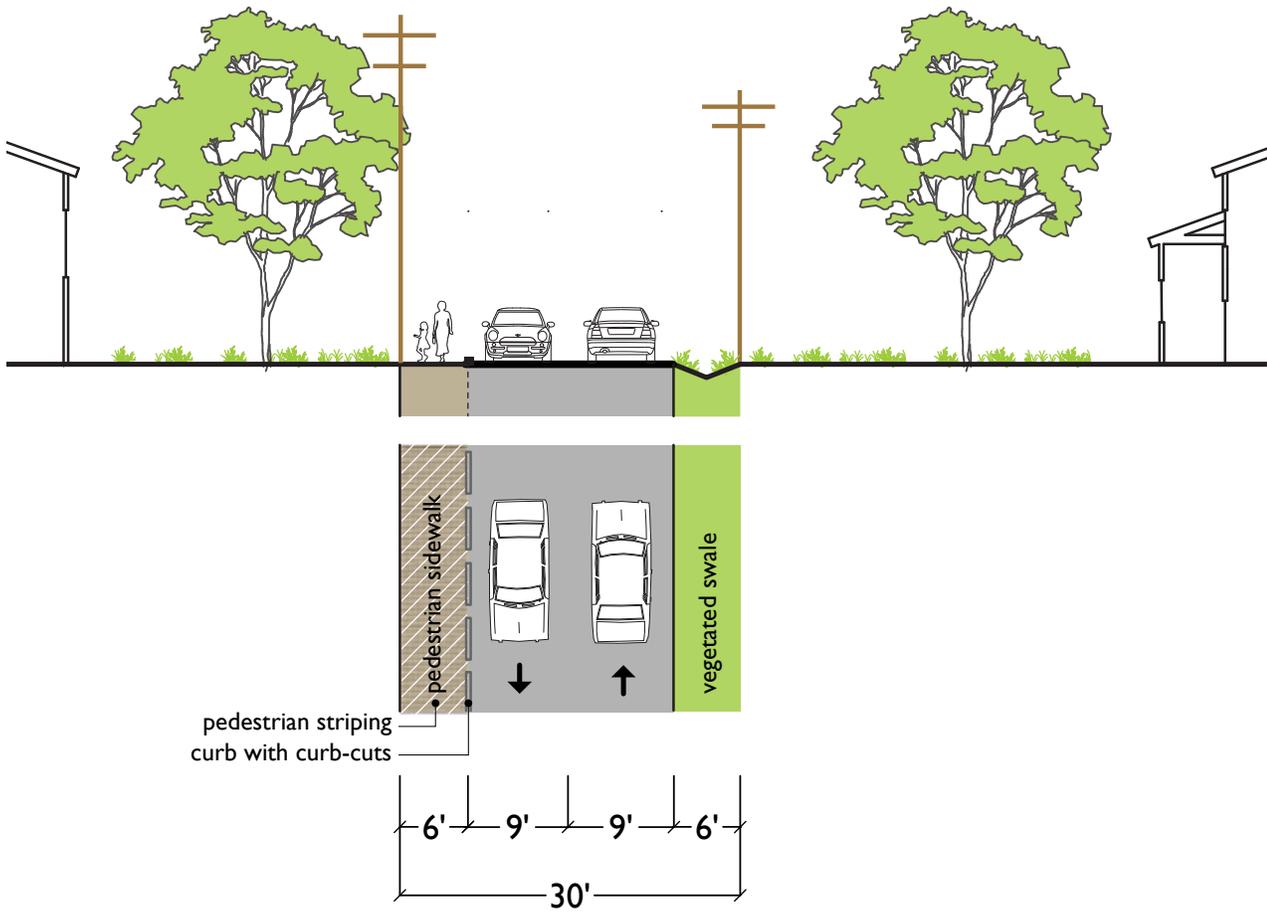
45' ROW Local Streets (Class III Bike Route)

Local streets, such as Burlington Avenue and Wyandotte Avenue, are approximately 45 feet wide and consist of two travel lanes in both directions, one of which is designated for parallel parking. Four-foot-wide vegetated swales along either side of the road provide stormwater management and beautification, as well as a buffer for pedestrians.



30' ROW Local Streets

Local streets, such as Elgin Street, are narrow residential streets with one lane of travel in each direction. A series of curb cuts protect pedestrians on one side, while a 6-foot swale on the opposing side of the street collects storm-water.



INTRODUCTION

Enhancing the tree canopy and other landscaping offers a wide variety of benefits for towns, such as increased health and well-being of residents and economic value of properties. Trees and plantings soften the urban environment and break up impermeable surfaces, such as concrete and asphalt, allowing for more natural and filtered stormwater drainage while decreasing carbon dioxide emissions. For example, a single 10-inch-diameter Red Oak (*Quercus rubra*) can intercept and filter 1,211 gallons of stormwater per year, while storing 280 pounds of carbon dioxide per year. Research in the Central Valley found that for every 1,000 deciduous trees, stormwater runoff is reduced nearly 1,000 gallons – a value of almost \$7,000 per storm event. Trees also reduce surrounding temperatures by shading, while further cooling occurs due to evaporation from their leaf surfaces. The evaporation from a single tree can produce the cooling effect of 10 room-sized air conditioners operating 20 hours per day.^{1 2} Landscape plantings also contribute to a more natural and attractive environment, providing physiological benefits and ultimately a healthier and more prosperous community.

Shade trees are especially important in Oroville due to the scorching summers, particularly for the very young, elderly, disabled and non-auto-owning residents, who may not have access to air-conditioned cars and/or may be less able to withstand extreme conditions. Strategically planting shade trees along sidewalks and bikeways can encourage more people to get out of their cars and walk or bike, which is beneficial for air quality and for their own health. Furthermore, plants trap and filter air pollutants, improve water quality by absorbing and filtering runoff from streets, and can contribute to on-site stormwater management.

While the urban forest includes all trees on both public and private land within the Oroville Urban Area, this chapter focuses on City-maintained trees, collectively referred to as the City Forest. City trees include those along right-of-ways and in parks and open space. Some areas of Oroville have excellent urban forest features, including the tree-lined streets in the downtown and historic residential neighborhood at the city’s core. These contribute to Oroville’s charm and walkability. However, other areas, such as major arterials that are gateways into town, and much of the Southside neighborhood, suffer from a lack of tree canopy and permeably planted areas. These areas need



Street Trees in Residential Neighborhood

Urban Forest:

all trees on private and public lands within the Oroville Urban Area

City Forest:

only City-maintained trees located in the right-of-ways, parks, and open space

¹ Kloss, Christopher; 2006. *Crystal Calarusse. Rooftops to Rivers – Green Strategies for Controlling Stormwater and Combined Sewer Overflows*. Natural Resource Defense Council, www.nrdc.org.

² North Carolina State University and Cooperative Extension, <http://www.ncsu.edu/project/treesof-strength/benefits.htm>.



Shaded Sidewalk in Downtown Oroville



Tree Canopy in South Oroville

some landscaping assistance to attract visitors, provide a stronger and more attractive sense of place, reduce the distance between residents and the natural environment, and increase the sense of community investment and pride that leads to better care of property and reduced crime.

This chapter addresses canopy as well as understory and other planting with the understanding that all types of plantings contribute to the urban forest. However, given the available data recently collected by the City, this chapter focuses on why, where, and how to expand the City Forest.

URBAN FOREST VISION AND GOALS

In addition to the urban greening vision and goals set forth at the beginning of this Plan, this Plan identifies a vision and set of goals specific to urban forestry. The vision for Oroville's urban forest is to increase existing canopy coverage throughout the community by creating greener streets that encourage people to walk and exercise, establishing green buffers from the freeways that divide the community, and focusing on other multi-benefit greening opportunities. Specific goals for reaching this vision include:

- **Increase Citywide Canopy Coverage.** A target of 21-percent for citywide coverage is recommended for Oroville, as further discussed below under Recommendations for Enhancing the Urban Forest.
- **Enhance Forest Structure.** Increase the percentage of trees that are native and have low water requirements, and work towards building a forest that is diverse with consideration to species composition and age distribution. In addition, enhance drought-tolerant, low-water need, and low-maintenance understory and other plantings throughout the city.
- **Increase Urban Forest Benefits per Tree.** Focus on multi-benefit urban forestry projects that optimize environmental and community benefits, including but not limited to stormwater management, air pollution reduction, beautification, and neighborhood walkability. Ensure selection of the right tree for new locations in order to optimize forest benefits and to reducing infrastructure conflicts.

Realization of these goals will maximize environmental, social and economic benefits associated with the urban forest, thereby enhancing the quality of life and the public health enjoyed by the Oroville community. Potential benefits of the urban forest are identified below based on research by the United States Department of Agriculture and the Alliance for Community Trees.³

³ Alliance for Community Trees, Benefits of Trees and Urban Forests (Resource List), http://www.actrees.org/files/Research/benefits_of_trees.pdf, accessed February 25, 2014.

THE EXISTING FOREST AND MANAGEMENT

This section provides an overview of the forest structure and benefits provided by the forest contained along public roadways and within public parks in the Oroville Urban Area, as well as a brief overview of current management and maintenance practices. This section is based on an inventory and assessment of City-owned trees that was conducted in 2012; a digitized aerial image of the South Oroville area that suggests canopy coverage within this area; and conversations with City staff.

The 2012 tree inventory was limited to City-owned trees located in the public right-of-way (ROW) or City parks, and did not include the recently annexed South Oroville area. All road segments within the city limits with curb, gutters, and sidewalks were inventoried, based on the assumption that these are the only roadways with City-owned and -maintained trees. Trees in City rights-of-way without curbs, gutters, and sidewalks were not inventoried, nor were self-seeded or invasive trees along City roadways.

The inventory identified 5,164 trees owned and maintained by the City of Oroville; these trees are collectively referred to as Oroville's City Forest and are shown in Figure 4-1. The majority of the 5,164 trees inventoried were located along public streets, while 572 of the 5,164 were located within City parks. The structure and benefits of the City Forest presented in this section were assessed using a database analysis tool called iTrees Streets. This tool was developed by a team of researchers with the United States Department of Agriculture Forest Service, Davey Tree Service, and the International Society of Arboriculture (ISA), and allows cities to analyze the benefits of their urban forests.

EXISTING FOREST STRUCTURE

Studies of urban forests suggest that a strong urban forest resource “possesses a mix of species, sizes, and ages.”⁴ This diversity ensures the longevity and resilience of the forest over time. Increasing tree species diversity reduces the risk that a single blight, disease, or pest can destroy the entire forest population since many of these issues are species-specific and spread more easily to related populations. Researchers recommend utilizing native trees wherever possible, as they are well-suited to the local environment and have developed resiliencies to local pests and provide excellent habitat for native wildlife. Diversity in age and size ensures the long-term stability of an urban forest. As trees die and are replaced, younger trees are needed to offset the removal of older trees. Very young trees do not provide the same benefits as established trees, so simply replacing the tree will not achieve the same immediate effect.

This section summarizes the species composition, age composition, and estimated benefits provided by the forest in dollar value, as well as an overview of the general condition, necessary maintenance, and potential conflicts with existing infrastructure. The complete data set resulting from iTrees Streets analysis is provided in Appendix C.



Lack of Street Trees in Downtown Oroville

⁴ Clark, James R., Nelda P. Matheny, Genni Cross, and Victoria Wake. “A Model of Urban Forest Sustainability.” *Journal of Arboriculture* 23(1): January 1997.

CANOPY COVERAGE:

Citywide Coverage

The existing canopy coverage of Oroville’s City Forest (all trees included in the inventory as defined above) was determined using the iTrees Streets program. Based on iTrees analysis, Oroville’s City Forest provides canopy coverage for 1 percent of the total area of the city, assuming the 2012 city boundaries that defined the inventory area. It is important to note that trees on private property and other trees that are not maintained by the City also provide canopy coverage within Oroville, and that if these trees were included in the analysis the overall coverage would increase.

While Oroville’s City Forest provides very little coverage when compared to the entire acreage of the city, the canopy coverage within the inventoried area in which the City maintains trees (street ROWs, parks, and open space) is estimated to be higher, at approximately 4 percent. Table 4-1 describes how this 4-percent coverage is distributed by land use. For simplification, similar land uses were combined for this analysis and it was assumed that trees within the right-of-way are associated with the adjacent existing land use. For each land use grouping, the total acreage of right-of-ways and parks and open spaces serves as the basis for coverage analysis as this reflects the inventory area and area in which the City maintains trees. As shown in Table 4-1, residential areas have a significantly higher canopy coverage within right-of-ways, parks, and open spaces than other land uses; more than half of the total inventoried canopy coverage is within this land use.



Residential Street in Oroville with Overhead Canopy

Table 4-1: Distribution of Tree Canopy Coverage by Land Use

LAND USE	Total Area in Land Use Category including Associated ROW (acres)	Estimated Acreage within Inventory (ROW, Parks, Open Space)*	Total Canopy Area (acres)	Canopy Coverage within ROW, Parks, and Open Space	Distribution of City Canopy by Land Use
Residential	3554	402	47	12%	55.3%
Commercial	1948	220	12	5%	14.1%
Industrial	1003	113	2	2%	2.4%
Parks and Open Space	1536	1536	24	2%	28.2%
Total (Citywide)	8041	2,271	85	4%	100%

*The right-of-way (ROW) is estimated based on the assumption that the 909 acres of City ROW is distributed equally throughout the City (Estimated ROW= Total ROW x Percent of City within specified Land Use). Parks and Open Space acreage includes ROW as well as acreage of parcels.



Tree Canopy along Myers Street

Research conducted by American Forests⁵ recommends an overall average canopy coverage of 25 percent as appropriate for urban areas in temperate and arid climates, such as Oroville, based on recommended coverage for specific land uses of 35 percent for suburban residential, 18 percent for urban residential zones, and 9 percent for central business districts. This recommendation is based on coverage provided by all trees within an urban area, including trees on public and private lands. Based on estimates discussed above and shown in Table 4-1, Oroville's canopy coverage is significantly lower the American Forests' standard overall as well as for specific land uses.

With consideration to percent coverage provided by the Oroville City Forest within each land use, parks and open space areas had the highest percentage of canopy coverage and industrial areas had the lowest level of canopy coverage. As previously discussed, total canopy coverage within industrial and other areas would increase if privately maintained trees were included in the assessment. However, there are opportunities to increase canopy coverage in all land uses. Streets and sidewalks serve as a primary location for urban forest trees.

South Oroville Canopy Coverage

As described above, formerly unincorporated South Oroville was not included in the tree inventory that was analyzed using iTrees. However, tree canopy in South Oroville was digitized from a 2012 aerial image, as shown in Figure 4-2.⁶ The aerial image was taken in the early spring, when trees that are apparently deciduous and not leafed out were digitized to the extent their branch structure was visible. Trees lacking leaves and areas where it was difficult to distinguish canopy from surrounding shadow were not digitized. Thus it is likely this layer under-represents the total canopy in South Oroville.

The results of the digitization of the aerial photograph show that 5.9 percent of South Oroville is covered by tree canopy, although as discussed above this is a conservative estimate due to the time of year that the photo was taken. Almost all of the trees in South Oroville are on privately owned (primarily residential) land. There are very few trees along streets, in the public right-of-way. While this coverage is notably higher than the 4 percent coverage among the inventoried City streets, parks and open space discussed above, it is important to note that the South Oroville canopy cover analysis attempted to capture all trees in the South Oroville area, including trees on private property, rather than just City-owned trees. Based on aerials of the city, it appears that other residential neighborhoods within Oroville may have similar overall (public and private land) canopy coverage as South Oroville. However, this conservative estimate is still substantially lower than the 25-percent coverage recommended by American Forests.

⁵ American Forests is a nonprofit conservation organization that is a recognized for their pioneering work in the science and practice of urban forestry. The difference between their canopy coverage recommendation and coverage recommend by this plan for Oroville is further discussed below under Canopy Coverage Targets.

⁶ Canopy coverage for South Oroville was digitized on-screen from a 2012 aerial image with 30 cm/pixel resolution at scales varying between 1:500 and 1:750.

Figure 4-2: 2012 South Oroville Canopy Coverage



Source: Butte County, 2009 and 2013. PlaceWorks, 2015.



- South Oroville Tree Canopy
- Oroville City Limit (2012)
- Oroville City Limit (2015)
- Oroville Urban Area

SPECIES COMPOSITION

The species composition of a forest affects the aesthetic character of a park or street, as well as the benefits that the trees provide. For instance, palms and conifers (like pine trees) are generally tall and narrow trees and provide minimal shade. Broadleaf trees, like oaks and sycamore, provide greater canopy coverage and shade and therefore have greater measurable benefits in this respect.

Oroville’s City Forest is composed of 93 percent broadleaf species, 4 percent conifers, and 3 percent palm trees. Of the broadleaf species, 95 percent are deciduous while the other 5 percent are evergreen. Most of the forest (57 percent) is comprised of medium stature trees, large and small trees account for 41 percent and 2 percent of the forest, respectively.

Species diversity is also an important consideration to forest health, since diversity can buffer the impacts of pests and weather conditions on the forest. For this reason, it is widely recommended that no more than 10 percent of the forest be comprised of any one species.⁷ Oroville’s City Forest includes 73 unique species, yet five species together comprise nearly 50-percent of the forest. The dominant species of the City Forest are identified include Chinese

⁷ Clark, James R., Nelda P. Matheny, Genni Cross, and Victoria Wake. “A Model of Urban Forest Sustainability.” *Journal of Arboriculture* 23(1): January 1997.



Overhead Utility Conflicts with Street Trees in Oroville



Existing Street Trees in Downtown Oroville



Dead Street Tree Limbs

Pistache (*Pistacia chinensis*) (14.3 percent), Maple (*Acer* species) (13.5 percent), Crape Myrtle (*Lagerstroemia* species) (11.5 percent), Sycamore (*Platanus* species) (8.2 percent), Northern Red Oak (*Quercus rubra*) (5.3 percent), Chinese Hackberry (*Celtis sinensis*) (4.3 percent), Caucasian Ash (*Fraxinus oxycarpa*) (3.9 percent), Japanese Zelkova (*Zelkova serrata*) (3.7 percent), Oak (*Quercus* species) (2.6 percent), and Pear (*Pyrus* species) (2.4 percent).

Inclusion of native species in the urban forest can be beneficial since native species are well-suited to the local climate and provide valuable wildlife habitat. Based on the 2011 tree inventory, there are several California native species included in the Oroville City Forest. These species include Velvet Ash (*Fraxinus velutina*), California Sycamore (*Platanus racemosa*), Gray Pine (*Pinus sabiniana*), Redwood trees (*Sequoia* species) and several oak species (*Quercus wislizenii* and *Quercus ilex*). In addition, the inventory identified additional oak, palm, pine, dogwood, birch, and maple trees that may be California natives, yet native range cannot be confirmed as the species name was not identified by the inventory.

RELATIVE AGE DISTRIBUTION

Age distribution is an important consideration when assessing an urban forest since every tree has a limited life span and different considerations are necessary depending on the age of a tree. For instance, urban trees are often planted at the same time (such as during the construction of a new park or street) and will reach the end of their life span at the same time, making it challenging to preserve an area’s character while addressing safety issues and removing trees. It is beneficial to a forest’s health to have an uneven age distribution.⁸ Studies suggest that the bulk of the tree population (approximately 40 percent) be composed of young trees in order to offset the loss of older and diseased trees.⁹

Given the difficulty of determining the age of each tree, diameter-at-breast-height (DBH), or diameter at 4.5 feet above ground level, is often used as an indicator of the age of a tree. Although DBH at different ages will vary depending on species, health, growing conditions, and other factors, generalized DBH classes are an effective tool for summarizing population distribution within diverse urban forests and are commonly used for purposes of urban forest assessment and planning. The DBH classes used to assess Oroville’s City Forest are based on Richards (1983).

Oroville’s City Forest has higher percentage of young trees than old trees. Approximately 72 percent of the trees in the City Forest are less than 15 inches at breast height, 21 percent range from 15 to 30 inches in diameter at breast height, and the remaining 7 percent are greater than 30 inches in diameter at breast height. As Oroville’s Urban Forest ages, it will be important to continue to plant new trees in order to balance age distribution and build a healthier forest.

8 Clark, James R., Nelda P. Matheny, Genni Cross, and Victoria Wake. “A Model of Urban Forest Sustainability.” *Journal of Arboriculture* 23(1): January 1997.

9 Richards NA. 1983. “Diversity and stability in a street tree population.” *Urban Ecology*. 7:159–171.

CONDITION

In the Tree Inventory, each tree was evaluated as being dead, critical, poor, fair, or good with consideration to the structural condition (the woody components) and the functional conditions (the foliage).

The City Forest in Oroville appears to be well managed, with 94 percent of the trees surveyed being rated as fair or good. Only 43 (less than 1 percent) of the 5,164 trees surveyed were rated as Declining/Dead, however, 273 (5 percent of the total surveyed) were rated as being in poor condition.

MAINTENANCE NEED

As part of the tree inventory, maintenance recommendations were attributed to each tree surveyed. Maintenance recommendation types included inspections, routine trimming, spraying insecticide, and tree removal.

The identified maintenance needs indicate that Oroville's City Forest is in relatively good condition. Less than 1 percent of trees surveyed were flagged for inspection, insecticide spray, or tree removal. The primary maintenance need is routine trimming, with 99 percent of trees surveyed identified as being in need.

CONFLICTS WITH EXISTING INFRASTRUCTURE AND UTILITIES

Urban trees exist in close proximity to other features of the urban environment and can interfere with other systems. Common issues include sidewalk damage from tree roots and tree canopy interference with overhead utility lines.

Based on the 2012 inventory, only 12 percent of Oroville's City Forest was causing any sidewalk damage. However, while the overall City Forest population does not pose a significant problem for sidewalks, certain tree species cause greater issues than others. The seven tree species identified by City staff as most problematic in terms of sidewalk damage include:

- American Sweetgum (*Liquidambar styraciflua*)
- Chinese Pistache (*Pistacia chinensis*)
- Japanese Zelkova (*Zelkova serrata*)
- Mulberry (*Morus* species)
- Chinese Tallow (*Sapium sebiferum*)
- Red Oak (*Quercus rubra*)
- Raywood Ash (*Fraxinus oxycarpa* 'Raywood')

In most cases, damage was caused as a result of trees being planted in wells that were too narrow.¹⁰ The 2012 inventory also found many of these species problematic, yet reported additional problem trees as well. Following is a list of problematic trees and the percentage of their total population where sidewalk damage was found:

¹⁰ Conversation with City of Oroville staff, May 15, 2015.

- Chinese Elm (*Ulmus parvifolia*) : 52.31 percent of species population
- Common Hackberry (*Celtis occidentalis*) : 50 percent of species population
- Silver Maple (*Acer dasycarpum*) : 30 percent of species population
- Japanese Zelkova (*Zelkova serrata*) : 27.98 percent of species population
- Hickory (*Carya x ludoviciana*) : 27.78 percent of species population
- Camphor tree (*Cinnamomum camphora*) : 27.71 percent of species population
- Chinese Hackberry (*Celtis sinensis*) : 26.46 percent of species population
- Ailanthus (*Ailanthus* species): 25 percent of species population
- Ash (*Fraxinus* species) : 25 percent of species population

Similar to sidewalk conflicts, 18 percent of Oroville’s City Forest conflicts with overhead utility lines. Trees that conflict with overhead utility lines are distributed relatively evenly throughout the city, but primarily occur along major roadways.

FOREST HEALTH

In an urban environment, forest health is artificial and dependent upon humans for selection, planting, and nurturing from youth to maturity. The forest cycle, including biochemical cycles, gas exchange, productivity, competition, succession, and regeneration, does not operate the same in an urban setting as it would in a natural setting. An urban forest, intertwined with human production and action, is therefore dependent on humans to plant and care for it. Based on the 2012 inventory, only six trees were dead or declining, while 41 percent of the trees were in good health, 47 percent were in fair health, and 10 percent were in poor health. This indicates that nearly 90 percent of trees are currently in good or fair health.

Practices affecting the health of the community forest are described below.

- **Planting Practices.** Poor nursery stock root development and improper pruning cuts made at the nursery and not corrected in the field can lead to the development of weak branch attachments. Without corrective pruning within the first few years after planting, a tree will likely develop structural problems such as weak or multiple limb attachments.
- **Use of Stakes and Ties.** Improper use of stakes and ties affect the health of many of Oroville’s maturing trees. Nursery ties and stakes are intended to support a tree’s growth, but left too long they hinder the development of a tree’s core and root strength to combat wind.

- **Surroundings:** Conditions such as specific soil, light, moisture, and well space can affect tree health adversely.
- **Pruning Practices:** Lack of pruning or incorrect pruning can result in structurally weak trees that are susceptible to breakage and other hazards. These trees can become hazardous, unattractive, and costly to maintain.
- **Conflicts with Utility Lines:** Topping is perhaps the most harmful tree pruning practice known. It leads to vigorous water sprouting (epicormic shoot growth), increases maintenance costs, and destroys the structure and natural form of the tree. Topping stresses the tree, which will become more vulnerable to insect and disease infestation. When pruning trees under utility lines, directional pruning should be used on every cut. Pruning styles that should be used for utility line clearance are crown reduction, side pruning, V-pruning, and/or through-pruning.
- **Soil and Root Care:** Tree health depends as much on good soil, healthy roots, and trunk as it does on the upper branches and canopy. When trees are planted in the wrong location, root growth can conflict with sidewalks and other urban infrastructure and become a costly maintenance issue. When root growth is not addressed early enough or with the proper techniques, the structure and health of the tree can also be permanently damaged. Avoid planting in areas too shallow or small to allow for optimum growth. Another prevalent challenge in Oroville is compacted, barren soil in planting areas devoid of nutrients and a living soil food web full of abundant, beneficial, microorganisms. Trees growing in such conditions are much more susceptible to disease and less likely to thrive. These conditions can be corrected with proper soil preparation, planting, and maintenance practices. Adding organic matter in the form of compost and mulch is a relatively easy way to begin to build soil health. Additional recommendations for building healthy soil are described in Appendix D, Plant Palette.



Tree Well in Planting Strip



Shaded Street with Power Lines

BENEFITS PROVIDED BY OROVILLE'S EXISTING FOREST

The benefits of an urban forest population can be measured both in positive environmental impacts and economic value. These benefits can be estimated and quantified based on tree size, type, and condition to provide a value of the urban forest. The following is a summary of both the environmental and economic benefits of Oroville's City Forest based on iTrees Streets analysis. A full summary of the impacts of the individual tree species in Oroville's City Forest can be found in Appendix C.

Environmental benefits include the interception of stormwater runoff, improvement of air quality, and reduction of atmospheric carbon dioxide, as described above in greater detail. Larger trees with more established canopies and roots tend to have greater positive impacts; however, as noted previously, it is important to maintain a young population to replace dying or removed trees and thereby maintain continuous urban forest benefits.

Table 4-2: Summary of Annual Net Environmental Benefits

	Stormwater (gallons of stormwater intercepted)	Air Quality (pounds of reduced air pollutants)*	Carbon Dioxide (tons of CO ₂ sequestered per year)
Total	3,876,719	7,478.70	198.10

* Pounds of reduced air pollutants includes deposition of ozone (O₃), nitrogen dioxide (NO₂), particulate matter (PM₁₀) and sulfur dioxide (SO₂) and avoidance of NO₂, PM₁₀, volatile organic compounds (VOCs), and SO₂, but does not take into account potential Biogenic Volatile Organic Compounds (BVOCs) emissions.

Table 4-3: Summary of Annual Net Economic Benefits

Energy		Stormwater	Air Quality*	Carbon Dioxide	Aesthetics	Total Benefits
\$75,343	\$30,238	\$71,629	\$6,404	\$672,748	\$856,362	\$1,712,724

*Air quality includes deposition of ozone (O₃), nitrogen dioxide (NO₂), particulate matter (PM-10) and avoidance of NO₂, PM₁₀, volatile organic compounds (VOCs), and sulfur dioxide (SO₂), as well as Biogenic Volatile Organic Compounds (BVOCs) emissions.

Many of these environmental benefits also have economic value, iTrees Streets can be used to quantify the economic value trees provide. Based on the iTrees analysis, Oroville’s City Forest currently has an annual estimated gross value of \$1,712,724 considering combined benefits related to energy savings, carbon dioxide sequestration, air quality, stormwater management, aesthetic and other benefits. Considering these benefits as a whole, the average annual economic benefit of a tree within Oroville’s City Forest is \$166. The approach to calculating economic values is described below.

- **Energy Savings:** Trees save energy by cooling the immediate area through shading and transpiration, which also cools pavements and reduces the need to heat and cool buildings. The value of energy savings benefits from Oroville’s City Forest is calculated by iTrees Streets based on assumptions for tree species regarding shading, canopy coverage, species size, and assumptions relating to regional climate and wind patterns.
- **Carbon Dioxide Reduction:** Trees reduce carbon dioxide, a harmful greenhouse gas, by taking it out of the air and transforming it into wood, bark, and foliage. By lowering surrounding summer air temperatures they also cut urban energy use for cooling, and thus carbon dioxide emissions due to power plant energy production. The value of reductions in carbon dioxide due to the city’s

urban forest is calculated by iTrees Streets based upon costs associated with climate change, such as the increased energy costs needed to cool households in hotter temperatures. The amount of carbon dioxide sequestered (stored) in a tree depends upon tree size and species. Carbon dioxide released and generated by tree maintenance (use of chain saws, etc.) and by decomposition of trees are also considered by iTrees Streets.

- **Stormwater Runoff Reduction:** Tree roots and leaf litter promote the infiltration of stormwater into the soil. Trees slow down and temporarily store runoff and pollutants by taking them up from soils through their roots. Trees can transform these pollutants into less harmful substances, and can store rainfall in their canopy, releasing it later as transpiration. A single tree can store 100 gallons or more, at least until it reaches saturation after one or two inches of rainfall. It is estimated that an urban forest can reduce annual runoff by 2-7 percent, with reductions as high as 65 percent in some residential developments.^{11 12} The implied value of stormwater reduction considers the amount of stormwater captured and the general cost of urban stormwater management.
- **Aesthetic and Other Benefits:** The fiscal value of beautification, shade, habitat, privacy, comfort, and great urban spaces is difficult to quantify. iTrees Streets estimates the fiscal value of these benefits based upon estimated property values. Research shows that buyers are willing to pay up to 20 percent more for houses and properties with trees, and therefore trees increase property value. The benefits of street trees to a home's value spill over to residences within a 100-foot radius. In addition, research has shown that people are willing to travel farther, visit more frequently, and pay more for goods and services in business districts with trees – on average 12 percent more.^{13 14 15 16 17}

11 US EPA, 21013. *Stormwater to Street Trees: Engineering Urban Forests for Stormwater Management*. <http://water.epa.gov/polwaste/green/upload/stormwater2streettrees.pdf>.

12 Arbor Day Foundation, How Trees Can Retain Stormwater Runoff. *Tree CityUSA Bulletin*. http://www.fs.fed.us/psw/programs/used/uep/products/11/800TreeCityUSABulletin_55.pdf.

13 US Forest Service Pacific Northwest Research Station. 2010. Science Findings Issues 126. https://www.itreetools.org/news/articles/PNW_scifi126_Sept2010.pdf.

14 Wolf, K.L., 2003. Public Response to the Urban Forest in Inner-City Business Districts. Special Issue on Social Aspects of Urban Forestry. *Journal of Arboriculture*, 29, 3, 117-126.

15 Wolf, K.L., 2005. Business District Streetscapes, Trees and Consumer Response. *Journal of Forestry*, 103, 8, 396-400.

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New Street Trees along Oro-Dam Boulevard

MANAGEMENT OF THE EXISTING FOREST

The City of Oroville’s Parks and Recreation Department currently maintains and manages the trees in the City’s parks and open spaces, and within public right-of-ways, but only those on road segments with curbs, gutters, and sidewalks, adjacent to the curb and gutter. Trees located outside of the ROW are not maintained by the City because they are growing on private property; this includes trees located on the non-street side of existing sidewalks.

There are six employees in the Department and three are board-certified arborists, including the Parks and Trees Supervisor. Staff does all tree maintenance in-house, including planting, removing, pruning, irrigating, stump riding, and applying pesticides if necessary. Thirty-five to 40 percent of staff’s time and effort is devoted to managing Oroville’s street trees, which is equivalent to approximately 2.4 Full Time Equivalent (FTE) staff. Only one job in the last 15 years has been contracted out.

The total annual community forestry expenditures in Oroville for 2013-2014 were roughly \$186,000 and are funded primarily by the General Fund. During that the 2013-2014 year, 47 trees were planted, 1572 trees were pruned, and 43 trees were removed; and expenditures are estimated by the City to have been divided amongst the tasks as listed below.

- Tree Planting and Initial Care: 3%
- Tree Maintenance: 31.5%
- Tree Removals: 4%
- Management: 61%
- Utility Line Clearance: 0%
- Volunteer Time: 0%
- Certifications/Training: 0.5%

Increasing the canopy coverage of the Oroville City Forest to 21 percent would increase annual benefits, as described above, as well as annual expenditures. Assuming that expenditure increases reflect the increase in the canopy, it is estimated that the annual budget would increase over time to approximately \$1 million dollars and that 12 FTEs would be needed to maintain the forest once the target is reached. The City has built a strong working relationship with PG&E, as well as their tree assessment consultant, Western Environmental Consultants (WEC). This relationship has allowed for an efficient and holistic approach to coordinating tree planting, maintenance, and removal with utility needs. The City reviews the scope of work provided by WEC prior to work being done and WEC sends out a notice to neighbors. Additionally, PG&E’s support has been gained for events such as the Arbor Day celebration. Phone and cable companies prune trees once every five to seven years, except for the high voltage power lines, which are cleared annually.

As mentioned earlier, there are seven designated tree species that the City no longer plants and actively removes because they are problematic. Previous planting of these species in the public right-of-way has resulted in roots causing damage to curbs, gutters, and sidewalks. The City is actively removing these trees and replacing them with more appropriate species as a joint

effort between the Parks and Recreation and the Public Works Departments. The system is both reactive and proactive, with trees being removed that are causing damage to adjacent infrastructure, as well as removal of problematic species even if they are not yet causing damage.

It is anticipated that the recent formation of a community organization, Save Oroville Trees, may open new possibilities for partnerships with community organizations. Save Oroville Trees adopted Centennial Plaza and has taken responsibility for upkeep of the property by pruning shrubs, weeding, and overseeing trash pickup. Other roles for the organization may be explored in the future.

RECOMMENDATIONS FOR ENHANCING THE URBAN FOREST

Based on the existing conditions of the urban forest, this section presents strategies for achieving the urban forestry goals through recommending canopy coverage targets and identifying opportunity sites for focused implementation.

CANOPY COVERAGE TARGETS

As discussed in the existing conditions analysis, the estimated canopy coverage of 4 percent within the City’s street right-of-ways, parks and open space and the 6 percent overall coverage estimate within South Oroville are both far less than the 25 percent recommended by American Forests as appropriate for urban areas in temperate and arid climates.

It is recommended that the City increase coverage within public right-of-ways and other public spaces and work towards a 21 percent citywide canopy coverage target for all public and private lands, with the understanding that increases will be incremental and the target represents a long-term goal. This target is based on American Forests’ recommendations for coverage in residential, commercial and institutional and is adjusted based on existing land uses and existing conditions within the community, as shown in Table 4-4. Meeting this target will require that the City work with other jurisdictions, agencies, and property owners to increase tree plantings outside of streets and parks.

Table 4-4: Canopy Coverage Targets

Landuse	Total Acres	Target (%)	Target (acres)	Discussion of Target
Residential (Low Density)	3554	35%	141	American Forest recommendation
Commercial/Institutional	1948	9%	20	American Forest recommendation
Industrial	1003	6%	3	Tripling of existing coverage; assumes less opportunity than commercial
Open Space	1536	15%	230	Assumes significant opportunities in parks and open space, yet considers constraints within undeveloped open space
Total	8041	21%	394	



Newly Established Trees in Oroville

2012 inventory and South Oroville study both indicate that coverage is low, a citywide canopy coverage study that encompasses the entire city and includes both public and private land would greatly inform existing conditions and key opportunities for enhancement. The cost of such a study would depend on the approach and area covered. In addition, an inventory of trees within areas that have been annexed into the City since the 2012 inventory, including the Southside area, should be conducted.

Within City-owned property, there is a clear opportunity to increase street tree plantings as well as canopy coverage within parks. It is recommended that the City commit to no-net-loss of trees within the existing City-maintained forest, and strive to increase plantings throughout the city by focusing on the opportunity sites discussed below. Within street right-of-ways, it is recommended that the City also work towards a canopy coverage of 21 percent within parks and streets, which would require more than doubling the forest. Tree spacing necessary to reach this target within streets depends on tree species and size as well as width and conditions within the right-of-way, and is discussed under Design Recommendations, below.

Achieving this target would substantially increase the benefits provided by the Oroville City Forest. While the actual benefits would depend on the species, location, and health of the trees planted, it can be assumed that benefit increase would reflect canopy increase. Therefore, increasing the canopy coverage of the Oroville City Forest from 4-percent to 21-percent would increase the value of total benefits from \$1,712,724 to \$8,991,801 (refer to Table 4-5 for description of benefits).

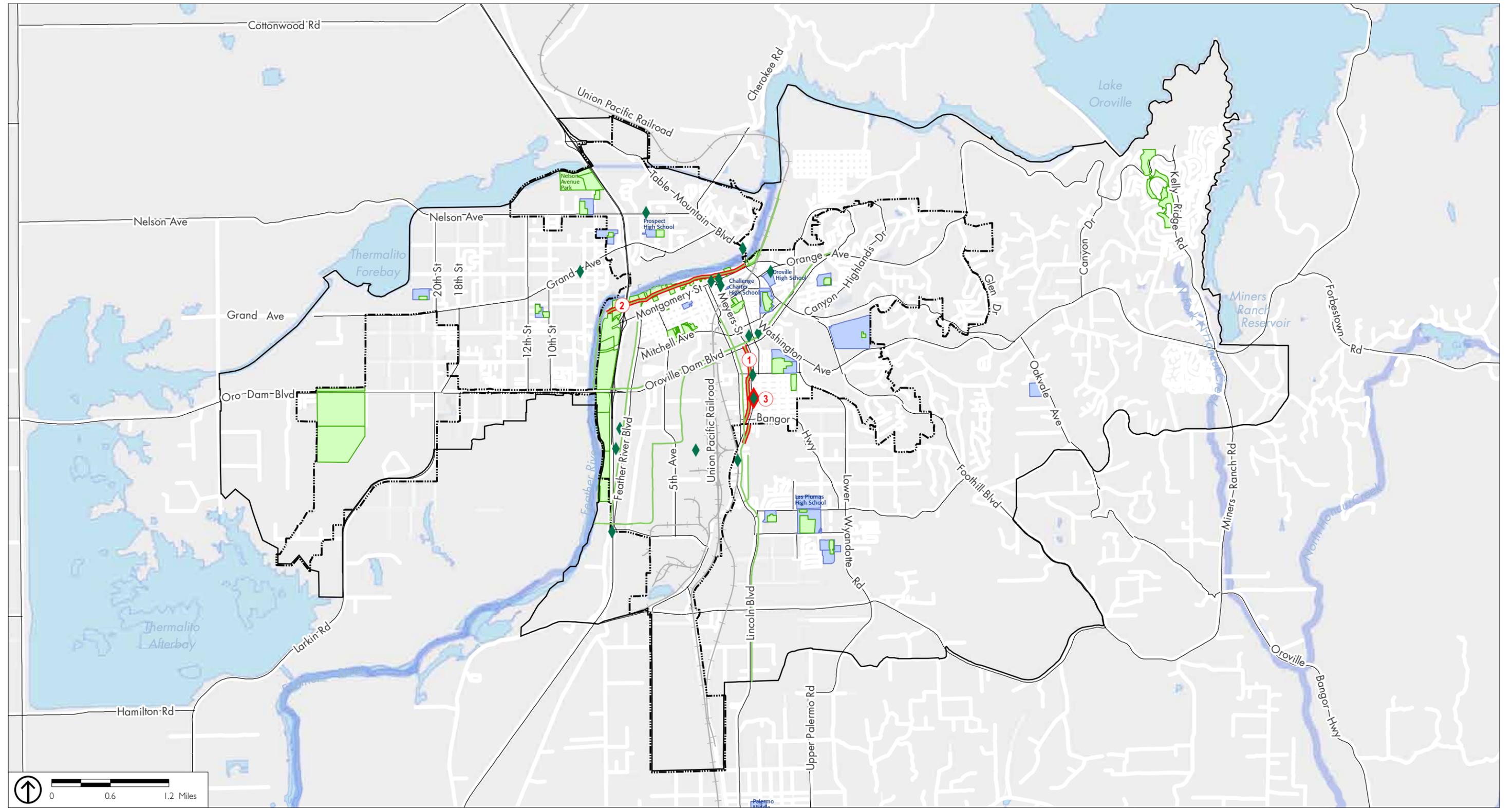
OPPORTUNITY SITES

Replacement of existing trees and planting of new trees is central to enhancing the forest. Trees that are either unhealthy or do little to contribute to the urban forest should be replaced with species that provide greater urban forestry benefits, such as the tree species with larger and fuller canopies identified in the Plant Palette (Appendix D). New trees should be located where they will have the most impact. Table 4-5 identifies key opportunities based on land use typologies and provides specific recommendations for enhancing the urban forest within Oroville.

The importance of increasing Oroville's City Forest is illustrated by the huge number of sites and corridors the community identified as opportunities for trees and other landscaping, as shown in Figure 4-3. Suggestions ranged from providing shading in parks, along streets, and in community gathering spaces to beautifying key commercial nodes and community entryways. Community members pointed to schools as needing more trees, and to a number of specific properties that needed beautification.

There were a large number of sites and corridors that the community identified as urban forestry and planting opportunities, as listed in Appendix A, Opportunities Matrix. The ones selected as priorities were the Myers Street corridor, specifically at the Wyandotte intersection, and the Levee Trail along the Feather River. These would have a large impact for many different people at key community nodes. Design solutions for these two sites are illustrated and described in Chapter 8, Conceptual Site Plans.

Figure 4-3: Urban Forestry and Planting Opportunities



Greening Opportunities

- ◆ Planting Sites
- ◆ Priority Planting Sites

- Planting Connections
- Priority Planting Connections

- Parks & Ballfields
- Schools

- Oroville Urban Area
- Oroville City Limit

PRIORITY OPPORTUNITIES

- 1 Add street trees and plantings along Myers south of Oro Dam Boulevard.
- 2 Beautify the river and levee Downtown.
- 3 Shade El Medio Fire Department event site.

Source: Butte County 2013.

The community has been clear from the beginning of the planning process for the Urban Greening Plan that native plants, which require less maintenance and water, should be used in landscaping wherever feasible, and that invasive species should be avoided and managed. Community members also stressed the need for maintenance, and therefore for plantings that can be easily maintained. The community’s input is incorporated into Appendix D, Plant Palette.

Table 4-5: Opportunity Types

OPPORTUNITY TYPES	DESCRIPTION
Freeways and Highways	The noise, air pollution, and aesthetics associated with freeways and highways can be mitigated with a forest buffer of native trees and trees that provide high air quality benefits densely planted along the roadway corridor.
Streets	While large-stature trees can create continuous canopies over residential and commercial streets and provide notable environmental benefits, smaller stature trees are sometimes better suited to cultural preferences and/or physical site constraints. Furthermore, tree plantings within the ROW can contribute to stormwater management, beautification, and walkable environments.
Parks and Open Space	Parks and open spaces provide opportunities to plant trees that require more space, and to further define and unify the City’s character.
Parking Lots	Trees should be planted in existing public and private parking lots to create well-shaded areas, reduce ambient temperature, help manage stormwater and protect water quality. The canopy will improve the shopping experience for all, as well as attracting new shoppers to the area.
Vacant Lots	Vacant lots provide blank canvases and perfect opportunities to plant forest pocket parks that provide neighborhood recreational amenities and advantageously increase the urban tree canopy coverage.
Utility Corridors	As with vacant lots, utility corridors are open areas that can be strategically planted with trees to increase urban tree canopy coverage. Trees under utility lines will need to be small stature species so that they will not grow into the lines, presenting a safety hazard and requiring maintenance.
River Corridors	Increasing trees along river corridors, such as Feather River, will help to buffer the waterbodies from adjacent urban land uses and enhance the habitat value of the corridor.
Trail Corridors	Trees planted along trails will provide shade and beautification of the corridor for bicyclists, equestrians, runners, and/or hikers to enjoy.
Alleyways	Narrow alleyways may not provide enough space for trees, but wider ones can be designed with bulbouts for trees, which will shade and green the space. If utility lines run overhead, then the trees will need to be small in stature.
Private Property	Although private property is beyond the jurisdiction of the City, the City can plant new trees in partnership with other land owners and encourage private property owners to plant trees on their respective properties through financial incentives and education tools, such as design recommendations and tree planting and care guidelines.

DESIGN RECOMMENDATIONS

Design provides a framework for optimizing the benefits of the community forest. Plantings that mitigate Oroville's hot, dry summers and impermeable surfaces would beautify the city, improve street flooding issues, and create a healthier, more comfortable, and more appealing community for residents and visitors. This section introduces a recommended plant palette, identifies design principles and standards that should be considered for all projects, recommends standards for creating successful designs, and illustrates the potential for integrating these tools at demonstration sites selected to represent typical conditions found in the Oroville Urban Area. Because these are designed to address typical conditions, they are conceptual in nature. The ideas embodied in the demonstration site designs can be applied in a variety of combinations throughout the Urban Area.

PLANT PALETTE

A plant palette was developed specifically for the Oroville Urban Area and includes recommended plant species and summarizes their respective characteristics, such as size, spacing, and irrigation and maintenance needs. The palette, which emphasizes drought-tolerant and low-maintenance species and provides specific plant selection criteria, can be found in Appendix D.

DESIGN PRINCIPLES

The following design principles should be considered for all projects related to the community forest, from large-scale planning projects such as corridor studies to small-scale planting plans, daily maintenance, and tree replacement efforts.

BALANCE SPECIES DIVERSITY

The use of visual patterns in an urban forest, and especially along streetscapes, contributes to the character of an area. A carefully selected grouping of two or three tree species, planted in a pattern along a street, brings a sense of order and identity to a neighborhood. Species diversity is also important to the longevity of the urban forest; planting the same type and age of tree in an area leaves an area vulnerable to disease and potential for all trees to die at the same time. When a forest includes a diversity of species, it is more resilient to potential pests and diseases and is able to provide a wider range of benefits than single-species forests. However, a forest that includes too many different types of trees will be challenging to maintain and will likely lack the visual pattern that creates cohesive urban form. Balancing visual patterns with species diversity should be a key design goal at all planning scales, and especially when planning for large areas such as an entire neighborhood.

DESIGN FOR MULTIPLE BENEFITS

The numerous benefits that trees offer an urban environment should be considered with each planting. It is important that opportunities for pollution reduction, stormwater management, shade production, habitat creation, and urban beautification be optimized through the proper selection of trees and appropriate retrofits of the urban area. The selection of habitat-building trees and the creation of multi-layered canopies are among the strategies that can be employed to enhance habitat. Specific strategies for optimizing benefits include:

- Use plant **PALETTES AND DESIGNS** to celebrate and further define the unique sense of place and identity of each park, street corridor, or urban forestry project. Create aesthetic unity through cohesive plantings within each park, and perimeter plantings that are cohesive with any streetscape plantings. The urban forest should be designed to highlight cultural and ecological heritage through plant selection and site design.
- Plant **NATIVE SPECIES**, particularly in parks. While they are not always well suited to the constraints of urban environments, including constrained tree wells and clearance requirements along roadways, many species are highly suitable to park environments.
- Incorporate **EDIBLE TREES** where there is community support and where appropriate maintenance can be ensured.
- Maximize coverage with **LARGE CANOPY** shade trees, such as oak trees, wherever possible.
- Locate trees to **SHADE PAVED SURFACES**, gathering areas, and buildings.
- Emphasize trees with high capacity for **CARBON STORAGE AND POLLUTANT REMOVAL** near freeways and other areas where air quality is of high concern. (These species are identified as appropriate for freeway buffers in the Plant Palette).
- Create **AGE-DIVERSE, MULTI-LAYERED CANOPIES** that enhance habitat and facilitate cost-effective management..
- Actively encourage the use of trees as a primary means of **STORMWATER MANAGEMENT**, and integrate stormwater treatment into tree planting designs. The amount of pollutants that enter the storm drain can be significantly reduced by intercepting and infiltrating stormwater in planting spaces using design tools such as porous paving, open grid paving, structural soil, bio-retention cells, infiltration trenches, tree well filters, vegetated swales and rain gardens, and stormwater planters. In addition, increasing the canopy has direct benefits for stormwater management as canopy cover catches and slows rain, allowing more time for infiltration.

RESPOND CREATIVELY TO SITE CONSTRAINTS

Urban environments go hand-in-hand with design and planting constraints, such as limited planting space, above- and below-ground utilities and infrastructure, compacted soils, and inconsistent planting areas along streets. On a site-by-site basis, these constraints should be approached as design cues to guide the selection of appropriate tree species and identify opportunities for improving air quality, stormwater management, urban form, and the character of the city.

SITE DESIGN STANDARDS

TREE SPACING

Trees should be provided with enough space above- and below-ground to grow to their optimum size, considering urban conditions rather than natural conditions. Above-ground spacing standards for trees that are planted in even patterns are listed below:

- 20 to 40 feet on-center depending on species (see Appendix C, Plant Palette for recommended spacing by species)
- 10 feet from light poles
- 5 feet from utility meter boxes

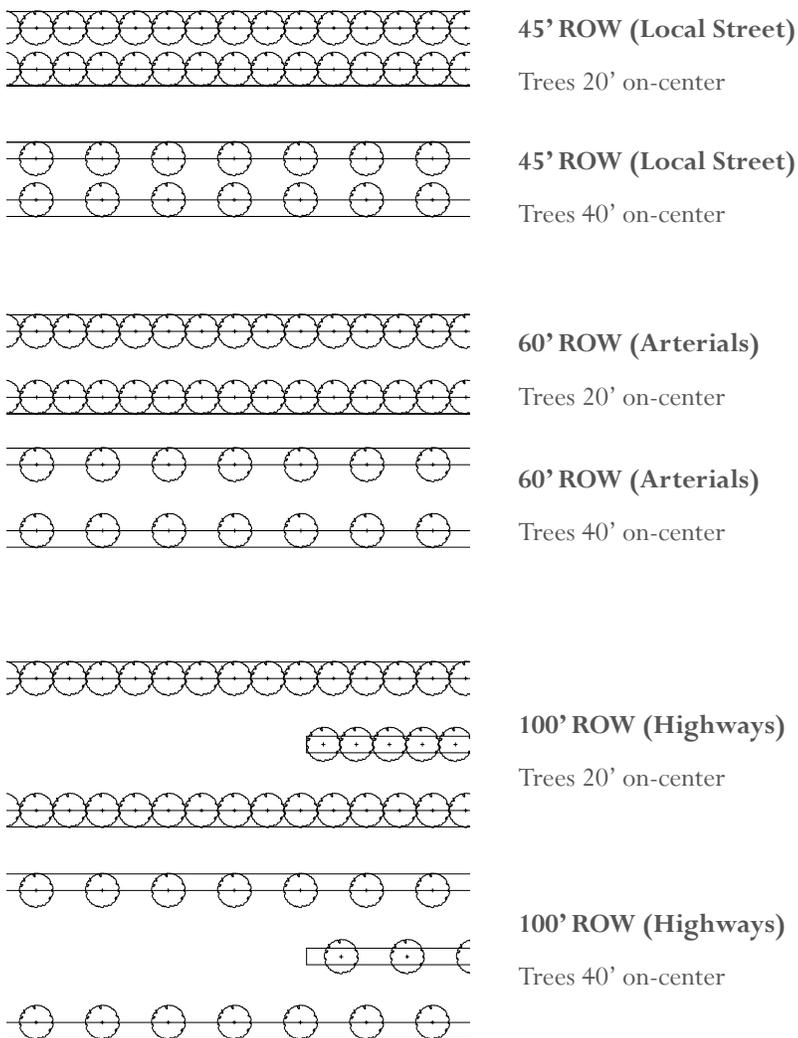
On-center spacing between street trees affects the level of canopy coverage in relation to the street right-of-way. Figure 4-4 illustrates approximate canopy coverage that can be achieved within the City right-of-way by applying the standards recommended above. Actual canopy coverage will depend upon the size and species of the tree, the width of the right-of-way and other conditions such as curb cuts, medians, utilities, and intersection characteristics. The ranges in Figure 4-4 assume that 20-percent of potential planting sites are not planted due to such constraints. Tree spacing must also allow for visibility at intersections and mid-block left-turn locations.

BALANCING SPECIES DIVERSITY

As discussed above, it is best when a forest includes a balanced percentage of young, semi-mature, and mature trees so that substantial portions of the forest will not become over-mature/senescent and require replacement all at once. It is also advantageous to have the right balance of species diversification to avoid mass failure that may occur from planting a monoculture, or single species of tree. These monoculture plantings can be susceptible to pests or diseases such as Dutch Elm disease or emerald ash borer. Balancing the use of a wide variety of tree species with carefully selected groupings of two or three species in visual patterns should be a key design goal at all planning scales, and especially when planning for large areas such as an entire neighborhood. Streets or blocks may be lined with single species on specific streets, but not every street or adjacent streets. A goal to follow in reaching species diversity is to follow the 10/20/30 rule. This rule limits any one species or cultivar to 10 percent, any one genus to 20 percent, and any one family to 30 percent of the tree population. Following are strategies to achieve this balance:

- Limit the number of species used on a block to 2 to 3. Establish a regular pattern for alternating species.
- Highlight key intersections with different species than the rest of the block.
- Use different species of the same type of tree. For instance, planting several types of evergreen oak will increase resistance to disease yet maintain a cohesive appearance.
- Alternate different species throughout a neighborhood using a block-by-block pattern.

Figure 4-4: Approximate ROW Canopy Coverage



TREE WELLS (SOIL AREA)

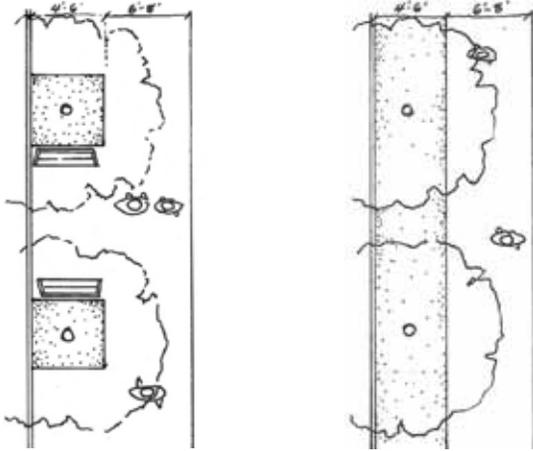
The size of tree wells, or the soil area in which trees are planted, is an important design consideration when planning for street trees since the tree well size will help to determine which species to plant and will affect sidewalk width. The volume of soil available for tree roots will also affect tree health, size and longevity. Current research on soil root volumes recommends 200 cubic feet of good quality soil for small trees under 14-foot canopy, 400 cubic feet for medium sized trees with a 26-foot canopy and 800 cubic feet for trees with a 32-foot canopy.¹⁸ Connecting individual tree wells with linear planting strips or larger planting areas will increase the soil volumes and potential for a more robust urban forest. For example, an area 4' x 6' x 3' deep provides 72 cubic feet, while a 4' x 20' x 3' deep planter strip will provide 240 cubic feet. Figures 4-5 illustrates how to maximize tree well size.

The following should be considered when determining tree well width:

- **Plant Requirements.** The minimum tree well size for each species is identified in Appendix D, Plant Palette.
- **Utilities.** New utility lines should be 20 feet from the eventual root ball when possible.
- **Minimum Tree Well Square Footage.** The minimum square footage of a tree well is 16 square feet (4' X 4') in constrained urban spaces. Where space is available, tree wells should be 4' X 6' or larger. Selected trees should be appropriate for tree well size.
- **Relationship to Pedestrian Right-of-Way.** The size of a tree well should respond to the size of the pedestrian right-of-way (combined width of planting area and sidewalk). Larger right-of-ways may be able to provide larger tree wells, yet sidewalk width must be maintained as appropriate for street type and level of use (typically 6 feet). Use of the Silva Cell, a modular suspended pavement system, or other structural solutions can allow adequate growing space to be maintained beneath sidewalks, reducing the need for large tree wells in constrained urban conditions; refer to Chapter 6, Stormwater Management.

¹⁸ Urban, James. 2008. *Up by the Roots: Healthy Soils and Trees in the Built Environment*. Wichita, Kansas: International Society of Arboriculture. Table 2.4.1, page 205.

Figure 4-5: Tree Wells



Typical Tree Well Sizing (left)

Tree Wells Linked Together to Maximize Root Space (right)

URBAN FORESTRY DESIGN CONCEPTS

There are numerous ways in which the urban forest within the Oroville Urban Area can be enhanced through design. The following three site design concepts illustrate a variety of possibilities for new trees and increased planting areas in the community. The sites were picked to represent typical conditions and include roadways, parking lots, and vacant lots. Each typology offers a different set of opportunities, described and illustrated below, that should be optimized to enhance the urban forest.

VACANT LOT TO FORESTED POCKET PARK

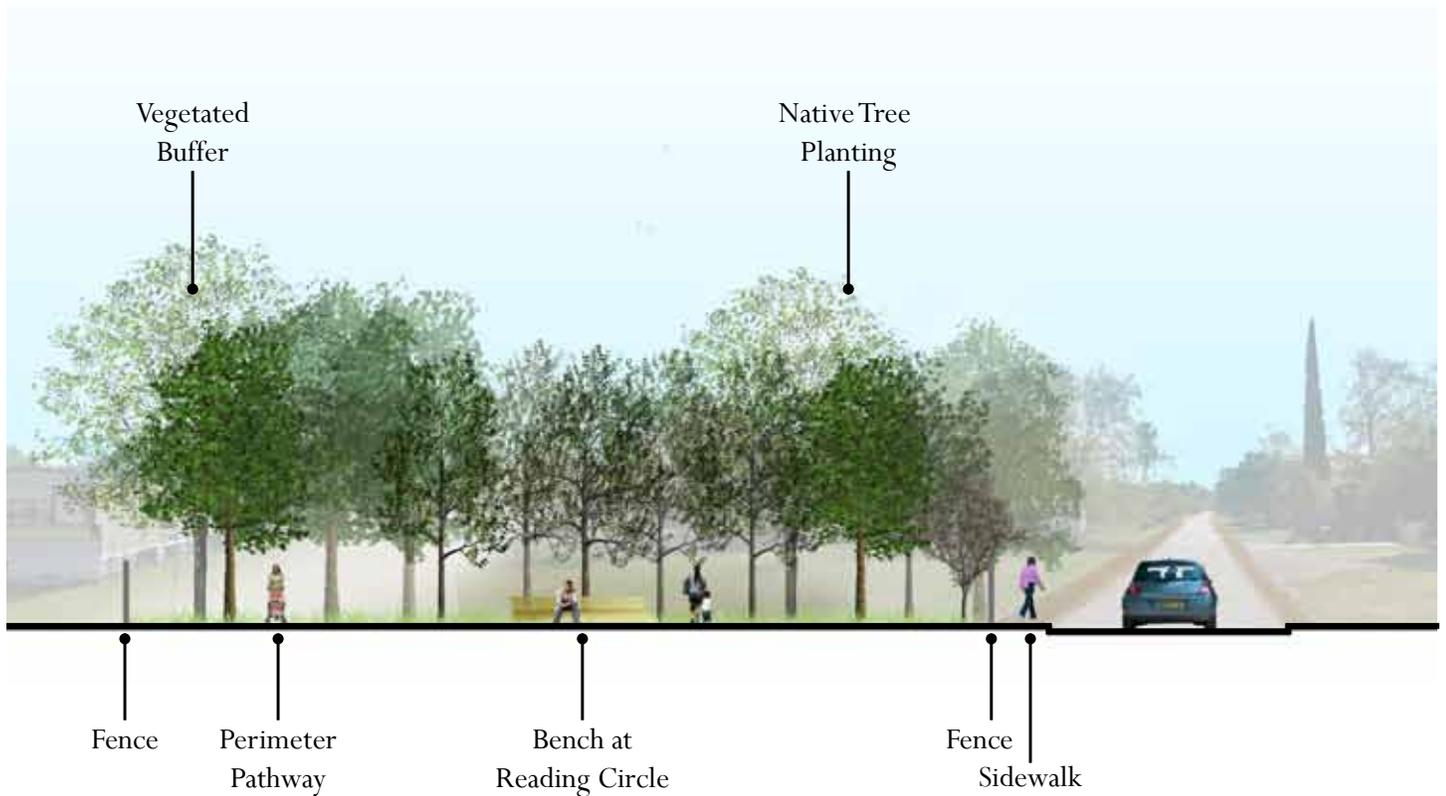
As mentioned in Chapter 7, Clean and Green, many of the lots in the Southside neighborhood are vacant. There are opportunities to transform these vacant lots into community gardens, as well as create a forested pocket park. Planting trees in these areas will help to offset carbon emissions and reduce the urban heat effect, which will improve the microclimate of the neighborhood. Opening a select vacant lot to the public as a demonstration pocket park provides a desired community space that is shaded from the hot summer sun

Figures 4-6 and 4-7 illustrate a Southside vacant lot as a demonstration pocket park and forest with a dense and diverse canopy. This would serve as a demonstration site for a healthy urban forest, including a diversity of species, and an emphasis on native and drought-tolerant species. Low understory planting and trees pruned above head height allow for high visibility into the forest from the street. A planted buffer and/or fence separate the space from adjacent land uses and discourage dumping. Gathering areas include seating at the entrance and around a seating area in the heart of the site. Interpretive and informational signage would provide an explanation of the benefits of a healthy urban forest and describe the species utilized in the demonstration site.

Figure 4-6: Urban Forest Concept Design: Vacant Lot to Forested Pocket Park (Plan)



Figure 4-7: Urban Forestry Concept Design: Vacant Lot to Forested Pocket Park (Cross-Section)



SHADED DOWNTOWN PARKING LOT

A retrofit of a downtown block with surface parking, as shown in Figure 4-8, illustrates how increasing shade trees and connecting planting areas in parking lots can beautify parking areas while also improving stormwater management and tree health. These subtle improvements can be done without hampering vehicular circulation and parking needs, yet can have substantial benefits for the community and urban forest. The design illustrates an increase in planted area from less than 10% to over 40%, which will accommodate all stormwater onsite, and an increase in shaded area provided by the additional tree canopy, from less than 5% to over 50%.

CREATE WALKABLE STREETS AND BUFFER HIGHWAYS

Figure 4-9 illustrates how to use trees to transform Nelson Avenue into a more walkable arterial to provide a safe walk to nearby schools for local youth. The tree planting design addresses factors such as more formal spacing, tree wells, sidewalk shade, and a buffer between pedestrians and adjacent traffic. The design also shows a buffer along Highway 70 that is comprised of a diverse selection of native trees, which will increase beautification and reduce noise and air pollution. Implementation of the design would need to be coordinated with Caltrans.

Figure 4-8: Urban Forest Concept Design: Shaded Downtown Parking Lot

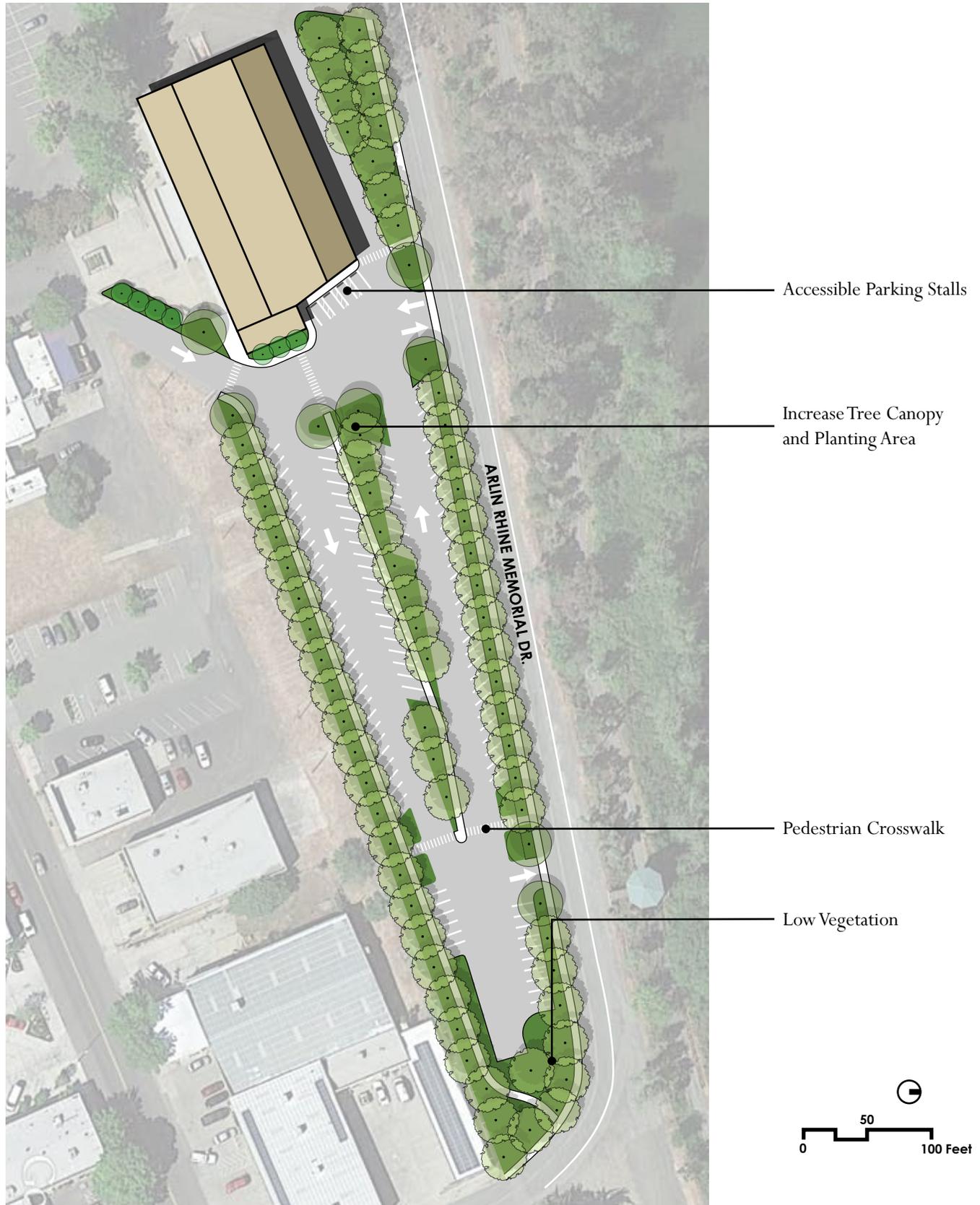
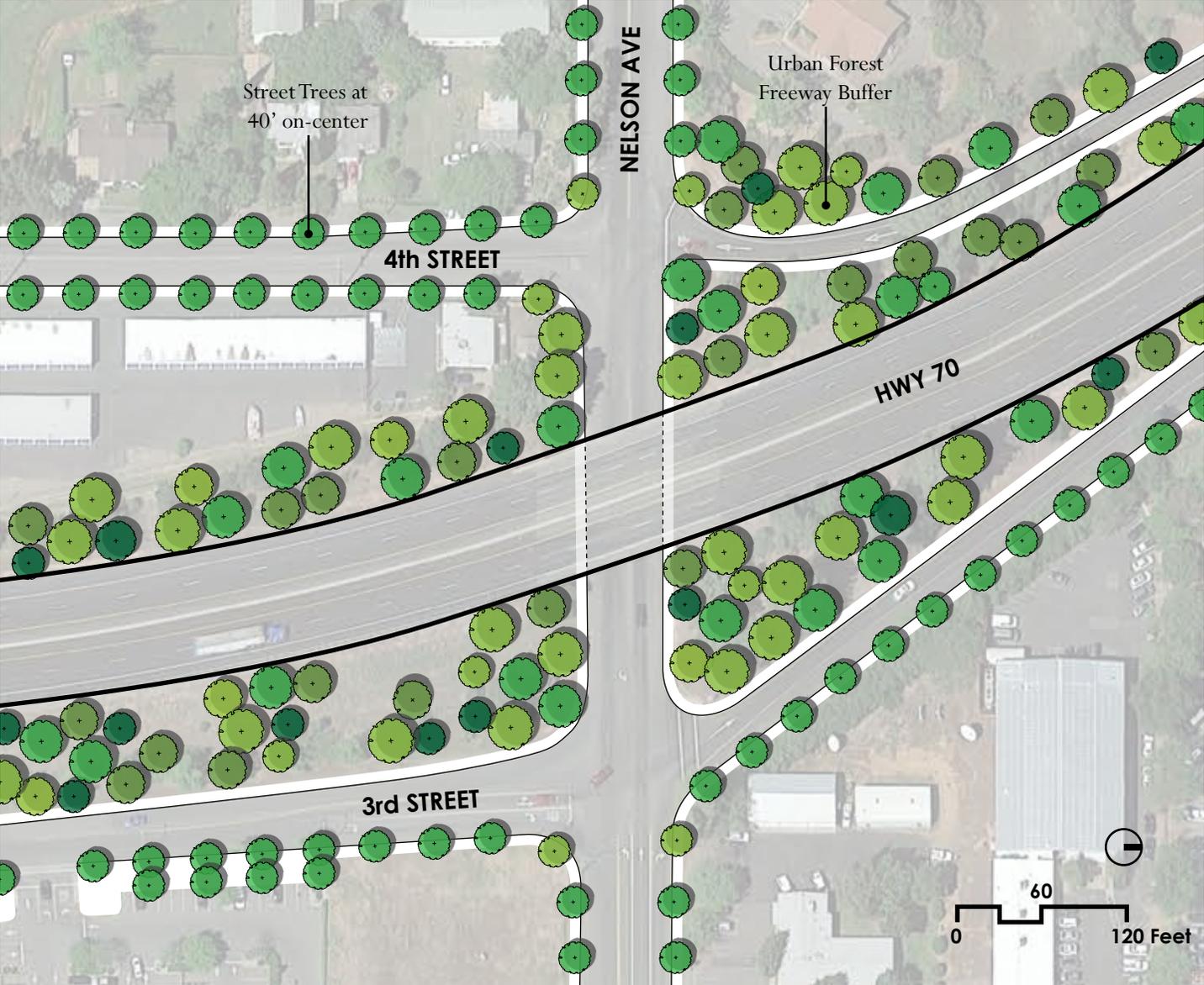


Figure 4-9: Urban Forest Concept Design: Walkable Street and Buffered Highway



IMPLICATIONS FOR GREENHOUSE GAS REDUCTION

A major benefit of trees in the urban environment is their ability to “sequester” carbon by removing it from the atmosphere and storing it in the soil, as well as in their trunks, branches, and roots. As described above under existing conditions, it is estimated that the current forest sequesters 405 metric tons of carbon dioxide per year, and that approximately 1,878 metric tons would be sequestered by the target canopy (equivalent to an increase of 1,473 metric tons). While existing sequestration was analyzed using iTrees software, the increase in carbon storage resulting from increased canopy coverage at existing parks was estimated using the following assumptions: (1) 150 pounds stored/tree/year, based on the average iTrees estimates for existing trees in Oroville’s parks; (2) 70 trees per acreage of cover, assuming approximate spacing of 25 feet between trees. Based on these assumptions, it is estimated that 4.76 metric tons of carbon will be sequestered for each additional acre of canopy coverage, which is approximately equal to the amount of carbon used to drive about 9,500 miles or to meet the average energy demand in a typical household for about five months.¹⁹

Planting of trees along highways and streets, at parks, and throughout communities can contribute to greenhouse gas reduction in other ways than carbon sequestration, including but not limited to providing shade for buildings, thus reducing air conditioning usage; reducing the urban heat island effect; and creating streets and paths that encourage people to walk or bike, thus reducing vehicle trips.

In addition, selecting trees that have high capacity for carbon sequestration, especially for sites near freeways and other sites that have high levels of air pollution, can improve the contribution of the urban forest to greenhouse gas reduction. Trees that are highly effective at sequestration are identified in the Landscape Interest/Uses column of Appendix D, Plant Palette. They include California Sycamore (*Platanus racemosa*) and Cork Oak (*Quercus suber*).

¹⁹ About 1 metric ton of carbon dioxide is produced for approximately each 100 gallons of gasoline used; this assumes a car gets 20 miles per gallon. About 1 metric ton of carbon dioxide is produced to meet the average monthly energy demand of a typical American household for heating, cooling, cooking, electricity use, and other energy needs. Source: US EPA.

INTRODUCTION

Parks and open space are a fundamental part of a community's natural and cultural landscape. They are important community assets that provide exercise and recreation opportunities, host events and activities that bring neighbors together, add aesthetic and environmental value, and help to build a sense of pride in the community. Neighborhoods with green common areas encourage positive interactions between neighbors, developing social bonds.¹

Natural open spaces provide habitat for plants and animals, act as development buffers from sensitive areas such as streams to protect wildlife and water quality, act as permeable surfaces to slow and filter stormwater, and support trees that absorb carbon dioxide emissions. Not only do parks benefit people and nature, but they support property values: homes adjacent to parks and open spaces are valued at 8 to 20 percent higher than comparable properties.²

EXISTING CONDITIONS

There are a number of outdoor recreation features and open space resources in and around the Oroville Urban Area, many of which are focused around the Feather River and the Oroville Dam, as shown in Figure 5-1. These are regional amenities that serve not only Oroville residents, but northern California visitors as well, with future plans of developing new trails and recreational facilities that connect these features. The largest of these facilities are State-managed, including the Lake Oroville State Recreation Area and the 12,000-acre Oroville Wildlife Area, a riparian forest that serves both as habitat and as a recreational destination for hiking, bird watching, canoeing, fishing, and seasonal hunting.

In addition to these large State and regional parks, there are smaller local parks throughout the area. The FRRPD, one of Butte County's five independent parks districts, manages 13 parks, both inside and outside Oroville's city limits. The City of Oroville also has its own Department of Parks and Trees, which manages several additional parks within the city, including sports fields, fishing areas, and the Downtown Skate Park.



The Feather River



Centennial Plaza

1 Kuo, F. and W. Sullivan. "Fertile Ground for Community: Inner-City Neighborhood Common Spaces." *American Journal of Community Psychology*, Issue 26, 1998.

2 Crompton, J.L., *Parks and Economic Development*. PAS Report No. 502, American Planning Association, Chicago, Illinois, 2001.

Although extensive plans for new recreational facilities have been slowed by the dam’s relicensing process, the Supplemental Benefits Fund (SBF), which is held for the area by the Department of Water Resources, will eventually support this infrastructure growth and maintenance. This funding source is further described in Chapter 10.

While the bulk of these planned improvements will focus on river-related recreation, the SBF funds are intended for all local recreation. There are many existing parks in other parts of the Oroville Urban Area that the community has identified as sites for improvements, discussed later in this chapter. There is also overlap between parks and open space opportunities and bicycle and pedestrian trail opportunities, as many of the bicycle and pedestrian trails also function as or connect to recreational trails.

RECOMMENDATIONS

GREENING OPPORTUNITIES

Through the public input process, community members expressed that existing parks in Oroville require maintenance, shading, and infrastructure replacement, as well as new features such as lighting, accessible walkways, BBQ areas, and community gardens. These features will improve the function, aesthetic appeal, and safety of existing parks, and provide more recreational opportunities for local residents.

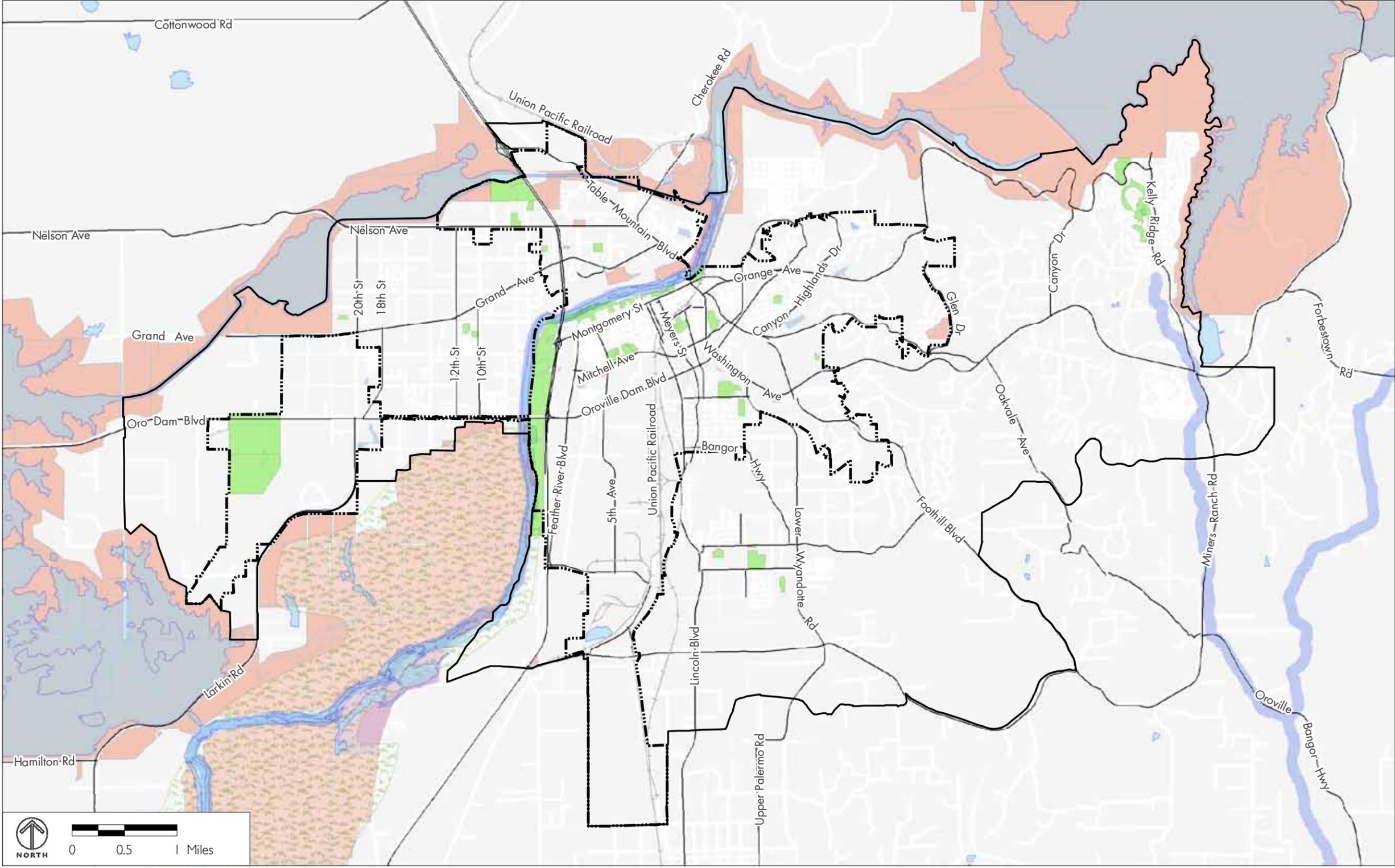
Community suggestions for new parks in Oroville range from community gardens and neighborhood-scale pocket parks to “destination” active recreation regional parks on the Feather River. They also include unusual ideas such as community seating areas that are integrated with retail and the municipal auditorium.

Figure 5-2 shows all Parks and Open Space Opportunities identified by the community, as listed in Appendix A.

PRIORITY GREENING OPPORTUNITIES

Although community members suggested opportunities – and ambitious ideas – for new parks, particularly in the Southside neighborhood, they felt the priority should be placed on existing parks, including renovating them, providing more shade, improving landscape features and safety elements, and maintaining them better. The priority greening opportunities in this section, which are highlighted in Figure 5-2, reflect this input from the community.

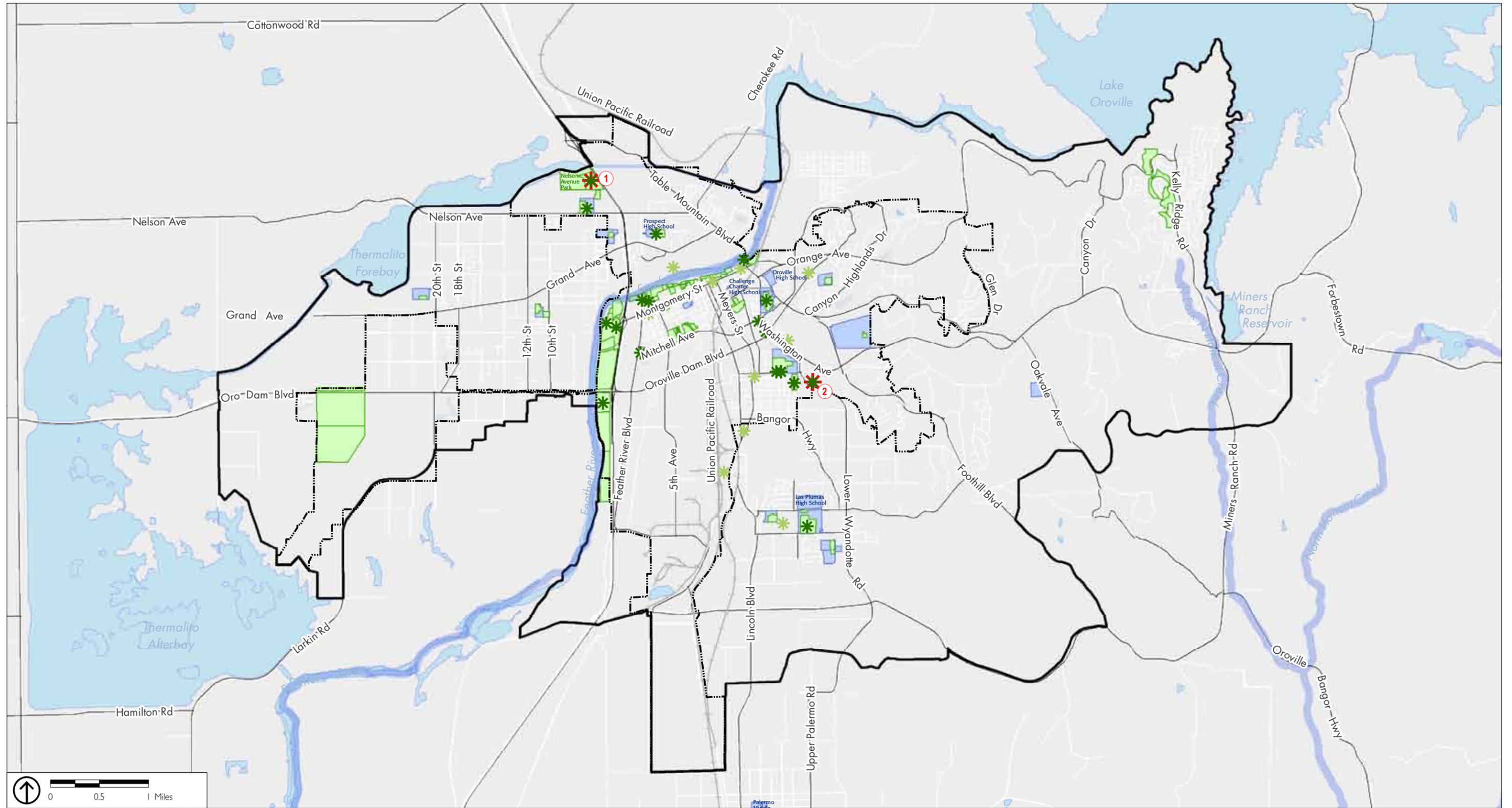
Figure 5-1: Existing Parks and Recreational Open Space



- Local Parks & Ballfields
- State of California Department of Parks and Recreation Lands
- State of California Department of Fish and Wildlife Lands
- Other State Owned Land
- Oroville Wildlife Area
- Water Bodies
- Oroville Urban Area
- Oroville City Limit

Source: Butte County 2009 and 2013.

Figure 5-2: Parks and Recreational Open Space Opportunity Sites



Greening Opportunities

-  Existing Parks and Open Space
-  New Parks and Open Space
-  Priority Parks and Open Space Opportunities

-  Parks & Ballfields
-  Schools
-  Oroville City Limit
-  Oroville Urban Area

PRIORITY OPPORTUNITIES

- 1 Plant new trees and update the irrigation system at the Nelson ballfields complex.
- 2 Build a community garden at the Southside Community Center.

Source: Butte County 2013.

PLANT NEW TREES AND UPDATE THE IRRIGATION SYSTEM AT THE NELSON BALLFIELDS COMPLEX

The Nelson Ballfields Complex located north of Thermalito is well used but has minimal shading and inadequate irrigation, leading to dry fields and uncomfortable conditions in the summer. These factors discourage residents from using the park. Shade trees and a new irrigation system would enhance the existing park's resources, creating a more welcoming and healthy environment for residents of all ages to actively use the ballfields or to watch sports. Adding trees and irrigation is a relatively low-cost project with high community interest. In 2014 the Supplemental Benefits Fund (discussed in Chapter 10) committed funding for a water well at Nelson Park to improve irrigation at this site. This priority greening opportunity is further explored through conceptual designs presented in Chapter 8.



Nelson Ballfields Complex



Priority Opportunity Site:

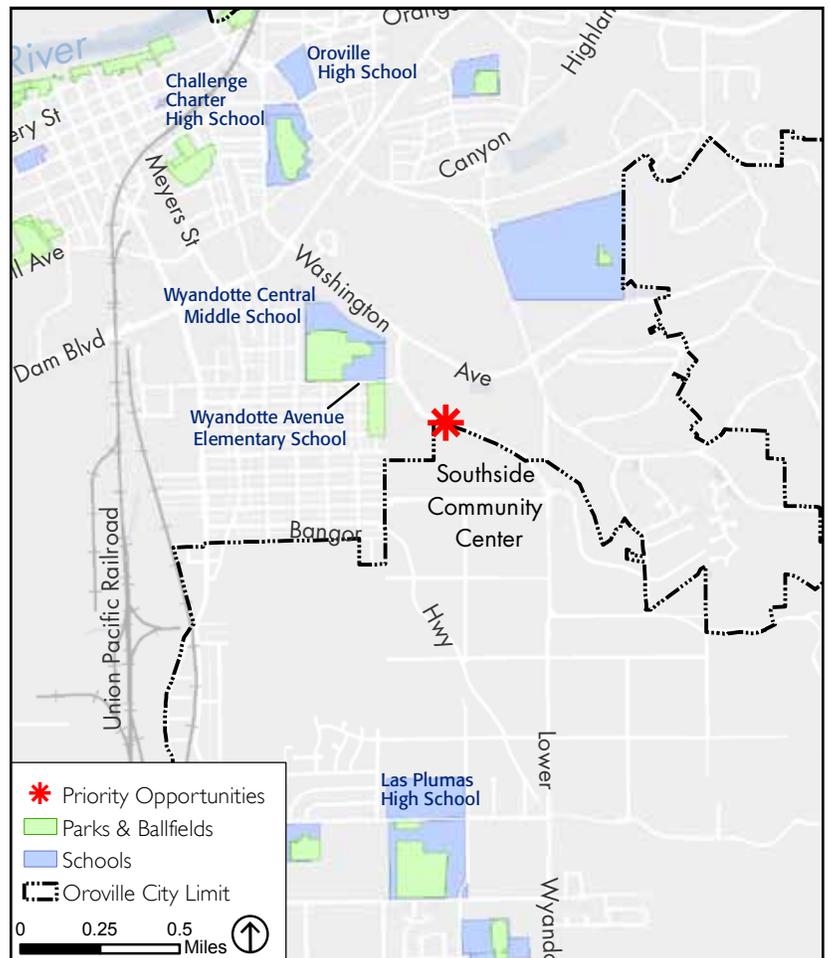
Plant New Trees and Update the Irrigation System at the Nelson Ballfields Complex



Southside Community Center

BUILD A COMMUNITY GARDEN AT THE SOUTHSIDE COMMUNITY CENTER

There is strong community interest in building community gardens. There is an existing community garden at the Wyandotte Elementary School and one at the intersection of Wyandotte and Columbia Avenues that is run by the African American Family and Cultural Center. The community is interested in increasing the number of garden sites. Although there are a variety of sites that community members have suggested for new community gardens, the Plan has prioritized the Southside Community Center site due to its proximity to the Southside neighborhood, which is in need of community-building amenities like gardens, coupled with the ready availability of publicly-owned land on this site. Successful community gardens are often shepherded by community groups that take responsibility for the logistics, maintenance, and volunteer labor. This priority greening opportunity will therefore require input and close coordination with community groups.



Priority Opportunity Site:

Build a Community Garden at the Southside Community Center

DESIGN SOLUTIONS

There are a number of solutions to improve existing parks and open spaces throughout the Oroville Urban Area. Some of the popular suggestions from local residents include better circulation and connection between existing recreational facilities, improved safety elements, and new recreational features, such as parks and community gardens. The following recommendations highlight some strategies and design solutions to improve parks and open spaces in the Oroville Urban Area.

EXISTING PARKS

Park improvements, such as new amenities, safety improvements, and various recreational features, are just some of the simple solutions that can greatly enhance a park's design and use. These improvements are applicable to existing parks of different sizes and uses.

Improved Recreational Facilities and Amenities

Recreational opportunities range from the provision of playground equipment, such as prefabricated structures and swings, to sports fields, courts, trails, and nature. Playgrounds, picnic areas, sport fields, and natural elements, such as creeks and wetland areas provide a wide variety of outdoor activities for family to partake. Recreational opportunities should be considered based on the size, use, and proximity to other recreational elements.

Parks amenities enhance the comfort and convenience of park users. Amenity elements range from access to drinking fountains, benches, and trash cans to shade structures and picnic areas. These amenities can ultimately make a park more comfortable and appealing for all park users. Provided park amenities should be durable and fit within the overall character of an existing park and prioritized based on the needs and use of an existing park. Community members expressed a desire for improvements to several recreational facilities and amenities. In addition to upgrades to the Nelson Ballfields, they identified the following parks as in need of greening: Riverbend Park, Bedrock Park, and Martin Luther King Jr. Park.

Playgrounds

Parks that include playgrounds are typically utilized by families with young children. Various playground elements, such as climbing equipment, swings, and slides, provide local gathering spaces for adults and recreational opportunities for young children. While the development of new parks may not be feasible, incorporating a playground into an existing park or open space could be a good way to increase access to recreational amenities in the Oroville Urban Area. The addition of playground or play facilities at the Feather River Recreation and Activity Center was mentioned by community members as a potential greening opportunity.



Neighborhood Park with Shaded Picnic Space



Playground



Pocket Park



Nature Park



Plot-Based Community Garden

NEW PARKS

Community members expressed an interest in creating new parks at a number of locations throughout the Oroville Urban Area. A number of vacant lots, particularly in the Southside, were suggested as possible locations for new parks. These locations are described in greater detail in Appendix A. Depending on the site character, size, and location, the following park and open space types could be developed, and would add to the network of green spaces in the Oroville community.

Pocket Parks

Pocket parks are small parks that are located in residential areas near schools and are a popular way to offer recreational activities to the general public. Pocket parks are usually small in size - typically under half an acre - and located on single parcels or portions of a larger parcel, where irregular pieces of land have made it uncondusive for development. Although these parks lack the necessary space for larger recreational sporting activities, such as baseball and soccer, they have a positive effect on the community by offering recreational activities for community members of all ages. Pocket parks also offer local residents a social gathering space, and a destination for children to play. Pocket parks can also highlight specific aspects of a community, such as art, culture, and history, by means of design and included features. A number of underutilized lots within the Oroville Urban Area could be suitable for future pocket parks.

Nature Parks

Nature parks offer a different perspective on recreational activities for local families. These types of parks focus on the conservation and maintenance of biological features. Natural parks typically lack common features found throughout recreational parks, such as playground equipment, lights, and gathering spaces. Instead, they help instill a sense of discovery, respect, and responsibility for the environment and local habitats. Popular locations for nature parks are along creeks and other natural features. Interpretive signage helps to illustrate the importance of caring for the environment, local fauna, and fragile habitat.

Community Gardens

Community gardens are pieces of land used by local residents who have a common interest in the cultivation of produce. Typically owned by local governments or non-profit organizations, community gardens instill a sense of pride and community amongst local residents by enhancing the beauty of neighborhoods and providing a place for community members to gather and socialize. Various types of community gardens include plot-based community gardens, urban farming, and school gardens.

- **Plot-Based Community Gardens.** Plot gardens can vary in size depending on available land and the number of people involved. In contrast to an urban farm, local gardeners who participate in community gardens are typically assigned a plot within the larger property, where they are responsible for the care and maintenance of their crops and produce.

- **Urban Farming.** Urban farming is the cultivation of crops and produce by local residents in a town or city environment, typically for sale. This form of farming has gained popularity amongst those wishing to partake in the social and sustainable movement of producing food closer to consumers. Urban farms give city-dwellers direct access to fresh produce, as well as the knowledge of where their food was produced and how it was cultivated.
- **School Gardens.** School gardens serve a variety of purposes, such as introducing students to fundamental agricultural practices and giving students a better understanding of health and nutrition. These gardens are very influential in helping students understand where our food is sourced and how it is produced. By introducing urban gardening in an academic context, students break away from the traditional classroom and are able to gain hands-on experience in agricultural practices.



AAFCC Community Garden in Oroville



School Garden

INTRODUCTION

Sustainable stormwater management techniques have the capacity to reduce flooding, improve water quality, and provide habitat for wildlife. These techniques, known as low impact design (LID), attempt to mimic nature by restoring hydraulic patterns through cleansing, diffusing, and absorbing the water where it falls. Additionally, stormwater practices that utilize natural processes often involve creating raingardens, swales, and other attractive drainage plantings in areas that would otherwise be eyesores. Other LID strategies include:

- Maximizing the tree canopy, which can catch and slow rain fall before it hits the ground, thus slowing runoff rates and allowing more time for infiltration.
- Installing permeable hardscape, allowing runoff to be absorbed into the ground.
- Using structural features, such as green roofs, cisterns, and rain barrels, to collect and use rainwater.
- Adding energy dissipaters, such as vegetation, rocks, and fiber rolls, in the path of water flow to reduce the speed of runoff.

These LID techniques aim to preserve or replicate natural drainage patterns, maximize permeable areas where stormwater can be absorbed into the ground, detain and retain runoff, and direct small quantities of runoff into landscape areas to spread out stormwater infiltration areas.

Such practices offer economic benefits as well. LID projects can be completed at a cost reduction of 25 to 30 percent over conventionally developed projects, as costly stormwater ponds, underground drainage pipes, or wide streets are replaced by less expensive features such as rain gardens and planted swales. Cities across the country, including Chicago, Philadelphia, New York, and Seattle, are increasingly using such techniques to improve water quality, reduce flooding, and build resilience to weather extremes. The US Environmental Protection Agency (EPA) also supports these techniques as a way to better manage stormwater while achieving other goals such as water quality.^{1 2}



Flooding in South Oroville

1 US Environmental Protection Agency (EPA), 2005. *Nonpoint Source News-Notes # 75*. www.epa.gov/newsnotes/.

2 US Environmental Protection Agency (EPA), *Green Infrastructure*. <http://water.epa.gov/infrastructure/greeninfrastructure/>.



Pedestrian Footbridge over Swale in South Oroville



Detention Pond and Wetland Enhancement Area

EXISTING CONDITIONS

Oroville's historic approach to stormwater management has used conventional engineering practices, consisting of collection, conveyance, and temporary storage. These practices fail to achieve the same environmental benefits as those that mimic nature, and may also have less success at ultimately managing stormwater due to ongoing infrastructure and maintenance needs. As a result, Oroville periodically has had significant problems with flooding, particularly nuisance flooding of streets and sidewalks.

These problems are compounded where stormwater infrastructure is outdated, poorly maintained, or entirely missing, particularly in some of the more rural areas that have not historically been funded by City services, such as the Southside and Thermalito neighborhoods.

This Urban Greening Plan provides an opportunity to supplement the existing stormwater infrastructure with a more low-impact approach that not only better achieves the area's stormwater goals, but also helps achieve environmental and social benefits. The sites that the community has identified as being in need of stormwater upgrades will benefit significantly from these changes.

RECOMMENDATIONS

GREENING OPPORTUNITIES

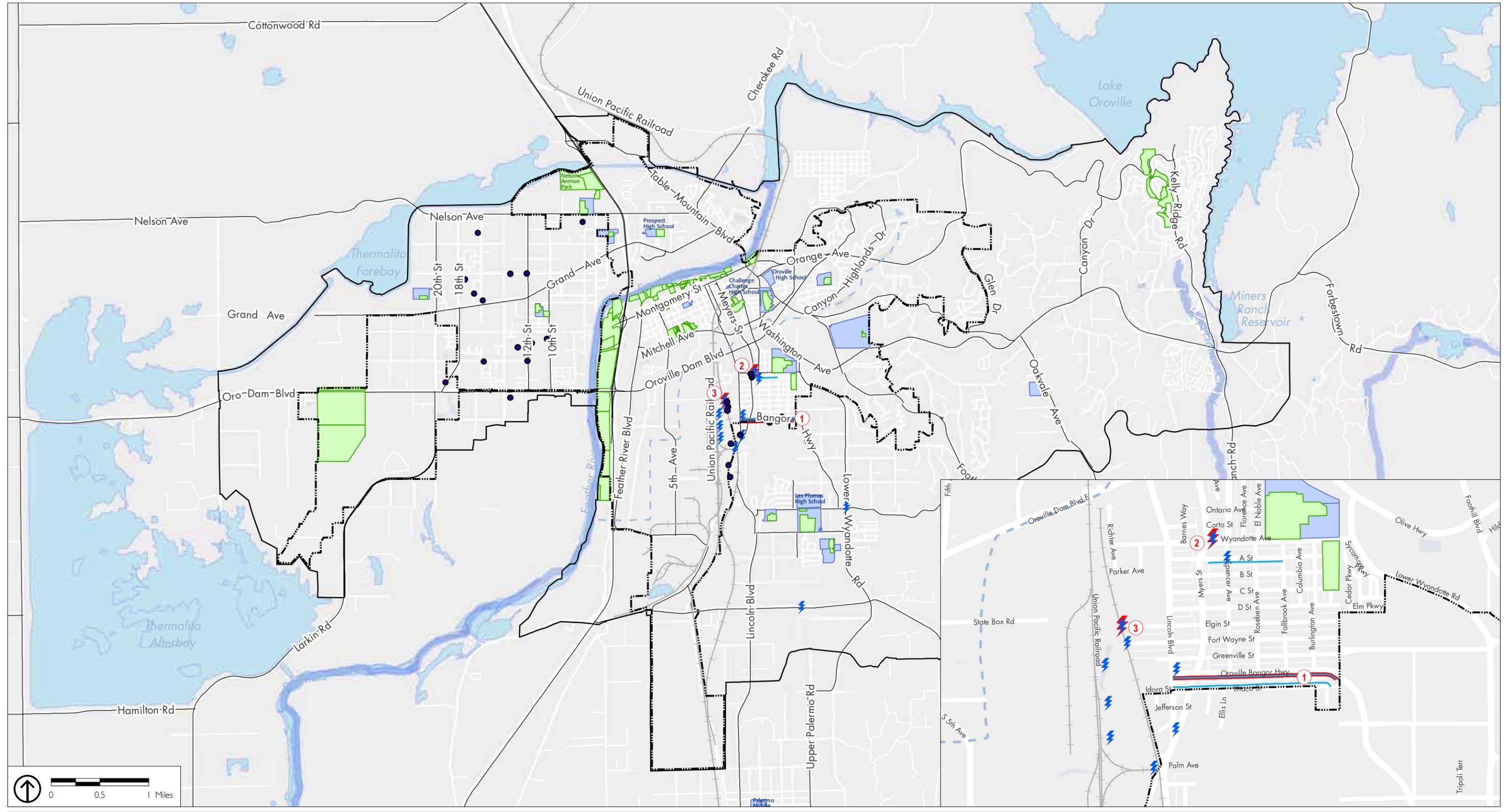
The community has identified several different types of opportunities for stormwater management. Some of these opportunities focus on specific streets and alleys, which, when flooded, primarily impact access to homes, as well as the commutes of children attempting to reach school by bicycle or on foot.

Other identified opportunities focus on particular streams. Those identified include streams that flow naturally through creeks, and streams that flow through culverts – in this case, culverts that are insufficiently sized to handle peak flows during storms.

Additionally, the community made suggestions for specific locations where detention ponds and wetland enhancements would help drain and absorb stormwater from larger areas, as well as provide wetland habitat and open space conservation.

Figure 6-1 shows all of the stormwater opportunity sites identified by the community, which are also listed in Appendix A. The data for the localized flooding sites is based on observations during a significant storm on December 23, 2013 in South Oroville, and as identified in Appendix A of the 2009 Update of the Thermalito Master Drainage Plans.

Figure 6-1: Stormwater Management Opportunity Sites



- Greening Opportunities
- Stormwater Management Sites
 - Priority Stormwater Management Sites
 - Priority Stormwater Management Areas
 - Stormwater Management Areas
 - Parks & Ballfields
 - Schools
 - Localized Flooding Sites
 - Oroville Urban Area
 - Oroville City Limit

PRIORITY OPPORTUNITIES

- 1 Address stormwater system along Oro Bangor Highway and Ithaca Street
- 2 Manage Drainage problems at Myers and Wyandotte
- 3 Manage drainage on and at the end of Elgin Street

Source: Butte County 2013.

PRIORITY GREENING OPPORTUNITIES

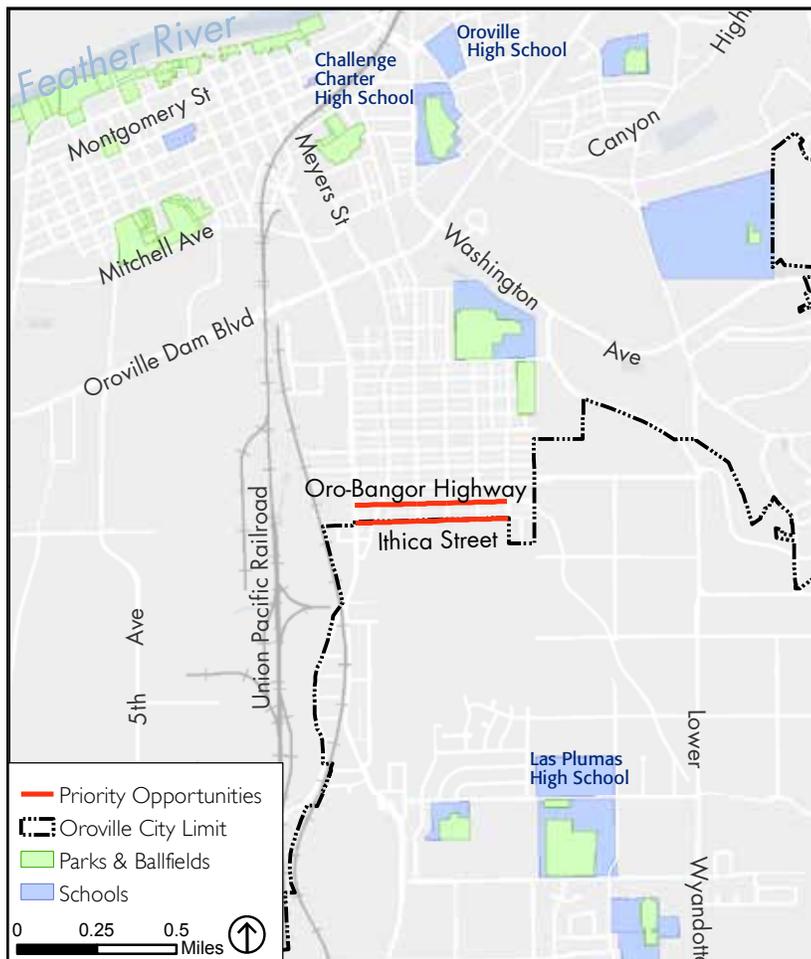
There are street flooding issues throughout Oroville, but the problems are more frequent and pronounced in the Southside neighborhood. The three priority opportunity sites for managing stormwater selected for this Plan are all located in this neighborhood, reflecting the severity of the problems at these sites, the underserved history of the neighborhood, and the likelihood of funding opportunities being higher in this neighborhood.

Address Oro-Bangor Highway and Ithaca Street Flooding

There are open ditches and culverts running east-west through the Southside neighborhood along Oro Bangor Highway and Ithaca Street that are prone to severe flooding, affecting the streetscape and adjacent private properties. There is an opportunity to replace the existing infrastructure with low-impact alternatives that will manage the stormwater more efficiently. This could include vegetated bioswales and biofiltration. This is illustrated in Figures 6-4 and 6-5.



Open Ditch along Oro-Bangor Highway



Priority Opportunity Site:

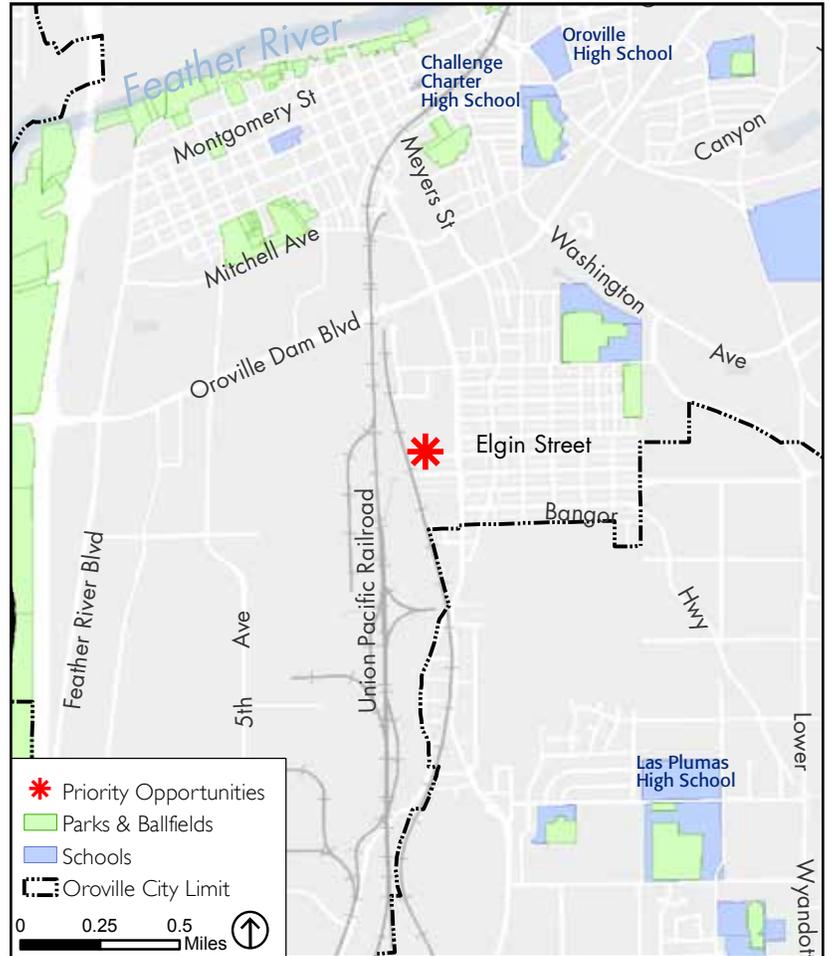
Address Oro-Bangor Highway and Ithaca Street Flooding



Flooding on Elgin Street

Manage Drainage on and at the End of Elgin Street

The end of Elgin Street, by the abandoned railroad right-of-way, has significant flooding problems. As a low point, stormwater collects in this area, flooding the street and adjacent private properties. The narrow right-of-way presents a challenge for implementing improvements within the streetscape; therefore, alternative solutions, such as a detention pond, may be required outside of the street corridor.

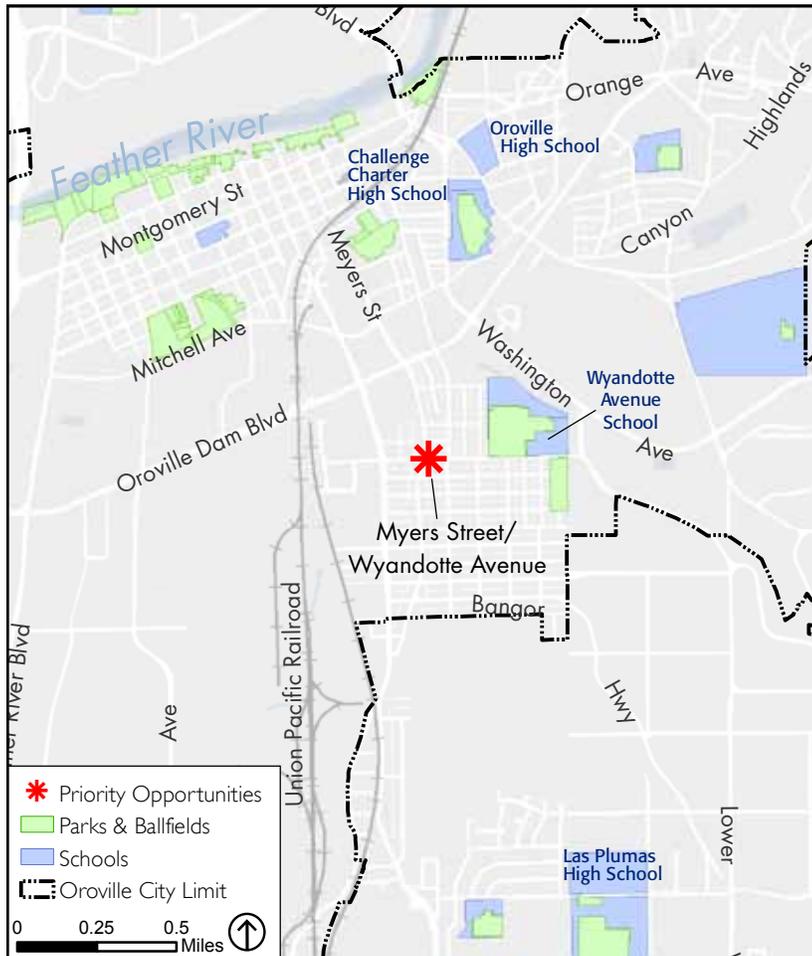


Priority Opportunity Site:

Manage Drainage on and at the End of Elgin Street

Improve Stormwater Infrastructure at the Myers Street and Wyandotte Avenue Intersection

This intersection, like many in the Oroville Urban Area, is equipped with traditional engineered solutions for managing stormwater. Retrofitting intersections with low-impact systems would improve water quality, create longer-lasting infrastructure, and beautify the community, as illustrated in the proposed design for the Myers and Wyandotte Intersection in Chapter 8, Conceptual Site Plans.



Priority Opportunity Site:

Improve Stormwater Infrastructure at the Myers and Wyandotte Intersection



Stormwater Issues around Myers and Wyandotte Intersection

PRIORITY LID TARGET AREAS IN THE SOUTHSIDE NEIGHBORHOOD

In addition to the opportunity sites identified by the community, the County has identified the Southside neighborhood as an opportunity for LID stormwater management. As shown in Figure 6-2, much of the neighborhood lacks conventional storm drain intakes and stormsewers. Without conventional or LID stormwater treatment, flooding is a regular occurrence. Given the relatively wide rights-of-way in this neighborhood and lack of conventional infrastructure, as shown in Figure 6-2, the entire neighborhood would benefit from LID stormwater management and treatments to promote complete and green streets, such as those described in the Design Guidelines section, below.

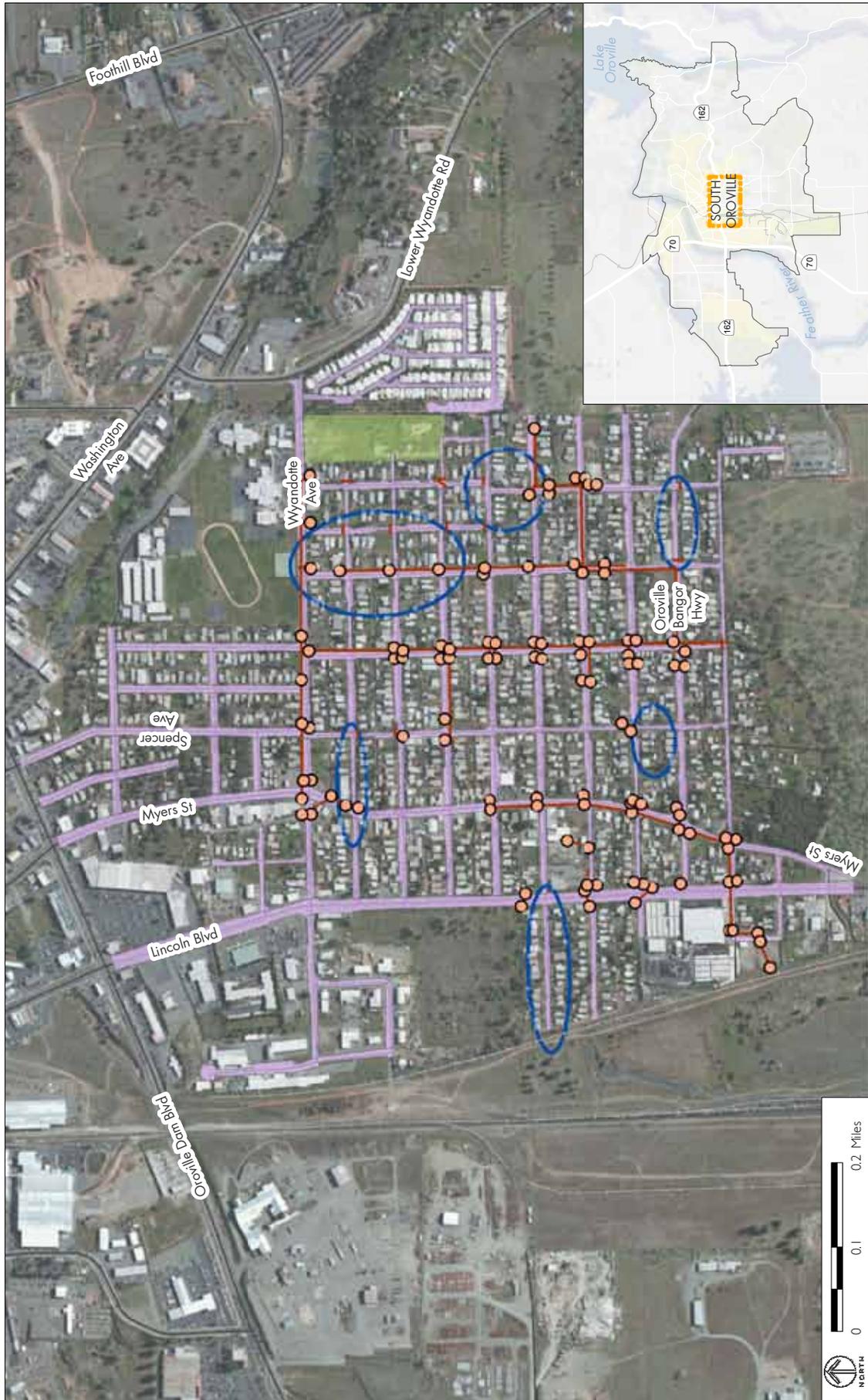
Within the Southside neighborhood, the County has also identified six specific locations that should be prioritized for LID stormwater management. These locations were selected because they are called out in the Oroville Southside Drainage Study, which is part of the Phase I Development of the Master Plan for Urban Street Improvements (Phase I Master Plan) for the unincorporated area of South Oroville (2013). The drainage study identifies the areas considered as most prone to flooding during storm events due to inadequate drainage. Figure 6-2 shows these target locations within the context of the existing stormwater infrastructure for the neighborhood. These locations should be prioritized for treatment before the rest of the neighborhood in order to address these acute flooding issues.

Figure 6-3 shows the street slopes for the whole neighborhood that correspond to specific types of LID strategies. Specific low-impact stormwater control measures are also called best management practices (BMPs). The street slopes shown in Figure 6-3 correspond to BMP methods as follows:

- Street slopes from 0 to 3 percent are optimal for stormwater infiltration methods.
- Street slopes from 3 to 5 percent are optimal for either stormwater infiltration or a detention pond.
- Street slopes from 5 to 10 percent are optimal for either detention ponds or energy dissipation methods.
- Street slopes 10 to 20 percent are optimal for energy dissipation methods.

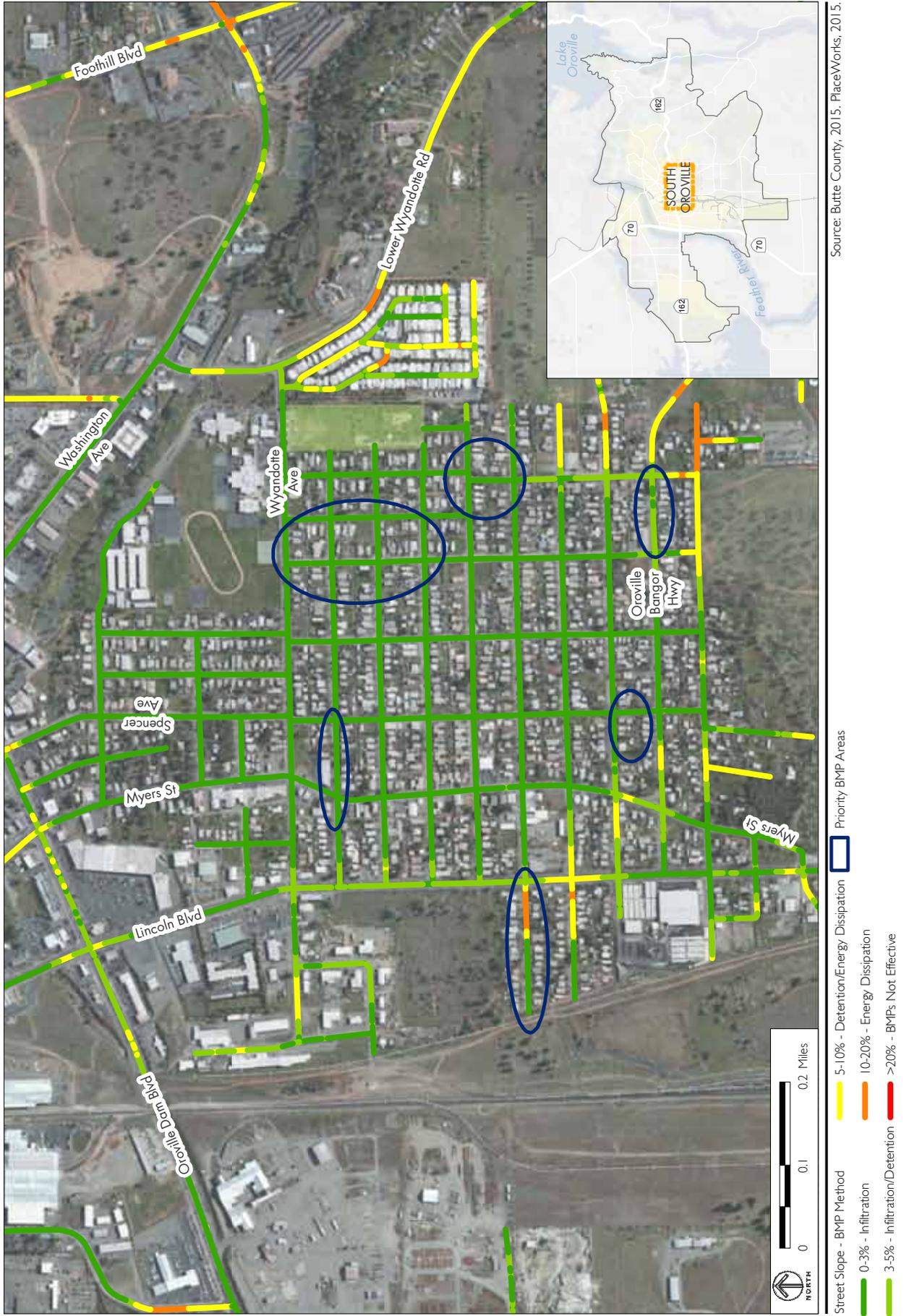
Based on the mapping exercise, the priority BMP areas in the Southside neighborhood have slopes that are suitable mainly for infiltration BMP methods, which are discussed further in the Design Guidelines section below. One of the priority BMP areas, located along Elgin Street, includes steeper slopes that call for energy dissipation and/or detention methods, which could include vegetated swales and rain gardens.

Figure 6-2: Targeted Areas for Low Impact Design (LID) in the Southside Neighborhood



Source: Butte County, 2015. PlaceWorks 2015.

Figure 6-3: Street Slopes and Best Management Practices (BMPs) in the Southside Neighborhood



DESIGN GUIDELINES

This section identifies tools that will help Oroville and Butte County comply with the National Pollutant Discharge Elimination System (NPDES) General Permit for Small Municipal Separate Storm Sewer Systems (MS4) and the California Water Efficient Landscape Ordinance (CALWELO). This program, authorized by the Clean Water Act, controls water pollution by regulating municipal point sources that discharge pollutants into waters of the United States. The amount of pollutants that enter a storm drain can be significantly reduced by intercepting and infiltrating stormwater in planting spaces.

Site planning and design prior to construction can help to mitigate stormwater with low-impact development. BMPs include:

- Preserving or replicating natural drainage patterns
- Avoiding excessive grading and disturbance of existing vegetation
- Concentrating development on portions of the site with less permeable soils to preserve areas that can promote infiltration
- Limiting a project's overall impervious coverage (i.e. paving and roof area)
- Detaining and retaining runoff throughout the site
- Employing small-scale design solutions that direct smaller quantities of runoff into landscaped areas, which spreads out stormwater infiltration areas, allowing for more stormwater to sink in, thereby reducing infrastructure costs

Sites with existing stormwater issues can be retrofitted with the following design elements, wherever feasible.



Street Tree Canopy



Tree Well



Bio-Retention Cells (stacked under sidewalk)



Permeable Pavers

MAXIMIZE TREE CANOPY:

As described in Chapter 4, a healthy urban forest can help contribute significantly to addressing stormwater. Tree canopies catch and slow rain fall before it hits the ground, thus slowing runoff rates and allowing more time for infiltration. Trees also draw water from the soil and release it into the atmosphere. The contribution of an urban forest to stormwater management increases as the overall canopy coverage grows. A well maintained tree canopy can provide additional environmental benefits, such as providing erosion control and regulating air temperature. Guidance on appropriate tree species for absorbing stormwater can be found in Appendix D, Plant Palette.

Trees should be strategically preserved and planted where they will have the most impact, such as above hardscape in streetscapes and parking lots. Large, leafy tree canopies are best at intercepting rainwater.

Ideally, street trees should be located in planted areas with ample room to grow. Where space is limited, the elements described below should be implemented to improve tree health.

Tree Wells

Pre-engineered and custom tree wells can provide increased runoff storage and filtration utilizing growing medium to uptake water and pollutants. One advantage of pre-engineered units is the availability to use them for retrofits of existing parking lots with minimal disruption to the existing landscaping and infrastructure.

Structural Soil

Extensive research has demonstrated that structural soil can perform as a paving base, while also serving as optimum growing medium for trees. The material consists of gap-graded gravels made up of crushed stone, clay loam, and a hydrogel stabilizing agent. This material can be compacted to meet pavement loading requirements while maintaining a lattice and void structure that allows for root development. Structural soils, when correctly designed and installed, provide multiple benefits, such as encouraging deeper root growth, providing a reservoir for stormwater retention (a water supply source for tree roots), and protecting underlying soils from compaction.

Bio-Retention Cells

A subsurface pavement support system, such as DeepRoot's Silva Cell[®], can serve as an alternative to structural soil. A modular cell system that supports traffic loads while preventing soil compaction can also house soil within its cells to support root growth and retain stormwater.

INSTALL PERMEABLE HARDSCAPE:

Traditional paving materials are impermeable; therefore, rainfall is not able to infiltrate into the soil below. Installing porous hardscape materials will allow water to move through the surface and into the soil below, imitating natural drainage systems and significantly reducing the quantity of runoff. Utilizing permeable hardscape within the street corridor with existing storm drains will likely result in cost savings when the storm drain system is replaced. Several examples are described below.

Porous Paving

Porous asphalt and concrete paving use a coarse aggregate mix that eliminates the finer particles, creating pockets in the finished surface. As mixing and placement requirements differ from standard concrete and asphalt, working with qualified vendors and certified contractors is critical to optimum performance. Porous concrete can also be manufactured in the form of pavers, allowing water to drain directly through the paver.

Open Grid Paving

Paving systems with open-jointed block paving and filled with permeable aggregates allow for water to enter into the joints between the pavers and infiltrate to the soil. Open-cell paving grids have large voids filled with aggregate or sod, which are designed to structurally support the weight of pedestrians and vehicles.

Infiltration Trenches

Infiltration trenches are shallow basins that serve as underground reservoirs for stormwater. The trenches, which are lined with filter fabric and filled with gravel, help slow stormwater runoff and remove pollutants from stormwater.

Energy Dissipaters

Fast-moving stormwater, especially on steeper slopes, can cause major erosion and damage downstream channels and drainage structures. Slowing the velocity of the water flow with energy dissipaters can prevent these problems. Examples of energy dissipaters include vegetation, as well as stone-lined channels and compost socks.

UTILIZE BIOFILTRATION FEATURES:

Landscape-based treatment measures, including biofiltration trenches, vegetated swales, and rain gardens, should be strongly encouraged as they are found to be the most effective way to holistically treat stormwater runoff. The vegetation that these measures support is able to filter pollutants from stormwater, while also absorbing the water over time and releasing it back into the atmosphere through transpiration. Hardscape should be sloped toward these treatment areas, and any barriers, such as curbs, should be designed to allow for stormwater runoff to travel into the planted areas. Paving should be strategically located and pedestrian “bridges” should be included to reduce foot traffic through the stormwater features. Low-irrigation and low-maintenance plant species that are suitable for periodic inundation are identified in the Plant Palette, Appendix D.

To increase the water-absorbing capabilities of on-site soils, compost tea or non-synthetic fertilizers should be used. Because fertilizers and pesticides negatively impact stormwater quality, integrated pest management should be utilized during project construction and maintenance, focusing on mechanical, cultural, physical, and biological pest controls and utilizing the least toxic pesticides as a last resort. Adding mulch to landscape areas will provide soil stabilization, reduce stormwater runoff velocity, and improve the infiltration of runoff. A 2- to 3-inch layer of mulch is recommended for all exposed soils around plants, except in turf areas or direct seeding applications. Sheet mulching – applying a layer of paper or cardboard underneath the mulch – will further enhance weed suppression and build soil health.



Open-Celled Paving Grid



Infiltration Trench in Parking Lot Rain



Biofiltration Trench



Biofiltration Trench



Vegetated Swale



Rain Garden with Interpretive Signage

Biofiltration Trenches

A planted trench integrated into the streetscape introduces plants to capture stormwater pollutants and allows stormwater to infiltrate through the soil and into the groundwater below. Curb cuts allow stormwater to enter the trench. The trenches also provide space to plant street trees, but appropriate tree selection is important to ensure tree health and avoid damage to the surrounding hardscape with large root systems. Biofiltration trenches can be integrated into sidewalks, planting strips, and other locations. See Appendix D, Plant Palette, for appropriate street tree species.

Vegetated Swales

Vegetated swales are linear open channels planted with vegetation that filter out sediments as the runoff flows across the surface. Suitable locations include planted areas in parking lots and along streets, where stormwater can enter the swale. Side slopes should not be more than 2:1, with 3:1 or flatter preferred. The soil within vegetated swales should have a percolation rate of 5 inches per hour. Often, well-draining soil must be imported to meet this requirement. Swales constructed over heavy clay soils may require an underdrain to prevent ponding. Plant material used in vegetated swales needs to tolerate both inundation and drying periods. Grasses and fine-leaved plants are preferred to trap sediments, however conventional mowed turf is discouraged due to the use of fertilizers and herbicides. Drought tolerant no-mow turf varieties are encouraged, as they reduce maintenance needs.

Rain Gardens

Rain gardens are depressions that infiltrate and treat runoff through evaporation and transpiration. Rain gardens can be located in curb bulb-outs, sidewalk extensions, or low-lying planted areas. When located within the streetscape, curb cuts can allow stormwater to enter. As with vegetated swales, side slopes should not be more than 2:1, the soil should have a percolation rate of five inches per hour, and underdrains may be required if it is constructed over heavy clay soil. Plant material will also need to tolerate inundation, as well as periods of drought.

EMPLOY ARCHITECTURE TO MANAGE STORMWATER:

Best management practices for stormwater should not be exclusive to the landscape, but should also be incorporated into structures. The following elements should be considered for both new and existing buildings.

Green Roofs

Planted roofs can provide insulation, improve air quality, slow stormwater runoff, and increase evapotranspiration. Vegetation and growing medium is laid out over a waterproofing membrane, along with root barrier and a drainage system, which protect the roof structure. Green roofs are typically described as either intensive or extensive. The difference is based on the weight of soil that the roof can support. An extensive green roof has 3 to 6 inches of soil, and therefore only groundcover can be grown; an intensive green roof can withstand the weight of more than 6 inches of soil (i.e. 18 inches for shrubs and up to 40 inches for small trees), as well as the weight of other amenities.

Cisterns and Rain Barrels

Connecting water-harvesting containers to rooftop drains and downspouts enables the collection of rainfall landing on rooftops. The harvested water can be used for landscape irrigation, as well as flushing of toilets.

EXAMPLES OF DESIGN SOLUTIONS:

This section presents examples of how to implement the design guidelines at two of the priority opportunity areas.

Oro-Bangor Highway

As noted earlier, this street in the Southside neighborhood has numerous flooding problems. Currently, the road is paved with traditional asphalt, and an open culvert is located either one side or both sides of the right-of-way. In some locations, homeowners have installed pedestrian footbridges over the open swale to access their property from the street, which means vehicle access is at the rear, from the alley.

The proposed design solution, as illustrated in Figure 6-4, is to maintain the vegetated swale on the south side of the street, with a permeable paver edge to better define the swale from the roadway. An engineered swale with permeable soil would be created, and would include a perforated pipe connection to the existing storm drain. Installing engineered swales is actually more cost effective than a traditional polyvinyl chloride (PVC) pipe and sidewalk, and has additional biofiltration and transpiration benefits. Street trees planted in the swale also help to intercept rainwater and reduce runoff.

A parking lane on the north side of the street is shown with permeable pavers, allowing water to infiltrate and reduce the amount of runoff. At intersections, rain garden bulb-outs will provide areas for biofiltration of the street's runoff, as well as a location for large canopy street trees.

Ithaca Street

This street runs parallel to and directly south of Oro-Bangor Highway, and has similar stormwater and flooding issues. Because the right-of-way is narrower and does not support parking, the proposed design solution is to pave the entire roadway with permeable pavers, as illustrated in Figure 6-5. In addition, engineered swales with street trees should be maintained on either side to treat excess stormwater, as shown in the visual simulation. As an alternative, permeable asphalt can provide similar benefits as permeable pavers.



Extensive Green Roof



Rain Barrel

Figure 6-4: Design Solution Example: Oro-Bangor Highway



Existing Condition



Proposed Design Solution

Figure 6-5: Design Solution Example: Ithaca Street



Existing Condition



Proposed Design Solution

INTRODUCTION

The City’s industrial history, combined with the design and changing use of residential neighborhoods and disinvestment in property has led to a significant number of vacant and abandoned parcels in the Oroville area. While some of these parcels are simply a nuisance—overgrown with weeds, unattractive, or unusable due to undesirable activity—some of them pose significant hazards to the community. Hazards may be due to residual toxics from former industrial uses, sanitation issues as a result of illegal dumping, or crime occurring as a result of overgrowth and a lack of “eyes on the street” that would otherwise prevent illegal or dangerous activity. Even where toxins are not present, cleanup and re-use of vacant properties has been linked to reductions in crime and improvements in health for neighboring residents. For example, a 2011 study found that areas in which vacant lots were “greened” had reductions in assaults, vandalism, and stress levels among neighbors.¹

The purpose of this section is to identify the vacant sites that are most in need of assistance, ways to “clean” the sites of their existing hazards, and possible strategies to “green” the sites, reclaim them as beneficial community amenities, and avoid future problems.

EXISTING CONDITIONS

Vacant and abandoned sites in the Oroville Urban Area include vacant lots, alleys, and industrial sites. All three of these types of vacant sites are a serious source of concern for residents in Oroville, and particularly in the Southside neighborhood, where the vacant lot and alley problems are more severe and ubiquitous, and located close to toxic vacant industrial sites. This area is also in greater need of the benefits that cleaning and greening these opportunity sites could provide.

VACANT LOTS AND ALLEYS

One type of vacant nuisance site in Oroville is the alley. Oroville’s Southside and Thermalito neighborhoods were built with houses facing the streets and backing onto alleys. No parking or services are accessed by cars in the alleys, although Lake Oroville Area Public Utility District (LOAPUD) sewers are underground in many of the alleys in the Southside neighborhood. The alleys are for the most part unused by the public. Instead weeds, crime, trash, and stray animals fill the alleys and keep residents from using them as pedestrian and bicycle routes. The alleys are publicly owned and maintained, but the amount of



Southside Alleys

¹ American Journal of Epidemiology. January 2011. *A Difference-in-Differences Analysis of Health, Safety, and Greening Vacant Urban Space.*



Southside Vacant Lot

funding available for weed abatement and maintenance is inadequate to keep up with the extensive need.

As shown in Figure 7-1,² vacant properties are also a particular concern in the Southside neighborhood. Nearly 8 percent of all Southside residential parcels are vacant. Often the owners are no longer even in the area to be prevailed upon to clean or fence their sites. Butte County has acquired liens on a few of these properties in the course of pursuing code enforcement and nuisance abatement.

Clean and safe vacant sites can be a great space for pocket parks, stormwater management, community gardens, public art, or new development. Neighborhoods with more amenities and fewer vacant sites that are eyesores have higher property values, which can in turn spur new investment and further reduce the chance of blight.

² Figure 7-1 only shows vacant properties in the Southside neighborhood; there are other vacant properties elsewhere in the Oroville Urban Area.

Figure 7-1: Vacant and Lien-held Properties in South Oroville

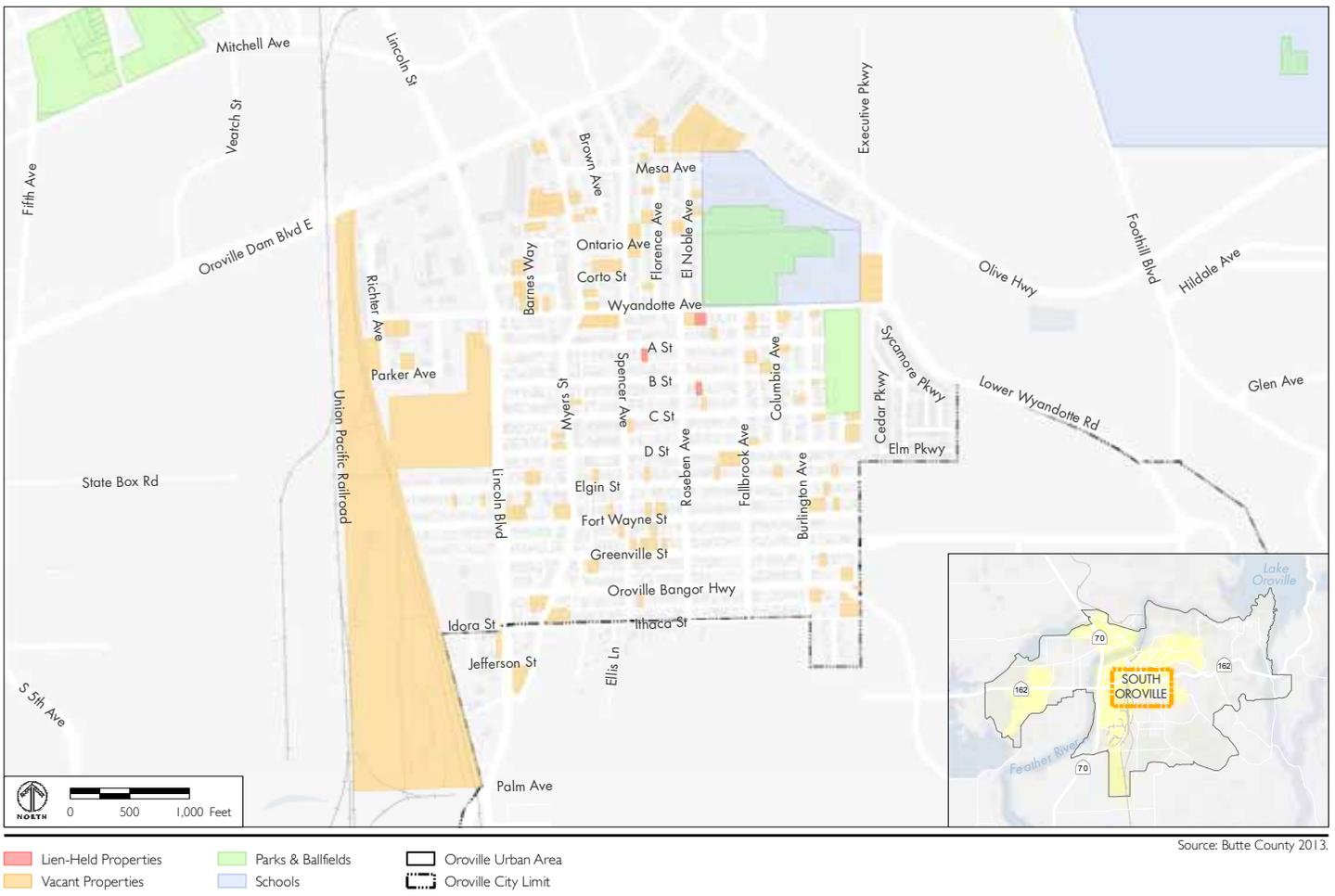
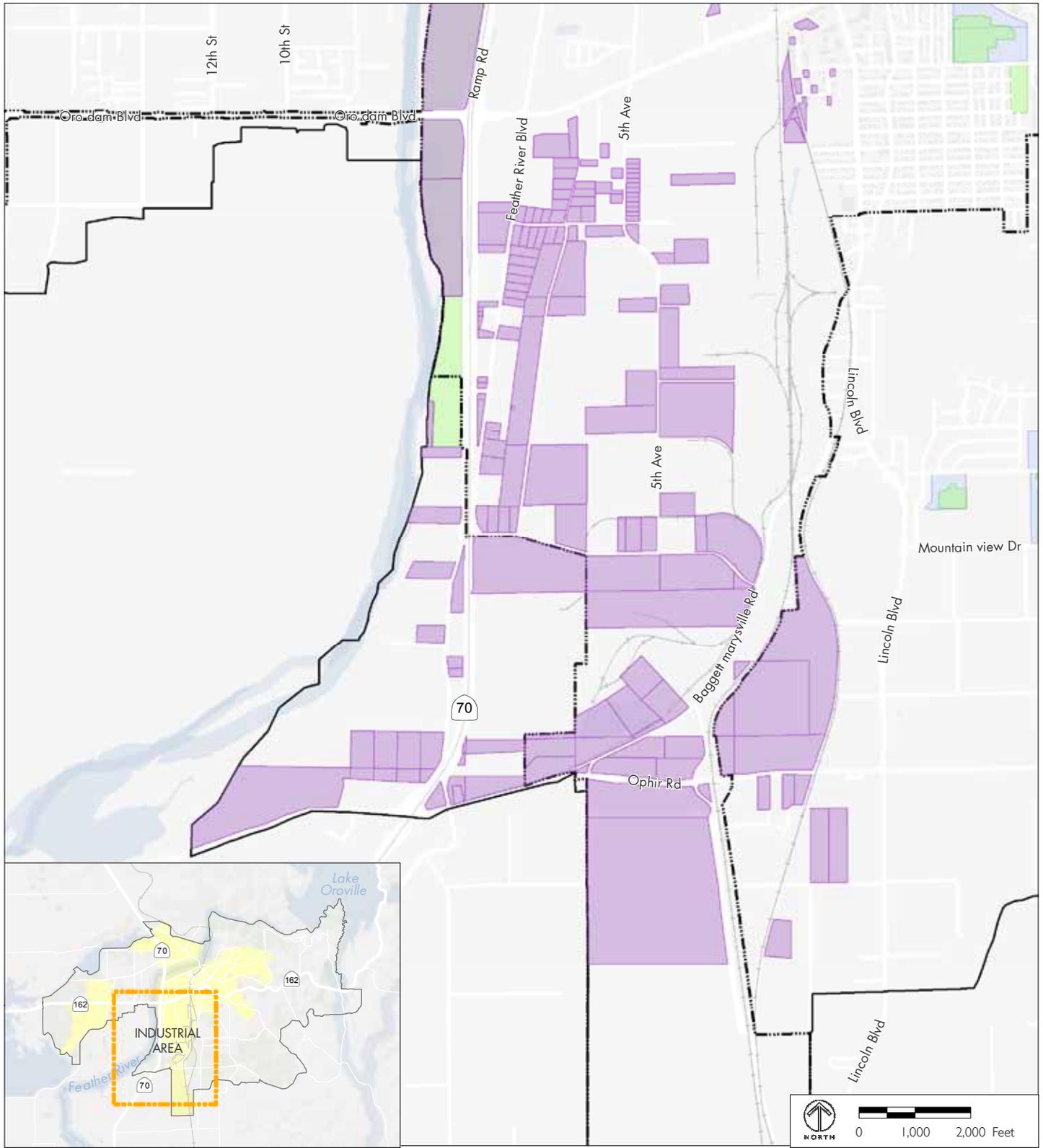


Figure 7-2: Vacant Industrial Properties - Industrial Area



Source: Butte County Assessor 2013.

- Vacant Industrial Properties
- Parks & Ballfields
- Schools
- Oroville Urban Area
- Oroville City Limit



Dumping in the Industrial Area



Vacant Land in the Industrial Area



Abandoned Facility in the Industrial Area

INDUSTRIAL SITES

The southwest part of the Oroville Urban Area, just east of Highway 70, has been in industrial use for many years. Mining and railroad use has been occurring in the industrial area since the late 19th century. Dredging for gold in the early 20th century overturned surface soil and substrate in the area to depths of 40 feet or more. Industrial use of the area began in the 1920s. While the area is still populated with industrial uses, several industrial plants have been abandoned without remediation of the damage done during industrial production and processing. Figure 7-2 shows the vacant industrial properties in this area, which were mapped using County Assessor data.

Implementing LID techniques for stormwater management, assuring safe and convenient access for all users through complete streets design, and designing future industrial sites appropriately will be critical to attaining greening goals in the Oroville industrial area. Future development in that area should seek to preserve natural infiltration capacity and existing drainage patterns, minimize and disconnect impervious areas, minimize the footprint of future development, minimize unnecessary compaction or the removal of native vegetation and trees, and use green techniques to infiltrate, intercept, store, and transpire stormwater runoff. However, given shallow groundwater depths in portions of the area, infiltration of stormwater may not be appropriate in all portions of the industrial area.

Streets should be designed to limit encroachments (e.g. driveways) onto principal streets, limit traffic speeds, provide space for plantings and street trees, and provide convenient and safe sidewalks and bicycle lanes for bikers and pedestrians. Further information and design options for the industrial area are provided in Appendix G, Industrial Area Greening.

RECOMMENDATIONS

GREENING OPPORTUNITIES

Although there are vacant sites throughout the Oroville Urban Area, the sites that community members have identified as being in need of cleaning and greening are all in the southern Oroville area. Residents would like to see toxics, trash, or abandoned homes removed, and these hazards and nuisances replaced by green amenities ranging from active parks to simply well-maintained landscaping.

The community has identified a set of greening opportunities in Oroville's Industrial Area on sites that were formerly used as industrial plants and may require toxics remediation similar to that undergone by the Kopper's Co. plant, a former Superfund site. Although remediation of industrial sites will require a more detailed plan for acquiring the significant funding it will take to address toxic soils and more technical planning than is within the scope of this Urban Greening Plan, there is the opportunity to coordinate with remediation efforts to include greening practices on these sites (e.g. planting areas for oak tree loss mitigation or stormwater management).

The other community-identified cleanup sites are in residential areas. Although there are nuisance vacant lots throughout the Oroville Urban Area, the community identified the vacant lots in the Southside neighborhood as providing a significant opportunity to improve the area. Many of these vacant lots are adjacent to alleys, which have also been designated as an opportunity for cleaning and greening that is described below.

Because they are mostly not used for legitimate purposes, the alleys in the Southside neighborhood have become a location for crime, dumping, and other undesirable activities. This leaves residents leery of using what could otherwise be safe off-street pedestrian and bicycle routes and places for children to play near to home but away from traffic. Where vacant lots back up onto the alleys, the problem of dumping is compounded, as illegal dumpers are able to use the cover of the dark alleys at night to access the vacant lots to dump broken furniture, appliances and other trash.

It is important to note that some community members are concerned about the use of vacant sites as homeless encampments, and would like to see this use discontinued. Others have spoken up as advocates for the homeless, wanting to make sure that people without homes will still have places to live on some of the vacant properties.

Figure 7-3 shows all the “Clean and Green” opportunity sites, including those that the community has identified, as listed in Appendix A. These opportunity sites include: all of the vacant lands in the Southside neighborhood identified in Figure 7-1; the alleys in the Southside neighborhood; other opportunities for “cleaning and greening” vacant lots, including some outside of the Southside neighborhood; and former industrial sites.

PRIORITY GREENING OPPORTUNITIES

While industrial sites were noted in the full list of opportunity sites, they were not included among the priorities because the complexity of their remediation is beyond the scope of the Urban Greening Plan. Instead, the following types of opportunities, both in the Southside neighborhood, were listed as priorities due to the impacts they have on the everyday life of residents. Both are also explored through conceptual designs presented in Chapter 8.

CLEAN AND GREEN VACANT SOUTHSIDE LOTS

The Southside neighborhood has many vacant lots. Vacancy is due to a variety of reasons, such as fire or simply abandonment of existing buildings. Most of these lots have overgrown weeds, but some significant problem sites also experience persistent dumping. Greening opportunities for these sites could include cleanup, weed abatement, and fencing the lots to control dumping. Residents have also suggested re-using some of these sites for community gardens.



Dumping in Southside Vacant Lots



Southside Vacant Lot



Southside Alleys



PHS's Tioga Project (before and after)
Source: <http://phsonline.org/greening/landcare-program/photo-galleries/>

CLEAN AND GREEN SOUTHSIDE ALLEYS

The Southside neighborhood's alleys are overgrown with weeds and are often used for dumping and other serious criminal activity. Many private properties along alleys do not have fences, so pets are able to run free into the alleys. Residents have expressed a very real concern for their safety, indicating that they would not voluntarily use an alley, particularly at night.

Were Oroville to clean the alleys, abate the weeds, and address public safety issues (e.g. adding pedestrian-scale lighting), the alleys have the potential to be reclaimed from crime and trash and used as safe pedestrian and bicycle routes of travel. Some cleanup has been attempted, in the form of community-based cleanup days and an annual County clean-up fee, but the severity and scale of the problem means that these attempts have had minimal impact, and the cleanup of the Southside alleys is a clear priority under the Urban Greening Plan.

PROGRAMS AND DESIGN SOLUTIONS

Basic physical solutions to clean, green, and prevent further blight of vacant sites and alleys are well-known and proven to increase property values, decrease crime, contribute to neighborhood investment, and improve the well-being of residents. They include:

- Removing trash and other debris
- Grading the property to manage storm water
- Adding compost-enriched topsoil for plantings
- Planting shade trees
- Installing simple fencing around vacant lots to discourage dumping

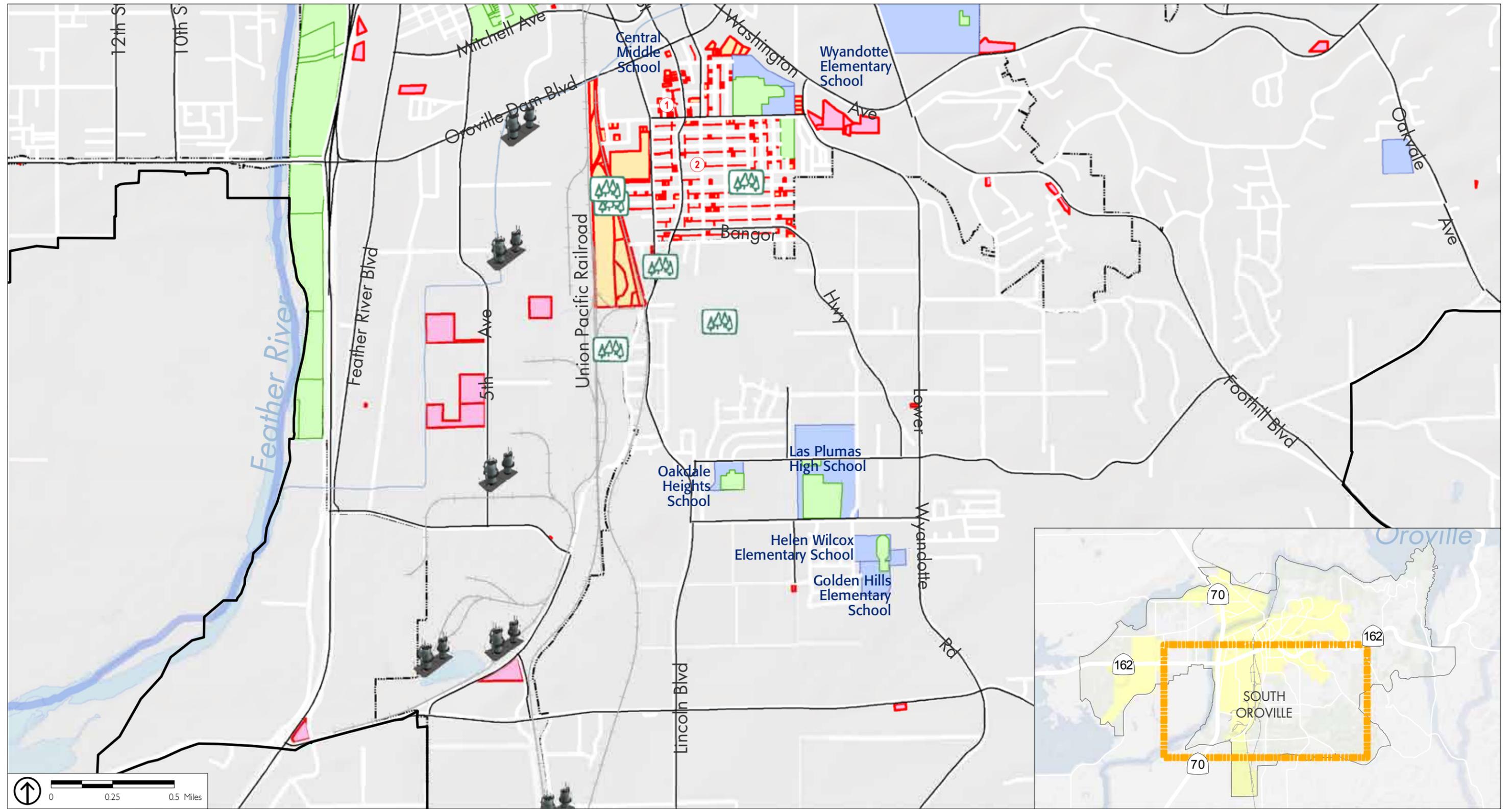
EXAMPLES OF SUCCESSFUL CLEAN AND GREEN VACANT LOT PROGRAMS

The basic solutions above have proven successful in cities such as Philadelphia, where the Pennsylvania Horticultural Society (PHS) runs the Philadelphia LandCare program (<http://phsonline.org/greening/landcare-program>) using funding from the State Office of Housing and Community Development. The program transforms vacant lots into neighborhood assets by cleaning, greening, and fencing the lots as part of the City's nuisance abatement program. The properties are then cared for by community-based organizations working under contract to PHS.

The results are dramatic, with proven benefits to neighborhood health, safety, and wealth.

The more complex solutions offered in this Urban Greening Plan are for programs and design solutions to clean and green Oroville's sites in the long term. Existing City and County codes adequately address property owners' responsibility to keep their properties clean and hazard-free, and no additional regulation is suggested. However, effective programs to clean and green vacant alleys and properties require a sustainable source of funding and active community support. Butte County has had an existing maintenance program for the alleys in the Southside neighborhood, but the \$12 annual fee per household

Figure 7-3: Clean and Green Opportunity Sites



Greening Opportunities



Clean and Green Southside Opportunities

 Clean and Green Alley Opportunities

 Vacant Private Land

 Vacant Public Land

 Parks & Ballfields

 Schools

 Oroville Urban Area

 Oroville City Limit



Industrial Sites Opportunities

PRIORITY OPPORTUNITIES

- 1 Clean and green vacant Southside lots.
- 2 Clean and green Southside alleys.

Source: Butte County 2013.

has not been adequate to address the dumping and weed problems. Acquiring a more sufficient, sustained source of funding and partnering with community groups would make maintenance of the Southside alleys more effective.

The following programs could be undertaken by the City of Oroville as the lead agency, partnering with local community groups, nonprofit community developers, and even potentially private enterprise. Some of these programs address vacant lots only, while others – such as dumping prevention programs –also address alleys.

VACANT LOT INVENTORY

Create an inventory of the vacant lots and their owners’ contact information to facilitate the purchase of those lots by private buyers or community development organizations.

COMMUNITY DEVELOPMENT BLOCK GRANT FUNDING

Apply for Community Development Block Grant (CDBG) funding to combat blight and provide benefits to low-and middle-income residents by acquiring and leasing privately-owned lots for creative community development projects.

ILLEGAL DISPOSAL SITE ABATEMENT GRANT

Apply to CalRecycle for funding to remove and dispose waste, install fences on privately owned vacant lots, or undertake other preventive measures.

PREVENTION THROUGH COMMUNITY CLEANUP

Investigate Community Cleanup grants and partner with nonprofits to host dumping prevention events, such as one similar to Chico’s “Drop and Dash” program, which allows residents to drop off furniture for free at a designated date and time.

LIEN-HELD PROPERTIES

The City may begin foreclosure to acquire the properties on which it holds a lien, allowing the sites to be turned over to the community for creative re-use, such as community gardening.

See Appendix F, Clean and Green Vacant Lots, for more detail and implementation recommendations for these suggested programs.

In addition, design solutions for cleaning and greening vacant lots and alleys in the Southside neighborhood are provided in Chapter 8.

EXAMPLES OF SUCCESSFUL ALLEY GREENING PROGRAMS

Programs aimed to clean up, green, and bring life to alleys have been developed in various cities around North America. Most programs were developed specifically to address stormwater problems, which are also an issue in the Southside neighborhood, and therefore involve repaving alleys with porous surfaces, such as permeable concrete or asphalt, permeable pavers, decom-



Chicago’s Green Alleys with Permeable Pavement
Source: <http://www.epa.gov/region5/chicagoriver/>



Baltimore Green Alley
Source: <http://www.terralogos.com/events/TLTine-Extreme-Green.html>



Seattle’s Alley Network Program
Source: http://allevnetworkproject.com/wp-content/uploads/2012/04/Alleybook_alley-image-1.png



Los Angeles' Trust for Public Land Alley Program
Source: <http://content-object.com/Trust-for-Public-Land-Avalon-Green-Alley-Network>

posed granite, or paver-grass hybrids. Examples of programs where alleys are simply paved with porous surfaces include the “Green Alley Program” in Richmond and “Blue Alleys” in Baltimore, both funded by National Wildlife Foundation grants. Other programs clean and green alley spaces in order to transform them into amenities for a wider array of uses. These examples may also be considered for application in the Southside neighborhood, which has limited access to park space.

In Chicago, the “Green Alley Program” involves permeable paving along with other components, including high albedo hardscape (i.e. hardscape with high solar reflectance), recycled construction materials, and dark-sky compliant light fixtures. Additionally, adjacent property owners are encouraged to plant trees and native landscaping, install cisterns and green roofs, and manage runoff with rain gardens and bioswales.

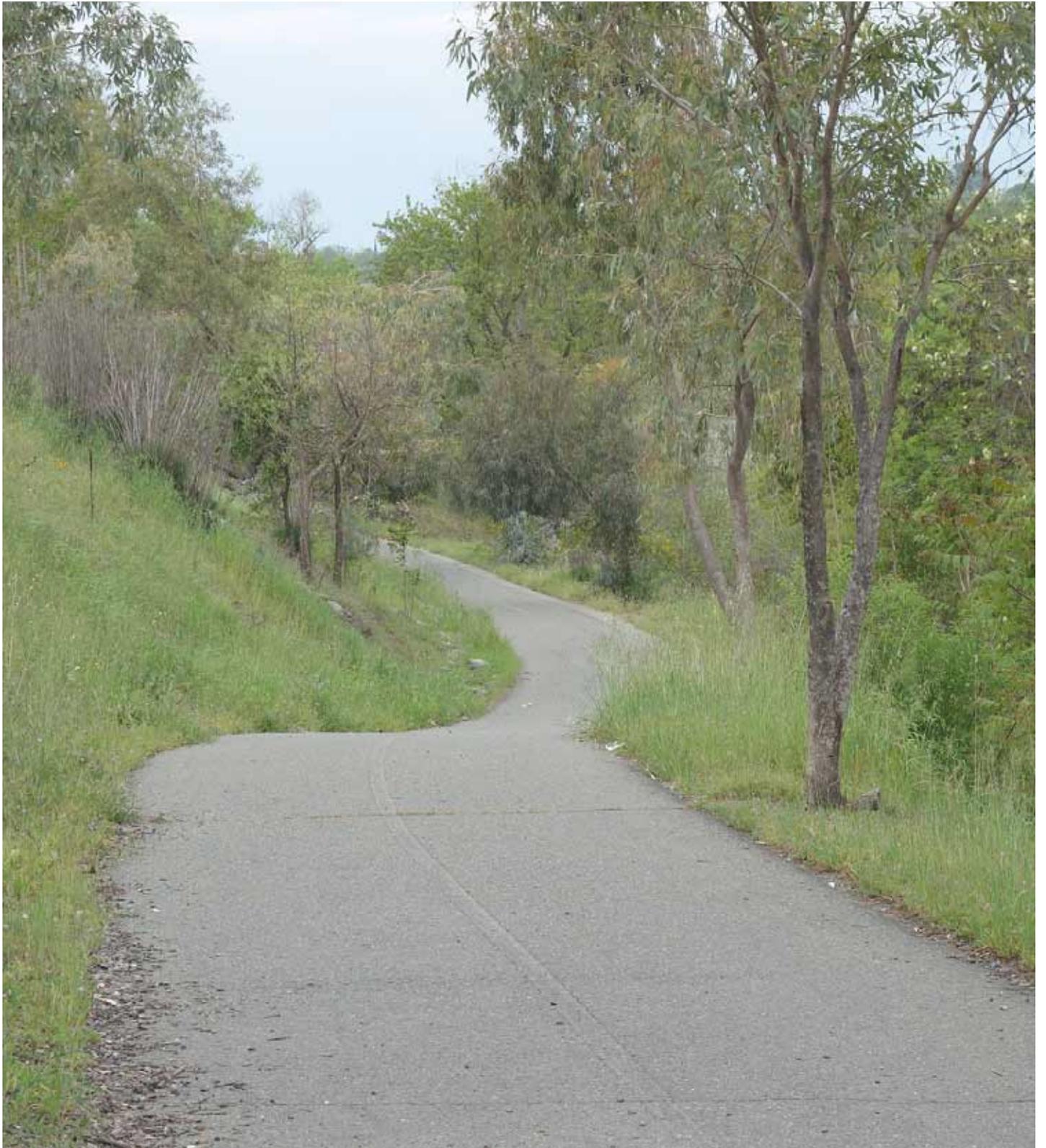
A unique program developed with the goal to eliminate cars, noise, littering, and loitering in alleys is Baltimore’s “Alley Gating and Greening” ordinance. Locked gates are installed at either end of the alley and the space between is transformed into community gardens and gathering spaces.

In Seattle, there has been a movement to activate alleys by naming them and installing identifying signs, which signal that they are cared for, safe and inviting. Green walls have been installed to provide vegetables, manage stormwater, and attract birds. Businesses have expanded into the alley with café seating and hanging lights that create a lively ambience at night, and special events and festivals have taken place in the alleys, signifying them as delightful public spaces.

The City of Los Angeles is partnering with the Trust for Public Land to improve alleys with:³

- Light-colored paving to reduce the heat island effect.
- Crosswalk striping, lights and signage to encourage pedestrian use and increase workability.
- Native and drought-tolerant planting to help green and beautify the area.
- Innovative techniques to capture and infiltrate stormwater.

³ Trust for Public Land website: <https://www.tpl.org/our-work/parks-for-people/los-angeles>.



part III implementation

This chapter depicts six sites selected as part of the Oroville Area Urban Greening Plan for conceptual site plans, illustrating how greening could be implemented. Various design elements include planting and shading, stormwater management, pedestrian use, and bicycle improvements that help create greener, safer, and more sustainable community spaces in the Oroville Urban Area.

These six sites were chosen from among the community's top priority greening opportunities. Some of these sites are longer-term projects (i.e. five to ten years out as described in Chapter 10, Phasing and Implementation) due to their complexity, but are still addressed with conceptual designs in this chapter because they are high priorities. In selecting opportunities for designs, the process valued sites that could be used as prototypes and replicated throughout other areas of the city, other sites, or elsewhere on the same street. The projects selected are also those for which developing design concepts at this time would be the most valuable to the community. For example, although completing the gap in the Brad Freeman Trail under the Green Bridge is an immediate priority, the FRRPD has already developed a design for the segment, so that site is not included in this chapter.

The six conceptual site plans and design concepts include the following:

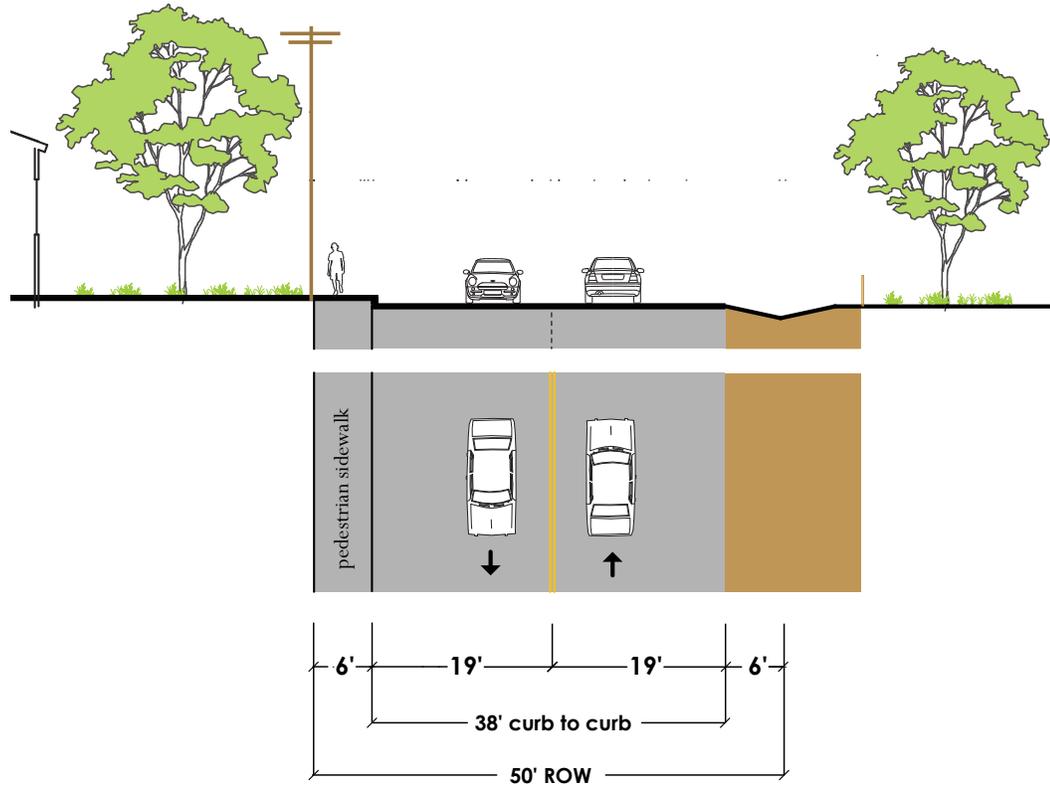
- **Las Plumas Avenue** shows improved pedestrian circulation and stormwater management through cross-sections and a “before and after” visual simulation, for an arterial adjacent to a high school.
- **Clean and Green Alleys and Vacant Lots** includes three “before and after” visual simulations illustrating potential enhancements of Southside alleyways and the transformation of a Southside vacant lot into a community garden.
- **Myers and Wyandotte Intersection and Corridors** depict specific streetscape improvements for all modes of transportation.
- **Levee Trail** demonstrates how the existing trail along the Feather River can be enhanced for the enjoyment of bicyclists, runners, and walkers.
- **Oroville Dam Boulevard** illustrates with cross-sections and visual simulations the existing condition of the roadway and two alternatives for improving the corridor, which vary in cost.
- **Nelson Ballfields Complex** includes an illustrative conceptual diagram and a detailed site plan showing renovations for the existing ballfields adjacent to the Feather River and Highway 70.

LAS PLUMAS AVENUE

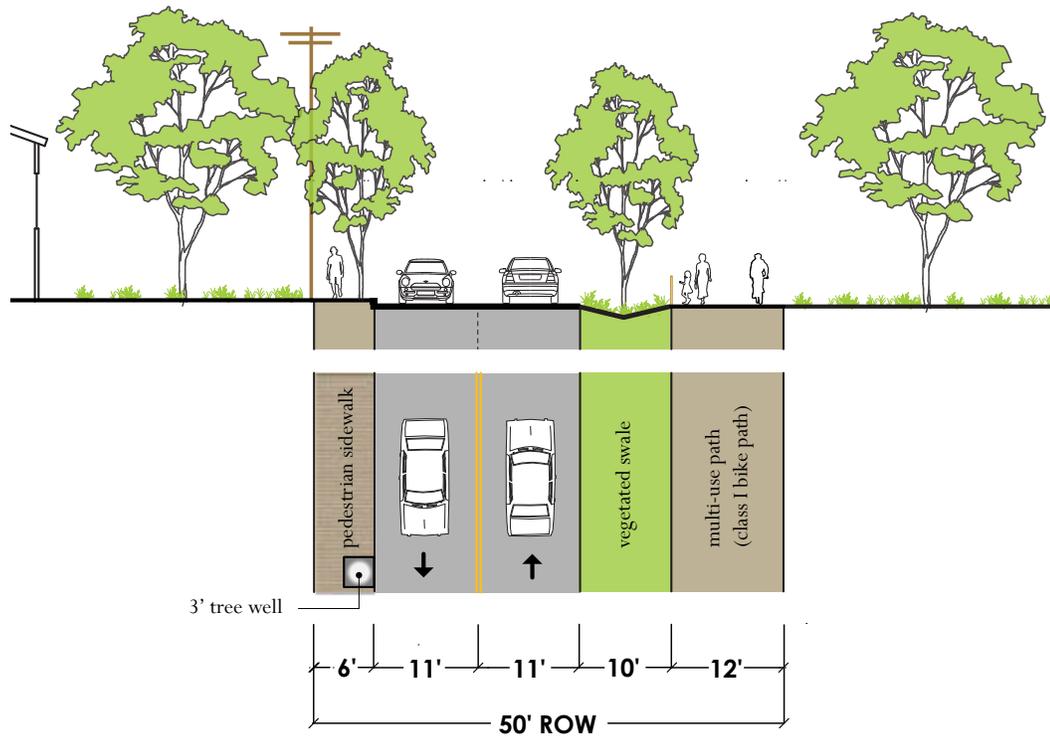
Las Plumas High School is located along Las Plumas Avenue, south of Oroville and the Southside neighborhood. There are several elementary schools, within a walkable distance from Las Plumas High School, including Oakdale Heights, Helen Wilcox, and Golden Hills Elementary Schools. Many high school students walk younger siblings to these nearby elementary schools sometimes in large groups of pedestrians, yet the roadway connections often lack sidewalks and shade. In particular, Las Plumas Avenue has intermittent sidewalks that tend to be narrow and alternate between different sides of the street from block to block. The community is interested in installing adequate and continuous sidewalks, bike paths, and shade trees on Las Plumas Avenue, Autrey Lane, and surrounding residential streets, as well as providing a pedestrian island in front of Las Plumas High School to help students cross the street from the sidewalk and the parking lot that face the school.

As illustrated in Figures 8-1 and 8-2, the conceptual design for Las Plumas Avenue aims to promote biking and walking to school, and introduces a sustainable stormwater management approach. The existing sidewalk on the north side of the street is transformed into an off-street, multi-use (Class I) bike path. The path is separated from the vehicle travel lanes by a vegetated swale with trees and other vegetation. Runoff from the street and path drains into the adjacent swale. On the south side of the street, trees are located in tree wells within the sidewalk zone. Marked pedestrian crosswalks will slow traffic and enhance pedestrian safety, which is particularly important for students commuting to school by foot or bike.

Figure 8-1: Las Plumas Avenue Improvements



Existing Conditions



Design Concept

Figure 8-2: Pedestrian Enhancements and Stormwater Treatment for Las Plumas Avenue



Existing Condition



Design Concept

CLEAN AND GREEN ALLEYS AND VACANT LOTS

Existing alleys within Oroville are underutilized and in a state of disrepair. Trash and debris accumulate along alleyways and further invite residential littering. The lack of pedestrian amenities, such as lighting, trash receptacles, and benches, creates an undesirable pedestrian experience. Many of Oroville's existing alleys are also composed of inadequate surface paving such as loose brick and uneven asphalt.

Figure 8-3 illustrates the entire alley right-of-way as paved with porous hardscape. "Planting pockets" are cut-outs in the hardscape for vegetation such as vines and small shrubs. Also included are permeable paving, such as porous concrete bordered by decomposed granite or open-grid pavers, benches, lighting, and trash receptacles.

Vacant lots, many of which can be found along the alleyways in the Southside neighborhoods, can also be transformed into public spaces, such as community gardens. Figure 8-4 illustrates this type of solution with the following design elements:

- A stormwater bioswale adjacent to the street that captures stormwater runoff.
- Street trees and low vegetation that buffer the lot from the side street while maintaining visual access to and from the site.
- Access from both the alley and cross street, creating multiple "fronts" for the space.
- Community garden plots and a tool shed.
- Picnic tables and benches and lighting.
- Pervious paving in the alley.

Figure 8-3: Alley Improvements



Existing Conditions



Design Concept

Figure 8-4: Community Garden in Vacant Lot



Existing Conditions



Design Concept

MYERS AND WYANDOTTE INTERSECTION AND CORRIDORS

The intersection of Myers Street and Wyandotte Avenue is an important gateway into the South Oroville neighborhood. However, the site's current condition lacks many of the attributes and qualities of a neighborhood gateway. Therefore, a number of improvements are proposed at the Myers and Wyandotte intersection.

Figure 8-5 illustrates the proposed improvements for this location. A series of gateway monuments located at the corners of the intersection will provide a formal entry for those entering South Oroville. These could be sculptures or monuments created by local artists or groups. A small plaza, located at the northwest corner of the intersection, will provide residents with an informal gathering space outside of the commercial businesses. Existing diagonal parking in the parking lot and parallel parking on one side of both streets is delineated with striping.

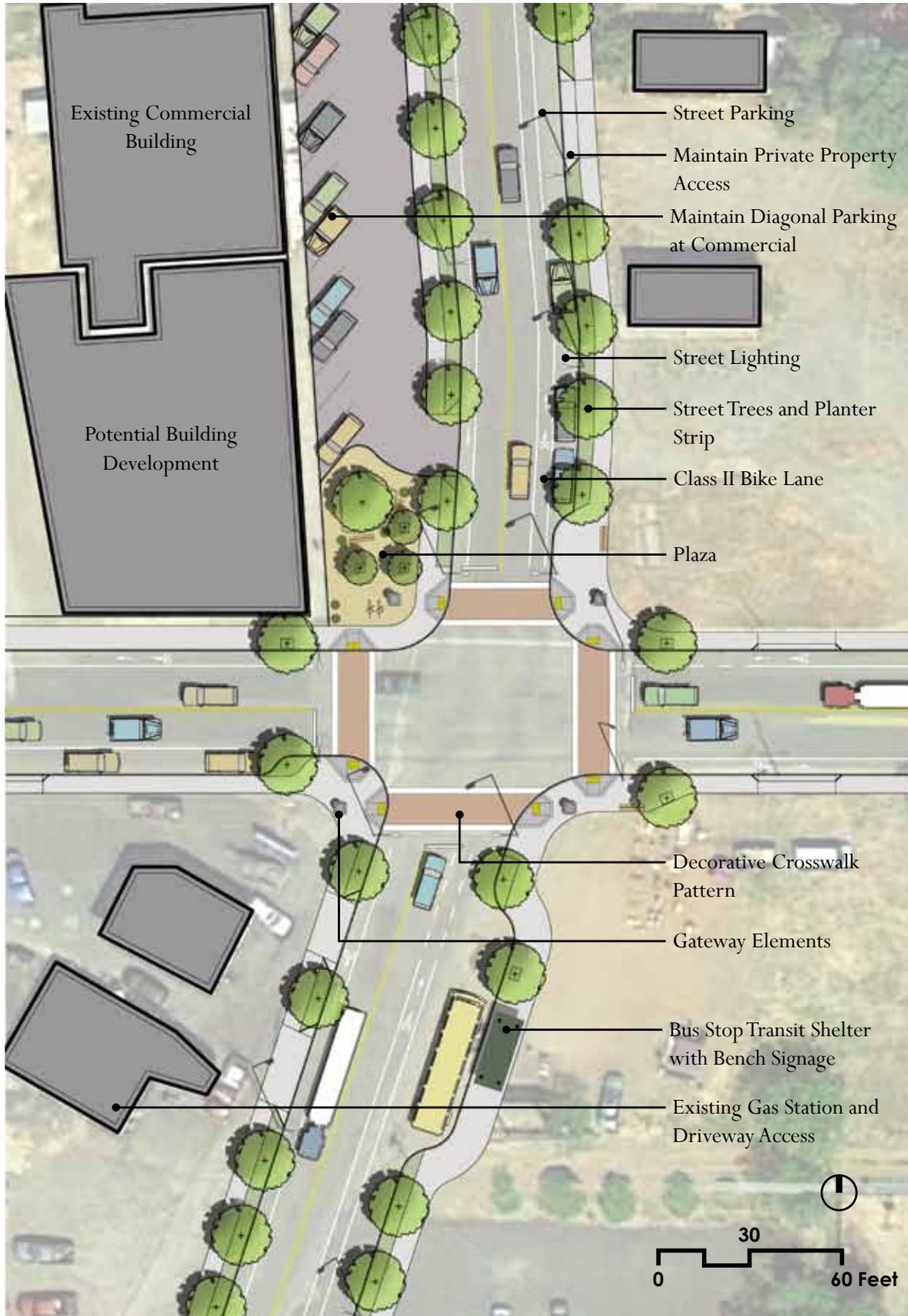
Planting strips with street trees along both sides of Myers Street will provide a buffer between traffic and sidewalk users as well as shading. Introducing additional street trees and planting along this corridor will also contribute to stormwater management and beautify the area to be more welcoming and comfortable for pedestrians, attracting people to this retail destination. A formal bus stop located at the southeast corner of the intersection as well as Class II bike lanes along either side of both streets support alternative forms of transportation.

Newly constructed sidewalks will include bulbouts and sidewalk extensions that protrude into the roadway at the intersection, which will enhance the pedestrian experience and improve safety. Bulbouts promote street safety by reducing the distance of roadway pedestrians must cross, and serve as a traffic calming method by forcing drivers to slow down through the narrowed roadway. Bulbouts also provide space for pedestrian seating, trash receptacles, and rain gardens. Additionally, pedestrian-scale lighting will help enhance the safety for residents at night and help define the public space.



Existing Condition of the Myers and Wyandotte Intersection

Figure 8-5: Myers and Wyandotte Intersection (Concept Plan)



LEVEE TRAIL

The Feather River runs adjacent to Downtown Oroville, where many small businesses are located. The river is an important recreational asset in the Oroville area due to its natural appeal to outdoor enthusiasts, attracting runners and cyclists to its many trails that meander down to the river's edge. While the levee trail is an attractive amenity, shading and pedestrian elements along the trail seldom exist.

As illustrated in Figure 8-6, resurfacing and restriping the trail and adding shade trees and native plantings will greatly enhance this recreational area for community members and visitors, particularly between the Veterans Memorial and the Downtown area. The additional trees, landscaping, and riparian restoration will beautify the corridor and enhance the habitat quality along the trail. These improvements, along with other amenities such as benches, trash receptacles, and pedestrian-scale lighting, will further promote recreational use, ultimately provide a more appealing community gathering area, and help provide additional connectivity from the nearby Downtown neighborhood. Funding should be readily available for this kind of project, community interest is high, and the costs of plantings and maintenance using native species is relatively low. Improvements should be coordinated with the Gateway project already underway to help define and revitalize the Downtown area, as well as with the design of the new section of the Brad Freeman Trail between the Veterans Memorial and the Green Bridge, which is underway.



Existing Levee Trail

Figure 8-6: Levee Trail Improvements



Existing Condition



Design Concept

OROVILLE DAM BOULEVARD

The Oroville Dam Boulevard corridor between Highway 70 and Spencer Avenue is a busy arterial with surface parking lots and commercial buildings on either side. As shown in Figure 8-7, the existing design of the street is oriented around automobiles with poor pedestrian and bicycle conditions, despite being a designated bike route and public transit route. The proposed designs for Oroville Dam Boulevard promote walking, biking, and sustainable stormwater management along the corridor.

Figure 8-8, Option #1, shows a proposed design that utilizes the existing right of way and curb infrastructure. It narrows the travel lanes and center turning lane to accommodate Class II bike lanes with a painted buffer to separate bikes from vehicles. Street trees, located in tree wells within the sidewalk zone, will beautify the corridor and provide much-needed shade and pedestrian safety.

Figure 8-9, Option #2, shows a more ideal, yet more costly, solution, in which the center turning lane is transformed into a planted median with large street trees, except where needed to allow cars to make left turns at parking lot entrances and cross streets. At these points, the turning lane can be paved with permeable pavers or alternative pervious paving surfaces. Additionally, the bike lanes on either side are raised slightly to distinguish them from the vehicle travel lanes, and a vegetated swale with street trees separates the bike lane from the sidewalk.

Both options provide greening along the corridor and promote non-motorized transportation as well as ADA-compliant access.

Figure 8-10 and 8-11 illustrate visual simulations of applying Option #2 at two locations along Oro Dam Boulevard.

Figure 8-7: Oroville Dam Boulevard - Existing Conditions

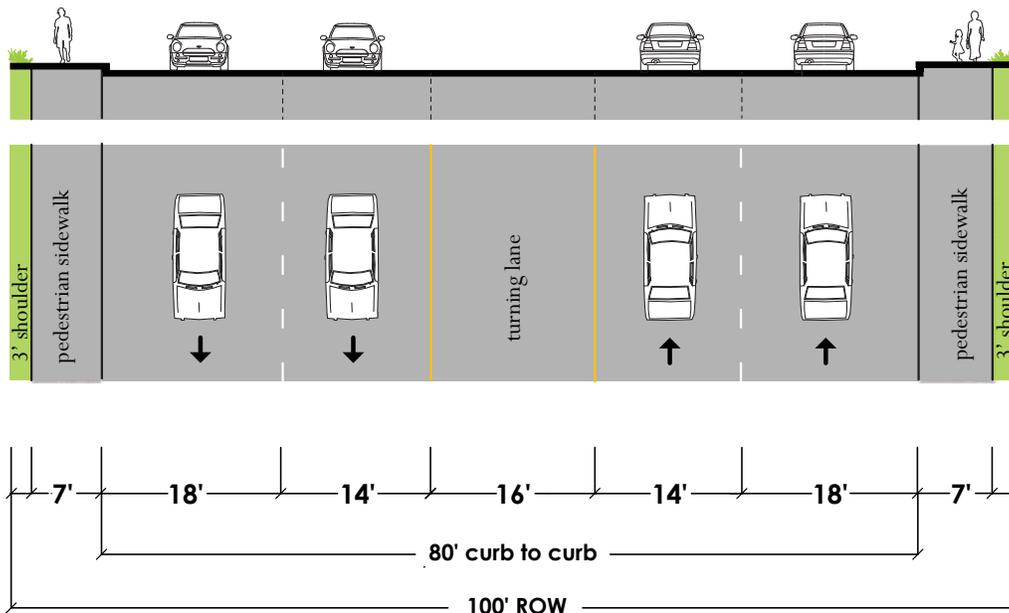


Figure 8-8: Oroville Dam Boulevard - Option #1

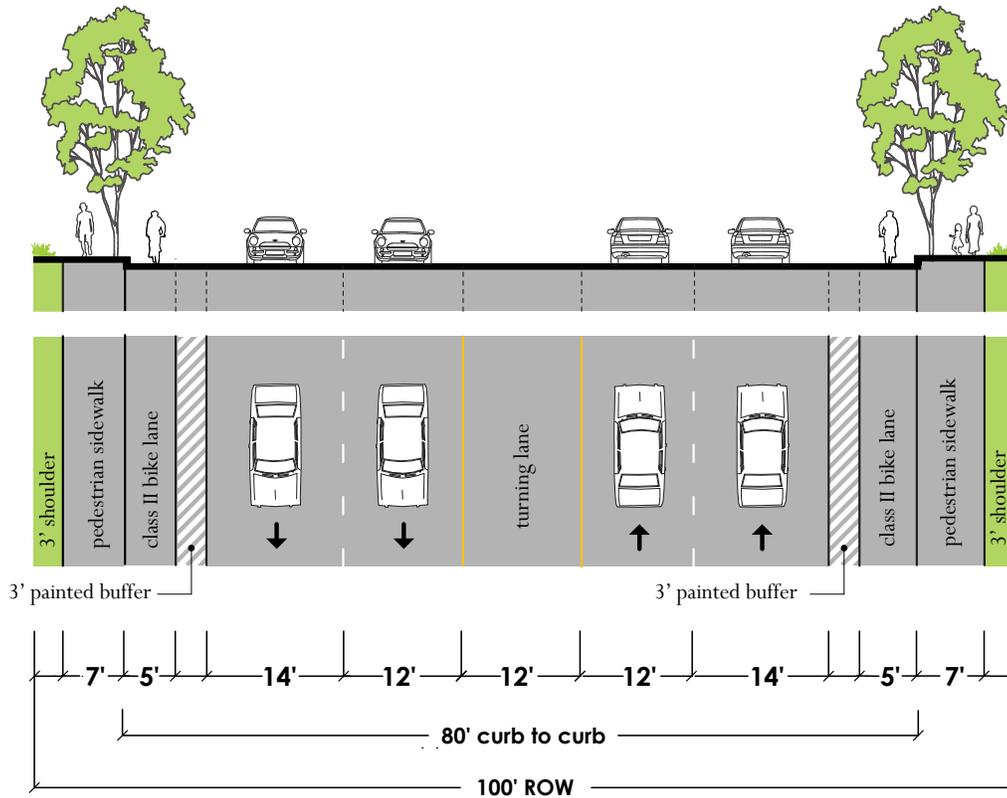


Figure 8-9: Oroville Dam Boulevard - Option #2

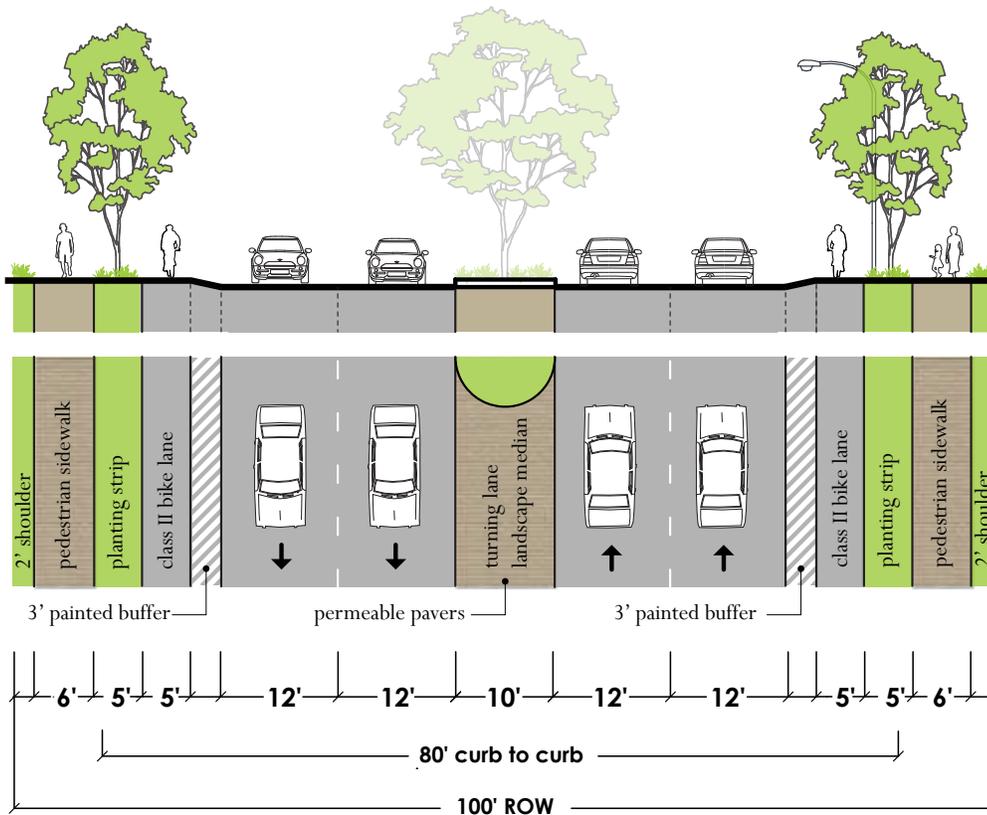


Figure 8-10: Oroville Dam Boulevard Improvements (looking east)



Existing Condition



Design Concept

Figure 8-11: Oroville Dam Boulevard Improvements (looking west)



Existing Condition



Design Concept

NELSON BALLFIELDS COMPLEX

The Nelson Ballfields Complex is a recreational hub composed of a large asphalt parking lot and several ballfields with minimal shading and inadequate irrigation. This area is well-used by local residents and is a popular destination in Oroville. However, the hot summer conditions and lack of shade creates an uncomfortable environment for park goers. The park also suffers from poor ballfield turf conditions. Figure 8-12 shows the current site conditions at the Nelson Ballfields area.

As shown in Figures 8-13 and 8-14, the design concept includes a new trail that will connect the ballfields to the Brad Freeman Trail and to the Thermalito-Forebay Picnic Area/Aquatic Center via a new pedestrian bridge over the Thermalito Power Canal, which will improve bicycle and pedestrian access to and from Nelson Ballfields and the adjacent Thermalito neighborhoods.

Adding trees around the ballfields will help shade the area for players and spectators. Shade trees will be also planted around the other open spaces, such as the picnic areas, restroom facilities, parking lot, and playground area. A series of shade structures will provide much-needed shade directly over specific seating areas, including the ballfield spectator stands, picnic area, and playground. Both trees and shade structures are strategically located to provide protection from the eastern, southern, and western solar exposure. Trees should be placed around gathering areas to provide the most shade coverage, but should not interfere with spectator views of the ballfields.

A series of rain gardens and permeable paving in the parking lot will help minimize stormwater runoff by limiting the amount of impervious surface. A bioretention area located near the parking lot will capture stormwater and pollutants that could otherwise travel to the nearest storm drain and into sensitive habitat areas.

Safety improvements to the site will consist of lighting, signage, and any necessary ADA features that will create a safer environment for all community members. Existing facilities, such as restrooms and drinking fountains that are in disrepair, will either be replaced or amended.



Nelson Ballfields: Unshaded Parking Lot



Nelson Ballfields: View Toward Forebay Picnic Area



Nelson Ballfields: Unshaded Play Structure

Figure 8-12: Nelson Ballfields (Concept Plan)



Figure 8-13: Nelson Ballfields (Existing Conditions)



Figure 8-14: Nelson Ballfields (Concept Diagram)



INTRODUCTION

Trees and other landscape plantings offer significant urban greening benefits, including improved ecological function, enhanced health and quality of life for residents, and increased economic value of commercial and residential properties. Services such as stormwater retention, carbon dioxide reduction, and shade protection are extremely valuable and trees and plants offer an economically sensible and ecologically sensitive way of providing these services in urban areas. Furthermore, increased greening and well-maintained natural features provide an attractive urban condition that can positively impact resident and visitor experiences within the Oroville Urban Area. Appropriate plant selection and thoughtful short- and long-term maintenance can ensure that these green assets are maximized and retain their value over time.

A plant palette, included as Appendix D to the Urban Greening Plan, was developed specifically for the Oroville Urban Area. It includes a list of trees, shrubs, grasses, perennials, and groundcovers that are drought-resistant and appropriate for the local climate. Plant water requirements are based on the Water Use Classifications of Landscape Species (WUCOLS IV), published by UC Davis in collaboration with the California Center for Urban Horticulture (CCUH) and the State of California Department of Water Resources.

More information is available at:

www.ucanr.edu/sites/WUCOLS/

Additional planting design guidelines and maintenance recommendations described below will ensure that new plantings are a long-term asset.

EXISTING CONDITIONS

Existing conditions impacting the plant palette include the climate zone, hot summer temperatures, and low summer water.

CLIMATE ZONE

Based on the categorization in the *Sunset Western Garden Book*, a planting resource guide for climate-specific planting, the Oroville Urban Area is located in Climate Zone 9, “thermal belts of California’s Central Valley,” with Zone 7 to the west around Lake Oroville and Zone 8 to the east around Highway 99. Zone 9 is very similar to both Zone 7, “California’s Gray Pine Belt and Oregon’s Rouge River Valley,” and Zone 8, “cold air basins of California’s Central



Sunset Western Garden Book: Climate Zones
 Source: <http://www.sunset.com/garden/climate-zones/sunset-climate-zone-northern-california>



Oroville Street with Minimal Shade



Oroville's Dry Climate



Drought-Tolerant Planting

Valley,” but Zones 7 and 8 have colder nights and winters. All zones experience high summertime temperatures, although summers in Zone 7 are slightly milder. All species in the Plant Palette, Appendix D, are suitable for Zone 9, and therefore, all of the Oroville Urban Area.

HOT SUMMER TEMPERATURES

Average high temperatures in Oroville range in the high 90s throughout the summer, although it is possible to reach higher than 100°F for days at a time. Plants selected must be able to withstand these temperatures or must be planted in a way to prevent exposure during this time, such as being planted under the canopy of more heat-tolerant species, in shady areas, or on the north or east side of buildings.

LOW SUMMER WATER

There is little to no summer precipitation in Oroville, so plants requiring water need to be irrigated during the summer months. As of 2015, California is in its fourth year of a serious drought. In April, Governor Jerry Brown issued Executive Order B-29-15a with immediate restrictions placed on water use in the landscape. Therefore, new planting must be drought-tolerant to minimize irrigation needs given current conditions and anticipated, continued water restrictions. All species in the Plant Palette (Appendix D) are hardy with low to very low water requirements. If planted in aerated soils amended with quality compost, watered properly with necessary but limited irrigation, and maintained with a minimum 3 inches of mulch cover, these plants will be able to survive the harsh drought conditions.

DESIGN GUIDELINES

PLANT SELECTION

The following is a list of specific criteria to consider during plant selection, including invasive species, native species, hydrozones, soil, year-round interest, and plant height and spacing, as described below.

INVASIVE PLANTS

Invasive plants should always be avoided during plant selection. CAL-IPC's "Don't Plant a Pest" list for the Sierra Foothills region and PlantRight's invasive plant list for the Central Valley region should be used as references. These lists are updated periodically, so it is important to check them on a regular basis to ensure newly-identified invasive species are not planted.

More information is available at:

www.cal-ipc.org/landscaping/dpp/planttypes.php?region=foothills
www.plantright.org/regions/central-valley

NATIVE SPECIES

Ecosystems are comprised of flora and fauna that have co-evolved. Plant species from other regions are often inedible to local fauna, such as native moths and butterflies. Removing native plants and replacing them with decorative

and exotic plants throws the system into imbalance and fragments functional habitat.

Native species should be prioritized during plant selection because they improve biodiversity and have a measureable effect on the health of the landscape. They also can help define a region and draw attention to the area's unique quality. Native plants are extremely well-suited for the climatic conditions of their home range; however, the soil compaction and environmental conditions of an urban setting may limit the success of some species of native plants. Native species can be augmented by plants from similar climatic regions that are well adapted to urban environments. The Plant Palette builds on the native plants of the region and supplements them with plants adapted to the climatic conditions of Oroville.

HYDROZONES

Plant selection should respond to varying soil, water, and sun exposure requirements. Consider the site's microclimate and potential for reflected heat from roadways or buildings, and group plants with similar tolerances. Do not mix California natives and Mediterranean plants with species from other regions that are not adapted to dry summer climates in the same hydrozone, as this will result in over- or under-watering, and they will not naturally thrive.

SOIL

Soil type and quality are important in plant selection, both because of the water-holding capacity of the different soil types as well as the general soil preferences of certain plant species. Although soil amendments such as compost can vastly improve the soil's ability to sustain growth, it is important to consider existing soil restrictions. Typical, native soils in Oroville are not perfect and have too much clay, or are too sandy, too stony, or too acidic; therefore, soil amendments are often needed.

YEAR-ROUND INTEREST

Utilize evergreen shrubs and groundcovers in the Plant Palette to help provide year-round interest. Anchoring the planting layout with drought-tolerant and native plants that will remain green year-round helps provide structure. Both seasonal and year-round flowering shrubs and trees should be used where they can be most appreciated — adjacent to walkways and recreational areas, or as a frame for site gateways, building entrances, and stairs.

Plants should be selected and sited to reflect both ornamental and functional characteristics. Full-canopy shade trees, greenery, and brightly colored flowering materials should be combined.

PLANT HEIGHT

Groundcover and shrub heights, as well as sightlines, should be considered when selecting plant species. When placing plants near roadways and intersections, provide sufficient setbacks for larger plants to ensure good visibility by both pedestrians and vehicles, thereby protecting pedestrian safety when crossing streets and providing safe turning distances for vehicles. Plants within sightline zones should grow no higher than 24 inches at maturity.



Street Median Trees Providing Fall Color



Streetscape Planting with Clear Sightlines



Shaded Street Corridor



Large Trees Conflicting with Overhead Utility Lines

Crime Prevention Through Environmental Design (CPTED) guidelines encourage visual corridors to be maintained throughout the public realm. Groundcover and shrubs should be maintained to remain below 36 inches, and tree canopies should be above head height (6 feet above the ground).

PLANT SPACING

Plants should be selected and placed to allow room to grow to full size at maturity. Ensure the plant is the right size for the space. Mature sizes of plant materials should be considered when selecting plant species to avoid unnecessary shearing, maintain plant health and avoid green waste. Plants and foliage do not need to fill the entire planting area in order to create a visually attractive landscape. Mulch or ground surfacing such as decomposed granite (DG) can provide an attractive and functional ground surface between plants while further limiting water needs.

SUITABLE AREAS (PLANT COMMUNITIES)

Different plant species are more suitable for some types of spaces than others. In certain situations, trees can cause safety hazards and/or destruction of property. Key plant communities are defined below and categorized in the Plant Palette (Appendix D) by “suitable areas” or sites where the species would be well-suited or useful.

STREET CORRIDORS

Many species have fast-growing, shallow, and/or large root systems that are known to damage asphalt and create conflicts with underground utilities. While locating street trees, consider the presence of underground utilities, especially gas lines. Also account for enough tree well space to give street trees enough room to thrive, and space trees appropriately to provide for enough shade without excessively overlapping canopies. Trees in the streetscape should also have an upright habit without low branching to maintain sightlines. See the Design Recommendations section in the Urban Forestry chapter (Chapter 4) for further information.

OVERHEAD UTILITY LINES

Small-stature species are more appropriate to locate under overhead lines because they will not grow tall enough to pose conflicts and require pruning. Trees that are appropriate to locate under overhead lines are highlighted in the “Under Utility Lines” column under “Suitable Areas” in the Plant Palette.

FREEWAY BUFFERS

As mentioned in the Urban Forestry chapter, trees improve air quality by absorbing volatile organic compounds (VOCs) and sequestering carbon dioxide released from vehicles. Some species are more capable than others, and should be located along freeways and highways to buffer the adjacent land uses. These species are highlighted in the “Freeway Buffers” column under “Suitable Areas” in the Plant Palette.

PUBLIC SPACES: CIVIC, PARKS, AND SCHOOLS

Characterized as needing larger planting space and more maintenance plants suitable for this category of spaces range in their characteristics as these spaces can accommodate more variety. This group of plants includes some iconic large trees with irregular branching patterns that may not be suitable for streets or other areas with pedestrians, as well as some specimen trees to make these spaces more unique than other planting spaces in the Urban Area. These species are highlighted in the “Civic, Parks, and Schools” column under “Suitable Areas” in the Plant Palette.

HIGH HEAT EXPOSURE

Large areas of impervious surface, such as parking lots or wide streets in commercial areas, as well as areas at high elevations, receiving reflective heat from walls, with southern or western exposures, and/or without shade, require plant species that can withstand high heat exposure. These species are highlighted in the “High Heat Exposure” column under “Suitable Areas” in the Plant Palette. Additionally, low-maintenance trees with large canopies should be selected to reduce surface temperatures. Adding a minimum of 3” of mulch in planting areas will help to maintain uniform soil temperature and prevent water loss from evaporation. Trees should be located to screen the southern and western exposure on buildings, gathering spaces, sidewalks, and bike lanes when feasible.

STORMWATER MANAGEMENT

Plants that can withstand flooding are the ideal plants for areas with persistent stormwater issues at low points in the landscape. Factors to be considered include inundation period, volume of water, expected velocity of water flow, and access and maintenance requirements. Specific shrubs and grasses that help with stormwater infiltration are categorized in the Plant Palette. Additional guidance is provided in Chapter 6, Stormwater Management.

RIPARIAN CORRIDORS

Species appropriate for riparian corridors, such as along the Feather River and the Thermalito Forebay, provide soil stabilization, support habitat restoration, and enable wildlife to move along the corridor. Riparian species should be prioritized in areas near and along water bodies. Species suitable for riparian corridors are identified in the Plant Palette under “Suitable Areas.”

TURF ALTERNATIVES

Turf grass is often selected for active use areas, but it has high water needs and requires routine mowing, as well as fertilizer and pesticide application. Therefore, turf grass should be eliminated when it is not serving a specific recreational or public use function. No-mow grass alternatives or native grass blends should be used wherever possible. Examples of turf alternatives are listed in the Plant Palette.



Inundated Stormwater Swale



No-Mow Grass



Wasteful Irrigation

IRRIGATION DESIGN

The majority of California native and climate-adapted plants do not respond well to overhead water in the summer. New planting often needs to be irrigated regularly when first installed, but on-going irrigation is not always needed once the plants are established. This is particularly true of species with low water needs, as indicated in the Plant Palette. Where necessary, a low volume irrigation system (i.e. drip, inline drip, and bubblers) should be installed, and recycled water should be utilized, if feasible.

Irrigation systems should be designed and installed to be highly-efficient with self-adjusting (“smart”) irrigation controllers that are weather-based or soil-based. All systems should be equipped with a rain-sensing or moisture-sensing shutoff device to ensure water is applied sparingly yet efficiently. To eliminate runoff, multiple start times may be required to allow infiltration into the soil for water conservation. Also, proper soil management should be used to avoid compaction (which leads to runoff) and to maximize infiltration, utilizing good quality green-waste compost and avoiding the use of synthetic fertilizers and pesticides.

County- and/or City-established irrigation standards and guidelines for appropriate irrigation techniques can help to appropriately irrigate plants to responsibly conserve water. As of November 2015, all irrigation design for new construction projects with over 500 square feet of landscaping and rehabilitation projects with over 2,500 square feet landscaping must comply with the California Water Efficient Landscape Ordinance (CAL WELO). To help comply with CAL WELO, the following note should be included on irrigation construction documents where required for permit issuance: “Contractor to provide product list, parts, models, and shop drawings with flow rate, head spacing for full coverage, distribution, and matched precipitation rates meeting the most recent California Water Efficient Landscape Ordinance (CAL WELO).”

More information is available at:

www.water.ca.gov/wateruseefficiency/landscapeordinance/

Separate from CAL WELO, specific water reduction guidelines should be followed as mandated by the local water agency.

This section of the Urban Greening Plan provides recommendations and options to help the Oroville community take advantage of the opportunities and design concepts detailed in Chapters 3 through 8. This implementation framework of phasing, programming, funding and partnership supports Oroville’s efforts to meet its community goals by promoting sustainable development and creating a more livable and vibrant community.

PHASING

The priority opportunities discussed in prior chapters were selected from a significantly more exhaustive list of potential greening sites the community had identified during the planning process, shown in Appendix A. The same evaluation used to prioritize those sites has been used here to generate a phasing plan that is consistent both with the community’s priorities and the feasibility of implementing the changes within five years, ten years, or beyond ten years. Projects that have high community interest, such as those for which conceptual designs are shown in Chapter 8, but will be complex to implement may be scheduled for the five-to-ten year period because it will take several years to plan, determine funding sources, and collaborate with the appropriate agencies and partners.

The jurisdictions in the area will use the plan as a basis for future decisions regarding infrastructure, policies, programs, and grant applications. It also provides a near “shovel-ready” list of priorities to which the community can confidently point funding agencies. The plan does not compete with similar projects and plans currently underway, such as the Safe Routes to Schools and Gateway projects, but is designed to complement and support those efforts.

This plan is intended to guide Oroville’s urban greening over the next 15 years. However, over time the community’s priorities may shift, funding may become more or less available, and new environmental or health issues may arise. As a result, some of the opportunities that are listed in Appendix A but not determined to be priorities in the scope of this plan may rise to become priorities. Some sites that were not identified in this plan at all may become available for greening. The City, County and FRRPD will amend the priorities and phasing accordingly.

Table 10-1 below proposes three timeframes for implementation: 0-5 years, 5-10 years, and over 10 years. The table also identifies lead agencies, as well as potential partners, programs, and funding sources to help implement them. The partners, programs, and funding sources are described in detail later in this chapter.



PROGRAMMATIC SOLUTIONS

In addition to specific site interventions, there are ongoing programs and practices that can be implemented by the City, the County, the FRRPD, local utility districts, or even local organizations and neighborhood groups. Given limited funding and resources, and Oroville’s active civic realm, engaging civic organizations in developing, constructing and maintaining green improvements is a good strategy to ensure support and implementation into the future for the Urban Greening Plan.

This section describes the programmatic and community engagement ideas that have been suggested through the planning process. They have developed in conversation with residents and emerged from reviewing best practices in other communities. Some of these are best facilitated by local government agencies, while many of them could be led or supported by nongovernmental organizations and individual residents, discussed further under Community Resources and Partnerships.

ABATEMENT AND ENFORCEMENT PROGRAMS

Existing City and County code enforcement and abatement programs can be strengthened and supported, including by partnering with community groups to promote education and cleanup days. These programs can address public nuisance, unsafe structures and illegal dumping, as well as abatement of weeds and invasive plant species such as *Ailanthus altissima*. Foreclosing on long-standing City and County liens on abandoned or vacant properties due to code violations would allow these hazardous properties to become available for cleaning and public use.

LOCAL CLEANUP AND REMEDIATION INCENTIVES

The City and County have the ability to provide incentives such as tax breaks and legal protection to individuals and companies who are willing to remediate former industrial sites or renovate dilapidated properties. Local government can also partner with the US Environmental Protection Agency (EPA) to implement federal tax incentives.

DISPOSAL PROGRAMS

Chico’s “Dump & Run” program and Fresno’s “Operation Clean-Up” program are examples of utility-operated programs that discourage illegal dumping by facilitating disposal in appropriate facilities. The Dump & Run program provides designated days when residents can either deposit large items for disposal, and Operation Clean-Up picks up large trash in each neighborhood annually on a rotating basis. Other similar options include vouchers or “amnesty days” to allow proper disposal of trash.

VACANT LOT INVENTORY

Many of Oroville’s dilapidated vacant lots are owned by absentee property owners, and some are entirely abandoned. A program by the City and County to identify these properties and their rightful owners and provide this information to the public would allow interested parties – including existing neigh-

Table 10-1: Summary of Project Phasing, Key Agencies, Partnerships, and Funding

OPPORTUNITY	KEY AGENCY	POTENTIAL PARTNERS	POTENTIAL PROGRAMS (IF APPLICABLE)	POTENTIAL FUNDING SOURCES
0-5 Years				
Connect the gap in the Brad Freeman Trail under the Green Bridge	FRRPD	<ul style="list-style-type: none"> • City • Friends of the Feather River Nature Center • California State Parks • Department of Water Resources (DWR) 		<ul style="list-style-type: none"> • Supplemental Benefits Fund
Clean and green Southside alleys	City	<ul style="list-style-type: none"> • Southside Vanguard • Southside Community Resource Center • Our Father's House 	<ul style="list-style-type: none"> • Alley greening • Alley neighborhood gating • Alley abandonment • Community Engagement/ stewardship 	<ul style="list-style-type: none"> • City General Fund • Community Development Block Grant (CDBG)
Clean and green vacant Southside lots	City Public Works/ City Code Enforcement	<ul style="list-style-type: none"> • Southside Vanguard • Southside Community Resource Center • Our Father's House 	<ul style="list-style-type: none"> • Disposal Programs • Vacant Lot Inventory • Abatement and Enforcement • Community Engagement 	<ul style="list-style-type: none"> • California Illegal Disposal Site Abatement • CDBG • City General Fund
Improve Myers Street through the Southside neighborhood/manage drainage problems at Myers and Wyandotte	City Public Works	<ul style="list-style-type: none"> • County Public Works • DWR • Save Oroville Trees • Lake Oroville Area Garden Club • Rotary Club • Schools 	<ul style="list-style-type: none"> • Local hiring/bidding • Community engagement 	<ul style="list-style-type: none"> • Alliance for Community Trees • CalFire Urban Greening Grant • California Releaf • CDBG • CTC Active Transportation Program (ATP) • DOT CMAQ • DOT Transportation, Community & System Preservation • DWR Stormwater Flood Management Grants • HUD Investment Planning Grants • National Fish and Wildlife (SFWF) Grants • National Integrated Water Quality Program • Office of Traffic Safety (OTS) Grants • Project Learning Tree • SBF • Strategic Growth Council • USFS National Urban and Community Forestry Challenge Cost-Share Program
Beautify the river and levee Downtown	City/FRRPD	<ul style="list-style-type: none"> • Lake Oroville Area Garden Club • Economic Development Organizations • Schools • Rotary Club • Oroville Association of Realtors 	<ul style="list-style-type: none"> • Community engagement 	<ul style="list-style-type: none"> • California Riparian Habitat Conservation Program • Federal Land and Water Conservation Fund • SBF • USDA Urban Forestry • USFS National Urban and Community Forestry Challenge Cost-Share Program • Wildlife Conservation Board • CalFire Urban Greening Grant • California Strategic Growth Council • Alliance for Community Trees
Shade El Medio Fire Department event site	City	<ul style="list-style-type: none"> • Fire Department • Farmers Market • Neighborhood groups 	<ul style="list-style-type: none"> • Community Engagement • Adopt-a-Tree 	<ul style="list-style-type: none"> • USDA Urban Forestry • USFS National Urban and Community Forestry Challenge Cost-Share Program • CalFire Urban Greening Grant • California Releaf • California Strategic Growth Council • Alliance for Community Trees
5-10 Years				
Connect Nelson Park to the Thermalito Forebay Picnic Area/Aquatic Center	FRRPD	<ul style="list-style-type: none"> • Department of Water Resources (DWR) 	<ul style="list-style-type: none"> • Local hiring/bidding 	<ul style="list-style-type: none"> • FRRPD Funds • SBF
Fill in sidewalk gaps along Fallbrook, Burlington, Columbia, and Wyandotte	City Public Works		<ul style="list-style-type: none"> • Local hiring/bidding 	<ul style="list-style-type: none"> • Office of Traffic Safety (OTS) Grants

Table 10-1: Summary of Project Phasing, Key Agencies, Partnerships, and Funding (continued)

OPPORTUNITY	KEY AGENCY	POTENTIAL PARTNERS	POTENTIAL PROGRAMS (IF APPLICABLE)	POTENTIAL FUNDING SOURCES
5-10 Years (continued)				
Plant new trees and update the irrigation system at the Nelson ballfields complex.	FRRPD	<ul style="list-style-type: none"> • City Public Works • Adopt-a-Park Committee • Rotary • Kiwanis • Lions Club • Little League 	<ul style="list-style-type: none"> • Local hiring/bidding 	<ul style="list-style-type: none"> • FRRPD Funds • SBF • USDA Urban Forestry • USFS National Urban and Community Forestry Challenge Cost-Share Program • CalFire Urban Greening Grant • California Releaf • California Strategic Growth Council • Alliance for Community Trees
Link Thermalito Schools with Residential Areas East of Highway 70	City and County Public Works	<ul style="list-style-type: none"> • County Public Health • Thermalito Union School District (TUSD) 	<ul style="list-style-type: none"> • Safe Routes to Schools • Local hiring/bidding 	<ul style="list-style-type: none"> • Office of Traffic Safety (OTS) Grants • CTC ATP • DPT Congestion Mitigation and Air Quality (CMAQ) • CTC Active Transportation Program (ATP)
Improve Streets around Las Plumas High School and Nearby Elementary Schools	County Public Works	<ul style="list-style-type: none"> • Public Health • Oroville Union High School District (OUHSD) • Oroville City Unified School District (OCUSD) 	<ul style="list-style-type: none"> • Safe Routes to Schools • CTC Active Transportation Program (ATP) • Local hiring/bidding 	<ul style="list-style-type: none"> • Office of Traffic Safety (OTS) Grants • USDA Urban Forestry • USFS National Urban and Community Forestry Challenge Cost-Share Program • CalFire Urban Greening Grant • California Releaf • California Strategic Growth Council • Alliance for Community Trees
Improve Oro Dam Boulevard between Highway 70 and Spencer Street	Caltrans City Public Works	<ul style="list-style-type: none"> • County • Lake Oroville Area Garden Club • Community Engagement 	<ul style="list-style-type: none"> • Local hiring/bidding 	<ul style="list-style-type: none"> • Office of Traffic Safety (OTS) Grants • USDA Urban Forestry • USFS National Urban and Community Forestry Challenge Cost-Share Program • CalFire Urban Greening Grant • California Strategic Growth Council • Alliance for Community Trees
Address stormwater system along Oro Bangor Highway and Ithaca Street	City Public Works		<ul style="list-style-type: none"> • Local hiring/bidding 	<ul style="list-style-type: none"> • CDBG • National Fish and Wildlife (SFWF) Grants • National Integrated Water Quality Program • DWR Stormwater Flood Management Grants
Manage drainage at the end of Elgin Street	City Public Works		<ul style="list-style-type: none"> • Local hiring/bidding 	<ul style="list-style-type: none"> • CDBG • National Fish and Wildlife (SFWF) Grants • National Integrated Water Quality Program • DWR Stormwater Flood Management Grants
Build a community garden at the Southside Community Center.	County General Services	<ul style="list-style-type: none"> • County Public Health • Cultivating Community North Valley • Lake Oroville Area Garden Club • CSU College of Agriculture • City • Butte County Farm Bureau • Oroville 4-H Club 	<ul style="list-style-type: none"> • Community engagement 	<ul style="list-style-type: none"> • National Gardening Association • Welch's Harvest Grants • Global Green School Makeover • Cultivating Community North Valley (CCNV)
10+ Years				
Create a Safe Route to School below the Power Lines between Southside and Las Plumas High School.	County	<ul style="list-style-type: none"> • Oroville Union High School District (OUHSD) • PG&E • Property Owners 	<ul style="list-style-type: none"> • Safe Routes to School • Local hiring • Community engagement 	<ul style="list-style-type: none"> • CTC ATP • DOT CMAQ
Connect the Gap between the Brad Freeman Trail and Highway 162	Caltrans FRRPD	<ul style="list-style-type: none"> • City • County 	<ul style="list-style-type: none"> • Local hiring 	<ul style="list-style-type: none"> • Federal Recreational Trails Program • FRRPD Budget • National Trails Fund • SBF

bors – to purchase the lots for use as homes, extended yards, community gardens, or other creative enterprises. The City or County may also consider strategically purchasing some of these lots for resale or use as parks or community gardens.

COMMUNITY FACILITIES DISTRICT PARK MAINTENANCE

Local government Park Maintenance Districts using Mello-Roos Community Facilities District funding could be developed to provide facilities and maintenance in a specific area via an assessment on property owners. However, the funds required to implement this program would require voter approval. These funds are described in further detail in Possible Funding Sources, below.

EDUCATIONAL PROGRAMS

Educational campaigns help inform park users, business owners, residents and local government staff. This information can inspire them to be involved in community greening, help them understand the goals of the Urban Greening Plan, and train them to better support and maintain Oroville’s green spaces. The following programs are examples of educational efforts Oroville could undertake.

- Signage and community information campaigns can encourage park users to appropriately use trash and recycling bins and discourage users from misusing the facilities.
- Public works, parks, or other staff and residents trained in tree and plant care and maintenance and planting from the recommended plant palette, particularly in planting native species, eradicating invasive species, and using drought-resistant alternatives to lawns, will be likely to make better choices in both landscaping and weed abatement.
- Special events such as Arbor Day and Earth Day celebrations, tree planting festivals, tree dedications and other one-day events are an effective way to build enthusiasm and support for the community forest.
- The City’s existing beautification awards both encourage and educate the community about the special role greening has in community pride and sustainability.

ALLEY CLEANUP

A program to clean up Oroville’s alleys, as described in Chapter 7 (Clean and Green), could clean up debris; address stormwater; clear, beautify and light alleys; or coordinate with adjacent property owners either to turn alleys over to neighborhood groups or allow the City to close the public right of way and allow the adjacent property owners to maintain the abandoned land. Any of these options will require that the City and neighborhood residents work together extensively both to plan improvements and to ensure ongoing resident support for the alleys. Residents should help determine the process and outcome. Some examples of successful precedent programs developed in other cities are summarized in Chapter 7 (Clean and Green).

COMMUNITY ENGAGEMENT PROGRAMS

Greening programs are more successfully supported when they involve residents, particularly neighbors, in the planning process. Notifying residents and property owners of any project involving planting or tree removal near their home or business is critical, and allows the people most directly affected to shape the environment around them. A more effective program would be to engage those residents in the construction, planting and maintenance phases in addition to the planning. There are many ways to include residents in greening their communities, including the following programs:

- A **local hiring or bidding policy** or practice would support the economy, build community buy-in around the projects, and provide jobs for residents.
- Partnerships with **work training** programs could provide a source of more skilled arborists and horticulturists in training.
- A **community stewardship activity** such as selecting a community tree species (from an approved plant palette) for a specific street or neighborhood would help residents of all ages feel engaged with their neighbors and environment.
- Building upon existing **community service programs** and **education programs** could establish opportunities for classroom and neighborhood-based learning.
- Coordinating **stewardship activities** with established volunteer groups, as well as school groups, churches and environmental organizations, would provide labor for planting and ongoing maintenance and give the community a sense of ownership and pride in their parks, streets and alleys.
- An **adopt-a-tree** campaign would allow individuals and established community groups or businesses to adopt a tree by providing materials, labor or financial support for planting and long-term maintenance.

Ideally many of these programs, particularly those addressing tree planting and care, would be led by a trained arborist. Other project and program leaders and potential partners for community engagement programs are described in the Community Resources and Partnerships section, below.

HOMELESS ADVOCACY AND SUPPORT

One concern that was raised at two public workshops was the presence of homeless residents living on abandoned properties. This issue was raised both as a safety issue by people who found individuals living in these areas to be threatening, and as a humanitarian issue by homeless advocates who do not want to see homeless encampments displaced for greening. Because of this connection, supporting programs that provide housing and services for the area's homeless residents will serve the community's urban greening goals.

COMMUNITY RESOURCES AND PARTNERSHIPS

A key strategy in implementing the Urban Greening Plan is to develop partnerships between agencies and with groups such as business owners, neighborhood associations, schools, and churches. Partnerships allow communities to leverage limited public funds to create more significant change. Providing community support in the form of “sweat equity” will also help Oroville acquire grants from sources outside the community.

In addition to the financial benefits of community partnerships, one of the best strategies for building support for greening activities and ensuring that the good work will be maintained into the future is to generate community enthusiasm and participation. Community-based partners can build momentum for a greening project and will have greater ownership over the project moving forward.

PUBLIC AGENCIES

The Green Team, which advised on the Urban Greening Plan, is the most logical starting point to find public partners to implement the projects and programs recommended in the Plan. In addition to the City of Oroville, Butte County, FRRPD, members of the Green Team include energy providers, water providers, wastewater service providers, and State and regional agencies. Many of these agencies have an interest in moving greening projects forward for water management, health, economic development, or other reasons. Because of these shared goals, they may be able to provide staff time, funds, or grant-seeking capacity to achieve the goals of the Plan. California State University Chico planning, engineering, agriculture, and horticulture faculty and students and local high school Regional Occupational Programs in fields such as agriculture, building construction and ornamental horticulture may be open to a partnership that would serve their educational needs.

VOLUNTEER GROUPS AND COMMUNITY-BASED ORGANIZATIONS

There are existing volunteer groups and nonprofit organizations who might be interested in partnering to fundraise, provide construction and stewardship labor, or otherwise support Oroville’s greening plans. Some of these organizations are also members of the Green Team, including community organizations such as the Hmong Cultural Center of Butte County and the Oroville Area Chamber of Commerce. Other organizations including cultural, family resource, job training, educational and economic development organizations are all likely candidates to partner on projects that will help achieve their missions by intersecting with the mission of urban greening. The Southside Community Resource Center and the Southside Vanguard are very active in the Southside, and the Lake Oroville Area Garden Club already provides beautification projects and hosts educational gatherings. Churches of all faiths involve themselves in community service projects, such as Our Father’s House, which hosts a community garden among its other services.

POTENTIAL FUNDING SOURCES

Given the wide range of projects that the Oroville community has prioritized, there are many programs and grants that are potential sources of funding. These are summarized below by type of project funded: community and school gardens, bicycle and pedestrian infrastructure, stormwater management and creek restoration, cleanup of alleys and dumping sites, trails, shade trees and landscaping, park and open space, riverfront, and projects that contribute more generally to urban greening. These funding opportunities have online websites that should be checked for ongoing grant announcements throughout the year.

COMMUNITY AND SCHOOL GARDENS

National Gardening Association Youth Garden Grant

Youth Garden Grant funds are directed to educational garden projects that enhance the quality of life in their host communities. The focus of this grant is to fund tools and supplies for programs that plan to garden in 2015 with at least 15 children between the ages of 3 and 18. Funds are granted based on the demonstrated relationship between the garden program and education related to the environment, health and nutrition issues, character education, and entrepreneurship in the United States.

More information is available at:

grants.kidsgardening.org/

Welch's – Harvest Grants

Any school, home school association, religious educational center, or Head Start center is eligible to apply for a Welch's "garden package" award. These awards are excellent starting points for tools, seeds, and educational materials. Welch's offers five \$1,000 garden packages and 95 \$500 garden packages each year.

More information is available at:

www.scholastic.com/harvest/pdfs/learnmore.pdf

Global Green USA's Green School Makeover Competition

The Green School Makeover is focused on promoting the design, building, renovation, or operation of K-12 schools in an ecological and resource-efficient manner to reduce environmental impact, save money, and improve student health and performance. Funds from winning the competition could be a source of funding for school gardens that achieve these sustainability goals.

More information is available at:

globalgreen.org/makeover2013

Cultivating Community North Valley (CCNV)

CCNV is a partnership of local players, including the Growing Resourcefully, Uniting Bellies (GRUB) Educational Program, the Organic Vegetable Project (OVP), and the Center for Healthy Communities, who share a vision of strengthening the health and vitality of the North Valley community and local food network through the growing, preparing and marketing of specialty crops. CCNV provides education, outreach, and resources to students, small-scale farmers, under-served communities, and everyone interested in participating in the local food movement.

More information is available at:

cultivatingcommunitynv.org/

Supplemental Benefits Fund

To increase positive health outcomes in the City of Oroville, it is essential to include community schools and gardens into the fabric of the community. Connecting local funding sources with community schools and gardens is an essential link in creating a healthy and sustainable City of Oroville. Furthermore, local funds could be leveraged to supplement and spur other grants listed in this chapter. The Supplemental Benefits Fund (SBF) is intended to allow opportunities for job creation, tourism, and local recreation. Much of the recreational and economic development to be supported by the SBF will occur along the Feather River; however, the funds may be used outside of the Feather River corridor.

More information is available at:

www.cityoforoville.org/index.aspx?page=380

BIKE AND PEDESTRIAN INFRASTRUCTURE

United States Department of Transportation (DOT) Congestion Mitigation and Air Quality (CMAQ)

CMAQ funds support surface transportation projects, such as bike and pedestrian infrastructure, and other related efforts that contribute to air quality improvements and provide congestion relief. The focus is on “projects that shift traffic demand to nonpeak hours or other transportation modes, increase vehicle occupancy rates, or otherwise reduce demand.” Of the \$2.2 billion in annual funding, 13% of funds are directed to bike and pedestrian infrastructure projects. Caltrans administers these funds for the State of California.

More information is available at:

www.fhwa.dot.gov/environment/air_quality/cmaq/

DOT Transportation, Community, and System Preservation

The Federal DOT awards discretionary grants to plan and implement strategies that improve the efficiency of the transportation system, reduce environmental impacts of transportation, reduce the need for costly future public infrastructure investments, ensure efficient access to jobs, services and centers of trade, and examine development patterns and identify strategies to encourage private sector development patterns that achieve these goals.

More information is available at:

www.fhwa.dot.gov/discretionary/tcsp2012selc.cfm

California DOT (Caltrans) Grants

Caltrans Sustainable Transportation Planning Grant Program funds are available for projects that improve mobility by integrating sustainability and innovatively addressing problems or deficiencies in the multimodal transportation system. Grants are either in the Strategic Partnerships or Sustainable Communities categories. The goals of the program include sustainability, preservation, mobility, safety, innovation, economy, health, and equity. In Fiscal Year 2015-16, 51 applications totaling \$9.8 million were selected for funding.

US Office of Housing and Urban Development (HUD) Planning Grants

These grants were created to support metropolitan and multijurisdictional planning efforts that integrate housing, land use, economic and workforce development, transportation, and infrastructure investments. HUD has created six livability principles that translate into strategies that drive the Regional Planning Grant Program. These livability principles place a priority on investing in projects that provide more transportation choices. Specifically, HUD identifies the development of safe, reliable and economical transportation choices to decrease household transportation costs, reduce our nation's dependence on foreign oil, improve air quality, reduce greenhouse gas emissions and promote public health, all of which dovetail well with bicycle and pedestrian infrastructure. The Community Challenge Planning Grants foster reform and reduce barriers to economically vital and sustainable communities through efforts such as replacing local master plans and promoting sustainability at the local or neighborhood level.

More information is available at:

portal.hud.gov/hudportal/HUD?src=/hudprograms/sci

The California Transportation Commission (CTC) Active Transportation Program (ATP)

The CTC's ATP program consolidates existing federal and state transportation programs, including the Transportation Alternatives Program (TAP), Bicycle Transportation Account (BTA), and State Safe Routes to School (SR2S), into a single program to make California a national leader in active transportation. The goal of the program includes enhancing public health, increasing the proportion of trips accomplished by biking and walking, increasing safety and mobility for non-motorized users, and ensuring that disadvantaged communities fully share in the benefits of the program.

More information is available at:

www.casaferoutestoschool.org/atp-cycle-2-call-for-projects-now-open/

Office of Traffic Safety (OTS) Grants

The Office of Traffic Safety (OTS) administrates federal traffic safety grant funds that are apportioned to California under the National Highway Safety Act. The OTS supports a wide variety of traffic safety programs, including pedestrian and bicycle safety programs for children, child passenger safety outreach, and support for increased law enforcement services and resources, such as safety helmet distribution, and court diversion programs for safety helmet

violators. State governmental agencies, state colleges, and state universities, local city and county government agencies, school districts, fire departments, and public emergency services providers are eligible to apply for and receive OTS grant funding. Grants are awarded on a competitive basis.

More information is available at:

www.ots.ca.gov/ots_and_traffic_safety/faqs.asp

Supplemental Benefits Fund

The economic and recreational benefits provided from the SBF allow opportunities for job creation, tourism, and local recreation. Much of the recreational and economic development will occur along Oroville's most prized natural resource, the Feather River. Connecting bike and pedestrian infrastructure with the Feather River is an essential link in creating a connected and inviting bicycle and pedestrian friendly network. Furthermore, these funds could be leveraged to match other grants listed in this chapter.

More information is available at:

www.cityoforoville.org/index.aspx?page=380

STORMWATER MANAGEMENT/CREEK RESTORATION

Community Development Block Grants

CDBG funds public works, community facilities, and public service projects serving lower-income areas. These projects may include public improvements including water and wastewater systems.

More information is available at:

hcd.ca.gov/fa/cdbg/CommunityDevelopment.html

National Fish and Wildlife Foundation (NFWF) grants

The Five Star and Urban Waters Restoration Grant Program seeks to develop community capacity to sustain local natural resources for future generations by providing modest financial assistance to diverse local partnerships for wetland, riparian, forest and coastal habitat restoration, urban wildlife conservation, and stormwater management, as well as outreach, education and stewardship. Projects should focus on water quality, watersheds and the habitats they support. NFWF may use a mix of public and private funding sources to support any grant made through this program.

More information is available at:

www.nfwf.org/fivestar/Pages/2015RFP.aspx#.VWP0wWRVikp

More links to NFWF Stormwater Management:

www.nfwf.org/pages/grants/home.aspx

www.timmons.com/projects/green-alley-stormwater-management-projects/

National Integrated Water Quality Program

These funds contribute to improving the quality of surface water and groundwater resources through research, education, and extension activities. Projects funded through this program will work to solve water resource problems by advancing and disseminating the knowledge base available to agricultural, rural, and urbanizing communities. Funded projects should lead to science-based decision-making and management practices that improve the quality of the nation's surface water and groundwater resources in agricultural, rural, and urbanizing watersheds.

More information is available at:

www.epa.gov/oig/catalog/programs/115.html

California Department of Water Resources, Division of Integrated Regional Water Management

This agency offers Stormwater Flood Management Grants funded by Proposition 1E, The Disaster Preparedness and Flood Protection Bond Act of 2006. Actions funded include implementation actions to reduce flooding and provide multiple benefits.

More information is available at:

bondaccountability.resources.ca.gov/Project.aspx?ProjectPK=3860-P1E-348&pid=5

Prop 1E Stormwater Flood Management Grants

This grant pays for levee repairs and improvements, upgrade flood protection for urban areas, improve emergency response capabilities, and provide grants for stormwater flood management projects. Specifically, \$300 million allocated for Stormwater Flood Management for areas outside the State Plan of Flood Control will provide grants to local entities to cost-share stormwater runoff projects, consistent with an integrated regional water management plan.

More information is available at:

bondaccountability.resources.ca.gov/PDF/Prop1E/PROPOSITION_1E_fact.pdf

The Water Quality, Supply, and Infrastructure Improvement Act of 2014

The California Water Bond was approved by California voters on November 4, 2015 and enacts the Water Quality, Supply, and Infrastructure Improvement Act of 2014. The water bond authorizes \$7.12 billion in general obligation bonds for state water supply projects, such as public water system improvements, surface and groundwater storage, drinking water protection, water recycling and advanced water treatment technology, water supply management and conveyance, wastewater treatment, drought relief, emergency water supplies, and ecosystem and watershed protection and restoration. The Water bond could fund multibenefit ecosystem and watershed protection and restoration projects, stormwater management, flood management projects and activities, and integrated regional water management plan projects.

More information is available at:

www.acwa.com/spotlight/2014-water-bond

Supplemental Benefits Fund

Stormwater management and creek restoration are imperative to any economic and recreational development along Oroville's most prized natural resource, the Feather River. An investment that optimizes stormwater management and creek restoration has a direct and exponential benefit to tourism and local recreation within the City of Oroville. Furthermore, creating a livable and economically sustainable City of Oroville is directly impeded by flooding and cumulative impacts associated with the omission of stormwater management and creek restoration efforts.

More information is available at:

www.cityoforoville.org/index.aspx?page=380

ALLEYS AND DUMPING CLEANUP

Community Development Block Grant

Since 1974, the US Department of Housing and Urban Development has administered CDBG funds. The goal of the CDBG program is to develop viable urban communities by providing decent housing and a suitable living environment and by expanding economic opportunities, principally for persons of low and moderate income. Projects funded must meet specific criteria of benefiting low-income households, creating new jobs, or accommodating specific business expansion or retention. CDBG funds are available for a number of different types of projects, including housing rehabilitation, new housing construction, community facilities, public services, and public works projects.

More information is available at:

www.hcd.ca.gov/fa/cdbg/CommunityDevelopment.html

HUD Brownfields Economic Development Initiative (BEDI)

BEDI funds are intended to enhance the viability of brownfields economic development projects by enhancing security of Section 108 loans. Eligible uses include land write-downs, site remediation costs, funding reserves, over-collateralizing Section 108 loans, and financing businesses at below market interest rates.

More information is available at:

portal.hud.gov/hudportal/HUD?src=/program_offices/comm_planning/BEDI

www.epa.gov/brownfields/grant_info/

California Illegal Disposal Site Abatement Grant Program

This program provides financial assistance in the form of reimbursement grants up to \$500,000 to help public entities accelerate the pace of cleanup, restore sites, and turn today's problems into tomorrow's opportunities. Properties on which illegal dumping occurs lose economic value, create public health and safety and environmental problems, and degrade the community's enjoyment and pride in the affected communities. Abandoned, idled, or underutilized properties that suffer from unauthorized dumping deteriorate areas that were once sources of economic benefits to a community. Many such properties have been abandoned or have owners who are unable or unwilling to pay the costs of cleanup.

More information is available at:

www.calrecycle.ca.gov/LEA/GrantsLoans/SolidWaste/LEA/default.htm

Local Government Incentives

In addition to dedicating money from the City or County budget for cleanup, local government can provide incentives such as disposal fee waivers or vouchers, or free disposal days. These both encourage organizations and neighborhood associations to conduct wholesale cleanups, and reduce future dumping. Operation Clean-Up, run jointly by the City of Fresno and Fresno County, is an example of a public utility that minimizes illegal dumping by offering neighborhood-by-neighborhood pickups that allow residents to put large and unusual items out on the street for pick-up.

Supplemental Benefits Fund

The SBF is intended to allow opportunities for job creation, tourism, and local recreation. Much of the recreational and economic development to be supported by the SBF will occur along the Feather River; however, the funds may be used outside of the Feather River corridor. Illegal dumping, e.g. garbage, rubbish, abandoned vehicles or parts, demolition and construction waste or recyclable materials can provide food and habitat for rats, other rodents, and insects, which could spread disease, particularly to household pets. Furthermore, illegal dumping has a tremendous impact on the health of Oroville waterways, including the Feather River. Preventing impacts to the Feather River due to illegal dumping activities is an essential link in creating a healthy and robust tourism and local recreation haven in the City of Oroville.

More information is available at:

www.cityoforoville.org/index.aspx?page=380

TRAILS (BIKE, HORSE, HIKING)

Federal Recreational Trails Program

Federal transportation funds benefit recreation including hiking, bicycling, in-line skating, equestrian use, cross-country skiing, snowmobiling, off-road motorcycling, all-terrain vehicle riding, four-wheel driving, or using other off-road motorized vehicles. For example, Butte, Plumas & Tehama counties received \$5,000 in 1999 to maintain and groom snowmobile trails through the Butte Meadows Hillsiders Grooming Program, and Jonesville received \$30,000 in 2000 for trail maintenance. While available funds vary from year to year, there was over \$5.7 million available to California in 2013. These funds require at least a 20 percent local match.

More information is available at:

www.fhwa.dot.gov/environment/recreational_trails/

Rails-to-Trails Conservancy

The Rails-to-Trails Conservancy offers funding ideas and links to potential funding sources, acknowledging that paying for rails-to-trails conversions requires “a bit of ingenuity and a lot of research.” Among the links to potential funding sources offered by the Rails-to-Trails conservancy, there is information about federal transportation funding for trails, including the Recreational Trails Program and the Rivers, Trails, and Conservation Assistance Program (RTCA).

More information is available at:

www.railstotrails.org/ourwork/trailbuilding/toolbox/information-summaries/funding_financing.html#creative

National Trails Fund

The American Hiking Society provides micro-grants to trail crews specifically to support hiking trails. Grants are available in amounts between \$500 and \$5,000 to members of the American Hiking Society's Alliance of Hiking Organizations for projects that have hikers as the primary constituency; are seeking to secure trail lands, including acquiring trails and trail corridors; and will build and maintain trails resulting in visible and substantial ease of access, improved hiker safety, or avoidance of environmental damage. Higher preference is given to projects with volunteer labor.

More information is available at:

www.americanhiking.org/national-trails-fund

Supplemental Benefits Fund

Much of the recreational and economic development along Oroville's most prized natural resource, the Feather River, ought to be accessible by multipurpose trails. Connecting bicycle, horse, and hiking trails with the Feather River may increase job opportunities, tourism and local recreation. Furthermore, these funds could be leveraged to match other grants listed in this chapter.

More information is available at:

www.cityoforoville.org/index.aspx?page=380

SHADE TREES AND LANDSCAPING

Community Benefit Districts

Should a neighborhood have a strong interest in seeking additional financing for landscaping, one possible option is to work with the Butte Local Agency Formation Commission (LAFCO) to form special financing or landscape improvement districts with restricted boundaries and limited taxing authority.

Donation Program and Memorial Trees

A tree donation program would create a mechanism for individual and corporate donors to contribute to the urban forest. A commemorative plaque could be included to recognize these donors for their contribution. Donors may include residents, business owners, and local nurseries. A memorial tree program would provide an opportunity for community members to dedicate trees in honor of a loved one's life or for special occasions, including births, quinceaneras, marriages, retirement, graduations, and even local championship games.

US Department of Agriculture (USDA) Urban and Community Forestry Program

The Urban and Community Forestry Program provides technical, financial, research and educational services to local government, non-profit organizations community groups, educational institutions, and tribal governments. Over the next five years an increasing percentage of funding will be focused on landscape-scale projects. Three national themes provide a framework for this work: conserve working forest landscapes, protect forests from harm, and enhance benefits associated with trees and forests.

More information is available at:

www.fs.fed.us/ucf/about_overview.shtml

US Forest Service (USFS) National Urban and Community Forestry Challenge Cost-Share Program

The Challenge grants provide funding that will help enhance urban forest stewardship, support new employment opportunities, and help build resilience in the face of a changing climate. Furthermore, these funds will address urban forest resiliency to extreme weather events and the long-term impacts of climate change; strategies for bolstering green jobs; and opportunities to use green infrastructure to manage and mitigate stormwater and improve water quality.

More information is available at:

www.fs.fed.us/ucf/nucfac.shtml

CalFire Urban Forestry and Urban Greening Grant Programs

The Urban & Community Forestry Program works to expand and improve the management of trees and related vegetation in communities throughout California. This grant requires a 25 percent local match for activities such as tree planting, municipal tree inventories and management plans, urban forest educational efforts, and innovative urban forestry projects.

More information is available at:

www.fire.ca.gov/resource_mgt/resource_mgt_urbanforestry.php
www.fire.ca.gov/resource_mgt/downloads/CALFIRE_UFGGrants_ProceduralGuide2012_2013.pdf

California ReLeaf

This urban forestry program administers grants provided through funding from California Department of Forestry and Fire Protection (CAL FIRE), Region IX of the EPA, and the USDA Forest Service. Through roving applications, grants are provided to nonprofit groups, local agencies, and community groups to plant trees in communities with low urban canopy coverage, including their Arbor Week Urban Forestry Grant. ReLeaf also tracks public grants and compiles resources for applicants on their website

More information is available at:

californiareleaf.org/programs/grants/

Sustainable Forestry Initiative (SFI) Conservation and Community Partnership Grants

This nongovernmental initiative program promotes sustainable forestry management, improved forestry practices and responsible purchasing of forest products. SFI provides conservation and community grants for forestry programs emphasizing sustainable forestry practices and sourcing, as well and incorporating an educational component for youth or community-based groups

More information is available at:

www.sfiprogram.org/community-conservation/conservation-community-partnerships-grant-program/

Urban Streams Restoration Program

Administered through the California Department of Water Resources, this program provides funding for urban stream projects, including the revegetation efforts.

More information is available at:

www.water.ca.gov/urbanstreams/

California Strategic Growth Council

Revenues from California's Cap & Trade program are being allocated to eligible projects around the State. These projects include green infrastructure that explicitly includes shade trees, heat island mitigation measures, community gardens, stormwater planters, parks and open space. The Oroville Area Urban Greening Plan was funded by the Strategic Growth Council and may be eligible for future funding.

More information is available at:

sgc.ca.gov/urban_greening_grants.html

California Department of Parks and Recreation

California State Parks offers many grants for local, state and nonprofit use, administered by the Office of Grants and Local Services (OGALS). Projects eligible for these grants include nature interpretation programs to bring urban residents into park and wildlife areas, protection of various plant and animal species, and acquisition and development of wildlife corridors and trails.

More information is available at:

www.parks.ca.gov/?page_id=1008

Environmental Enhancement and Mitigation Program

Administered through the California Natural Resources Agency, this annual grant program provides resources for urban forestry projects designed to offset vehicular emissions.

More information is available at:

resources.ca.gov/bonds_and_grants/eemp/

Alliance for Community Trees

This grant helps communities seed local tree planting at schools, parks, residential neighborhoods, business sites, or other locations where new trees will tangibly improve a community's quality of life, such as neighborhoods with few trees, storm-damaged areas, or neglected urban spaces. Likewise, these funds help grow the capacity to care for existing and newly planted trees, support conservation, and develop education programs to ensure communities and their trees live healthy lives.

More information is available at:

actrees.org/what-we-do/grants-and-awards/

Project Learning Tree

This environmental education grant program provides funding for schools and communities to enhance their local urban forest as a method of enhancing nature-based learning opportunities within the community.

More information is available at:

www.plt.org/

Supplemental Benefits Fund

The SBF is intended to allow opportunities for job creation, tourism, and local recreation. Much of the recreational and economic development to be supported by the SBF will occur along the Feather River; however, the funds may be used outside of the Feather River corridor. Increasing the number of shade trees and improving landscaping fosters more inviting spaces for tourists and local residents to linger and enjoy the natural features in the City of Oroville, especially the Feather River. In addition to improved aesthetics and human comfort, cumulatively, additional shade trees and landscaping can significantly mitigate some pollutants from infiltrating downstream water tables. Furthermore, these funds could be leveraged to match other grants listed in this chapter.

More information is available at:

www.cityoforoville.org/index.aspx?page=380

PARK AND OPEN SPACE CONSTRUCTION, IMPROVEMENT, AND MAINTENANCE

HUD Grant Programs

Eligible activities funded through the HUD grants program include land acquisition, site preparation and assessment, demolition and clearance of property or remediation, acquisition and construction of public facilities, and rehabilitation of public real property. These funds could be used for urban greening projects, including purchase of vacant lands, remediation of industrial properties that may contain hazardous waste, and creating additional open spaces.

More information is available at:

portal.hud.gov/hudportal/HUD?src=/topics/grants

National Environmental Education Foundation (NEEF) Earth Day Grants

Nonprofit volunteer “Friends” organizations are eligible to apply for Earth Day Grants to support land stewardship, improvement, and responsible use of public lands. There are two rounds each year (fall and spring). Grantees must have a two-year relationship with a public land site and propose a project that will strengthen the capacity of the organization to serve the public or sites. The program offers 25 awards of up to \$5,000 each. Funds cannot be used for land acquisition, landscaping, scholarships, giveaways, or food.

More information is available at:

www.neefusa.org/grants/index.htm

Preventative Health and Health Services Block Grant

This grant provides funding to address communities’ unique public health needs in innovative and locally defined ways. By providing flexibility to use funds to respond rapidly to emerging health issues and to fill funding gaps in programs, these funds are well suited to parks and open space projects that seek to engage residents in healthy lifestyles.

More information is available at:

www.cdc.gov/phhsblockgrant/

California Department of Boating and Waterways

The CA Department of Boating and Waterways has grants available for recreational boating facilities with public access. Grants are restricted to qualifying public agencies to fund boat launching ramps, boarding floats, and associated parking areas, restrooms, and lighting.

More information is available at:

www.dbw.ca.gov/Funding/Facilities.aspx#BLFG

California Statewide Park Program (Proposition 84)

This funding source awards grants for the creation of new parks and new recreation opportunities in proximity to underserved communities throughout California. Ultimately, the purpose of these funds is to benefit the health of families, youth, senior citizens, and other population groups by meeting their recreational, cultural, social, educational, and environmental needs.

More information is available at:

www.parks.ca.gov/?page_id=26025

Supplemental Benefits Fund

The SBF is intended to allow opportunities for job creation, tourism and local recreation. Much of the recreational and economic development to be supported by the SBF will occur along the Feather River; however, the funds may be used outside of the Feather River corridor. Park and open space construction and improvement, and eventual maintenance, is necessary to creating a welcoming and inviting end user, tourist and local residents, experience. Funding the construction and maintenance of park facilities is an essential component of creating a regional destination around the City of Oroville's most prized natural resource, the Feather River. Furthermore, these funds could be leveraged to match other grants listed above.

More information is available at:

www.cityoforoville.org/index.aspx?page=380

RIVERFRONT PROJECTS

The California Natural Resources Agency River Parkways Program

Parkways funds are granted to projects that produce multiple benefits that reduce greenhouse gas emissions, increase water use efficiency, reduce risks from climate change impacts, and demonstrate collaboration with local, State, and community entities. Given California's current drought, projects should promote water conservation with practices such as planting native and drought-tolerant vegetation, enabling groundwater recharge, and protecting watersheds.

More information is available at:

resources.ca.gov/bonds_and_grants/river-parkways/

Federal Land and Water Conservation Fund (LWCF)

This fund can be used to reimburse development costs for outdoor recreation areas and facilities. The funds provide matching grants to cities and counties seeking funds covering up to 50 percent of project costs.

More information is available at:

www.parks.ca.gov/default.asp?Page_id=21360

California Riparian Habitat Conservation Program

These funds were created to protect, preserve, restore and enhance riparian habitat throughout California. Riparian habitats are found along rivers, creeks, streams and lakes and are made up of plant communities of woody vegetation. Riparian habitat can range from a dense thicket of shrubs to a closed canopy of large mature trees covered by vines.

More information is available at:

www.wcb.ca.gov/Programs/Riparian

Wildlife Conservation Board (WCB)

The Wildlife Conservation Board provides public access funding and can enter into cooperative project agreements with local agencies or nonprofit organizations for the development of facilities for “public access for hunting, fishing or other wildlife-oriented recreation,” such as wildlife viewing and bird watching. The WCB may fund the construction of project elements such as trails, boardwalks, interpretive facilities. Applications are accepted on a continuous basis.

More information is available at:

www.wcb.ca.gov/Access/examples.html

Supplemental Benefits Fund

To maximize the many existing opportunities offered by the Feather River and capitalize on the facilities already in place, prioritizing funding for riverfront projects can further enhance Oroville’s status as a cultural, recreational, and residential center. Local funding could be leveraged to match other grants listed above.

More information is available at:

www.cityoforoville.org/index.aspx?page=380

GENERAL URBAN GREENING FUNDING SOURCES

Local Initiatives Support Corporation (LISC)/National Football League (NFL) Foundation Grassroots Program

LISC and the NFL provide grants to restore or build football fields as gathering places and recreational facilities to support the development of young people and their parents, particularly in poorer neighborhoods.

More information is available at:

www.lisc.org/section/ourwork/national/youth/request

Corporate Grants

Many small-scale grants and sponsorships are available to support the development and revitalization of parks and recreation. Some of these are through established corporate giving programs such as PowerBar's Direct Impact on Rivers and Trails program, which has provided funds up to \$5,000 to create, maintain, improve or restore access to valued recreational areas. While smaller companies are less likely to have established programs, local businesses often designate funds for donation to their community and can be particularly tapped for sponsorships of local projects that support the community.

More information is available at:

www.americantrails.org/resources/funding/DIRTfund.html

Mello-Roos Community Facilities Districts

The Mello-Roos Community Facilities Act of 1982 allows any County, City, special district, school district, or joint powers authority to establish a Community Facilities District (CFD), which allows for financing of public improvements and services through taxation within the district. The services and improvements that CFDs can finance include streets, sewer systems, and other basic infrastructure. A CFD is created by a sponsoring local government agency and includes all properties that will benefit from the improvements to be constructed or the services to be provided. A CFD cannot be formed without a two-thirds majority vote of residents living within the boundaries. Once the CFD is approved, a Special Tax Lien is placed against each property in the CFD and property owners pay a special tax annually.

Supplemental Benefits Fund

Funding general urban greening initiatives, such as, upgrading existing stormwater infrastructure to a low-impact system can help Oroville achieve environmental and social benefits (see the stormwater management chapter for more information). Furthermore, these funds could be leveraged to match other grants listed above.

More information is available at:

www.cityoforoville.org/index.aspx?page=380

