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Napa Greenway Feasibility Study

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Prepared for: NC TPA Napa County Transportation & Planning Agency

Acknowledgements

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Executive Summary

The Need for a Napa Valley Greenway Study

The Napa Valley Greenway concept emerged in response to the Napa Valley's commitment to providing transportation options, tourism opportunities, and a strong desire to enhance the quality of life for residents throughout the valley. The Greenway is an opportunity to draw on the superlative qualities of the region.

The Napa Valley is renowned as a grape growing region that exports wine worldwide, making it an international tourist attraction. The central and northern ends of the Napa Valley are primarily agricultural, with flat terrain punctuated by occasional small hills. Aside from its scenic qualities, wineries, spas, and restaurants, Napa Valley is known for its temperate climate, making it ideal for walking and bicycling. The area was one of the earliest to attract bicycle-touring groups, and continues to draw residents and visitors committed to an active lifestyle.

Napa Valley is renowned as a grape growing region.

Considering all of Napa County's attractive qualities, a Greenway that meanders through beautiful landscape and connects cities, homes, jobs, schools, parks and tourist attractions is a perfect addition. The proposed 48-mile Greenway will provide a continuous path along which bicyclists and pedestrians of all types can use as a north-south route from the BayLink Ferry terminal in Vallejo (Solano County) north through the Napa Valley to the City of Calistoga. An overview map of the Greenway is provided on page iv.

Greenway Goals

One of the main goals for the Greenway is to become one of the premier trail systems in California. The Greenway should also provide tangible economic, environmental and health benefits to the residents and visitors of Napa County, while protecting and enhancing the Valley's unique environmental and agricultural resources. Six goals were developed through the initial planning

process with input from the Steering Committee. These goals, presented in the inset below, will continue to guide planning and implementation of the Greenway into the future.

Napa Valley Greenway Goals

1. Improve north-south access for bicyclists and pedestrians
2. Improve the safety of bicyclists and pedestrians
3. Provide maximum benefits to the public
4. Minimize the negative impacts to the environment and local residents
5. Minimize trail impacts to private lands and operations including agricultural, residential, transportation, and other land uses.
6. The project should be consistent with adopted policies, standards, and goals.

Study Process

The Greenway study process was comprised of several key phases including data gathering, development of route options, and development of route alternatives, alternative alignment analysis, and design and implementation strategies. These phases are summarized below.

Background and Data Review

Existing St Helena bike path looking north.

Gathering existing data is an important process of a study. In the case of the Greenway, it ensures consistency throughout the affected jurisdictions and connectivity to existing facilities. Planning documents from the Napa County Transportation and Planning Agency, County of Napa, and the Cities of Calistoga, Napa, St Helena and American Canyon were consulted to determine how the plans from these jurisdictions would be affected by or would affect the Greenway. Many of these plans value the preservation of open space, which the Greenway accomplishes. In addition, many of the cities support constructing on- and off-street bicycle facilities. The City of Calistoga's Bicycle Transportation Plan calls for the construction of bicycle paths wherever feasible and one of the City of Napa's General Plan goals is to construct a bicycle network. Similarly, the City of St. Helena sets a transportation guiding principle to develop bicycle routes along open space corridors.

Guidance for the Greenway alignment comes from the Napa Countywide Bicycle Plan, which recommends that all abandoned rights-of-way be considered for bicycle path use (Caltrans Classification Class I). Specifically these routes include those along the Wine Train right-of-way and Napa River.

This phase also addresses potential environmental effects of the Greenway including habitat areas, flood zones, cultural resource areas and other environmental features. The affect of the Greenway on these environmental resources, in addition to public and private facilities, was analyzed in an opportunities and constraints matrix, which is discussed in Chapter 4. This analysis helped to guide the selection of the preferred Greenway alignment and the phasing of the construction of the Greenway.

Development of Route Alternatives

Stakeholder Involvement

The Napa County Greenway responds to the broad desires of stakeholders. Meetings were held in the Cities of Napa and Calistoga to obtain stakeholder and general pubic input. The consultant team presented the potential Greenway alignments and facilitated public comment.

Old railroad right-of-way along private property

The Greenway design also responds to the needs and interests of local and neighboring jurisdictions. This was accomplished through the formation of a Steering Committee that consisted of representatives from the County's cities. The Steering Committee provided relevant data and recommendations on the alignment segment selections and analysis.

Alignment Selection

Once input was gathered from the steering committee, and the Greenway alignments were identified, the 48-mile corridor study area was divided into ten segments for study. An overview map showing the proposed ten segments is provided on the following page. Chapter 5 provides detailed maps of each segment and their alternative alignments. Some of the segments are part of existing or planned trail alignments that were subsequently incorporated into the project. Each segment contains between one (1) and three (3) alternatives, generally identified as: Option A. West Side, Option B. Mid-Valley and Option C. East Side.

Existing trail to Grist Mill along Segment 2

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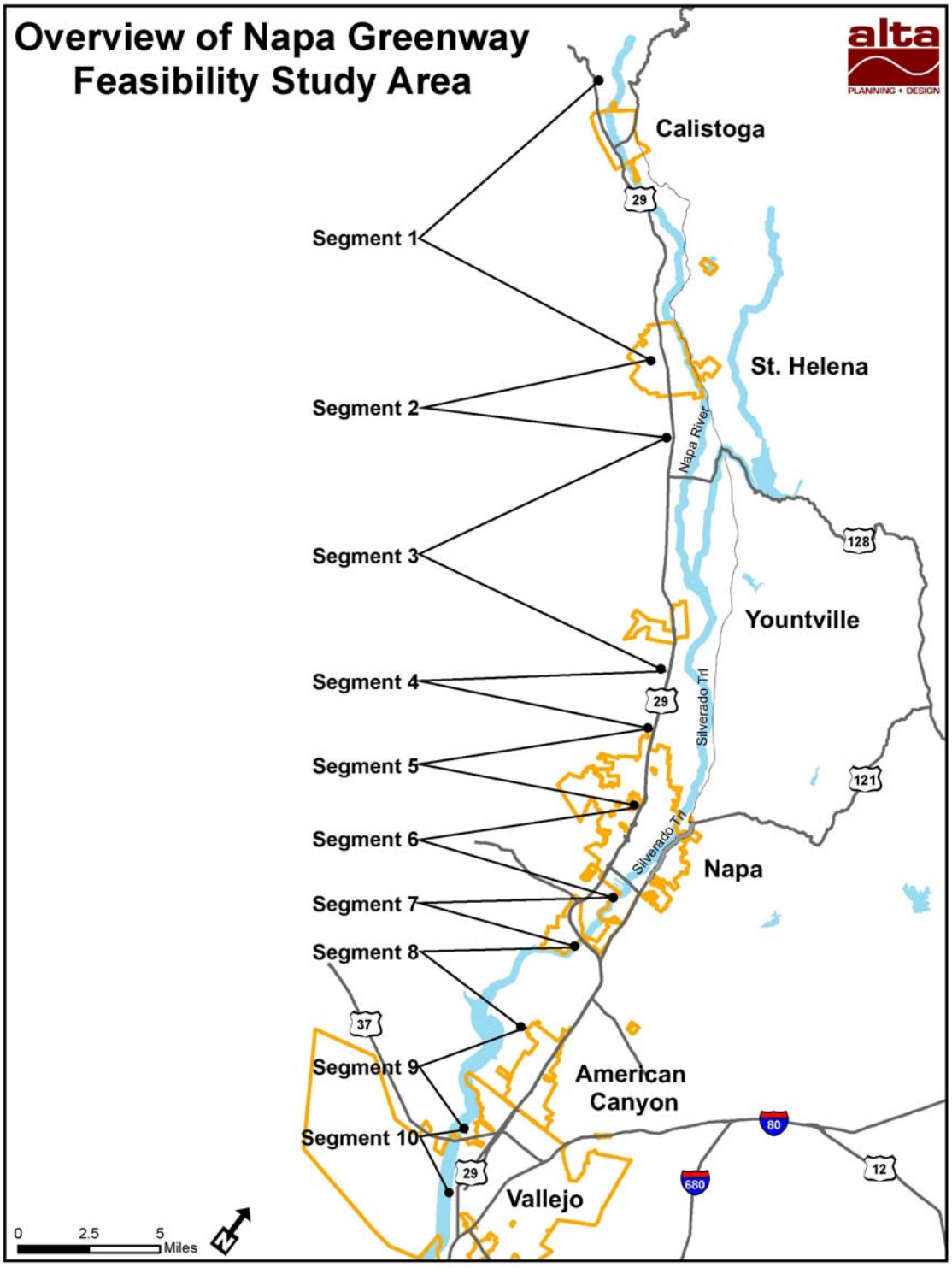

Overview of Napa Valley Greenway Feasibility Map

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Alternative Alignment Analysis

A decision matrix with criteria-based scoring was used to evaluate each alternative alignment for each segment. The evaluation criteria were based on the overall project goals and were weighted to reflect the relative importance of each category. Each criterion had a weighting factor reflecting its relative importance from zero (low benefit or negative impact) to 10 or 20 (high benefit or low negative impact) depending on its relative importance. The criteria were used to evaluate each of the alternative alignments. The table below provides a summary of each segment, its jurisdictions, start and end points, and length in miles. Each of the 10 segments was evaluated in Chapter 5 based on a potential west side, mid-valley, and east side alignment.

Summary of Segments

Segment #	Jurisdictions	Start	End	Selected Key Factors
1	Calistoga, Napa County, St. Helena	Washington St., Calistoga	Deer Park Rd., St. Helena	**West Side Option (1A)** • Could be entirely on public property • Good aesthetics **Mid-Valley Option (1B)** • Requires support by local property owners • Most scenic route/broadest variety of users **East Side Option (1C)** • Busy road with some shoulders
2	St. Helena	Deer Park Rd., St. Helena	Zinfandel Lane	**West Side Option (2A)** • Mostly on public property • Needs Caltrans and Wine Train approvals **Mid-Valley Option (2B)** • Requires support by local property owners • Most scenic route/broadest variety of users **East Side Option (2C)** • Uses public right-of-way, and some private land
3	Napa County	Zinfandel Lane	Yountville Cross Road	**West Side Option** • Mostly Caltrans property • Connections to wineries. **Mid-Valley Option (3B)** • Requires support by local property owners • Most scenic route/broadest variety of users **East Side Option (3C)** • Busy road with some shoulders. • Require setbacks or barriers in sections.

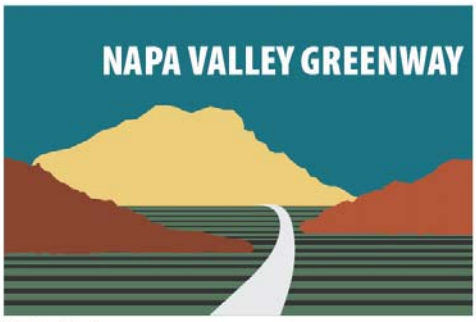
4	Yountville	Yountville Cross Road	California Drive, Silverado Winery	**West Side Option (4A)** • Almost 100% on public right-of-way. • Good connections to neighborhoods, commercial and visitor facilities. **Mid-Valley Option (4B)** • Requires support by local property owners • Best aesthetic experience **East Side Option (4C)** • Would require 5-feet setback or barrier.
5	Yountville, Napa County, City of Napa	California Drive, Silverado Winery	Redwood Road, Trancas Street	**West Side Option (5A)** • Potentially 100% on public right-of-way. • Likely use by the broadest variety of users • Good connections to residential neighborhoods, schools and commercial areas. **Mid-Valley Option (5B.1)** • Requires support by local property owners • Requires improvements to Big Ranch Road **Mid-Valley Option (5B.2)** • Requires support by local property owners • Most scenic route **East Side Option (5C)** • Good aesthetics • Would require 5-feet setback or barrier.
6	City of Napa	Redwood Road, Trancas Street	Imola Avenue	**West Side Option (6A)** • Public right-of-way/existing paved bike path • Connections to neighborhoods/commercial **Mid-Valley Option (6B)** • Mostly on public right-of-way. • Requires paving and widening some sections. **East Side Option (6C)** • Require lanes changes on Napa River bridge.
7	City of Napa, Napa County	Imola Avenue	Highway 29	**West Side Option (7A)** • Mostly on public right-of-way • All Class I separated bike path **Mid Valley Option (7B)** • Mostly on public right-of-way • Portions are class II bike lanes • Shares road with industrial traffic

				East Side Option (7C) • Mostly Class II bike lanes
8	Napa County, American Canyon	Highway 29	Green Island Rd.	**West Side and Mid Valley Options (8A and 8B)** • Mostly on public right-of-way. • Requires environmental mitigation. • Requires several agencies to approve **East Side Option (8C)** • All on public right-of-way. • All Class II bike lanes.
9	American Canyon, Vallejo	Green Island Rd.	Highway 37	**West Side (Option 9A)** • Needs permission from DFG for boardwalks. • Almost entirely a continuous Class I bike path. • Requires environmental mitigation. • Offers good aesthetic experience to users. **Mid Valley (Option 9B)** • On public property. • Mix of Class I and Class II. **East Side Option (9C)** • Less expensive because it is not a separated bike path - almost entirely Class II bike lanes.
10	Vallejo	Highway 37	Vallejo Ferry Terminal	• All on public property. • Likely to be used by a broad variety of users. • Connections to residential neighborhoods.

Each segment was scored individually so that the best possible alignment could be identified for each segment. Since one of the primary goals of the plan was not to impact private properties, and no public right-of-way currently exists for much of the Mid-Valley and some of the East Side alignments, the West Side (Option A) scored the highest for most segments between Calistoga and the City of Napa. Option A is often located along the Highway 29 corridor for most of its length north of Napa. South of Napa, the preferred alignment often was consistent with current Bay Trail plans, and in many cases there were fewer than three potential alignments.

Route Design and Implementation

The final Greenway alignment is expected to be a separated Class I paved bicycle path, also known as a multi-use or shared use path. In some cases the pathway may be along roadways or the Wine Train, and in other cases, it may use quiet side streets as a Class III bike route. The primary design objective was to select a design

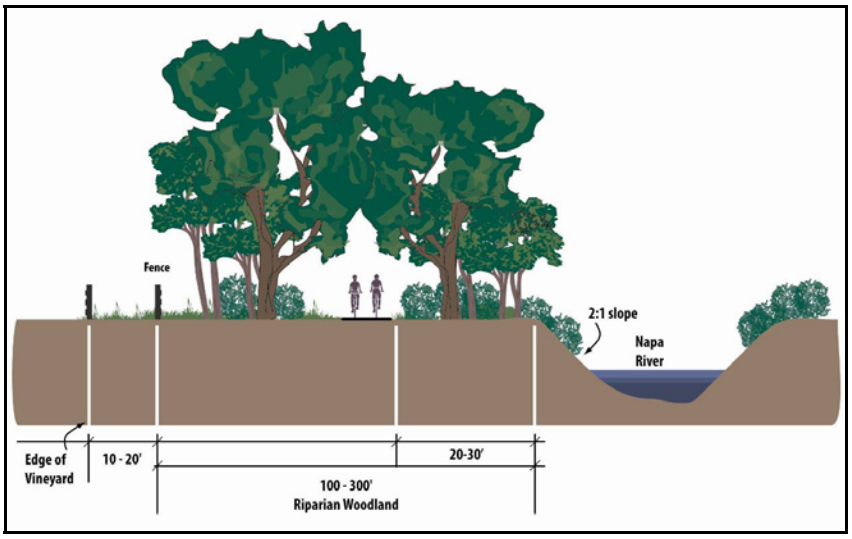


LOGO: option b

and alignment that would attract the widest diversity of users as possible, including local residents going to school, work, and exercising. The final selected network may consist of one of more interconnected alignments, allowing for a variety of experiences for users.

Design Guidelines

A unified and comprehensive approach was used to develop design guidelines for the Greenway. The forms and materials used in the various site amenities will reflect the identity of the region, The Greenway design guidelines respond to professional planning and engineering best practices including Caltrans, Rails to Trails Conservancy, Institute of Transportation Engineers (ITE), and the American Association of State Highway and Transportation Officials (AASHTO).



Typical Greenway Cross-Section along the Napa River

Right-of-Way Acquisition

The City of St Helena has an easement to the water treatment plant.

A primary goal of the Greenway was to not require the use of private property. While the ultimate Greenway location may be based on private property, this would require property owner approval along with the acquisition of easements or other devices. Every effort was made to ensure that the right-of-way acquisition strategy is sensitive to the widest range of stakeholders. One of the basic goals of the Napa Valley Greenway is to protect and, where possible, to enhance the private properties along the Greenway alignment. The lead agency for each Greenway segment will contact each property owner individually to discuss options prior to any plans being made public. Aside from the individual cities and Napa County, there are several other public agencies that have interests in or that control property where the Napa Valley Greenway is proposed including Caltrans, Napa Resource Conservation District and California Fish and Game. These, and

other, public agencies will be worked closely with. Lastly, development agreements will be required between all involved parties to ensure successful right-of-way acquisition.

Cost Estimate

The total cost of the Napa Valley Greenway is estimated to be between $34 million and $48 million depending on which of the alignments and design treatments are selected. Of this cost, between $2 million and $7 million are associated with potential easement acquisition based on which option and variation is selected. Cost estimates include design and environmental review and contingencies. The actual cost may vary considerably based on a number of unforeseen issues, such as the type of roadway crossings, easement costs, area construction costs, and other factors. The estimated segment costs are provided to this right. Some of the segments have multiple alignments for each option, which are reflected in the cost estimate range.

Greenway Cost Estimate

Segment	Cost (Millions)
1	$6.6 - $7.2
2	$3.8 - $5.2
3	$6.4 - $10.9
4	$.2 - $1.6
5	$5.7 - $9.6
6	$1.6 - $1.7
7	$.8 - $2.5
8	$2.5 - $5.3
9	$2.1 - $4.6
10	$.5
Total	$34-$48

Phasing

The Napa Valley Greenway will be constructed over time based on the availability of funding. Each completed segment will function either as a stand-alone project or as an extension of an existing trail. Specific criteria used to evaluate individual segments resulted in a short, mid, and long-term phasing plan listed below.

Greenway Phasing

Phase I Short-Term	
Segment	**Responsible Agency**
4A	Yountville
8A	Napa County
Phase II Mid-Term	
Segment	**Responsible Agency**
5A	Napa County and City of Napa
6A	City of Napa
10A	Solano County and Vallejo
9A	Napa County and American Canyon
Phase III Long-Term	
Segment	**Responsible Agency**
7A	Napa County and City of Napa
3A	Napa County
1A	Calistoga to St Helena
2A.1	St Helena

Next Steps

The Napa Valley Greenway will be designed and constructed over time as money and other factors allow. The Greenway is designed so that each segment can serve as a stand-alone facility until connections are built. Key implementation steps include funding, identifying an agency to operate and maintain the Greenway, and finding the most effective implementation sponsorship for the project.

Funding

Funding that can be used for bicycle and pedestrian projects, programs and plans come from all levels of government. A comprehensive list of funding sources is provided Chapter 6. This list not only provides funding sources, but also application deadlines, the types of projects eligible and whether a match is required. This information is provided in a comprehensive funding matrix. It is expected that funding for the Greenway will come from a variety of sources, including possibly local residents and businesses. As one of the premier trails of its type in California, the Greenway should compete well for regional, state, and federal competitive grant funds.

Maintaining a Successful Greenway

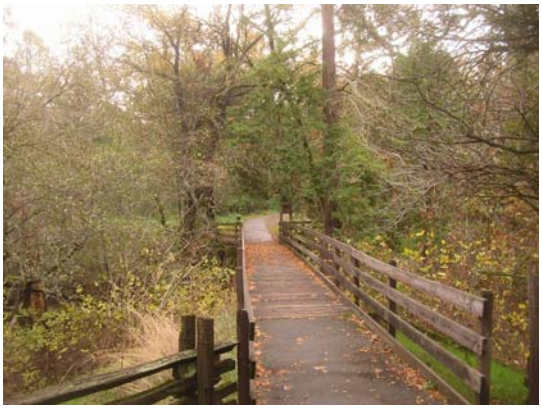
Ongoing maintenance and operations is a key element of the Napa Valley Greenway's future success. It is expected that each local agency will develop and manage their segments of the Greenway, serving as the trail managers. While the Napa Valley Greenway has the potential to become one of California's best-known trails systems, it will not achieve this standing without a comprehensive maintenance protocol. A detailed table of maintenance practices is provided in Chapter 6.

A Grassroots Approach

The Napa Valley Greenway is unique in many respects, from its setting to the expected use serving local transportation and recreation needs. Given the sensitivity of locating a trail in active vineyards, and concerns about managing the impacts of visitors, finding a local group to lead the implementation effort in partnership with local agencies makes sense for this project. This approach would allow the key stakeholders control of how and where the project gets developed, and ensure that it both provides the maximum attraction and function for residents while protecting private property owners and agricultural operations.

1. Introduction

1.1. Project Overview



Bridge over creek to Grist Mill

The Napa Countywide Bicycle Path Feasibility Study explores the concept of a world-class bikeway, to be named the Napa Valley Greenway. The Greenway will serve residents and visitors from the City of Calistoga in the north to the City of American Canyon in the south, with an ultimate connection to Vallejo and the BayLink Ferry Terminal. The Greenway will provide a continuous, high quality experience for bicyclists, pedestrians, and others, for trips to school, work, shopping, recreation, and exercise. The project is expected to take its place among some of the best-known trail systems in the state, such as the San Francisco Bay Trail and American River Parkway, and offer tangible economic, environmental, health, and other benefits to Napa County residents. The project will also protect and enhance the Valley's unique environmental and agricultural resources.

1.2. Purpose

In 2007, the NCTPA secured funding for the Countywide Bicycle Path Feasibility Study. The Study proposes constructing a continuous bikeway from the BayLink Ferry terminal in Vallejo (Solano County) north through the Napa Valley. There are many existing segments of bikeways along this route. This study evaluates multiple alternatives for connecting these segments through the County, evaluates these alternatives, and identifies a preferred alternative for the Napa Valley Greenway. The Feasibility Study will allow NCTPA and the County of Napa to take the next steps of design, funding, and eventually construction of the Greenway.

The Napa Valley Greenway has the potential to help reduce traffic congestion, improve bicycle and pedestrian safety, increase property values, improve the local tourist economy while not increasing roadway congestion, and offer residents an invaluable option to exercise and recreate. It is expected that the Greenway will be used by schoolchildren, local residents walking/bicycling to work or shopping, and by commuters and visitors. An objective of this project is to create a 'world class' greenway system reflecting the unique setting, history, and needs of the Valley.

1.3. Project Setting and Study Area

The Napa Valley is renowned as a wine region and exports wine across the nation and to other countries. The central and northern end of the Napa Valley is primarily agricultural, with flat terrain punctuated by occasional smaller hills, and is an international tourist attraction. The study

corridor is composed of one medium-sized city (Napa, population 75,000), several smaller communities including fast-growing American Canyon (14,000), and older more established communities north of Napa such as Calistoga (5,200), St. Helena (6,000) and the Town of Yountville (3,260). The predominant land uses in the study corridor are agricultural uses, almost exclusively vineyards. Due to restrictions on development in the Valley north of Napa, most growth has occurred south of the city towards American Canyon.

Aside from its scenic qualities and winery, spa, and restaurant attractions, Napa Valley is known for its temperate climate that makes it ideal for walking and bicycling. The area was one of the earliest to attract bicycle-touring groups, and continues to be a popular place for active lifestyles for visitors and residents alike.

Aside from public roadways and the occasional park, the land in the study corridor is privately owned. The Napa River, which runs in the center of the valley its entire length, and other tributaries are privately owned and maintained north of the city of Napa.

1.4. Goals and Objectives

The overall goal of the Napa Countywide Bicycle Path Study is to provide a continuous greenway in the Napa Valley. The member agencies of NCTPA (American Canyon, Calistoga, Napa, St. Helena, the Town of Yountville and Napa County) all have adopted bikeway goals, policies, and projects in their own jurisdictions. Other supporting goals and policies include improving access to area businesses, providing a bicycling commute route for residents, and reducing congestion on area roadways.

The following goals and objectives have been developed to help guide the evaluation process in this feasibility study.

Goal 1: The project should improve north-south access for bicyclists and pedestrians in Napa County.

Objective 1A: Connectivity. Provide links and improve access to destinations throughout Napa County.

Objective 1B: Recreation Amenity. Provide improved access to recreational amenities, including wineries, open spaces, points of interest, agricultural heritage, resorts, and neighboring jurisdictions.

Goal 2: Improve pedestrian and bicyclist safety in Napa County.

Objective 2A: Safety. Consider safety in the planning and design of the greenway.

Objective 2B: Separation. Maximize separation between greenway users and vehicles through use of a separated pathway wherever feasible. Use of secondary roads with a minimum of four (4) feet wide roadway shoulders, lower traffic volumes (under 5,000 average daily vehicles), and speeds with a preferred maximum of 45 mph at the 85th percentile, may be appropriate for short distances.

Goal 3: The project should provide maximum benefits to the public.

Objective 3A: Range of User Groups. Maximize the range of potential users of any new facility or service, including users of all ages and abilities.

Objective 3B: Function. Maximize the functional aspects of any recommendation in terms of convenience, gradients, availability, directness, access, cost, and connectivity to major destinations.

Objective 3C: Aesthetics. Wherever possible, locate the greenway in an aesthetically pleasing and attractive environment, and design the facility to be attractive itself.

Objective 3D: Cost Effectiveness. The project should offer the best combination of effectiveness with lowest capital and operating cost, and should be consistent with existing and future local and regional improvement projects wherever possible.

Objective 3E: Health. Promote the project as a healthy transportation option that improves physical fitness through walking and bicycling and by providing opportunities to enjoy nature

Objective 3F: Environment. Include environmental restoration and enhancements whenever feasible, and promote the project as a transportation alternative that conserves energy, improves air quality, and reduces traffic congestion**.**

Objective 3G: Economy. Work with Napa jurisdictions and businesses to promote the project as an economic benefit for the County, including wineries and agricultural employers.

Objective 3H: Economy. Work with Napa jurisdictions and wineries to market the greenway as a visitor attraction that will result in extended stays and less internal trips.

Goal 4: The project should minimize negative impacts on the environment and local communities.

Objective 4A: Environment. Design the project so it does not result in significant negative environmental impacts in terms of direct construction impacts (water quality, historical and archaeological resources, etc.) and indirect impacts (increased demand on local resources that are already over capacity, traffic capacity, financial resources, etc.).

Objective 4B: Environment. Avoid sensitive habitat areas to the maximum extent feasible when identifying, designing and constructing new greenway segments.

Objective 4C: Visual Impacts. Locate the greenway so as to minimize visual and other impacts on adjacent landowners. Design the project so it does not result in significant impacts on the visual resources of the corridor, rather enhances the area.

Goal 5: Minimize trail impacts to private lands and operations including agricultural, residential, transportation, and other land uses.

Objective 5A: Property. Avoid greenway development on private lands when a feasible alternative alignment exists on adjacent public properties.

Objective 5B: Agriculture. Work with property owners of agricultural operations to minimize or eliminate negative impacts.

Objective 5C: Railroad/Roadway. Avoid negative impacts to railroad and roadway operations.

Goal 6: The project should be consistent with adopted policies, standards, and goals.

Objective 6A: Consistency: Design the project to be consistent with the local, regional, and State adopted standards, policies, and goals, such as Caltrans Highway Design Manual and the Americans with Disabilities Act (ADA).

1.5. Plan Contents

The Napa Countywide Trail Feasibility Study is organized into the following Chapters:

Chapter 2. Existing Conditions

This chapter presents existing economic and transportation conditions in the Study Area as well as discusses relevant plans and policies to the Feasibility Study.

Chapter 3. Opportunities and Constraints

This chapter describes the primary opportunities and constraints that will affect the location of the Napa Valley Greenway. Opportunities are defined as unique conditions that will facilitate implementation of the greenway and constraints are defined as conditions that may negatively impact the feasibility, enjoyment, and/or operation of the greenway.

Chapter 4. Needs Analysis

This chapter provides an overview of the user needs for the Napa Valley Greenway, including the destinations, input from public agencies, and input gathered from public meetings.

Chapter 5. Alternative Alignments

This chapter identifies the criteria used to evaluate the alternative alignment options, describes the individual alignment components, evaluates the alignments in detail, and outlines the preferred alignment.

Chapter 6. Design and Implementation

This chapter describes the preferred alignment in more detail and presents funding opportunities for the greenway.

2. Existing Conditions

This chapter provides a summary of existing physical, political, transportation, demographic, economic, and other conditions in the study corridor.

2.1. Bikeways

Napa County's existing bikeway system consists of on and off-street bicycle facilities. On-street bikeways include bicycle lanes and bicycle routes. Off-street bicycle facilities are paved pathways. Most of this network will connect to the Napa Valley Greenway due to its central alignment.

Table 2-1: Napa County Existing Bikeway Lengths shows the mileage of the two bikeway classifications in Napa. As shown, there are minimal off-street bikeways compared to on-street bikeways.

Calistoga trail south end

Table 2-1: Napa County Existing Bikeway Lengths

Bikeway Type	Miles
On-Street	77
Off-Street	7
Total	84

2.2. Roadways

There are two roadways in the project Study Area that connect north and south through Napa County, State Route 29 and Silverado Trail. Other major roadways connect to these routes and are also within the Study Area, these are State Routes 12/121 and 128. A summary table of traffic volumes is shown in **Table 2-2 Napa Bikeway Roadway Vehicle Traffic** and a description of each is below.

Table 2-2: Napa Bikeway Average Daily Vehicle Traffic

Roadway	Cross Street	ADT
State Route 29*	Jct. Rte. 37, Marine World Parkway	28,500
	Vallejo, Mini Drive	32,500
	Solano/Napa County Line	34,500
	Solano/Napa County Line	34,500
	American Canyon Road	42,250
	Green Island Road	46,750
	Kelly Road South	46,500
	Jct. Rte. 12 East	57,750
	Jct. Rte. 221 North	56,750

Roadway	Cross Street	ADT
	Jct. Rte. 121 South	47,500
	Jct. Rte. 121 North	51,250
	First Street	56,500
	Lincoln Avenue Interchange	55,000
	Jct. Trancas/Redwood Roads	45,500
	Oak Knoll Avenue	29,750
	California Drive Interchange	28,500
	Oakville Grade Road	25,750
	Rutherford, Jct. Rte. 128 East	23,250
	Zinfandel Lane	23,150
	Adams Street	17,900
	Pratt Avenue	18,250
	Lodi Lane	14,700
	Larkmead Lane	13,750
	Jct. Rte. 128 Northwest	11,950
Silverado Trail**	Sage Canyon	13,520
State Route 12*	Jct Rte 29	24,500
	Kelly Road	28,250
	Solano/Napa County Line	32,000
State Route 121*	Duhig Road	30,750
	South Jct. Rte. 29	16,000
	North Jct Rte 29 (Imola Avenue)	12,750
	Jefferson Street	24,750
	South Coombs St	20,500
	Jct. Rte. 221 South	25,250
	Soscol Avenue	15,900
	Third Street	12,800
	Lincoln Avenue	15,000
	Trancas Street	12,350
State Route 128*	Sonoma County Napa County	2,800
	Tubbs Lane	6,675
	Calistoga, Petrified Forest Road	12,000
	Calistoga, North Jct Rte 29	10,300
	Rutherford, South Jct. Rte. 29	3,100
	Silverado Trail	2,150
	Chiles/Pope Valley Roads	1,800
	Lower Chiles Valley Road	1,525
	Knoxville Road (Berryessa Road To Spanish Flat)	2,175
	Jct. Rte. 121 South	2,175
	Napa County Solano County	2,250

*Source: 2006 Caltrans volumes

**Source: Napa County General Plan Revised Public Hearing Draft 12/3/07.

2.2.1. State Route 29

State Route 29 begins at I-80 in Vallejo and extends north through American Canyon, Napa, Yountville, St. Helena, Calistoga, and north to Lakeport in Lake County. SR 29 is variously a four lane freeway (in and south of the City of Napa), a four lane limited access highway (from Napa to St. Helena), and a two-lane highway (St. Helena to Calistoga). Caltrans had plans to widen SR 29 and purchased right-of-way, resulting in excess right-of-way in some areas of the corridor. Caltrans is currently planning a lane channelization project on Highway 29 between the Sulphur Creek bridge in St. Helena and Mee Lane, a distance of approximately three miles.

2.2.2. Silverado Trail

Silverado Trail is a north-south two-lane County roadway connecting the City of Napa at SR 121 north through St. Helena and Calistoga, ending at SR 29. Silverado Trail runs on the east side of the Napa Valley parallel to SR 29. It is a two-lane highway with shoulders between 4 and 6 feet wide, and in some locations, marked bike lanes. According to the Revised Public Hearing Draft of the Napa County General Plan, in 2003, Silverado Trail at Sage Canyon Road had an average daily traffic of approximately 13,520 vehicles.

2.2.3. State Route 12

State Route 12 is an east-west two and four lane roadway. It connects Sebastopol in Sonoma County to San Andreas in Calaveras County. Through Napa it is includes a section of the Sonoma-Napa Highway, connecting with SR 29 on the southern boundary of the City of Napa. According to 2006 Caltrans vehicle volume data, SR 12 has an average daily traffic of approximately 28,250 vehicles.

2.2.4. State Route 121

State Route 121 connects with SR 12 for a segment of the Sonoma-Napa Highway. It begins at SR 37 near the San Pablo Bay and ends at SR 128 near Lake Berryessa in Napa County. SR 121 cuts through the southern boundary of the City of Napa. It is a two and lane arterial that, according to 2006 Caltrans vehicle volume data, has an average daily traffic of approximately 18,122 vehicles.

2.2.5. State Route 128

State Route 128 begins at Highway 1 near the Pacific Ocean and connects east through Calistoga and St. Helena and onto the Sacramento Valley. SR 128 is a two-lane road with shoulders. According to 2006 Caltrans vehicle volume data, SR 128 has an average daily traffic of 3,619 vehicles.

2.2.6. Local Roads

There are many local roadways considered in the study area. The major arterials that cross the Valley to the east and west could potentially intersect the Bikeway. These are: Dunweal Lane, Big Tree Road, Bale Mill Lane, Deer Park Road, Pratt Street, Pope Street, Rutherford Cross Road (Highway

128), Oakville Cross Road, Yountville Cross Road, Oak Knoll Avenue, Redwood/Trancas Street, Lincoln Avenue, Imola Avenue (121), and Green Island Road.

2.3. Public Transit

2.3.1. Bus Service

Napa County Transportation Planning Agency (NCTPA) operates transit services and the regional Vine transit system. Vine connects with Vallejo in Solano County and Santa Rosa in Sonoma County. NCTPA provides other limited fixed routes in American Canyon, St. Helena, and Yountville as well as Calistoga's HandyVan on-demand service. The City of Napa also operates a fixed-route system.

2.3.2. Baylink Ferry

The Baylink Ferry is a public transportation service provided by the City of Vallejo. The Ferry has service between Vallejo and San Francisco. The Vallejo terminal is located on Mare Island Way in Vallejo, connecting to San Francisco's Ferry Building and Fisherman's Wharf. The ferry ride is a 60 minute trip and ferry capacity is 300 passengers. Between cities, twelve trips are made on weekdays and five trips are made on the weekends. Ferries have capacity for 25 bicycles on board.

2.4. Railroads

2.4.1. Napa Valley Railroad

The Napa Valley Railroad Company was founded in 1864 and developed the 42-mile Napa Valley Railroad line. The Railroad served as a passenger connection between Vallejo's Ferry Terminal to San Francisco and Calistoga. The original purpose of the Train was to bring tourists to the area. In 1869, Napa Valley Railroad Company foreclosed and was eventually taken over by Southern Pacific Railroad in 1898. The rail line connected with the main line in Suisun in 1898 and became an electrified train in 1904, connecting to Benicia and St. Helena in 1905. In 1929, the San Francisco and Napa Valley Electric Railway made the line freight service only and continued operation until 1987.

Railroad ROW looking south from Pratt Lane

A new corporate entity purchased the line from Southern Pacific in 1987 called the Napa Valley Wine Train (NVWT). Vincent DeDomenico purchased the railroad in 1987 after Southern Pacific notified the Interstate Commerce Commission that it was abandoning the line. The NVWT's plan to start a tourist railroad was opposed by many neighborhood groups in the area due to a potential increase in pollution and tourism traffic. Neighbors were unsuccessful in stopping the train and in 1989 the Wine Train's operation began.

The Wine Train is a three hour, 37-mile round trip tour between Napa and St. Helena. The Train operates twice a day, at 10:30 AM and 5:30 PM, on both weekdays and weekends. Train riders can order lunch or dinner (depending on the time) as well wine. Riders can also just take the train, paying the basic fare only. Costs range from $50 to $150, depending on the meal, seat, and tour options.

2.5. Economic Conditions

2.5.1. Agriculture

Agriculture is the largest industry in Napa County. Wine grapes produce 98 percent of Napa County's agricultural revenue followed by floral and nursery crops. In 2002, the County estimated that total value of grape production in Napa County was $380 million.[1]

2.5.1.1. Vintners

According to the *Economic Impact of Wine and Vineyards in Napa County* report, there are 391 wineries and 704 grape growers in Napa County that produce approximately 8.5 million cases of wine a year. The industry has approximately $8.1 billion in revenue and $1.4 billion in wages, giving the wine industry a total economic impact of approximately $9.5 billion.[2]

Deer Park Road looking toward existing railroad ROW

2.5.1.2. Napa County Farm Bureau

The Napa County Farm Bureau is an organization that advocates for continuing sustainable agriculture in Napa County through advocacy and education. The Napa County Farm Bureau is the County branch of the California Farm Bureau. Many of the County's wineries help support the Farm Bureau.

2.5.2. Tourism

Napa County is a global destination for tourists. Visitors come to the area for its natural beauty and abundant wineries. The visitor service industry is the second largest industry in the County, generating almost $1 billion in direct visitor spending annually.[3] Between four and five million tourists visit Napa County a year and approximately three million of these visitors come to Napa to experience the wine culture.

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[1] Economic Impact of Wine and Vineyards in Napa County, Jack L. Davies Napa Valley Agricultural Land Preservation Fund and Napa Valley Vintners, June 2005.
[2] Economic Impact of Wine and Vineyards in Napa County, Jack L. Davies Napa Valley Agricultural Land Preservation Fund and Napa Valley Vintners, June 2005.
3 Napa County Visitor Profile Study & Napa County Economic Impact Study, Napa County Destination Strategy Project, March 2006.

2.5.2.1. Napa County Destination Strategy Project

The Napa County Destination Strategy Project is a Napa Valley Conference & Visitors Bureau project to brand the Napa Valley and help keep it a destination for food, wine, health and wellness, agriculture, the arts, and respect for its heritage. The Napa County Destination Strategy Project is working to enhance Napa's "sense of place." The primary objectives of the Strategy Project are to develop a marketing plan, train partners in the area, help reinforce the branding strategy, and to identify policy issues concerning Napa County visitors.

The Napa County Visitor Profile Study & Napa County Economic Impact Study was conducted between 2005 and 2006. The objective of the economic impact study was to determine the number of visitors coming to Napa Valley and develop a comprehensive analysis of the economic impact of those visitors. Below are some of the key findings to the Study that are relevant to the Bicycle Path Feasibility Study.[4]

- Napa County's travel market is predominantly comprised of domestic visitors, with close to half coming from within the state of California and the rest from across the United States.
- More than half of the respondents in the study reported a household income of $100,000 or more, and they were significantly more likely to spend at least one night in Napa County than those whose household income were below $100,000.
- Amongst other reasons, Napa County visitors came mainly for wines and wineries, food, friends, and families. Community downtowns, wineries, museums and art galleries, and spas were the types of attractions visited most often.
- Napa County visitors typically traveled with their spouses, partners, or companions. Few brought children on the trip.
- More than 90 percent of visitors reported that they were either very likely or likely to return for future visits. Among them, close to two-thirds would come back within a year.

2.5.2.2. Trip Origins

For the Napa County Visitor Profile Study and Napa County Economic Impact Study intercept surveys were conducted to collect information about tourists. Several of the questions related to trip origin, a factor related to transportation and potential trail demand. Survey information was collected in personal interviews with 1,137 Napa County visitors. Below are some of the key findings from the Study that are relevant to the Bicycle Path Feasibility Study.

- 92.5 percent of the respondents were from within the United States.
- Californians made up 49 percent of all domestic traveling parties.
- 9.8 percent of respondents came from San Francisco County
- 85.5 percent of respondents indicated pleasure as their primary trip purpose
- 28 percent of visitors had been to Napa seven or more times
- Over half of the parties used private vehicles in Napa (see **Figure 2-1**)
- Over 77 percent of respondents visited wineries on their trip (see **Figure 2-2**)

4 Napa County Visitor Profile Study & Napa County Economic Impact Study, Napa County Destination Strategy Project, March 2006.

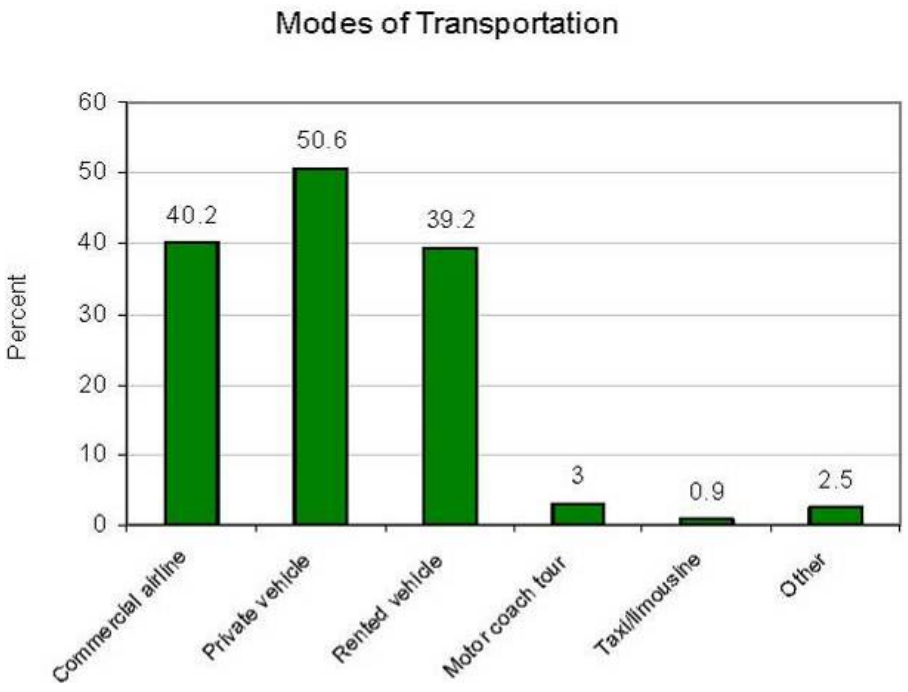

Figure 2-1: Mode of Transportation to Napa Valley

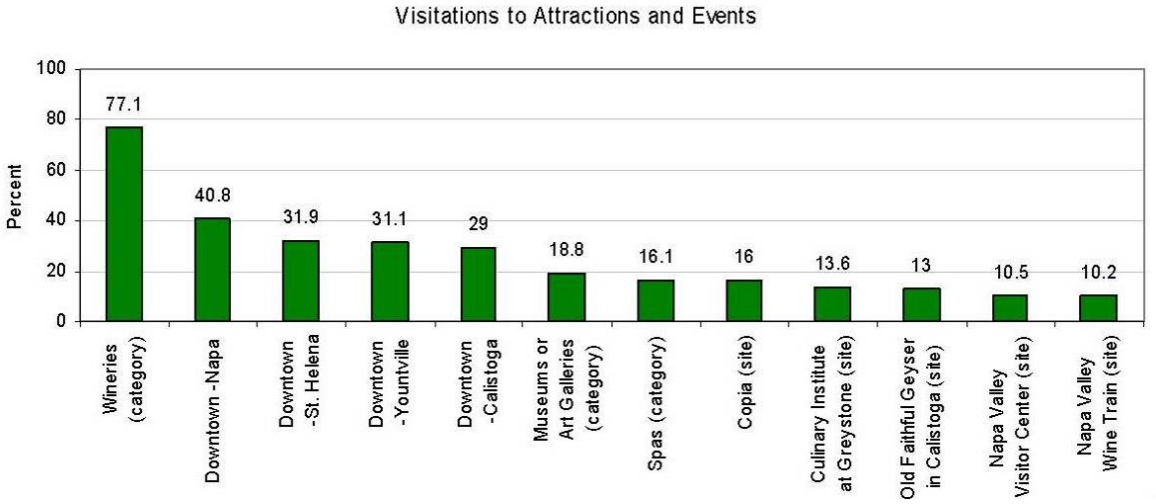

Figure 2-2: Attractions Napa Valley

This data shows trip characteristics of tourists in Napa County. Travelers primarily visit wineries and the central business districts when visiting the area. Only 2.5 percent of visitors use "other" modes of transportation. This "other" category includes bicycles. With the development of a Countywide Path, visitors could bicycle more to and around the area, accessing attractions and potentially decreasing traffic.

2.6. Political & Jurisdictional Groups

2.6.1. Land Trust of Napa County

The Land Trust of Napa County is a nonprofit organization founded in 1976. The Organization has 1,500 members helping it preserve open space in Napa County through conservation agreements, property transfers, land donations, and with government agencies' coordination. **Figure 2-3: Napa Valley Land Trust Protected Lands** shows the 50,000 acres preserved by the Land Trust to date.

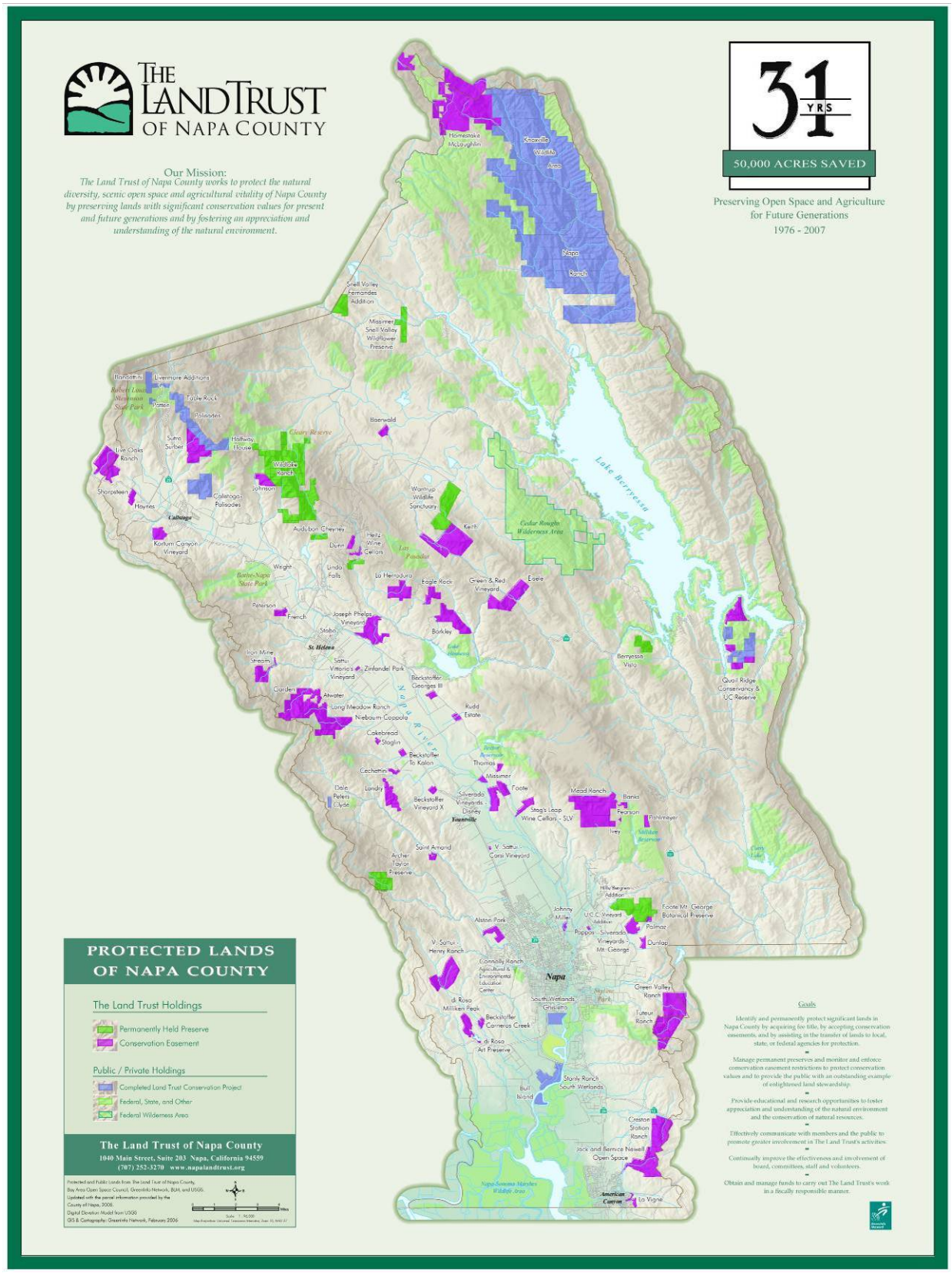

Figure 2-3: Napa Valley Land Trust Protected Lands

2.7. Affected Jurisdictions and Existing Plans and Policies

2.7.1. Napa County Transportation Planning Agency

The Cities of American Canyon, Calistoga, Napa, St. Helena, the Town of Yountville, and the County of Napa formed a Joint Powers Agency in 1998 called NCTPA. The NCTPA was formed to serve as the countywide transportation planning body for the incorporated and unincorporated areas of Napa County. The agency coordinates planning and funding of intermodal transportation.

2.7.2. Napa Countywide Bicycle Plan (2003)

The NCTPA Countywide Bicycle Plan is intended to integrate consistent bicycle facilities across Napa's cities and unincorporated areas, enable agencies to apply for funding, and lead into the County's Strategic Transportation Plan. The Bicycle Plan includes existing bicycling conditions in Napa County (shown in **Figure 2-4: City of Napa Existing Bikeway System Map**), goals and policies of the Plan, criteria for choosing priority improvements, a recommended network, descriptions of support facilities, and a financial plan for developing the network.

Many of the goals and policies for the Bicycle Plan are important to the Napa Countywide Bicycle Trail. The most important are safe, convenient, and continuous routes for bicyclists of all types. To help meet this goal, a series of policies are established in the Bicycle Plan. These include developing a bikeway system for all users that accesses activity centers and evaluating all abandoned rights-of-way as Class I – multi-use paths.

SR 29 is recommended as a bikeway for its entirety through Napa County. Where it has wide shoulders, Class IIIA bikeways are recommended for more experienced bicyclists. For less experienced bicyclists, Class I bikeways are recommended. These could operate as segments or connections to the Countywide Path. They extend north and south near the Napa River and State Route 29. The routes would connect to the County's cities and nearby land uses and scenic areas. The following paths from the Napa Countywide Bicycle Plan are relevant to this study:

- Path #1 is the Solano Avenue/First Street Bike Path Connection to California Street near or along Napa Creek. This project is also in the City of Napa Bike Plan. This route would provide a grade separation of State Route 29 and provides links to downtown Napa, the Napa River Trail, and other proposed regional routes.
- Path #3 is the Napa River Bike Trail. This Trail would follow the Napa River through the City of Napa. Segments of this Trail are already complete and it is described more in this Chapter under the Napa River Parkway Master Plan. Extending this Trail to the north and south in Napa County could serve part of the Countywide Bicycle Path.

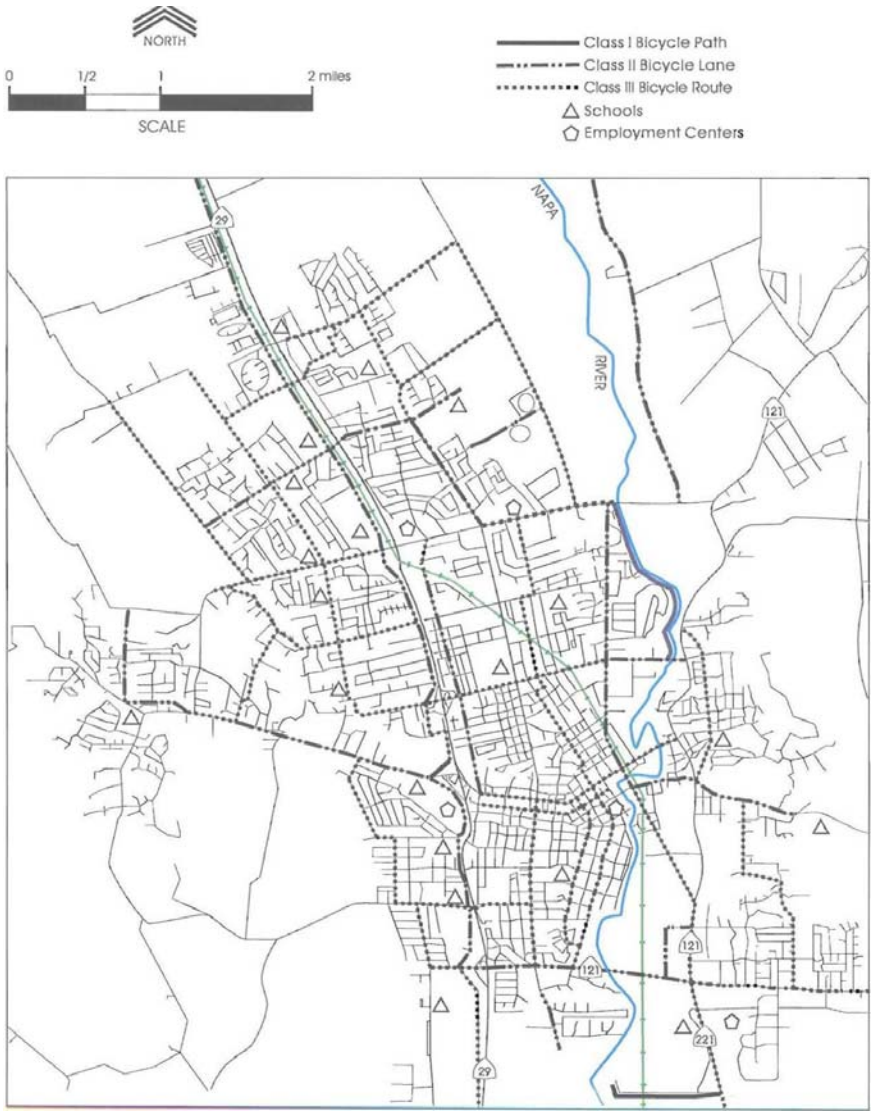

Figure 2-4: City of Napa Existing Bikeway System Map

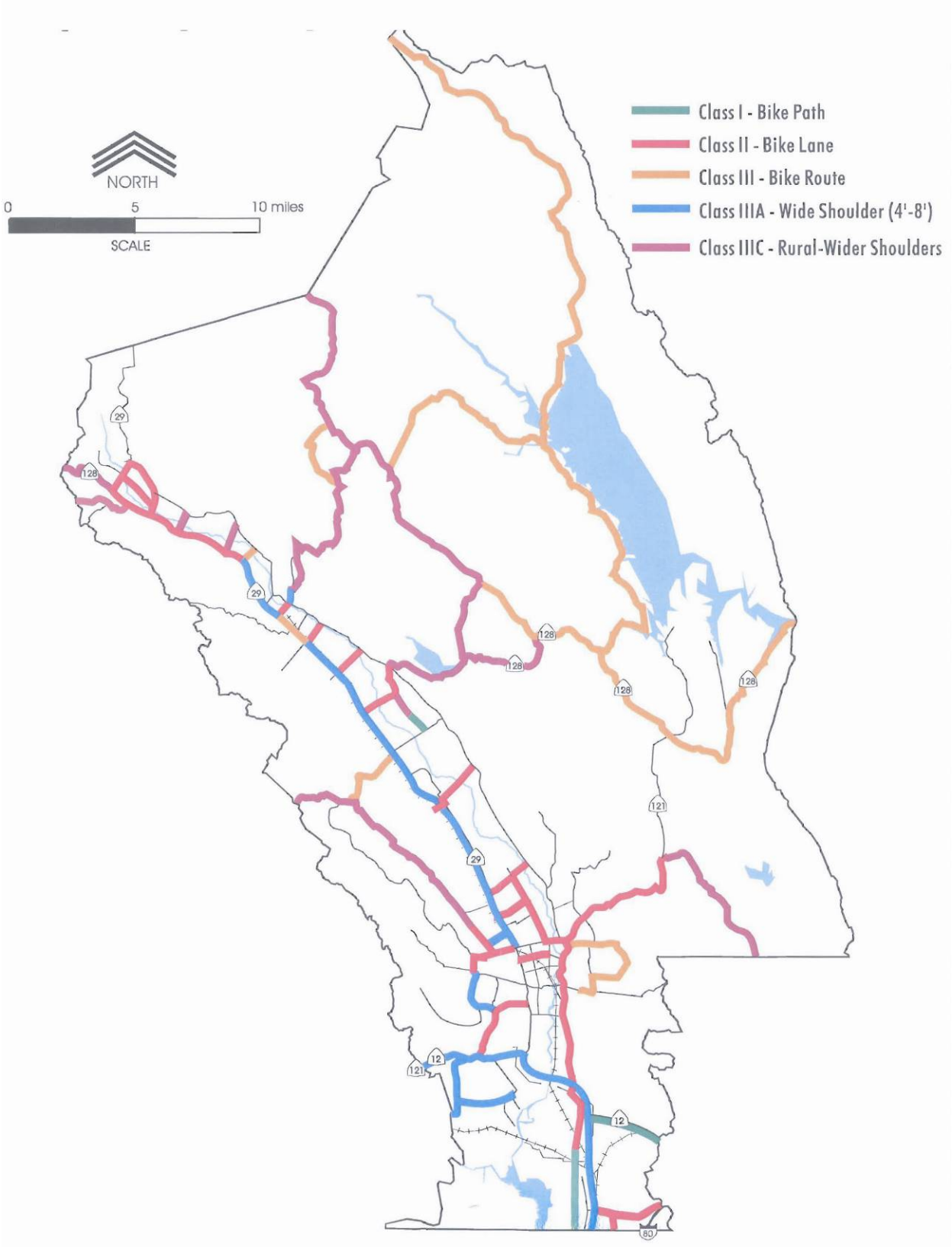

Figure 2-5: Recommended Additions to the Napa County Bikeway System Map

- Path #4 is the Railroad Right-of-Way through the City of Napa. This route follows the Southern Pacific Railroad right-of-way from Vallejo Avenue to Redwood Road. Potential issues include safety and security, maintenance, designs of crossings, potential barriers, and liability issues. However, this Path would provide a connection to the Napa River Path via the Salvador Channel Path, follows an existing rail right-of-way, and could potentially link north and south to other cities.
- Path #6, the Stanly Ranch Path would connect south of the City of Napa. The route would provide an alternative to the existing on-street facilities. The Path could also connect to the Bay Trail.
- Path #8 is the Dunaweal to Washington connection. This path would provide a connection between Dunaweal Lane to Washington Street, south of Calistoga. This route would run along the Napa River.

The Countywide Bicycle Plan presents a number of north-south segments and in the Future Bicycle Paths and Bikeway Appendix it recommends further study of a north-south path from Napa to Calistoga. The two potential corridors of the Napa River and the railroad right-of-way are suggested as locations. Details for the River Path are as follows:

- Follow Ranch Road/Big Ranch Road north from Trancas, in Napa.
- Acquire an easement or right-of-way to connect to the Napa River from the north end of Big Ranch Road
- Follow the Napa River to either Finnel Road or the Yountville Cross Road.
- From the Yountville Cross Road either follow the River north or take the Yount Mill Road/Cook Road as far as possible; then
- Follow either Conn Creek or the River to the Oakville Cross Road.
- Take the Conn Creek Path to Rutherford Road.
- Follow the Napa River to Calistoga, as feasible.

2.7.3. Strategic Transportation Plan (1999)

The NCTPA Strategic Transportation Plan serves as the policy document for the Metropolitan Transportation Commission's Regional Transportation Plan, stating the needs of the various transportation modes in Napa County. The needs for bicycle facilities include consistency, funding, and an improvement fund. The NCTPA has a series of 11 goals, three of them relate to the Napa Bicycle Path Study. These are:

- Increase bicycle use for commute as well as recreational trips.
- Preserve the existing rail corridor as a regional asset.
- Improve the efficiency and effectiveness of travel corridors by considering all modes in the planning, design, and construction process.

The Strategic Plan restates the 1996 Bicycle Plan goals and policies as well as the prioritized list of projects from a previous NCTPA Bicycle Plan.

2.7.4. Napa County

2.7.4.1. General Plan (1990)

Circulation Element

Napa County's General Plan's Circulation Element includes goals and policies guidelines for transportation. Planning Goal 7 is for non-motorized transportation:

- To develop an integrated system of hiking paths and bicycle lanes where it is safe and financially feasible

A number of policy guidelines support this goal and several are relevant to the Countywide Path. These include developing bicycle lanes to meet transportation and recreational needs. This is important to help meet the needs of commuters and the needs of people out for exercise and leisure. Also, integrating lanes and trails with those in Napa County's cities and with the lanes and trails in Vallejo are policy guidelines.

Conservation and Open Space

The Conversation and Open Space Element of the General Plan has four goals with supportive conservation policies. Two of these goals pertain to the Bicycle Path Study. The first is to provide recreational facilities for County residents and is supported by developing non-motorized riding and hiking trails. The other related goal is about the protection of flood plains with a policy to develop pedestrian and riding trails in these areas if they are compatible with the habitat.

2.7.4.2. General Plan (2008)

The Napa County General Plan was adopted by the Board of Supervisors in June 2008.

Circulation Element

The Circulation Element has three goals and two are important for the feasibility of a Countywide Path.

- The County's transportation system shall be correlated with the policies of the Agricultural Preservation and Land Use Element and protective of the County's rural character.
- The County's transportation system shall encompass the use of private vehicles, local and regional transit, paratransit, walking, bicycling, air travel, rail, and water transport.

To help meet the first goal, policies are established to coordinate planning and development to include bicycle and pedestrian facilities. The Element also calls for a healthier community by improving the walking and bicycling networks. For accomplishing the second goal stated above, one policy calls for decreasing single-occupancy mode share by 50 percent through an increase of different transportation modes, including bicycling and walking. The Feasibility Study Path connects

with the Baylink Ferry Terminal in Vallejo and the Circulation Element calls for this type of connection, between regional public transit and bicycles. The last two relevant policies are developing the County Bicycle Plan and using newly abandoned rail for bicycle paths, or pedestrian/hiking routes.

Recreation and Open Space Element

The Recreation and Open Space Element describes the current needs in the County for open space, the supply and demand of open and space, the formation of the Park and Open Space District, open space ownership, locations of trails and open spaces, and a series of goals, policies, objectives, and actions.

Included in the Recreation and Open Space Element and reproduced in this Chapter is a table from the California Department of Parks and Recreation showing the average. **Table 2-3: Average Annual Days of Participation in Recreational Activities by Californians'** shows Californians most common recreational activities. As shown, five of the first six most common activities could be done on a Countywide Path.

Table 2-3: Average Annual Days of Participation in Recreational Activities by Californians[5]

Rank	Recreational Activity	Days per Year
1	Walking for fitness and fun	94.4
2	Walking a pet	34.8
3	Driving for pleasure, sightseeing, driving through natural scenery	31.3
4	Wildlife viewing, bird watching, viewing natural scenery	25.3
5	Jogging and fitness running	23.1
6	Bicycling on paved surfaces	19.6

As **Figure 2-6: Napa County Trail Network – Existing, Proposed and Potential** shows, Napa County has approximately 67 miles of completed non-motorized trails, 22 miles of these trails are paved surfaces. In addition to the existing network, Napa County has almost 200 miles of proposed trails, including those presented in **Figure 2-6**. In addition to these facilities, the Recreation and Open Space Element calls out 100 miles of linear corridors that could be utilized for trails and open space. However, these areas often include private property.

Figure 277: Napa County Bay and Ridge Trail Network- Existing and Proposed shows those regional trails identified by agencies such as ABAG (Bay Trail) and the Bay Area Ridge Trail.

[5] California Department of Parks and Recreation, "Public Opinions and Attitudes on Outdoor Recreation in California 2002: An Element of the Outdoor Recreation Plan," December 2003, p. 30.

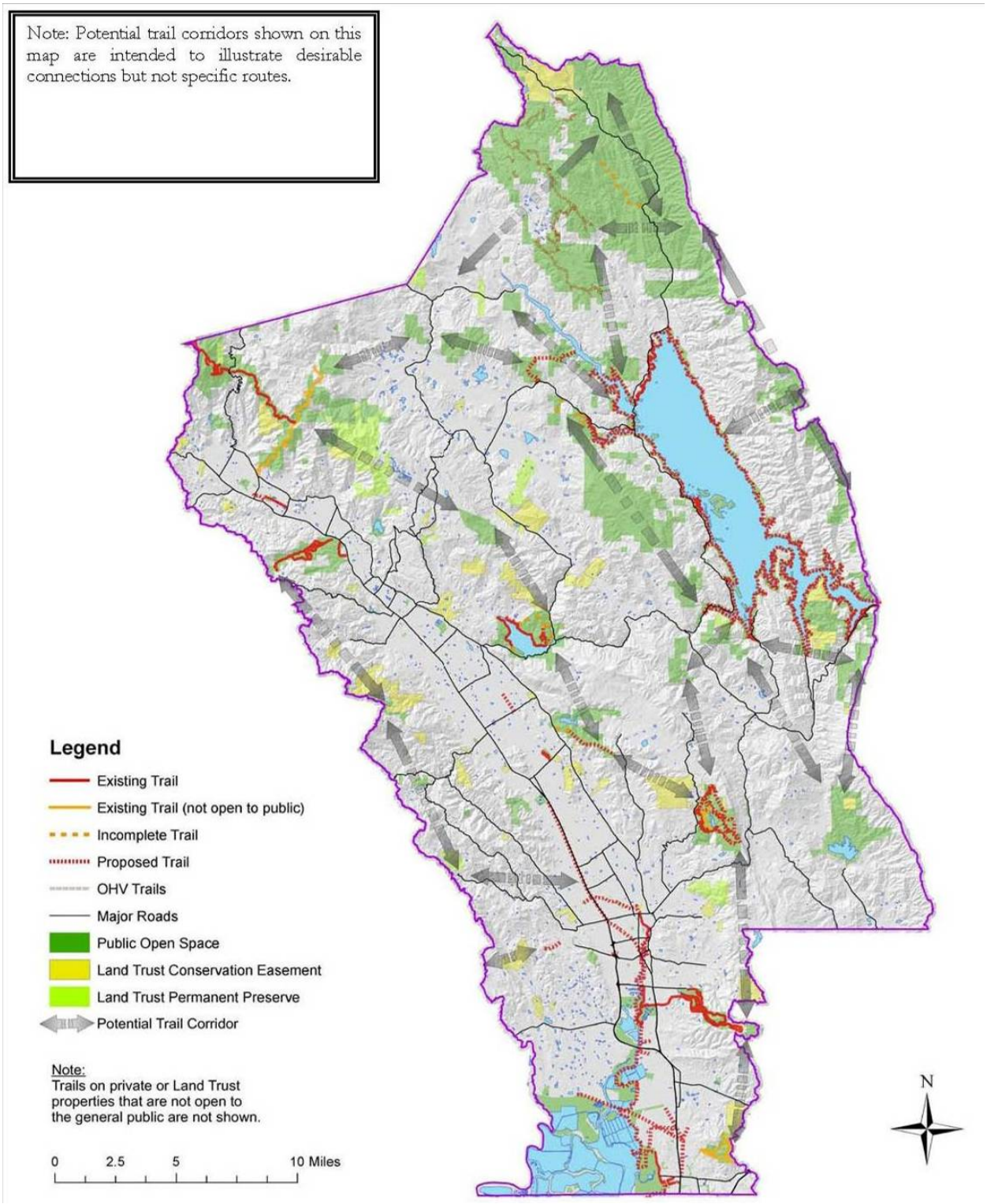

Figure 2-6: Napa County Trail Network – Existing, Proposed and Potential

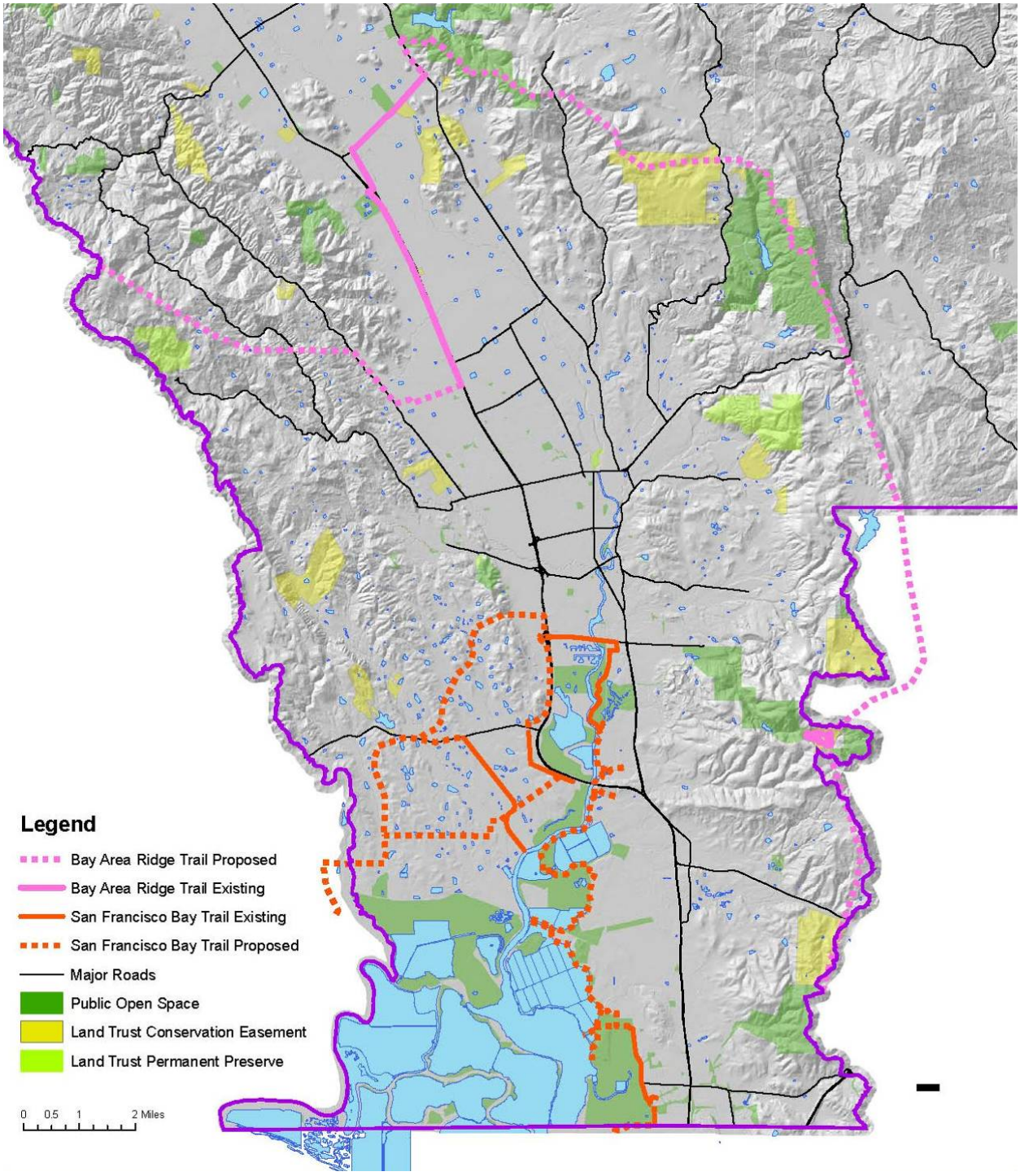

Figure 2-7: Napa County Bay and Ridge Trail Network – Existing and Proposed

The first Goal in the Recreation and Open Space Element states that the County should protect of natural, cultural, and archaeological resources, agricultural production, and private property. To meet this goal, the County establishes a policy of not using eminent domain for acquiring any land. Also, policies are set for trails and their compatibility with agriculture and private property. Important policies to the Feasibility Study are:

- Utilize a range of solutions tailored to individual circumstances;
- Locate trails to take advantage of natural and visual barriers and buffers to discourage trespass onto private property and maintain the privacy of private property owners and their residences;
- Educate trail users through signage and printed materials on the "what" and "why" of good behavior as it relates to natural resources, agriculture, and private property, including ethics such as "leave no trace" and respect for others;
- Provide notice generally, as well as specifically, to property owners adjacent to proposed trails prior to their being constructed and/or opened to the public, and seek to address concerns in a spirit of cooperation;
- Utilize temporary and seasonal trail closures, and type and intensity of use restrictions as appropriate during periods of high wildfire risk and to protect sensitive species and habitats and avoid conflict with agricultural operations.

The second Goal calls for creating and maintaining parks, trails, and recreational, interpretive, and environmental education facilities. Policies to meet this goal include increasing the number and length of trails and working closely with the Napa County Regional Park and Open Space District. Priorities are established for a Regional Park and Open Space Master Plan. These include:

- Complete the San Francisco Bay Trail through Napa County, including both bicycle lanes and paths and, where possible, recreational alignments in close proximity to the Bay, the Napa River, and associated wetlands, including a recreational alignment between the cities of American Canyon and Napa adjacent to existing and planned tidal wetlands west of the Napa Airport.
- Provide for direct and convenient recreational access to and along the Napa River in the vicinity of the City of American Canyon.
- Implement sections of the proposed Bay Area Ridge Trail, with the ultimate objective of a continuous regional trail.
- Investigate the feasibility of a non-motorized trail, and implement sections as opportunities arise, connecting the communities of the Napa Valley.

2.7.4.3. Napa Bay Trail Study (2007)

The Napa Bay Trail Study presents project stakeholders, planning and permitting issues, existing conditions, preliminary engineering designs, and cost estimates for a Bay Trail that would connect the City of American Canyon and the existing Bay Trail near the southern boundary of the City of Napa. The alignment is primarily located in public lands in unincorporated Napa County and the route is along the Napa River and Napa River marshland, the County Airport, existing Sonoma Marin Rail Transit railroad tracks, and Union Pacific Railroad tracks. All segments of the Trail would equal approximately 13 miles in length and the cost estimate in the Study is approximately $11 million.

The Napa Countywide Bicycle Path could access the Napa Bay Trail or potentially use the alignment or a portion of it for the Countywide Path. The Napa Bay Trail offers a scenic route, less than direct route between American Canyon and Napa.

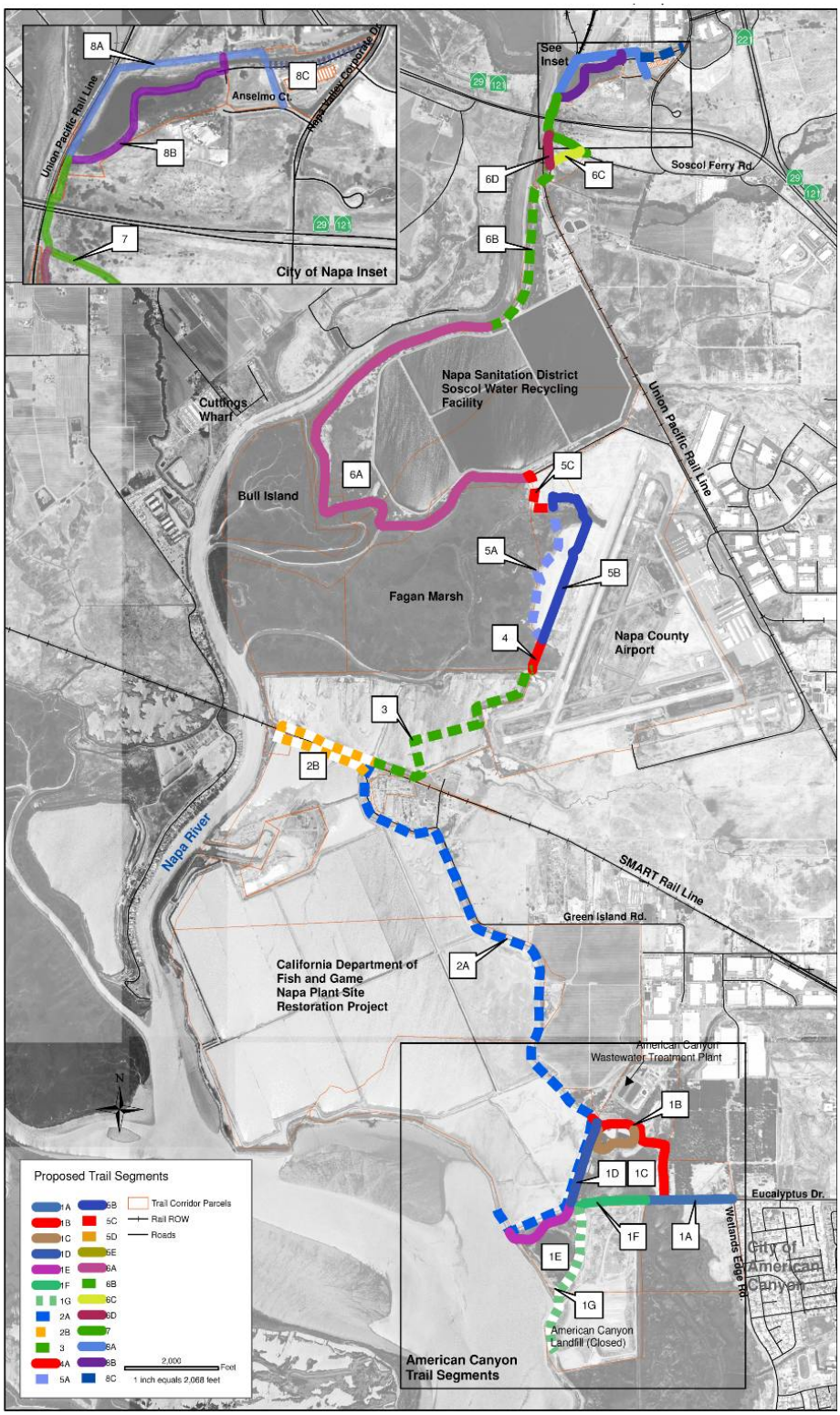

Figure 2-8: Napa River Bay Trail Feasibility Study Trail Study Segments

2.7.4.4. Measure J

Napa County voters approved Measure J in 1990. Measure J was adopted to preserve agricultural land and open space in the County and sets limits on parcel size and maximum building densities. The Measure freezes county zoning changes until 2020 unless there is a 2/3 majority approving the change. Measure J was controversial and its constitutionality was questioned, however in 1995, the California Supreme Court reaffirmed its validity. Measure J makes agricultural preservation a top countywide priority. This is then reflected as one of the top design objectives of the Feasibility Study.

2.7.5. Calistoga

2.7.5.1. Calistoga Bicycle Transportation Plan (2007)

The 2007 Calistoga Bicycle Transportation Plan is an update to the 2003 General Plan Update's Circulation Element. The guiding policies and actions are to promote bicycle use as a viable, attractive, healthy, nonpolluting form of transportation and to assure safe and convenient access to all areas of the City. The Plan establishes objectives and policies from bike paths, to alleys, to updating the General Plan. The Class I – bike path objective states:

- Establish Class I bicycle paths whenever feasible and where designated in this Plan to facilitate safe and direct off-street travel.

To meet this objective, stated policies include reviewing railroad rights-of-way bike path opportunities, establishing a bike path on the old Southern Pacific Railroad right-of-way in Calistoga, minimizing road crossings, encouraging easements through agricultural areas, and considering paths in floodplains or floodways. Included in the project recommendations are the following Class I facilities:

Table 2-4: Proposed Calistoga Class I Facilities

Route Segment	Begin Point	End Point
Southern Crossing	Foothill Boulevard	Napa River
Former Gliderport Connection	Fair Way Extension	Lincoln Avenue
Southeastern Connection	Foothill Boulevard	Silverado Trail

2.7.6. City of Napa

2.7.6.1. General Plan (updated 2007)

Envision Napa 2020, the City of Napa's General Plan was originally adopted by City Council in December 1998 and then amended and adopted with updates in January 2007. The Plan provides policies, standards, programs, and development guidelines to shape the City of Napa through the year 2020. The Transportation and Parks and Recreation Elements' include information relevant to the Bicycle Path Study.

2.7.6.2. General Plan – Transportation Element (updated 2007)

The Transportation Element has three objectives, one of them directly relates to the Bicycle Path Feasibility Study. It calls for a citywide transportation system that includes a variety of safe options, including pedestrian and bicycle facilities. Various goals and policies are established in the Transportation Element to meet this objective. In the Bicycle Travel section, Goal T-6 is:

- To develop and maintain a safe, integrated bicycle route network for residents and visitors, connecting key destinations to neighborhoods, neighborhoods to each other, and the City of Napa to the county

Various policies are outlined to meet this goal, including the development of the greenway system in Napa. **Figure 2-9: City of Napa General Plan Future Bicycle Greenway System Map** shows the proposed greenway system. Other relevant policies are connecting Napa to destinations outside of the City boundary, developing off-road routes including the River Trail and the Wine-Train Rail Trail, and incorporate regional routes into the City bicycle system.

The Pedestrian Services section of the Transportation Element also relates to the Napa Countywide Bicycle Path Study. This section discusses sidewalk and the trail facilities shown in **Figure 2-10: City of Napa General Plan Trail System Map**. Goal T-9 important to the Countywide Path, it is:

- To provide an interconnected pedestrian network providing safe access between residential areas, public uses, shopping, and employment centers, with special attention to a high quality downtown pedestrian environment with links to neighborhoods.

Among the policies to meet this goal, the City, pending feasibility, calls for the development of the River Trail from Stanly Ranch to Trancas Street, and along Salvador Channel, and a multi-use trail along the Wine Train Railroad right-of-way. Another policy states that the City should connect its planned trails to other regional trails and to bicycle and pedestrian routes in downtown Napa.

2.7.6.3. General Plan – Parks and Recreation Element

The Parks and Recreation Element of the Napa General Plan has four major objectives. The most important to the Napa Countywide Bicycle Path is for a comprehensive multi-use trail system. The General Trails section of this Chapter discusses the goal below and policies to meet this objective.

- To develop a comprehensive system of trails for bicycle and pedestrian traffic both within the existing urbanized area and connecting to surrounding County areas.

The City's policies to meet this goal include providing connections with open space in and outside of the City, and connecting to destinations outside the City such as the Napa Marshes, Skyline Park, watershed areas, and views of vineyards and other agricultural lands. A policy specifically calls out the following segments and components:

A. Napa River Trail south: east bank
B. River Trail south: west bank
C. River Trail north on Salvador Channel to Alston Park connecting to Las Flores Center
D. Napa River Trail east to Skyline Park

E. Napa River Trail to Westwood Hills and Timberhill city parks
F. Other creek connections to the Napa River trail
G. Connections to surrounding county areas

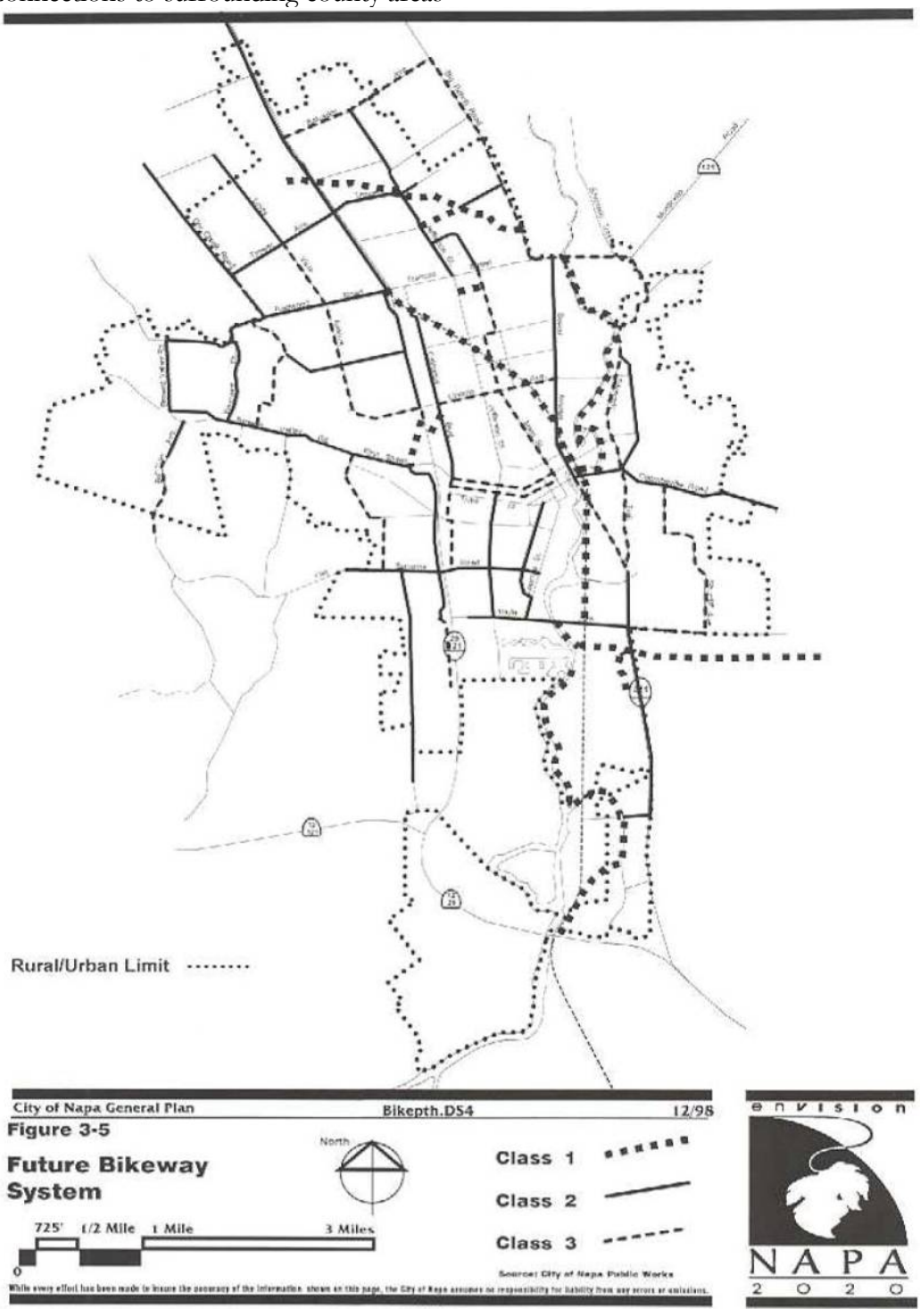

Figure 2-9: City of Napa General Plan Future Bicycle Greenway System Map

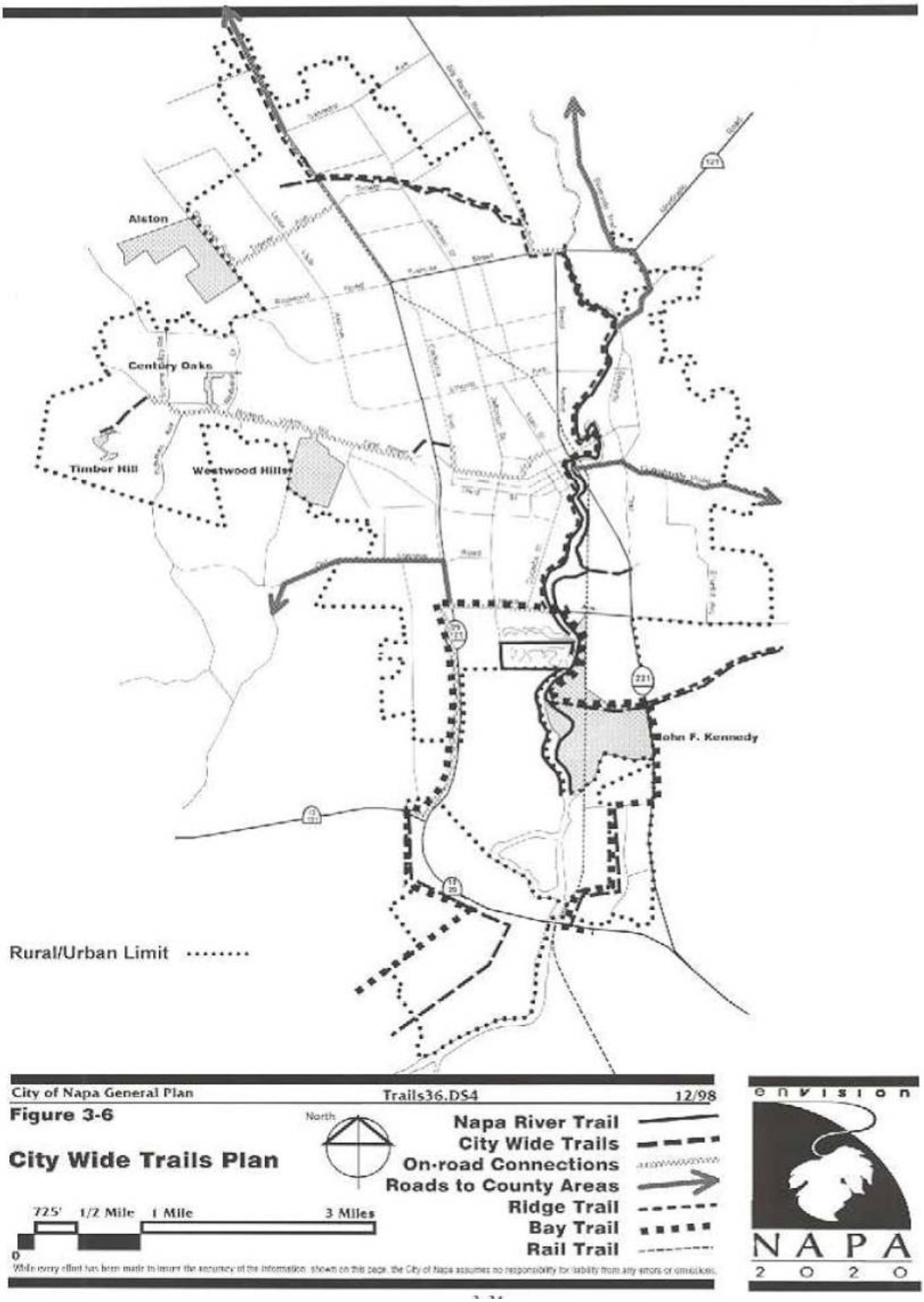

Figure 2-10: City of Napa General Plan Trail System Map

Other relevant General Trails policies are that the City shall provide trails for residents, tourists, and workers of all ages and skill levels, meet ADA Guidelines, support a regional trail network, and coordinate planning of a regional network in the City of Napa.

The Parks and Recreation Element of the General Plan also identifies a goal specific to the Napa River Trail. The Plan states that the Napa River Trail would serve as a major spine to the City and serve as a valuable resource. The specific goal is:

- To develop a major public multi-use trail and amenities along the Napa River, while protecting and enhancing the natural resources along the trail corridor.

A series of policies support this goal. These include:

- Protecting and enhancing natural resources
- Utilizing adopted design guidelines for implementation
- Linking the River Trail to the other trails
- Accommodating accessibility on the Trail
- Prioritizing trail phases
- Providing Trail maintenance
- Adopting a trail sign program
- Involving the public in the planning process

2.7.6.4. Napa River Parkway Master Plan (2005)

The Napa River Parkway Master Plan describes the planning effort for a seven mile long recreational corridor that extends through the City of Napa from the north to the south and through downtown. The fundamental element of the Parkway Plan is the Napa River Trail that will provide a recreational and transportation alternative to the City of Napa.

The Napa River Trail includes over eight miles of trails from Woodland, north of the City as **Figure 2-11: Napa River Trail – Northern Segment** shows, to bay marshes south of the City, as **Figure 2-12: Napa River Trail Plan - Southern Segment** shows. The Trail provides connections to key destinations, including Downtown, residential areas, and Napa Valley College. The Trail also provides links to other trails including "Bay to Ridge" trail system, the Bay Trail, Rail Trail, and Salvador Creek Trail. The network could provide a link to the Countywide Bicycle Path.

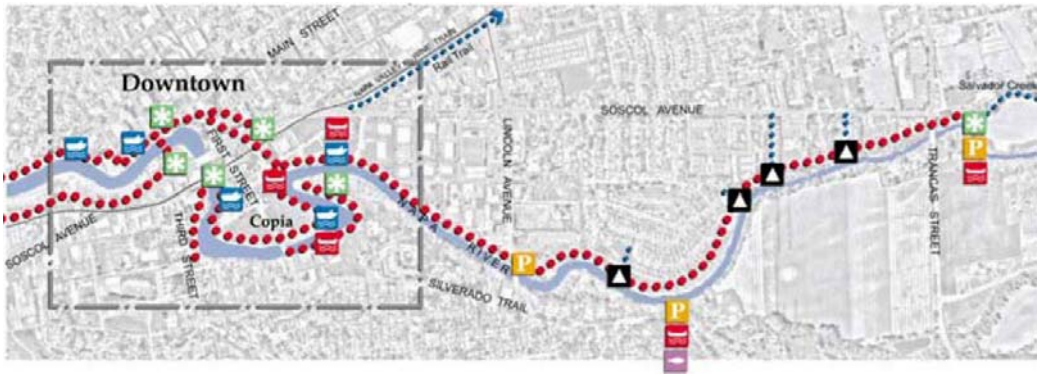

Figure 2-11: Napa River Trail – Northern Segment

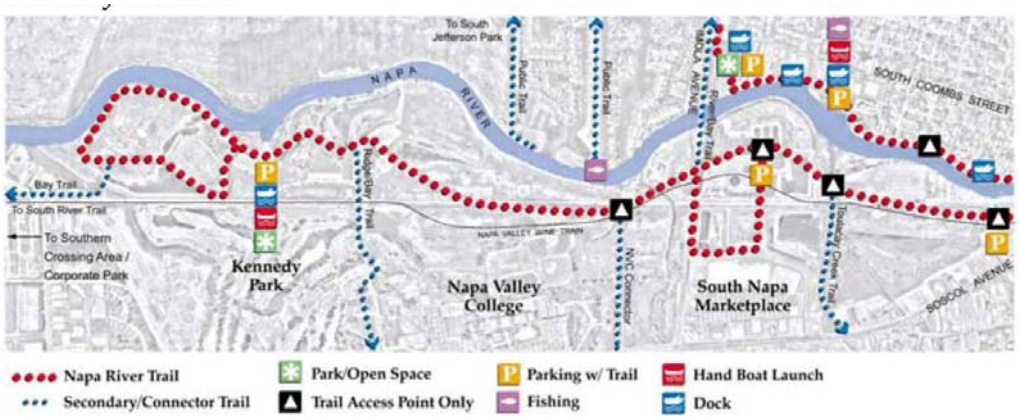

Figure 2-12: Napa River Trail Plan - Southern Segment

2.7.7. City of St. Helena

2.7.7.1. City of St. Helena General Plan

The existing General Plan in St. Helena was adopted in 1993. The primary goal of the Plan is to preserve the rural, small town quality and agricultural character of the City. The Transportation and Parks and Recreation Elements apply to the Napa Countywide Bicycle Trail.

General Plan – Transportation Element

The St. Helena Transportation has two guiding principles related to pedestrian routes and bikeways. The second of the two applies to the Napa Bicycle Path. It states:

- The City shall develop a system of bicycle routes to be located on collector streets and along open space corridors. In the interest of safety, bicycles shall be discouraged from using Main Street and shall be encouraged to use other parallel streets.

The Transportation Element also specifies the importance of the Napa Valley Wine Train's corridor to the public good given its location either as a commuter train or as a regional open space corridor for pedestrian and bicycle use. This leads to the guiding principle for rail in the corridor, to:

- Encourage use of the rail corridor that benefits the St. Helena community by providing improved public transportation/circulation.

General Plan – Parks and Recreation Element

The Parks and Recreation Element of the St. Helena General Plan states that there is a negative impact of tourists on the park system. The increase in traffic and parking makes it more difficult for residents to walk and bicycle to parks. Guiding Policies of the Element call for a citywide system of parks linked by a trail system, helping to alleviate the circulation issues.

2.7.7.2. General Plan Update – Transportation Element Background Report (2007)

The City of St. Helena is undergoing a General Plan update and has completed a Background Report for the updated Transportation Element. The Background Report serves as a benchmark for current conditions and provides the City's future improvements. Descriptions of existing bicycle and pedestrian facilities are limited in the Report. It states that within the urban limit line, sidewalks are recommended on all streets and the Report differs to the NCTPA Countywide Bicycle Plan for existing and recommended bicycle facilities.

2.7.7.3. City of St. Helena Bikeway Plan Map (1994)

The City of St. Helena's Bikeway Plan consists of a map of existing and proposed bikeways. The map shows proposed bikeways on the west side of the Napa River. There is a segment between Pope Street and Hunt Avenue that has no proposed facilities.

2.7.8. City of American Canyon

2.7.8.1. General Plan (1994)

The City of American Canyon's General Plan was adopted by City Council in 1994. It is the City's first General Plan after it incorporated into a city in 1992.

General Plan – Circulation Element

The City of American Canyon's Circulation Element calls out ten visionary goals. Two of them relate to the Napa Countywide Bicycle Path. They are:

- Design a balanced transportation system that would include adequate provisions for public transit, pedestrians and bicycles as well as necessary facilities for the efficient circulation of vehicular traffic.
- Provide safe, functional and attractive areas for pedestrians in residential neighborhoods, commercial activity centers, and near public facilities such as schools, and, where feasible, provide pedestrian inter-connections to eliminate vehicle trips entirely.

To meet these visionary goals, the Circulation Element describes goals, objectives, and policies. These include providing a citywide system of safe, efficient and attractive bicycle and pedestrian routes for commuters, school and recreational use, and develop programs that encourage the safe utilization of easements and/or rights-of-way along public utilities, railroads, and streets wherever

possible for the use of bicycles and/or pedestrians. Another policy is to negotiate easements and establish pedestrian/bikeway access to the Napa River and adjacent wetlands in the near future.

General Plan – Parks and Recreation Element

The American Canyon Genera Plan's Parks and Recreation Element primary goal is below.

- Enrich the quality of life in American Canyon by providing parks, trails and recreational services for all of the City's residents.

The Parks and Recreation Element strives to meet this goal through different goals, objectives, and policies. These include working toward the establishment of a system of public parks interconnected by off-street trails or bicycle lanes. In this process, American Canyon mentions that it will strive to work with the neighboring jurisdictions of Vallejo and Napa and Napa County to establish a trail connection between these areas and to provide these facilities for all users.

2.7.9. Solano Transportation Authority (STA)

Solano County is Napa County's neighboring jurisdiction to the south. The Solano Transportation Authority (STA) is the Congestion Management Agency for the County and serves the jurisdictions of Benicia, Dixon, Fairfield, Rio Vista, Suisun City, Vacaville, Vallejo and the County of Solano. Since the Napa Bicycle Feasibility Study analyzes a connection from Vallejo north through Napa County, several of STA's relevant plans are reviewed in this section.

2.7.9.1. STA Bicycle Plan (2004)

One of the STA Bicycle Plan's objectives is to develop a countywide bicycle system that meets the needs of commuters and recreational users. A policy included in this objective is connecting to the regional bikeway system. Therefore, the STA bicycle system should connect to Napa and its Countywide Bicycle Path.

Project #8 is the Vallejo to Sonoma County (SR 37 and western linkages). This project, as shown in **Figure 2-13: Vallejo to Napa County Connector** consists of a Class I multi-use path from SR 29 to the Bay Trail. This proposed facility serves as the link to the BayLink Ferry Terminal. This segment is complete with all off-street bikeways except at the Marine World and Highway 37 intersection.

Figure 2-13: Vallejo to Napa County Connector

2.7.9.2. STA Pedestrian Plan (2004)

The Countywide Pedestrian Plan was developed as a complete tool kit for aiding member jurisdictions with developing a programmatic framework within their respective administrations. The tools are designed to provide background information that is easily adapted for use in grant applications or outreach and marketing materials.

The STA Pedestrian Plan outlines a series of objectives and policies to:

- Complete a safe and enjoyable system of pedestrian routes and zones in the places people need and want to go in Solano County, providing a viable alternative to use of the automobile, through connection to transit, and employment, health, commercial, recreational and social centers.

The most relevant Pedestrian Plan objective to this Study is Objective 5, to support and coordinate pedestrian planning connections in Solano County. One of the policies to help achieve this objective is to support regional trail linkages. For a connection to Napa this could occur from the Vallejo Bay/Ridge Trail Connector, listed as project #11 in the Pedestrian Plan. This path would connect the existing regional Bay Trail and the Bay Area Ridge Trail east of the Carquinez Bridge along and under I-80 to Highway 29, where the bike/pedestrian pathway across the bridge ends. The Bay/Ridge Trail route extends along the Vallejo waterfront and north along Highway 29 or Broadway. Ultimately the route may extend along Meadows Drive to the city limits/county line, where it could be connected to Bay Trail segments in American Canyon/Napa County. More details about this connection is described in the Vallejo Waterfront Plan section and previously in the Napa Bay Trail section

2.7.10. City of Vallejo

2.7.10.1. Vallejo Station and Waterfront Project – Revised Draft EIR

The Vallejo Station and Waterfront Project is a proposal to on approximately 92 acres between Downtown Vallejo and the Mare Island Strait. The Vallejo Station and Waterfront Project would add residential units, office space, and parks and open space. The Waterfront Promenade (as shown in **Figure 2-14: Vallejo Waterfront Promenade**) is already in place between Mare Island Causeway and Maine Street and it is a Class I bicycle path that traverses the Waterfront between Marin Street and Tennessee Street, aligned between Mare Island Way and the Waterfront. This path provides access to the Baylink Ferry Terminal.

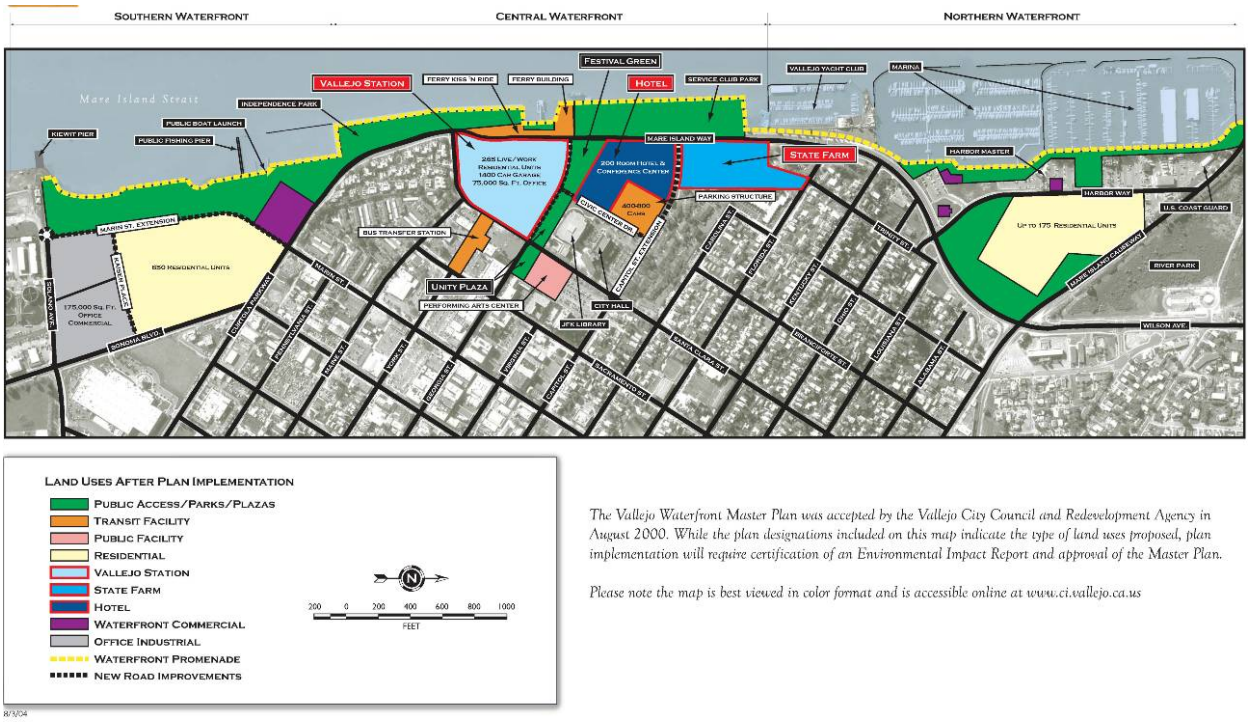

Figure 2-14: Vallejo Waterfront Promenade

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3. User Needs

This chapter provides an overview of the user needs related to the Napa Valley Greenway. Connecting southern and northern Napa with a bicycle route is called out as a priority in the NCTPA Countywide Bicycle Plan. This bicycle facility could be used by a variety of different types of bicyclists and pedestrians, connecting them to different destinations. This chapter describes these as well as forecasts of the number of trail users.

3.1. User Groups

The project corridor is already being used by a wide variety of bicyclists and pedestrians for short distances, especially in and near the communities of Calistoga, St. Helena, Yountville, Napa, and Vallejo. In addition to these cities are wineries, shopping centers, employment centers, parks and recreation areas, and the BayLink Ferry Terminal in Vallejo. These trip generators and destinations will attract bicyclists and pedestrians.

Each potential user group has specific needs that will directly affect the planning and design of the Napa Valley Bikeway. For example, many less experienced bicycle riders prefer to use multi-use trails (also known as Class I bike paths) or lower-traffic side streets rather than arterial streets with high traffic speeds and traffic volumes. More experienced bicyclists are often willing to trade more traffic and higher traffic speeds for a more direct route to their destination. **Table 3-1 Characteristics of Casual and Experienced Bicyclists** outlines the characteristics of casual and experienced bicyclists. This project should be designed for the greatest variety of user groups that will potentially use this corridor including tourists visiting Napa Valley wineries, students going to school, shoppers running errands, recreational and commuting bicyclists, pedestrians, hikers, dog walkers, in-line skaters, parents pushing strollers, seniors, children, and the disabled community.

Table 3-1
Characteristics of Casual and Experienced Bicyclists

Casual Riders	Experienced Riders
Prefer off-street bike paths or bike lanes along low-volume, low-speed streets	Prefer on-street or bicycle-only facilities to multi-use paths.
May have difficulty gauging traffic and may be unfamiliar with rules of the road. May walk bike across intersections.	Comfortable riding with vehicles on streets. Negotiates streets like a motor vehicle, including "taking the lane" and using left-turn pockets
May use less direct route to avoid arterials with heavy traffic volumes.	May prefer a more direct route.
May ride on sidewalks and ride the wrong way on streets and sidewalks.	Avoids riding on sidewalks or on multi-use paths. Rides with the flow of traffic on streets.
May ride at speeds comparable to walking, or slightly faster than walking.	Rides at speeds up to 20 mph on flat ground, up to 40 mph on steep descents.
Cycles shorter distances: up to 2 miles	May cycle longer distances, sometimes more than 100 miles.

3.1.1. Commuter Needs

Bicycle and pedestrian commuters consist of employed adults and students of all ages. Commute trips between work and home typically account for about one-third of all weekday person trips. This represents a substantial opportunity for bikeway and pedestrian usage, especially where links between commercial and residential areas exist and could potentially decrease the number of car commuters on the road. Common commute characteristics include:

- Commuter trips usually range from several blocks to ten miles.
- Commuters typically seek the most direct and fastest route available.
- Commute periods typically coincide with peak traffic volumes and congestion, increasing the exposure to potential conflicts with vehicles.
- Places to safely store bicycles, or end of trip facilities, are of paramount importance to all bicycle commuters.
- Major commuter concerns include changes in weather (rain and heavy fog), riding in darkness, personal safety and security.
- In general, a primary safety concern to bicycle commuters is intersections with no sign or signal controls.
- Commuters generally prefer routes where they are required to stop as few times as possible, thereby minimizing delay.

Commuters who currently drive between Napa Valley's cities for employment may face traffic delays. Use of the Napa Valley Bikeway may encourage some commuters who currently drive to walk or bicycle, thereby offering commuters saved resources, less traffic congestion, and reducing vehicle parking demand.

3.1.2. Recreational Needs

Recreational bicycling and walking generally falls into one of three categories: exercise, non-work destinations (such as shopping or library trips), and tourism or sight-seeing. Recreational bicyclists can be a varied user group in and of themselves, since the term encompasses a broad range of skill and fitness levels, from a racer who rides 100-miles each weekend, to a family with young children who occasionally want to ride a couple miles down a quiet trail, to wine enthusiasts visiting Napa Valley. Regardless of the skill level of the recreational user, directness of route is typically less important than being in scenic surroundings, having amenities like restrooms and water fountains, and being on routes with few traffic conflicts. Visual interest, shade, protection from wind, moderate gradients, and artistic or informational features also have a much higher value.

All recreational corridor users require some basic amenities to have a comfortable experience and to want to return. They include dedicated facilities (such as sidewalks or bike lanes), clear destination and intersection signage, and even surfaces. The aesthetic component of a facility is very important to most recreational users. In other words, most people prefer to walk or bicycle in pleasing surroundings. Some of the Napa Valley Bikeway options will offer users more pleasing surroundings (such as on a dedicated pathway) than others (such as using on-street bike lanes).

Bikeways in Wine Regions

Bikeways connecting to wineries and adjacent to active vineyards are highly popular and common throughout the world, and in fact already exist to some extent in the Napa Valley. Bicycling from winery to winery has been popular since the 1970s, with the world's largest bicycle touring company (Backroads) getting its start by offering bike tours in the Napa Valley. Bicyclists and hikers already bicycle and walk directly adjacent to active vineyards, and the demographics of tourists who visit wineries is very similar to the demographics of those who enjoy active vacations.

Bike paths directly adjacent to vineyards currently exist throughout the Bay Area (Sonoma County, Livermore), California, and the country. Local communities have seen the benefit of providing visitors with an alternative to driving from one winery to the next, and for attracting visitors with longer and higher quality stays. Visitors walking or bicycling to wineries can also order wine and have it delivered to their homes or hotels. A high quality bikeway linking wineries, spa-related businesses, hotels, and restaurants—in one of the most beautiful settings in the State, would undoubtedly become one of the most popular facilities of its type.

Users with Disabilities' Needs

Designing bikeways for users with disabilities ensures that all trail facilities are accessible and that all trail users are adequately served. Accessible facilities that comply with the Americans with Disabilities Act (ADA) are free of obstructions, consider the needs of blind and low-vision users at intersections, provide sufficient crossing time for users with disabilities, are compliant with ADA requirements for grade, cross slope, and curb ramps. The design of the Napa Valley Bikeway should comply with ADA requirements and should be accessible to all potential trail users.

3.2. Connecting Facilities

The Napa Bikeway could serve as a recreational destination, connecting to other existing and proposed bikeways and walkways in the County and to Napa's cities. A summary of connecting pathways and bikeways is provided below.

To the north, the Napa Bikeway will connect to existing bikeways in Calistoga. Two existing facilities connect to the downtown area, these are:

- Napa River Trail connects Dunaweal Lane in Napa County to Washington Street in Calistoga. Washington Street has bike lanes connecting to downtown Calistoga.
- Silverado Trail has bike lanes that connect to Lake Street and downtown Calistoga.

As the Napa Bikeway extends south, it will connect to the bicycle and pedestrian network in St. Helena. St. Helena has a network of bike routes. Connections include:

- A bike route on Pope Street, from Silverado Trail west to downtown St. Helena
- East-west bike routes on Adams Street and Hunt Avenue
- Bike lanes on Silverado Trail

Continuing south through Napa Valley, between St. Helena and Yountville, there is three existing bicycle facilities in the study area.

- Oakville Cross Road between SR 29 and Silverado Trail is a bicycle route
- Skellenger Lane between Ponti Road and Silverado Trail is a bicycle route
- Bike lanes on Silverado Trail

Yountville has one east-west bicycle facility in the study area connecting with Silverado Trail and two north-south bicycle facilities.

- Bike lanes exist on Jackson Street in Yountville connecting with Lincoln Avenue, Monroe Street, to Yountville Cross Road through Napa County to Silverado Trail.
- Bike lanes on Silverado Trail
- Bike lanes on Solano Avenue, extending south to Napa.

The City of Napa has a bicycle network throughout the City. The Napa Bikeway could extend to multiple existing facilities. These include:

East-West

- Salvador Avenue bike route between SR 29 in Napa to Big Ranch Road in Napa County
- El Centro Avenue bike route between Jefferson Street and Big Ranch Road
- Trower Avenue bike lanes between SR 29 and the eastern city limit
- Trancas Street, a bicycle route between Jefferson Street and Soscol Avenue
- Lincoln Avenue, a bicycle route between Morgan Lane and Soscol Avenue and extending east as bike lanes to Silverado Trail
- 1st and 2nd Streets, bicycle routes in both directions through downtown Napa.
- 3rd Street bicycle route connecting east, across the Napa River to bike lanes on Coombsville Road
- The Imola Avenue bicycle route from Foster Road, east past SR29 and the city limit.

North-South

- Jefferson Street bike route from Salvador Avenue, south to Trower Avenue and then extending south as bike lanes to Trancas Street
- Solano Avenue bike lanes from Yountville to Lincoln Avenue
- Sonoma Street bike lanes from Trancas Street to 1st Street
- A bicycle route connection from Beard Road to Adrian Street to Brown Street to Coombs Street, between Trancas Street and Imola Avenue.
- Soscol Way bike lanes and route between Trancas Street and SR 221

- The Napa River Trail on the west side of the River between Trancas Street and Lincoln Avenue
- The Napa River Trail on the west side of the River between Soscol Avenue extending south to John F. Kennedy Memorial Park
- Bike lanes on Silverado Trail north of the city limit to Trancas Street

In American Canyon and Vallejo there are several existing bicycle facilities in the study area to integrate with the Napa Bikeway.

- Bike lanes on American Canyon Road
- Bike Path southwest of Northampton Drive in American Canyon
- San Francisco Bay Trail, west of American Canyon and extending south to Vallejo and the BayLink Terminal
- Bike Routes on Tennessee Street in Vallejo

3.3. Surrounding Land Uses & Destinations

Surrounding land uses directly impact potential usage on any bicycle or pedestrian facility. The Napa Bikeway could potentially connect through the central business districts of Calistoga, St. Helena, Yountville, Napa, and Vallejo. These are the primary business and commercial centers in the Valley. The various land uses adjacent or proximal to the bikeway, and any connectivity issues related to them, are summarized below.

3.3.1. Residential

The proposed bikeway passes through numerous residential areas located in the county and in cities along the corridor. These residential areas include, but are not limited to: City of Calistoga, City of St. Helena, City of Yountville, City of Napa, City of American Canyon, City of Vallejo. There are also pockets of rural residential development along the study corridor to the southwest of the City of Calistoga along Highway 29 and northeast of the City of Napa. The most intensive residential areas along the corridor are between the City of Napa and City of Vallejo. Greater population density may mean increased ease of access for a larger percentage of the population, as people reside closer to the bikeway and bikeway access points.

3.3.2. Commercial

There are major commercial areas in the City of Napa, City of American Canyon and City of Vallejo. Most of these are focused along Highway 29. North of St. Helena is a small Outlet Mall. Commercial areas in the cities of Calistoga, St. Helena and Yountville cater more to tourism. The regional commercial centers in the cities of Napa and Vallejo are significant employment centers for Napa and Solano Counties respectively and have the potential to significantly increase the use of the bikeway for commuting.

3.3.3. Civic

The cities of Napa, American Canyon, Calistoga, St. Helena and Yountville are all incorporated cities within Napa County. The City of Napa is the host to most of the Napa County offices, although the Sheriff's office is located between the City of Napa and the City of American Canyon off Airport Boulevard, which is within the bikeway study area. The City of Vallejo is an incorporated city in Solano County. The trail provides access between each of these cities, and can be linked to each jurisdiction's civic center through the use of additional paths or a combination of Class I and II bicycle facilities and existing pedestrian facilities. Providing non-motorized access to civic centers can help ensure the equitable availability of city government and services to members of the public who are unable to drive.

To the west of the City of Yountville is the Veterans Home. Also located within the corridor southeast of the City of Napa is the Napa State Hospital. The Bikeway could offer a commute option to staff working at the Veterans Home and State Hospital.

3.3.4. Educational

The Napa Bikeway corridor is located near many institutions of elementary, secondary and higher education. Included among the educational institutions are the main Napa Valley College campus located off Highway 121 and Imola Avenue and the Napa Valley College Upper Valley campus located in St. Helena. . The Napa Valley College main campus is located adjunct to the existing Napa River Trail which would connect to or be part of the Napa Bikeway. The Culinary Institute of America, to the north of the City of St. Helena is an internationally renowned education facility. Numerous elementary schools throughout cities of Napa, American Canyon, Calistoga, St. Helena and Yountville are located within a mile of the trail corridor.

3.3.5. Agricultural

Most of the bikeway corridor between the City of Calistoga and the City of Napa is located in Agricultural Resource Areas. These Agricultural Resource areas consist almost exclusively of vineyards and winery operations. There are over sixty major wineries within this section of the corridor. Napa produces only 4% of California's wine by volume – but, as the largest producer of high-end wines in the state, Napa delivers more almost 27%2 of the sales value of the state's wine. With its premium grapes and top quality wines, Napa claims almost 21% of the total economic impact of wine in California. Agricultural operations have seasonal labor demands. Allowing for the seasonal fluctuations, grape growing and wineries account for 40,000 full time equivalent jobs in Napa County. This is nearly half of the county's total employment.1

3.3.6. Industrial

There are some industrial and light industrial operations located between the City of American Canyon and the City of Napa. Employees of these businesses could benefit from the Bikeway.

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1 Economic Impact of Wine and Vineyards in Napa County, MFK Research 2005.

3.3.7. Tourism and Recreation

Napa Valley has a multi-million dollar tourism industry. Visitors come to the Napa Valley because of Napa's world class reputation as a premier wine producing area. There are over eighty wineries located in Napa Valley. Most located in the area between Napa and Calistoga. In 2005, 4.7 million person trips were made to Napa County by visitors. These included 2.75 million overnight trips and 2 million day trips. [2] The economic multiplier effect of these visitors is enormously important to the local economy.

"The average visitor to Napa County spends $197 per day with those staying over-night spending $233 per day. The visitors' spending impacts almost every segment of the county's economy in a significant way with almost one billion dollars in direct spending and $1.3 billion in total impact. Over 17,000 jobs are created which provide nearly half a billion dollars in income to residents. Each resident of the county sees the benefit of almost $1,000 in indirect business taxes injected into the community by visitors and utilized to improve the quality of life for residents and visitors alike".[3]

Wine tasting is a major part of this wine economy. The 2005 Visitor study states that Napa visitors spent $184 million on wine purchase and another $38 million on wine tasting.

In addition to the Wineries, there are also other recreation facilities, these include:

- Resorts such as the L'Auberge de Soleil off the Silverado Trail and Solage in Calistoga attract visitors from all over the world. Solage has led the way in promoting non motorized tourism by including two bicycles with each of its suites for use by tourists.
- Copia American Center for Wine, Food and the Arts (downtown Napa). This facility attracts tourists from all over the world. Copia has been the catalyst for an economic revitalization of the City of Napa's Oxbow area with two new hotels and more retail areas planned.
- California State Parks operates the Bothe-Napa Valley State Park. This is located within the study corridor between St. Helena and Calistoga. The Department also operates the Robert Louis Stevenson State Park north of the City of Calistoga.
- City of Napa Parks. These include Alston Park, John F. Kennedy Memorial Parks as well as several other smaller parks within the City. The City of Napa also operates the Lake Hennessey Recreation Area at the Lake Hennessey Reservoir. And the Skyline Wilderness Park adjacent to the Napa State Hospital.
- California Department of Fish and Game Napa River Ecological Reserve north of Yountville as well as the Fagan Marsh Ecological Reserve near the Napa County Airport.
- In addition to the above tourism and recreation facilities each city within the study area operates numerous local neighborhood parks.

[2] 2005 Visitor Profile & Economic Impact Studies-Napa County
[3] Ibid.

3.4. Projected Usage

One of the goals of the Napa Valley Bikeway is to provide the maximum benefit to the public by providing for the widest range of users, including ages and bicycling skill level. The selection of the preferred alternative and its corresponding facility type will impact the number and diversity of users who will be attracted to the corridor.

The 2000 Census found that approximately 0.83% of work trips were made by bicycles in Napa County and 4.14% of work trips were made on foot. Nationally these percentages were 1.2% and 2.9% respectively; statewide for California they were 1.9% and 2.9% respectively. This data shows that in comparison to the rest of the state Napa County has a lower percentage of bicycling to work trips and a higher percentage of walking to work trips. This implies there is a latent demand in the population that would bicycle more often if it was an easier option.

In addition, bicycling is one of the most popular forms of recreational activity in the United States. The Bureau of Transportation Statistics' October 2000 survey found that of the 41 million people riding bicycles (almost 15% of the 281,421,906 national population (Census 2000)), 54 percent are bicycling for recreation and 35 percent are bicycling for exercise. The 2001 *American Sports Data Study* by the Sporting Goods Manufacturer's Association tallied 84,182,000 national recreational walkers (almost 30% of the national population). If nothing else, this indicates a latent demand for connected trails and user facilities.

Table 3-2 shows the 2000 Census journey to work data for Napa County and the cities located along the Napa Bikeway corridor: American Canyon, Calistoga, Napa, St. Helena, Yountville, and Vallejo.

Table 3-2
Napa County 2000 US Census Transportation Mode to Work

Location	Total	Drove Alone	Carpool	Public Transit	Bicycle	Walk	Other Modes	Work at Home
Napa County								
Number of Employed Adults	57,393	41,698	8,519	803	479	2,378	601	2,915
Percent		73%	15%	1%	1%	4%	1%	5%
American Canyon								
Number of Employed Adults	4,164	3,054	858	62	17	29	7	137
Percent		73%	21%	1%	0%	1%	0%	3%
Calistoga								
Number of Employed Adults	2,290	1,499	258	0	37	335	41	120
Percent		65%	11%	0%	2%	15%	2%	5%
City of Napa								
Number of Employed Adults	33,743	25,320	5,211	600	375	696	358	1,183
Percent		75%	15%	2%	1%	2%	1%	4%

Location	Total	Drove Alone	Carpool	Public Transit	Bicycle	Walk	Other Modes	Work at Home
St. Helena								
Number of Employed Adults	2,748	1,901	359	36	7	198	26	221
Percent		69%	13%	1%	0%	7%	1%	8%
Yountville								
Number of Employed Adults	974	766	94	9	7	32	0	66
Percent		79%	10%	1%	1%	3%	0%	7%
Vallejo								
Number of Employed Adults	50,230	33,449	11,525	2,505	199	625	464	1,463
Percent		67%	23%	5%	0%	1%	1%	3%

Using Alta Planning + Design's National Bicycle & Pedestrian Documentation (NBPD) Project trail usage model, it is projected that the Napa Greenway is expected to be one of the most heavily-used multi-use pathways in Northern California. Over 1.5 million annual users are expected. By way of comparison, an estimated 1.5 million persons per year use the Monterey Recreational Pathway. The estimate from the Napa Greenway is based on a combination of factors: (a) comparisons with pathways counts from around the country, (b) the quality of the facility (length, aesthetics, access, etc), (c) climate, (d) population of area served (e) regional population and (f) annual visitors to region.

The new pathway will attract a significant number of walkers/joggers (40 percent) and other users including roller bladders. Based on national surveys of pathway users, a slight majority of users are projected to be male (53 percent), most people will use the Greenway from their home (72 percent), and most people will be using the pathway for health or recreational purposes (47 percent). The pathway is projected to produce an estimated $21.2 million in local economic benefits, over $387 million in health benefits, and over 166,000 saved vehicle trips. Table 3-3 is a summary of projected user demand and benefits. Note that health benefits assume an annual cost saving of $128 per year for each trail user. This should be considered an upper limit of health benefit as users will use the trail multiple times in a year.

Table 3-3 Future Bike Path Use Projections and Benefits

Estimate of Annual Use: /1		**3,026,554**
By Mode of Travel:		
	Bicycle (59%)	1,798,923
	Walk (40%)	1,201,747
	Other (1%)	25,884
By Sex: /2		
	Male (53%)	1,604,073
	Female (47%)	1,422,480
Means of Travel to Trail: /3		
	Start from home (72%)	2,179,119
	Drive to Trail (28%)	847,435
Trip Purpose: /4		
	Recreation-biking only (37%)	1,119,825
	Recreation-biking to recreation destination (10%)	302,655
	Commuting (2%)	60,531
	Errands (5%)	151,328
	Shopping (3%)	90,797
	Other (28%)	847,435
	Combo (14%)	423,718
Benefits		
Economic Benefits:/5		$21,185,875
Health Benefits:/6		$387,398,861
Transportation Benefits (Saved VT/yr)		166,460

Notes:

Source:
Annual projection is calculated by multiplying average hourly volumes by 12 hours in a day and by the number of days when weather permits bicycling and walking (102 - Memorial Day through Labor Day)
/1 Based on counts on over 30 trails nationwide; calibrated for local environment and trail length surround land use, population, density, climate, number of visitors, aesthetics, and other factors. Includes all trips on trail, many of which may be for short distances.
/2 Ibid.
/3 Ibid.
/4 Ibid.
/5 "Economic benefits of Trails and Greenways" Rails to Trails Conservancy
/6 Transportation Research Board's Cooperative Highway Research Program "Guidelines for Analysis of Investments in Bicycle Facilities Final Report" (August 2005)

4. Opportunities and Constraints

This chapter describes the primary opportunities and constraints that will affect the location of the proposed Napa Valley Greenway. The project area presents a range of opportunities and constraints for the proposed Napa Valley Greenway. Opportunities are defined as unique conditions that will facilitate implementation of the Napa Valley Greenway, and/or enhance the operations and user experience of the trail. Constraints are defined as conditions that may negatively impact the feasibility, enjoyment, and/or operation of the trail. This opportunities and constraints analysis will help identify short- and long-term alignment and trail design and operation options.

4.1. Methodology

The Napa Valley Greenway project team gathered data for this opportunities and constraints report using the following methodologies.

Field Research

The project team conducted extensive fieldwork along Napa Valley Greenway corridor, using a combination of field notes and digital photography to document opportunities and constraints in the project area.

Document Research

The project team conducted document research in order to determine the location of some opportunities and constraints. Documents reviewed included relevant plans, trail studies, maps, historical documents, and environmental impact reports.

4.2. Opportunities and Constraints

Opportunities and constraints of the Napa Valley Greenway are presented in the text below. The Napa Valley Greenway corridor is shown in ten discrete segments for ease of graphic representation and analysis. The map sections start in Calistoga, (Figure 5-1), south to the terminus of the study area at the Vallejo Ferry Terminal (Figure 5- 25). Matrices listing opportunities and constraints are included as **Tables 4-1 and 4-2**, respectively.

4.2.1. Opportunities

The greatest opportunities afforded the Napa Valley Greenway are the overall existing vision of the trail, the amount of public and agency support, and extent of existing trail already completed. The vision, support, and existing infrastructure give the completion of the remaining gaps a head start and momentum that few other regional trails enjoy.

Another important opportunity is the setting for the Napa Valley Greenway project. The Napa Valley Area is recognized as one of the most beautiful natural environments in the country. Napa is

already a major visitor destination, together with a resident population who actively enjoy their communities, constitute a major ready-made demand for a trail that enhances access to this environment and opportunities for exercise, commuting by foot or bicycle, and education.

Finally, the Napa Valley has many unique historical, natural and environmental resources. The Napa Valley Greenway provides an opportunity to enhance the protection and restoration of this environment by (a) including restoration efforts as part of the trail development, and (b) providing educational elements to the public to build a greater understanding of the environment and support for preservation efforts. Key opportunities include:

- Tourism
- Viticulture education and interpretation
- Access to scenic, historic and natural resources
- Ecological education and interpretation
- Environmental restoration
- Geologic and geographic education and interpretation
- Cultural resources education and interpretation
- Existing and planned trail segments
- Roadways
- Proximity to activity areas and neighborhoods
- Transportation and transit integration
- Redevelopment in the City of Napa along the Napa River
- Existing connections under or over Highway 29
- Intact railroad right-of-way

Tourism

As mentioned in Chapter 3, the Napa Valley has a multi million dollar tourism industry. "Visitors are drawn to the community downtowns, wineries, museums and art galleries, and spas were the types of attractions visited most often"[1]. The Napa Valley Greenway will provide tourists the opportunity to visit the over eighty wineries in the Napa Valley Greenway study area. This will relieve congestion on busy roads and provide visitors a more relaxed opportunity to enjoy what the valley has to offer.

Viticulture Education and Interpretation

The Napa Valley Greenway corridor includes some of the most valuable agricultural lands in the United States. Visitors and residents are interested in the production cycle of the fine wines that Napa is world famous for. There are opportunities to educate the general public about how wine is made, the importance of agriculture, water conservation practices and viticulture's significant reductions in the use of pesticides and chemicals and embracing "sustainable agriculture". [2]

[1] Napa Valley Visitor Profile and Economic Impact Studies March 2006
[2] Report on the Economic Impact of Wine 2006 Updated January 2007 MKF Research.

Scenic, Historic and Natural Resources

The Napa Valley Greenway will provide new and enhanced access to scenic, historic and natural resources. The Greenway would create a link from the Old Faithful Geyser north of Calistoga to the Napa-Sonoma Marshes, from old stone wineries constructed in the nineteenth century to modern architectural accomplishments by world class designers, from vibrant downtowns to the historic building such as the Bale Grist Mill that celebrate California's history. The Greenway presents opportunities for interpretive signage and interpretive themes and locations of significance.

Environmental Restoration

The Napa River has been both a benefit and a cost to the County. Flooding of downtown and the subsequent projects to protect the downtown are also matched by other efforts in restoring creeks and ecosystems such as the Conn Creek Channel and Salvador Channel. North of the city of Napa there are few locations where Napa River is accessible. The Napa River Ecological Reserve in addition to smaller parks in St. Helena and Calistoga offer opportunities for interpretation of efforts of restoration. Trail projects in environmentally sensitive areas are often coupled with restoration efforts, including restoration of habitat, natural features, erosion control, removal of debris, water quality enhancements, and other elements. For example, new trails in the Lake Tahoe basin include drainage systems that help keep sediment out of the water. A new trail in Marin County will include removal of an old creosote-soaked railroad trestle over a wetland. Often new trail projects are coupled with land acquisition or easements that help protect natural resources as well.

Cultural Resource Education and Interpretation

The Napa Valley Greenway will provide numerous opportunities to highlight and interpret the cultural resources of Napa Valley. The Wappo, Lake Miwok, and Patwin communities of Native Californians have long inhabited the Napa County area, and were the primary residents of the region prior to Spanish exploration.

In the 19th Century, Spanish and later Mexican explorations and the expedition of General Mariano Vallejo to the neighboring Sonoma Valley had an impact on Napa. George Yount, a Yankee, who worked for General Vallejo became a Mexican citizen and obtained a land grant in Napa Valley. The City of Yountville is located on his former land and is named after him. Russian settlers from Fort Ross on the Sonoma Coast traveled as far as Napa and named Mount Saint Helena after a Russian patron saint. Later in the nineteenth century, Robert Louis Stevenson spent time in Napa Valley penning his "Silverado Squatters" about the silver and lead miners who lived in Napa County. The well preserved cities of St. Helena and Calistoga are a testament to the settlement of the area following the Bear Flag Revolt and California joining the United States.

State Parks, and other Facilities

There are two State Parks in the Napa Valley, Robert Louis Stevenson State Park and Bothe-Napa State Park. Bothe-Napa State Park would be accessible by the Napa Valley Greenway.

Existing and Planned Trail Connections and Segments

The existing trail segments include the City of Calistoga's Bike Path, the City of Yountville Pathway, the Napa Rail Trail, the Napa River Trail and segments of the San Francisco Ridge Trail and the San Francisco Bay Trail.

Roadways

Existing roadways in the study area can serve as important short or long-term alignments, both for on-road bikeways (shoulders, bike lanes) and parallel off-road paths. This may be especially important on some segments that are ecologically sensitive.

Existing Easements and Agreements

There are several existing easements in the corridor that may not be useable for trails. These include the City of Calistoga's ownership of some of the former railroad corridor between Big Tree Lane and Lodi Lane, and the City of Napa's trail easement from Napa Valley Corporate Drive to the Union Pacific Railroad right of way.

Proximity to Activity Areas and Neighborhoods

The Napa Valley Greenway will not only link existing state parks but also five cities with their residential neighborhoods and activity centers along the corridor. Providing good access to these areas is critical for the trail to function not only as a regional facility, but also as a local commuter and recreation route. The proximity of the trail to residential areas and major activity centers, along with good connectivity, will help ensure the trail is well used by the community.

Transportation/Transit Integration

Access to transportation and transit options will result in increased user diversity for the Napa Valley Greenway. With available transit connections, users may be able to access the trail by bus. This type of connection between transit modes will encourage use of the trail as a commuter route. The VINE bus system provides bike racks for passengers. Additional connections to transit can extend the reach of the trail for commuters. The connection to San Francisco on the BayLink Ferry may offer additional opportunities for day tourists.

Redevelopment in the City of Napa along the Napa River

The City of Napa is developing the Napa River Trail in conjunction with a downtown revitalization project and flood control project. The City of Napa already has an existing River Trail from Lincoln Avenue to Trancas Street. The City is also developing the Trancas Crossing Park (Johnny Miller Park) consisting of approximately 33 acres on the north side of Trancas Street. The City has a grant to develop as a passive use park with series of trails. The plan includes a connecting trail under Trancas Street at the bridge to the existing Napa River trail. The master plan includes a proposal for ten parking spaces.

Intact railroad right-of-way

The existing Napa Valley Wine Train (NVWT) railroad right of way is active between Soscol Avenue in Napa and Pratt Avenue in St. Helena. North of Pratt Avenue, there is inactive railroad right of way owned by the NVWT. South of Soscol Avenue the railroad right of way is owned by Union Pacific Railroad.

4.2.2. Constraints

The project team identified the following constraints for the Napa Valley Greenway:

- Active agricultural uses
- Privately owned land
- Industrial activities
- Sensitive wildlife habitat areas
- Sensitive plant communities
- Cultural resources
- Designated floodways
- Waterway Crossings
- Roadways and roadway crossings

Active Agricultural Uses

As towns and cities grow, trails are increasingly being proposed and located next to active agricultural areas. To planners and officials, agricultural areas may appear to be ideal locations for these types of facilities, since there are often are few physical obstructions. However, active farming operations are often not compatible with general public access, and trails must carefully consider the needs and interests of farmers in their feasibility analysis. Napa Valley is an internationally renowned area for grape growing and wine making. In 2006, 42,188 acres of land in Napa were vineyards[3]. In addition over eighty wineries are located in the study area for the proposed Napa Valley Bike Trail between American Canyon and Calistoga. Most of these are open to the public.

There are many potential conflicts that may arise as trails and agricultural production coexist in close quarters. These include:

- Crime, such as theft and vandalism,
- Trespass, safety and liability concerns,
- Loss of land, and
- Impacts to farm operations such as spraying.

In other agricultural counties where there are vineyards and wineries, there are examples of trails that co-exist with agricultural operations. Appendix A is a discussion of the potential conflicts and issues affecting grape growers. Appendix B is a summary of telephone interviews with four Sonoma

[3] Napa County Agricultural Commissioner's Crop Report 2006

County grape growers and an organic farmer who have had active agricultural properties next to existing trails for many years.

Since it is a goal of the Napa Greenway, and local agencies in Napa County to preserve and protect agriculture, it will be imperative that the trail is planned and designed to minimize those impacts. Where it is determined that an easement on the perimeter of private land being farmed is the best functional location for the trail, close coordination with each property owner will be critical. Trails and increased public access can coexist with agriculture, as has been found in places like Sonoma County and Yolo County, but this requires an understanding of farming operations and methods to reduce or eliminate impacts.

Private Lands

The Napa Valley Greenway project area contains privately owned property. Other than agricultural impacts, which have been discussed above, other private property concerns may include a loss of privacy, security, and noise. Where easements on private property are necessary, methods for addressing those concerns will be required. Trails have a good record of co-existence with private property owners. Extensive studies have shown that trails do not result in additional crime or vandalism, and may even result in higher property values. Some of the best-known and heaviest used trails in the country bisect wealthy residential neighborhoods and are considered community assets. Fencing, patrols, and other techniques can address issues of privacy and security as well. Given the sensitivity of this issue, the evaluation criteria of the alignment options has been developed to give heavier weighting to those options that are not on private property.

Wildlife Habitat and Sensitive Plant Communities

The proposed Napa Valley Greenway travels through many different types of habitat and plant communities. The habitats and communities along the corridor include:

- Oak woodland
- Napa River Calwild Linkage
- Grassland Riparian

Riparian habitat is located on the banks of seasonal or permanent creeks and drainages. Riparian habitats are significant because they typically support the highest diversity of wildlife and provide movement corridors between different communities. The Napa County Baseline Report cites the Calwild Linkages as important corridors for wildlife movement. One of these linkages is the Napa River, which runs adjacent to segments of the proposed greenway. The Napa River serves as a movement corridor for many fish species, reptiles, amphibians, and mammals. Perhaps of most importance is that the river serves as a corridor for fish species moving from the estuary to the upper Napa River watershed.[4]

Further research on environmental issues will be conducted as trail segments are selected for preferred alignment. Many of the habitat constraints identified in can be overcome or mitigated with appropriate design.

[4] Napa Country Baseline Report, "Biological Resources," (2005): 4-48.

The California Department of Fish and Game (DFG) manages approximately 70 acres of property either side of the Napa River north east of Yountville on Yountville Cross Road. There is a trail head parking lot and a trail. They also manage the Fagan Marsh Ecological Reserve and the Napa Sonoma Marshes Wildlife Area.

Environmental, cultural, or floodways issues were not determined to be fatal flaws for the Preferred Alignment based on available information.

Cultural Resources

Cultural resources, discussed above as an opportunity for education and interpretation, can also be considered a constraint to development of the Napa Valley Greenway. The environmental review for this project, to be conducted pursuant to the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA) requires that the project be analyzed for its potential impacts to cultural and historic resources. The requirement includes a review by the State Historic Preservation Office (SHPO) of the project area for any known significant historic artifacts.

Because of the unique human history of the area, the project team will develop appropriate mitigation measures to ensure protection of any unknown cultural resources that may be discovered during project development.

Designated Floodways

The Napa River and many of its tributaries are prone to seasonal flooding. Some potential options may be subject to actual inundation or otherwise impact or be impacted by flooding. Evaluation of trail alignments will include an analysis of flood impacts including a review of the Federal Emergency Management Agency Flood Insurance Rate Maps (FIRM) for the project area to determine the extent and frequency of flooding. This may impact the feasibility, design, and operation of an alignment.

Roadways and Roadway Crossings

Trails that rely on public right-of-way often end up alongside roadways at some point, since these are often the most common publicly owned lands available. This scenario is currently the case the Napa Valley Greenway in Option C where the bike path would parallel the Silverado Trail between Calistoga and Napa. Riding along roadways is generally considered a detriment to an aesthetic experience for trail users, who would prefer to be away from traffic if at all possible. Safety is also an issue for any trail directly adjacent to fast moving traffic and with numerous crossings. Some of the potential alignments will use some sections of roadways and the balance between right-of-way availability and aesthetics and safety will be reflected in the evaluation criteria.

Helping trail users avoid crossing busy roadways at unprotected locations, either on the trail itself or accessing the trail, will be a high priority. The existing and most of the proposed alignments avoid most of these types of crossings. Where a crossing may be needed, special attention will be paid to the traffic speeds and volumes (existing and future), and visibility. Appropriate crossing design and operations will be part of any feasibility analysis and recommendation.

Waterway Crossings

Several small creeks and streams would need to be crossed by the Options suggested in the Napa Valley Greenway. These include the Napa River, Dry Creek, Hopper Creek, Salvador Channel and Asylum Slough. Several other locations particularly in Segments 8 and 9 could involve bike trail on board walks. Although existing river crossings will be utilized where possible to avoid the expense of constructing new crossings; however, in many locations, such as Options that parallel the Napa Valley Wine Trail right of way, new trail bridges will be required. Bridge constraints include cost and potential environmental impacts, along with the safety of sharing some crossings with roadway traffic.

4.3. Summary

Tables **4-1 Summary of Opportunities** and **4-2 Summary of Constraints** summarize the key opportunities and constraints as they apply to trail segments.

Table 4-1 Summary of Opportunities by Trail Segment

Seg #	Start	End	Tourism	Viticulture education and interpretation	Access to scenic, historic and natural resources	Ecological education and interpretation	Environmental restoration	Geologic and geographic education and	Cultural resources education and interpretation	Existing and planned trail segments	Roadways	Proximity to activity areas and neighborhoods	Transportation and transit integration	Redevelopment in the City of Napa along the Napa River	Existing connections under or over Highway 29	Intact railroad right-of-way
1	Washington Street, Calistoga	Deer Park Road, St Helena	X	X	X		X	X	X	X	X	X	X		X	
2	Deer Park Road, St. Helena	Zinfandel Lane	X	X	X		X	X	X	X	X	X	X		X	X
3	Zinfandel Lane	Yountville Cross Road	X	X	X	X	X	X	X		X		X		X	X
4	Yountville Cross Road	California Avenue/ Silverado Winery	X	X			X		X	X	X	X	X		X	X
5	California Ave./ Silverado Winery	Redwood Road/ Trancas Street	X	X			X				X	X	X		X	X
6	Redwood Road/ Trancas Street	Imola Avenue					X			X	X	X	X	X	X	X
7	Imola Avenue	Highway 29					X			X	X	X	X	X	X	X
8	Highway 29	Green Island Road			X	X	X			X	X					X
9	Green Island Road	Highway 37			X	X	X			X	X	X				X
10	Highway 37	Vallejo Ferry Terminal			X	X	X			X	X	X	X			X

Table 4-2 Summary of Constraints by Trail Segment

Seg #	Start	End	Active agricultural uses	Privately owned land	Industrial activities	Sensitive wildlife habitat areas	Sensitive plant communities	Cultural resources	Designated floodways	Waterway Crossings	Roadways and roadway crossings
1	Washington Street, Calistoga	Deer Park Road, St Helena	X	X			X		X	X	X
2	Deer Park Road, St. Helena	Zinfandel Lane	X	X			X			X	X
3	Zinfandel Lane	Yountville Cross Road	X	X			X			X	X
4	Yountville Cross Road	California Avenue/ Silverado Winery	X	X			X			X	X
5	California Ave./ Silverado Winery	Redwood Road/ Trancas Street	X	X			X		X	X	X
6	Redwood Road/ Trancas Street	Imola Avenue							X	X	X
7	Imola Avenue	Highway 29			X		X		X	X	X
8	Highway 29	Green Island Road			X	X	X		X	X	X
9	Green Island Road	Highway 37				X	X		X	X	X
10	Highway 37	Vallejo Ferry Terminal							X	X	X

5. Alternative Alignment Analysis

This Chapter identifies the criteria used to evaluate proposed alignment alternatives, describes the individual alignment components, outlines the preferred alignments, and presents a recommended alignment for the Napa Valley Greenway.

A decision matrix with clearly described criteria and scoring was used to evaluate each project alternative. The evaluation criteria were based on the overall project goals and were weighted to reflect the relative importance of each category. Each criterion had a weighting factor reflecting its relative importance from zero (low benefit or negative impact) to 10 or 20 (high benefit or low negative impact) depending on the relative importance. This criterion was then used to evaluate each of the alternative alignments.

Definitions of Class I (bike path), Class II (bike lane), Class III (bike route) and unpaved bike path are described in Chapter 6 and illustrated in Figure 6-1.

5.1. Evaluation Criteria

In analyzing potential and alternative alignments, specific criteria have been applied when selecting a recommended route. These criteria are directly related to the goals and objectives of the project described earlier. The criteria used are:

5.1.1 . Most Important Criteria

Available Public Right-Of-Way/Land

One of the top priorities in evaluating alternatives for the Napa Valley Greenway is the protection of private property. Acquisition of any right-of-way for the Greenway would be purely voluntary, and much of the Greenway can be developed entirely on public property. Given this, the availability of public right-of-way is an important criterion. Alternatives that require the purchase of easements or property may involve timely and complex negotiations, plus additional costs. These projects would score lower than projects where right-of-way ownership is already by a public agency.

Impacts On Surrounding Agricultural Areas

The protection of vineyards and other agriculture in Napa Valley is a major priority. Given that many of the alignment alternatives are located adjacent to active vineyards, any option that has the potential to impact or disrupt these operations would score very low in this criterion. Some of these concerns can likely be addressed through proper operation and design of the greenway itself. Trails and bikeways have proven to be compatible with agricultural uses in California. Alignments that place the public in the middle of active agricultural fields/vineyards will score lower than those located on the periphery.

Aesthetics

The vision of the Napa Valley Greenway project is to create a quality world-class facility to compliment Napa Valley's image as one of the premier wine producing areas in the world. Ideally,

the best alternative will provide an enjoyable environment for Greenway users with good views of the valley. Alignments that offer the user scenic vistas away from busy roadways will attract substantially more people than those located on or next to busy roadways, and will score higher under this criterion.

User Safety

Conflicts with motor vehicles can be a major impediment to use by less experienced and capable users, especially recreational users, children, and the elderly. Alternatives that avoid or minimize these conflicts by being located away from busy roadways, and on separated facilities, would rate higher than on-road alignments or alignments that require crossings of busy roadways. Any crossing of Highway 29 at an unprotected location would be considered a fatal user safety flaw.

5.1.2 . Important Criteria

Residential Impacts

Any new pathway located adjacent to private properties may involve concerns about privacy and security. While research has shown that shared use paths do not have higher crime rates than surrounding areas, and privacy issues can usually be resolved through design, this is still a relatively important criteria. Alternatives that have potential impacts on security and privacy of adjacent land uses, especially residential areas, would score lower than other projects.

Use

Alternatives that will attract and benefit the greatest number and diversity of people will rate higher than those that would be used by a small number of people. Separated pathways in attractive surroundings that offer reasonable connectivity will attract many times more people than, for example, shoulders or bike lanes on a busy, high speed roadway.

Functionality / Access

People using the project for transportation purposes will resist using a facility that does not provide a reasonably direct connection to destinations, is not easily accessible, or requires changes from a multi-use path to riding on busy streets. Alignments score higher by having providing reasonably direct links and improving access to destinations throughout Napa County.

Cost/Feasibility

Cost of an alternative is always a critical component, especially where right-of-way would need to be purchased, and crossing improvements, fencing, signals, or other expensive infrastructure improvements are being considered. What are the estimated capital and operating costs for developing this alignment? Alternatives that had lower capital and operating costs, whose costs were more certain, and who would qualify more easily for available funding would score higher than those that had significant feasibility issues resulting in high costs.

Environmental Impacts

Rivers and wetlands such as the Napa River, Salvador Channel, Conn Creek, Fagan Marsh, and the Napa Sonoma Marshes Wildlife Area represent possible environmental constraints with any

proposed public access. Each alignment must be assessed as to its potential significant impacts or benefits to the environment, including wetland impacts, visual impacts, cultural resources impacts, and noise and health impacts. Alternatives that include new construction in wetland/riparian areas or new coverage of wetlands/riparian areas will score lower than alternatives that have no or fewer impacts. However, the project alternatives may also provide positive effects such as helping with environmental restoration and protection of riparian corridors, offering educational and interpretive opportunities, and by offering places for physical activity help with improving health, reducing traffic and congestion.

5.2. Alternatives and Sub-Components

The 48-mile corridor study area has been divided into ten segments for study. Some of the segments have existing or planned trail alignments and these have been incorporated into the project. These alignments are evaluated as part of the study to confirm that they are the most viable for this project. In several segments, there are several sub-option alignment opportunities. Field reviews and research were conducted to confirm existing conditions. Cross sections of the typical existing conditions for alternatives are shown on the series of Opportunity and Constraint maps and figures in Chapter 3 of this report.

The ten segments could be implemented separately or jointly over time, with each segment functioning alone or with other segments. A phasing plan is presented later in the report that provides a recommended sequencing of the segments. Each segment contains between two (2) and three (3) alternatives, generally identified as:

- Option A. West Side
- Option B. Mid-Valley
- Option C. East Side

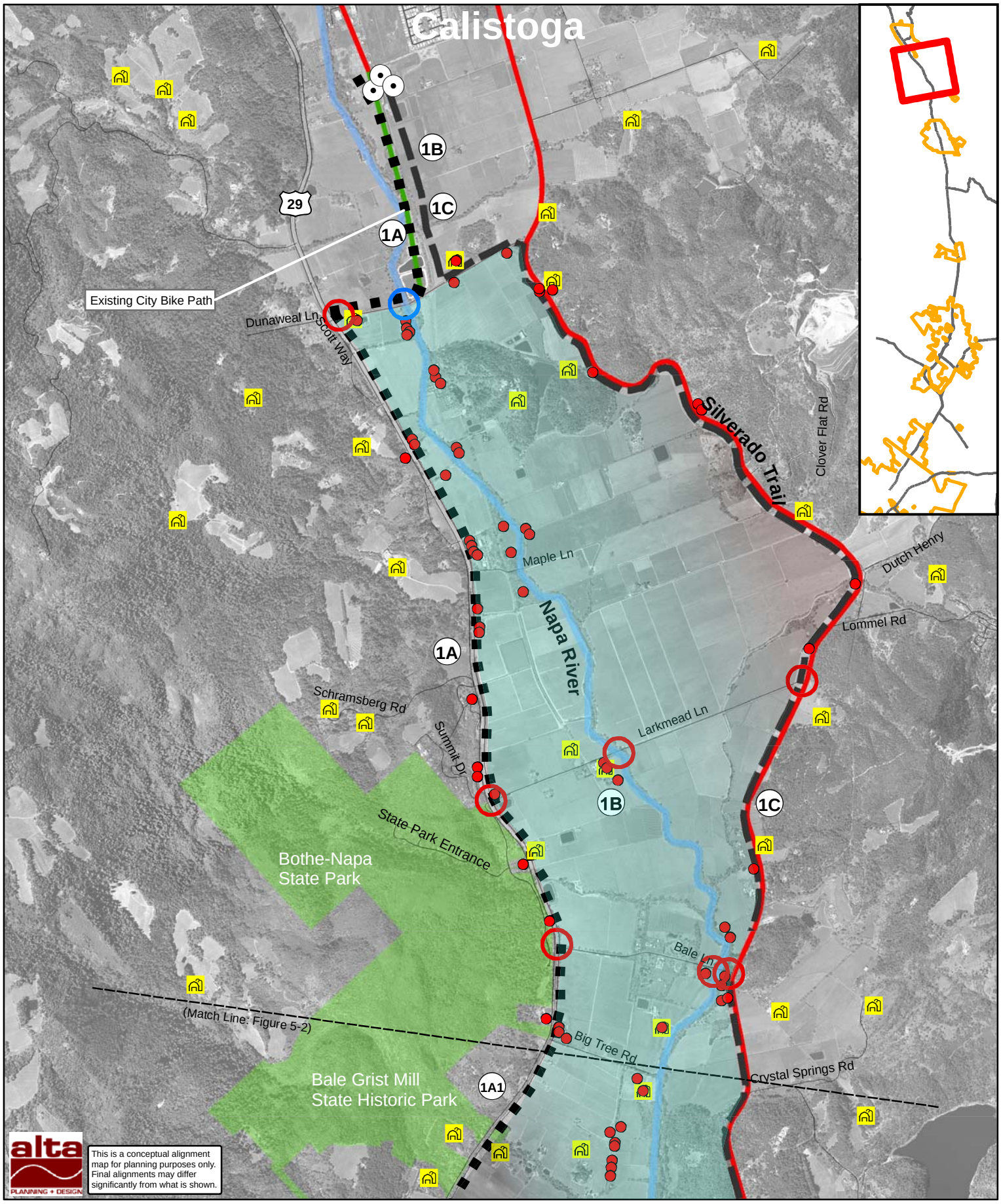
South of the City of Napa, there are generally only one or two alternatives. Since there are numerous roadways that cross the Valley between Highway 29 and the Silverado Trail, numerous sub-options involve these three main alternatives connected by these roadways. This chapter provides a summary description of each segment and sub-option, along with a ranking of these alternatives and identification of a preferred option.

Table 5-1 is a Summary of the Segment Descriptions for the three (3) primary corridor alternatives. There are also some sub options in some segments.

[Important note: This cross section refers to the estimated width that is available for the Greenway along roads and the railroad based on (a) available mapping and (b) field review. For example, it is assumed that roadways and the railroad are located in the center of their right-of-ways. In reality, conditions in the corridors change almost by the foot, with shoulders, utility poles, ditches, walls, fences, trees, and other features constantly changing, and roadways shifting continually within their right-of-ways. Since the feasibility and right-of-way needs for many of the alternatives comes down to a matter of feet and inches in some cases, additional survey work would be needed to confirm the figures used in this report.

Table 5-1: Summary of Segment Descriptions

Segment #	Jurisdiction(s)	Start	End	Length (miles)		
				A West Side	B Mid Valley	C East Side
1	Calistoga Napa County St. Helena	Washington Street, Calistoga	Deer Park Road, St Helena	6.60	6.92	7.80
2	St. Helena	Deer Park Road, St. Helena	Zinfandel Lane	3.86	3.91	3.73
3	Napa County	Zinfandel Lane	Yountville Cross Road	7.09 to 7.55	8.9 to 9.18	6.78
4	Yountville	Yountville Cross Road	California Drive/ Silverado Winery	0.84	1.32	1.13
5	Yountville Napa County City of Napa	California Drive/ Silverado Winery	Redwood Road/ Trancas Street	5.97	7.27 to 7.34	6.96
6	City of Napa	Redwood Road/ Trancas Street	Imola Avenue	3.50	3.96	4.11
7	City of Napa Napa County	Imola Avenue	Highway 29	3.03	3.97	3.85
8	Napa County American Canyon	Highway 29	Green Island Road	5.92	5.92	5.34
9	American Canyon Vallejo	Green Island Road	Highway 37	6.61	5.9	6.05
10	Vallejo	Highway 37	Vallejo Ferry Terminal	2.77	2.77	2.77



NAPA BIKEWAY FEASIBILITY STUDY

Segment 1 Map 1

Calistoga to Big Tree Rd

- Segment Endpoint
- Class I Path
- Class II Bike Lane
- Class III Bike Route
- Major Road Crossings
- Railroad
- Streams and Rivers
- Parks
- Creek and Stream Crossings
- Schools
- Wineries
- Buildings
- Option 1A1
- Option B Mid-Valley Study Zone
- Option C

Figure 5-1

0 0.2 0.4 Miles

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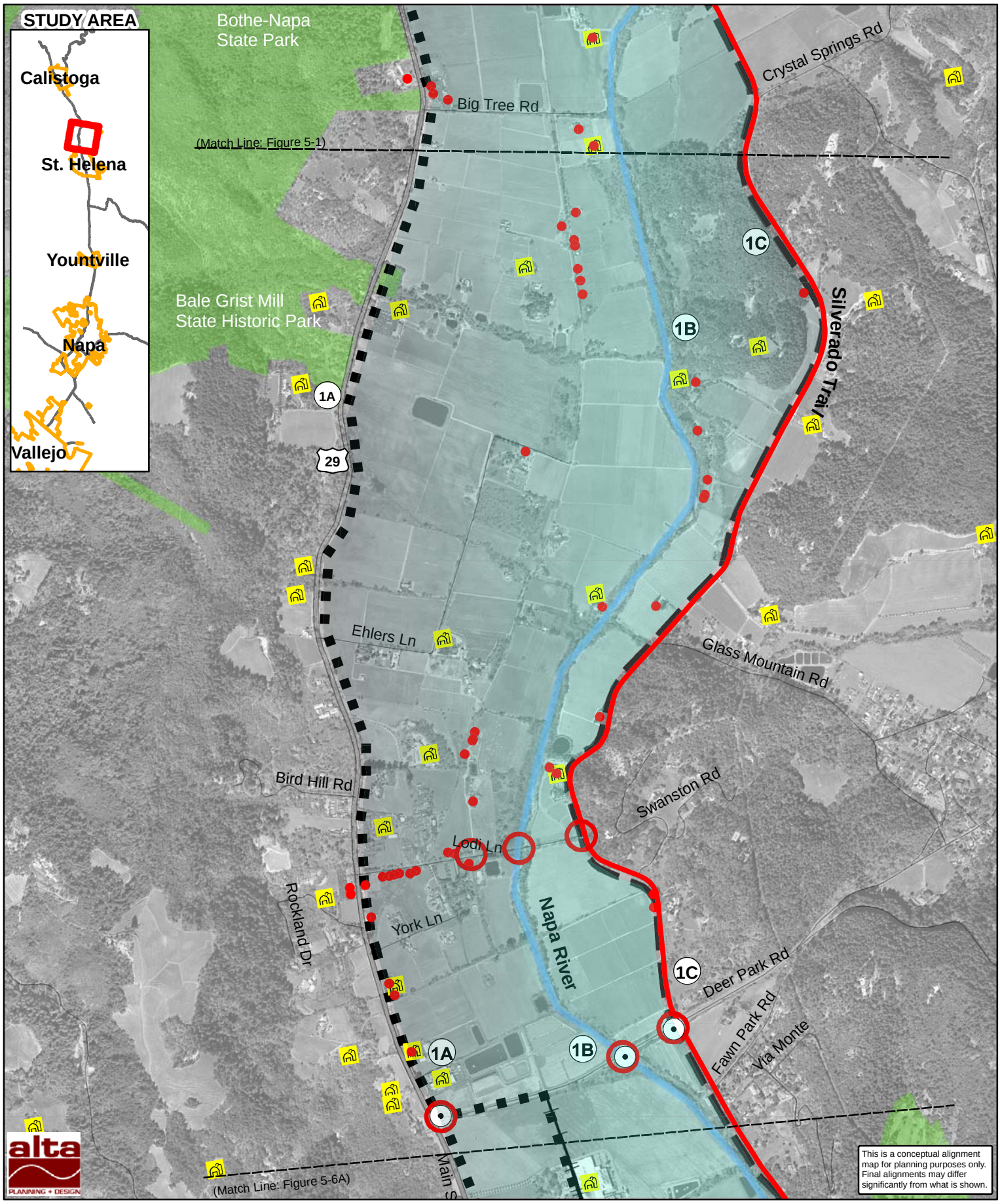

NAPA BIKEWAY FEASIBILITY STUDY

Segment 1 Map 2

Big Tree Rd to Deer Park Rd.

Segment Endpoint
Class I Path
Class II Bike Lane
Class III Bike Route
Major Road Crossings
Railroad
Streams and Rivers
Parks
Creek and Stream Crossings
Schools
Wineries
Buildings
Option 1A
Option B Mid--Valley Study Zone
Option C

Figure 5-2

Miles
0 0.1 0.2

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5.2.1 . Segment 1: Calistoga – Deer Park Road, St. Helena

All three proposed alternatives start at the intersection of Washington Street/Lincoln Avenue in downtown Calistoga, follow Washington Street south as a Class III bike route, and then utilize the existing City of Calistoga Class I Bicycle Path on the old Napa Valley Railroad right-of-way to Dunaweal Lane (0.9 miles). The three alternatives take different alignments from the termination point of the bicycle path at Dunaweal. Please refer to **Figures 5-1 and 5-2.**

Option 1A West Side

Length:	6.6 miles
Type:	Class I bike path, Class II, Class III on shared roads.
Surrounding Land Use:	Residential, Commercial, Agriculture, State Park
Jurisdictions:	City of Calistoga, Napa County, Caltrans, State Parks.

Option 1.A consists of eight sub-sections that utilize existing public lands and rights of way. The route would be a combination of Class I (Bike Path), Class II (Bike Lane) and Class III (Bike Route) bikeways.

Dunaweal Lane to Highway 29.

Dunaweal Lane is a two lane paved road with shoulders and relatively low traffic volumes but higher vehicle speeds. The public right-of-way is 60 feet wide, and the roadway itself is 32 feet,-leaving 15 feet on the north side and 13 feet on the south side of the road.

At Dunaweal Lane, the Napa Valley Greenway could be developed along the north side of Dunaweal Lane to Highway 29. The Napa Valley Greenway would consist of a ten foot wide paved Class I bike path **(Fig. 5-3: Cross Section 1).** If the pathway was located closer than 5 feet from the roadway, there would be a need to construct a barrier **(Fig. 5-3, Cross Section 2).** The Napa Valley Greenway would extend west to the intersection with Highway 29. A 125 -foot long bridge would be required to cross Napa River. Some right-of-way may be required on the west side of the riverbank.

Highway 29: Dunaweal Lane to Larkmead Road.

The Highway 29 right-of-way between Dunaweal Lane and Larkmead Lane varies between 145-160 feet, possibly the result of Caltrans acquiring land in the past for a future widening. The existing road consists of two travel lanes with occasional turn pockets, plus two 6-foot shoulders. The pavement is not centered in the right-of-way. The unused right-of-way varies between 20 feet to 56 feet of between the edge of pavement and the edge of right-of-way.

The wide Caltrans right-of-way along Highway 29 between Dunweal Lane and Larkmead Lane.

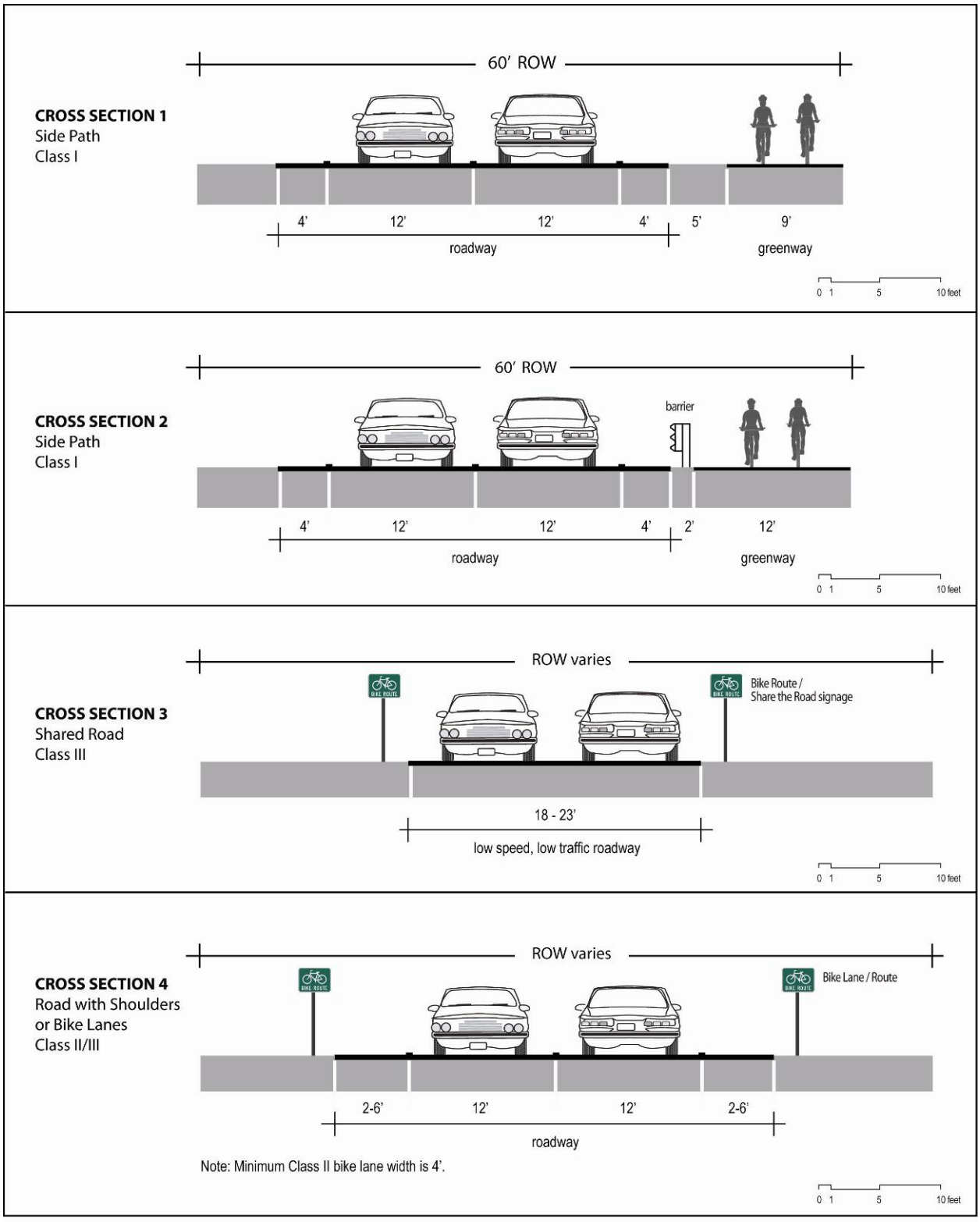

Figure 5-3. Typical Greenway Cross Sections: Roadway Corridors

The Napa Valley Greenway could be constructed on the east side of the highway within the public right-of-way between Dunaweal and Larkmead Lane **(Fig. 5-4, Cross Section 5),** set back from the roadway 10-40 feet. On the west side of the intersection of Larkmead Lane is the entrance to Bothe Napa State Park where there are picnic areas, restrooms and camping facilities including walk in camp sites available for cyclists. However, crossing Highway 29 at this location may be problematic unless safety enhancements are developed.

Highway 29: Larkmead Lane to Big Tree Road.

The Highway 29 right-of-way between Larkmead Lane to Big Tree Road width is 60 feet wide, but fencing and vineyards are set back 40 feet or more on the east side of the roadway. The roadway itself is about 24 feet plus two 6-foot shoulders. As the right-of-way is only 60 feet wide, it would be necessary to (a) develop an 8-feet wide pathway with a barrier between the path and highway **(Fig. 5-4, Cross Section 7)** that is acceptable to Caltrans, or (b) acquire 3-5 feet of right-of-way from adjoining private property owners for approximately one (1) mile on the east side of Highway 29 **(Fig. 5-4, Cross Section 6),** allowing for a 10-feet wide pathway set back 5 feet from the highway shoulder.

Highway 29 right-of-way south of Larkmead Lane.

Big Tree Road to Lodi Lane

At Big Tree Lane there are two alternatives:

Alternative 1A.1 Use Highway 29.

Napa Valley Greenway could be extended parallel to the east side of Highway 29 between Big Tree Road and Lodi Lane. This would require either (a) a barrier between the pathway and shoulders, and/or (b) acquire 3-5 feet of right-of-way from adjacent property owners. However, the right-of-way becomes more constrained and impacted by businesses and driveways .

Highway 29 ROW south of Lodi Lane Looking North, the Napa Valley Greenway could parallel road at this location.

The City of Calistoga acquired two sections of the former railroad right-of-way by Quit Claim from Southern Pacific Railroad. There are two sections between Big Tree Lane and Lodi Lane. They are not contiguous as they are separated by a section of the former railroad right-of-way acquired by a private party. The surface of the City-owned right-of-way was not intended to be permanently in public ownership, and may be sold to abutting land owners. This action would require approval of the City Council.

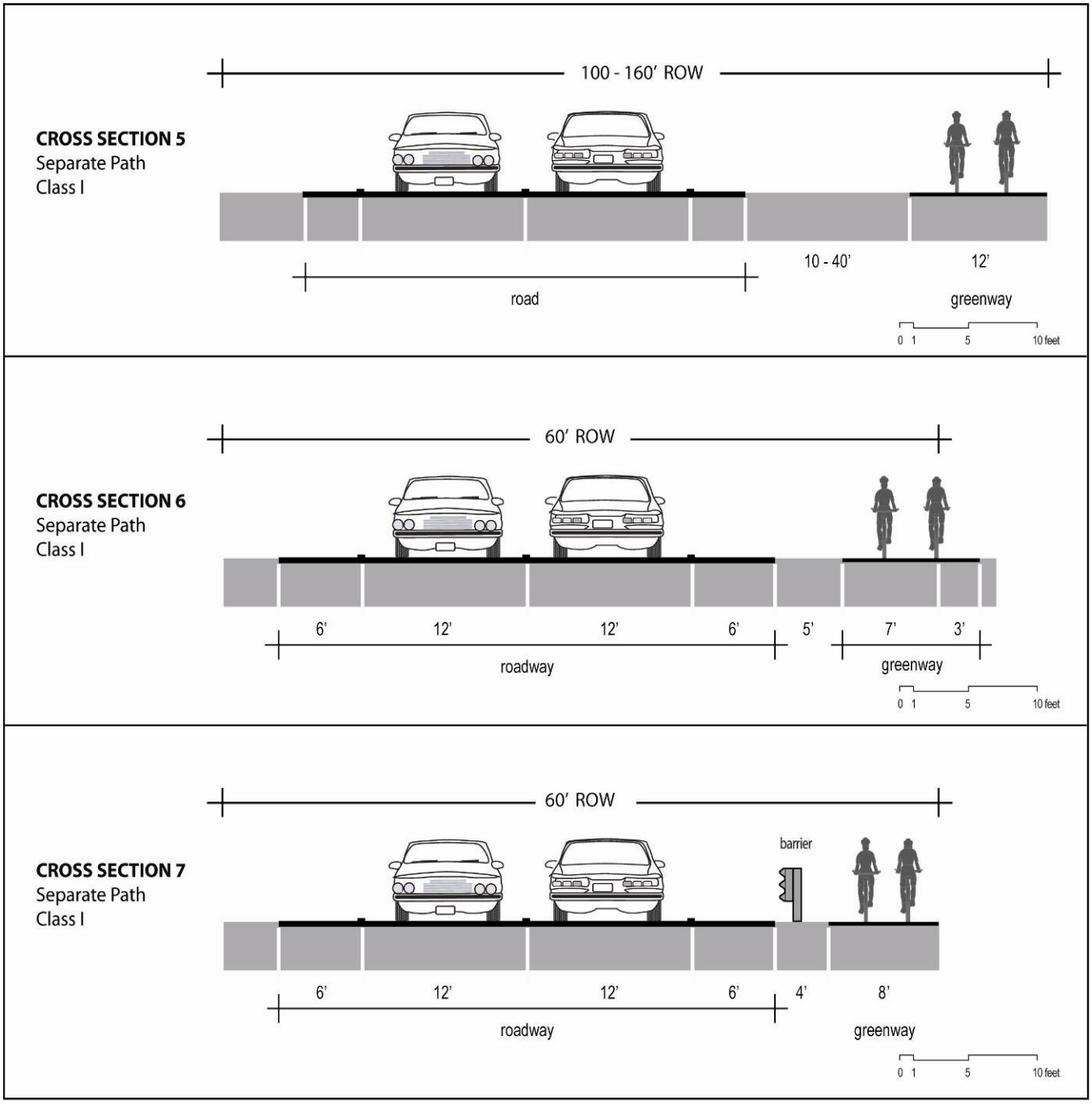

Figure 5-4. Typical Greenway Cross Sections: Roadways

Highway 29: Lodi Lane to Deer Park Road.

South of Lodi Lane, the Highway 29 right-of-way is 60 feet. The roadway itself is about 24 feet plus two 6- foot wide shoulders—leaving about 12 feet of public land on each side of the road. A field review shows that there is approximately 25 feet from the edge of shoulder to vineyards, with this area heavily wooded. Assuming there is only 12 feet of public right-of-way from the edge of shoulder, either an (a) 8-feet wide pathway could be developed with a barrier between the pathway and shoulder acceptable to Caltrans **(Fig. 5-4 Cross Section 7)** or (b) a 10-feet wide pathway set back 5 feet from the highway **(Fig. 5- 4 Cross Section 6)** could be developed which requires 2-5 feet of right-of-way from adjoining private property owners for approximately 3,200 feet on the east side of Highway 29. Although much of the existing development is set back from Highway 29, routing the Napa Valley Greenway will require removal of some non-native trees (Eucalyptus) and would involve careful routing around existing native trees or mitigation for their removal. Most of the right-of-way on the east side of pavement of Highway 29 is at a lower elevation. It may be necessary to construct cross sections of retaining walls with guardrail.

Table 5-2: Segment 1.A West Side - Summary

Option A (West Side)	Length in Miles	On Street LF	Bike Path LF	Maximum ROW Needed SF
Washington St to Dunaweal lane	0.87	0	4,569	0
Dunaweal Lane to Big Tree Road	3	0	15,840	21520
1A.1 Big Tree Road to Lodi Lane on 29	2.25	0	11,880	47520
Sub-Option Lodi Lane to Highway 29 on road to York Lane	0.15	1,280	536	2,144
Sub-Option. Lodi Lane to Highway 29 using abandoned right-of-way to York Lane	0.25	600	712	8545
Highway 29: Lodi Lane to Deer Park Road.	0.48	0	2,220	8,880

Option 1B Mid-Valley

Length: 6.92 miles
Type: Class I bike path.
Surrounding Land Use: Residential, Commercial, Agriculture, State Park
Jurisdictions: City of Calistoga, Napa County, Caltrans,

The Mid-Valley Option (1.B), as the name infers, would be located between Highway 29 and the Silverado Trail. Other than the City of Calistoga water pipeline property described previously, there are no other mid-valley publicly owned north-south corridors including roadways in this area. While there are some natural features (such as the Napa River) and manmade features (the abandoned Napa Valley Railroad), all of these are on private property and predominately in active vineyard or winery use. Since locating the Napa Valley Greenway on private property would be entirely voluntary, it would be up to each individual property owner in the corridor to decide (a) whether the Greenway was appropriate on their property and (b) the location of the Greenway.

Dunaweal Lane to Big Tree Road

This corridor currently consists of active vineyards, large and small wineries, and residences. The primary physical features are the Napa River and tributaries and the abandoned railroad right-of-way now in private ownership. The railroad right-of-way is often used as a maintenance road with the City of Calistoga sub-surface water pipeline. Major wineries include Sterling Vineyards and the Frank Family Vineyards. This option requires acquiring easements from private property owners. The City of Calistoga owns underground easement on a portion of the route, between Maple Lane and Dunaweal Lane, but do not have surface rights. Although the alignment along the Napa River would offer the highest aesthetic quality, there are several structures (such as winery buildings and a few private residences) on this alignment that would require re-routing to avoid potential conflicts with residents. The river alignment would bring the segment to an end at Big Tree Road.

It may be possible to locate the Greenway on existing maintenance/farm access roads while maintaining separate access for farm equipment and also providing low-impact barriers to keep users out of the vineyards **(Fig. 5- 5 Cross Section 8).** The Greenway would be operated in a manner to minimize or eliminate concerns about safety, security, and liability, including use of screening, patrols, and various indemnification techniques. It may also be possible for the Greenway to be closed or otherwise controlled based on agricultural needs and operations. The Greenway could be developed on as little as 12 feet of right-of-way, with adjacent farm access roads. Low barriers possibly planted with vines could be used to help channelize users **(Fig. 5-5 Cross Section 9).**

Big Tree Road to Deer Park Road

From Big Tree Road south, the Mid-Valley option would follow the alignment being proposed for the West Option, i.e., it would use the existing City of Calistoga water pipeline corridor between Big Tree Road and Lodi lane along with privately-owned segments. From Lodi Lane to Deer Park Road, the Mid-Valley Option could either follow the Napa River or follow the West Side Option along Highway 29.

Alternative: Use City of Calistoga Property and Easements.

To avoid this section of Highway 29 and to provide a more attractive experience for trail users, a potential option would have the Greenway turn east on Big Tree Road and connect to the abandoned railroad right-of-way owned by the City of Calistoga for its water pipeline. Big Tree Road is a low traffic, low speed cul-de-sac that serves local residents.

Table 5-3: Segment 1B Mid Valley - Summary

Option B (Mid Valley)	Length in Miles	On Street LF	Pathway LF	Maximum ROW Needed SF
Washington St to Dunaweal lane	0.87	0	4,569	0
Big Tree Road to Lodi Lane on Easement	2.56	7920	5,597	0
Dunaweal Lane to Deer Park Road.	6.05	0	33,173	398,077

Option 1C East Side

Length: 7.80 miles
Type: Class II and Class I Bike Path
Surrounding Land Use: Residential, Commercial, Agriculture
Jurisdictions: City of Calistoga, Napa County

The East Side option explores the opportunity to create a Class I bike path or use the existing Class II bike lanes on the Silverado Trail. Many cyclists currently use the Silverado Trail as a north-south bike route. The Silverado Trail has shoulders or bike lanes along much of its length. It is the preferred alternative to the traffic congestion on Highway 29. However the Silverado

Trail is ranked twenty-fourth for the most bicycle injuries and fatalities of any roads in the nine Bay Area counties by the California Highway Patrol (1997-2007), possibly reflecting the combination of high-speed vehicle traffic mixed with winery touring bicyclists.

Silverado Trail: Example of shoulder restriction by geologic feature

Dunaweal Lane to Silverado Trail

Option 1C. would begin at the end of the City of Calistoga's existing Class I bike path at Dunaweal Lane. Dunaweal Lane is a two lane paved road with shoulders. The public right-of-way is 60 feet wide, and the roadway itself is 32 feet.

There are private properties and a winery to the east on the north side of Dunaweal Lane including driveways and structures. It is recommended that the roadway be striped for Class II bike lanes **(Fig. 5-3, Cross Section 4)** from the end of the City of Calistoga bike path to the Silverado Trail approximately 2500 feet. There would be the need to develop an at-grade roadway crossing or safety warnings of Dunaweal Lane to allow for south/east bound cyclists.

Silverado Trail from Dunaweal Lane to Deer Park Road

Option 1.C would begin at the Silverado Trail and extend south on the west side of the Silverado Trail to Deer Park Road. The Silverado Trail is a two lane paved road with shoulders or bike lanes. These shoulders/bike lanes vary in width from 2 feet to 7-feet in width. The public right-of-way is

60 feet wide, and the roadway itself is 38 feet. at it is widest, including the bike lanes. This leaves only about 10-11 feet of 'excess' right-of-way for a pathway.

In order to develop a separate the Napa Valley Greenway on the west side of the Silverado Trail, 2 to 5 feet of additional right-of-way would be needed (Fig. 5-4, Cross Section 6). The Napa Valley Greenway would consist of a ten foot wide paved Class I bike path set back 5 feet from the roadway.

There are several locations along the Silverado Trail where there are geologic features or buildings and structures that would obstruct the development of a separated path even if private property owners were willing to sell additional right-of-way. Given the combination of topography, curvature, and developments in this area a Class I bike path is problematic. Some of the Napa Valley Greenway may require special structures such as retaining walls. Given this, it is recommended that only the existing shoulders and Class II bike lanes be considered for this option.

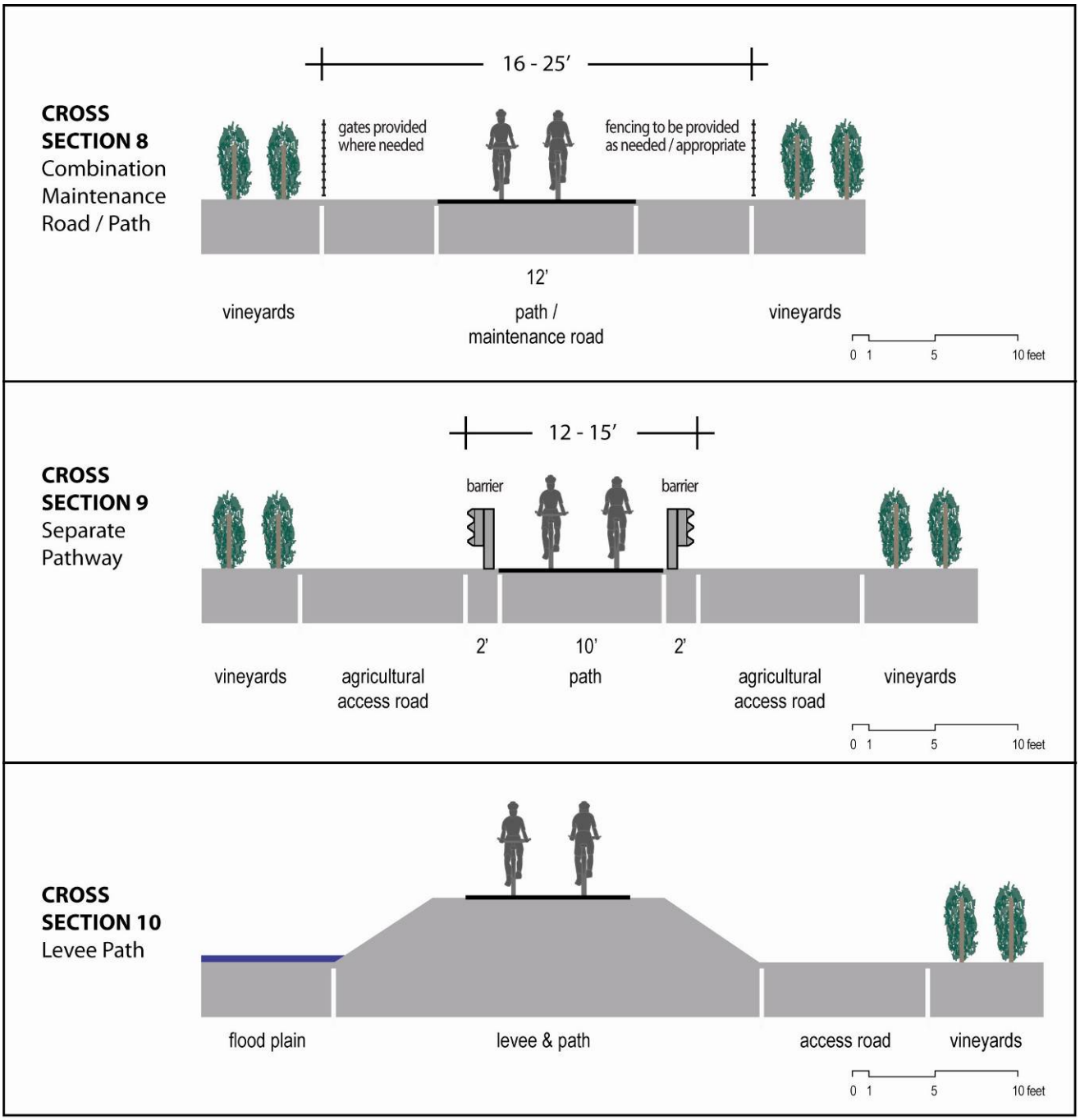

Figure 5-5. Typical Greenway Cross Sections: Separate Pathways

Table 5-4: Segment 1C East Side- Summary

Option C (East Side)	Length in Miles	On Street LF	Pathway LF	Maximum ROW Needed SF
Washington St to Dunaweal lane	0.87	0	4,594	0
Dunaweal Lane to Silverado Trail.	0.47	2,500	0	0
Silverado Trail: Dunaweal Lane to Deer Park Road.	6.46	0	33,264	166,320

Evaluation Of Alternatives

Segment 1 between Calistoga and Deer Park Road/St. Helena covers some of the most beautiful scenery in Napa Valley, if not California. In addition, the two communities of Calistoga and St. Helena are of the perfect distance to be linked by a greenway, allowing residents to walk or bicycle for recreation, work, school, and exercise. It is very likely that a well-designed greenway in this corridor will be used by visitors who would have otherwise driven from winery to winery. The Greenway would attract the kind of visitors to the Valley who appreciated the natural beauty, stayed to shop and dine in local establishments, and stay for 2-3 days rather than drive in and out the same day. In other words, the Greenway could be the key to preserving what makes the Valley special to those who live and work there, while also supporting the wineries and other businesses.

In evaluating the alternatives in this corridor, it is apparent that the East Side option (Option C1) on Silverado, while having the lowest impacts, also fails to meet the basic goals of the project of providing a separated Greenway that will be used by a wide variety of people and offer aesthetic and safety enhancements. This leaves the West Side (A1) and Mid-Valley (B1) alternatives. It is assumed that a Mid-Valley option would only move forward with the full support of property owners and the community, and only if the Greenway could be located, designed, and operated to minimize or eliminate environmental, private property, and agricultural impacts. The West Side option would be the preferred option if the property owners and/or community wished to keep the Greenway entirely on public property.

As can be seen in Table 5-5, Options 1A and 1B score close to each other, with the trade-offs between alternatives very clear. Therefore, it is recommended that the NCTPA and local agencies work with local property owners and the community to determine if a Mid-Valley option is feasible and acceptable. This may require additional feasibility and design work beyond the scope of this plan. At the same time, it is recommended that right-of-way acquisition efforts also be undertaken on the West Valley option with Caltrans and others.

Ultimately, the selected alignment is likely to have more to do with the availability of property than with any specific attribute of the alignment itself.

Table 5-5: Segment 1 Evaluation of Alternatives

Napa Valley Greenway Segment Evaluation		SEGMENT # 1		
Criteria	**Criteria Weight**	**Option A West Side**	**Option B Mid-Valley**	**Option C East Side**
Right-of-way	1 - 20	15	7	10
Agricultural Impacts	1 - 20	12	10	20
Aesthetics	1 - 20	8	20	1
User Safety	1 - 20	14	16	12
Residential Impacts	1 - 10	7	3	2
Usage	1 - 10	8	10	2
Functionality	1 - 10	7	8	10
Cost/Feasibility	1 - 10	4	2	4
Environmental Impacts	1 - 10	7	5	8
	Score	82	81	69

West Side Option (1A)

- Could be located entirely on public property
- Offers some good aesthetic experience to users
- Would require Caltrans approval of pathway and proposed barrier
- Some nearby residential uses at the end of the alignment

East Side Option (1C)

- Could potentially be on some public right-of-way, although private land may be needed
- Busy road with some shoulders and used by experienced cyclists.
- Would require 5-feet setback or barrier in narrow sections.

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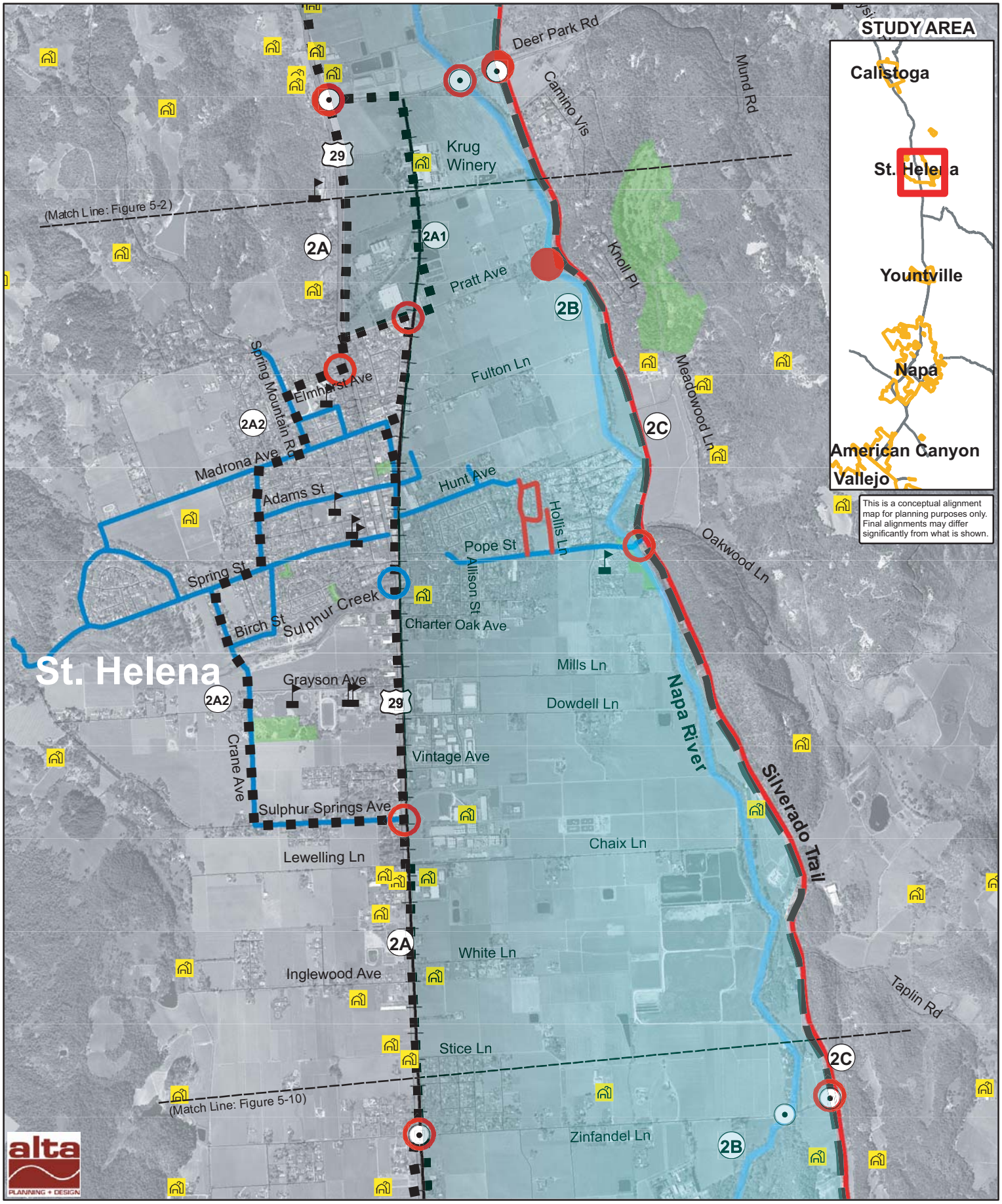
STUDY AREA
Calistoga
St. Helena
Yountville
Napa
American Canyon
Vallejo
This is a conceptual alignment map for planning purposes only. Final alignments may differ significantly from what is shown.
(Match Line: Figure 5-2)
(Match Line: Figure 5-10)
Deer Park Rd
Camino Vis
Mund Rd
Krug Winery
29
2A
2A1
2A2
2B
2C
Pratt Ave
Knoll Pl
Fulton Ln
Meadowood Ln
Spring Mountain Rd
Elmhurst Ave
Madrona Ave
Adams St
Hunt Ave
Hollis Ln
Pope St
Oakwood Ln
Spring St
Birch St
Sulphur Creek
Allison St
Charter Oak Ave
St. Helena
Grayson Ave
Mills Ln
Dowdell Ln
Napa River
Silverado Trail
Crane Ave
Vintage Ave
Sulphur Springs Ave
Chaix Ln
Lewelling Ln
White Ln
Inglewood Ave
Taplin Rd
Stice Ln
Zinfandel Ln
alta
PLANNING + DESIGN
NAPA BIKEWAY FEASIBILITY STUDY
Segment 2
Deer Park Rd. to Zinfandel Ln
Segment Endpoint
Class I Path
Class II Bike Lane
Class III Bike Route
Major Road Crossings
Railroad
Streams and Rivers
Parks
Creek and Stream Crossings
Schools
Wineries
Option 1A1
Option B Mid--Valley Study Zone
Option C
Figure 5-6A
Miles
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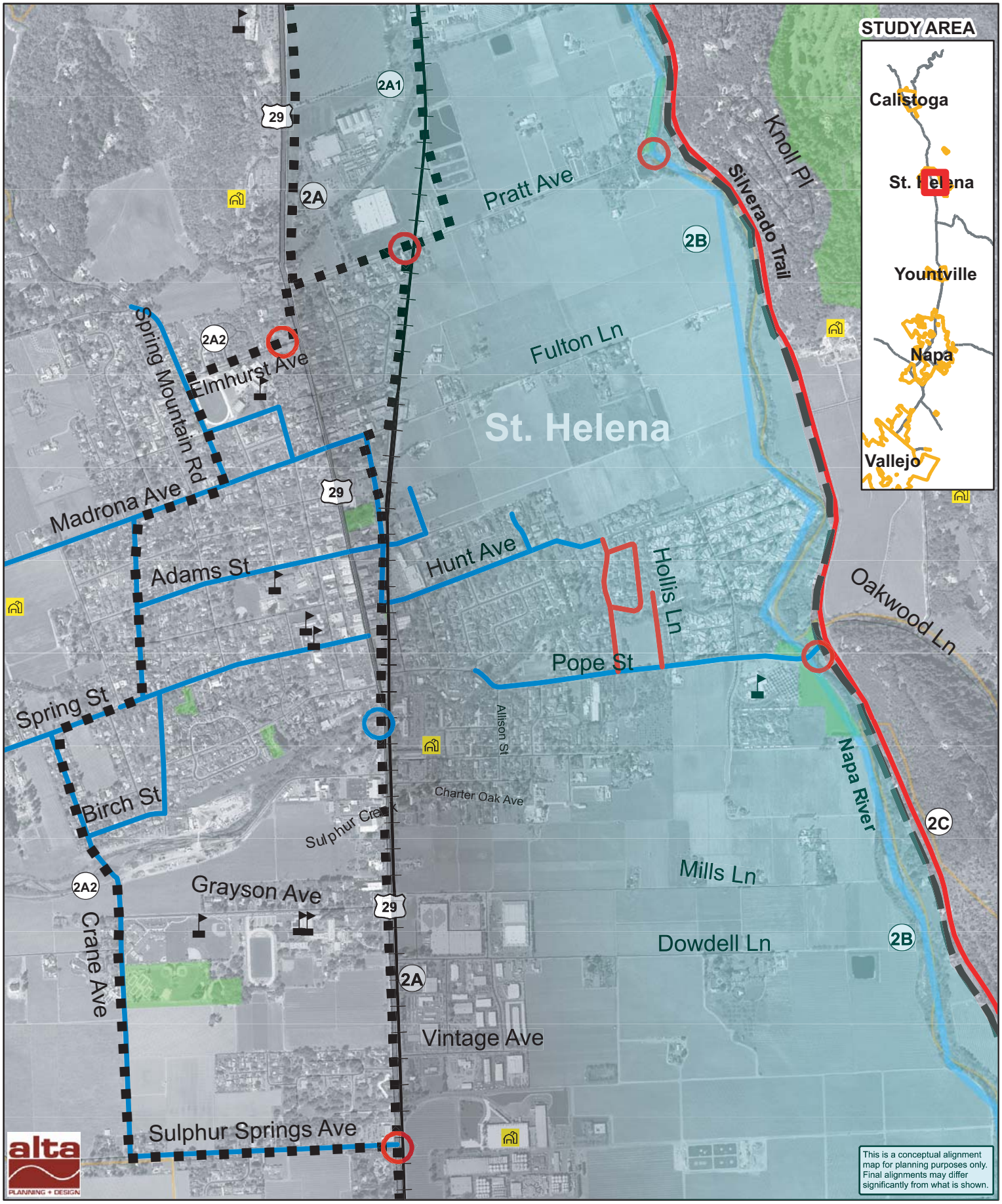
STUDY AREA
Calistoga
St. Helena
Yountville
Napa
Vallejo
St. Helena
Pratt Ave
Knoll Pl
Silverado Trail
Fulton Ln
Spring Mountain Rd
Elmhurst Ave
Madrona Ave
Adams St
Hunt Ave
Hollis Ln
Oakwood Ln
Pope St
Spring St
Allison St
Charter Oak Ave
Sulphur Creek
Napa River
Birch St
Mills Ln
Grayson Ave
Crane Ave
Dowdell Ln
Vintage Ave
Sulphur Springs Ave
2A1
2A
2A2
2B
2C
29
This is a conceptual alignment map for planning purposes only. Final alignments may differ significantly from what is shown.
alta
PLANNING + DESIGN
Segment Endpoint
Class I Path
Class II Bike Lane
Class III Bike Route
Major Road Crossings
Railroad
Streams and Rivers
Parks
Creek and Stream Crossings
Schools
Wineries
Option 1A1
Option B Mid--Valley Study Zone
Option C
NAPA BIKEWAY FEASIBILITY STUDY
St. Helena
Figure 5-6B
Miles
0
0.09
0.18

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5.2.2 . Segment 2: Deer Park Road, St. Helena, to Zinfandel Lane

Segment 2 extends from Deer Park Road on the St. Helena town limits to Zinfandel Lane south of the town, and consists of four sub sections that utilize mostly existing pubic rights of way. The route would be a combination of Class I (Bike Path), Class II (Bike Lane) and Class III (Bike Route) bikeways. This segment could be developed as a stand-alone project primarily serving St. Helena residents and visitors. **(See figures 5-6A and 5-6B)**

Option 2A West Side

Length:	3.86 miles
Type:	Class I bike path, Class II, Class III on shared roads.
Surrounding Land Use:	Urban, commercial, residential, wineries, vineyards.
Jurisdictions:	City of St Helena, Napa County, Caltrans.

Deer Park Road to Pratt Avenue.

Segment 2A. begins at Deer Park Road and extends to Pratt Avenue approximately three quarters of a mile south. Beginning at Deer Park Road the Greenway would continue along the east side of Highway 29 for half a mile past the historic Charles Krug Winery (now Peter Mondavi). The existing Highway 29 Right-of-way in this area is wider than 60 feet wide, with an existing pathway located about 20 feet from the shoulder edge. The proposed Napa Valley Greenway would replace and enhance the City of St Helena's existing 5-foot wide bike path, replacing the surface with asphalt and widening the pathway to 10 feet.

Existing St Helena Bike Path looking north.

Approximately 200-feet north of the York Creek bridge, the City's bike path ends. Upon entering the downtown area of St. Helena at York Creek, north of Pratt Avenue, the existing Class I bike path ends and becomes a sidewalk. At the end of the City Bike Path, it is recommended that the existing sidewalk on the east side of the street be widened to 8-13 feet to Pratt Avenue. This may require the removal of on-street parking, moving of curbs, and/or the acquisition of right-of-way.

As an alternative to 2A in this segment, Alternative 2A.1 would connect to Pratt Avenue as follows:

Alternative 2A.1 Deer Park Road to Pratt Avenue via railroad right-of-way.

From Highway 29, the route would follow Deer Park Rd. as a Class III bike route to the Napa Valley Wine Train right-of-way.

The abandoned railroad right-of-way from Deer Park Road runs south for three quarters of a mile through the Charles Krug Winery to Pratt Avenue. The Napa Valley Wine Train owns the right-of-way that runs through the Winery, but does not operate any service on this section of track. Although the right-of-way passes through the winery operation, a route through this area might be a potential tourist route/destination. South of the winery the route could be located either on the railroad corridor or on an agricultural access road. At Pratt Ave., the route would either return to

Highway 29 (segment 2A) on Class II bike lanes or a Class III bike route, or, continue south on the railroad right-of-way.

Pratt Avenue to Charter Oak Avenue (downtown St. Helena)

From Pratt Avenue the Greenway could continue south on the railroad right-of-way. St. Helena is likely to be the start or end point for most people using the Greenway in this vicinity. Residents will be headed to their homes or local schools and businesses, while visitors head for a trailhead, restaurants, or other destinations. As such, people walking on the Greenway are likely to continue down Main Street through downtown St. Helena. While Main Street has heavy traffic most of the time, it is slow moving and bicyclists appear to use this route to get through town. However, less experienced bicyclists would need to be given an alternative to riding on this busy roadway.

The preferred routing for less experienced bicyclists through St. Helena would be to route them east on Pratt Avenue to the railroad corridor (Class II bike lanes or Class III bike route), and then develop a new Class I bike path within the railroad corridor .3 miles to Fulton Lane **(Fig. 5-7 , Cross Section 12).** It appears that there is room on either side of the current tracks to provide a 9 feet wide pathway while staying at least 8.5 feet from the track centerline and avoiding equipment.

At Fulton Lane, bicyclists would transfer onto Railroad Avenue, a two-lane street with on-street parking and lower traffic volumes and speeds (Class III bikeway, **Fig. 5-3 Cross Section 3**). Railroad Avenue ends at Hunt Street, where a new Class I bike path would be developed within the railroad right-of-way **(Fig. 5-7, Cross Section 12).** This would extend across Pope Street and require a new bridge across Sulphur Creek, replacing the existing pedestrian walkway. This short segment has various constraints, including railroad equipment, slopes, and trees, yet will provide a critical bikeway connection into St. Helena.

Main Street

If for some reason adequate safety enhancements cannot be made on the West Side Route, or property cannot be leased/acquired on the East Side Route, it is recommended to simply use Main Street as the Greenway route through downtown St. Helena. This may require minor signage/striping improvements. The character of Main Street changes at the Sulphur Creek bridge. At this location, both Highway 29 and the Napa Valley Wine Train cross Sulphur Creek and then run parallel to each other.

As an Alternative to 2A in this segment, Alternative 2A.2 would use an existing network of bike routes on the west side of St. Helena:

Alternative 2A.2 On Street west side of St. Helena.

The existing network of bikeways on the west side of St. Helena includes several city streets (Elmhurst-Spring Mountain-Madrona-Alyn Street-Spring Street- South Crane- Sulphur Springs), and is very circuitous. It would also require bicyclists to cross Highway 29 at an unprotected location (fatal flaw). This route 2A.2 can be seen on Figure 5-6A and 5-6B following an existing Class III bike route through town. If safety improvements could be made at Elmhurst, this west side route could serve as an alternative if other alternatives were not feasible.

Charter Oak Avenue-Chaix Lane

Highway 29 and Wine Train ROW south of Sulfur Creek.

Other than the west side Class III bike route described earlier that requires bicyclists to cross Highway 29 at an unprotected crossing, the only other feasible route through St. Helena would be to locate the Napa Valley Greenway along the east side Highway 29 between the railroad tracks and Highway 29 from Charter Oak Avenue, 550-feet south of the Sulphur Creek bridge **(Fig. 5-7, Cross Section 11)** to Chaix Lane. There is also an existing 5-feet wide sidewalk along most of the east side of Highway 29 within the City limits. See photo on left.

Caltrans is in the process of planning a road channelization project for a three mile stretch of Highway 29 between the Sulphur Creek bridge in downtown St. Helena to Mee Lane, a mile south of the Segment 2 boundary. The plan is to create a left hand turn lane in this stretch of highway, consisting of three 12-feet wide travel lanes. There will be 8-feet wide shoulders on either side plus 4-feet on each side for outsloping and grading. The 8-feet wide shoulders will narrow to 4-feet in some locations along the length depending on obstacles such as trees. The shoulder will also serve as a Class II bike lane. The right-of-way width will be 60-feet.

Although Caltrans owns sufficient right-of-way along most of the affected corridor, much of the right-of-way on the west side of Highway 29 contains existing commercial development and significant trees including some heritage oak trees. As a result Caltrans is acquiring additional right-of-way from the Napa Valley Wine Train on the east side to shift the alignment. In some cases the right-of-way acquisition involves only a few feet and the operators of the Napa Valley Wine Train have informed Caltrans that they require a 15-feet separation from the center of their track to the edge of the highway. The right-of-way between the highway shoulder and railroad track centerline varies considerably in this area.

Chaix Lane and Highway 29. End of City sidewalk.

For most of the corridor, there is about 32 feet from the roadway edge to track centerline, allowing a 12 feet wide pathway to be developed **(Fig. 5-8, Cross Section 14)** with ample setbacks. However, where the proposed left turn lane will be constructed the highway will move up to 12 feet towards the tracks. In this case, there will be a need to provide a barrier between the bike path and shoulder **(Fig. 5-8, Cross Section 15).**

There may be an opportunity to use excess Caltrans right-of-way on the west side by developing the bike trail in such a manner to go around the heritage trees (**Fig. 5-9 Cross Section 16b**). Depending

on the final configuration of the Caltrans improvements, there would also be a need to acquire some right-of-way from adjacent property owners.

The Caltrans channelization project could significantly reduce the available width in this area and this option will have to be integrated into Caltrans plans to become feasible.

Chaix Lane - Zinfandel Lane

From Chaix lane to Zinfandel Lane, the Option 2A would continue to run between the railroad tracks and highway **(Fig. 5-8, Cross Sections 14-15).**

It may be possible to locate the pathway on the west side of the tracks. A 9-feet wide pathway could be developed within the railroad right-of-way and still leave 8.5 feet to the track centerline. However, the Caltrans channelization project could significantly reduce the available width in this area and this option will have to be integrated into Caltrans plans to become feasible.

Table 5-6: Segment 2A West Side - Summary

Option A (West Side)	Length in Miles	On Street LF	Pathway LF	Maximum ROW Needed SF
Deer Park Road to Zinfandel Lane	3.86	1,500	19,303	94,404

Option 2B Mid-Valley

Length: 3.91 miles
Type: Class I bike path.
Surrounding Land Use: Residential, Agriculture,
Jurisdictions: City of St Helena, Napa County.

As described in Segment 1, the alignment for the Mid-Valley Option (2B) is dependent on the approval and input of the local property owners. Potential alternatives include the Napa River **(Fig. 5-5, Cross Section 10),** the Napa Wine Train right-of-way between Deer Park and Pope Street. The Napa River option could follow Pratt Avenue and connect to about 900 feet of City of St. Helena owned property that parallels the Napa River. At this location heading south along the Napa River, the City's Bikeway Plan shows a continuous Proposed Bikeway from Pratt Lane to Pope Street. At present most of this alignment would be on existing privately owned land with the exception of a city owned parcel, Stonebridge Park on the north side of Pope Street. The Napa Valley Greenway would cross Pope Street and be constructed on another city owned property, Wappo Park, for approximately 900 feet. From Wappo Park south, the Napa Valley Greenway would follow the Napa River until it meets the east end of Chaix Lane and the City's Wastewater Treatment Plant.

City owned Parcel along Napa River Stonebridge Park

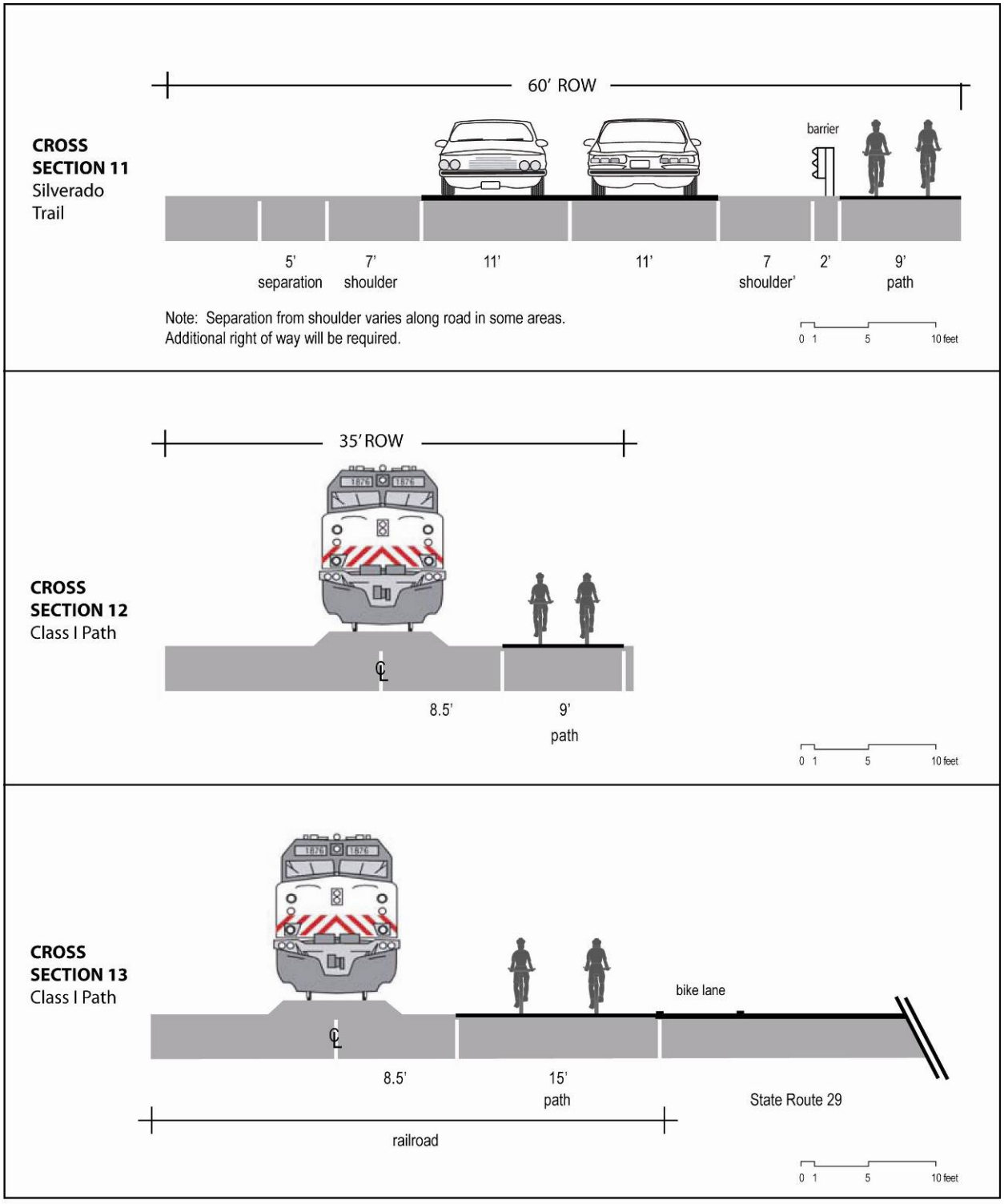


Figure 5-7. Napa Valley Greenway Typical Cross Sections

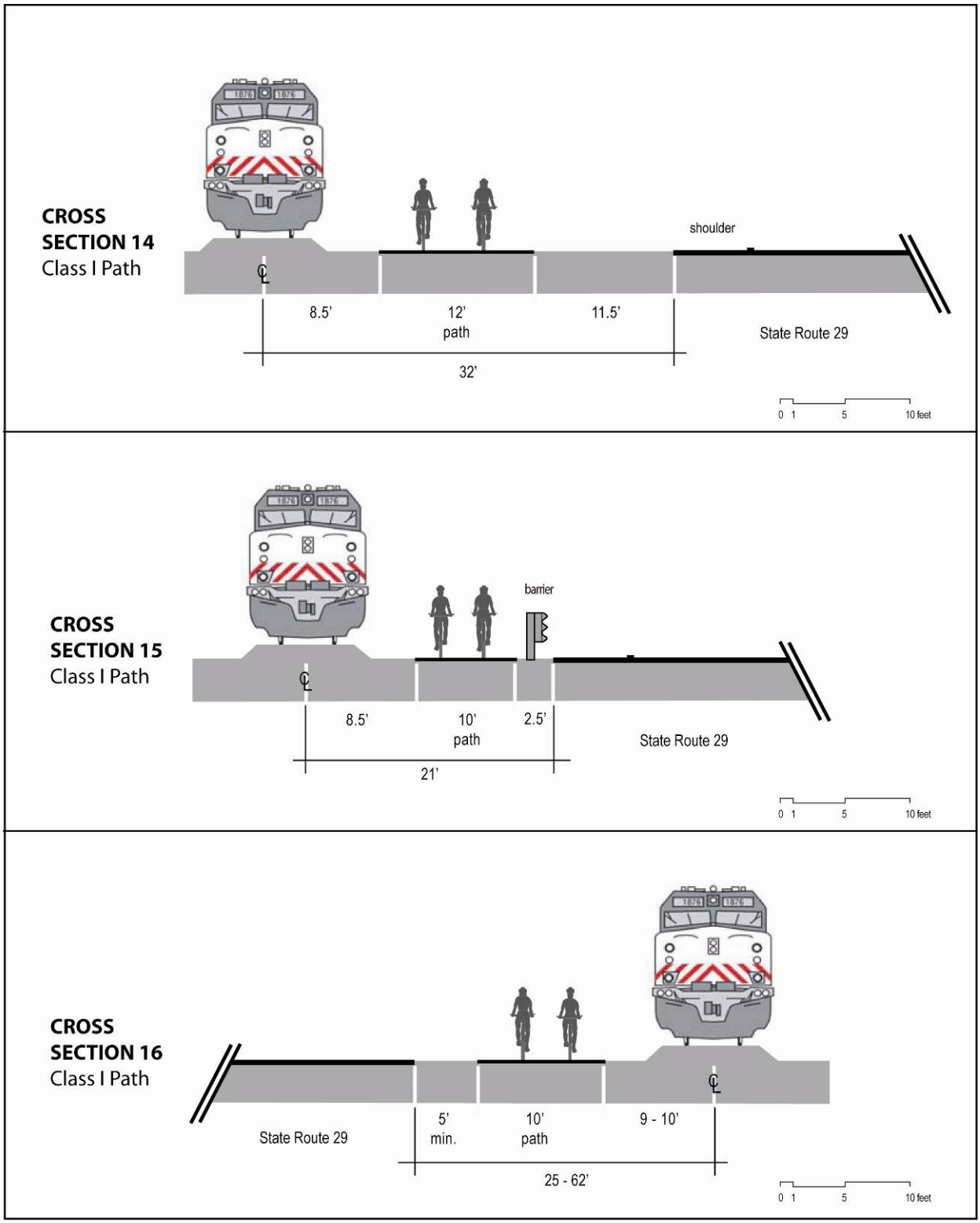


Figure 5-8. Napa Valley Greenway Typical Cross Sections

The Mid-Valley alignment could proceed around the perimeter of the wastewater treatment plant, along the Napa River, connecting to an existing public-easement access road that comes out on Zinfandel Lane. The access road entry on Zinfandel is shared with a private residence, and in fact looks like a driveway into a private home.

Table 5-7: Segment 2B Mid Valley - Summary

Option B (Mid Valley)	Length in Miles	On Street LF	Pathway LF	Maximum ROW Needed SF
Deer Park to Zinfandel Lane	3.91	0	21,859	208,814

Option 2C: East Side

Length: 3.73 miles
Type: Class I bike path.
Surrounding Land Use: Residential, Agriculture,
Jurisdictions: Napa County

Option 2C would consist of either (a) the existing Class II bike lanes or (b) a new Class I bike path parallel to the Silverado Trail from Deer Park Road to Zinfandel Lane **(Fig. 5-4, Cross Section 6).** As indicated in 1.C, the Silverado Trail alignment would involve developing a parallel bike path on the west side of the road. There is approximately 11 feet of right-of-way available. The bike path would consist of a ten foot wide paved Class I bike path with two 2-foot shoulders. There would be a 5-foot wide separation from the edge of the existing road pavement except in constricted areas where a barrier in lieu of a 5-foot separation from edge of pavement would be installed. The construction of the bike path would require purchasing a 5 to 8-foot easement along the entire west side of the Silverado Trail.

Silverado Trail: Example of topographic and geologic features that constrain the right-of-way south of the Pope Street Intersection.

Right-of-way limitations in this area consist of topographic and geologic features that constrain the right-of-way and limit opportunities to locate the alignment of a Class I bike path within the right-of-way. In addition, in Segment 2, there are two Cross Sections where the alignment parallels the Napa River. These physical constraints limit the ability to locate the Napa Valley Greenway along the Silverado Trail.

Table 5-8: Segment 2C East Side - Summary

Option C (East Side)	Length in Miles	On Street LF	Pathway LF	Maximum ROW Needed SF
Deer Park Road to Zinfandel Lane	3.73	0	19,694	98,528

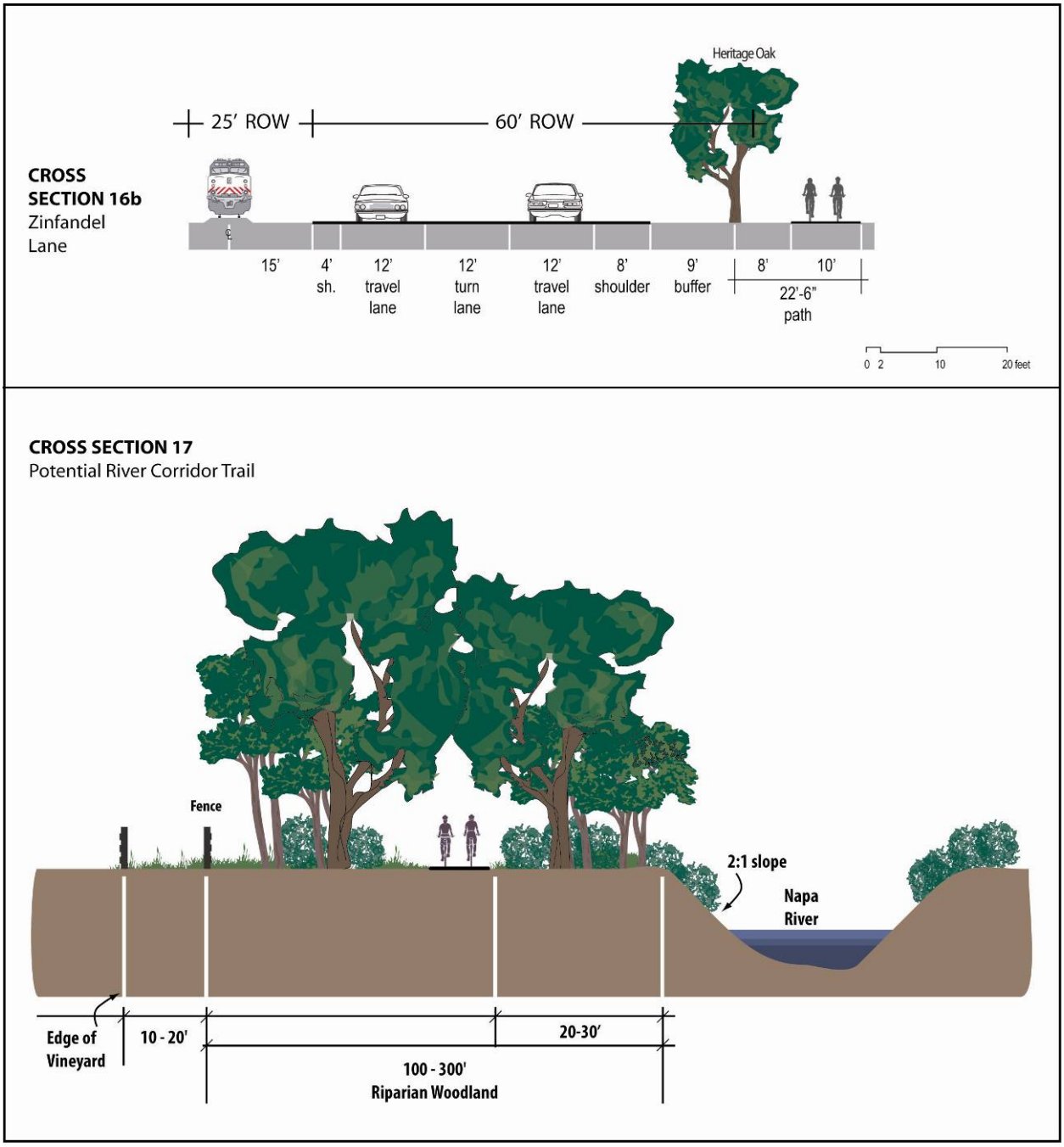


Figure 5-9. Napa Valley Greenway Typical Cross Sections

Evaluation Of Alternatives

Segment 2 between Deer Park Road and Chaix Lane in and around St. Helena includes wide-open vineyards along with small town neighborhoods and the St. Helena Downtown. This segment, if developed alone, would still serve St. Helena residents and visitors, providing connections to work and school, and also recreational opportunities.

In evaluating the alternatives in this corridor, the West Side (2A) and East Side (2C) alternatives offer similar opportunities and constraints. Both roads have 60 feet wide right-of-ways, and both

would require either barriers or the acquisition of right-of-way. The East Side (2C) alternative offers the advantage of lower traffic volumes. However, the West Side (2A) offers an opportunity for a short mid-valley segment, and also connects directly to more activity centers and St. Helena. It is assumed that a Mid-Valley option would only move forward with the full support of property owners and the community, and only if the Greenway could be located, designed, and operated to minimize or eliminate environmental, private property, and agricultural impacts.

As can be seen in Table 5-9, Option 2A and 2B score close to each other, with the trade-offs between alternatives very clear. Therefore, it is recommended that the NCTPA continue feasibility work on the West Side (2A) be continued and local agencies work with local property owners and the community to determine if a Mid-Valley (2B) option is feasible and acceptable. This may require additional feasibility and design work beyond the scope of this plan. If it is determined that the Mid-Valley option (2B) is not acceptable, than the West Valley, option (2A) would be the preferred option.

Ultimately, the selected alignment is likely to have more to do with a cooperative property owner than with any specific attribute of the alignment itself.

Table 5-9: Segment 2 Evaluation of Alternatives

Napa Valley Greenway Segment Evaluation		SEGMENT # 2		
Criteria	**Criteria Weight**	**Option A West Side**	**Option B Mid-Valley**	**Option C East Side**
Right-of-way	**1 – 20**	**12**	**4**	**10**
Agricultural Impacts	**1 - 20**	**20**	**10**	**20**
Aesthetics	**1 - 20**	**10**	**20**	**10**
User Safety	**1 - 20**	**10**	**20**	**10**
Residential Impacts	**1 - 10**	**7**	**3**	**6**
Usage	**1 - 10**	**7**	**10**	**3**
Functionality	**1 - 10**	**7**	**8**	**5**
Cost/Feasibility	**1 - 10**	**2**	**4**	**2**
Environmental Impacts	**1 - 10**	**7**	**5**	**8**
	Score	**82**	**84**	**74**

West Side Option (2A)

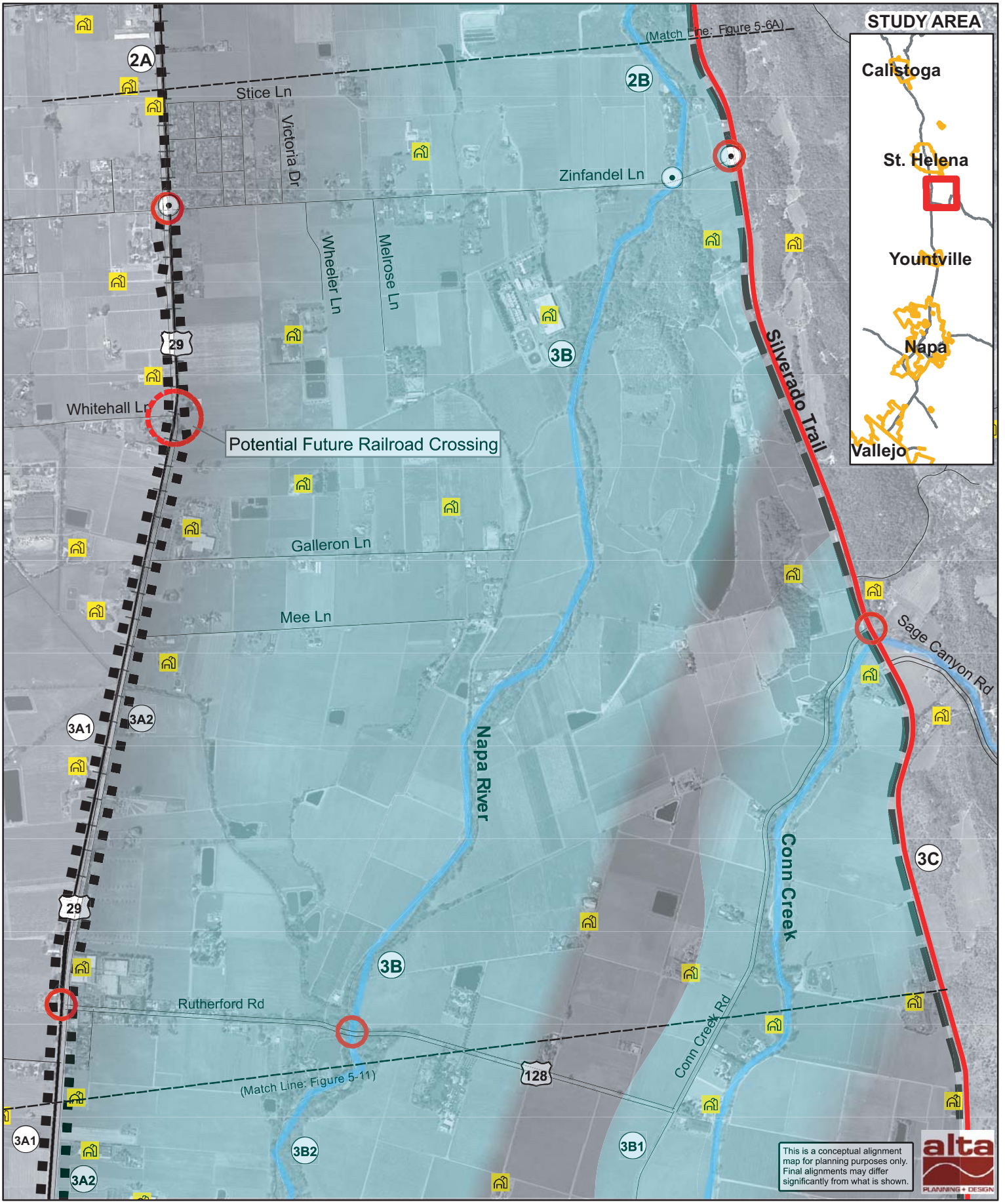
- Could be located mostly on public property
- Offers some good aesthetic experience to users
- Would require Caltrans and Napa Valley Wine Train approval of pathway and proposed barrier
- The path enters downtown St. Helena on a sidewalk

Mid-Valley Option (2B)

- Requires support and approval by local property owners
- Would need to be routed, designed, and operated to minimize impacts
- Provides the most scenic route
- Likely to be used by the broadest variety of users

East Side Option (2C)

- Could potentially be on some public right-of-way, although private land may be needed
- Busy road with some shoulders and used by experienced cyclists.
- Would require 5-feet setback or barrier in narrow sections.



NAPA BIKEWAY FEASIBILITY STUDY

Segment 3 Map 1

Chaix Ln. to Hwy 128

Segment Endpoint
Class I Path
Class II Bike Lane
Class III Bike Route
Major Road Crossings
Railroad
Streams and Rivers
Parks
Creek and Stream Crossings
Schools
Wineries
Option 1A1
Option B Mid-Valley Study Zone
Option C

Figure 5-10

Miles
0 0.1 0.2

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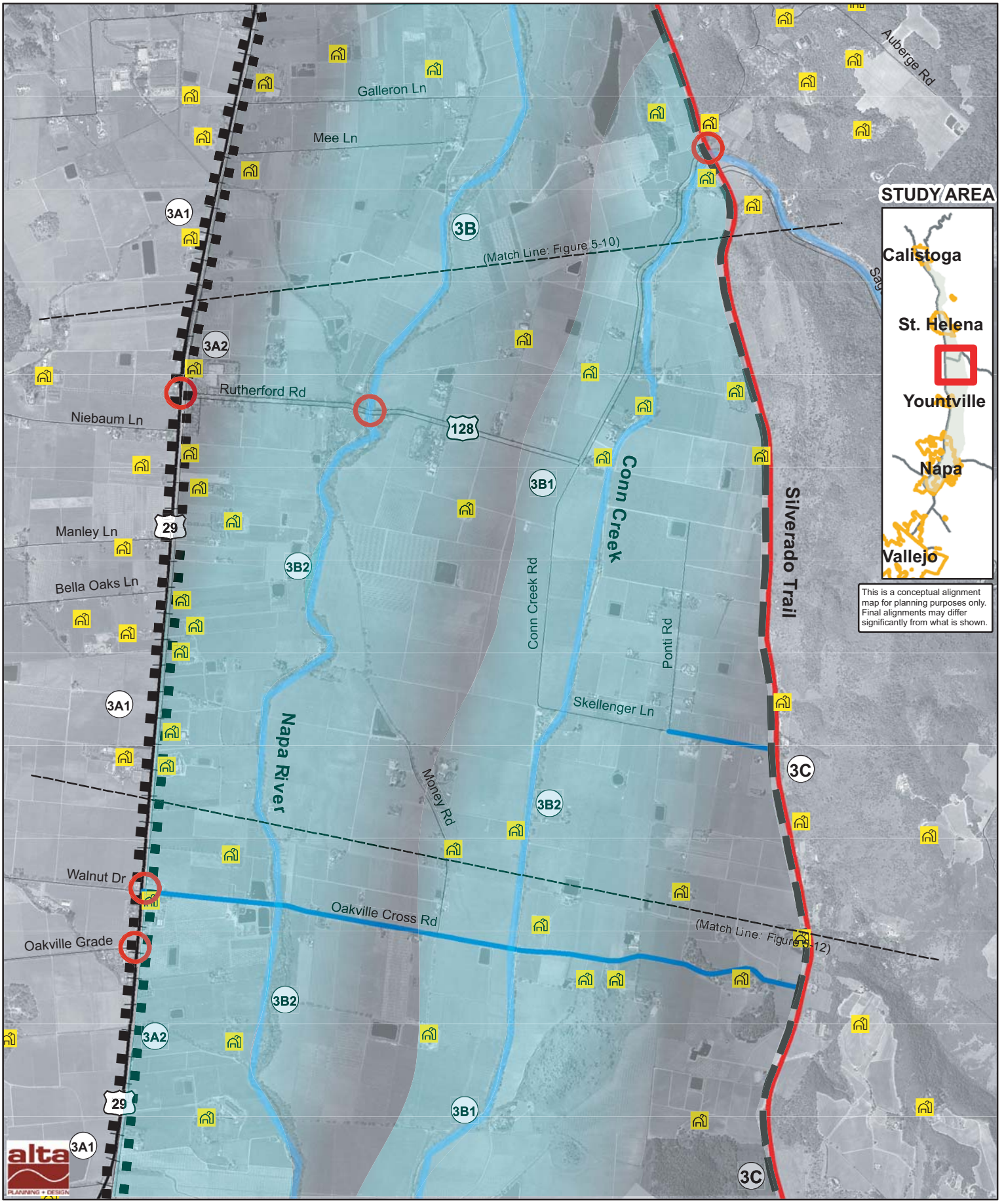

NAPA BIKEWAY FEASIBILITY STUDY

Segment 3 Map 2

Hwy 128 to Oakville Cross Rd.

Segment Endpoint
Class I Path
Class II Bike Lane
Class III Bike Route
Major Road Crossings
Railroad
Streams and Rivers
Parks
Creek and Stream Crossings
Schools
Wineries
Option 1A1
Option B Mid--Valley Study Zone
Option C

Figure 5-11

Miles
0 0.2 0.4

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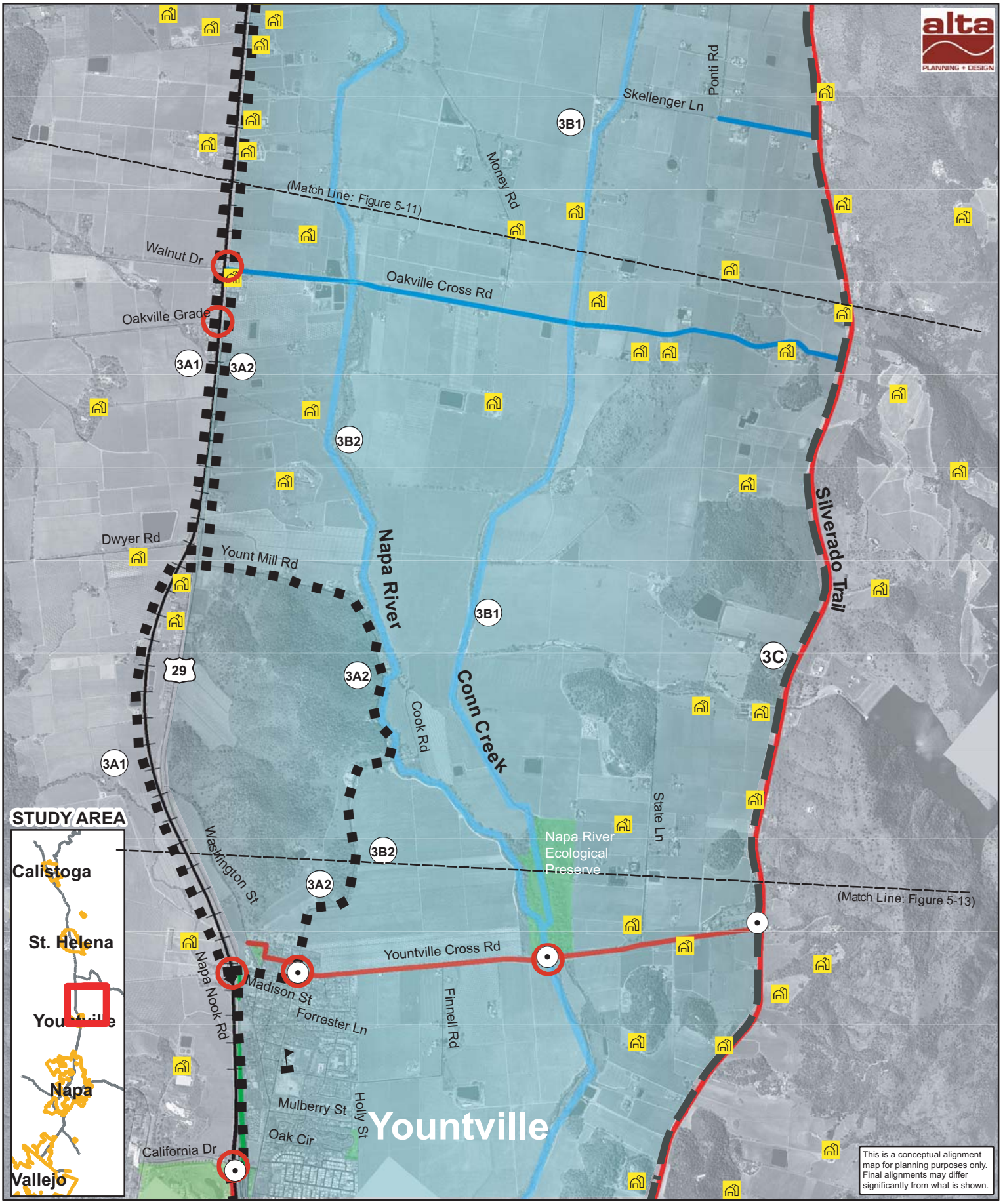

NAPA BIKEWAY FEASIBILITY STUDY
Segment 3 Map 3
Oakville Cross Rd to Yountville Cross Rd

Segment Endpoint
Class I Path
Class II Bike Lane
Class III Bike Route
Major Road Crossings
Railroad
Streams and Rive
Parks
Creek and Stream Crossings
Schools
Wineries
Option 1A1
Option B Mid--Valley Study Zone
Option C

Figure 5-12

Miles
0 0.2 0.4

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5.2.3 . Segment 3: Zinfandel Lane to Yountville Cross Road

Segment 3 reaches from Zinfandel Lane south of St. Helena to Yountville Cross Road, near Yountville. As such, this segment will provide by local connectivity for residents and also opportunities for visitors. The West Side alternatives actually include alternatives on both side of Highway 29, that can be connected together should a feasible crossing of Highway 29 be identified. **(See Figures 5-10, 5-11, 5-12)**

Option 3A West Side

Length:	7.09 to 7.55 miles
Type:	Class I bike path, Class II, Class III on shared roads.
Surrounding Land Use:	Agriculture, wineries, vineyards and rural residential.
Jurisdictions:	Napa County, Caltrans.

Segment 3A consists of three sub-sections that utilize a combination of existing public right-of-way and private property. The route would be a combination of Class I (Bike Path), Class II (Bike Lane) and Class III (Bike Route) bikeways

Zinfandel Lane to Whitehall Road (East Side of Highway 29)

The West Side Option (3A) would be a continuation of of the Napa Valley Greenway described in Segment 2A. This consists of an 8 to 12-feet wide Class I bike path **(Fig. 5-8 Cross Sections 14, 15)** located between the railroad tracks and highway, or on the east side of the tracks. Near Whitehall Lane, the railroad tracks cross over Highway 29 to the west side of the highway. It would be necessary to construct a grade-separated crossing at this location, since (a) Caltrans is not likely to approve a user-activated signal here, and (b) adequate right-of-way for a pathway exists only on the east side north of here, and on the west side south of here. It may be possible to construct an undercrossing for a reasonable amount.

Wine Train Railroad Crossing on Highway 29 at Whitehall Lane looking north

The only alternatives to a grade-separated crossing here would be (a) to locate the pathway on the west side of Highway 29 from St. Helena, or (b) on the east side of the highway from Rutherford Road northward. These alternatives would need to be studied in more detail as part of a feasibility analysis for this crossing..At this location there are two alternative alignmemts.

3A.1 Whitehall Road via Madison Street to Yountville Cross Road (West Side of Highway 29)

The land between railroad tracks and Highway 29 in this cross section varies between 15- and 62-feet, with the constrained areas located near winery entrances where there are left- and right-turn lanes. The typical available land is about 25-feet in width, allowing 10 feet wide Class I bike path **(Fig.5-9, Cross Section 16b).** This property would be partly Napa Valley Wine Train, and partly Caltrans. It may also be possible to locate a 9-feet wide pathway on the west side of the tracks, close to the vinewayds, entirely on railroad property.

Approximately 100-feet north of Dwyer Road, the railroad tracks begin a wide arc and are no longer adjacent to the Highway. There are two basic alternatives from this point to Yountville Cross Rd.

Railroad Right-Of-Way

If an easement can be obtained from the railroad, a 9-feet wide pathway could be developed within the railroad property **(Fig. 5-7, Cross Section 12).** This would place Greenway users next to vineyards and away from the highway traffic. The Napa Valley Greenway would continue to follow the railroad right-of-way to Napanook Road., where the Napa Valley Greenway would end. The bike route would then cross Highway 29 at the existing signalized intesection to Madison Street as a Class III bike route. The bike route would be on bike lanes either side of Madison Street. Madison Street connects with Yountville Cross Road **(Fig. 5-3, Cross Section 4).**

Wine Train Railroad ROW at Beaulieu Winery looking south to Highway 128

Highway 29

The pathway could continue along the west side of Highway 29. There appears to be 15-feet or so of available right-of-way, although there are considerable driveways, trees, and other obstacles. As the highway bends south, the right-of-way on the west side becomes very wide—over 100-feet at one point, providing more than enough room to develop a Class I bike path. This area could also potentially serve as a trailhead, assuming a northbound left-turn lane could be developed with sufficient visibility. The Napa Valley Greenway would continue to follow the Highway 29 to Napanook Road., where the Napa Valley Greenway would end. The bike route would cross Highway 29 at the existing signalized intesection to Madison Street. The bike route would be on bike lanes either side of Madison Street. Madison Street connects with Yountville Cross Road **(Fig. 5-3, Cross Section 4).**

Railroad ROW south of Oakville Grade north of Dwyer Road

3A.2 Whitehall Road via Yount Mill Road to Yountville Cross Road (East Side of Highway 29)

If a new grade-separated crossing of Highway 29 near Whitehall lane is deemed unfeasible, it may be possible to comtinue the Napa Valley Greenway on the east side of Highway 29. With the highway right-of-way 60-feet wide and the roadway about 36-feet wide (including shoulders) except where there are left-turn bays, this leaves about 12-feet for a Class I bike path **(Fig. 5-4, Cross Sections 6 and 7)**. Either additional right-of-way needs to be obtained (about 5-feet), or a barrier needs to be developed next to the highway shoulder. A field review of this segment shows 10-50 feet between

the shoulder and fencing and vineyards, with a line of trees and utility poles about 6-feet from the shoulder. The right-of-way is especially constrained in Oakville, where buildings are located almost adjacent to the roadway.

Yount Mill Road is a narrow two-lane public road approximately .1-mile south of Dwyer Road. The road has shade from trees, high quality scenery and views over Napa Valley. The right-of-way is 40-feet, with very low traffic and moderate speeds. The pavement is 24-feet wide with no shoulders. Users would head south on Yount Mill Road to the Yountville Crossroad on a Class III bike route.

Yount Mill Road looking north.

Table 5-10: Segment 3A West Side – Summary

Option A (West Side)		Length Miles	On Street LF	Pathway LF	Maximum ROW Needed SF
3A.1	Zinfandel Lane to Yountville Cross Road via Madison Street (West side Highway 29)	7.09	1,320	36,115	325,037
3A.2	Zinfandel Lane to Yountville Cross Road via Yount Mill Road (East side Highway 29)	7.55	13,992	25,872	232,848

Option 3B Mid-Valley

Length: 8.8 miles to 9.18 miles
Type: Class I bike path, Class II, Class III on shared roads.
Surrounding Land Use: Agriculture, wineries, vineyards and rural residential.
Jurisdictions: Napa County, Caltrans, California Department of Fish and Game

Option 3B begins at Zinfandel Lane at the termination of the public access easement to the wastewater treatments plant. From this point south, the alignment of the Mid-Valley Option would be dependent on the approval and direction of local property owners. Possible features to follow include the Napa River.

There are two alternatives when the Greenway reaches Rutherford Road.

Napa River Ecological Reserve Trail

Alternative 3B.1 Rutherford Road (Highway 128)

At this location the Greenway could head east along

Rujtherford Road using Class II (bike lanes) and connect to to Conn Creek. Shoulders would need to be extended on Rutherford Road **(Fig. 5-3, Cross Section 4)**, which is a two-lane roadway with moderate volumes and higher traffic speeds.

The Greenway would turn south at Conn Creek Road Conn Creek Road is a two-lane rural road with with low traffic volumes. The County completed Class II bike lanes on this road in 2008, from Highway 128 to Skellenper Lane. Users would share the road in this cross section for approximately .9 miles, where there is a proposed Class I bike path shown on the existing County General Plan. The Napa Valley Greenway would follow the top of a levee to the Oakville Cross Road.

Alternative 3B.2 Napa River & Yount Mill Road

The Greenway would follow the Napa River to Yount Mill Road and connect to Yountville.

Between Rutherford Road and Yountville Cross Road, the Mid-Valley Option would either be along the Napa River, Conn Creek, or possibly on the property lines of existing vineyards. Since this is almost entirely on private property, the location, design, and operation of this option would depend on local property owner leadership and input. Should a pathway be developed along either the Napa River or Conn Creek, they would connect into the Napa River Ecological Preserve extending about 0.5 miles north of Yountville Cross Road. The Preserve already provides a trail and allows public access.

Table 5-11: Segment 3B Mid Valley – Summary

Option B (Mid Valley)	Length Miles	On Street LF	Pathway LF	Maximum ROW Needed SF
3B.1 Zinfandel Lane to Yountville Cross Road via Rutherford Cross Road and Conn Creek Channel	8.8	10,560	36,432	728,640
3B.2 Zinfandel Lane to Yountville Cross Road via Napa River and Yount Mill Road	9.18	2,640	45,830	916,608

Option 3C: East Side

Silverado Trail near Conn Creek Road intersection looking north

Option 3C would consist of either (a) the existing Class II bike lanes or (b) a new Class I bike path parallel to the Silverado Trail from Zinfandel Lane to Yountville Cross Road **(Fig. 5-4, Cross Section 6)**. As indicated in 2C, the Silverado Trail alignment would involve developing a parallel bike path on the west side of the road. There is approximately 11-feet of right-of-way available. The Napa Valley Greenway would consist of a ten foot wide paved Class I bike path with two 2-foot shoulders. There would be a 5-foot wide separation from the edge of the existing road pavement except in constricted areas where a barrier in lieu of a 5-foot separation from edge of pavement would be installed. The construction of the Napa Valley Greenway would require purchasing a 5- to 8-foot easement along the entire west side of the Silverado Trail.

Right-of-way limitations in this area are less than in cross-sections north of here, with fewer obstructions adjacent to the right-of-way.

Table 5-12: Segment 3C East Side – Summary

Option C (East Side)	Length Miles	On Street LF	Pathway LF	Maximum ROW Needed SF
Zinfandel Lane to Yountville Cross Road	6.78	0	35,776	178,881

Evaluation Of Alternatives

Segment 3 between Chaix Lane and Yountville Cross Road (St. Helena-Yountville) is truly in the 'heart' of the Napa Valley: the Valley is wider here than further north, and the vineyards more expansive. This segment, if developed alone, would provide a community connection between St. Helena and Yountville, while also providing visitors with an alternative to driving from winery to winery.

All three alternatives and sub-options provide either a separated Class I bike path or quiet side-streets for Greenway users. As with previous segments, the determination of the 'preferred' alternative is really a matter of identifying which public and/or private entity(ies) are willing to allow the pathway to be developed within their right-of-way. All alternatives rely to some extent on the use of private property—for example, the Napa Valley Wine Train is the primary private property owner for the West Side Option.

All three alternatives provide views of and access to the Napa Valley destinations and vistas. The West Side and East Side Alternatives rely heavily on acquiring small strips of land (about 5-10 feet) along the highway, railroad, or edge of private properties. The Mid-Valley option could be located

on the periphery of properties as well, or along the various waterways—but these are currently private areas with little or no public access.

The West Side option connects directly to St. Helena and Yountville, and would be the preferred option if the property owners and/or community wished to keep the Greenway entirely along the Highway 29 corridor.

As can be seen in Table 5-13, Option 3A.2 scored the highest, marginally above Option 3A.1. However, with each option, it is recommended that the NCTPA and local agencies work with local property owners and the community to determine if the needs and interests of property owners for each option. It is likely that the selected alternative will have more to do with a willing property owner than with any specific attribute of the facility itself.

Table 5-13: Segment 3 Evaluation of Alternatives

Napa Valley Greenway Segment Evaluation		SEGMENT # 3				
Criteria	Criteria Weight	Option A West Side W of 29 3A.1	Option A West Side E of 29 3A.2	Option B Mid-Valley 3B.1	Option B Mid-Valley 3B.2	Option C East Side
Right-of-way	1 – 20	5	10	4	0	10
Agricultural Impacts	1 – 20	20	20	10	10	20
Aesthetics	1 – 20	10	10	20	20	10
User Safety	1 – 20	12	12	16	16	12
Residential Impacts	1 – 10	8	5	3	3	7
Usage	1 – 10	6	6	10	10	3
Functionality	1 – 10	10	10	8	8	8
Cost/Feasibility	1 – 10	2	4	2	0	4
Environmental Impacts	1 – 10	7	7	5	3	8
	Score	80	84	78	70	82

West Side Option (3A.1) and (3A.2)

- Could potentially use some Caltrans property, although some railroad or private property owners' land may be needed
- Offers some good aesthetic experiences to users, as well as connections to wineries.
- Would require Caltrans and Napa Valley Wine Train approval of pathway.
- Sub-alternatives on the East side of Highway 29 will require a grade separated crossing of the highway

Mid-Valley Option (3B)

- Requires support and approval by local property owners
- Would need to be routed, designed, and operated to minimize impacts
- Provides the most scenic route
- Likely to be used by the broadest variety of users
- A portion of 3B.1 could not be evaluated between Oakville Crossing and Yountville and will require further studies

East Side Option (3C)

- Could potentially be on some public right-of-way, although private land may be needed
- Busy road with some shoulders and used by experienced cyclists.
- Would require 5-feet setback or barrier in narrow sections.

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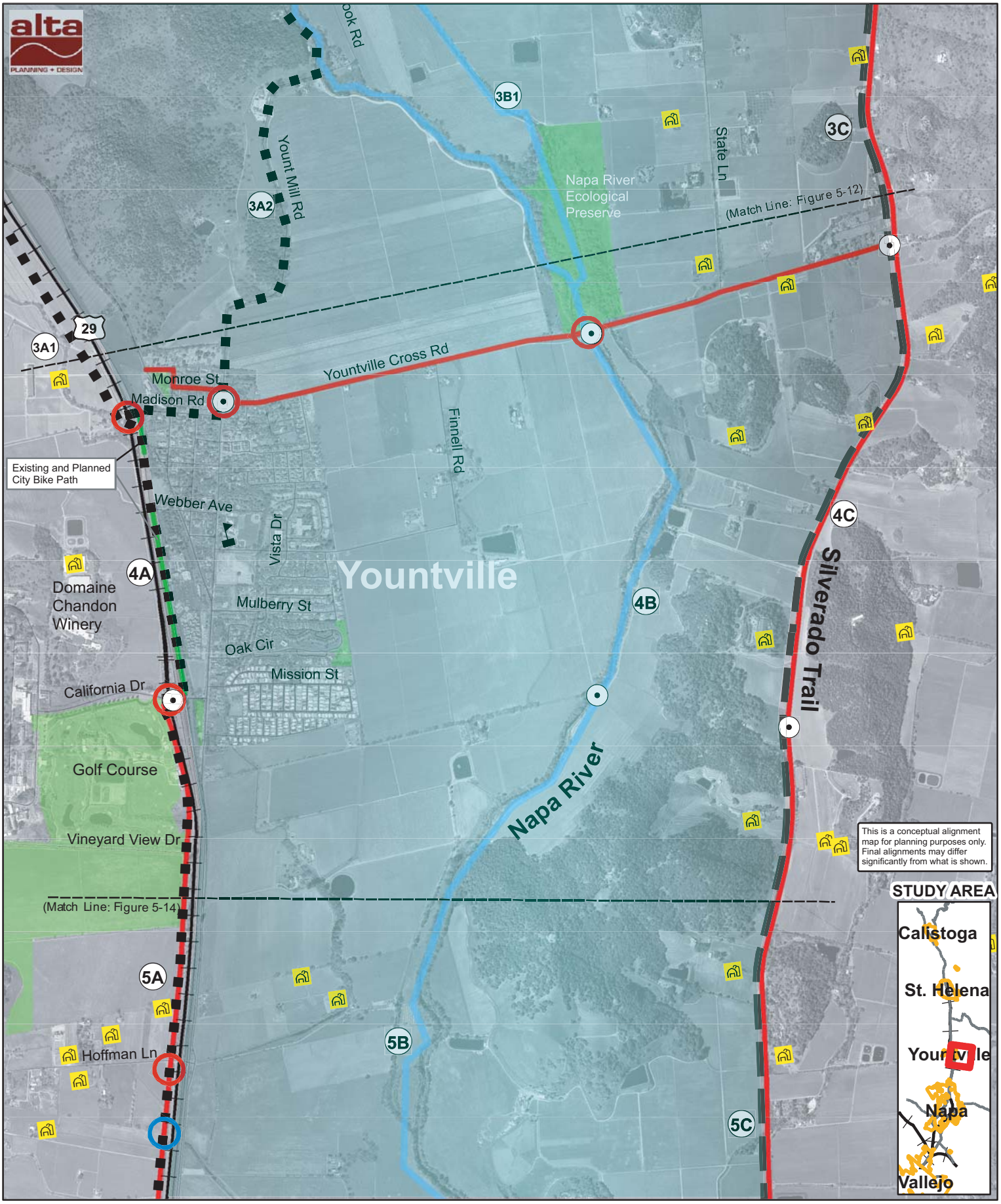

NAPA BIKEWAY FEASIBILITY STUDY
Segment 4
Yountville Cross Rd. to Vineyard View Dr

Segment Endpoint
Class I Path
Class II Bike Lane
Class III Bike Route
Major Road Crossings
Railroad
Streams and Rivers
Parks
Creek and Stream Crossings
Schools
Wineries
Option 1A1
Option B Mid-
-Valley Study Zone
Option C

Figure 5-13

Miles
0 0.1 0.2

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5.2.4 . Segment 4: Yountville Cross Road/Madison Street to California Drive/Silverado Winery

Segment 4 begins at the northern city limit of the City of Yountville and extends south to the southern city limit. This segment has already been partially developed as a bike trail that parallels Highway 29. It already serves the City's tourists and residents. Yountville has a strong tourism base with wineries, hotels, shopping and world-class restaurants. The downtown is located on the east side of Highway 29 and is connected to the Yountville Veterans Home and Golf Club on the west side of Highway 29 by an underpass. See **Figure 5-13** for location of Options.

Option 4A West Side

Length:	0.84 miles
Type:	Class I
Surrounding Land Use:	Urban, residential, commercial and tourism.
Jurisdictions:	City of Yountville, Napa County, Caltrans

Option 4A begins at Madison Street at the crossing of Highway 29 and uses the existing bike path on the west side on the Washington Square shopping center. The City of Yountville plans to extend this bike path south to connect to another existing bike path that parallels Highway 29. The bike path easement dedication and construction are conditions of development approval. The existing bike path begins at Webber Street and skirts the Villagio Hotel and Spa and Vintage Inn and Spa. Some of the existing route is located on easements on private property. The existing bike path is a standard 8-feet wide Class I bike path.

Existing bike path at Madison Street Yountville

At the Vintage Inn and Spa, approximately 250-linear feet of the existing bike path is only 6-feet wide (see photo). It would be necessary to widen the bike path to 8-feet minimum, Class I standard. There appears to be room available to accomplish this by removing or relocating some landscaping. The bike path is located between a parking lot and a creek. The bike path is an easement over private property. Approval for the widening from the owner would be necessary. There is ample room on the creek side to widen the path with no impact on the creek.

Vintage Inn and Spa
Narrow section of existing bike path

At the south end of town, the pathway connects to California Drive. There is an existing crosswalk and a 10-feet wide bike path under Highway 29 at California Drive. This bike path connects to Solano Avenue at the entrance to Domaine Chandon Winery and the Yountville Veterans Home. There may be some minor improvements required through this area, such as directional signs.

Highway 29 underpass
Existing bike path.

Table 5-14: Segment 4A West Side – Summary

Option A (West Side)		Length in Miles	On Street LF	Pathway LF	ROW Needed SF
4.A.	Madison Street/Yountville Cross Roads to California Drive	1.32	0	4,435	500

Option 4B Mid-Valley

Length: 1.32 miles
Type: Class I.
Surrounding Land Use: Agriculture
Jurisdictions: Napa County

Beginning at the Napa River Ecological Reserve on the north side of Yountville Cross Road, Option 4.B would have to cross the busy road at grade. Crossing improvements would be needed to warn path users and motorists. An undercrossing using the highway bridge appears to be infeasible because of massive abutments installed to counter the severe down cutting of the river.

Napa River on north side of Yountville Cross Road

The California Department of Fish and Game have indicated that any paths need be set back from the top of bank of the Napa River. This setback varies based on the down-cutting and erosion condition of the existing embankment. The average setback is between 20- and 30-feet (**see Fig. 5-9 Cross Section 17).** In this segment there has been considerable down-cutting and eroding..

Napa River on south side of Yountville Cross Road

A new pathway along the River within a 20-feet wide easement could be combined with efforts to restore the river corridor including addressing erosion, pest control, and flooding issues. The pathway could be used by maintenance vehicles needed to clear debris from the river channel and perform other activities.

This route would be entirely on private land in active agriculture. The path could be located so as to minimize or eliminate impacts to nearby homes and active agricultural operations in the vineyards. In many cases this woodland area is between 100- and 200-feet wide on both sides of the river, with vineyards set back an additional 50 or more feet. In other areas, the woodland area is narrower.

Table 5-15: Segment 4B Mid Valley – Summary

Option B (Mid Valley)		Length in Miles	On Street LF	Pathway LF	ROW Needed SF
4.B.	Yountville Cross Roads to area parallel to Vineyard View Drive	1.28	0	6,735	134,706

Option 4C East Side

Length: 1.13 miles
Type: Class I or II..
Surrounding Land Use: Agriculture
Jurisdictions: Napa County

Option 4C begins at the Yountville Cross Road and would consist of either (a) the existing Class II bike lanes or (b) a new Class I bike path parallel to the Silverado Trail from Yountville Cross Road to the Silverado Winery. (see **Fig. 5-4, Cross Section 6**). As indicated in 2C, the Silverado Trail alignment could involve developing a parallel bike path on the west side of the road. There is approximately 11-feet of right-of-way available.

Silverado Trail Right-of-way at Yountville Cross Road looking north

The bike path would consist of a 8-feet wide paved Class I bike path and either a barrier between the path and road, or, acquisition of a 5- to 8-foot easement along the entire west side of the Silverado Trail. This would require extensive negotiations with local property owners, and removal in some cases of existing fences, gateways, trees, and landscaping. See **Figure 5-7 – Cross Section 11**.

Silverado Trail Right-of-way at Yountville Cross Road looking south

Table 5-16: Segment 4C East Side – Summary

Option C (East Side)		Length in Miles	On Street LF	Pathway LF	ROW Needed SF
4C	Yountville Cross Roads to Silverado Winery	1.13	0	5,944	29,718

Evaluation Of Alternatives

Based on an evaluation of alternatives **(see Table 5-17 below)**, Option 4A outscores the other alternatives by using an existing and planned Class I bike path through Yountville. It would connect users with amenities such as restaurants and cafes and destinations such as hotels. Option 4.A already provides better connections to users to the downtown area and provides two protected crossings of Highway 29 at Madison Street and California Drive. There would be limited construction improvements to implement this option.

Option 4B would be entirely on private lands in active agriculture and would require the cooperation of private property owners. While providing an excellent aesthetic setting for pathway users, the combination of environmental and private property/agriculture issues would need to be resolved.

Unless the existing Class II bike lanes were used, Option 4C would require the cooperation of private property owners.

Table 5-17: Segment 4 Evaluation of Alternatives

Napa Valley Greenway Segment Evaluation	SEGMENT # 4			
Criteria	**Criteria Weight**	**Option A West Side**	**Option B Mid-Valley**	**Option C East Side**
Right-of-way	**1 - 20**	**20**	**0**	**10**
Agricultural Impacts	**1 - 20**	**20**	**10**	**10**
Aesthetics	**1 - 20**	**15**	**20**	**10**
User Safety	**1 - 20**	**16**	**14**	**12**
Residential Impacts	**1 - 10**	**5**	**5**	**5**
Usage	**1 - 10**	**10**	**10**	**4**
Functionality	**1 - 10**	**10**	**4**	**8**
Cost/Feasibility	**1 - 10**	**10**	**2**	**4**
Environmental Impacts	**1 - 10**	**10**	**5**	**8**
	Score	**116**	**70**	**71**

West Side Option (4A)

- Almost 100% on public right-of-way or existing public easements.

- Offers good aesthetic experience to users
- Likely to be used by the broadest variety of users
- Good connections to residential neighborhoods, and commercial and visitor serving facilities.

Mid-Valley Option (4B)

- Requires support and approval by local property owners
- Offers best aesthetic experience to users
- Would need to be routed, designed, and operated to minimize impacts
- Likely to be used by a broad variety of users

East Side Option (4C)

- Could potentially be on some public right-of-way, although some private property owner land may be needed
- Would require 5-feet setback or barrier.

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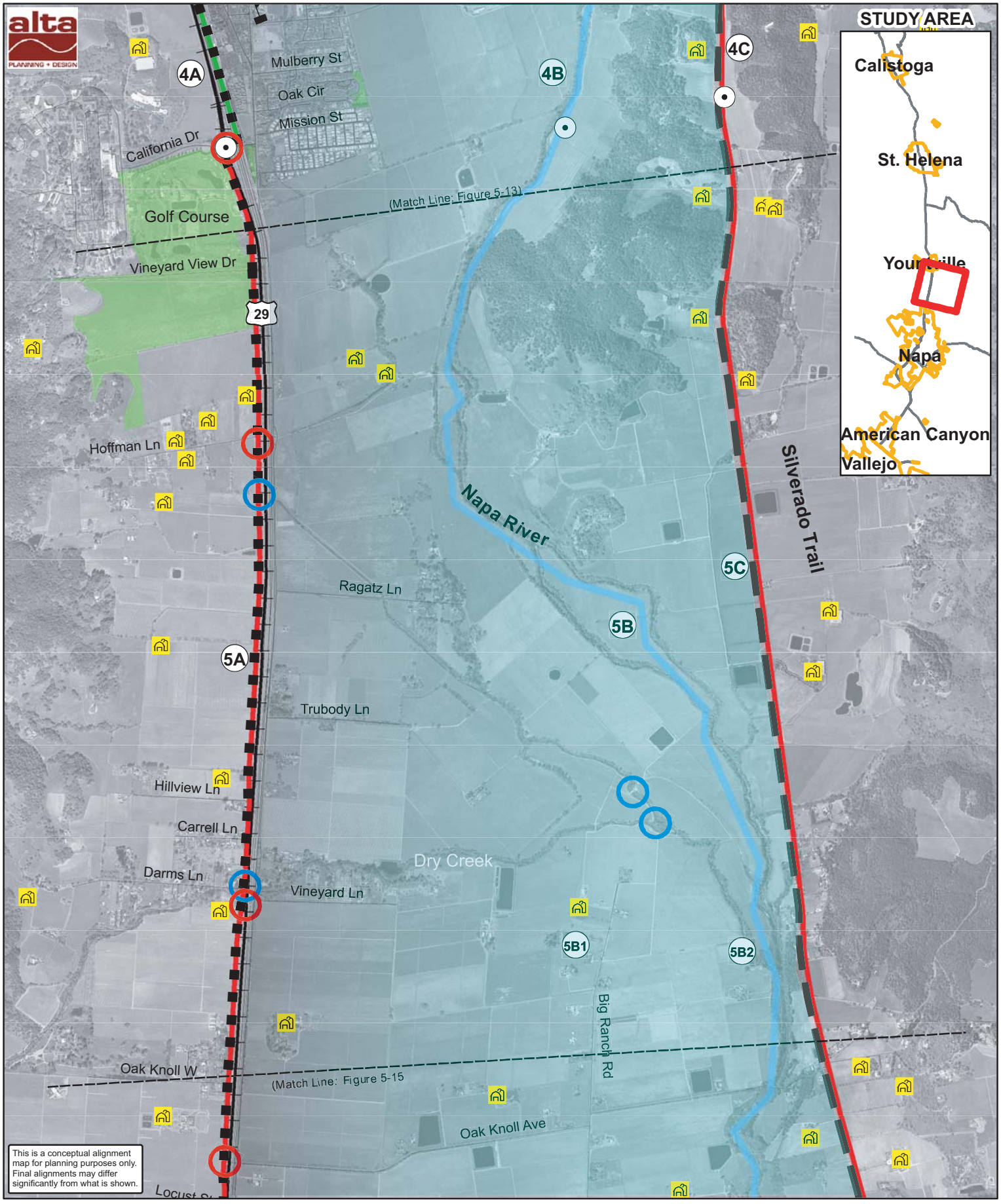

NAPA BIKEWAY FEASIBILITY STUDY
Segment 5 Map 1
Vineyard View Dr. to Oak Knoll Rd.

Segment Endpoint
Class I Path
Class II Bike Lane
Class III Bike Route
Major Road Crossings
Railroad
Streams and Rivers
Parks
Creek and Stream Crossings
Schools
Wineries
Option 1A1
Option B Mid--Valley Study Zone
Option C

Figure 5-14

Miles
0 0.1 0.2

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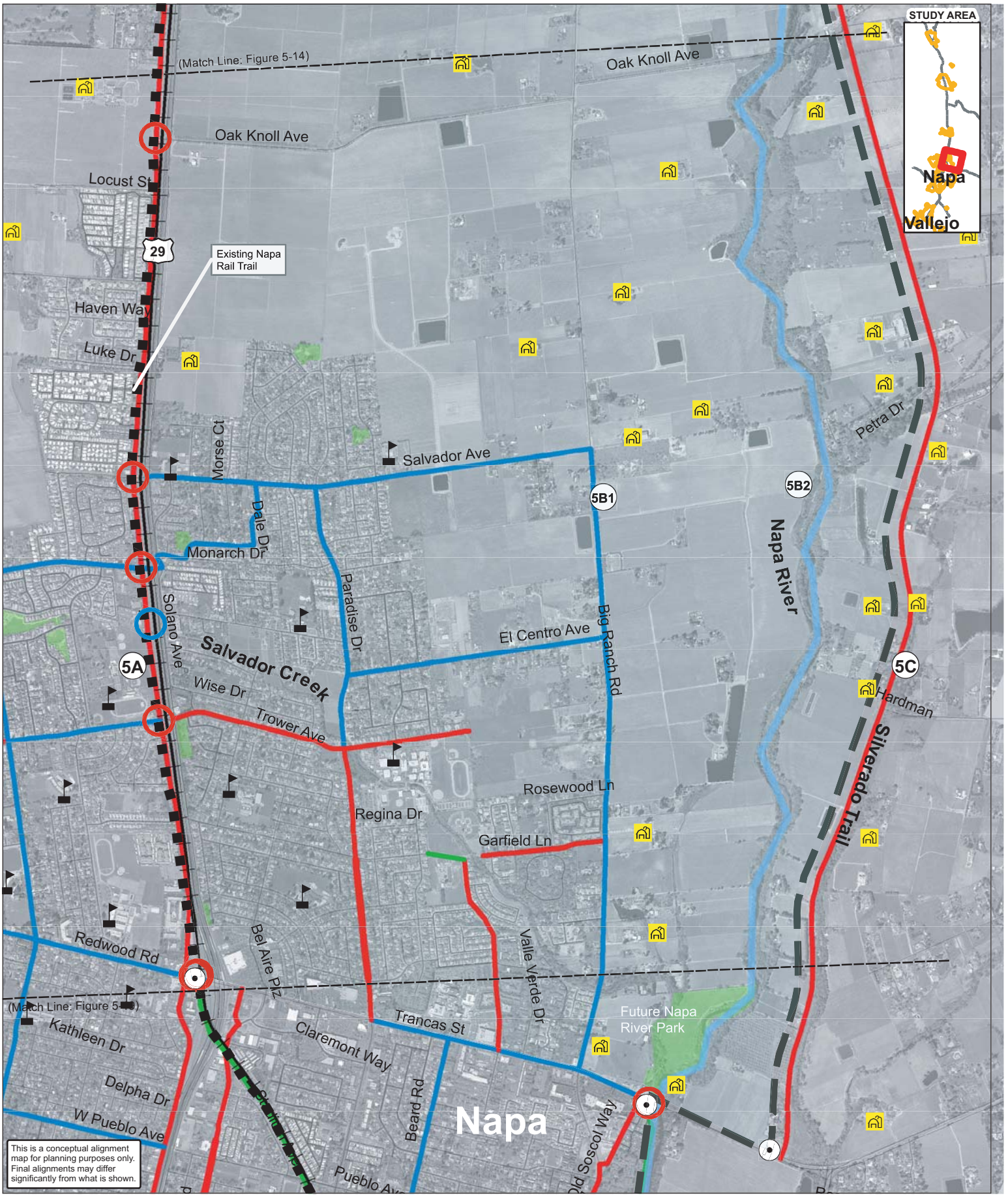

Segment Endpoint
Class I Path
Class II Bike Lane
Class III Bike Route

Major Road Crossings
Railroad
Streams and River
Parks

Creek and Stream Crossings
Schools
Wineries

Option 1A1
Option B Mid--Valley Study Zone
Option C

Oak Knoll Ave. to Trancas St.

Figure 5-15

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5.2.5 . Segment 5: California Drive/Silverado Winery to Redwood Road/ Trancas Street

The three Segment 5 options extend from the southern edge of Yountville on an east-west line extending from California Avenue in the City of Yountville to the Silverado Winery on the Silverado Trail. The segment extends south to Redwood Road and Trancas Street in the city of Napa. See **Figures 5-14 and 5-15** for location of Options.

Option 5A: West Side

Length:	5.97 miles
Type:	Class I bike path.
Surrounding Land Use:	Rural residential, Agriculture, Urban residential, commercial.
Jurisdictions:	Napa County, City of Napa, Caltrans, Napa County Flood Control District.

Option 5A begins at California Avenue, south of Yountville, and would be constructed parallel to Solano Avenue, a County and City road. The bike path would be mostly constructed in the County right-of-way between Solano Avenue and the Napa Valley Wine Train (NVWT) right-of-way. Solano Avenue currently provides Class II bike lanes on this entire segment.

The NVWT's right-of-way is consistently 38-feet wide along the corridor until just north of Redwood Road. Publicly-owned right-of-way on the west side of the NVWT varies from 80-feet mainly in within the City of Napa to between 60-feet and 127-feet in the unincorporated area. This variation is due to flood control /drainage channels located within the public right-of-way. These channels are set back from the railroad right-of-way. and there is often ample width to locate the bike path in these areas. The drainage and flood control channels are in some cases easements or fee property owned by the Napa County Flood Control District (NCFCD). The relevant cross-sections illustrating the conditions are referenced in the following detailed descriptions

The railroad right-of-way and Highway 20 share a common boundary along this segment and in all cases there would not be enough room to locate the bike path between the railroad tracks and the highway. It is also preferable to locate the pathway on the Solano Avenue side of any drainage swale, providing greater access for users and also maximizing the separation between SR 29 and the path way.

The segment is broken down into four sub-segments.

California Avenue to Hillview Lane.

The bike path would begin at California Avenue. It would be necessary to construct an at-grade crossing where California Avenue and Solano Avenue connect. The Napa Valley Greenway would be located between the NVWT right-of-way and Solano Avenue within the Solano Avenue right-of-way. The 9-feet wide bike path would be adjacent to the existing bike lane, separated from Solano Avenue by a barrier. At this location Solano Avenue has a right-of-way width of 60-feet. There is a drainage swale that would have to be partially re-engineered with a retaining wall at this location to accommodate the pathway **(Fig 5-16 Cross Section 18)**.

Beginning at Vineyard View Drive, south to Hoffman Lane (approximately one and a half mile), there is a flood control channel between Solano Avenue and the railroad right-of-way. The centerline of the railroad is over 120-feet from the west edge of Solano Avenue. The Solano Avenue pavement occupies 46-feet of the right-of-way, and 42-feet is occupied by the flood control channel. As a result there is over 20-feet available within which to construct a 9-feet wide bike path **(Fig 5-16 cross section 19).**

Existing trees and informal pathway parallel to Wine Train ROW between Vineyard View Drive and Hoffman Lane

There are many existing trees, both native (valley oaks) and non native (eucalyptus and palms) in this corridor. The bike path can meander between these trees to preserve those that would be desirable to keep for shade. There are existing informal pathways in this area as well.

Approximately 1500-feet south of Hoffman Lane, the bike path would need to span a drainage channel. It is estimated that a 70- to 80-foot long bike/pedestrian bridge would be needed at this location.

Eucalyptus trees north of Hillview Lane between railroad right-of-way and Solano Avenue

Approximately 2000-feet north of Hillview Lane the flood control channel ends. At this location, the distance between the railroad right-of-way and Solano Avenue is substantially reduced. From here south to Carrel Lane there is a row of twenty eight mature eucalyptus trees between the railroad right-of-way and Solano Avenue. Solano Avenue has a right-of-way width in this section of 60-feet wide. It would be necessary to remove all of these trees to construct the bike path. The trees appear to be in a mature condition and like many eucalyptus of that age are nearing the end of their functional and natural lives **(Fig. 5-16 Cross Section 20).**

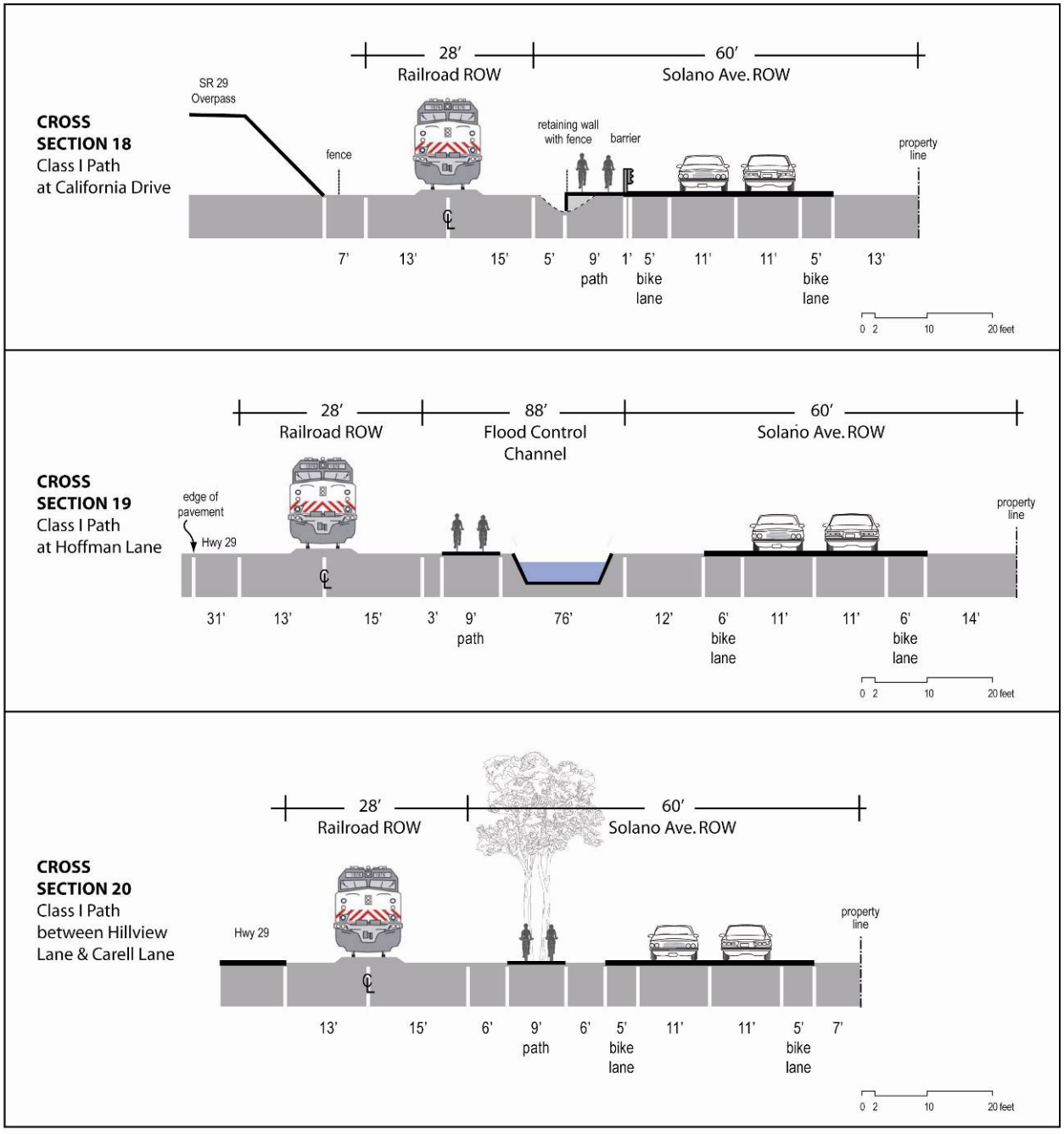


Figure 5-16. Napa Valley Greenway Typical Cross Sections

Hillview Lane to Oak Knoll Avenue

Between Carrell Lane and Darms Lane, the railroad crosses over Dry Creek. At this location, the distance between the edge of the pavement and the centerline of the NVWT's right-of-way is 22-feet. This would allow a 9-feet wide bike path to be constructed on the Solano Avenue right-of-way. A bike/pedestrian bridge approximately 125-feet long would need to be constructed at this location.

Existing railroad crossing of Dry Creek

South of Darms Lane, the Solano Avenue right-of-way increases to 117-feet. In this section there is a widening of the right-of-way to accommodate the flood control ditch/drainage channel drainage. There is ample public road right-of-way in this area to accommodate a 9-foot wide bike path **(Fig 5-17 Cross Section 21).**

Oak Knoll Avenue to Luke Drive.

Between Oak Knoll Avenue and Luke Drive there are no flood control or drainage channels. The area is open, flat and with a few trees. The edge of the pavement on Solano Avenue and the railroad right to way varies, but there is adequate room to construct a 9-feet wide bike path between Oak Knoll Avenue and Luke Drive **(Fig 5-17 Cross Section 22)**. Beginning at Locust Avenue there is a 4-foot wide sidewalk on the west side of Solano Avenue, separated by a 5-foot wide planter strip and curb from the roadway.

Right-of-way between Oak Knoll Avenue and Luke Drive, looking north.

The distance between the centerline of the NVWT right-of-way and the edge of the pavement of Solano Avenue decreases south of Luke Drive. In this section it may be necessary to realign a bus stop and install a guard rail to create area for the bike path. It will also be necessary to reroute the bike path around an equipment enclosure.

Salvador Creek Channel crossing.

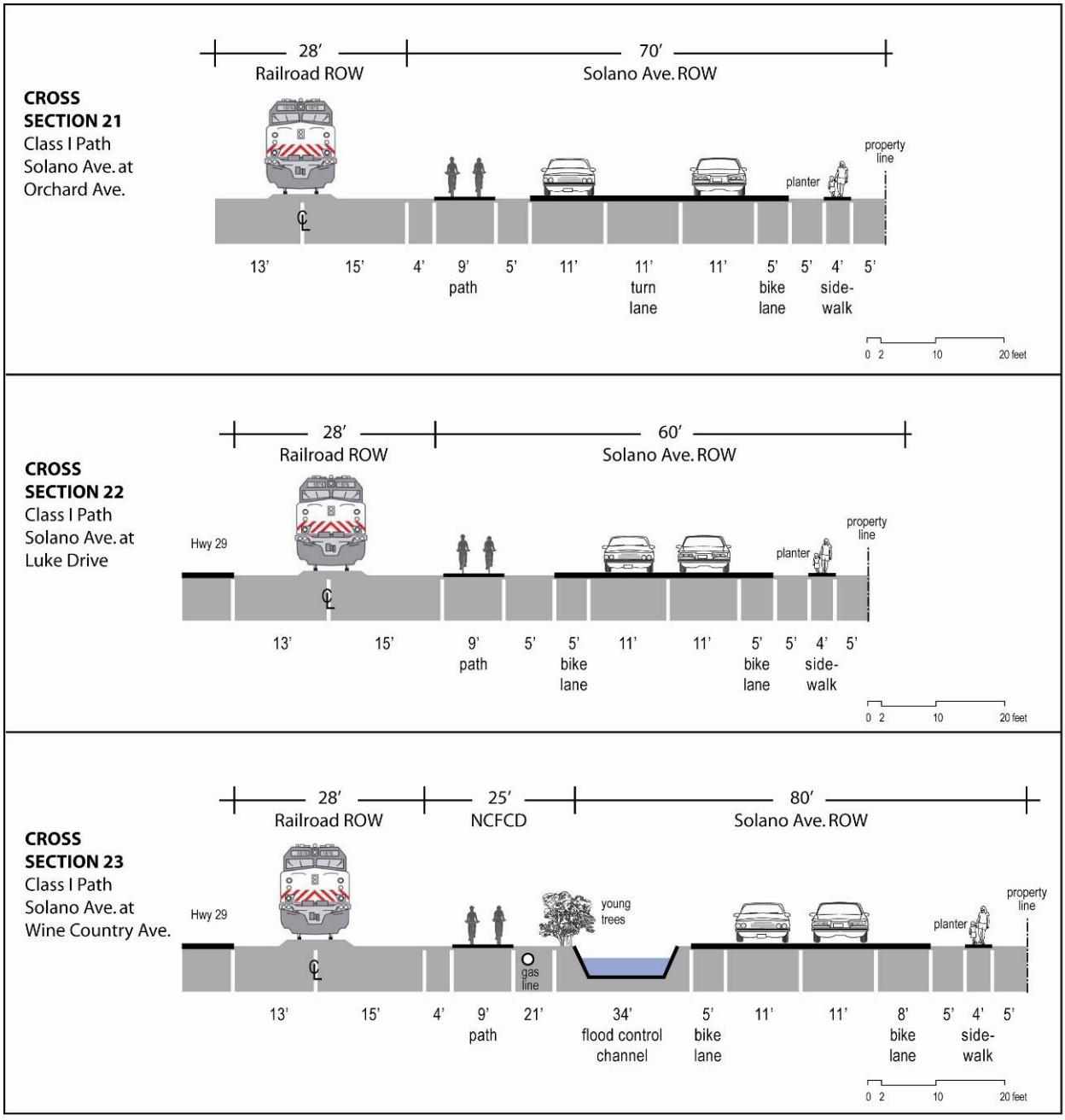
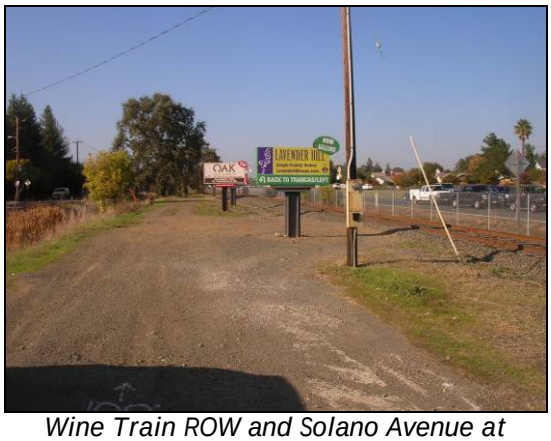


Figure 5-17. Napa Valley Greenway Typical Cross Sections

Luke Drive to Redwood Road.

There is a NCFCD channel that begins at Luke Drive and heads south to Trower Avenue. This drainage easement is located between Solano Avenue and the NVWT right-of-way. **(see Fig 5-17 Cross Section 23)**. At Salvador Avenue there is another bridge required to span the Salvador Creek channel. It is estimated that the length would be 80-feet.



Wine Train ROW and Solano Avenue at Redwood Road.

As the proposed bike path enters the Napa city limits, there are more obstructions within the Napa Valley Railroad right-of-way, such as advertising signs. However, south of Trower Avenue the there is ample room to construct a 9-feet wide bike path between the NVWT right-of-way and Solano Avenue (see Fig 5-18 Cross Section 24).

At Redwood Road the proposed bike path would connect to the incomplete existing bike path that parallels the existing Wine Train right-of-way to Central Avenue. In this section north of Redwood Road, there is ample room to accommodate a 9-feet wide bike path within the existing public right-of-way **(see Fig 5-18 Cross Section 25)**.

Wine Train ROW and existing incomplete bike path at bike/pedestrian bridge over Highway 29 at Redwood Road.

Table 5-18: Segment 5A West Side - Summary

Option A (West Side)		Length Miles	On Street LF	Pathway LF	Maximum ROW Needed SF
5A	California Avenue Dr to Redwood Road	5.06	0	26,695	0

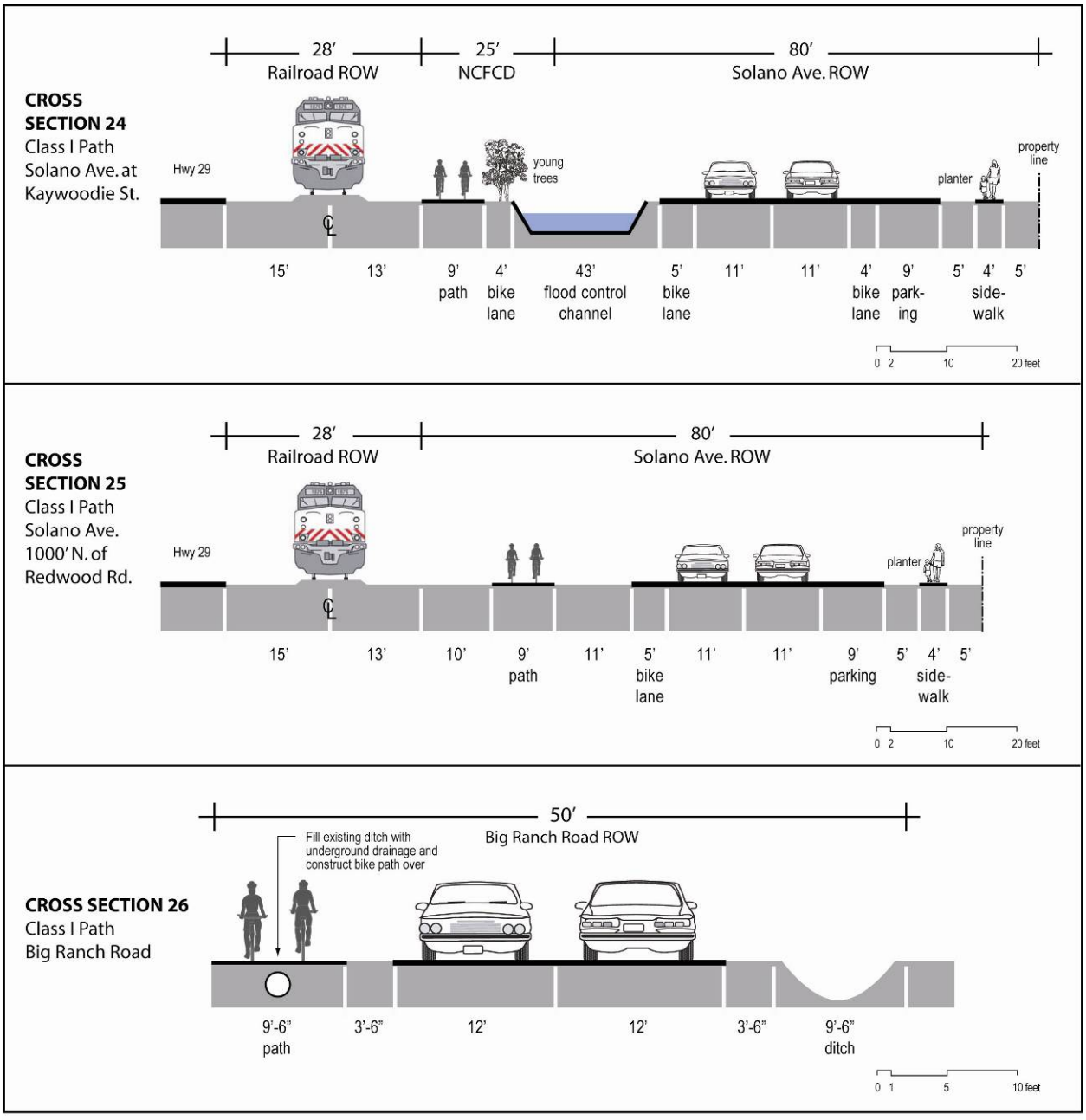


Figure 5-18. Napa Valley Greenway Typical Cross Sections

Option 5B Mid-Valley

Length:	7.34 miles using Big Ranch Road or 7.27 miles using Napa River.
Type:	Class I
Surrounding Land Use:	Agriculture
Jurisdictions:	Napa County, City of Napa

Option 5B begins at a point in line with the City of Yountville's southern boundary. The proposed bike path would be located on the west bank of the Napa River. The river as it flows south from Yountville is joined by several drainages and tributaries including Hopper Creek. These creeks and drainages would require the construction of bridges. There are two sub-options:

River Bench above Napa River south of Oak Knoll Avenue.

5B.1 Sub Option: Napa River and Big Ranch Road

The bike path could continue south and follow the Napa River and connect through private properties to the north end of Big Ranch Road. This would involve obtaining easements from eleven property owners.

Big Ranch Road is a low volume traffic road with a right-of-way that varies from 50-feet in the north end to 80-feet near Trancas Road. The road runs due south for three and three quarter miles connecting to Trancas Street. However, it has no shoulders for much of its length, and has drainage ditches on either or both sides. It would be necessary to underground the drainage on one side of the road to accommodate a Class I bike path **(see Fig 5-18 Cross Section 26)**.

Big Ranch Road looking north.

5B.2 Sub Option: Follow the Napa River to Trancas Street.

The bike path could continue south and follow the Napa River to Trancas and the site of the proposed new river park, located on Trancas Street. This would involve obtaining easements from about thirty-four property owners.

At Trancas Street, the bike path would have to cross the street and connect to the existing Napa River Trail. The Trancas Miller Park Plan proposes a trail connection under the Tracas bridge. The lack of an existing protected crossing at this location is problematic from a safety perspective.

Future Napa River Park at Trancas Road bridge looking north.

Connection to existing Napa River Trail on south side of Trancas Street

Table 5-19: Segment 5B Mid Valley - Summary

Option B (Mid Valley)		Length Miles	On Street LF	Pathway LF	Maximum ROW Needed SF
5B	Vineyard View Dr to fork in Napa River north of Big Ranch Road	2.41	0	12,913	258,256
5B.1	Napa River to Redwood Road/Trancas via Big Ranch Road	4.93	21,120	3,943	78,860
5B.2	Napa River to Redwood Road/Trancas via Napa River	4.86	0	24,751	495,020

Option 5C: East Side

Length: 6.96 miles
Type: Class I
Surrounding Land Use: Agriculture, Rural residential, Commercial.
Jurisdictions: Napa County, City of Napa

Option 5C would consist of either (a) the existing Class II bike lanes or (b) a new Class I bike path parallel to the Silverado Trail from Silverado Winery to Trancas Street **(see Fig. 5-7, Cross Section 11)**. As indicated in 2C, the Silverado Trail alignment would involve developing a parallel bike path on the west side of the road. There is approximately 11-feet of right-of-way available.

Silverado Trail: Right-of-way looking south.

The bike path would consist of a 10-feet wide paved Class I bike path with two 2-feet shoulders. There would be a 5-feet wide separation from the edge of the existing road pavement except in constricted areas where a barrier in lieu of a 5-feet separation from edge of pavement would be installed. The construction of the bike path would require purchasing a 2- to 8-foot easement along the entire west side of the Silverado Trail.

However as the Silverado Trail approaches the City of Napa, the right-of-way begins to decrease in width and the bike path would have to transition to bike lanes. The lack of an existing protected crossing at this location is problematic from a safety perspective. When Segment 5.C, the Silverado Trail, reaches Trancas Road, it may be feasible to continue a Class I trail westwards to connect to the Napa River Trail.

Table 5-20: Segment 5C East Side – Summary

Option C (East Side)		Length Miles	On Street LF	Bike Path LF	ROW Needed SF
5C	Silverado Winery to Redwood Road/Trancas	6.96	0	36,730	183,651

Evaluation Of Alternatives

Segment 5 has significant challenges as it approaches the Napa Valley City limits in order to connect to one of the two existing trails within the city of Napa (Napa River Trail and the Napa Rail Trail).

Option 5A outscores the other options primarily because of the availability of existing publicly owned right-of-way. It also would connect at Redwood Road with the existing Napa Rail Trail. It also serves residential neighborhoods along Solano Avenue and commercial and employment centers off Redwood Road.

However, Big Ranch Road has significant drainage ditches on either side and currently does not have adequate shoulders suitable for cyclists and pedestrians. There would be substantial costs for widening the road and undergrounding the drainage on one side of the road.

Table 5-21: Segment 5 Evaluation of Alternatives

Napa Valley Greenway Segment Evaluation	SEGMENT # 5				
Criteria	Criteria Weight	Option A West Side	Option 5B.1 Mid-Valley following Big Ranch Road	Option 5B.2 Mid-Valley following the Napa River	Option C East Side
Right-of-way	1 - 20	20	10	0	10
Agricultural Impacts	1 - 20	20	10	10	20
Aesthetics	1 - 20	10	10	20	10
User Safety	1 - 20	15	10	15	10
Residential Impacts	1 - 10	8	3	6	7
Usage	1 - 10	8	8	7	4
Functionality	1 - 10	8	4	4	8
Cost/Feasibility	1 - 10	2	1	1	4
Environmental Impacts	1 - 10	7	5	5	8
	Score	98	61	68	81

West Side Option (5A)

- Could potentially be 100% on public right-of-way.
- Offers some good aesthetic experience to users
- Likely to be used by the broadest variety of users
- Would require Napa Valley Wine Train approval of pathway and proposed barrier next to tracks,
- Good connections to residential neighborhoods, schools and commercial areas.
- Would require removal of eucalyptus trees between Hillview Lane and Carrel Lane

Mid-Valley Option (5B.1)

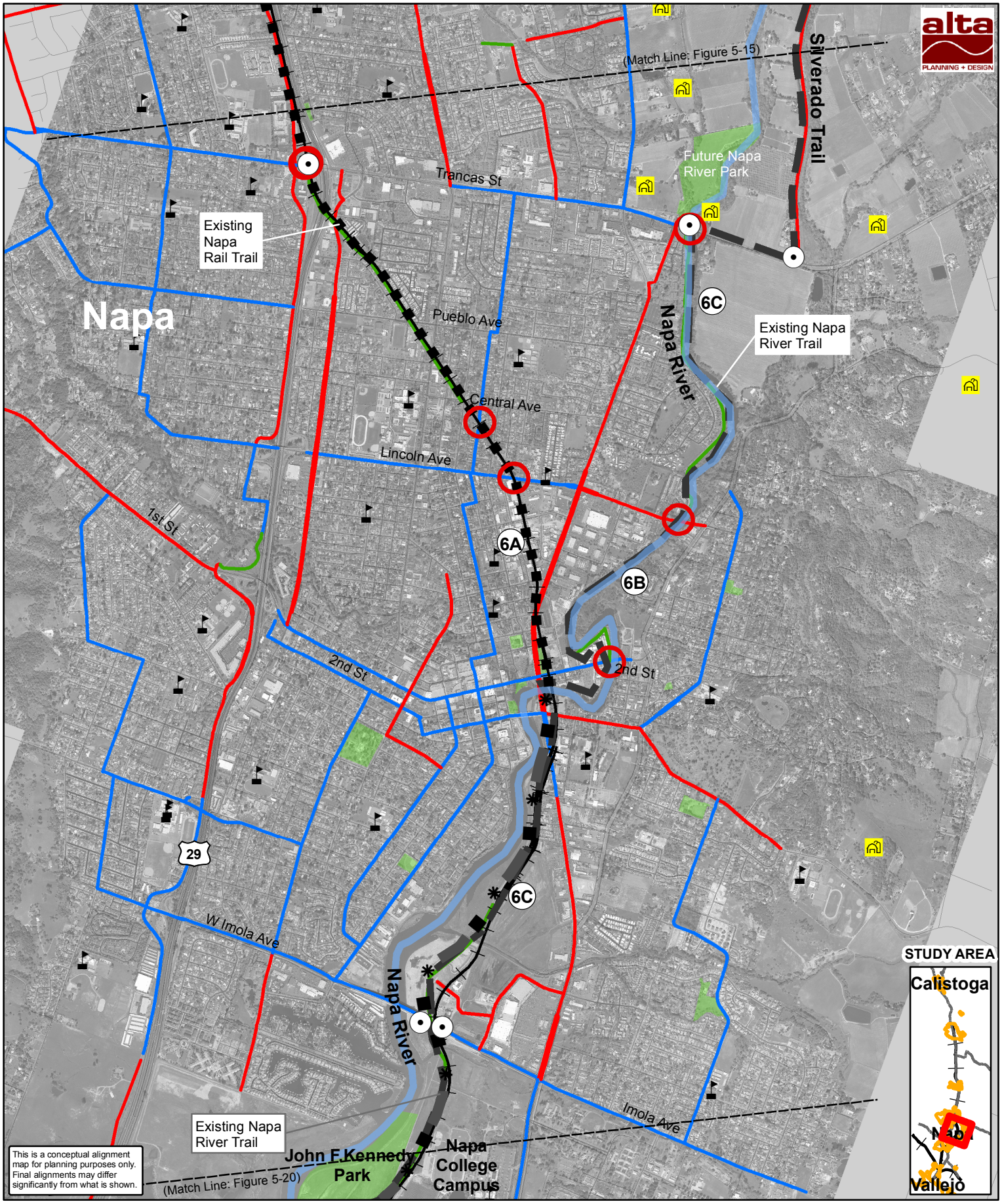
- Requires support and approval by local property owners
- Would need to be routed, designed, and operated to minimize impacts
- Likely to be used by a broad variety of users
- Would require improvements to Big Ranch Road to cover over and existing draining ditch.

Mid-Valley Option (5B.2)

- Requires support and approval by local property owners
- Would need to be routed, designed, and operated to minimize impacts
- Provides the most scenic route
- Likely to be used by a broad variety of users
- Connects to proposed City Park at Trancas Street
- Cross Trancas at-grade would be problematic without crossing protection given the street width, speeds, and traffic volumes. An under crossing of the bridge at this location may be feasible and warrants further study.

East Side Option (5C)

- Could potentially be on some public right-of-way, although some private property owner land may be needed
- Offers some good aesthetic experience to users
- Would require 5-feet setback or barrier.
- The transition from Silverado Trail to the Napa River Trail would require some users to cross the roadway at some location



NAPA BIKEWAY FEASIBILITY STUDY
Segment 6
Trancas St. to Imola Ave.

- Segment Endpoint
- Class I Path
- Class II Bike Lane
- Class III Bike Route
- Major Road Crossings
- Railroad
- Streams and Rivers
- Parks
- Creek and Stream Crossings
- Schools
- Wineries
- Alignment 1A1
- Alignment B Mid--Valley Study Zone
- Alignment C

Figure 5-19

0 0.2 0.4 Miles

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5.2.6 . Segment 6: Redwood Road/Trancas Street to Imola Avenue

Segment 6 begins at Redwood Road/Trancas Street and extends south through the City of Napa to Imola Avenue. The City of Napa already has two north-south pathway alignments that can be integrated into the Napa Valley Greenway. The Napa Rail Trail which extends from a point just south of Redwood Road to Central Avenue, and the Napa River Trail which has two segments already completed. In Segment 6 all the options basically follow the existing and proposed trail alignments. See **Figure 5-19** for location of Options.

Wine Train ROW at First Street.

Option 6A West Side

Length:	3.50 miles
Type:	Class I
Surrounding Land Use:	Urban, residential and commercial.
Jurisdictions:	City of Napa.

Option 6A would connect to the existing Napa Rail Trail that extends from 150 feet south of Redwood Road to Central Avenue (0.9 miles). The Rail Trail is not formally completed between from Redwood Road and the new bike/pedestrian bridge over SR 29 due to some property issues.

Existing Napa River Trail south of Tulacay Creek, looking north.

This option would parallel the NVWT right-of-way to the Soscol Avenue bridge. It would connect to the planned Napa River Trail at First Street.

The path would cross the Napa River at the Soscol Avenue bridge and then connect to the Napa River Trail that extends from this point south towards Imola Avenue.

Most of the path with the exception of the 1.5-mile section from Central Avenue to Tulacay Creek exists. The connection between Central Avenue and Tulacay Bridge is planned as part of the Napa River Trail.

Existing Napa River Trail, looking South to Imola Avenue.

Table 5-22: Segment 6A West Side - Summary

Option A (West Side)		Length in Miles	On Street LF	Pathway LF	ROW Needed SF
6A	Redwood Road to Imola Ave	3.50	0	18,485	79,200

Option 6B Mid-Valley

Length: 3.75 miles
Type: Class I
Surrounding Land Use: Urban, residential, commercial
Jurisdictions: City of Napa

Option 6.B would begin at Trancas Road and follow the existing Napa River Trail to Lincoln Avenue (0.75 miles).

The Napa Valley Greenway would cross Trancas Avenue and follow the existing Napa River Trail to Lincoln Avenue. From Lincoln Avenue south to the Soscol Avenue Bridge there is a one mile gap to another section of the existing Napa River Trail south of the Soscol Avenue Bridge.

Most of the existing trail between Trancas Avenue to Lincoln Avenue is a soft surface trail and would need to be widened and paved to meet Class I bike path standards.

Looking east on Trancas Street to Napa River bridge and the end on existing Napa River Trail.

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Existing unpaved Napa River Trail at Lincoln Ave.

Table 5-23: Segment 6B Mid Valley - Summary

Option B (Mid Valley)		Length in Miles	On Street LF	Pathway LF	ROW Needed SF
6B	Trancas to Imola Ave	3.75	0	19,820	105,600

Option 6C: East Side

Length:	4.11 miles
Type:	Class II
Surrounding Land Use:	Urban, residential, commercial
Jurisdictions:	City of Napa, Caltrans.

As the Silverado Trail enters Napa, it intersects with Trancas Street. South of Trancas Street, the Silverado Trail becomes SR 121 and it passes through residential and commercial areas with little opportunity to construct a separate Class I bike path.

Looking west on Trancas Street to Napa River Bridge

Approximately half a mile to the west of the Silverado Trail following Trancas Street Option 6C would intersect with Option 6.B. Option 6B would cross Trancas Street and follow the existing and planned Napa River Trail to Imola Avenue.

There are vineyards on either side of Trancas Street. Trancas Street has a right-of-way of 80-feet and consists of four 12-feet wide travel lanes and a single 12-feet wide turn lane. There are 4-feet bike lanes. It would be possible to construct a Class I bike path on the north side. It may be possible to reconfigure the road lanes, by eliminating the continuous turn lane that only serves the Silverado Trail, or acquire some right-of-way.

Napa River Bridge at Trancas Street

Where Trancas Street crosses the Napa River, the travel lanes and turn lanes could be reconfigured to accommodate the bike path.

This would involve either:

1. Restriping the travel lanes and eliminate the center lane for the length of the bridge to create a bike path on the north side of Trancas Avenue; or
2. Constructing a new pedestrian/bike bridge over the Napa River.

At the west end of the bridge, the Napa Valley Greenway would cross Trancas Avenue and connects to the existing Napa River Trail as described in 6B.

Table 5-24: Segment 6C East Side – Summary

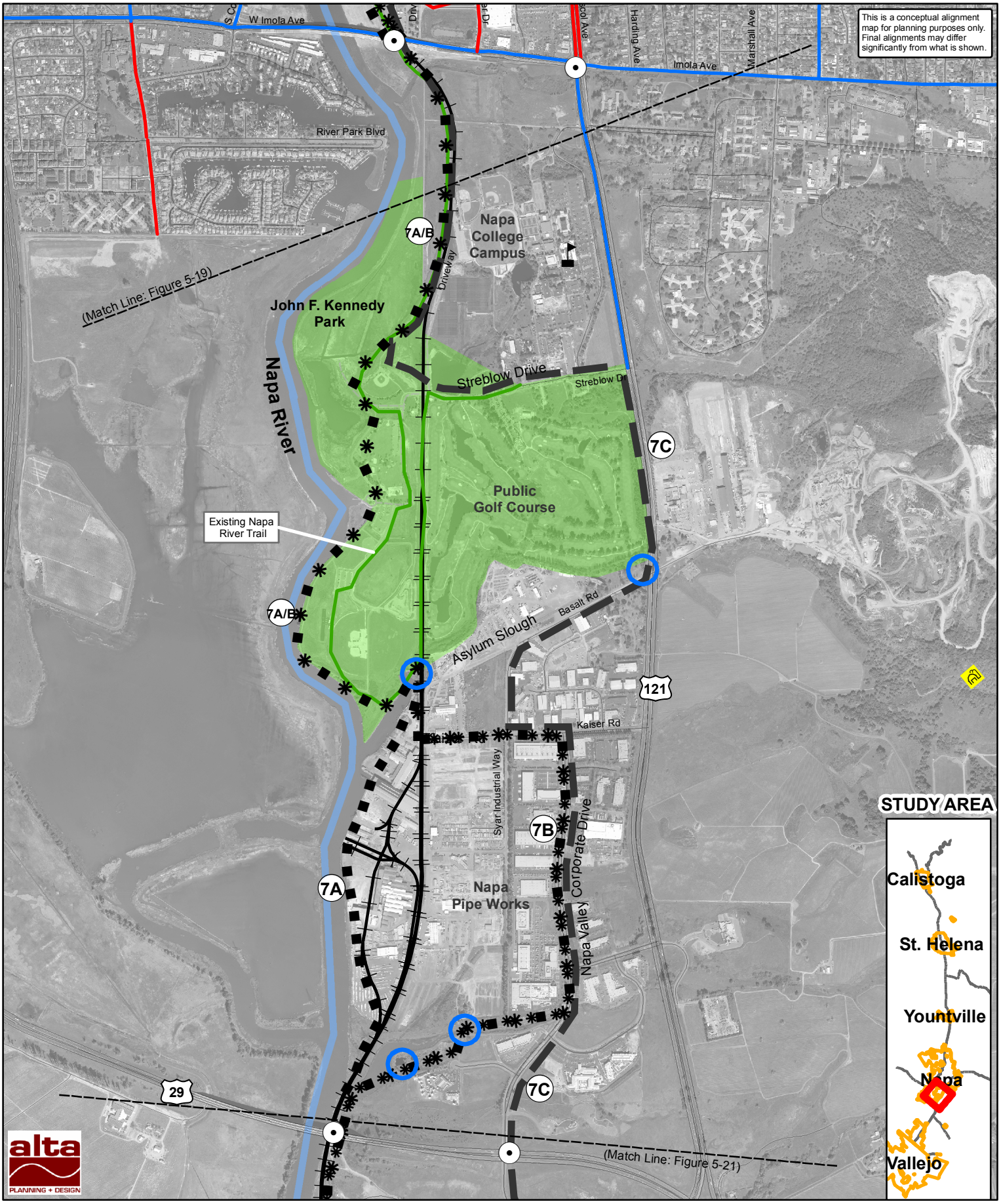
Option C (East Side)		Length in Miles	On Street LF	Pathway LF	ROW Needed SF
6C	Trancas to Imola Ave	4.11	0	21,701	137,280

Evaluation Of Alternatives

Based on an evaluation of alternatives (see Table 5.25 below), Option 6A has a slight advantage over Option 6B and 6C, because the environmental impacts of constructing the bike path along the NVWT right-of-way are likely to be less than constructing a path next to the Napa River.

Table 5-25: Segment 6 Evaluation of Alternatives

Napa Valley Greenway Segment Evaluation	SEGMENT # 6			
Criteria	**Criteria Weight**	**Option A West Side**	**Option B Mid-Valley**	**Option C East Side**
Right-of-way	**1 - 20**	**10**	**12**	**7**
Agricultural Impacts	**1 - 20**	**20**	**20**	**20**
Aesthetics	**1 - 20**	**10**	**15**	**15**
User Safety	**1 - 20**	**14**	**14**	**14**
Residential Impacts	**1 - 10**	**8**	**8**	**8**
Usage	**1 - 10**	**8**	**7**	**7**
Functionality	**1 - 10**	**8**	**7**	**7**
Cost/Feasibility	**1 - 10**	**8**	**4**	**4**
Environmental Impacts	**1 - 10**	**10**	**5**	**5**
	Score	**96**	**92**	**87**



NAPA BIKEWAY FEASIBILITY STUDY
Segment 7
Imola Ave. to Hwy 29

Segment Endpoint
Class I Path
Class II Bike Lane
Class III Bike Route
Major Road Crossings
Railroad
Streams and Rivers
Parks
Creek and Stream Crossings
Schools
Wineries
Option A
Option B
Option C

Figure 5-20

N

0 0.1 0.2 Miles

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West Side Option (6A)

- Mostly on public right-of-way or existing easements.
- Uses existing paved Class I bike path for .9 mile of route.
- Offers good aesthetic experience to users in a city
- Likely to be used by the broadest variety of users
- Good connections to residential neighborhoods and commercial areas.

Mid-Valley Option (6B)

- Mostly on public right-of-way or existing easements.
- Would require paving and widening some existing sections of unpaved trail.

East Side Option (6C)

- Same as 6B.
- Would require reconfiguring travel lanes on Napa River bridge to accommodate bike path on south side or construction of new bike/pedestrian bridge.

5.2.7 . Segment 7: Imola Avenue to The Highway 29 Bridge.

Segment 7 begins at Imola Avenue and extends to the Highway 29 Bridge across the Napa River. All three Options follow the existing City of Napa River Trail and Bay Trail route as far as Streblow Drive, that serves John F. Kennedy Memorial Park (Kennedy Park). All three would connect with the Napa Valley College campus. From Kennedy Park south there are two potential path routes. These have been explored in previous studies: *Napa River Bay Trail Study (2007)* and the *San Francisco Bay Trail: Gap Analysis Study (2005)*. **See Fig 5-21** for location of Options.

Option 7A West Side

Length:	3.03 miles
Type:	Class I and Class II
Surrounding Land Use:	Public park, proposed redevelopment project and railroad.
Jurisdictions:	City of Napa, Napa County, Union Pacific Railroad.

Options 7A crosses beneath the Imola Avenue bridge and follows the existing San Francisco Bay Trail southwards through Kennedy Park towards Asylum Slough. The existing bike path is a Class I path (**Fig 6-1**) 10-feet wide.

John F. Kennedy Park
Existing San Francisco Bay Trail

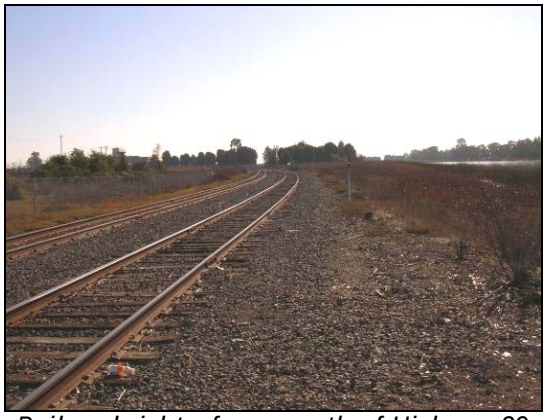
The Union Pacific Railroad (UPRR) owns the railroad corridor that runs through Kennedy Park for almost 1.5 miles. The right-of-way is not fenced and there is a road crossing, Streblow Drive, as well as an existing trail crossing of the tracks within the park.

UPRR has an operating agreement with California Northern Railroad on this section of railroad track. The track is used primarily as a spur siding to store rail cars awaiting transit to the main line 5-miles further south in American Canyon.

View south from John F. Kennedy Park, looking across Asylum Slough to the Napa Pipe Works property.

Options 7A follows the Long Term Recommendation of the *San Francisco Bay Trail Gap Analysis Study* and proposes to cross Asylum Slough by constructing a bicycle/pedestrian bridge parallel to the existing railroad bridge. The property on the south side of Asylum Slough is an industrial area occupied by steel fabricators, a concrete plane and the former Napa Pipe Works. There is active heavy industrial use of the area. As a result, in the short term it may not be compatible with the trail. However, there are proposals to redevelop the Napa Pipe Works. This would present an opportunity to construct a trail between the railroad and the Napa River on the west side of the existing railroad tracks. The railroad right-of-way through this area is 50- to 60-feet wide and there would appear to be ample room to accommodate the bike path and provide separation from the tracks.

A minimum 12-feet wide easement from the Union Pacific Railroad would have to be acquired to implement the construction of a bike path within their right-of-way at two locations, the south side of Asylum Slough to Kaiser Road and from the end of the existing 25-feet wide trail easement to the Highway 29 Bridge.



Railroad right-of-way north of Highway 29 Bridge.

Table 5-26: Segment 7A West Side – Summary

Option A (West Side)		Length in Miles	On Street LF	Pathway LF	ROW Needed SF
7A	Imola to Highway 29 Bridge	3.03	0	15,998	71,280

OPTION 7B Mid-Valley

Length: 3.97 miles
Type: Class I and Class II
Surrounding Land Use: Public park, Golf course, industrial, business park and railroad.
Jurisdictions: City of Napa, Napa County, Union Pacific Railroad.

Option 7B follows the same route as Option 7A until it reaches the south bank of Asylum Sough. At this location Option 7B would head east along Kaiser Way. Option 7B would become Class II bike lanes on Kaiser Way to connect to Napa Valley Corporate Drive and head south. Approximately 1000-feet north of San Anselmo Court, the trail would once again become a Class I bike path heading west following an existing 25-feet wide trail easement. This easement was dedicated as a condition of the Napa Corporate Park development along with a tidal lagoon. Option 7B would then head south along the east side of the UPRR railroad right-of-way. In this location, the railroad right-of-way varies from between 50 to 60 feet and is occupied by a single track.

There is adequate room to offset a Class I bike path on the east side of the railroad tracks from the south side of the Napa Pipe Works. Two 75-feet long bicycle/pedestrian bridges would need to be constructed in this area to cross the tidal lagoon. The bike path would head south to the Highway 29 bridge over the Napa River.

Table 5-27: Segment 7B Mid Valley -Summary

Option B (Mid Valley)		Length in Miles	On Street LF	Pathway LF	ROW Needed SF
7B	Imola to Highway 29 Bridge	3.97	6,336	14,045	36,000

Option 7C: East Side

Length: 3.85 miles
Type: Class I and Class II
Surrounding Land Use: Public park, industrial, business park and railroad.
Jurisdictions: City of Napa, Napa County, Caltrans and Union Pacific Railroad.

Option 7C offers a shorter term solution by avoiding the wide section of Asylum Slough and Napa Pipe Works property.

Option 7C follows the same alignment as Options 7A and 7B until it reaches Streblow Drive in Kennedy Park. At this point Option 7C would cross the railroad tracks at Streblow Drive using the existing Class I bike path.

Existing railroad crossing at Streblow Drive in Kennedy Park

Before Streblow Drive intersecting with Highway 121, the trail would head south along the boundary of the publicly owned Napa Golf Course and cross Asylum Slough via a new bike/pedestrian bridge to connect to Basalt Road. At this point the bike path would become Class II bike lanes through the NapaValley Corporate Park.

The bike lanes would connect to Kaiser Road and then south along Napa Valley Corporate Drive and under the Highway 29 overpass. At this location there is access to the Napa Valley Vista Point.

Napa Valley Corporate Drive

Table 5-28: Segment 7C East Side – Summary

Option C (East Side)		Length in Miles	On Street LF	Pathway LF	ROW Needed SF
7C	Imola to Highway 29 Bridge	3.85	9,874	9,768	0

Evaluation Of Alternatives

Based on an evaluation of alternatives (**see Table 5.29 below**), Option 7.C scores slightly higher because it uses more of the existing roads and rights-of-way.

Table 5-29: Segment 7 Evaluation of Alternatives

Napa Valley Greenway Segment Evaluation	SEGMENT # 7			
Criteria	**Criteria Weight**	**Option A West Side**	**Option B Mid-Valley**	**Option C East Side**
Right-of-way	**1 - 20**	**10**	**15**	**20**
Agricultural Impacts	**1 - 20**	**20**	**20**	**20**
Aesthetics	**1 - 20**	**10**	**10**	**10**
User Safety	**1 - 20**	**14**	**10**	**10**
Residential Impacts	**1 - 10**	**10**	**10**	**10**
Usage	**1 - 10**	**8**	**6**	**5**
Functionality	**1 - 10**	**6**	**4**	**4**
Cost/Feasibility	**1 - 10**	**2**	**6**	**10**
Environmental Impacts	**1 - 10**	**5**	**5**	**8**
	Score	**85**	**86**	**97**

West Side Option (7A)

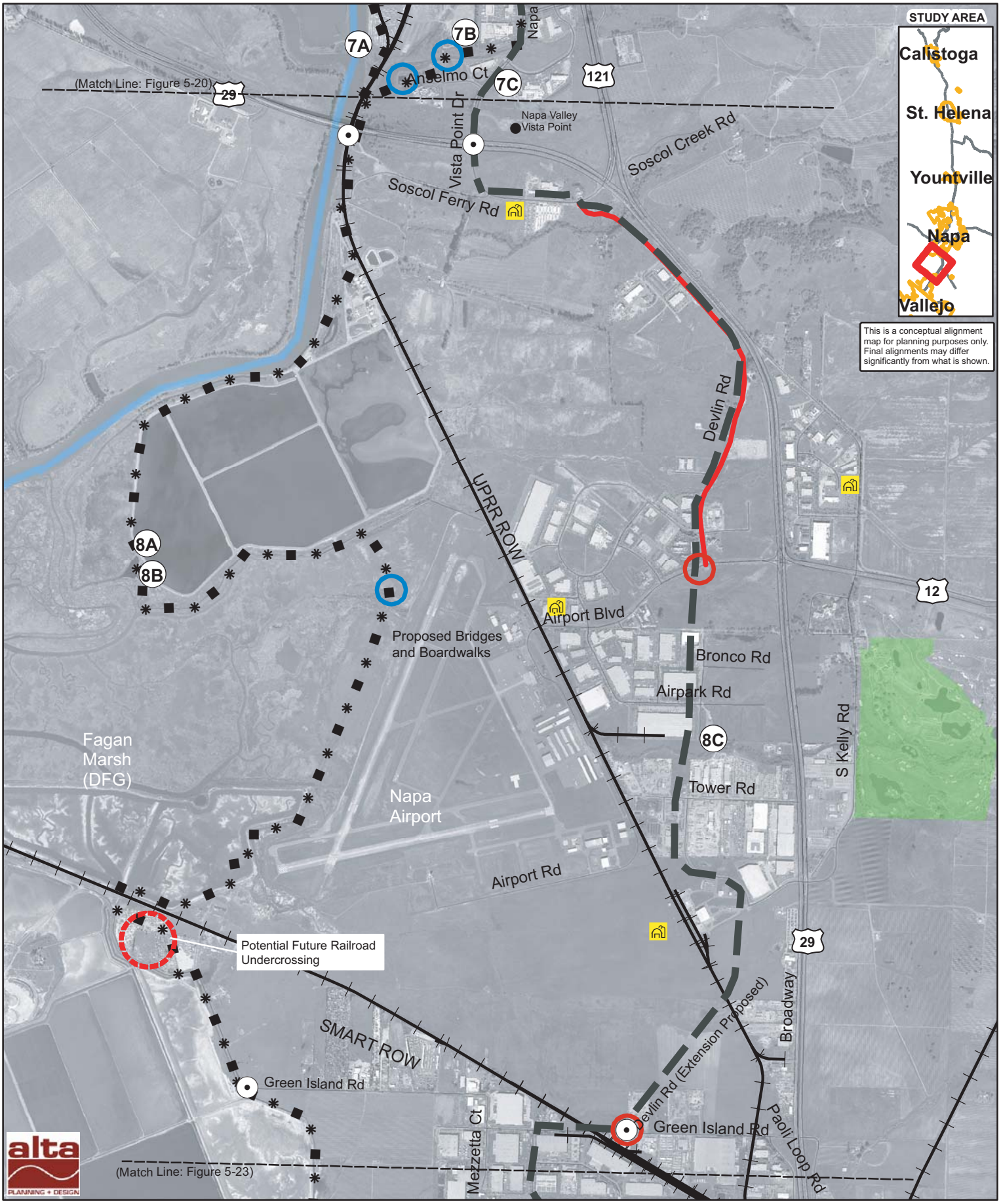
- Mostly on public right-of-way, existing easements or locations where easements could be obtained through development agreement.
- All Class I separated bike path..
- Offers good aesthetic experience to users.
- Likely to be used by the broadest variety of users

Mid Valley Option (7B)

- Mostly on public right-of-way or existing easements.
- Class II bike lanes for part of Option
- Shares road with industrial traffic
- Has three bridges that would bed to be constructed.

East Side Option (7C)

- Mostly on public right-of-way
- Mostly Class II bike lanes



NAPA BIKEWAY FEASIBILITY STUDY

Segment 8

Hwy 29 to Green Island Rd.

- Segment Endpoint
- Class I Path
- Class II Bike Lane
- Class III Bike Route
- Major Road Crossings
- Railroad
- Streams and Rivers
- Parks
- Creek and Stream Crossings
- Schools
- Wineries
- Option A
- Option B
- Option C

Figure 5-21

N

0 0.2 0.4 Miles

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5.2.8 . Segment 8: Highway 29 Bridge to Green Island Road

Segment 8 begins where the Highway 29 bridge crosses the Napa River and extends south to Green Island Road. **See Fig 5-21 for location of Options**.

Option 8A West Side and 8B Mid-Valley

Length:	5.92 miles
Type:	Class I
Surrounding Land Use:	Wildlife habitat, public facilities, airport, light industrial.
Jurisdictions:	Napa County Sanitation District, Caltrans, California Department of Fish and Game, Sonoma Marin Area Rail Transit Authority (SMART), Union Pacific Railroad.

In Segment 8, Options 8A and 8B are identical. From the Highway 29 Bridge, Options 8A and 8B follow the east side of the UPRR right-of-way until they enter the Napa Sanitation District Plant at a private crossing off Soscol Ferry Road. This alignment is the preferred alignment that was prepared for Napa County in 2007

In the 2007 study conducted by Questa Engineering and Alta Planning + Design for the Napa County Regional Parks and Open Space District[1], it was determined that a trail could be constructed along the levee surrounding the plant and then head back inland towards the Napa Airport, skirting the Fagan Mash Ecological Reserve to intersect with Green Island Road.

UPRR railroad tracks at entry to Napa Sanitation District Plant

Existing paved levee at Napa Sanitation District Plant

[1] Napa River San Francisco Bay Trail Napa County September 5, 2007 (Questa Engineering and Alta Planning + Design)

The 2007 study included information about wetlands and sensitive habitat areas. The trail design would include buffers and fencing in these biologically sensitive areas. The trail alignment also proposes to reconstruct levees to connect the parts of the trail alignment. These levees have a minimum width suitable for accommodating an 8-feet wide Class I bike path. In some cases it is wider.

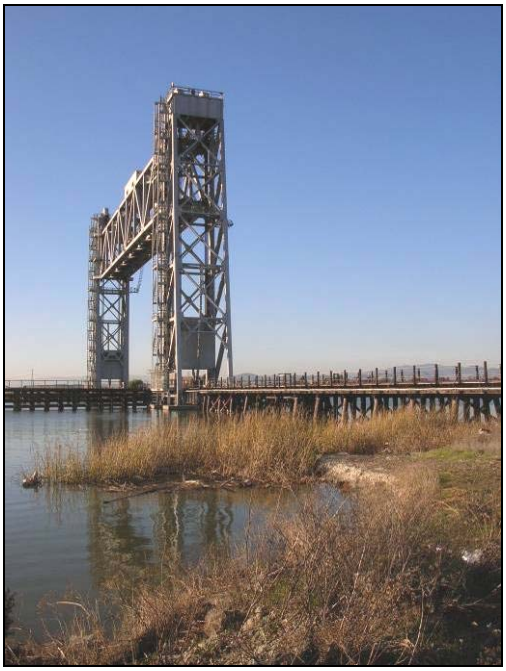
Bridges and boardwalks are proposed to traverse the edge of DFG's Fagan Marsh. The bridges and the boardwalks are wide enough to accommodate an 8-feet wide Class I bike path (see Fig 22 Cross Section 27).

The Greenway would connect with Green Island Road south west of the Napa Valley Airport. Because of the configuration of levees in the area and the desire to have a separated grade crossing at the SMART railroad tracks, the trail could be extended further west to the Brassos railroad bridge and provide an undercrossing at that location.

The estimated cost of this alignment was over $5.5 million. This included a separated grade crossing at the SMART railroad right-of-way of $1,659,700.

Existing unpaved levee on south side of Napa Sanitation District Plant

Fagan Marsh Ecological Reserve



Brassos Railroad Bridge. Trail Would Cross Under Trestle.

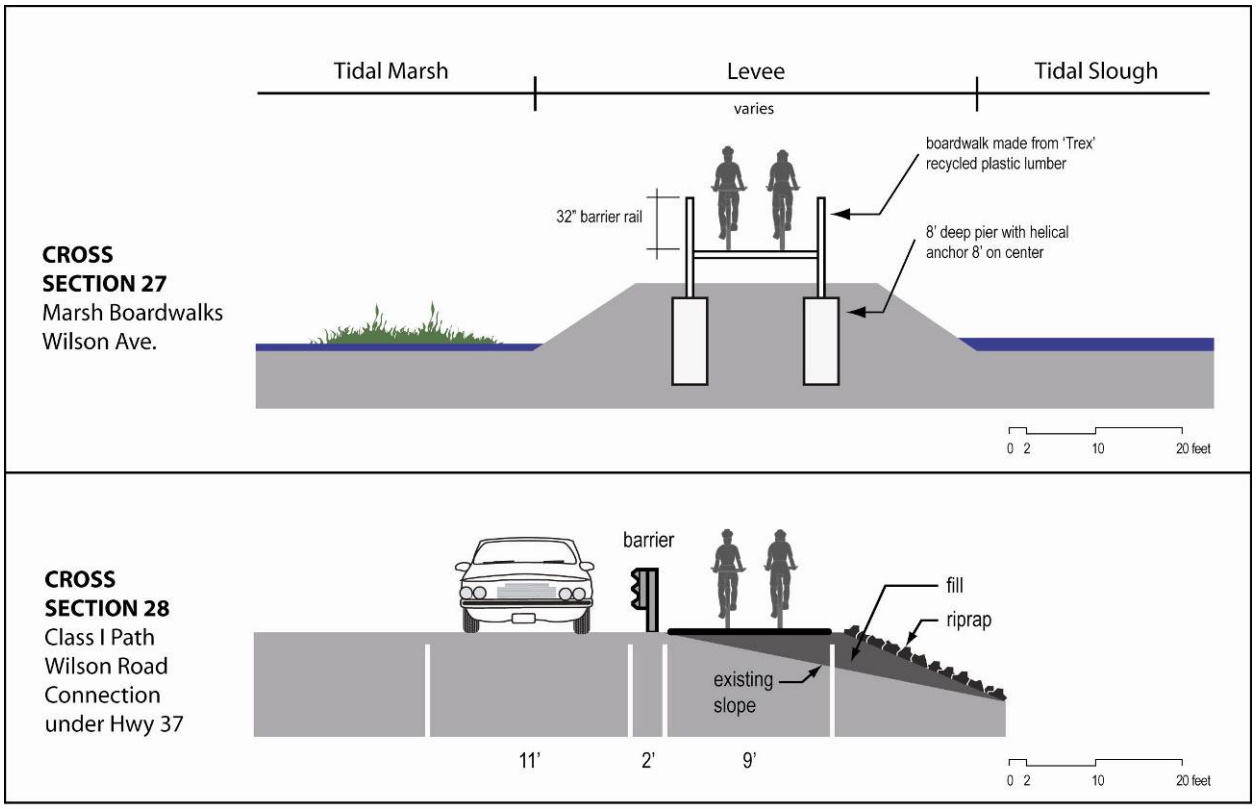


Figure 5-22. Napa Valley Greenway Typical Cross Sections

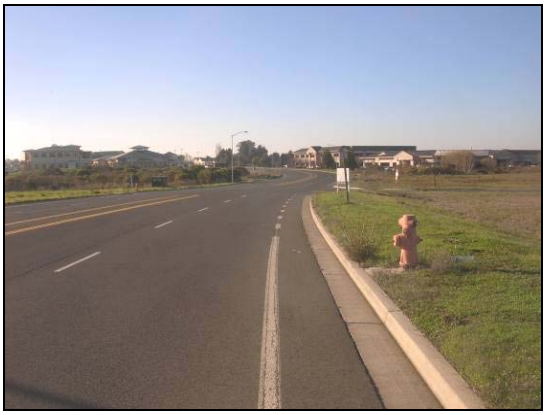
Table 5-30: Segment 8A and 8B West Side and Mid Valley - Summary

Option A (West Side) and Option B (Mid-Valley)		Length in Miles	On Street LF	Pathway LF	ROW Needed SF
8A & 8B	Highway 29 Bridge to Green Island Road	5.92	0	31,281	26,400

Option C: East Side

Length: 5.34 miles
Type: Class I
Surrounding Land Use: Wildlife habitat, public facilities, airport, light industrial.
Jurisdictions: Napa County, Caltrans, Sonoma Marin Area Rail Transit Authority (SMART), Union Pacific Railroad.

Option 8C begins at the Highway 29 Bridge and continues as Class II and Class III bike lanes and bikeways from Napa Valley Corporate Drive to Soscol Ferry Road. Soscol Ferry Road has low traffic volumes. Soscol Road connects to Devlin Road which parallels Highway 29 south to Airport Boulevard. Devlin Road has a 60-feet wide right-of-way with curbs consisting of four travel lanes and two Class II bike lanes. It is planned to extend Devlin Road to Green Island Road.



Devlin Road

Table 5-31: Segment 8C East Side – Summary

Option C (East Side)		Length in Miles	On Street LF	Pathway LF	ROW Needed SF
8C	Highway 29 Bridge to Green Island Road	5.34	28,220	0	0

Evaluation Of Alternatives

Based on an evaluation of alternatives (see Table 5-32 below), Options 8A and 8B take a less direct route that may appeal more to recreational users. Most commuter cyclists will prefer to use the on street efficiency of the Devlin Road extension when it is constructed. The cost of the Class II bike lanes proposed under Option 8C would be considerable less. However, Options 8A and 8B offer a continuous Class I experience.

Table 5-32: Segment 8 Evaluation of Alternatives

Napa Valley Greenway Segment Evaluation	SEGMENT # 8		
Criteria	**Criteria Weight**	**Option A & B West Side & Mid-Valley**	**Option C East Side**
Right-of-way	**1 - 20**	**18**	**20**
Agricultural Impacts	**1 - 20**	**20**	**20**
Aesthetics	**1 - 20**	**15**	**10**
User Safety	**1 - 20**	**14**	**12**
Residential Impacts	**1 - 10**	**10**	**10**
Usage	**1 - 10**	**8**	**8**
Functionality	**1 - 10**	**8**	**6**
Cost/Feasibility	**1 - 10**	**2**	**7**
Environmental Impacts	**1 - 10**	**5**	**10**
	Score	**100**	**103**

West Side and Mid Valley Options (8A and 8B)

- Mostly on public right-of-way.
- Requires environmental mitigation.
- Offers good aesthetic experience to users.
- Likely to be used by a broad variety of users.
- Requires several agencies Napa County Sanitation District and Department of Fish and Game to approve trail.
- Requires new separated grade crossing of SMART railroad right-of-way at Brassos Bridge.

East Side Option (8C)

- All on public right-of-way.
- All Class II bike lanes.
- Depends on extension of Devlin Road to serve industrial parks.
- Uses existing at grade automated railroad crossings.

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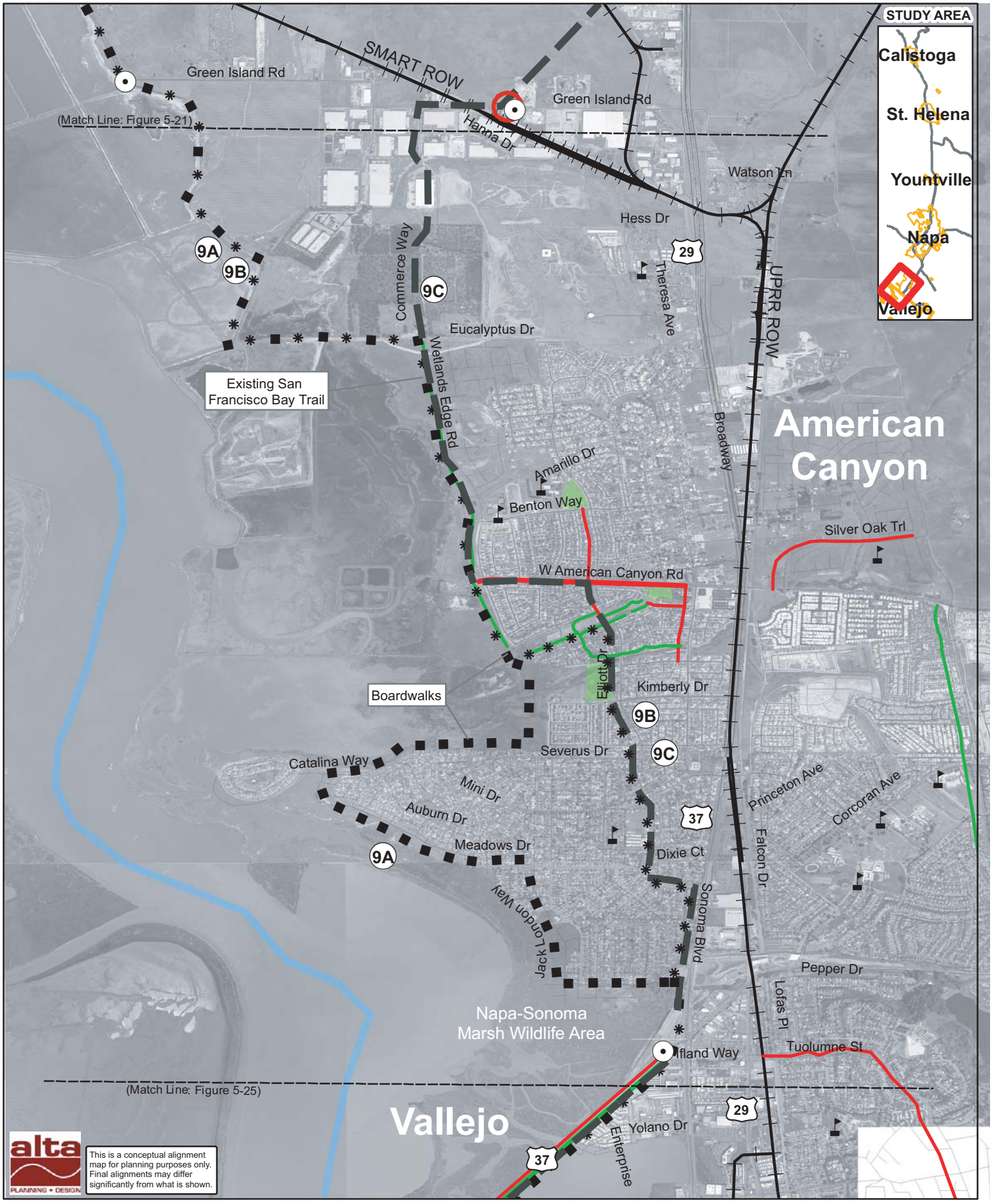

NAPA BIKEWAY FEASIBILITY STUDY
Segment 9
Green Island Ave. to Highway 37

Segment Endpoint
Class I Path
Class II Bike Lane
Class III Bike Route
Major Road Crossings
Railroad
Streams and Rivers
Parks
Creek and Stream Crossings
Schools
Wineries
Option A
Option B
Option C

Figure 5-23

N

0 0.2 0.4 Miles

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5.2.9 . Segment 9: Green Island Road to Highway 37

Segment 9 begins at Green Island Road and extends south to Highway 37. This segment traverses mainly residential areas, but also some commercial development on Highway 29 and some industrial development between the cities of Vallejo and American Canyon. All options would end at the intersection of Highway 29 and Highway 37. Option 9.A skirts the DFG's Napa-Sonoma Marshes Wildlife Area. Option 9.C mainly follows city streets through this residential area. Option 9.C combines elements of both Options 9.A and 9.C. **See Figure 5-23 for location of Options**.

Option 9A West Side

Length:	6.61 miles
Type:	Class I and short section of Class III
Surrounding Land Use:	Urban residential, and wildlife habitat.
Jurisdictions:	City of American Canyon, City of Vallejo, Napa County, Solano County, Caltrans, California Department of Fish and Game.

In Segment 9 Options 9A begins at Green Valley Road and follow the levee of the DFG property which connects to the levee owned by the City of American Canyon's Wastewater Treatment Plant for approximately. The length is approximately 1.9 miles. The Levee connection ends at Eucalyptus Drive. At the intersection of Wetlands Edge Road and Eucalyptus Drive is the beginning of a 1.4 mile existing section of the San Francisco Bay Trail which parallels the west side of Wetlands Edge Road, terminating at Kensington Way.

Existing
Bay Trail along Wetlands Edge Road

The City of American Canyon's Bikeway Circulation Plan shows the Bay Trail route heading east from the end of the existing bike path and following a series of older Class I bike paths. At Kensington Way there is a 600-feet gap from the Bay Trail to the existing bike path. There is adequate room to construct a Class I link between the Bay Trail and the existing Bike path **(Fig. 5-24 Cross Section 29).** The property is part of the Napa-Sonoma Marsh owned by the DFG.

Kensington Way. The trail could be constructed to the right of the existing sidewalk.

The City of American Canyon's existing bike path crosses Chaucer Lane and Knightsbridge Way and terminates at Elliot Drive. Elliot Drive is a 48-feet wide road with striped bike lanes. Trail users currently have to use the Elliot Drive bridge over American Canyon Creek and then connect to Kimberley Park. A separate bike/pedestrian bridge in this location paralleling the Elliot Drive bridge could provide a more continuous Greenway experience.

Meadows Way Bike Path, Looking North City of American Canyon.

There is no Class I bike path connection at the south side of Kimberley Park. Trail users could ride east along Kimberley Drive for 750-feet until they connect with an existing Class I bike path which parallels the west side of along Meadows Way for 1000 feet. The existing bike path terminates at the corner of Meadows Way and Marla Drive, close to the boundary between the City of American Canyon and City of Vallejo.

Catalina Drive, City of Vallejo

Option 9A would follow the edge of the Napa Sonoma Marshes by using the existing levee and a boardwalk for 0.7 miles to Catalina Drive in Vallejo behind residential properties on the north side of Catalina Drive (**Fig. 5-24 Cross Section 30**). Catalina Drive has direct frontage onto the Napa-Sonoma Marsh. A trail could be constructed along the shoulder in this area for approximately 0.4 miles to the intersection with Meadows Drive. The cross section would be similar to **Fig 5-24 Cross Section 29.** Meadows Drive also fronts onto the Napa-Sonoma Marsh Wildlife Area for almost 0.75 miles.

Meadows Drive Looking West. City of Vallejo

Meadows Drive is a 60-feet wide street plus two 5-foot sidewalks. The four lane road appears to have been constructed at a time when it was assumed further residential development might occur in this area. It might be possible to narrow the road by eliminating one of the lanes and reconstruct the west side of the road to accommodate a Class I bike path (**Fig 5-24 Cross Section 31).**

Option 9.A would route the Greenway via the edge of levees and proposed boardwalks along the edge of the Napa-Sonoma Marsh behind existing residences (**Fig. 5-24 Cross Section 30**) and include a section of an existing bike path within Meadows Park off Jack London Drive.

Meadows Park on Jack London Drive, looking south over Napa-Sonoma Marshes

The Greenway will extend east on boardwalks to the westbound on ramp from Highway 29 to Highway 37. The bike path would cross under the Highway 37 on ramp and head south to connect to the existing bike path at Ifland Way on the south side of Highway 37.

Looking from the south end of Jack London Drive looking east to Hwy 29.

Looking west from under the westbound on ramp from Highway 29 to Highway 37.

Table 5-33: Segment 9A West Side - Summary

Option A (West Side)		Length in Miles	On Street LF	Pathway LF	ROW Needed SF
9A	Green Island Road to Highway 37	6.61	750	34,150	0

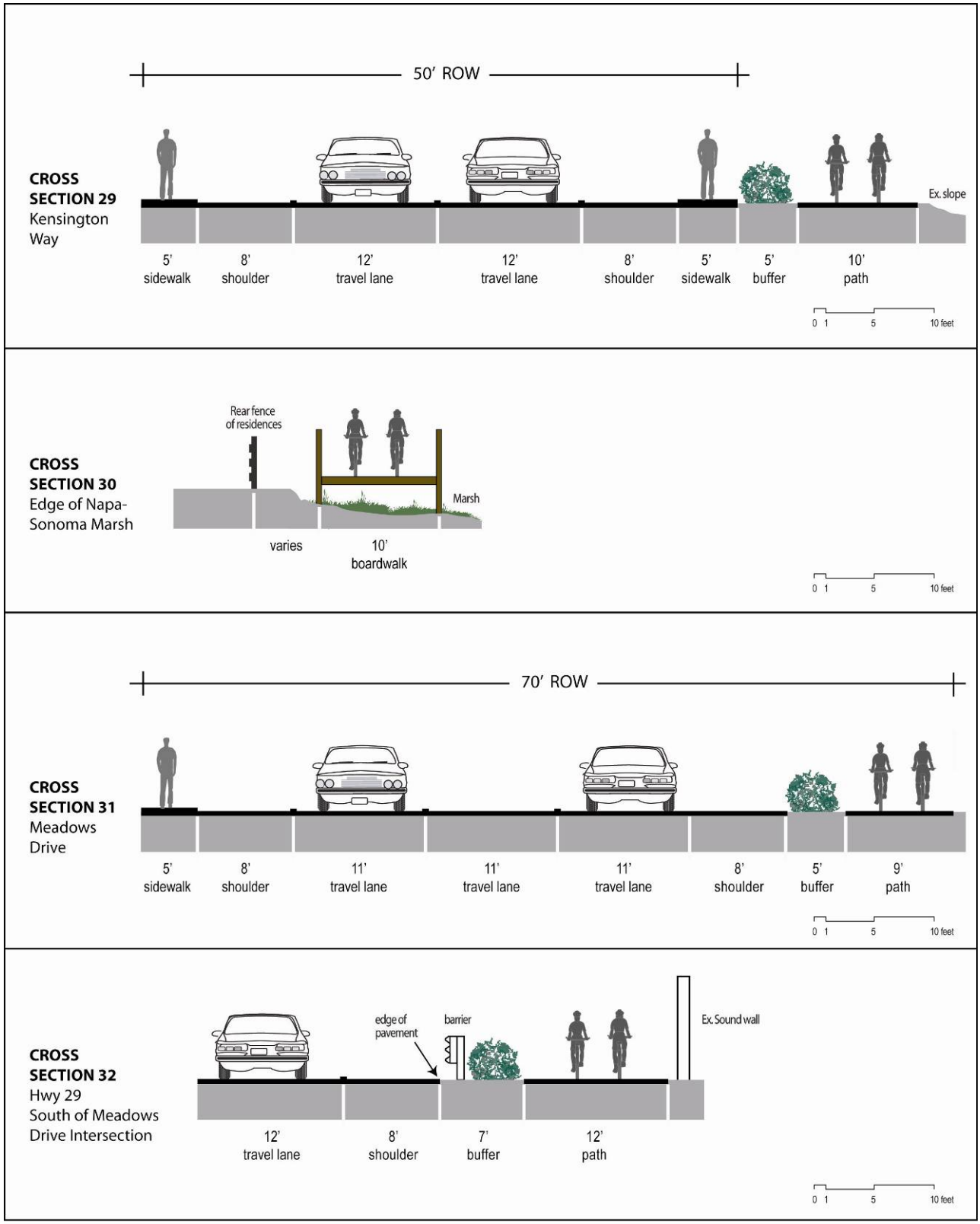


Figure 5-24. Napa Valley Greenway Typical Cross Sections

Option 9B Mid-Valley

Length:	5.9 miles
Type:	Class I and Class III
Surrounding Land Use:	Urban residential and wildlife habitat.
Jurisdictions:	City of American Canyon, City of Vallejo, Napa County, Solano County, Caltrans, California Department of Fish and Game.

Option 9B follows the same alignment as Option 9A until it reaches Elliot Drive in American Canyon. At this point, trail users would follow Elliot Drive in the City of American Canyon south to Meadows Drive in Vallejo, a distance of approximately 2.2 miles. This route would be a Class II bikeway.

The section of Elliot Drive north of the American Canyon Creek bridge has well-striped and defined bike lanes. South of the bridge there would be a need to extend these striped bike lanes to Meadows Drive in the City of Vallejo and the intersection of Meadows Drive and Highway 29.

Elliot Drive looking north. Existing Class I Bike path is on the left.

At the intersection of Meadows Drive and Highway 29, a Class I bike path could be constructed between the sound wall along Highway 29 and the existing road pavement for approximately 0.25 miles. A barrier rail would be installed between the bike path and the west edge of the road shoulder. (**Fig 5-24 Cross Section 32).**

The Greenway would head south to connect to the existing bike path at Ifland Way on the south side of Highway 37. The Greenway would have to cross the east bound and west bound on ramps onto Highway 37.

Elliot Drive looking south from American Canyon Creek bridge

Table 5-34 Segment 9B Mid Valley - Summary

Option B (Mid Valley)		Length in Miles	On Street LF	Pathway LF	ROW Needed SF
9B	Green Island Road to Highway 37	5.9	7392	23,760	0

Option C: East Side

Length:	6.05 miles
Type:	Class I & Class II
Surrounding Land Use:	Urban residential, commercial, industrial, and wildlife habitat
Jurisdictions:	City of American Canyon, City of Vallejo, Napa County, Solano County, Caltrans, California Department of Fish and Game.

Option 9C begins at Green Island Road and connects to Commerce Way using existing bike lanes. Commerce Drive extends south over North Slough to the west of Oat Hill.

Commerce Way looking north.

Option 9C connects to a property owned by the City of American Canyon. There is an unpaved road from Commerce Way to the beginning of the San Francisco Bay Trail at Wetlands Edge Road. Although the road is gated to vehicle traffic, it could be made accessible to bikes and pedestrians.

The unpaved road could be improved by constructing a 9-feet wide Class I bike path along the west side. Users would travel approximately 0.4 miles south to connect with Wetlands Edge Road. Option 9C would follow Wetlands Edge Road for 0.75 miles to American Canyon Road West for approximately one mile. Trail users would use existing Class II bike lanes on American Canyon Road for 0.4 miles to Elliot Drive.

Highway 29 shoulder south of Meadows Drive Looking south towards the Highway 37 Westbound on-ramp

Highway 29 looking north to Meadows.

At this point Option 9C would head south using the existing bike lanes on Elliot Drive to Meadows Drive in Vallejo. Meadows Drive heads east and intersects Highway 29. This route is the same route as Option 9B.

Table 5-35: Segment 9C East Side - Summary

Option C (East Side)		Length in Miles	On Street LF	Pathway LF	ROW Needed SF
9C	Green Island Road to Highway 37	6.05	19,536	7392	0

Evaluation Of Alternatives

Based on an evaluation of alternatives (**see Table 5-36 below**), Options 9C has an advantage in areas of Cost/Feasibility and Environmental Impacts, but scores lower on Aesthetics and Usage. It may be less attractive to inexperienced bicyclists. Option 9A is a longer route in distance but would provide unique views of the San Francisco Bay and Napa-Sonoma Marshes. It also provides a continuous Class I route, with the exception of a short stretch on Kimberley Street in American Canyon. None of the projects require the purchase of private property for right-of-way. If Option 9A was favored, easements for trail use would have to be negotiated with the DFG along the edge of their property.

Highway 37 and Highway 29 Intersection looking south.

Table 5-36: Segment 9 Evaluation of Alternatives

Napa Valley Greenway Segment Evaluation	SEGMENT # 9			
Criteria	**Criteria Weight**	**Option A West Side**	**Option B Mid-Valley**	**Option C East Side**
Right-of-way	**1 - 20**	**20**	**20**	**20**
Agricultural Impacts	**1 - 20**	**20**	**20**	**20**
Aesthetics	**1 - 20**	**15**	**12**	**10**
User Safety	**1 - 20**	**14**	**14**	**12**
Residential Impacts	**1 - 10**	**10**	**10**	**10**
Usage	**1 - 10**	**8**	**8**	**5**
Functionality	**1 - 10**	**5**	**6**	**6**
Cost/Feasibility	**1 - 10**	**4**	**8**	**8**
Environmental Impacts	**1 - 10**	**4**	**4**	**6**
		100	**102**	**96**

West Side (Option 9A)

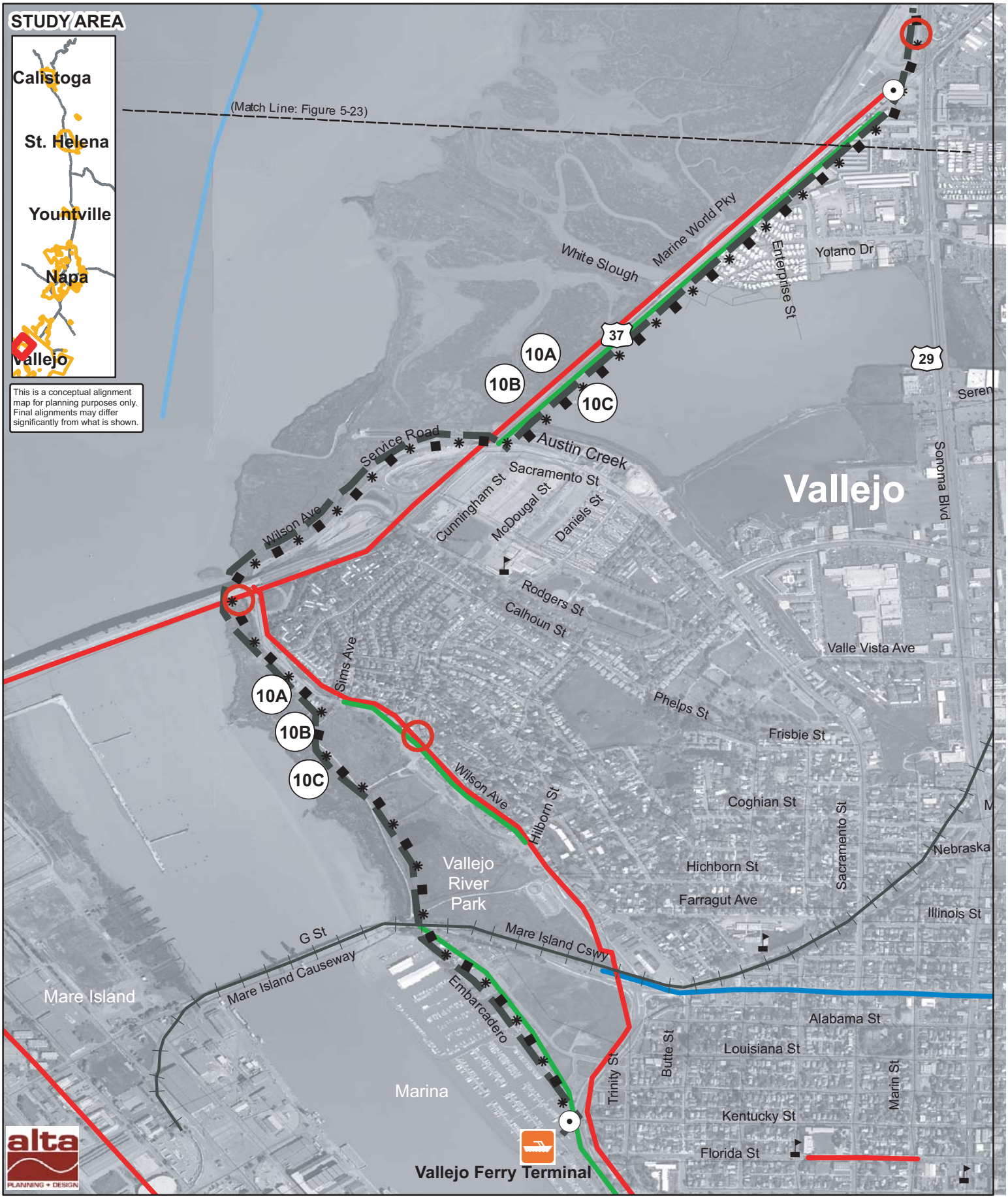
- On public property, but would require permission from DFG for boardwalks.
- Almost entirely a continuous Class I bike path.
- Requires environmental mitigation.
- Offers good aesthetic experience to users.
- Likely to be used by a broad variety of users.
- Good connections to residential neighborhoods.

Mid Valley (Option 9B)

- On public property.
- Mix of Class I and Class II.
- Likely to be used by a broad variety of users.
- Good connections to residential neighborhoods.

East Side Option (9C)

- On public right-of-way
- Less expensive because it is not a separated bike path.
- Almost entirely Class II bike lanes.



NAPA BIKEWAY FEASIBILITY STUDY
Segment 10
Highway 37 to Ferry Terminal

Segment Endpoint
Class I Path
Class II Bike Lane
Class III Bike Route
Major Road Crossings
Railroad
Streams and Rivers
Parks
Creek and Stream Crossings
Schools
Wineries
Option A
Option B
Option C

Figure 5-25

N

0 0.1 0.2 Miles

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5.2.10 . Segment 10: Highway 37 to Vallejo Ferry Terminal

Segment 10 begins at Ifland Way and ends at the Vallejo Ferry Terminal. All Options follow the same alignment **See Figure 5-25 for location**.

Option 10A West Side, 10B Mid-Valley and 10C East Side

Length:	2.97 miles
Type:	Class I
Surrounding Land Use:	Urban residential and wildlife habitat.
Jurisdictions:	City of Vallejo, Solano County, Vallejo Park and Recreation District, Caltrans.

All options begin at the existing Class I bike path at Ifland Way and Sonoma Boulevard. The existing Class I bike path parallels the south side of Highway 37. The bike path terminates at Sacramento Street.

Highway 37 bike path looking east

At Sacramento Street, the existing bike path ends. Trail users would transition to Class II (bike lanes) across Highway 37 using the overcrossing to the north side of Highway 37.

Sacramento Street and the overcrossing of Highway 37 where the existing bike path ends at Sacramento Street

Trail users would parallel Highway 37 on Wilson Avenue and then cross back under Highway 37. Users would be using Class II bike lanes. Some improvements to the road shoulders and striping would be required. There is 15-feet from the fog line to the edge of asphalt in this area. The narrowest location is at the southern bridge pier visible in the photo above is 10.5-feet.

Wilson Avenue beneath the Highway 37 Bridge looking north.

Heading south along Wilson Avenue, there may be an opportunity to widen a newly constructed 6-feet wide sidewalk to accommodate a Class I trail to Sims Avenue, where there is an existing bike path.

Wilson Avenue looking south from Highway 37 bridge to end of existing sidewalk.

Where Wilson Avenue meets Sims Avenue, the Greenway would connect to the Vallejo River Park. The park has an unpaved trail which heads west and under the Mare Island Causeway bridge.

Existing bike path at Sims Avenue.

The unpaved trail passes under the Mare Island Causeway bridge, the trail is subject to flooding and poor drainage. There is 9-feet of headroom. There are also some gates and obstructions that would need to be relocated to accommodate cyclists if this was designated as a Class I bike path. However, it should be noted that many cyclists already use the existing route.

Trail under Mare Island Causeway bridge

The Embarcadero to the Ferry Terminal and Marina is a wide pathway and is already used by both cyclists and pedestrians. It is a designated section of the San Francisco Bay Trail

Bay Trail following Vallejo Marina Embarcadero looking north

The Embarcadero parallels the Mare Island channel between Vallejo and Mare Island for approximately 0.75 miles and connects to the Vallejo Ferry Terminal.

Vallejo Ferry Terminal

Table 5-37: All Options - Summary

All Options		Length in Miles	On Street LF	Pathway LF	ROW Needed SF
All	Highway 37 to Vallejo Ferry Terminal	2.77	8290	6336	0

Evaluation

The existing sections of Class I bike path in this segment could be connected up by using Class II bike lanes and some improvements to the shoulders of Wilson Avenue.

Table 5-38: Segment 10 Evaluation

Napa Valley Greenway Segment Evaluation	SEGMENT # 10	
Criteria	**Criteria Weight**	**All Options**
Right-of-way	**1 - 20**	**20**
Agricultural Impacts	**1 - 20**	**20**
Aesthetics	**1 - 20**	**5**
User Safety	**1 - 20**	**12**
Residential Impacts	**1 - 10**	**10**
Usage	**1 - 10**	**5**
Functionality	**1 - 10**	**5**
Cost/Feasibility	**1 - 10**	**10**
Environmental Impacts	**1 - 10**	**8**
	Score	**95**

Segment 10

- All on public property.
- Likely to be used by a broad variety of users.
- Connections to residential neighborhoods.

6. Design Guidelines

This chapter addresses the implementation and design of the Napa Valley Greenway, including design standards and guidelines, cost estimates, funding, permitting, and operations and management. Technical reports are included in the Appendices and include an analysis of Trails and Agricultural Areas and a Summary of Public Input.

The Napa Valley Greenway will be constructed over time based on the availability of funding, with each completed segment functioning either as a stand-alone project or as an extension of an existing trail. Specific criteria used to evaluate individual segments resulted in a short, mid, and long-term phasing plan at the end of this chapter.

6.1. Right-of-Way Acquisition Strategy

One of the greatest challenges to implementing some of the Options for the Napa Valley Greenway is the need to acquire right-of-way from both public and private entities. Wherever possible, the Greenway is located on public right-of-way to minimize the impacts to property owners. Some segments such as the Mid-Valley Option (Option B) and the East Side Option (Option C) will require the acquisition of an easement of property rights from private property owners. If these Options were to be considered for further feasibility it is recommended that the Transportation Agency meet with every property owner who might be directly or indirectly impacted by the Greenway project. Special efforts should be made to gather input from the agricultural community, and to understand their unique needs and concerns.

6.1.1 . Private Property Owners

One of the basic goals of the Napa Valley Greenway is to protect and, where possible, to enhance the private properties along the Greenway alignment. National studies have consistently shown that trails, if properly designed and managed, help increase local property values and do not increase crime or liability rates.

Easements or right-of-way may be donated, purchased, leased, or otherwise acquired as part of this process. The lead agency for each segment of the Greenway could also make special arrangements in terms of safety and liability protection, minimizing impacts to agricultural operations including spraying, screening the Greenway from adjacent properties, installing fencing and other barriers as needed, and posting and enforcing 'No Trespassing' signs and ordinances. The lead agency will contact each property owner individually to discuss options prior to any plans being made public. Any property owner along the proposed alignments may also initiate this contact with the appropriate lead agency. All discussions will be kept confidential throughout this process until an agreement, if any, is reached.

6.1.2 . Public Property Owners

Aside from the individual cities and Napa County, there are several other public agencies who have interests in or who control property on which the Napa Valley Greenway is proposed:

CalTrans

Segments of the Greenway particularly between the cities of Yountville and Calistoga would require a Caltrans easement within the Highway 29 right-of-way. Some preliminary discussions have already been held with Caltrans, but no formal process initiated. One typical issue is whether the Napa Valley Greenway needs to be located to allow for any future widening or improvements of Highway 29 south of St. Helena.

Napa River Flood Control

The Napa County Flood Control and Water Conservation District is responsible for all flood control in Napa County, but has only a few projects within the Napa Valley Greenway Project Area. These include Hopper Creek south of Yountville and Conn Creek. The District's main project is the Napa River Flood Control project between the Highway 29 bridge and Trancas Street in the City of Napa.

Napa County Resource Conservation District

The Napa County RCD works with farmers in Napa County and assists the Napa Valley Flood Control District with the Conn Creek levee repair/restoration project where a section of the creek was degraded. Conn Creek flows from Lake Hennessey Reservoir and sudden water releases from the reservoir had scoured Conn Creek. It extends in a North-South direction from Conn Creek Road across Oakville Cross Road.

California State Parks

California State Parks operates the Bothe-Napa State Park and the Bale Grist Mill State Historic Park located on the west side of Highway 29. These parks would be served by the Greenway. However, locating the Greenway within the parks is complicated by the existence of cultural resources, Pioneer Cemetery as well as the restrictions on new construction within the State Historic Park. There is also the issue of how a trail could be managed within a State Park where the parks typically close at specific hours, while most regional trail systems used for transportation purposes are open 24 hours a day.

California Department of Fish and Game:

The California Department of Fish and Game is responsible for the management of Fagan Marsh, the Napa Sonoma Marshes Wildlife Area and the Napa River Ecological Reserve. The Department is also responsible for environmental review of projects that could affect the Napa River and its tributaries.

6.1.3 . Types of Right-of-Way Instruments

The Napa Valley Greenway will require the development of agreements and possibly the acquisition of easements or right-of-way. There are a variety of instruments that can be used in this process.

Memorandum of Understanding (MOU)

An agreement between agencies outlining which agency is responsible for the planning, design, construction and management of a bikeway. An MOU typically does not delineate any specific right-of-way boundaries and is less detailed than other instruments. Liability may be shared among all signing partners including the owner of the underlying property.

License Agreement

Allows the use of a public or private right-of-way within specific parameters, but no rights to the land itself. The landowner may retain some liability.

Easement Agreement

Similar to a license agreement, but typically specifies right-of-way that the trail owner controls within specific parameters set by the property owner. The right-of-way may be purchased or donated, and the landowner will retain some liability.

Encroachment Permit

Used by public agencies such as Caltrans, this instrument allows local agencies to construct improvements within Caltrans right-of-way as long as they are designed and operated within established requirements. Both agencies would be protected under the Design Immunity statutes, but some shared liability would remain.

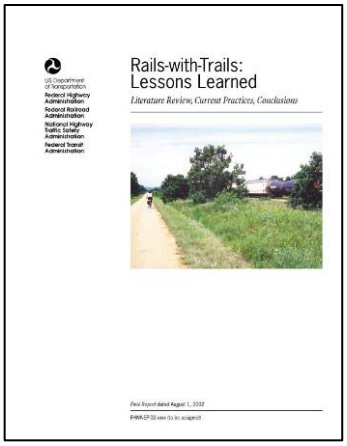
Purchased/Title

Right-of-way for the trail may be purchased and the title transferred to the trail development entity. The major issues are (1) obtaining approval for a lot line adjustment and (2) the cost of the right-of-way. The former landowner would have no legal responsibility for anything that happens on the trail after the sale is complete.

The type of instrument selected will depend on a variety of factors, including the desire to maintain control over the underlying property, the need to be protected from liability, and other issues. Some funding programs require that the right-of-way be under control prior to an agency receiving a grant, and that the bikeway have a minimum serviceable life of 20 years.

6.2. Design Guidelines

The following provides recommended specific design guidelines for the Napa Valley Greenway that are consistent with the guidelines currently observed in California and in the United States. Ultimately, the Greenway may be designed to meet both the operational needs of the roadway and railway system and area businesses as well as the safety of trail users. The challenge is to find ways of accommodating motorized and non-motorized uses with minimum compromising of safety or functionality.



Planning, design, and implementation standards in this document are derived from the following sources:

- Institute of Transportation Engineers (ITE), Design and Safety of Pedestrian Facilities, 1994.
- American Association of State Highway and Transportation Officials (AASHTO), A Policy on Geometric Design of Highways and Streets, 2004.
- AASHTO, Guide for the Development of Bicycle Facilities, 1999.

- California Dept. of Transportation (CalTrans), California Manual of Uniform Traffic Control Devices (MUTCD), 2006.
- Caltrans: Highway Design Manual (Chapter 1000: Bikeway Planning and Design)
- Rails-with-Trails: Lessons Learned (August 2002)
- Rails-to-Trails Conservancy, Rails-with-Trails, Sharing Corridors for Transportation and Recreation, 1996.

The sources listed above provide details on many aspects of bike trail and rail trail design, but a) may contain recommendations that conflict with each other; b) are not, in most cases, officially recognized "requirements"; and c) do not cover all conditions on most rail trails. All design guidelines must be supplemented in the application to specific situations by the professional judgments of the trail designers and engineers.

The Napa Valley Greenway will accommodate a wide range of users including pedestrians, persons in wheelchairs and bicyclists of varied abilities including family cycling. Assumptions regarding trail design include:

- Minimum tread width 8 feet, but with 10 feet wherever possible.
- Typical shoulder width of trail- 2 feet.
- Minimum setback from edge of highway road to edge of tread- 5 feet. (without a barrier)
- Minimum setback from edge of highway/road to edge of tread- 2 feet (with barrier)
- Minimum setback from railroad track centerline to obstructions or edge of trail tread: 8.5 feet.
- Typical setback from edge of tread to obstructions and buildings 3 feet.

6.2.1 . Bikeway and Trail Types

Though most of the Napa Valley Greenway will consist of off-street bike paths and trails, several segments will be designed as on-street bikeways. There are four types of trail or bike path referenced in the Napa Greenway Feasibility Study. They are illustrated in Figure 6-1.

Class I Bikeways, typically called a "bike path," a Class I bikeway provides bicycle travel on a paved right-of-way completely separated from any street or highway. Per Caltrans standards, the minimum paved width of a two-way bike path is 2.4 meters (~8 feet), but 12 feet are recommended.

Class II Bikeways, often referred to as a "bike lane," a Class II bikeway provides a striped, signed and stenciled lane for one-way travel on a street or highway. Caltrans' minimum bike lane width requirements vary depending on the presence of on-street parking and curb, but generally range between 1.2 to 1.5 meters (~4 to ~5 feet).

Class III Bikeways, generally referred to as a "bike route," a Class III bikeway allows shared use with motor vehicle traffic and is identified only by signing. Caltrans does not state minimum widths for bike routes, but recommends that designated bike routes "should offer a higher degree of service than alternative streets" by providing direct connections between existing segments, by providing traffic control devices compatible with cyclists (such as bicycle detector loops), by having street parking

eliminated, or by having a higher degree of maintenance than other streets. Class III bike routes are not required to, but may have striped shoulders.

There are also multipurpose trails that can be used by both bicyclists and pedestrians. This type of trail is appropriate on less high use trails and more rural areas. It is recommended that the surfacing be either compacted shale or quarry fines or stabilized earth with a polymer stabilizer.

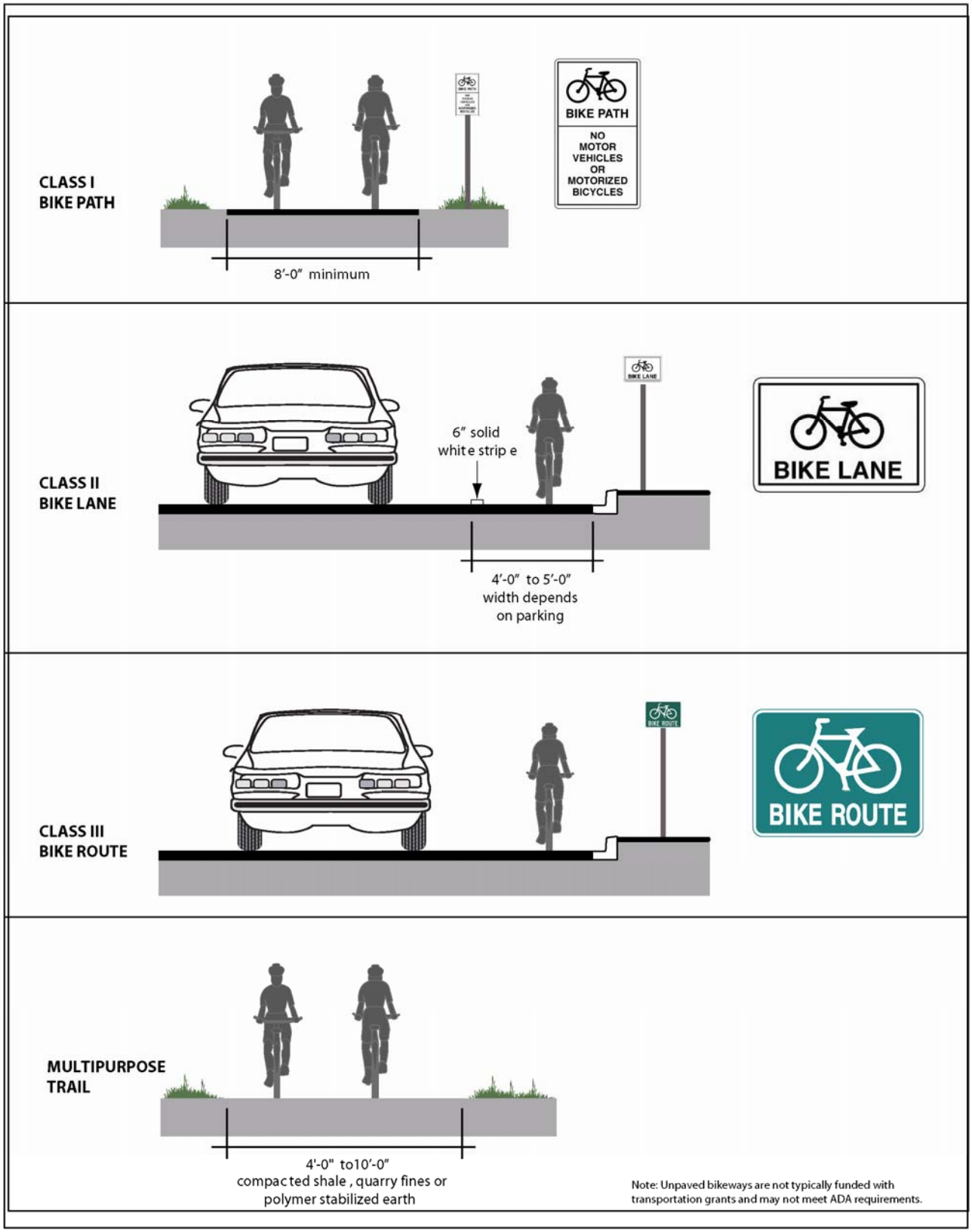


Figure 6-1. Cross Sections of Types of Bike Paths and Bike Routes

The Caltrans Highway Design Manual recommends separation Between Bike Paths and Highways.

"A wide separation is recommended between bike paths and adjacent highways. Bike paths closer than 5 feet from the edge of the shoulder shall include a physical barrier to prevent bicyclists from encroaching onto the highway. Bike paths within the clear recovery zone of freeways shall include a physical barrier separation. Suitable barriers could include chain link fences or dense shrubs. Low barriers (e.g., dikes, raised traffic bars) next to a highway are not recommended because bicyclists could fall over them and into oncoming automobile traffic. In instances where there is danger of motorists encroaching into the bike path, a positive barrier (e.g., concrete barrier, steel guard railing) should be provided".

Multi Use Trail parallel to State Highway 116. There is a 5-feet wide separation without a barrier.

Signing and Striping

When it is anticipated that trails will have multiple types of users, trail etiquette signs are recommended to reduce conflicts. In addition other warning signs informing users of approaching intersections and crossings of driveways will need to be installed.

Bike path, bike lane, and bike route signing and markings should generally follow the guidelines as developed the Manual on Uniform Traffic Control Devices. This includes advisory, warning, directional, and informational signs for bicyclists, pedestrians, and motorists. All signs shall be retroreflective on shared-use paths. Lateral sign clearance shall be a minimum of three feet and a maximum of six feet from the near edge of the sign to the near edge of the path. Mounting height shall be between four and five feet from the bottom edge of the sign to the path surface level. The final striping, marking, and signing plan for the Napa Valley Greenway will be resolved in the full design phase of the trail, and should be reviewed and approved by a licensed traffic engineer or civil engineer. This will be most important at locations where there are poor sight lines from the trail to cross-traffic (either pedestrian or motor vehicle). These locations would be identified in a preliminary engineering study.

A yellow centerline stripe is standard for multi-use paths in several cities, especially at blind corners, high traffic areas, intersection approaches and/or where nighttime riding is expected with limited lighting.

Design Speed

The minimum design speed for bike paths is 20 miles per hour, except on sections where there are long downgrades (steeper than 4%, and longer than 500 feet - not applicable). Speed bumps or other surface irregularities or obstacles should never be used to slow bicycles.

Lateral Clearance on Horizontal Curves

Stopping sight distance on horizontal curves and lateral clearance can be calculated using the equations in the AASHTO Guide 2003.

Vertical Clearance

A 10-feet vertical clearance should be maintained on multi-use trails. This area should be free from tree limbs and any other obstructions that may interfere with pathway use.

Gradients

Steep grades should be avoided on any multi-use trail, with 5% the recommended maximum gradient. Steeper grades can be tolerated for short distances (up to about 500-feet). The Napa Valley Greenway corridor is nearly flat for most of the alignment.

Drainage

A 2% cross slope will resolve most drainage issues on a bike path, except along cut sections where uphill water must be collected in a ditch and directed to a catch basin, where the water can be directed under the trail in a drainage pipe of suitable dimensions.

Bollards

Bollards at trail intersections and entrances are sometimes used to prevent vehicles from entering. Bollards should be located adjacent to the trail with a removable center bollard for emergency and maintenance access. Bollards should not be located in the travel lanes. Bollards should be designed to be visible to bicyclists and others, especially at nighttime, with reflective materials and appropriate striping.

Access Management

Access for parking, loading and unloading is an issue for area businesses. Multiple driveways and other access ways create potential points of conflict between vehicles and trail users. Efforts should be made to consolidate and orient driveways and parking spaces so that a minimum number cross the trail.

6.2.2 . Rail-with-Trail Design

This section provides guidance for specific railroad safety issues and other design issues related to rail-with-trails (RWTs). Much of the information in this section is based on the *"Rails-with-Trails: Lessons Learned"* Study. Again, engineering judgment and the requirements of the landholders must be applied. In Napa Valley, the Wine Train, an excursion railroad runs between downtown Napa and St. Helena. The train has two services a day leaving Napa at 11:30 AM and 6:30 PM. The round trip takes approximately 3 hours. As a result the level of operation is predictable and limited. There is an existing bikeway that parallels the Wine Trail within the corridor from Lincoln Avenue to just south of Trancas Street

Railroad Crossings

One of the options for the Napa Valley Greenway alignment includes at-grade crossings of the Wine Trail railroad tracks. It is the intention to route trail users to existing crossings. New pedestrian railroad crossing flashers are typically not required for sidewalk crossings at legal crossings because they are redundant with adjacent vehicle crossing warning equipment.

Efforts should be made to have the multi-use trail cross railroad tracks at as close to a ninety degree angle as possible. As crossing angles deviate from perpendicular angles possibilities increase for a bicycle wheel to become trapped in the flangeway, or cyclists to loose traction on wet rails. AASHTO guidelines do not specify a minimum crossing angle, however they do recommend that any crossing that is less than forty-five degrees should be accompanied by a widening in the trail or shoulder area in order to permit a cyclist to cross the track at a safer angle, preferably perpendicular.

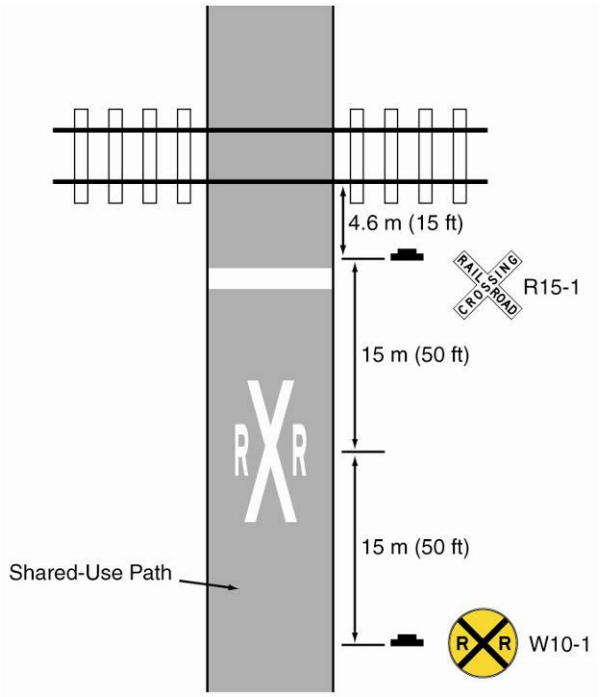


Figure 6-2 MUTCD Example of Signing and Marking for Shared-Use Path/Railroad Crossing

Standard concrete railroad crossings with compressible flangeway fillers permit rail operations while creating a smooth or subtle bump for cyclists.

Crossing materials should be skid resistant. Colored surfaces also help alert cyclists to potential conflict points. Rubber and concrete materials require less maintenance and have a longer lifespan than wood or asphalt.

Signing and marking should be per MUTCD standards. Changes in bicycle surface may be indicated by the W8-10 Bicycle Surface Condition Warning Sign.

Minimum Required Setbacks

Setback is measured from the nearest edge of the trail to the centerline of the nearest railroad track. No empirical data has been discovered indicating the precise setback that is recommended between a public trail and an active railroad. A review of 65 existing trails as part of the *Rails-with-Trails: Lessons Learned* report shows wide variance in the setback distance. Researchers attempted to determine if narrower setback distances have a direct correlation to safety problems. However, based on the almost non-existent record of claims, crashes, and other problems on these RWTs, they were unable to conclude a strong correlation between setback and safety. At an absolute minimum, the setback must keep trail users outside the "dynamic envelope" of the trains, defined as "the clearance required for the

train and its cargo overhang due to any combination of loading, lateral motion, or suspension failure." Additionally, in corridors with regular use of maintenance equipment that operates outside the dynamic envelope, the setback distance should allow adequate clearance between the maintenance equipment and the trail.

The Federal Railroad Administration (FRA) already publishes minimum setback standards for fixed objects next to active railroad tracks, the distance between two active tracks, and adjacent walkways (for railroad switchmen). These published setbacks represent the legal minimum setbacks based on the physical size of the railroad cars, and are commonly employed along all railroads and at all public grade crossings. Most Public Utilities Commissions (PUC), which regulate railroad activities within states, also have specific minimum setbacks for any structures or improvements adjacent to railroads, including any sidewalk or trail that parallels active railroad tracks. According to the PUC standards, minimum distances from the centerline of an active railroad to the outside edge of a trail or bikeway is 8.5 feet on tangent and 9.5 feet on curved track.

The *Rails-with-Trails: Lessons Learned* Report outlines preferred setback distances, with encouragement toward as much setback distance as possible. The study details circumstances under which a RWT can be set back a minimum of 8.5 feet, with greater width preferred.

Rail operators often prefer that reduced setbacks are accompanied by increased safety measures such as fencing.

6.2.3 . On-Street Bikeways

The Napa Greenway, in some locations, will acquire right-of-way for on street bikeway facilities. National guidelines for the planning and design of on-street bikeways are provided through the American Association of State Highway Transportation Officials (AASHTO). Standards for signing and striping of on-street bikeways are found in the Manual on Uniform Traffic Control Devices. Specific issues that will be addressed in the design of on-street bikeways:

- Sight lines and topography
- Lane widths for all travel modes
- Intersection design
- Signing, markings, and striping
- Design of drainage inlet grates
- Pavement conditions
- Specific design for pinch points, driveways, railroad crossings, and other challenging areas
- Integration with off-street shared use trails/paths

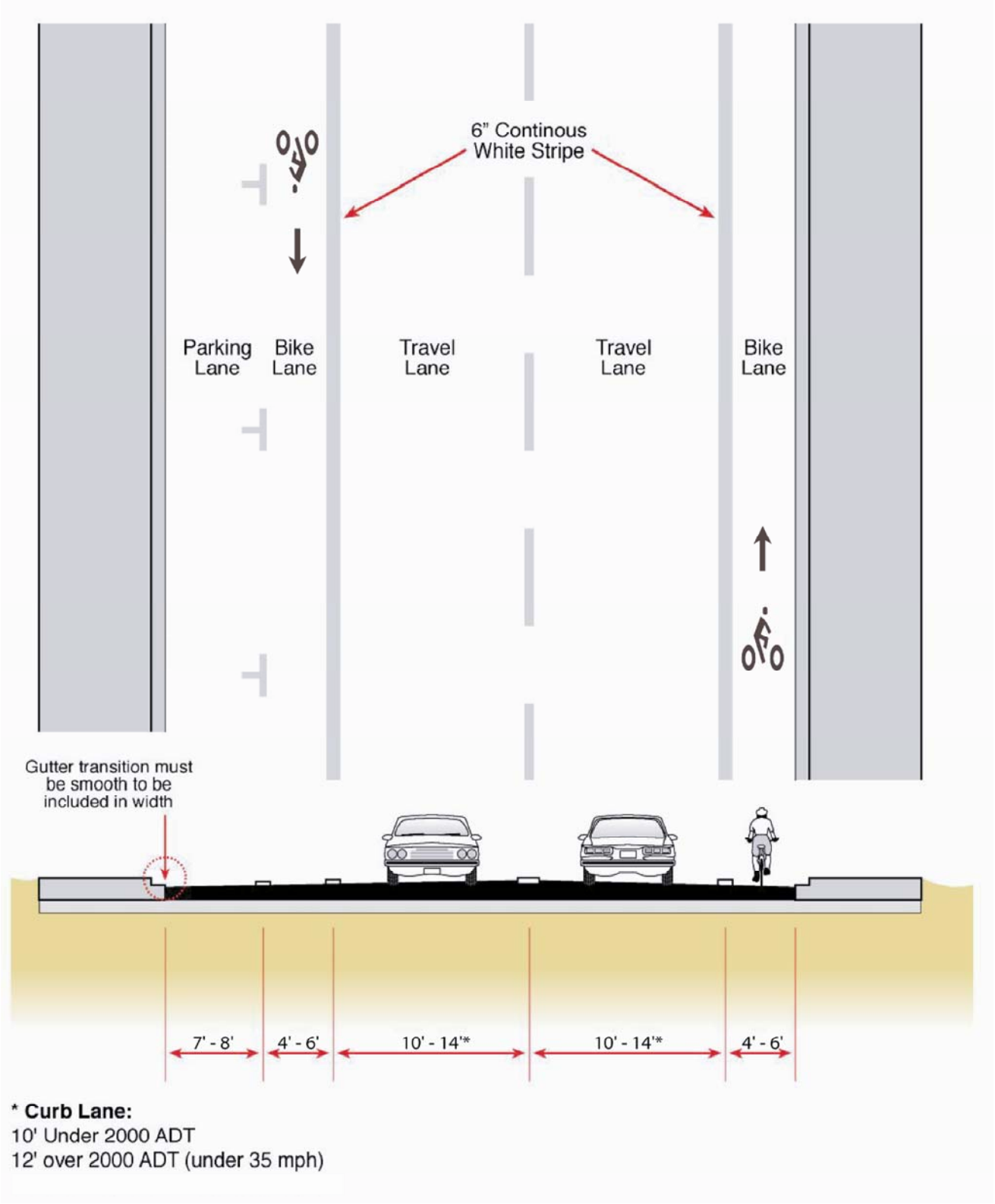


Figure 6-3- On Street Bike Lanes

Table C2: Class II Bike Lane Specifications

Minimum Widths	Adjacent Parking	5'	(1.5 m)
	No Parking[4]	4'	(1.2 m)
	Combination Parking Lane[5]	11-13'	(3.3-3.9 m)
Striping	Left side line: solid white stripe	6"	(150 mm)
	Right side line: solid white stripe	4"	(100 mm)
	Approach to intersections: Dashed white stripe	100-200'	(30 m-60 m)
Signing	R81 Bike Lane Sign		
	■ beginning of all bike lanes ■ far side of all bike path crossings ■ at approaches and far side of all arterial crossings ■ at major changes in direction ■ maximum ½ mile (0.8 km) intervals		
	Custom Bike Route Sign with G33 Directional Arrow and destination signs (where needed)		
	■ see items under R81 Bike Lane Sign ■ at approach to arterial crossings		
Pavement Markings	"Bike" legend "Lane" legend Directional arrow		
	■ see items under R81 Bike Lane Sign ■ at beginning and end of bike lane pockets at approach to intersection		
Source:	Caltrans Highway Design Manual, Chapter 1000, MUTCD, Caltrans Traffic Manual		

4 Minimum 3' (.9 m) between stripe and gutter joint.

5 Rolled curb, 11' (3.3 m), vertical curb, 12' (3.6 m), 13' (3.9 m) recommended with significant parking or turnover.

10/00-100

FIGURE

CLASS TWO BIKE LANE SPECIFICATIONS

alta TRANSPORTATION CONSULTING

Figure 6-4 Bike Lane Specifications

6.2.4 . Intersections and Crossings

Bikeway-Roadway Crossings

Like most trails in built urban areas, the Napa Valley Greenway must cross roadways at certain points. While at-grade crossings create a potentially high level of conflict between trail users and motorists, well-designed crossings have not historically posed a safety problem, as evidenced by the thousands of successful trails around the United States with at-grade crossings.

The lack of markings or signals at most crossings can be very intimidating for trail users, and may be challenging enough to suppress potential trail usage. However, in most cases, trail crossings can be properly designed at-grade to a reasonable degree of safety and meet existing traffic and safety standards.

Grade separated crossings are recommended in certain situations, which are discussed further. The conversion of existing at-grade trail crossings to grade-separated crossings is a difficult and expensive undertaking and should be considered where other traffic control measures have failed, where the natural topography lends itself to a grade-separated crossing, or where persistent safety issues exist.

Trail-roadway crossings should comply with the Association of American State Highway and Transportation Officials (AASHTO) Guide for the Development of Bikeway Facilities, CalTrans Highway Design Manual, and Manual of Uniform Traffic Control Devices (MUTCD) standards.

Evaluation of trail crossings involves analysis of vehicular and trail user traffic patterns, including speeds, street width, traffic volumes (average daily traffic, peak hour traffic), line of sight, and trail user profile (age distribution, destinations). This study identifies the most appropriate crossing options given available information, which must be verified and/or refined through the actual engineering and construction document stage.

At-Grade Crossing Prototypes

In addition to the many at-grade roadway crossings, there will also be many crossings of driveways including some commercial businesses fronting onto Highway 29.

When considering a proposed off-street multi-use path and required at-grade crossings of roadways, it is important to remember two items: 1) trail users will be enjoying an auto-free experience and may enter into an intersection unexpectedly; and 2) motorists may not anticipate bicyclists riding out from a perpendicular trail into the roadway. However, in most cases, an at-grade trail can be properly designed to a reasonable degree of safety and meet existing traffic engineering standards.

Evaluation of multi-use trail crossings should involve an analysis of vehicular traffic patterns, as well as the behavior of trail users. This includes traffic speeds (85th percentile), street width, traffic volumes (average daily traffic and peak hour traffic), line of sight, and trail user profile (age distribution, range of mobility, destinations). A traffic safety study should be conducted as part of the actual civil engineering design of the proposed crossings to determine the most appropriate design features. This study would identify the most appropriate crossing options given available information, which must be verified and/or refined through the actual engineering and construction document stage.

The proposed intersection approach that follows is based on established standards, [1] published technical reports,[2] and the experiences from cities around the country.[3] At-grade trail-roadway crossings will fit into one of four basic categories:

Type 1: Marked/Unsignalized, Type 1+: Marked/Enhanced

Type 2: Route Users to Existing Intersection

Type 3: Signalized/Controlled

Type 4: Grade-separated crossings

Type 1: Marked/Unsignalized Crossings

A marked/unsignalized crossing (Type 1) consists of a crosswalk, signing, and often no other devices to slow or stop traffic. The approach to designing crossings at midblock locations depends on an evaluation of vehicular traffic, line of sight, trail traffic, use patterns, vehicle speed, road type and width, and other safety issues such as the proximity of schools. The following thresholds indicate where unsignalized crossings may be acceptable:

Type 1 Crossing

Maximum traffic volumes:

- Up to 6,000 ADT on two-lane roads
- Up to 12,000 ADT on two-lane roads with a median.
- Up to 16,000 ADT on four-lane roads with a median.

Maximum travel speed:

- 35 mph

Minimum line of sight:

- 25 zone: 155 feet
- 35 zone: 250 feet

If well designed, crossings of multi-lane higher volume arterials over 16,000 ADT may be unsignalized with features such as a combination of some or all of the following: excellent sight distance, sufficient crossing gaps (more than 60 per hour), median refuges, and/or active warning devices like flashing beacons or in-pavement flashers. These are referred to as Type 1 Enhanced (Type 1+). Such crossings

[1] MUTCD, AASHTO Guide for the Development of Bicycle Facilities, Oregon Pedestrian and Bicycle Guide.
[2] Federal Highway Administration (FHWA) Report, "Safety Effects of Marked vs. Unmarked Crosswalks at Uncontrolled Locations."
[3] In particular, the recommendations in this report are based in part on experiences in cities like Portland (OR), Seattle (WA), Tucson (AZ), and Sacramento (CA), among others.

would not be appropriate, however, if a significant number of school children used the trail. Furthermore, both existing and potential future trail usage volume should be taken into consideration.

On two-lane residential and collector roads below 15,000 ADT with average vehicle speeds of 35 mi/h or less, crosswalks and warning signs ("Trail Xing") should be provided to warn motorists, and stop signs and slowing techniques (bollards/geometry) should be used on the trail approach. Curves in trails that cause the trail user to face oncoming traffic are helpful in slowing trail users and making them aware of oncoming vehicles. Care should be taken to keep vegetation and other obstacles out of the sight line for motorists and trail users. Engineering judgment should be used to determine the appropriate level of traffic control and design.

Raised Crosswalk- On roadways with low to moderate volumes of traffic (< 12,000 ADT) and a need to control traffic speeds, a raised crosswalk may be the most appropriate crossing design to improve pedestrian visibility and safety. The crosswalks are raised 75 mm above the roadway pavement, similar to speed humps, to an elevation that matches the adjacent sidewalk. The top of the crosswalk is flat and typically made of asphalt, patterned concrete, or brick pavers. Brick or unit pavers should be discouraged because of potential problems related to pedestrians, bicycles, and ADA requirements for a continuous, smooth, vibration-free surface. Tactile treatments are needed at the sidewalk/street boundary so that visually impaired pedestrians can identify the edge of the street. Costs can range from $5,000 to $20,000 per crosswalk, depending on the width of the street, the drainage improvements affected, and the materials used for construction.

Raised Crosswalk

On roadways with higher traffic volumes, a flashing yellow beacon may be used, preferably one that is activated by the trail user rather than operating continuously. The costs will range between $5000 and $15,000 depending on the need for poles with arms and overhead mounted signals. These can be activated by trail users tripping video or motion detectors on the trail. This equipment, while slightly more expensive, helps keep motorists alert.

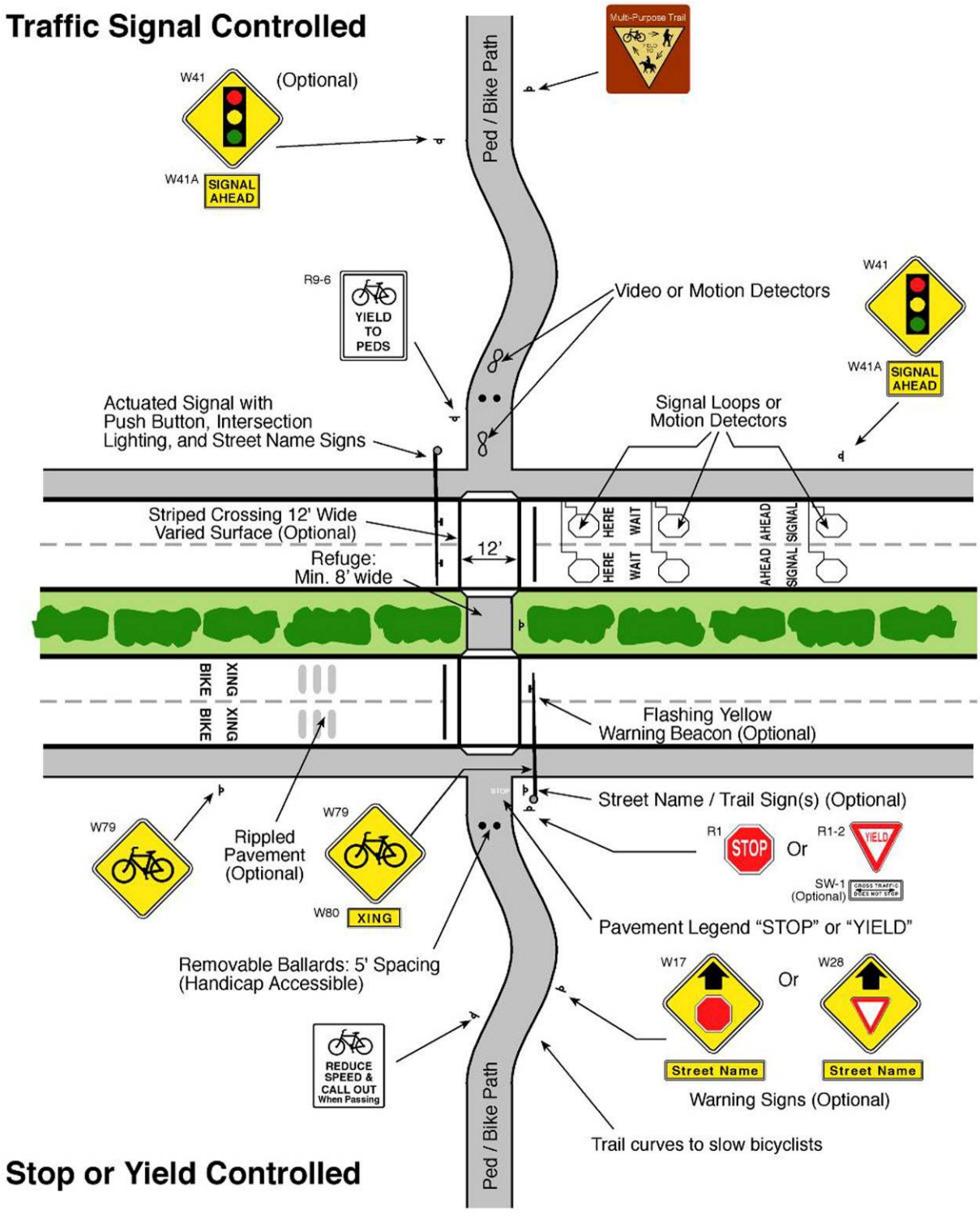


Figure 6-5
Type 1+ Without Signal or Type 3 with Signal Crossing Treatment

Type 2: Route Users to Existing Intersection

Crossings within 250 feet of an existing signalized intersection with pedestrian crosswalks are typically diverted to the signalized intersection for safety purposes. For this option to be effective, barriers and signing may be needed to direct trail users to the signalized crossings. In most cases, signal modifications would be made to add pedestrian detection and to comply with the ADA.

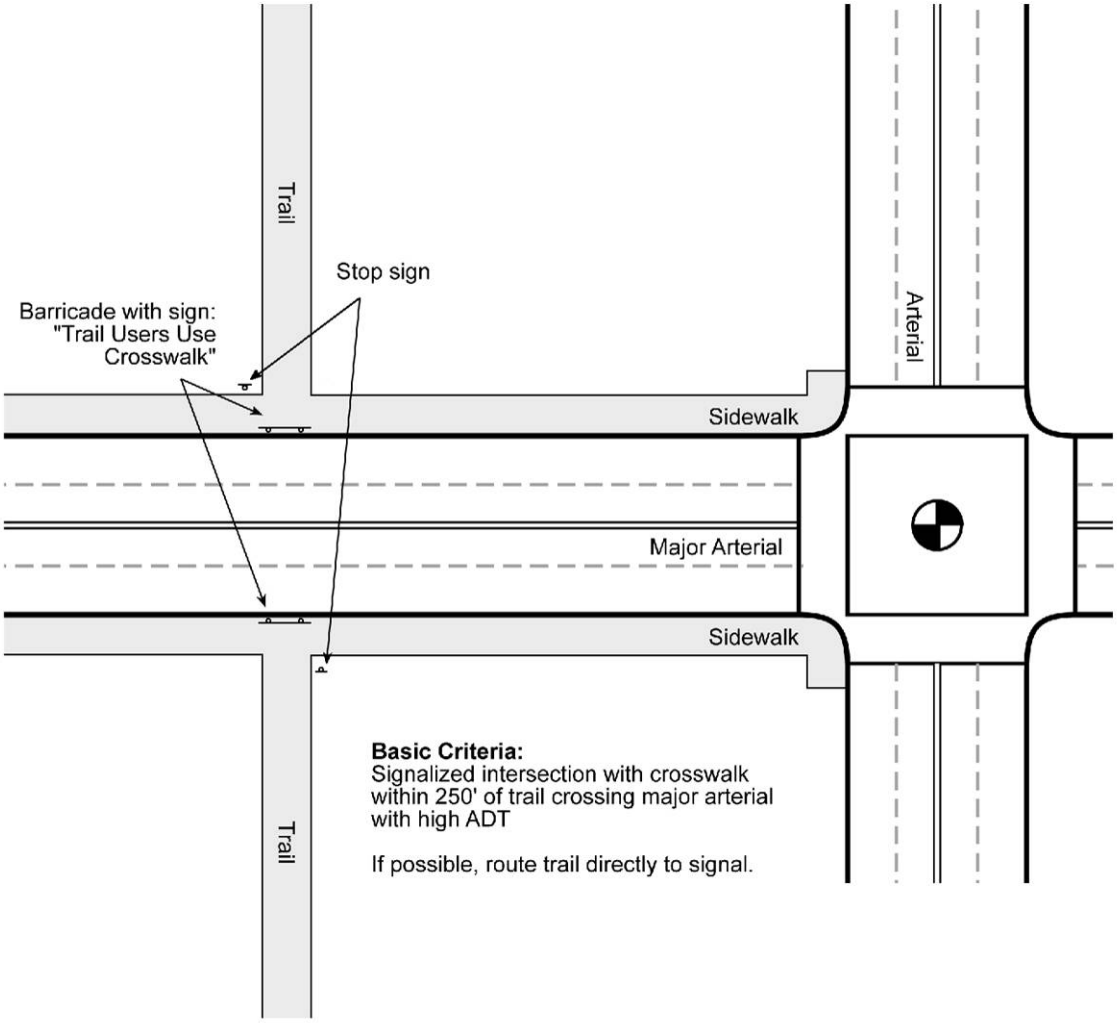


Figure 6-6
Type 2 Roadway Crossing Treatment

Type 3: Signalized/Controlled Crossings

Type 3 Crossing

New signalized crossings may be recommended for crossings that meet pedestrian, school, or modified warrants are located more than 250 feet from an existing signalized intersection and where 85th percentile travel speeds are 40 mi/h and above and/or ADT exceeds 15,000 vehicles. Each crossing, regardless of traffic speed or volume, requires additional review by a registered engineer to identify sight lines, potential impacts on traffic progression, timing with adjacent signals, capacity, and safety.

Trail signals are normally activated by push buttons, but also may be triggered by motion detectors. The maximum delay for activation of the signal should be two minutes, with minimum crossing times determined by the width of the street. The signals may rest on flashing yellow or green for motorists when not activated, and should be supplemented by standard advanced warning signs. Typical costs for a signalized crossing range from $150,000 to $250,000.

PELICAN signal in Tucson, AZ

PELICAN Signal- A Pelican (**Pe**destrian **L**ight **C**ontrol **A**ctivated crossi**n**g) signal incorporates a standard red-yellow-green signal light that rests in green for vehicular traffic until a pedestrian wishes to cross and presses the button. The signal then changes to yellow, then red, while Walk is shown to the pedestrian. The signal can be installed as either a one-stage or two-stage signal, depending on the characteristics of the street. In a two-stage crossing, the pedestrian crosses first to a median island and is then channelized along the median to a second signalized crossing point. At that point, the pedestrian then activates a second crossing button and another crossing signal changes to red for the traffic while the pedestrian is given a Walk signal. The two crossings only delay the pedestrian minimally and allow the signal operation to fit into the arterial synchronization, thus reducing the potential for stops, delays, accidents, and air quality environmental issues. A Pelican crossing is quite effective in providing a pedestrian crossing at midblock locations when the technique can be accommodated into the roadway design.

PUFFIN Signal

PUFFIN Signal- A Puffin (**P**edestrian **U**ser **F**riendly **In**telligent) crossing signal is an updated version of a Pelican crossing. The signal consists of traffic and pedestrian signals with push-button signals and infrared or pressure mat detectors. After a pedestrian pushes the button, a detector verifies the presence of the pedestrian at the curbside. This helps eliminate false signal calls associated with people who push the button and then decide not to cross. When the pedestrian is given the Walk signal, a separate motion detector extends the Walk

interval (if needed) to ensure that slower pedestrians have time to cross safely. Conversely, the signal can also detect when the intersection is clear of pedestrians and return the green signal to vehicles, reducing vehicle delay at the light. Puffin signals are designed to be crossed in a single movement by the pedestrian, unlike the Pelican signal, which can be designed to cross in either one or two stages.

HAWK Signal

HAWK Signal- A Hawk (**H**igh-Intensity **A**ctivated Cross**w**al**k**) signal is a combination of a beacon flasher and traffic control signaling technique for marked crossings. The beacon signal consists of a traffic signal head with a red-yellow-red lens. The unit is normally off until activated by a pedestrian. When pedestrians wish to cross the street, they press a button and the signal begins with a flashing yellow indication to warn approaching drivers. A solid yellow, advising the drivers to prepare to stop, then follows the flashing yellow. The signal is then changed to a solid red, at which time the pedestrian is shown a Walk indicator. The beacon signal then converts to an alternating flashing red, allowing the drivers to proceed after stopping at the crosswalk, while the pedestrian is shown the flashing 'Don't Walk' signal.

Full Signalized Crossings- The federal government has provided guidance to determine where traffic control signals should be considered for installation. The Pedestrian Volume signal warrant is intended for the application where the traffic volume on a major street is so heavy that pedestrians experience excessive delay in crossing the major street. Section 4C.05 of the Manual on Uniform Traffic Control Devices details Warrant 4, Pedestrian Volume. For signal warrant analysis, a location with a wide median, even if the median width is greater than 9 m (30 ft), should be considered as one intersection.

Half Signalized Crossings- In situations where there are few "crossable" gaps and where vehicles do not stop for pedestrians waiting to cross (or because of multiple lanes, it is unsafe to cross in front of a stopped vehicle), there are a number of innovative pedestrian traffic signals that do not operate as full signals that might be installed. Many of these models have been used successfully for years overseas, and their use in the United States has increased dramatically over the last decade.

Type 4: Grade-Separated Crossings

Grade-separated crossings may be needed where ADT exceeds 25,000 vehicles, and 85th percentile speeds exceed 45 mi/h. Safety is a major concern with both overcrossings and undercrossings. In both cases, trail users may be temporarily out of sight from public view and may have poor visibility themselves. Undercrossings, like parking garages, have the reputation of being places where crimes occur. Most crime on trails, however, appears to have more in common with the general crime rate of the community and the overall usage of the trail than any specific design feature.

Type 4 Grade-Separated Undercrossing

Design and operation measures are available which can address trail user concerns. For example, an undercrossing can be designed to be spacious, well lit, equipped with emergency cell phones at each end and completely visible for its entire length prior to entering.

Type 4 Grade-Separated Overcrossing

Other potential problems with undercrossings include conflicts with utilities, drainage, flood control, and maintenance requirements. Overcrossings pose potential concerns about visual impact and functional appeal, as well as space requirements necessary to meet ADA guidelines for slope.

Summary of At-Grade Recommendations

In summary, Table 6-1 provides guidance on how to implement at-grade trail-roadway crossings. Table 6-2 provides recommendations for each of the new roadway crossings within the study area.

Table 6-1: Summary of Trail-Roadway Intersection Recommendations[4]

Roadway Type (Number of Travel Lanes and Median Type)	Vehicle ADT □ 9,000			Vehicle ADT > 9,000 to 12,000			Vehicle ADT > 12,000 to 15,000			Vehicle ADT > 15,000		
	Speed Limit **											
	□ 30 mi/h	35 mi/h	40 mi/h	□ 30 mi/h	35 mi/h	40 mi/h	□ 30 mi/h	35 mi/h	40 mi/h	□ 30 mi/h	35 mi/h	40 mi/h
2 Lanes	1	1	1/1+	1	1	1/1+	1	1	1+/3	1	1/1+	1+/3
3 Lanes	1	1	1/1+	1	1/1+	1/1+	1/1+	1/1+	1+/3	1/1+	1+/3	1+/3
Multi-Lane (4 or more lanes) with raised median	1	1	1/1+	1	1/1+	1+/3	1/1+	1/1+	1+/3	1+/3	1+/3	1+/3
Multi-Lane (4 or more lanes) without raised median	1	1/1+	1+/3	1/1+	1/1+	1+/3	1+/3	1+/3	1+/3	1+/3	1+/3	1+/3

[4] This table is based on information contained in the U.S. Department of Transportation Federal Highway Administration Study, " Safety Effects of Marked vs. Unmarked Crosswalks at Uncontrolled Locations," February 2002.

* **General Notes:** Crosswalks should not be installed at locations that could present an increased risk to pedestrians, such as where there is poor sight distance, complex or confusing designs, a substantial volume of heavy trucks, or other dangers, without first providing adequate design features and/or traffic control devices. Adding crosswalks alone will not make crossings safer, nor will they necessarily result in more vehicles stopping for pedestrians. Whether or not marked crosswalks are installed, it is important to consider other pedestrian facility enhancements (e.g., raised median, traffic signal, roadway narrowing, enhanced overhead lighting, traffic-calming measures, curb extensions), as needed, to improve the safety of the crossing. These are general recommendations; good engineering judgment should be used in individual cases for deciding which treatment to use.

For each trail-roadway crossing, an engineering study is needed to determine the proper location. For each engineering study, a site review may be sufficient at some locations, while a more in-depth study of pedestrian volume, vehicle speed, sight distance, vehicle mix, etc. may be needed at other sites.

** Where the speed limit exceeds 40 mi/h (64.4 km/h), marked crosswalks alone should not be used at unsignalized locations.

*** The raised median or crossing island must be at least 4 ft (1.2 m) wide and 6 ft (1.8 m) long to adequately serve as a refuge area for pedestrians in accordance with MUTCD and AASHTO guidelines. A two-way center turn lane is not considered a median.

1= Type 1 Crossings. Ladder-style crosswalks with appropriate signage should be used.

1/1+ = With the higher volumes and speeds, enhanced treatments should be used, including marked ladder style crosswalks, median refuge, flashing beacons, and/or in-pavement flashers. Ensure there are sufficient gaps through signal timing, as well as sight distance.

1+/3 = Carefully analyze signal warrants using a combination of Warrant 2 or 5 (depending on school presence) and EAU factoring. Make sure to project trail usage based on future potential demand. Consider Pelican, Puffin, or Hawk signals in lieu of full signals. For those intersections not meeting warrants or where engineering judgment or cost recommends against signalization, implement Type 1 enhanced crosswalk markings with marked ladder style crosswalks, median refuge, flashing beacons, and/or in-pavement flashers. Ensure there are sufficient gaps through signal timing, as well as sight distance.

Table 6-2: Napa Valley Greenway: New Crossings By Type

		Option A West Side		Option B Mid Valley		Option C East Side				
Segment	Agency(ies)	Crossing Location	Crossing Type	Crossing Location	Crossing Type	Crossing Location	Crossing Type	Speed Limit	Lanes	ADT
1	Napa County	Dunaweal Lane	1/1+	N/A	N/A	N/A	N/A	45	3	2000-10000
	Napa County	Maple Lane	1	N/A	N/A	N/A	N/A	Dead end	2	<2000
	Napa County	Larkmead Lane	1	Larkmead Lane	1	Larkmead Lane	1	-	2	589
	Napa County	Bale Lane	1	Bale Lane	1	Bale Lane	1	40	2	1092
	Napa County	Big Tree Road	1	N/A	N/A	N/A	N/A	Dead end	2	109
	Napa County	Lodi Lane	1	Lodi Lane	1	Lodi Lane	1	40	2	730
	Napa County	York Lane	1	N/A	N/A	N/A	N/A	Dead end	2	<2000
	Napa County	Deer Park Road	1/1+	Deer Park Road	1+	Deer Park Road	1/1+	50	2	5597
2	St Helena	Pratt Avenue	1	Pratt Avenue	1	Pratt Avenue	1	35	2	2000-10000
	St Helena	Fulton Lane	1	Fulton Lane		Fulton Lane		25	2	<2000

Table 6-2: Napa Valley Greenway: New Crossings By Type

		Option A West Side		Option B Mid Valley		Option C East Side				
Segment	**Agency(ies)**	**Crossing Location**	**Crossing Type**	**Crossing Location**	**Crossing Type**	**Crossing Location**	**Crossing Type**	**Speed Limit**	**Lanes**	**ADT**
	St Helena & Caltrans	Highway 29 (1)	1+/3	N/A	N/A	N/A	N/A	-	4	>10000
	St Helena	Hunt Avenue	1	N/A	N/A	N/A	N/A	25	2; dead-ends	2000-10000
	St Helena	Pope Street	1	Pope Street	1	Pope Street	1/1+	35	2	2000-10000
	St Helena	Charter Oak Ave.	1	N/A	N/A	N/A	N/A	25	2	<2000
	St Helena	Mills Lane	1	N/A	N/A	N/A	N/A	25	2	<2000
	St Helena	Dowdell Lane	1	N/A	N/A	N/A	N/A	25	2	<2000
	St Helena	Sulfur Springs Road (1)	1	N/A	N/A	N/A	N/A	25	2	2000-10000
	St Helena	Vintage Ave.	1	N/A	N/A	N/A	N/A	25	2	<2000
	St Helena	Chaix Lane	1	N/A	N/A	N/A	N/A	-	2	<2000
	Caltrans and Napa County	White Lane	1	N/A	N/A	N/A	N/A	-	2	<2000
	Napa County	Stice Lane	1	N/A	N/A	N/A	N/A	25	2	<2000
	Napa County	Zinfandel Lane	1/1+	Zinfandel Lane	1+ (mid-block)	Zinfandel Lane	1/1+	55	2	2942
3	Napa County	Galleron Lane	1	N/A	N/A	N/A	N/A	-	2	<2000
	Napa County	Mee Lane	1	N/A	N/A	N/A	N/A	-	2	<2000
	Caltrans	Rutherford Rd (Hwy 128)	1	Rutherford Rd (Hwy 128)	1/1+ (mid-block)	Rutherford Rd (Hwy 128)	1/1+ (wide intersection)	-	2	>10000
	Napa County	Oakville Grade	1	N/A	N/A	N/A	N/A	-	2	2000-10000
	Napa County	Oakville Cross Road	1	Oakville Cross Road	1/1+ (mid-block)	Oakville Cross Road	1	-	2	>10000
	Caltrans and Napa County	Highway 29 at Yount Mill Road	3	N/A	N/A	N/A	N/A	65	3	26,000

Table 6-2: Napa Valley Greenway: New Crossings By Type

		Option A West Side		Option B Mid Valley		Option C East Side				
Segment	Agency(ies)	Crossing Location	Crossing Type	Crossing Location	Crossing Type	Crossing Location	Crossing Type	Speed Limit	Lanes	ADT
	Caltrans and City of Yountville	Highway 29 at Madison Street (2)	2	N/A	N/A	N/A	N/A	65	4	<10000
	Napa County	N/A	N/A	Yountville Cross Road	1/1+ (mid-block)	Yountville Cross Road	1	45	2	2000-10000
4	City of Yountville	California Drive	1+	N/A	N/A	N/A	N/A	25	2	>10000
5	Napa County	Hoffman Lane	1 (2?)	N/A	N/A	N/A	N/A	55	2	2000-10000
	Napa County	Vineyard Lane	1	N/A	N/A	N/A	N/A	-	2	<2000
	Napa County	Oak Knoll Avenue	2	Oak Knoll Avenue	1/1+ (mid-block)	Oak Knoll Avenue	1	50	2	2000-10000
	City of Napa & Napa County	Salvador Avenue	1/1+	Salvador Avenue	1	N/A	N/A	40		2000-10000
	Napa County	N/A	N/A	N/A	N/A	Petra Drive	1	25	2	<2000
	City of Napa	Wine Country Ave.	1 (2?)	N/A	N/A	N/A	N/A	35	2	2000-10000
	City of Napa & Napa Cty.	N/A	N/A	El Centro	1	N/A	N/A	30	2	2000-10000
	City of Napa	Trower Avenue	1+/3 (2?)	N/A	N/A	N/A	N/A	35	6	2000-10000
	City of Napa	N/A	N/A	Garfield Lane	1	N/A	N/A	25	2	2000-10000
	City of Napa	Redwood Road	2(?)	Trancas Street	2	Trancas Street	1/1+	45	6,4	>10000
6	City of Napa	Highway 29 South of Redwood Road (3)	4	N/A	N/A	N/A	N/A	35	6	>10000
	City of Napa	Existing Napa Rail Trail Crossings (4)	4	N/A	N/A	N/A	N/A	-		0
	City of Napa	Central Ave	1	N/A	N/A	N/A	N/A	25	2	2000-10000
	City of	Lincoln	1/1+	Lincoln Ave	1/1+	Lincoln Ave	1/1+	35	4	2000-

Table 6-2: Napa Valley Greenway: New Crossings By Type

		Option A West Side		Option B Mid Valley		Option C East Side				
Segment	Agency(ies)	Crossing Location	Crossing Type	Crossing Location	Crossing Type	Crossing Location	Crossing Type	Speed Limit	Lanes	ADT
	Napa	Ave								10000
	City of Napa	2nd Street (1st street)	1	2nd Street (1st street)	1/1+ (or below overpass)	2nd Street (1st street)	1/1+ (or below overpass)	30 (1st st)	2	2000-10000
	City of Napa	Imola Avenue (5)	4	Imola Avenue (5)	4	Imola Avenue (5)	4	35	2	>10000
7	City of Napa	N/A	N/A	Kaiser Road	1/1+	Kaiser Road	1/1+	40	2	2000-10000
	City of Napa	N/A	N/A	Syar Industrial Way	1	Syar Industrial Way	1	25	2	2000-10000
8	Napa County	N/A	N/A	N/A	N/A	Highway 29 (6)	4	60		>10000
	Napa County	N/A	N/A	N/A	N/A	Soscol Ferry Road	1	-	2	2000-10000
	Napa County	N/A	N/A	N/A	N/A	Airport Blvd	1+/3	45	4	>10000
	Napa County	N/A	N/A	N/A	N/A	Bronco Road	N/A	doesn't cross	N/A	<2000
	Napa County	N/A	N/A	N/A	N/A	Airpark Road	1	-	2, dead end	2000-10000
	Napa County	N/A	N/A	N/A	N/A	Tower Road	1	25	2	2000-10000
	Napa County	Green Island Road	1	Green Island Road	1	Green Island Road	1	25	2	660
9	City of American Canyon	Eucalyptus Drive	1	Eucalyptus Drive	1	Eucalyptus Drive	1	25	2	2000-10000
	Caltrans	N/A	N/A	N/A	N/A	Highway 37/29 Intersection	4	65	4	>10000
10	Vallejo and Caltrans	Wilson Avenue at Highway 37	4 (?)*	Wilson Avenue	4 (?)*	N/A	N/A	-	2	>10000
	City of Vallejo	N/A	N/A	N/A	N/A	Sacramento Street	1/1+*	-	2	>10000
	City of Vallejo	N/A	N/A	N/A	N/A	Wilson Ave at Daniels Street	1/1+	-	2	>10000

(1) Assumes a crossing of Highway 29 to access on street bike routes on west side of St Helena.

Table 6-2: Napa Valley Greenway: New Crossings By Type

		Option A West Side		Option B Mid Valley		Option C East Side				
Segment	**Agency(ies)**	**Crossing Location**	**Crossing Type**	**Crossing Location**	**Crossing Type**	**Crossing Location**	**Crossing Type**	**Speed Limit**	**Lanes**	**ADT**
(2) Existing traffic signal										
(3) Existing bike/ped bridge										
(4) The Napa Rail Trail already has installed crossings of several city streets to Central Avenue										
(5) Existing undercrossing										
(6) Existing undercrossing										
* Streets unfinished in aerials; difficult to determine appropriate crossing type										

6.2.5 . Entrance Features

The Napa Greenway will have numerous entry points or trailheads which will also serve to (a) identify the trail, (b) reflect some of the local history and culture of the area, (c) an opportunity to provide enities such as benches, restrooms, trail system signs and operating rules, and (d) parking.

Major trailheads are expected to provide, at a minimum, at least 20 parking spaces, a Napa Greenway entry sign, and a trail kiosk with directional and other information **(see Figure 6-9)**. Some major trailheads may also provide full restroom, drinking fountains, benches, and other amenities.

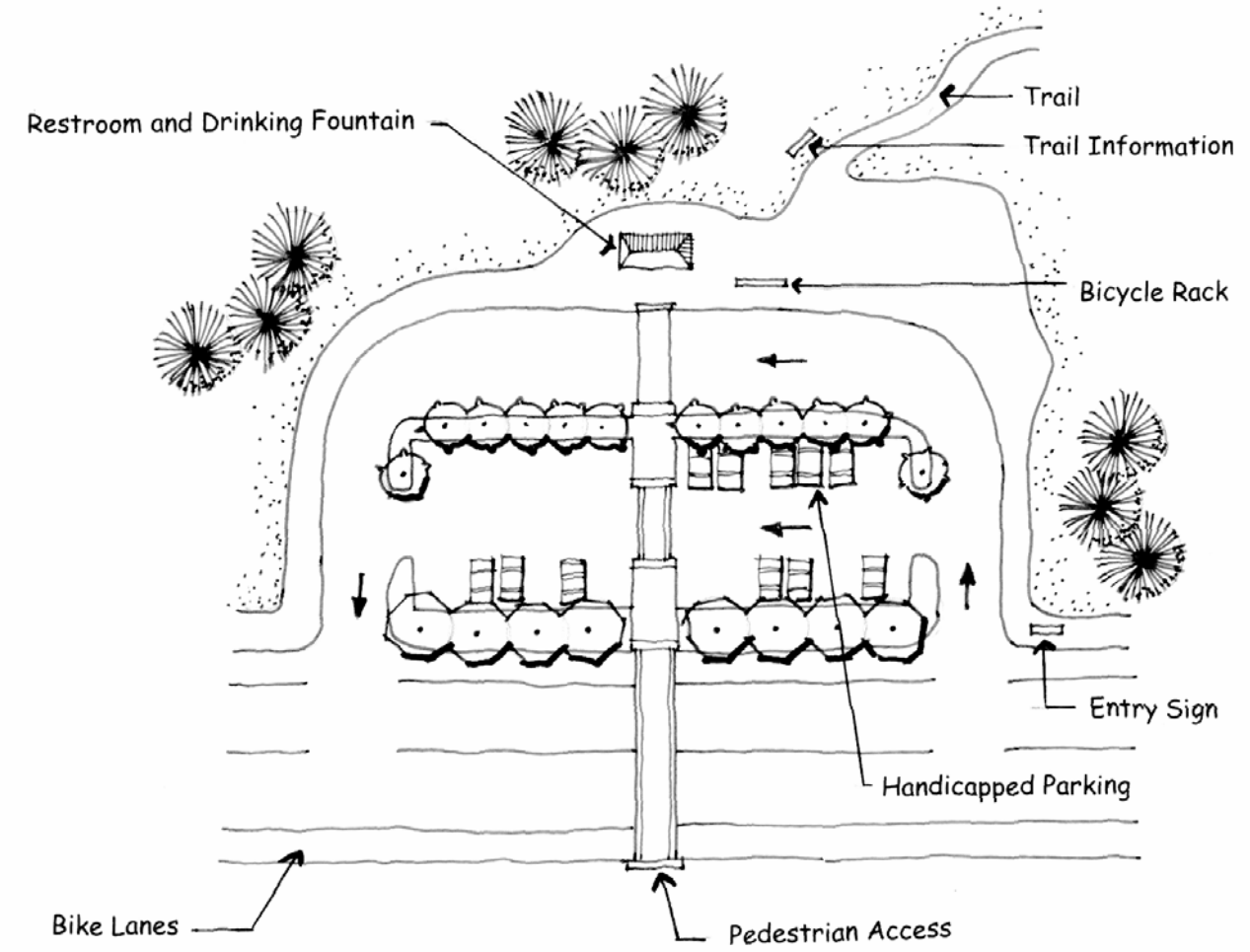


Figure 6-7 Example: Major Trailhead

Minor Trailheads are expected to provide, at a minimum, a Napa Greenway entry sign with smaller trail information signs. All trailheads will have bollards as described previously.

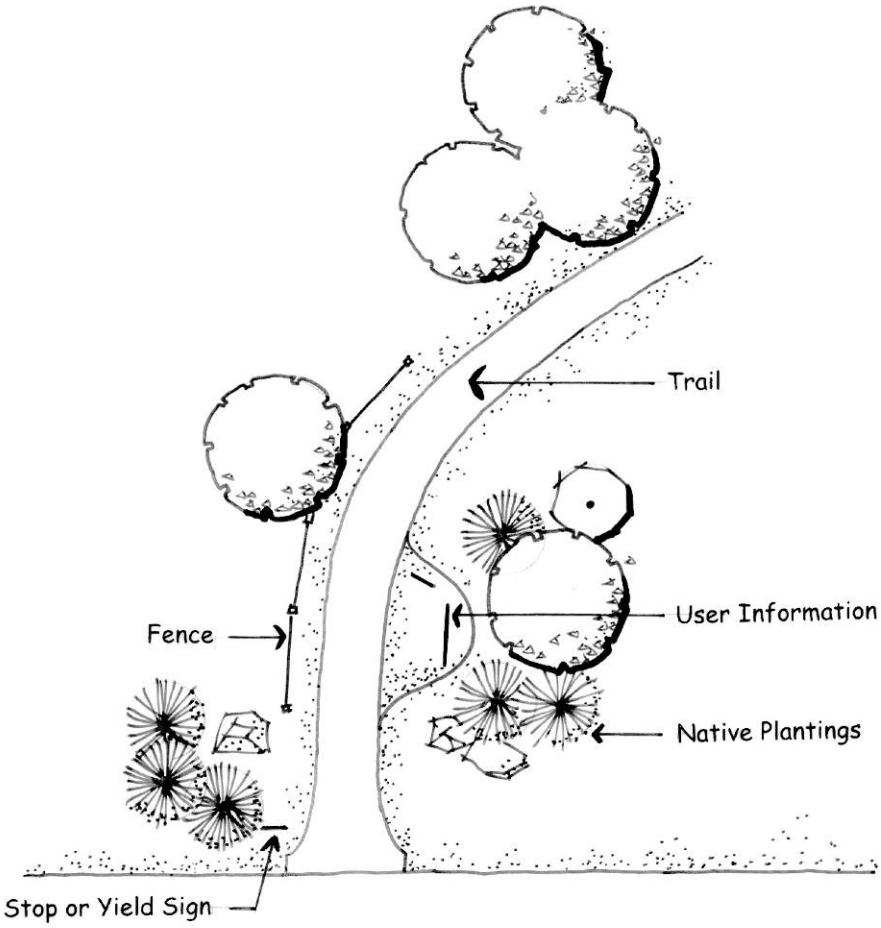


Figure 6-8 Example: Minor Trailhead

The Preferred alignment, which is along SR 29 for most of its length, already has adequate parking and support facilities in the cities and towns along the highway. In fact, it was decided that for economic reasons it would better to have trail users park in the cities and towns where they could also shop and eat. No additional facilities were identified as needed at this point, however guidance is provided should a major trailhead be needed.

A description of a range of Trail entry features and related amenities is provided below.

Path Entries.

The Trail will draw substantial numbers of users during peak times. Path users could be directed to specific path entries where parking and other amenities are provided, helping to relieve some of the pressure on residential and commercial areas. Path entries may also contain drinking fountains, telephones, restrooms, bike lockers, public art, and other features. They should be accessible by transit service whenever feasible.

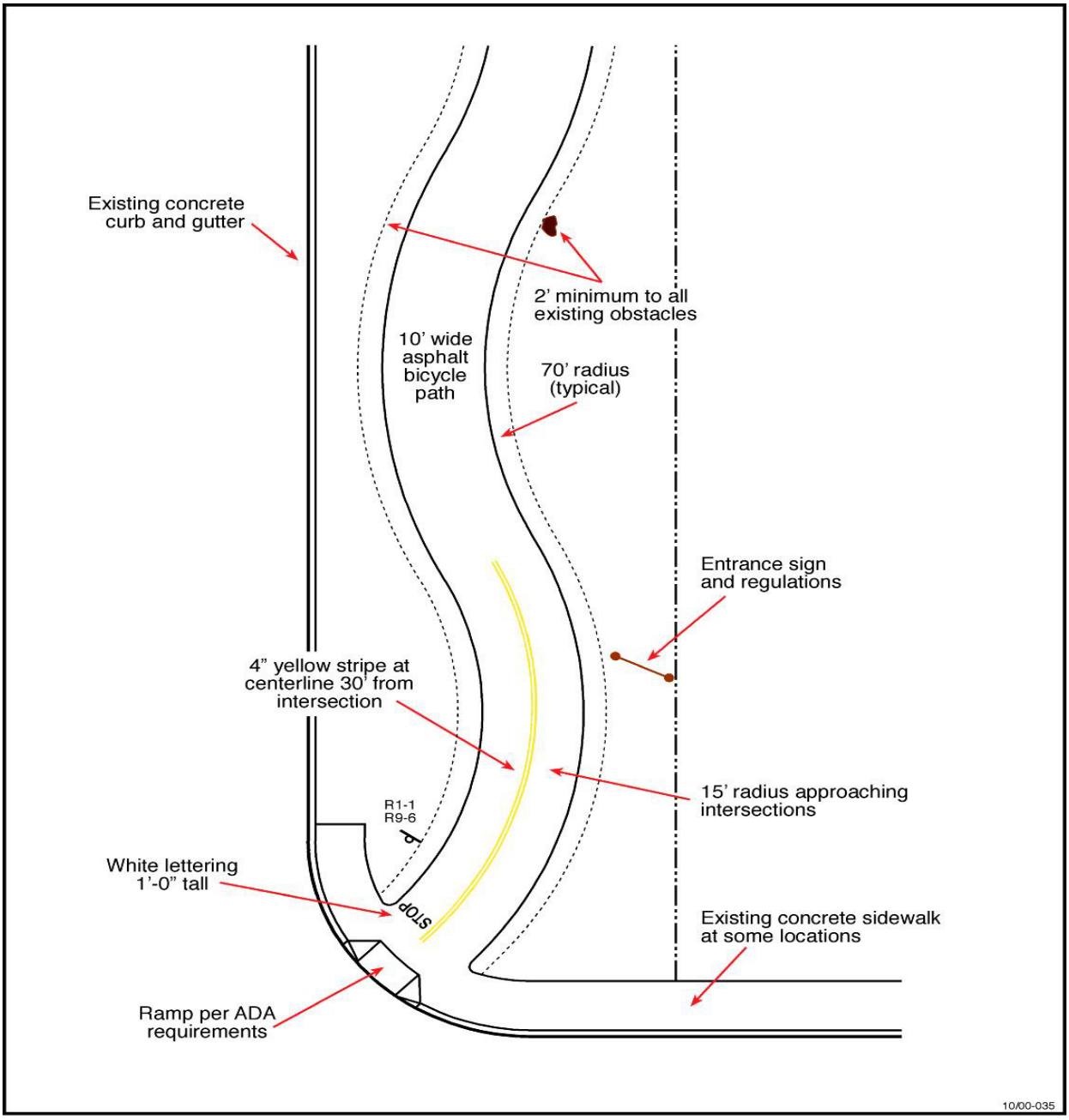


Figure 6-9 - Path Approach Design

Bollards

A single 48-inch wood or metal bollard (post) should be placed on the centerline of the path at all entrances to prevent motor vehicles from entering the path, leaving at least 48" of clearance on each side. The bollard should be designed with high reflective surfaces and be brightly painted. The bollard should be locked to a ground plate and be easily removed by emergency vehicles. Collapsible bollards are another option. Refer to Figure 6-12 for an example of bollard design and installation.

Trail Approaches to Entries

The Trail alignment should have a sharp (20' or less radius) curve at all intersection approaches to help slow bicycles. Barriers may also be required at the end of the Trail where it has a long down slope over 5% ending at a 'T' intersection with a roadway, to help prevent bicyclists from riding directly into the street.

Kiosks

Most trailheads will have Trail Kiosks which provide information on the Trail, destinations, distances, trail operating restrictions, and other information. They may also be combined with interpretive elements as well.

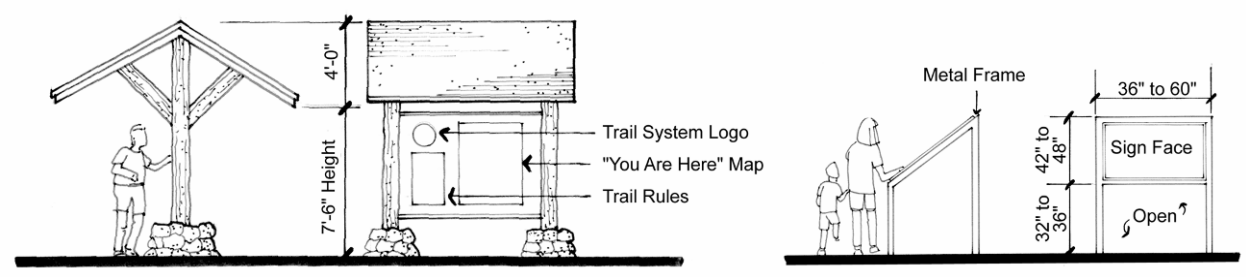


Figure 6-10 Example: Trail Kiosks

Entry Sign

All Trail access points will have a Trail Entry sign, which can be a simple sign with the Trail Name and logo (see Figure 6-11). Trail signs may also incorporate the name of the local jurisdiction managing the trail as well.

Parking

Major Trailheads either already have parking (such as at State Parks) or on existing streets. Some new trailheads may require new or expanded parking areas, depending on patterns of use during peak periods. It is not expected that any trail-related parking will impact local neighborhoods, but if this proves to be true, parking restrictions may need to be implemented or new parking provided.

Benches

Benches should be provided at major trailheads, vista overlooks, and any other area where trail users might stop for rest, snack, or travel orientation. Benches should be simple, low-maintenance structures. Wood or wood composite materials are durable, have warm colors, and are visually consistent with the natural landscape of the corridor. If metal components are used, they should be hot-dipped or galvanized to resist corrosion. Metal may be painted as desired by public agencies that will be taking responsibility for on-going maintenance. Other seating options are local boulders 24" x 36" or larger or tree trunk segments 18" to 24" diameter that blend with the natural landscape character and can be stabilized in the ground for sitting.

Drinking Fountains / Potable Water

Drinking water should be provided at Major Trailheads, preferably at intervals no greater than five miles apart. Trail links to other parks or nearby retail sources will satisfy water availability objectives. If no potable water will be available for greater distances, information signs should alert the trail users. Water for domestic animals may be provided at trail staging area locations.

Restrooms

Unless public restrooms are already available nearby, Major Trailheads should provide at least one unisex restroom facility. These could be a permanent facility or a portable unit. Anticipated volume of users will dictate the type of facility that is chosen. Public concern for visual impacts to views of the Valley is a primary concern. To reduce the visual impact of restroom facilities, one may integrate the use of natural materials and earth-tone colors and provide planting and earth grading to blend structures with the natural environment. Locate facilities discretely within existing development wherever possible. Long-term maintenance responsibility of either a portable or a fixed unit must be established prior to design.

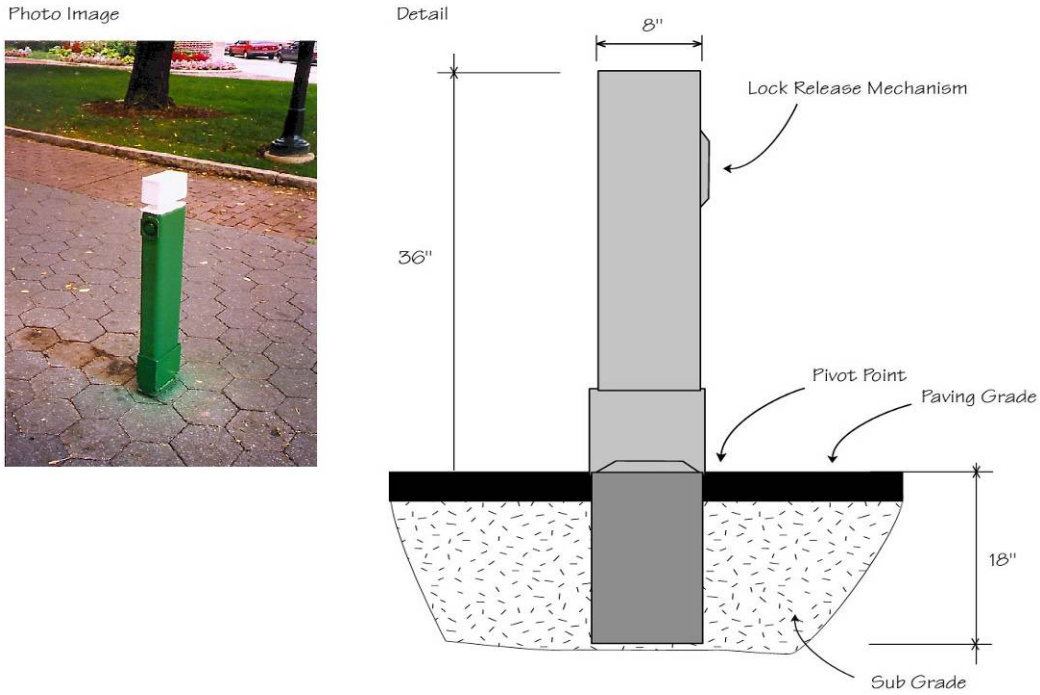


Figure 6-11: Collapsible Bollard

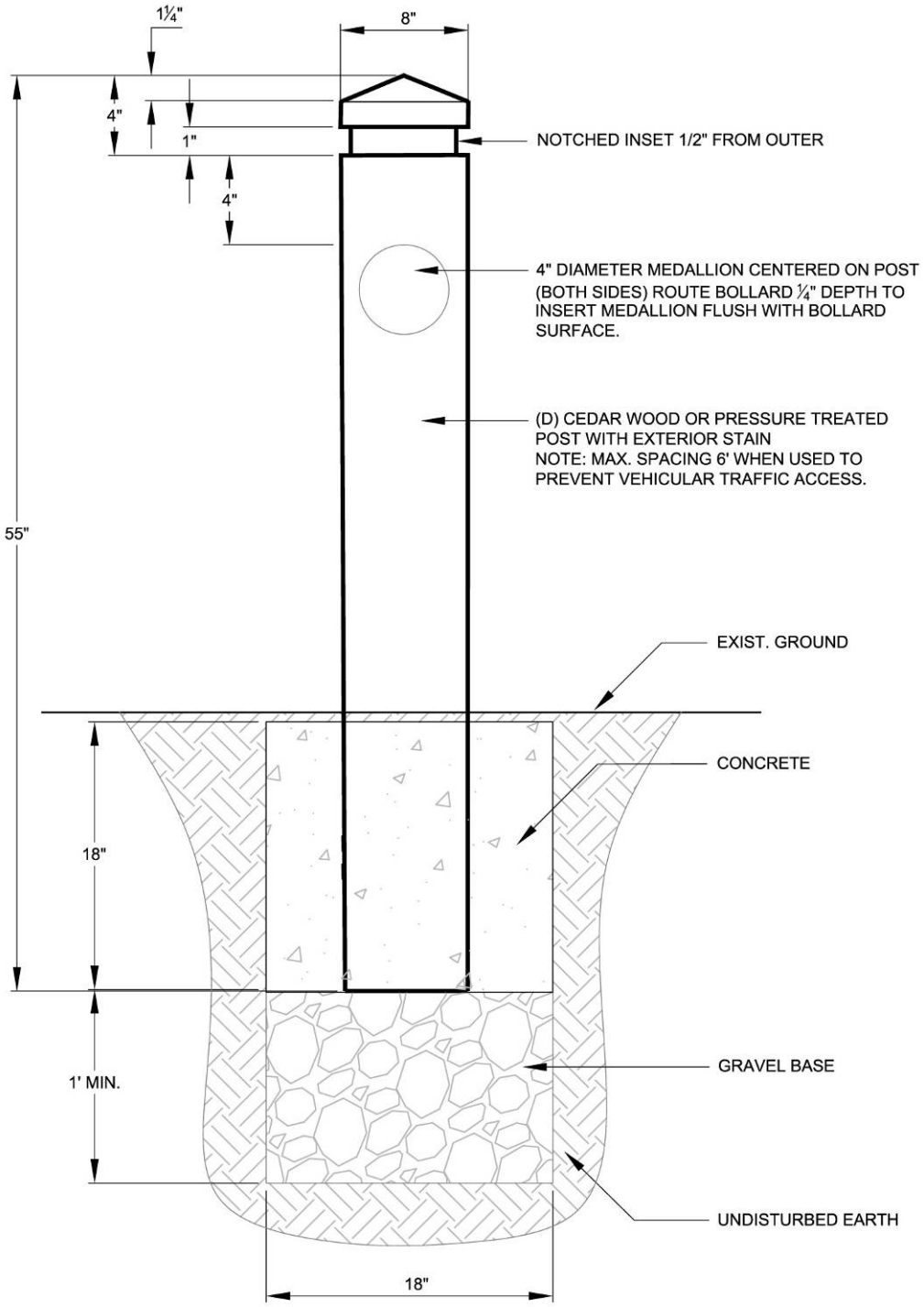


Figure 6-12: Stationary Bollard

6.2.6 . Signage Design

Traffic Control

Uniform signs, markings, and traffic control devices shall be used per Chapter 2 of the Manual of Uniform Traffic Control Devices California Supplement 2006.

Multi-use path signing and markings should follow the guidelines as developed by Caltrans in the California Manual on Uniform Traffic Control Devices **(see Table 6-3)**. This includes advisory, warning, directional, and informational signs for bicyclists, pedestrians, and motorists. The final striping, marking, and signing plan for the Napa Valley Greenway should be reviewed and approved by a licensed traffic engineer or civil engineer.

Designs which deviate from the mandatory Caltrans design standards shall be approved by the Chief, Office of Project Planning and Design, or to delegated Project Development Coordinators. These standards represent the basic guidelines set forth by Caltrans. There are many conditions that are not explicitly covered in the Caltrans or American Association of State Highway and Transportation Officials guidelines. Table 6-3 the range of trail and bikeway signs that can be used on the Greenway Trail.

Table 6-3: Recommended Signing and Marking

Item	Location	Color	Caltrans Designation	*MUTCD Designation
No Motor Vehicles	Entrances to trail	B on W	R44A	R5-3
Bicyclists Use Pedestrian Signal/Bicyclists Yield to Pedestrians	At crosswalks; where sidewalks are being used	B on W	N/A	9-5 R9-6
Bike Lane Ahead: Right Lane Bikes Only	At beginning of bike lanes	B on W	N/A	R3-16 R3-17
STOP, YIELD	At trail intersections with roads and Napa Valley Wine Train	W on R	R1-2	R1-1 R1-2
Bicycle Warning	For motorists at trail crossings		W79	W11-1
Bike Lane	At the far side of all arterial intersections	B on W	R81	D11-1

Item	Location	Color	Caltrans Designation	*MUTCD Designation
Hazardous Condition	Slippery or rough pavement	B on Y	W42	W8-10
Turns and Curves	At turns and curves which exceed 20 mph design specifications	B on Y	W1,2,3,4,5,6,14, 56, 57	W1-1,2 W1-4,5 W1-6
Trail Intersections	At trail intersections where no STOP or YIELD required, or sight lines limited	B on Y	W7,8,9	W2-1, W2-2 W2-3, W2-3 W2-4, W2-5
Stop Ahead	Where STOP sign is obscured	B, R on Y	W17	W3-1
Signal Ahead	Where signal is obscured	B, R, G	W41	W3-3
Bikeway Narrows	Where bikeway width narrows or is below 8'	B on Y	W15	W5-4a
Downgrade	Where sustained bikeway gradient is above 5%	B on Y	W29	W7-5
Pedestrian Crossing	Where pedestrian walkway crosses trail	B on Y	W54	W11A-2
Restricted Vertical Clearance	Where vertical clearance is less than 8'6"	B on Y	W47	W11A-2
* The Manual on Uniform Traffic Control Devices (MUTCD)				
Railroad Crossing	Where trail crosses railway tracks at grade	B on Y	W47	W10-1
Directional Signs (i.e., Downtown, wineries etc).	At intersections where access to major destinations is available	W on G	G7,G8	D1-1b(r/l) D1-1 C

Item	Location	Color	Caltrans Designation	*MUTCD Designation
Right Lane Must Turn Right; Begin Right Turn Here, Yield to Bikes	Where bike lanes end before intersection	B on W	R18	R3-7 R4-4
Napa Greenway	Trail logo: at all trail entrances, major intersections, major access points	-	N/A	N/A
Trail Regulations	All trail entrances	-	N/A	N/A
Multi-purpose Trail: Bikes Yield to Pedestrians	All trail entrances	-	N/A	N/A
Bikes Reduce Speed & Call Out Before Passing	Every 2,000 feet	-	N/A	N/A
Please Stay On Trail	In environmentally-sensitive areas	-	N/A	N/A
Caution: Storm Damaged Trail	Storm damaged locations	-	N/A	N/A
Trail Closed: No Entry Until Made Accessible & Safe for Public Use	Where trail or access points closed due to hazardous conditions	-	N/A	N/A
Speed Limit Signs	Near trail entrances: where speed limits should be reduced from 20 mph	-	N/A	N/A
Trail Curfew 10PM - 5AM	Based on local ordinance	-	N/A	N/A

In general, all signs should be located two to four feet from the edge of the paved surface, have a minimum vertical clearance of 8.5 feet when located above the path surface and be a minimum of four feet above the path surface when located on the side of the path. All signs should be oriented so as not to confuse motorists. The designs (though not the size) of signs and markings should be the same as used for motor vehicles.

In addition to required traffic control signs, other signs and markings, including logo signs and directional signs, will be needed on the Napa Valley Greenway. These are discussed briefly below.

Logo Sign

A distinctive logo for the Napa Valley Greenway should be developed and adopted, and used to identify the trail throughout the County. Two examples of signs with logos are shown in Figure 6-15.

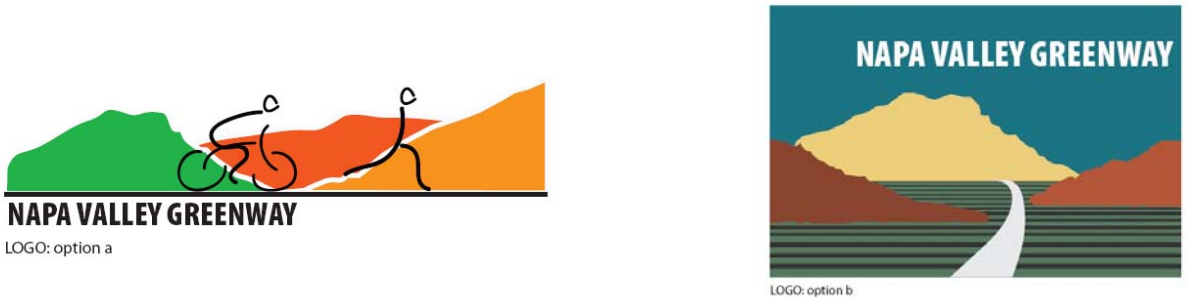


Figure 6-13: Examples of Logos

Signage can be integrated into the trail design using appropriate signage posts and supports. Example are shown in Figure 6-16

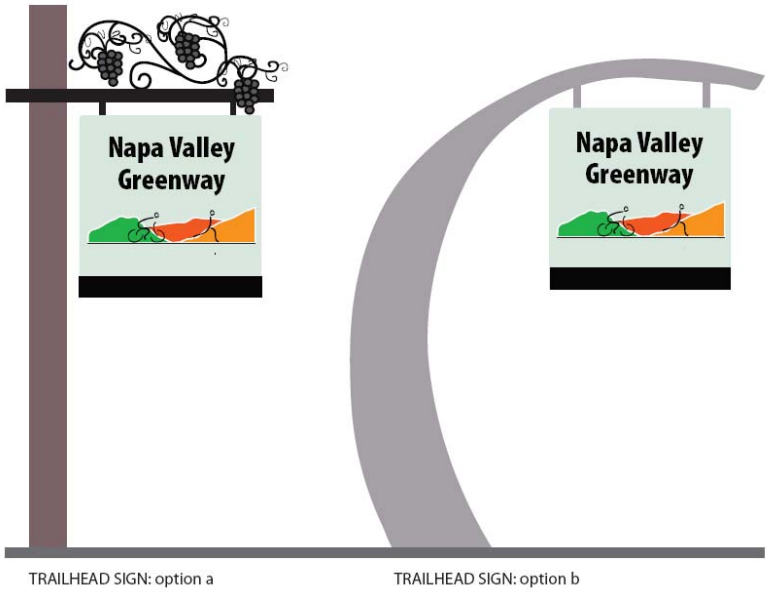


Figure 6-14: Examples of signage installations

Directional Signs

Directional signs on the Greenway Trail indicate directional turns and connections on the trail itself, but also directions to nearby destinations or support facilities (such as rest areas, water, restrooms, downtowns, etc.). Directional signs also need to be placed on approaches to the Greenway in each community and major connection point, so people are aware of how to reach the Greenway. See Figure 6-17 for examples of directional signs with logos.

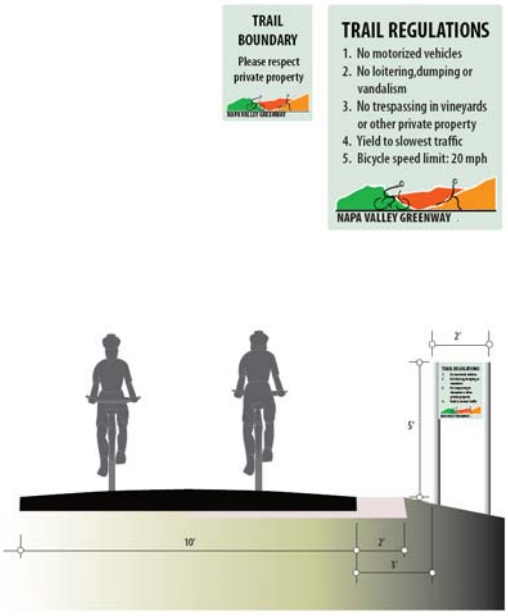


Figure 6-15: Examples of Directional Signs

6.2.7 . Fencing and Barriers

Fencing and other barriers are typically used to separate a path from adjacent private property and land uses. The Napa Greenway will be located in areas where no fencing is needed, and in other areas where it is needed to protect private property and control people from walking in sensitive areas. A variety of fencing materials are available, as shown in Figure 6-18. The following are important considerations when selecting fencing or barriers:

Aesthetics

Depending on the type and height of the barrier, the aesthetics of a path could be impacted by eliminating or reducing views and visibility, and otherwise creating a "bowling alley" effect for users. Fencing materials should also contribute - rather than detract - to the overall community aesthetics. Selection of fencing type and height could impact the overall attractiveness of the bikeway. For example, lower wooden fencing may be provide on the wetland side of the pathway to help prevent dogs from entering the wetlands, but preserving views.

Security

Fencing between the path and adjacent land uses can protect the privacy and security of the property owners. While crime or vandalism have not proven to be a common problem along most multi-use

paths, fencing is still considered a prudent feature especially in some residential areas. The type, height, and maintenance responsibility of the fencing is dependent on local policies.

Farmlands

Fencing between the Greenway and active farmlands is proposed to be a "no climb" welded wire fabric or post and cable fence, with 'No Trespassing' and civil penalties posted every 200 feet. Post and cable fencing with two wire strands will clearly demarcate private property, but will also be easy to move as needed, inexpensive, and will not impact wildlife movement or views from the Greenway.

Highway

Sections of the Greenway next to Highways, where it is closer than 5 feet from the edge of pavement, will require a barrier to protect trail users. Caltrans typically would require installation of a standard concrete K-rail or metal beam guard railing to meet this need.

Railroad

Fences are the most common type of physical barrier used in Rail with Trail corridors. A number of fencing types are available, ranging from simple wood post and rail fences to tall, heavy-duty steel fences. Selection of a fencing type, height and location depends on the frequency and speed of trains, number of trail users, of amount of trespassing anticipated along a given segment of the RWT, concern for entrapment on the wrong side of the fence and the aesthetic qualities desired see Figure 6-19.

The Wine Train right-of-way parallels Highway 29 and for much of its length between Napa and Yountville it also parallels a storm water drainage ditch. This narrow corridor would provide in many cases a minimal separation from the railroad track. In these locations, some sort of acceptable fencing barrier design will need to be developed. This could be considered as part of an overall aesthetic treatment to the corridor and enhance the visual quality. The use of an appropriate style of fencing may be considered an improvement to the scenic resource.

A wide variety of physical barriers are used in RWT corridors. Of the 65 RWT facilities surveyed in the United States today, 71 percent have some type of physical barrier between the trail and tracks. The types of barriers in use include fences, walls, vegetation, grade differences and ditches.

Operational considerations (right-of-way widths, frequency of use, access to loads, etc.) for the line paralleling the Napa Valley Greenway may prevent the use of a barrier in some segments.

Fences are the most common type of physical barrier used in RWT corridors. A number of fencing types are available, ranging from simple wood post and rail fences to tall, heavy-duty steel fences. Selection of a fencing type, height and location depends on the frequency and speed of trains, number of Greenway users, of amount of trespassing anticipated along a given segment of the RWT, concern for entrapment on the wrong side of the fence and the aesthetic qualities desired.

Some factors to consider when deciding on fencing necessity and styles include:

- **Safety:** Fencing can be used as an indicator to alert Greenway users to a hazard and to reduce inadvertent trespass.
- **Security:** Fencing between the Greenway and adjacent land uses can protect the privacy and security of adjacent property owners. While crime or vandalism have not proven to be a

common problem along most multi-use trails, fencing is often included. The type, height, and material of the fencing are subject to local policies.

- **Fencing height:** The height and design of a fence influences whether lateral movement will be inhibited. Few fences are successful at preventing people from continuing to cross at historic illegal crossing locations. Fencing that cannot be climbed will typically be cut or otherwise vandalized. Heavy-duty fencing such as wrought iron or other styles of fencing that are difficult to climb are often more expensive.
- **Cost:** Fencing and other barriers, depending on the type of materials used and the length, can be costly, so options should be considered carefully.
- **Openings:** Fencing and fence posts, especially end posts can become collision hazards. The number of openings should be minimized, trail setbacks observed and the design should not present sharp or dangerous protrusions.

Where fencing is to be installed along the corridor it should be located a minimum of 8.5 feet (9.5 on curves) from the nearest track centerline and three feet from the edge of the trail tread. Where the fence is located within 15 feet of the centerline of the nearest track, it should be designed with periodic removable sections for rail maintenance work, unless adequate access can be provided on the opposite side of the tracks. All fencing should provide breaks or openings at least 5 feet wide every 500 feet to allow emergency access and escape.

With normal setback, fencing height should range between 36 inches and 48 inches, with 42 inches standard.

Regardless of fence type, railroad maintenance vehicles and/or emergency vehicles may need fence gates in certain areas to facilitate access to the track and/or trail. Fence design should be coordinated with railroad maintenance personnel, as well as representatives from utilities that extend along the corridor.

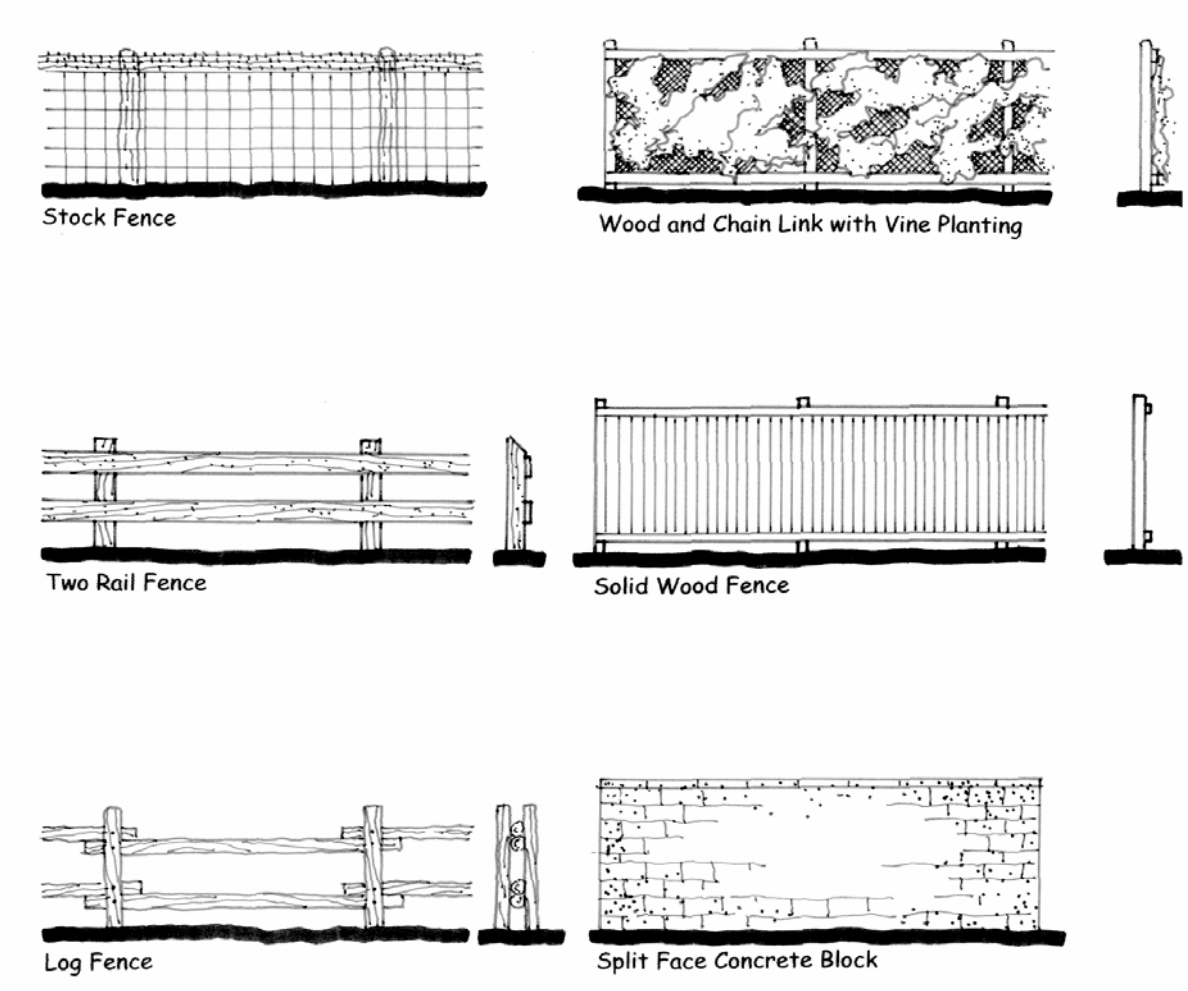
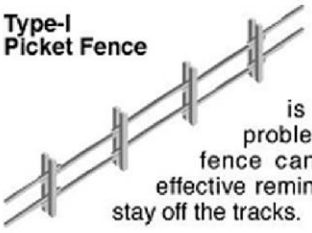


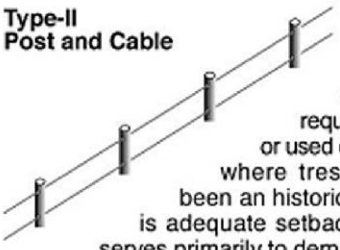
Figure 6-16 - Fence Types Non Railroad

Type-I
Picket Fence



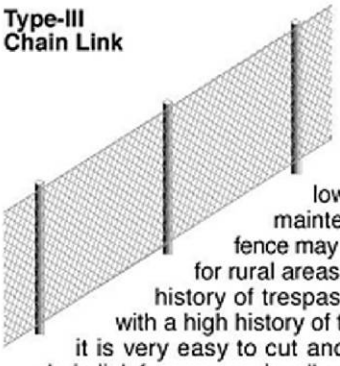
Where trespassing is not as much of a problem, a low wood rail fence can still serve as an effective reminder to trail users to stay off the tracks.

Type-II
Post and Cable



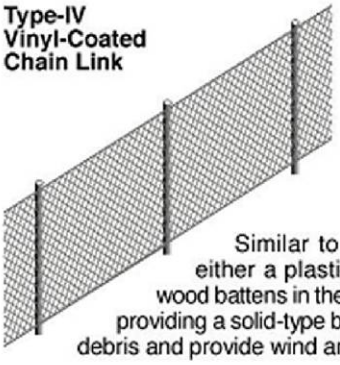
This inexpensive fence is occasionally requested by a railroad or used on a RWT primarily where trespassing has not been an historical problem, there is adequate setback, and the fence serves primarily to demarcate the railroad property boundaries. The fence does not provide any screening or anti-trespassing features.

Type-III
Chain Link



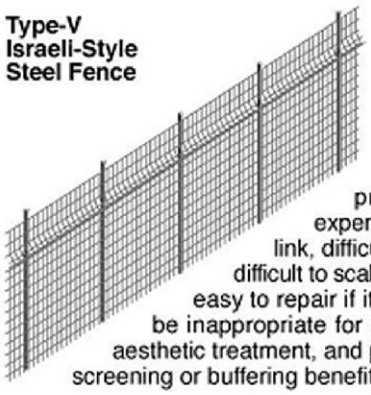
Chain link fences are popular due to their effectiveness in keeping trail users off the tracks, relative low cost, and ease of maintenance. Chain link fence may not be appropriate for rural areas where there is no history of trespassing, or for areas with a high history of trespassing, since it is very easy to cut and vandalize. Most chain link fences are visually unappealing – and tend to project an image of an urban industrial environment. For this reason, trail designers should explore using other, more appealing types of fences whenever possible.

Type-IV
Vinyl-Coated
Chain Link



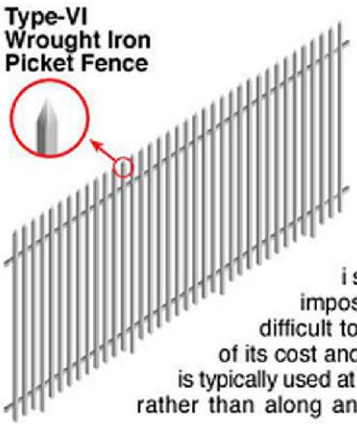
Similar to Type **III**, but with either a plastic woven fabric or wood battens in the chain link material providing a solid-type barrier to help catch debris and provide wind and visual buffering.

Type-V
Israeli-Style
Steel Fence



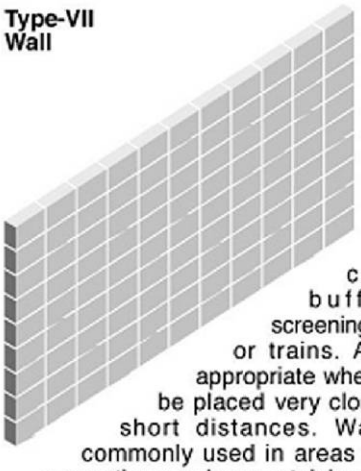
Sometimes referred to as 'Israeli-style' fencing for its use in Israel to protect kibbutzs, this product is more expensive than chain link, difficult to vandalize, difficult to scale, and relatively easy to repair if it is cut. It would be inappropriate for areas requiring aesthetic treatment, and provides limited screening or buffering benefits.

Type-VI
Wrought Iron
Picket Fence



This is the ultimate in vandal-resistant fencing, and is used in locations that have a history of trespassing. It is virtually impossible to cut and difficult to scale. Because of its cost and visual impact, it is typically used at specific locations rather than along an entire corridor.

Type-VII
Wall



Very rarely used due to its cost and visual impact, solid concrete block walls are virtually indestructible and offer complete buffering and screening from rail debris or trains. A wall may be appropriate where a RWT must be placed very close to tracks for short distances. Walls are most commonly used in areas where a grade separation requires a retaining wall adjacent to the trail. Wall design in active rail corridors should be carefully coordinated with rail engineers, because they can have an effect on the structural integrity of the rail bed, alter drainage patterns in the rail corridor, and, in some circumstances, impede access by railroad maintenance equipment.

Figure 6-17 - Fence Types Railroads

6.2.8 . Undercrossings

It is anticipated that two under crossings may be required to implement the Greenway, One is located in Segment 8A/B to cross under the SMART railroad at the Brassos Bridge. There is a need to increase headroom clearance at that location and provide a path system which can withstand occasional flooding from the Napa River.

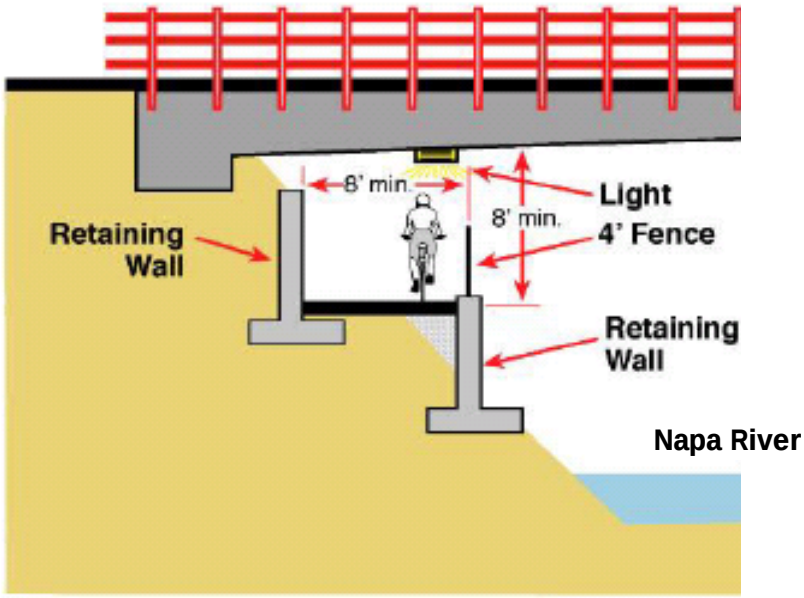


Figure 6-18 –Under Crossing at Brassos Bridge

The second crossing is located at the undercrossing of Highway 37 in Segment 9 Option C.

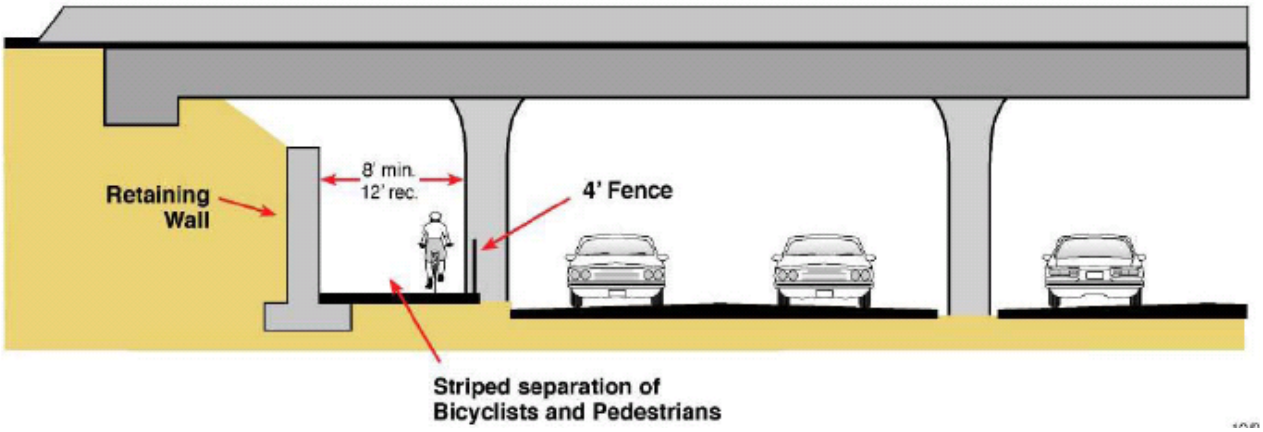


Figure 6-19 –Under Crossing at Highway 37

6.2.9 . Landscaping

The Napa Greenway travels through a mix of urban and native coastal landscapes. Within an urban area, planting may be used to highlight Greenway entrances, provide a vegetation buffer between the Greenway and street. Vine or low shrub planting should be used to soften the use of fences in an urban setting. Trees may be part of the natural landscape palette, used to soften parking lot appearances, or formally planted at trailheads to highlight access points. Planting should be drought tolerant species, preferably native to the California Coastal Valley Regions. Irrigation may be required for establishment, but plantings should be able to withstand considerable periods without supplemental water.

In most cases, outside of urban areas, planting will not be necessary. However, cut and fill slopes should be replanted or seeded to stabilize slopes and control erosion. Plants should be indigenous species to the Napa Valley, appropriate to the particular landscape eco-type along the corridor.

Trail entries may include some landscaping depending on the interest of each local agency, especially in developed areas where the landscaping would also serve as streetscape for the community. The type of landscaping will be dependent on each local agency, and may range from low or no water native plants to more ornate irrigated flowers and grass.

Greenway segments in sensitive environmental locations may require some landscaping to (a) help reduce sand movement and erosion, (b) screen private property from the Greenway (such as vines on a fence), and/or (c) help keep people out of or away from sensitive areas.

6.2.10 . Amenities

There are a number of amenities that make a trail system inviting to the user. Below are some common amenities that make systems stand out.

Interpretive Installations

Interpretive installations and signs can enhance the users experience by providing information about the history of the Valley. Installations can also discuss local ecology, environmental concerns, and other educational information.

Water Fountains and Bicycle Parking

Water fountains provide water for people (and pets, in some cases) and bicycle racks allow recreational users to safely park their bikes if they wish to stop along the way, particularly at parks and other desirable destinations.

Pedestrian-Scale Furniture

Providing benches at key rest areas and viewpoints encourages people of all ages to use the trail by ensuring that they have a place to rest along the way. Benches can be simple (e.g., wood slates) or more ornate (e.g., stone, wrought iron, concrete).

Maps and Signage

A comprehensive signing system makes a bicycle and pedestrian system stand out. Informational kiosks with maps at trailheads and other pedestrian generators can provide enough information for someone to use the network with little introduction – perfect for areas with high out-of-area visitation rates as well as the local citizens.

Art Installations

Local artists can be commissioned to provide art for the trail system, making it uniquely distinct. Many trail art installations are functional as well as aesthetic, as they may provide places to sit and play on.

6.3. Cost Estimates

The total cost of the Napa Valley Greenway is estimated be between $34.1 million and $48.5 million depending on which of the Options and their variations are selected. Table 6-5 provides a summary of costs for the development of the Greenway with some of the variations within the Segments.

Of this cost, between $1.6 million and $6.9 million is associated with expected easement acquisition again based on which Option and which variation is selected. These right-of-way costs may change significantly. The cost is based on all of the segment alignments identified in Chapter 5 for short, mid, and long-term projects. Where two or more alternative alignments existed for a specific segment, a preferred alignment was identified in the Evaluation Matrix at the end of Chapter 5 based on the stated criteria.

Many segments include multiple types of trail construction, which affects the cost. Alternative unit cost estimates are presented in Table 6-6 for different trail types and for all features on the Greenway including bridges, road improvements, and trailheads. Cost estimates include design and environmental review and contingencies, estimated at 50% of the direct construction cost.

- Option A (West Side) has the most publicly owned land and right-of-way and would be the least expensive option in Segments 1, 2,4, 5 and 6.

- Of the three Options, right-of-way costs and lengthy negotiations with landowners to secure necessary rights of way and easements render Option B (Mid Valley) less attractive in almost all segments. The cost of Option B is higher than the other options with the exception of Segment 7.

- Option C (East Side), which used Class II and Class III bike lanes and bike routes for segments 3, 8, 9 and 10 is less expensive in those segments. However because the goal of the study is to identify a trail route which provides the user with the most off road experience Option C is less suited to meet that goal.

Table 6-4: Napa Greenway: Cost Summary

Segment	Option A	Option B	Option C
1	$6,700,461	$7,248,644	$6,641,801
2		$4,543,315	$3,815,934
2A.1	$3,834,685		
2A.2	$1,385,576		
3			$6,477,399
3A.1	$7,360,525		
3A.2	$7,554,540		
3B.1		$11,308,382	
3B.2		$10,981,758	
4	$244,409	$1,600,930	$1,069,370
5	$5,768,886		$ 6,616,626
5B.1		$9,659,841	
5B.2		$9,343,437	
6	$1,599,548	$1,685,724	$1,699,292
7	$1,310,135	$832,104	$2,496,850
8	$5,313,114	$5,313,114	$2,497,897
9	$4,570,342	$2,095,388	$2,854,164
10	$494,590	$494,590	$494,590

Table 6-5: Napa Valley Greenway Trail Unit Cost Estimates

Type	Unit	Cost
Bikeways		
Class I bike path (8 feet wide); 2" AC over 6" Type 2 base assumes level terrain + allowance for drainage and utilities	LF	$153.00
Class I bike path (10 feet wide); 2" AC over 6" Type 2 base assumes level terrain + allowance for drainage and utilities	LF	$166.50
Class I bike path minor repair. Adding overlay over existing 6' wide path plus 2 ' wide additional 2" asphalt over 6" Type 2 base + allowance for drainage and utilities.	LF	$50.00
Class II bike lanes painted lines with bike symbols	LF	$72.00
Class II bike lanes, 4' widening each side of road	LF	$249.00
Class III bike route, wayfinding signage	LF	$1.50
Quarry Fines Trail 3" layer compacted 8-feet wide. Includes mobilization, demo and misc earthwork, landscape erosion control	SF	$5.50
Trailhead		
Major Trailhead (restroom plus 20 parking spaces)	LS	$500,000.00
Signage and Barriers.		
Interpretive signage Allowance per mile	Mile	$4,000.00
Striping and signage Allowance per mile	Mile	$3,000.00
Barrier Rail : Caltrans metal beam guard railing.	LF	$125.00
Bridges and Structures		
Bike Ped Bridge (12 ' wide)	LF	$960.00
Bridge abutments per bridge	LS	$60,000.00
Boardwalks (8-feet wide)	LF	$375.00
Road Crossings		
Street Crossing Striped	LF	$15.00
Signalized Street Crossing	LS	$60,000.00
Right-of-way based on 100,000/acre	SF	$2.29
RR Undercrossing	EA	$1,200,000.00
RR At Grade Crossing	EA	$450,000.00
Culvert crossing 25 feet long	EA	$15,000.00
Fencing, gates, bollards		
Four strand wire fence	LF	$15.00
Post and cable fencing	LF	$18.00
Security Fencing (6' high)	LF	$37.50
Pipe Gate and Bollards	EA	$7,500.00
Chain link access gate	EA	$5,000.00

Table 6-6: Napa Valley Greenway: Cost Estimates By Segment Option A

Segment	Agency(ies)	Description Begin	Description End	Length in miles	Quantity	Unit	Improvement Type(s)	Item Cost	Segment Cost
1	Calistoga Napa County St. Helena	Washington Street, Calistoga	Deer Park Road, St Helena	6.6	3,168	LF	New Class 1 Bike Path (8' wide)	$ 484,704	
			Note: Length includes 0.9 mile of existing bike path		31,680	LF	New Class 1 Bike Path (10' wide)	$ 5,274,720	
					Allowance	mile	Interpretive signage	$ 26,400	
					Allowance	mile	Striping and signage	$ 19,800	
					3,168	LF	Barrier Rail	$ 396,000	
					125	LF	Bike Ped Bridge (12 ' wide)	$ 120,000	
					1	EA	Bridge abutments	$ 60,000	
					6	EA	Street Crossing Striped	$ 5,400	
					1	EA	Signalized Street Crossing (Deer Park)	$ 60,000	
					10	EA	Gates Bollards at each entrance	$ 75,000	
					77,920	SF	Right-of-way	$ 178,437	
									$ 6,700,461
2A.1	St. Helena	Deer Park Road, St. Helena	Zinfandel Lane	3.86	21,120	LF	New Class 1 Bike Path (10' wide)	$ 3,516,480	
					Allowance	mile	Interpretive signage	$ 15,440	
					Allowance	mile	Striping and signage	$ 11,580	
					94,404	SF	Right-of-way	$ 216,185	
					10	EA	Gates Bollards at each entrance	$ 75,000	
									$ 3,834,685
2A.2	St. Helena	Deer Park Road, St. Helena	Zinfandel Lane	3.86	1,584	LF	Class I bike path minor repair	$ 79,200	
					6,600	LF	New Class 1 Bike Path (10' wide)	$ 1,098,900	
					Allowance	mile	Interpretive signage	$ 15,440	
					Allowance	mile	Striping and signage	$ 11,580	
					2	EA	Signalized Street Crossings (Elmhurst & Hwy 29 and Sulphur Springs & Hwy 29)	$ 120,000	
					26,400	SF	Right-of-way	$ 60,456	
									$ 1,385,576
3A.1	Napa County	Zinfandel Lane	Yountville Cross Road	7.09	37,435	LF	New Class 1 Bike Path (10' wide)	$ 6,232,961	

Table 6-6: Napa Valley Greenway: Cost Estimates By Segment Option A

Segment	Agency(ies)	Description Begin	Description End	Length in miles	Quantity	Unit	Improvement Type(s)	Item Cost	Segment Cost
					Allowance	mile	Interpretive signage	$ 28,360	
					Allowance	mile	Striping and signage	$ 21,270	
					160	LF	Bike Ped Bridge (12 ' wide)	$ 153,600	
					1	EA	Bridge abutments	$ 60,000	
					16	EA	Gates Bollards at each entrance	$ 120,000	
					325,037	SF	Right-of-way	$ 744,334	
									$ 7,360,525
3A.2	Napa County	Zinfandel Lane	Yountville Cross Road	7.55	39,864	LF	New Class 1 Bike Path (10' wide)	$ 6,637,356	
					Allowance	mile	Interpretive signage	$ 30,200	
					Allowance	mile	Striping and signage	$ 22,650	
					16	EA	Gates Bollards at each entrance	$ 120,000	
					325,037	SF	Right-of-way	$ 744,334	
									$ 7,554,540
4	Yountville	Yountville Cross Road	California Drive/ SilveradoWinery	1.42	1,056	LF	New Class 1 Bike Path (10' wide)	$ 175,824	
			Note: Existing 1.02 miles bike path		250	LF	Class I bike path minor repair	$ 12,500	
					Allowance	mile	Interpretive signage	$ 5,680	
					Allowance	mile	Striping and signage	$ 4,260	
					6	EA	Gates Bollards at each entrance	$ 45,000	
					500	SF	Right-of-way	1,145	
									$ 244,409
5	Yountville Napa County City of Napa	California Drive/ Silverado Winery	Redwood Road/ Trancas Street	5.97	31,522	LF	New Class 1 Bike Path (10' wide)	$ 5,248,346	
					Allowance	mile	Interpretive signage	$ 23,880	
					Allowance	mile	Striping and signage	$ 17,910	
					160	LF	Bike Ped Bridge (12 ' wide)	$ 178,750	
					3	EA	Bridge abutments	$ 180,000	
					16	EA	Gates Bollards at each entrance	$ 120,000	
									$ 5,768,886
6	City of Napa	Redwood Road/ Trancas Street	Imola Avenue	3.5	7,920	LF	New Class 1 Bike Path (10' wide)	$ 1,318,680	

Table 6-6: Napa Valley Greenway: Cost Estimates By Segment Option A

Segment	Agency(ies)	Description Begin	Description End	Length in miles	Quantity	Unit	Improvement Type(s)	Item Cost	Segment Cost
			Note: Existing Bike path		Allowance	mile	Interpretive signage	$ 14,000	
					Allowance	mile	Striping and signage	$ 10,500	
					10	EA	Gates Bollards at each entrance	$ 75,000	
					79,200	SF	Right-of-way	$ 181,368	
									$ 1,599,548
7	City of Napa Napa County	Imola Avenue	Highway 29	3.03	5,438	LF	New Class 1 Bike Path (10' wide)	$ 905,494	
			Note: Existing Bike path through Kennedy Park (2 miles)		Allowance	mile	Interpretive signage	$ 12,120	
					Allowance	mile	Striping and signage	$ 9,090	
					120	LF	Bike Ped Bridge (12 ' wide) at Asylum Slough	$ 115,200	
					1	EA	Bridge abutments	$ 60,000	
					6	EA	Gates Bollards at each entrance	$ 45,000	
					71,280	SF	Right-of-way	$ 163,231	
									$ 1,310,135
8	Napa County American Canyon	Highway 29	Green Island Road	5.92	2,000	LF	New Class 1 Bike Path (10' wide)	$ 333,000	
					321,700	SF	Stabilized quarry fines 3" layer 8 feet wide	$ 1,769,350	
					Allowance	mile	Interpretive signage	$ 23,680	
					Allowance	mile	Striping and signage	$ 17,760	
					1,220	LF	Boardwalks	$ 457,500	
					185	LF	Bike Ped Bridge (12 ' wide)	$ 177,600	
					3	EA	Bridge abutments	$ 180,000	
					11,300	LF	4 Strand wire fence	$ 169,500	
					7,900	LF	Chain link fencing	$ 296,250	
					6,650	LF	Post and cable fence	$ 119,700	
					5	EA	Gates Bollards at each entrance	$ 37,500	
					3	EA	Culvert crossings	$ 45,000	
					15,840	SF	Right-of-way	$ 36,274	

Table 6-6: Napa Valley Greenway: Cost Estimates By Segment Option A

Segment	Agency(ies)	Description Begin	Description End	Length in miles	Quantity	Unit	Improvement Type(s)	Item Cost	Segment Cost
					1	EA	At Grade RR Crossing at Soscol Ferry Road	$ 450,000	
					1	EA	RR Undercrossing @ Brassos Bridge	$ 1,200,000	
									$ 5,313,114
9	American Canyon Vallejo	Green Island Road	Highway 37	6.61	8,448	LF	New Class 1 Bike Path (10' wide)	$ 1,406,592	
			Note: Existing residential roads and bike path		63,360	SF	Stabilized quarry fines 3" layer 8 feet wide	$ 348,480	
					Allowance	mile	Interpretive signage	$ 26,440	
					Allowance	mile	Striping and signage	$ 19,830	
					6,864	LF	Boardwalks	$ 2,574,000	
					1,320	LF	Barrier Rail	$ 165,000	
					4	EA	Gates Bollards at each entrance	$ 30,000	
									$ 4,570,342
10	Vallejo	Highway 37	Vallejo Ferry Terminal	2.77	6,600	LF	Class II bike lanes	$ 475,200	
			Note: Existing Bike paths 1.5 miles		Allowance	mile	Interpretive signage	$ 11,080	
					Allowance	mile	Striping and signage	$ 8,310	
									$ 494,590
							TOTALS		
							Option with 2A.1 and 3A.1		**$ 37,196,695**
							Option with 2A.2 and 3A.2		**$ 34,941,601**

Table 6-7: Napa Valley Greenway: Cost Estimates By Segment Option B

Segment	Agency(ies)	Description Begin	Description End	Length in miles	Quantity	Unit	Improvement Type(s)	Item Cost	Segment Cost
1	Calistoga Napa County St. Helena	Washington Street, Calistoga	Deer Park Road, St Helena	6.92	31,786	LF	New Class 1 Bike Path (10' wide)	$ 5,292,302	
			Note: Length includes 0.9 mile of existing bike path		Allowance	mile	Interpretive signage	$ 27,680	
					Allowance	mile	Striping and signage	$ 20,760	
					4	EA	Street Crossing Striped	$ 3,600	
					1	EA	Signalized Street Crossing (Deer Park)	$ 60,000	
					63,571	LF	4 Strand Wire Fence (both sides)	$ 953,568	
					8	EA	Gates Bollards at each entrance	$ 60,000	
					362,766	SF	Right-of-way	$ 830,733	
									$ 7,248,644
2	St. Helena	Deer Park Road, St. Helena	Zinfandel Lane	3.86	20,381	LF	New Class 1 Bike Path (10' wide)	$ 3,393,403	
					Allowance	mile	Interpretive signage	$ 15,440	
					Allowance	mile	Striping and signage	$ 11,580	
					20,381	LF	4 Strand Wire Fence (one side)	$ 305,712	
					10	EA	Gates Bollards at each entrance	$ 75,000	
					324,096	SF	Right-of-way	$ 742,180	
									$ 4,543,315
3B.1	Napa County	Zinfandel Lane	Yountville Cross Road	9.18	45,830	LF	New Class 1 Bike Path (10' wide)	$ 7,630,762	
					Allowance	mile	Interpretive signage	$ 36,720	
					Allowance	mile	Striping and signage	$ 27,540	
					6	EA	Gates Bollards at each entrance	$ 45,000	
					45,830	LF	4 Strand Wire Fence (one side)	$ 687,456	
					2,640	LF	Class II bike lanes, 4' widening each side of road	$ 657,360	
					4	EA	Street Crossing Striped	$ 3,600	
					969,408	SF	Right-of-way	$ 2,219,944	
									$ 11,308,382
3B.2	Napa County	Zinfandel Lane	Yountville Cross Road	8.90	41,712	LF	New Class 1 Bike Path (10' wide)	$ 6,945,048	
					Allowance	mile	Interpretive signage	$ 35,600	
					Allowance		Striping and signage	$ 26,700	

Table 6-7: Napa Valley Greenway: Cost Estimates By Segment Option B

Segment	Agency(ies)	Description Begin	Description End	Length in miles	Quantity	Unit	Improvement Type(s)	Item Cost	Segment Cost
						mile			
					41,712	LF	4 Strand Wire Fence (one side)	$ 625,680	
					5,280	LF	Class II bike lanes, 4' widening each side of road	$ 1,314,720	
					4	EA	Street Crossing Striped	$ 3,600	
					16	EA	Gates Bollards at each entrance	$ 120,000	
					834,240	SF	Right-of-way	$ 1,910,410	
									$ 10,981,758
4	Yountville	Yountville Cross Road	California Drive/ SilveradoWinery	1.32	6,970	LF	New Class 1 Bike Path (10' wide)	$ 1,160,438	
					Allowance	mile	Interpretive signage	$ 5,280	
					Allowance	mile	Striping and signage	$ 3,960	
					6,970	LF	4 Strand Wire Fence (one side)	$ 104,544	
					1	EA	Gates Bollards at each entrance	$ 7,500	
					139,392	SF	Right-of-way	$ 319,208	
									$ 1,600,930
5B.1	Yountville Napa County City of Napa	California Drive/ Silverado Winery	Redwood Road/ Trancas Street	7.34	17,635	LF	New Class 1 Bike Path (10' wide)	$ 2,936,261	
			Note: Uses Big Ranch Road for 4 miles.		Allowance	mile	Interpretive signage	$ 29,360	
					Allowance	mile	Striping and signage	$ 22,020	
					160	LF	Bike Ped Bridge (12 ' wide)	$ 153,600	
					2	EA	Bridge abutments	$ 120,000	
					17,635	LF	4 Strand Wire Fence (one side)	$ 264,528	
					1	EA	Gates Bollards at each entrance	$ 7,500	
					21,120	LF	Class II bike lanes, 4' widening each side of road	$ 5,258,880	
					1	EA	Signalized Street Crossing (Trancas Rd)	$ 60,000	
					352,704	SF	Right-of-way	$ 807,692	
									$ 9,659,841
5B.2	Yountville Napa County City of Napa	California Drive/ Silverado Winery	Redwood Road/ Trancas Street	7.27	38,386	LF	New Class 1 Bike Path (10' wide)	$ 6,391,202	

Table 6-7: Napa Valley Greenway: Cost Estimates By Segment Option B

Segment	Agency(ies)	Description Begin	Description End	Length in miles	Quantity	Unit	Improvement Type(s)	Item Cost	Segment Cost
					Allowance	mile	Interpretive signage	$ 29,080	
					Allowance	mile	Striping and signage	$ 21,810	
					38,386	LF	4 Strand Wire Fence (one side)	$ 575,784	
					1	EA	Gates Bollards at each entrance	$ 7,500	
					1	EA	Signalized Street Crossing (Trancas Rd)	$ 60,000	
					767,712	SF	Right-of-way	$ 1,758,060	
					1	LS	Major Trailhead (Parking plus restroom) at Napa River Park	$ 500,000	
									$ 9,343,437
6	City of Napa	Redwood Road/ Trancas Street	Imola Avenue	3.96	7,920	LF	New Class 1 Bike Path (10' wide)	$ 1,318,680	
			Note: Uses part of existing unpaved trail		Allowance	mile	Interpretive signage	$ 15,840	
					Allowance	mile	Striping and signage	$ 11,880	
					5	EA	Gates Bollards at each entrance	$ 37,500	
					1	EA	Signalized Street Crossing (Lincoln Ave.)	$ 60,000	
					105,600	SF	Right-of-way	$ 241,824	
									$ 1,685,724
7	City of Napa Napa County	Imola Avenue	Highway 29	3.86	3,696	LF	Stabilized quarry fines 3" layer 8 feet wide between Napa Corporate Parkway and Railroad ROW	$ 6	
			Note: Existing Bike path through Kennedy Park (2 miles)		Allowance	mile	Interpretive signage	$ 15,440	
					Allowance	mile	Striping and signage	$ 11,580	
					120	LF	Bike Ped Bridge (12 ' wide) at Asylum Slough	$ 115,200	
					1	EA	Bridge abutments (pair)	$ 60,000	
					75	LF	Bike Ped Bridge (12 ' wide) at Wetland Mitigation site	$ 72,000	
					1	EA	Bridge abutments (pair)	$ 60,000	
					6	EA	Gates Bollards at each entrance	$ 45,000	
					5,280	LF	Class II bike lanes within Business Park	$ 380,160	
					1,200	LF	Chain link fencing for RR	$ 45,000	
					2	EA	Chain link access gate	$ 10,000	

Table 6-7: Napa Valley Greenway: Cost Estimates By Segment Option B

Segment	Agency(ies)	Description Begin	Description End	Length in miles	Quantity	Unit	Improvement Type(s)	Item Cost	Segment Cost
					850	LF	Post and cable fence	$ 15,300	
					1,056	SF	Right-of-way	$ 2,418	
									$ 832,104
8	Napa County American Canyon	Highway 29	Green Island Road	5.92	2,000	LF	New Class 1 Bike Path (10' wide)	$ 333,000	
					321,700	SF	Stabilized quarry fines 3" layer 8 feet wide	$ 1,769,350	
					4,000	mile	Interpretive signage	$ 23,680	
					3,000	mile	Striping and signage	$ 17,760	
					1,220	LF	Boardwalks	$ 457,500	
					185	LF	Bike Ped Bridge (12 ' wide)	$ 177,600	
					3	EA	Bridge abutments	$ 180,000	
					11,300	LF	4 Strand wire fence	$ 169,500	
					7,900	LF	Chain link fencing	$ 296,250	
					6,650	LF	Post and cable fence	$ 119,700	
					5	EA	Gates Bollards at each entrance	$ 37,500	
					3	EA	Culvert crossings	$ 45,000	
					15,840	SF	Right-of-way	$ 36,274	
					1	EA	At Grade RR Crossing at Soscol Ferry Road	$ 450,000	
					1	EA	RR Undercrossing @ Brassos Bridge	$ 1,200,000	
									$ 5,313,114
9	American Canyon Vallejo	Green Island Road	Highway 37	5.9	3,696	LF	New Class 1 Bike Path (10' wide)	$ 615,384	
			Note: Existing residential roads and bike path		63,360	SF	Stabilized quarry fines 3" layer 8 feet wide	$ 348,480	
					7,392	LF	Class II bike lanes	$ 532,224	
					Allowance	mile	Interpretive signage	$ 23,600	
					Allowance	mile	Striping and signage	$ 17,700	
					4,224	LF	Barrier Rail	$ 528,000	
					4	EA	Gates Bollards at each entrance	$ 30,000	
									$ 2,095,388
10	Vallejo	Highway 37	Vallejo Ferry Terminal	2.77	6,600	LF	Class II bike lanes	$ 475,200	
			Note: Existing Bike paths		Allowance	mile	Interpretive signage	$ 11,080	

Table 6-7: Napa Valley Greenway: Cost Estimates By Segment Option B

Segment	Agency(ies)	Description Begin	Description End	Length in miles	Quantity	Unit	Improvement Type(s)	Item Cost	Segment Cost
			1.5 miles						
					Allowance	mile	Striping and signage	$ 8,310	
									$ 494,590
							TOTALS		
							Option with 3B.1 and 5B.1		**$ 44,782,031**
							Option with 3B.2 and 5B.2		**$ 44,139,003**

Table 6-8: Napa Valley Greenway: Cost Estimates By Segment Option C

Segment	Agency(ies)	Description Begin	Description End	Length in miles	Quantity	Unit	Improvement Type(s)	Item Cost	Segment Cost
1	Calistoga Napa County St. Helena	Washington Street, Calistoga	Deer Park Road, St Helena	7.80	36,432	LF	New Class 1 Bike Path (10' wide)	$ 6,065,928	
			Note: Length includes 0.9 mile of existing bike path		Allowance	mile	Interpretive signage	$ 31,200	
					Allowance	mile	Striping and signage	$ 23,400	
					4	EA	Street Crossing Striped	$ 5,400	
					1	EA	Signalized Street Crossing (Deer Park)	$ 60,000	
					10	EA	Gates Bollards at each entrance	$ 75,000	
					166,320	SF	Right-of-way	$ 380,873	
									$ 6,641,801
2	St. Helena	Deer Park Road, St. Helena	Zinfandel Lane	3.73	21,120	LF	New Class 1 Bike Path (10' wide)	$ 3,516,480	
					Allowance	mile	Interpretive signage	$ 14,929	
					Allowance	mile	Striping and signage	$ 11,196	
					3	EA	Street Crossing Striped	$ 2,700	
					6	EA	Gates Bollards at each entrance	$ 45,000	
					98,528	SF	Right-of-way	$ 225,630	
									$ 3,815,934
3	Napa County	Zinfandel Lane	Yountville Cross Road	6.78	35,776	LF	New Class 1 Bike Path (10' wide)	$ 5,956,732	
					Allowance	mile	Interpretive signage	$ 27,103	
					Allowance	mile	Striping and signage	$ 20,327	
					4	EA	Street Crossing Striped	$ 3,600	
					8	EA	Gates Bollards at each entrance	$ 60,000	
					178,881	SF	Right-of-way	$ 409,637	
									$ 6,477,399
4	Yountville	Yountville Cross Road	SilveradoWinery	1.13	5,966	LF	New Class 1 Bike Path (10' wide)	$ 993,406	
					Allowance	mile	Interpretive signage	$ 4,520	
					Allowance	mile	Striping and signage	$ 3,390	
					29,718	SF	Right-of-way	68,055	
									$ 1,069,370

Table 6-8: Napa Valley Greenway: Cost Estimates By Segment Option C

Segment	Agency(ies)	Description Begin	Description End	Length in miles	Quantity	Unit	Improvement Type(s)	Item Cost	Segment Cost
5	Yountville Napa County City of Napa	California Drive/ Silverado Winery	Redwood Road/ Trancas Street	6.96	36,730	LF	New Class 1 Bike Path (10' wide)	$ 6,115,570	
					Allowance	mile	Interpretive signage	$ 27,826	
					Allowance	mile	Striping and signage	$ 20,869	
					2	EA	Street Crossing Striped	$ 1,800	
					4	EA	Gates Bollards at each entrance	$ 30,000	
					183,651	SF	Right-of-way	$ 420,560	
									$ 6,616,626
6	City of Napa	Redwood Road/ Trancas Street	Imola Avenue	4.11	7,920	LF	New Class 1 Bike Path (10' wide)	$ 1,318,680	
			Note: Existing Bike path		Allowance	mile	Interpretive signage	$ 16,423	
					Allowance	mile	Striping and signage	$ 12,318	
					5	EA	Gates Bollards at each entrance	$ 37,500	
					137,280	SF	Right-of-way	$ 314,371	
									$ 1,699,292
7	City of Napa Napa County	Imola Avenue	Highway 29	3.85	9,768	LF	New Class 1 Bike Path (10' wide)	$ 1,626,372	
			Note: Existing Bike path through Kennedy Park (2 miles)		Allowance	mile	Interpretive signage	$ 15,400	
					Allowance	mile	Striping and signage	$ 11,550	
					9,874	LF	Class II bike lanes painted lines with bike symbols	$ 710,928	
					60	LF	Bike Ped Bridge (12 ' wide)	$ 57,600	
					1	EA	Bridge abutments	$ 60,000	
					2	EA	Gates Bollards at each entrance	$ 15,000	
									$ 2,496,850
8	Napa County American Canyon	Highway 29	Green Island Road	5.34					
					28,220	LF	Class II bike lanes	$ 2,031,862	
					Allowance	mile	Striping and signage	$ 16,034	

Table 6-8: Napa Valley Greenway: Cost Estimates By Segment Option C

Segment	Agency(ies)	Description Begin	Description End	Length in miles	Quantity	Unit	Improvement Type(s)	Item Cost	Segment Cost
					1	EA	At Grade RR Crossing at Green Island Road	$ 450,000	
									$ 2,497,897
9	American Canyon Vallejo	Green Island Road	Highway 37	5.10	26,928	LF	Class II bike lanes	$ 1,938,816	
			Note: Existing residential roads and bike path		2,112	LF	New Class 1 Bike Path (10' wide)	$ 351,648	
					4,224	LF	Barrier Rail	$ 528,000	
					Allowance	mile	Interpretive signage	$ 20,400	
					Allowance	mile	Striping and signage	$ 15,300	
									$ 2,854,164
10	Vallejo	Highway 37	Vallejo Ferry Terminal	2.77	6,600	LF	Class II bike lanes	$ 475,200	
			Note: Existing Bike paths 1.5 miles		Allowance	mile	Interpretive signage	$ 11,080	
					Allowance	mile	Striping and signage	$ 8,310	
									$ 494,590
							TOTAL		**$ 34,663,923**

6.4. Phasing

Each segment of the Greenway is assigned to a phasing category in accordance with the total score received by that segment. An initial review of the recommended phasing reveals a pattern of trail development stemming from two hubs, This strategy would provide facilities for areas with the highest short-term demand, while helping through users. Table 6-10 presents the segments assigned to each phasing category.

Table 6-9: Napa Valley Greenway: Phasing

Segment #	Phase I Short Term	Score	Estimated Cost
4A	Yountville		$ 244,409.00
8A	Napa County		$ 5,313,113.60
	Phase 2 Mid Term		
5A	Napa County and City of Napa		$ 5,768,886.40
6A	City of Napa		$ 1,599,548.00
10A	Solano County and Vallejo		$ 494,590.00
9A	Napa County and American Canyon		$ 4,570,342.00
	Phase 3 Long Term		
7A	Napa County and City of Napa		$ 1,310,134.80
3A	Napa County		$ 7,554,540.27
1A	Calistoga to St Helena		$ 6,700,460.80
2A.1	St Helena		$ 3,834,685.16

6.5. Funding

Funding that can be used for bicycle and pedestrian projects, programs and plans comes from all levels of government. This section covers federal, state, regional and local sources of bicycle and pedestrian funding, as well as some non-traditional funding sources that may be used for bicycle and pedestrian projects.

6.5.1 . Federal Funding Sources

SAFTEA-LU

APPLICATION DEADLINE	*Varies*
TYPE OF PROJECTS FUNDED	*Planning & Design* *Construction* *Safety and Education Programs*
TYPE OF TRAILS ELIGIBLE	*Paved* *Unpaved*
LINK TO PROGRAM	*http://www.fhwa.dot.gov/safetealu/index.htm*

The primary federal source of surface transportation funding—including bicycle and pedestrian facilities—is the Safe, Accountable, Flexible, Efficient, Transportation Equity Act: A Legacy for Users. This Federal bill is the third iteration of the transportation vision established by Congress in 1991 with the Intermodal Surface Transportation Efficiency Act and renewed in 1998 and extended in 2003 through the Transportation Equity Act for the 21st Century and the Safe, Accountable, Flexible, and Efficient Transportation Equity Act of 2003. Also known as the Federal Transportation Bill, the $286.5 billion bill was passed in 2005 and authorizes federal surface transportation programs for five years.

Other federal funding is administered through the state (Caltrans and the State Resources Agency) and regional planning agencies. Most, but not all, of these funding programs are oriented toward transportation versus recreation, with an emphasis on reducing auto trips and providing inter-modal connections. Many Federal programs require a local match of between 10-20%. Federal funding is intended for capital improvements and safety and education programs and projects must relate to the surface transportation system.

Specific funding programs under the federal transportation bill for bicycle and pedestrian facilities that might be potential funding sources for the Napa Valley Greenway include:

Federal Lands Highway Funds—Approximately $1 billion dollars are available nationally through 2009 for planning and construction of bicycle and pedestrian projects built in conjunction with roadways

Transportation, Community and System Preservation Program—$270 million nationally through 2009 for projects that improve the efficiency of the transportation system, reduce the impact on the environment, and provide efficient access to jobs, services and trade centers

Recreational Trails Program—$370 million nationally through 2009 for non-motorized trail projects. (See below).

Land and Water Conservation Funds- Funding has varied considerable over the years for this program. Approximately $1 million a year is appropriated for California.

Federal Lands Highway Funds

Federal Lands Highway Funds may be used to build bicycle and pedestrian facilities in conjunction with roads and parkways at the discretion of the department charged with administration of the funds. The projects must be transportation-related and tied to a plan adopted by the State and Metropolitan Planning Organization. Federal Lands Highway Funds may be used for planning and construction.

APPLICATION DEADLINE	*Varies*
TYPE OF PROJECTS FUNDED	*Planning & Design* *Construction*
TYPE OF TRAILS ELIGIBLE	*Paved*
LINK TO PROGRAM	*http://www.fhwa.dot.gov/flh/flhfs051028.htm*

Transportation, Community and System Preservation Program

The Transportation, Community and System Preservation Program provides federal funding for transit oriented development, traffic calming and other projects that improve the efficiency of the transportation system, reduce the impact on the environment, and provide efficient access to jobs, services and trade centers. The program is intended to provide communities with the resources to explore the integration of their transportation system with community preservation and environmental activities. The Program funds require a 20 % match.

APPLICATION DEADLINE	*Varies*
TYPE OF PROJECTS	*Planning & Design*

FUNDED	*Construction*
TYPE OF TRAILS ELIGIBLE	*Paved*
LINK TO PROGRAM	*http://www.fhwa.dot.gov/tcsp/pi_tcsp.htm*

Recreational Trails Program

The Recreational Trails Program (RTP) provides funds annually for recreational trails and trails-related projects. The RTP is administered at the federal level by the Federal Highway Administration (FHWA). It is administered at the state level by the California Department of Parks and Recreation (DPR). The maximum amount of RTP funds allowed for each project is 88% of the total project cost. The applicant is responsible for obtaining a match amount that is at least 12% of the total project cost. Examples of trail uses include hiking, bicycling, in-line skating, equestrian use, and other non-motorized as well as motorized uses. Funds may be used for:

- Maintenance and restoration of existing trails;
- Purchase and lease of trail construction and maintenance equipment;
- Construction of new trails; including unpaved trails
- Acquisition of easements or property for trails;
- State administrative costs related to this program (limited to seven percent of a State's funds); and
- Operation of educational programs to promote safety and environmental protection related to trails (limited to five percent of a State's funds).

APPLICATION DEADLINE	*October*
TYPE OF PROJECTS FUNDED	*Planning & Design* *Property Acquisition* *Construction* *Safety and Educational Programs* *Maintenance and Restoration of Existing Trails*
TYPE OF TRAILS ELIGIBLE	*Paved* *Unpaved*

LINK TO PROGRAM	*Sandy Berry* *(916) 651-7741* *sberr@parks.ca.gov*

Land and Water Conservation Fund

The Land and Water Conservation Fund is a federally funded program that provides grants for planning and acquiring outdoor recreation areas and facilities, including trails. The Fund is administered by the National Parks Service and the California Department of Parks and Recreation and has been reauthorized until 2015.

Cities, counties and districts authorized to acquire, develop, operate and maintain park and recreation facilities are eligible to apply. Applicants must fund the entire project, and will be reimbursed for 50% of costs. Property acquired or developed under the program must be retained in perpetuity for public recreational use. The grant process for local agencies is competitive, and 40% of grants are reserved for Northern California.

In 2006, approximately $480,000 was available for projects in Northern California.

APPLICATION DEADLINE	*May*
TYPE OF PROJECTS FUNDED	*Planning & Design* *Construction*
TYPE OF TRAILS ELIGIBLE	*Paved* *Unpaved*
LINK TO PROGRAM	*Sandy Berry* *(916) 651-7741* *sberr@parks.ca.gov*

6.5.2 . Statewide Funding Sources

The State of California uses both federal sources and its own budget to fund the following bicycle and pedestrian projects and programs.

Proposition 84

In November 2006, voters approved Proposition 84 Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Bond Act of 2006. Napa County as well as the incorporated cities will be eligible to apply for funds under programs being developed by the State. It is anticipated that State Parks, Local Assistance and the Coastal Conservancy will have programs to disburse grant funds. The Coastal Conservancy's San Francisco Bay program will have funds for trail planning and development.

APPLICATION DEADLINE	*To be determined*
TYPE OF PROJECTS FUNDED	*Planning & Design* *Construction*
TYPE OF TRAILS ELIGIBLE	*Paved* *Unpaved* *Conservation & Restoration projects*
LINK TO PROGRAM	*California State Parks Local Assistance Program.* *Jim Holt* *(916) 651-8577* *jholt@parks.ca.gov* *State Coastal Conservancy. San Francisco Bay Program* *Amy Hudsel or Betsy Wilson* *(510) 286 0332* *ahudsel@scc.ca.gov*

Proposition 1A Infrastructure Bond

In November 2006, voters approved Proposition 1A, to fund repairs and renovations to the State's aging infrastructure The bond includes some funds levee repairs and flood protection. Some of the Napa River levees may qualify for funds under this program. These levees could be improved and accommodate trails.

California River Parkways Program

The California River Parkways Program is a state program that provides competitive grants to projects that provide public access to rivers or streams or are a component of a larger parkway plan that provides public access to rivers or streams. The program focuses on non-motorized access. The program was established in 2002 when California voters passed The Proposition 50, the Water Security, Clean Drinking Water and Beach Protection Act of 2002. Funds can be used to develop walking, bicycling trails, provide amenities, property acquisition, construction of interpretive signage and overlooks, boardwalk construction, informational displays, interpretive kiosks, signage. The program is administered by the California Resources Agency. The program, may be receiving additional funds from Proposition 84.

In addition to providing public access to rivers or streams, eligible projects must meet two of the following five requirements:

- **Recreation:** Provide compatible recreational opportunities, including trails for strolling, hiking, bicycling and equestrian uses along rivers and streams.
- **Habitat:** Protect, improve, or restore riverine or riparian habitat, including benefits to wildlife habitat and water quality.
- **Flood Management:** Maintain or restore the open-space character of lands along rivers and streams so that they are compatible with periodic flooding as part of a flood management plan or project.
- **Conversion to River Parkways:** Convert existing developed riverfront land into uses consistent with River Parkways.
- **Conservation and Interpretive Enhancement:** Provide facilities to support or interpret river or stream Restoration or other conservation activities.
- Public agencies and nonprofit organizations are eligible for funding. Projects must comply with CEQA, real property must be acquired from a willing seller priority is given to projects that are included in an approved watershed plan and include watershed protection measures.

APPLICATION DEADLINE	*October*
TYPE OF PROJECTS FUNDED	*Planning & Design* *Construction*

TYPE OF TRAILS ELIGIBLE	*Paved* *Unpaved*
LINK TO PROGRAM	*http://www.resources.ca.gov/bonds_prop50riverparkway.html*

Bicycle Transportation Account

The Bicycle Transportation Account provides state funding for local projects that improve the safety and convenience of bicycling for transportation. Because of its focus on transportation, Bicycle Transportation Account projects must provide a transportation link. Funds are available for both planning and construction. Bicycle Transportation Account funding is administered by Caltrans and cities and counties must have an adopted Bicycle Transportation Plan in order to be eligible. City Bicycle Transportation Plans within Napa County must be approved by the Transportation Agency prior to Caltrans approval. The maximum amount available through the Bicycle Transportation Account is $1.2 million dollars, cities and counties are eligible to apply.

APPLICATION DEADLINE	*December*
TYPE OF PROJECTS FUNDED	*Planning and Design* *Construction* *Major repair and maintenance*
TYPE OF TRAILS ELIGIBLE	*Paved* *Unpaved*
LINK TO PROGRAM	*http://www.dot.ca.gov/hq/LocalPrograms/bta/btaweb%20page.htm*

Habitat Conservation Funds

This is a relatively small program approved by voters as part of Proposition 70, the Mountain Lion initiative. The program has approximately $2 million per year to fund habitat restoration and trails. There

are six programs, but only four programs are funded on an annual rotating basis. Grants are small, usually less that $100,000.

APPLICATION DEADLINE	*October*
TYPE OF PROJECTS FUNDED	*Planning & Design* *Construction*
TYPE OF TRAILS ELIGIBLE	*Paved* *Unpaved* *Habitat restoration near trails or part of trail project.*
LINK TO PROGRAM	*California State Parks Local Assistance Program.* *Sandy Berry* *(916) 651-7741* *sberr@parks.ca.gov*

Environmental Enhancement Mitigation Program

The EEMP program has not always received regular appropriations by the Legislature. Grants are usually less than $200,000. The principal requirement is to link the project with a local state transportation project. It needs support from the local Caltrans District.

APPLICATION DEADLINE	*November*
TYPE OF PROJECTS	*Land acquisition*

FUNDED	*Construction*
TYPE OF TRAILS ELIGIBLE	*Paved* *Unpaved*
LINK TO PROGRAM	*Caltrans District 4.*

Wildlife Conservation Board Public Access Program

This program provides funding for the acquisition of lands or improvements that preserve wildlife habitat or provide recreational access for hunting, fishing or other wildlife-oriented activities. There is up to $250,000 dollars available per project with applications accepted quarterly. Projects eligible for funding include interpretive trails, river access, and trailhead parking areas. The State of California must have a proprietary interest in the project. Local agencies are generally responsible for the planning and engineering phases of each project. There are several properties owned and administered by the California Department of Fish and Game within the Napa Valley Greenway (Fagan Marsh, the Napa Sonoma Marshes Wildlife Area and the Napa River Ecological Reserve).

APPLICATION DEADLINE	*Quarterly*
TYPE OF PROJECTS FUNDED	*Construction*
TYPE OF TRAILS ELIGIBLE	*Paved* *River Access and Trailheads* *Unpaved*
LINK TO PROGRAM	*http://www.wcb.ca.gov/Pages/public_access_program.htm*

Community Based Transportation Planning Demonstration Grant Program

This fund, administered by Caltrans, provides funding for projects that exemplify livable community concepts including bicycle and pedestrian improvement projects. Eligible applicants include local governments, metropolitan planning organizations and regional transportation planning agencies. A 20% local match is required and projects must demonstrate a transportation component or objective. There is $3 million available annually statewide.

APPLICATION DEADLINE	*October*
TYPE OF PROJECTS FUNDED	*Planning*
TYPE OF TRAILS ELIGIBLE	*Not Applicable*
LINK TO PROGRAM	*http://www.dot.ca.gov/hq/tpp/offices/ocp/cbtpg.htm*

6.5.3 . Local Funding Sources

Transportation Development Act

Transportation Development Act Article 3 funds are state block grants awarded monthly to local jurisdictions for transit, bicycle and pedestrian projects in California. Funds for pedestrian projects originate from the Local Transportation Fund, which is derived from a ¼ cent of the general state sales tax. Local Transportation Funds are returned to each county based on sales tax revenues. Article 3 of the Transportation Development Act sets aside 2% of the Local Transportation Funds for bicycle and pedestrian projects. Eligible pedestrian and bicycle projects include: construction and engineering for capital projects; maintenance of bikeways; bicycle safety education programs (up to 5% of funds); and development of comprehensive bicycle or pedestrian facilities plans. A city or county may use these funds to update their bicycle and pedestrian plan not more than once every five years. These funds may be used to meet local match requirements for federal funding sources.

APPLICATION DEADLINE	*Napa County and City Transportation Agencies*
TYPE OF PROJECTS FUNDED	*Planning* *Construction* *Maintenance* *Safety and Education*
TYPE OF TRAILS ELIGIBLE	*Paved*

LINK TO PROGRAM	

Developer Impact Fees

Fees placed on new development by the County and the incorporated cities for parks and recreation could be used as local matching funds to attract other grant sources.

APPLICATION DEADLINE	*County and Cities*
TYPE OF PROJECTS FUNDED	*Planning* *Construction*
TYPE OF TRAILS ELIGIBLE	*Paved* *Unpaved*
LINK TO PROGRAM	

6.5.4 . Nontraditional Sources

Community Development Block Grants

The Community Development Block Grant program provides money for streetscape revitalization, which may be largely comprised of pedestrian improvements. Federal Community Development Block Grant grantees may "use [these] funds for activities that include (but are not limited to): acquiring real property; reconstructing or rehabilitating housing and other property; building public facilities and improvements, such as streets, sidewalks, community and senior citizen centers and recreational facilities, paying for planning and administrative expenses, such as costs related to developing a consolidated plan and managing Community Development Block Grant funds; provide public services for youths, seniors, or the disabled; and initiatives such as neighborhood watch programs."

APPLICATION DEADLINE	*N/A*
TYPE OF PROJECTS FUNDED	*Planning*

	Construction *Property Acquisition* *Safety and Education*
TYPE OF TRAILS ELIGIBLE	*Not Applicable*
LINK TO PROGRAM	*http://www.hud.gov/offices/cpd/communitydevelopment/programs/index.cfm*

American Greenways Program

Administered by The Conservation Fund, the American Greenways Program provides funding for the planning and design of greenways. Applications for funds can be made by local regional or statewide non-profit organizations and public agencies. The maximum award is $2,500, but most range from $500 to $1,500. American Greenways Program monies may be used to fund unpaved trail development.

APPLICATION DEADLINE	*June 1*
TYPE OF PROJECTS FUNDED	*Planning* *Construction*
TYPE OF TRAILS ELIGIBLE	*Paved* *Unpaved*
LINK TO PROGRAM	*http://www.conservationfund.org/?article=2471*

6.5.5 . Funding Matrix

The matrix below provides detailed information for the funding sources listed in the preceding section. Beside each source is listed the corresponding application deadline, the allocating agency, the amount available (and for what time period and to whom), matching requirements, eligible applicants, eligible projects and comments, including agency contact information, where available.

Table 6-10: Funding Matrix

GRANT SOURCE	APPLICATION DEADLINE	AGENCY	PROGRAM TOTAL	MATCHING REQUIREMENTS	ELIGIBLE APPLICANTS	ELIGIBLE PROJECTS							COMMENTS	CONTACT
						Commute	Recreation	Safety and Education	Planning	Construction	Paved	Unpaved		
FEDERAL FUNDING														
Transportation and Community and System Preservation Program	Not Applicable	Federal Highway Administration	$61.25 million nationwide (in each FY 2006-2009)	20%	Public Agencies and Tribal Governments	√	√		√	√	√		Projects that improve system efficiency, reduce environmental impacts of transportation, etc.	Kenneth Petty TCSP Program Officer, Office of Planning phone: (202) 366-6654
Recreational Trails Program	October 1	State Parks	$3.3 million in FY 2006 for non-motorized	20%	Jurisdictions, special districts, non profits with management responsibilities over the land		√	√	√	√	√	√	For recreational trails to benefit bicyclists, pedestrians, and other users; contact State Dept. of Parks & Rec. , Statewide Trails Coordinator, (916) 653-8803	Sandy Berry (916) 651-7741 sberr@parks.ca.gov
Land and Water Conservation Fund	May 1	State Parks	$480,000 for Northern California in 2006	50%	Cities, counties, park districts	√	√		√		√	√	Recreational trails are eligible for funding. Applicants must fund the entire project, and will be reimbursed for 50% of costs.	Sandy Berry (916) 651-7741 sberr@parks.ca.gov
Rivers, Trails and Conservation Assistance Program	Ongoing	National Parks Service	N/A	N/A	Public Agencies and community-based organizations		√		√		√	√	Program which provides technical assistance via direct staff involvement to establish and restore greenways, rivers and trails. http://www.nps.gov/rtca/	http://www.nps.gov/rtca/
STATE FUNDING														
Bicycle Transportation Account	Varies	Caltrans	Varies	N/A	Cities and Counties only	√	√		√	√	√		Funding for local projects which improve the safety and convenience of bicycling for transportation.	Caltrans--Ken McGuire: ken.mcguire@dot.ca.gov, or David Priebe: david.priebe@dot.ca.gov

Table 6-10: Funding Matrix

GRANT SOURCE	APPLICATION DEADLINE	AGENCY	PROGRAM TOTAL	MATCHING REQUIREMENTS	ELIGIBLE APPLICANTS	ELIGIBLE PROJECTS							COMMENTS	CONTACT
						Commute	Recreation	Safety and Education	Planning	Construction	Paved	Unpaved		
California River Parkways Program	October	California Resources Agency	$100 million	N/A	Public agencies and nonprofits		√	√	√	√	√	√	Funds trails, signage, habitat restoration. land acquisition. Projects must provide public access to a river or stream.	http://www.resources.ca.gov/bonds_prop50riverparkway.html
Habitat Conservation Fund	October	State Parks	$2 million	20%	Public agencies		√		√	√	√		Funds trails, habitat restoration and land acquisition. Trails are one of five categories	Sandy Berry (916) 651-7741 sberr@parks.ca.gov
Wildlife Conservation Board Public Access Program	Quarterly	State of California Wildlife Conservation Board	$250,000 available per project	N/A	Local Public Agencies		√			√	√	√	Funding for the provision of recreational public access to wildlife habitat, including interpretive trails, river access and trailheads.	Wildlife Conservation Board 916.445.8448
Coastal Conservancy Bay Area Program	Ongoing	Coastal Conservancy	Grants range from $10,000 to several million.	N/A	California non-profit 501(c)3 organizations		√		√	√	√	√	Funds for trail planning and construction and restoration of coastal urban waterfronts.	Amy Hudsel (510) 286 0332 ahudsel@scc.ca.gov

Table 6-10: Funding Matrix

GRANT SOURCE	APPLICATION DEADLINE	AGENCY	PROGRAM TOTAL	MATCHING REQUIREMENTS	ELIGIBLE APPLICANTS	ELIGIBLE PROJECTS							COMMENTS	CONTACT
						Commute	Recreation	Safety and Education	Planning	Construction	Paved	Unpaved		
Office of Traffic Safety Grants	January 31	Office of Traffic Safety	$56 million statewide for FY 2006/07	N/A	Govt. agencies, state colleges and universities, local city and county government agencies, school districts, fire depts., and public emergency services providers			√					Grants are used to mitigate traffic safety program deficiencies, expand ongoing activity, or develop a new program. Grant funding cannot replace existing program expenditures, nor can traffic safety funds be used for program maintenance, research, rehabilitation, or construction.	OTS Regional Coordinator Lisa Dixon at, (916) 262-0978 or ldixon@ots.ca.gov
Community Based Transportation Grant Planning Demonstration Grant Program	October	Caltrans	$3 million dollars statewide	20%	Public Agencies	√			√		√		Funding for projects that exemplify livable community concepts including bicycle and pedestrian improvement projects.	http://www.dot.ca.gov/hq/tpp/offices/ocp/cbtpg.htm
Safe Routes to School	N/A	Caltrans	Statewide amount unclear as of mid-2006	11.47%	Cities and Counties	√	√	√	√	√	√		Primarily construction program to enhance safety of pedestrian and bicycle facilities.	Caltrans District 4 111 Grand Avenue Oakland CA 94623 (510) 286 5125
Transportation Enhancement Program	N/A	Caltrans	Annual Apportionment averages approximately $800,000		Public Agencies	√	√			√	√		Funds for construction of projects which enhance the transportation system, such as landscaping, bicycle facilities and streetscape improvements.	Caltrans District 4 111 Grand Avenue Oakland CA 94623 (510) 286 5125
LOCAL FUNDING														
Transportation Development Act (TDA) Article 3 (2% of total TDA)	Varies	NCTPA			Napa County and Cities	√	√	√	√	√	√		Funds for bicycle and pedestrian facility planning and construction.	Eliot Hurwitz Napa County Transportation Planning Agency

Table 6-10: Funding Matrix

GRANT SOURCE	APPLICATION DEADLINE	AGENCY	PROGRAM TOTAL	MATCHING REQUIREMENTS	ELIGIBLE APPLICANTS	ELIGIBLE PROJECTS							COMMENTS	CONTACT
						Commute	Recreation	Safety and Education	Planning	Construction	Paved	Unpaved		
Impact Fees or Developer Construction	N/A	Cities and Counties	N/A	N/A	Permitting Agencies	√				√	√		May fund bicycle and pedestrian infrastructure if a nexus is identified.	N/A
NONTRADITIONAL SOURCES														
Community Development Block Grants	N/A	HUD	N/A	N/A	Public Agencies	√				√	√		Primarily for community revitalization, may be used to fund streetscape improvements.	http://www.hud.gov/offices/cpd/communitydevelopment/programs/index.cfm
American Greenways Program	June 1	The Conservation Fund	Maximum amount per grant is $2,500	N/A	Public Agencies, CBOs and Non-profit groups		√		√	√	√	√	Funding for the planning and design for greenways.	http://www.conservationfund.org/?article=2471

6.6. Environmental and Permitting Requirements

The Napa Valley Greenway will require permitting and consultation with local, regional, state and federal agencies. The recommended alignment passes through several jurisdictions and includes sensitive and varied areas such as wetlands, active agricultural lands, industrial uses, designated floodways, and road crossings. The specific permitting requirements for each segment will need to be addressed as that segment nears construction. A list and description of possible permitting requirements for the Napa Valley Greenway is in Table 6-13 Information regarding environmental constraints is provided in Chapter 4, Opportunities and Constraints Analysis.

Table 6-11: Environmental Permitting Requirements

Agency	Possible Permitting and Consultation Required	Information	Contact Information
United States Fish and Wildlife Service (USFWS)	Section 7 Consultation for Threatened and Endangered Species / Review and Comment on 404 Permit	If a Federal agency determines that a proposed Federal action may affect a listed species and/or designated Critical Habitat, the agency must consult with the USFWS (and or NOAA fisheries for protected marine and anadromous fish) in accordance with section 7 of FESA.	US Fish and Wildlife Service 2800 Cottage Way # W2606 Sacramento, CA 95825 (916) 414-6464
United States Army Corps of Engineers (USACE)	Section 404 Permit for filling or dredging waters of the United States.	Section 404 of the Clean Water Act (CWA) of 1972 regulates activities that discharge dredged or fill material into waters of the United States, including wetlands.	US Army Corps of Engineers Regulatory Division 1325 J Street, Room 1480 Sacramento, CA 95814 916-557-5250 phone 916-557-6877 fax
California Department of Fish and Game (CDFG)	1601 Agreement for Streambed Alteration / Section 2080.1 Agreement for Threatened and Endangered Species	CDFG asserts that its jurisdictional area along a river, stream or creek is usually bounded by the top-of-bank or the outermost edges of riparian vegetation. Also manages the Napa Valley Ecological Reserve, Fagan Marsh and the Napa Sonoma Marshes Wildlife Area	Corrine Gray Environmental Scientist 7329 Silverado Trail Napa, CA 94558 Mail: P.O. Box 47, Yountville, CA 94599 707 944 5526 c.gray@dfg.ca.gov
California Water Resources Board (RWQCB)	Water Discharge Permit	Pursuant to Section 401 of the CWA, any section 404 authorization from the USACE for the discharge of dredged or fill material into a water of the US must, to be effective, be accompanied by a certification from the state that the activity will not violate state waster quality standards.	San Francisco Regional Water Quality Control Board 1515 Clay Street, Suite 1400, Oakland, California 94612 Phone (510) 622-2300 FAX (510) 622-2460
City of Calistoga	General Use and Grading Permits	In order to ensure consistency with local zoning and regulations these permits must be issued by the local municipalities.	Planning and Building Department 1232 Washington Street Calistoga, CA 94515 Email: Planning@ci.calistoga.ca.us Phone: 707-942-2827 Fax: 707-942-2831

Table 6-11: Environmental Permitting Requirements

City of St Helena	General Use and Grading Permits	In order to ensure consistency with local zoning and regulations these permits must be issued by the local municipalities.	Carole Poole, Planning Director City of St. Helena 1480 Main Street St. Helena, CA 94574 Tel: 707.968.2659 Fax: 707.963.7748 carolp@ci.st-helena.ca.us
Town of Yountville	General Use and Grading Permits	In order to ensure consistency with local zoning and regulations these permits must be issued by the local municipalities.	Bob Tiernan Town of Yountville Planning and Building Department 6550 Yount Street Yountville, CA 94599 Tel: (707) 944-8851 BobT@yville.com
City of Napa	General Use and Grading Permits	In order to ensure consistency with local zoning and regulations these permits must be issued by the local municipalities.	Planning Division Community Services Building 1600 First Street PO Box 660 Napa CA 94559-0660 707-257-9530 phone 707-257-9522 fax
City of American Canyon	General Use and Grading Permits	In order to ensure consistency with local zoning and regulations these permits must be issued by the local municipalities.	Brent Cooper, Director 3423 Broadway Street, Suite D-2 American Canyon, CA 94503 707 647-4336
City of Vallejo	General Use and Grading Permits	In order to ensure consistency with local zoning and regulations these permits must be issued by the local municipalities.	Bob Adams Development Services Director Vallejo City Hall - Second Floor 555 Santa Clara Street Vallejo, California 94590 (707)648-4326 FAX: (707)552-0163 email: bdolan@ci.vallejo.ca.us
Napa County	General Use and Grading Permits	In order to ensure consistency with local zoning and regulations these permits must be issued by the local municipalities.	Hillary Gitelman Planning and Conservation Director County Administration Building 1195 Third Street, Suite 210 Napa, CA 94559 (707) 253-4416 CBEYE@co.napa.ca.us
Solano County	General Use and Grading Permits	In order to ensure consistency with local zoning and regulations these permits must be issued by the local municipalities.	Michael G. Yankovich Planning Program Manager 675 Texas Street, Suite 5500 Fairfield CA 94533 707) 784-6765
Caltrans	Encroachment Permits	If the chosen alternatives analyzed at the project level demonstrate encroachment into the State Right-of-Way, encroachment review will be necessary (and realignment could be necessary, as this is not always allowed) for permits to be issued.	Caltrans District 4 111 Grand Avenue Oakland CA 94623 (510) 286 5125

Table 6-11: Environmental Permitting Requirements

State Office of Historic Preservation	Section 106 of the National Historic Preservation Act	Federal undertaking that may affect historic resource, Identification (some level of consultation to SHPO and interested parties), Listed properties or eligible properties, Adversely affected. It is assumed that Section 106 would be needed because of federal nexus	1416 9th Street, Room 1442-7 Sacramento, CA 95814 P.O. Box 942896 Sacramento, CA 94296-0001 TEL: (916) 653-6624 FAX: (916) 653-9824
California Public Utilities Commission	Railroad crossings	The California PUC has to approve all new railroad crossings.	Felix Ko California Public Utilities Commission 505 Van Ness Avenue San Francisco, Ca 94102 415 703 3722 f.ko@cpuc.ca.gov

6.7. Operations and Management

Operations and maintenance of the Napa valley Greenway is of utmost importance for the productive use of the bikeway, and the financial and liability resources of the cities and agencies involved in its implementation. It is expected that each local agency will develop (with the assistance of the Transportation Agency) and manage their segments of the Greenway, serving as the trail manager.

Costs for similar existing well established bike trails such as the Marin County Bikeway (5 miles) and the Joe Rodota and West County Trail in Sonoma County (13 miles) have averaged at $8,700/mile per year. Some portions of the proposed Greenway may represent new or unusual operations and maintenance costs or practices. Some of these areas are identified below.

6.7.1 . Operations

Operation activities on the Greenway will consist primarily of monitoring and security. Monitoring accidents including identifying the primary cause and rectifying any physical deficiencies must be accomplished by each operating agency. The local police department or sheriff's department typically has the responsibility for collecting accident information and identifying fault, while trail manager has the responsibility for identifying and improving physical or operational conditions that may have contributed to the accident. The trail manager typically also has the responsibility for making the determination to warn path users of problems, and to close the path when conditions warrant.

6.7.2 . Security

Most multi-use paths in the United States do not have a dedicated police patrol for the bikeway. . As a rule of thumb, a multi-use trail requires one person-hour per day for every five miles of trail. This translates into six person-hours per day for the entire segment. This figure would also vary by time of week and year. Off-peak weekdays may require only .2 person-hours per day, while peak weekends may require a full 8 person-hour per day.

A summary of key security recommendations is presented below.

- Make all paved segments of the Greenway located more than 100' from public roads accessible to emergency vehicles.
- Illuminate all grade crossings.
- Trim all vegetation at least 10 feet from the Greenway where possible to maximize visibility in developed areas.
- Provide bicycle racks and lockers at key destinations that allow for both frame and wheels to be locked.
- Provide fire and police departments of local jurisdictions with map of system, along with access points and keys/combinations to gates/bollards.
- Enforce speed limits and other traffic laws, for bicyclists, pedestrians and motorists.
- Provide emergency call boxes every one mile in remote rural areas.

6.7.3 . Maintenance

Maintenance of the Napa Valley Greenway should include the following regular activities shown in Table 6-12:

Table 6-12: Recommended Trail Maintenance Practices

Item	Frequency
Sign replacement/repair	1-3 years
Pavement marking replacement	1-3 years
Tree, Shrub, & grass trimming/fertilization	5 months- 1 year
Pavement sealing/potholes	Slurry sealing every seven years, pot hole repair as needed.
Clean drainage system	Once a year prior to wet season
Pavement sweeping	Monthly - annually as needed
Shoulder and grass mowing	as needed
Trash disposal	as needed
Lighting replacement/repair	1 year
Graffiti removal	Weekly - monthly as needed
Maintain furniture	1 year
Fountain/restroom cleaning/repair	Weekly - monthly as needed
Pruning	1-4 years
Remove fallen trees	As needed
Weed control	Monthly - as needed

Many of these maintenance items are dependent on the type and amount of supporting infrastructure that is developed along the path.

6.7.4 . Safety

Safety will be addressed on the Greenway in the following manner:

- Adhere to the established design, operation, and maintenance standards presented in this document and recommended by Caltrans.
- Supplement these standards with the sound judgment of professional engineers.
- Maintain adequate recording and response mechanisms for reported safety and maintenance problems.
- Thoroughly research the causes of each reported accident on the Greenway. Respond to accident investigations by appropriate design or operation improvements.
- Design the paved portions of the Greenway, its structures, and access points to be accessible by emergency vehicles. Bollards at the path entries should be removable by the appropriate fire, ambulance, and police agencies. Constrained segments of the any paved path that cannot

accommodate emergency vehicles should not be longer than 500 feet, and identified in advance by the appropriate police, fire, and ambulance services.

- Provide regular police patrols to the extent needed.

6.7.5 . Private Property Protection

Parts of the Greenway will be located directly adjacent to private properties. Neighbor concerns regarding path location near their properties typically include a loss of visual privacy, and concerns about increased crime, vandalism, noise, and fire. Wherever possible, the path should be located as far away as possible to protect the privacy of adjacent property owners. Criminal activity is not likely to occur along a path that is well planned, designed, operated, maintained, and used. Fire concerns should be addressed in part by adequate weed abatement.

New privacy fencing is not required as part of the Greenway project as there are few private homes located near proposed Greenway segments. If a private property owner requests additional privacy, fencing and/or landscaping should be included to accommodate this request. Property owners should be permitted to install gates leading directly onto the Greenway, if desired.

6.7.6 . Agricultural Lands

Public trail access across private land is by nature a controversial issue. However, the opportunity exists to reframe the issue of public trail access to highlight the benefits to landowners, recreational users, and the communities in which they are already coexisting. The proposed Greenway Plan has the potential to serve as a representative bikeway, demonstrating the ability of both agricultural landowners and trail users to work together, recognizing the significant role they each play in the future of the Napa County.

There are many potential conflicts that may arise as trails and agricultural production coexist in close quarters. These problems include (1) theft of produce, (2) safety and liability concerns associated with trespassing, (3) health and liability concerns associated with spraying, (4) impacts to agricultural operations, and (5) loss of productive agricultural land.

A detailed description of trail and agricultural issues is presented in Appendix 3

6.7.7 . Trail Repair And Closure

Greenway users will need to be informed and directed during construction and periodic maintenance of the trail, when sections of the trail will be closed or unavailable to users. Greenway users must be warned of impending trail closures, and given adequate detour information to bypass the closed or unfinished section of trail. Trail users must be warned through the use of standard signing at the entrance to each affected section of trail ("Trail Closed"), including (but not limited to) information on alternate routes and dates of closure. Sections of the trail that are closed must be gated or otherwise blockaded and clearly signed as closed to public use. Alternate routes should provide a reasonable level of directness and lower traffic volumes, and signed consistently. If no reasonable alternate routes are available, the trail should have an "End Trail" sign and provide access to the street and sidewalk system.

6.8. Next Steps

The list below summarizes the next steps for this project.

- **Project Approval:** The Napa County Transportation and Planning Agency must formally approve this report and the identified alignments, at a meeting open to the public.
- **Project Sponsor:** The Napa County Transportation and Planning Agency will be involved as a partner with local agencies in implementing the Greenway in Napa County. Since part of the proposed Greenway is located in Solano County, it is anticipated that either Solano County or the City of Vallejo would act as the project sponsor for that portion of the Greenway. Once the project is approved, each local agency will become the project sponsors responsible for designing, constructing, and managing segments in their jurisdictions.
- **Environmental Review:** An environmental analysis must be conducted per the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA) requirements as identified in Section 6.6. The public will have several opportunities to review and comment on the project and potential impacts in this process. Each project will need meet the requirements of the California Environmental Quality Act (CEQA) and likely the National Environmental Protection Act (NEPA), in addition to other permits. Each implementing agency will be responsible for this process and obtaining the needed clearances and approvals. The Transportation Agency has and will be involved in helping to fund these environmental approval efforts.
- **Funding:** Funding can be acquired from federal, state, local and private resources. It is likely that the Greenway will be funded through all of these sources. In some cases, funding is contingent on acquisition of long-term easements or right-of-way.
- **Easement Acquisition:** Easement acquisition for the trail will be complex. The proposed alignment would involve public and private lands. Easements or licenses would need to be requested from Caltrans, California Department of Fish and Game, the Napa Valley Wine Train, private agricultural landowners, and private residential landowners.
- **Design:** The design process can proceed at the same time the environmental work and fundraising is taking place. Design will take into account the concerns of adjacent landowners and will be environmentally sensitive. A contract for full design and engineering services can be written once the environmental process indicates there are no fatal environmental flaws.
- **Permitting:** Permit approvals from Caltrans, Corps of Engineers, Department of Fish and Game and other entities will be likely as identified in Section 6-6.

Appendix A

Napa Valley Greenway: Trails And Agricultural Land
Identifying Issues, Benefits And Mitigating Conflicts

Introduction

As towns and cities grow, trails are increasingly being proposed and located next to active agricultural areas. To planners and officials, agricultural areas may appear to be ideal locations for these types of facilities, since there are often are few physical obstructions. However, active farming operations are often not compatible with general public access, and trails must carefully consider the needs and interests of farmers in their feasibility analysis. Napa Valley is an internationally renowned area for grape growing and wine making. In 2006, 42,188 acres of land in Napa were vineyards[1]. In addition over eighty wineries are located in the study area for the proposed Napa Valley Greenway between American Canyon and Calistoga. Most of these are open to the public.

Potential Problems and Solutions

There are many potential conflicts that may arise as trails and agricultural production coexist in close quarters. These problems include (1) crime, such as theft and vandalism, (2) trespass, safety and liability concerns, (3) loss of land, and (4) impacts to farm operations such as spraying. In other agricultural counties where there are vineyards and wineries, there are examples of trails that co-exist with agricultural operations. Appendix B is a summary of telephone interviews with four Sonoma County grape growers and an organic farmer who have properties next to existing trails.

1. Crime, Theft and Vandalism.

National studies have shown that incidents of crime along trails is lower than other areas. This was borne out in the interviews conducted in Sonoma County. Agricultural enterprises such as wineries and vineyards are often more exposed to the public driving along a road. Trails are generally not accessible to vehicles. Many trail management agencies use signage asking trail users to respect their agricultural neighbors. Most property owners will post "no trespassing' signs. In addition regular patrols will deter crime.

The provision of fencing along the trail acts as a deterrent to theft of agricultural products and vandalism. The installation of a fence clearly demarcates the boundary between private, productive agricultural land and the trail facility. In the interviews conducted with three vineyard managers in Sonoma County, the existence of a fence was considered the most effective solution.

2. Trespass, Safety and Liability.

It is understandable that farmers including grape growers might be concerned about liability from trail users adjacent to agricultural activities. Farming activities involve activities and

[1] Napa County Agricultural Commissioner's Crop Report 2006

conditions that could be considered dangerous, such as the use of heavy equipment, guard dogs, livestock, open trenches, farm refuse areas, and holes overgrown with vegetation. The primary concern is that a trail user might trespass onto adjacent private property and become injured.

Agricultural landowners in California who have an interest in real property on which a trail is located are protected by the State's Recreational Use Statute..

The California Recreational Use Statute (California Civil Code §846) relieves the property owner of responsibility for those injuries. The current structure of the law provides significant protections for the landowner from personal liability. For example, Civil Code §846 protects private landowners from potential liability from those in recreational activities provided that the injured trail user was not expressly invited onto the private property and that the private property owner did not willfully or maliciously intend to cause the injury. Public Resources Code 5075.5 protects property owners from actions resulting from or caused by trail users who trespass onto adjoining property and protects property owners from actions started on or taking place within the boundaries of the trail itself.

California Civil Code § 846 was enacted to encourage private landowners to open their land to public use for recreational purposes without the risk of liability. Over the thirty year period that the Statute has been in place, the judgments handed down by the California Courts have predominantly upheld the purpose of the Statute. A review of the Recreational Use Statute and the case law pertaining to the Statute is attached to this document as Appendix B.

In addition to the protection offered landowners by the Recreational Use Statute, trail design can encourage safe trail use practices and provide a diminished risk of injury, thus reducing the potential for liability claims. Some of the most significant design features along a trail are inherent in the alignment itself. The distance the trail is setback from agricultural land results in important allowances for typical farm practices. For example, providing room at the end of a row for farm equipment to turn around without nearing the trail prevents trail users from feeling endangered by farming practices.

The installation of fences along the trail not only deters crime but also is an integral part of the defense against liability as it prevents trail users from making attractive nuisance claims. An attractive nuisance claim hinges on the tacit "invitation" of children onto the property by a nuisance, such as livestock, that is attractive to children[i2] The construction of a fence, which bars children from entry and warns against the nuisance, is a defensible precaution against attractive nuisance claims.

Another concern that has been frequently raised by farmers is the concern that insurance rates might increase for agricultural landowners next to trails. Sonoma County went through an exhaustive process in preparing a parks and trails plan in the 1990s.[3] In July 1997, Sonoma County held a workshop focused on liability and insurance issues relating to parks and trails. Sonoma County Farm Bureau representatives were invited to participate.

[2] McEowen, Roger A. "Recreational Use of Private Lands: Associated Legal Issues and Concerns" (The National Agricultural Law Center, 2003).

[3] Sonoma County Draft Outdoor Recreation Plan Draft 2003

Panelists at the workshop included representatives of the insurance industry (Cal Farm Insurance and Allied Group Insurance).

The insurance representatives stated that the location of a park or trail next to a property is not a factor in setting insurance rates. Insurance rates are based on several factors, the most significant of which is the number of claims; if an insurance company receives. An exceptional number of claims for vandalism on a single property, for example, could lead to a rate increase. The insurance industry representatives stated that injury claims filed as a result of trespassing are statistically so low they are not tracked as a separate category by the industry. Most claims for injuries come from persons invited as guests onto properties and not trespassers.

Panelists from the insurance industry also agreed that it would be desirable if public agencies such as Parks Departments, indemnified landowners adjacent to trails. They pointed out that both public agencies and insurance companies are interested in maintaining and operating the trails in a manner that reduces risk exposure. Should a property owner enter into an easement or a license for a trail on their property, the indemnification could be part of the agreement between the public agency and the property owner.

3. Loss of Land

New trails in agricultural areas may require acquiring land either in fee or by easement. These new trail may have a net effect of taking land out of agricultural production and/or by limiting access for agricultural equipment and other impacts. If the lad is purchased fair market value would be paid by the public entity including the value of crops such as grapevines.

Because the vineyards along the proposed Napa Valley Greenway corridor are in production prior to the construction of the trail, they are protected by Napa County's Right-to-Farm Ordinance. Any trail proposal that includes the taking of agricultural land out of production should be carefully evaluated and used only as a last resort. The Napa Valley Greenway Plan has as one of its primary goals the protection of agricultural lands. Every effort will be made to minimize or eliminate impacts on agriculture.

4. Agricultural Operations.

Napa County, like many other counties in California, has a Right to Farm Ordinance. A Statement regarding this ordinance is mailed out with property tax bills annually. It notifies other property owners of inconveniences such as noise, spraying and odors associated with agricultural activities.

Trail users conceivably could have an impact on agricultural operations by not understanding farming activities such as pesticide applications.

Agriculture has often been the victim of diseases that have spread through areas and wiped out entire crops. Vineyard owners are all too aware of phyloxera, a disease that almost destroyed the French wine industry in the 19th Century. The disease has made an occasional re-emergence in California. Vineyard owners have combated these threats by using disease resistant vines but also relied on chemical treatments. Today, the biggest threat to vineyards is Pierces Disease, carried by the Glassy Winged Sharpshooter is a threat to grapevines. To

protect the wine industry in Napa, the Napa Agricultural Commissioner's office conducts inspections of nursery stock.

Beginning in the 1970s there has been stricter regulation of chemicals in agriculture following the creation if the federal Environmental Protection Agency and state EPAs,. However, it is not just regulation that has changed viticulture practices, but also the social trend towards "sustainable agriculture". This emerged as the major trend in a 2006 Economic Report on the California Wine Industry.[4]

The result if this trend is that within the past decade there has been a substantial reduction in chemical applications and the growing use of sustainable practices such as organic farming and Integrated Pest Management Programs. As a result, many wine producing counties have seen sharp decreases in chemical uses in the past decade. Napa County decreased its chemical use from 2.8 million pounds in 1997 to 1.5 million pounds in 20066.[5] Some older chemical treatments such as the fumigation of soils before planting with Methyl Bromide have been almost completely phased out. As a result airborne spraying is becoming less prevalent.

Sulfur applied to grape vines to combat mildew is still the most commonly used chemical in viticulture. In Napa County it was the most commonly reported chemical applied in 2006, accounting for 75% of all chemical applications by pound weight in the County[6]. In 2006 1,126,858 lbs of sulfur was applied. It is equivalent to four sulfur treatments per acre/ year. Possible affects on trail users walking or riding next to vineyards where sulfur is being applied include irritation of eyes and skin. Sulfur is applied by a duster/blower towed or mounted on a tractor. However, there are considerable restrictions on when sulfur can be applied. It is usually applied in early mornings when where there is little wind to disperse it. Regulations restrict dusting with sulfur when winds exceed 10 miles per hour.

Although sulfur has been the chemical of choice for many years, there are several substitutes on the market that can be applied in less quantity. These include fungicides such as Pristine, Sonata, Champ and Vangard. These are low toxic fungicides that may eventually replace sulfur in many applications.

Some grape growers also use Glyphosate Isopropylamine salt (Roundup) to eliminate weeds in vineyards. Roundup is applied directly to weeds and there is little localized drift. However, even this is seeing a reduction. Alternatives such as the planting of cover crops, clover and mustard, between rows of grapevines and using mechanical rather than chemical methods to remove weeds are being used.

While spraying and dusting is still a practice in viticulture, it is declining as more efficient and more sustainable substitutes are found. Sonoma County Regional Parks Department who manage trails adjacent to vineyards along the thirteen mile West County Trail did not receive complaints about conflicts between trail users and vineyard owners who sprayed grapes[7].

Education either by signage or warnings when applications of pesticides are being applied could help mitigate this. It is essential that the trail management organization communicate

[4] Report on the Economic Impact of Wine 2006 Updated January 2007 MKF Research
[5] California Department of Pesticide Regulation Annual Reports 1997 and 2006.
[6] ibid
[7] Sonoma County Draft Outdoor Recreation Plan 2003 Appendix 6

with its agricultural neighbors, so that scheduled closures can occur to accommodate agricultural activities. Designing a trail with a setback can also mitigate this concern.

For example, in order to prevent nuisance claims triggered by the spraying of pesticides, warming signs and a spraying schedule may be posted at trail heads and along the trail to notify trail users of the risks associated with trail use. Case law pertaining to the Recreational Use Statute has upheld the presence of warning signs through a finding that warning signs are sufficient to show the absence of willful or malicious conduct on the part of the landowner. (Bacon v. Southern Cal. Edison Co., 1997, 53 Cal. App. 4th 854). The court also ruled supporting the placement of warning signs as defense against liability in the cases of Grippo v. U.S. (D. Nev 1995, 911 F. Supp. 437) and Hannon v. U.S. (E.D. Cal. 1992, 801 F Supp. 323).[8]

Benefits to Visitors and Trail Users

Napa Valley has a multi million dollar tourism industry. Visitors come to the Napa Valley because of Napa's world class reputation as a premier wine producing area. There are over eighty wineries located in Napa Valley. Most located in the area between Napa and Calistoga. In 2005, 4.7 million person trips were made to Napa County by visitors. These included 2.75 million overnight trips and 2 million day trips. [9] The economic multiplier effect of these visitors is enormously important to the local economy.

"The average visitor to Napa County spends $197 per day with those staying over-night spending $233 per day. The visitors' spending impacts almost every segment of the county's economy in a significant way with almost one billion dollars in direct spending and $1.3 billion in total impact. Over 17,000 jobs are created which provide nearly half a billion dollars in income to residents. Each resident of the county sees the benefit of almost $1,000 in indirect business taxes injected into the community by visitors and utilized to improve the quality of life for residents and visitors alike".[10]

Wine tasting is a major part of this wine economy. The 2005 Visitor study states that Napa visitors spent $184 million on wine purchase and another $38 million on wine tasting.

One of the objectives of the Napa Valley Greenway is to "define interpretive guidelines and exhibits to address ecological, historical, and agricultural working landscapes". Fulfillment of this objective will result in educational efforts focused on the appreciation of working agricultural landscapes. The interest in wine and how wine is made are great subjects for education and interpretation with a ready made audience eager to learn more.

The Napa Valley has seen an enormous growth in wine tourism in the past thirty years. Most visitors use cars to get around and as a result Highway 29 suffers from traffic congestion on weekends and holidays. Cycling on Highway 29 can be stressful on busy days. One pioneer bike tour operator stated that his company has reduced the number of weekend tour groups in part due to traffic.[11] . The Greenway would allow tourists to visit wineries at a more leisurely pace .and enable more visitors to make the connections between their enjoyment of the physical beauty of the agricultural landscape and the importance of purchasing both wine and other locally produced farm products.

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[8] California Recreational Use Statute and Liability Handbook (Bay Area Ridge Trail Council, 1998)
[9] 2005 Visitor Profile & Economic Impact Studies-Napa County
[10] Ibid.
[11] Personal communication with Tom Hale, President of "Backroads" Bicycle Touring. November 2007.

Benefits to Wineries and Grape growers.

Traffic congestion at weekends and holidays on the Highway 29 can be significant. A survey by the Napa County Transportation and Planning Agency revealed that 30% of guests at businesses in the valley saw traffic congestion as a significant effect on the quality of their Napa Valley Experience and a further 54% saw it as having a moderate effect.[12]

In the book "Wine Tourism Around the World"[13] Napa is cited as an example of good wine tourism. However the book also points out that developing a "sustainable" tourist industry may require other approaches. Slow growth may be one solution but with over 4 million tourists and only 130,000 residents, the road infrastructure is bound to reach a level where alternatives should be considered. The Napa Valley Greenway would offer a relatively inexpensive alternative that in itself could in itself become an attraction.

Location of trails may also have some positive effects. The alignment of trails at the edge of productive agricultural land can result in several desirable outcomes. First, the trail or open space provides a buffer between the agricultural operation and in some cases more densely populated residential areas. This buffer can help to reduce edge conflicts by ensuring that residential subdivisions and productive agricultural lands do not share a common fence line. Secondly, the presence of the trail along agricultural acreage provides educational opportunities for non-farm residents who may otherwise have limited exposure to agricultural operations. This exposure to agricultural production may encourage community buy-in to efforts to preserve agricultural land, as residents realize the important role that agriculture plays in their lives and in the life of their community. Finally, the construction of a trail abutting agricultural land presents opportunities for the landowner to reap an economic benefit if they decide to donate or sell land or an easement for a trail to a public agency or non-profit organization.

Among the benefits to agricultural landowners is the fact that while trail users are learning to appreciate local agriculture, landowners are able to reap this benefit without sharing a property line with a residential subdivision. While the risk of urban-rural edge conflicts is high, there is evidence that proximity to farmland can raise the value of residential development. Homebuyers are often willing to pay more to live on the edge of vineyards or other scenic agricultural parcels[14] Once the homes are purchased, however, homeowners must come to terms with the reality of an agricultural neighbor, which can mean early morning noise, objectionable odors, and pollution from spraying. The investment a homeowner has in their property may encourage them to take action against the agricultural landowners in defense of their own investment. For this reason, a trail may be a more desirable land use option adjacent to a productive agricultural parcel.

In addition to creation of a buffer between private residential development and private agricultural land, the implementation of a trail facility may provide an economic opportunity for the agricultural landowner.

Included in the Goals and Objectives of the Napa Valley Greenway Feasibility Study is the goal to "work with property owners of agricultural operations to minimize or eliminate

[12] NCTPA Zoomerang Survey July 2007.
[13] Wine Tourism around the World : Development management and markets: Hall 2000
[14] Esseks, J. Dixon, et. al., "Estimating the Income, Environmental and Social Benefits of Agricultural Conservation Easements from the Perspective of Local Stakeholders" in *Compensating Landowners for Conserving Agricultural Land* (University of California, Agricultural Issues Center, 2003).

negative impacts." Options for acquiring land should recognize that acquisition can be more flexible, more creative and less expensive than fee simple acquisition; explore property transfers, trades, donations, partial purchases, joint purchases, easements, long-term leases, encroachment permits, and a variety of other legal means from willing sellers or property owners and not using eminent domain powers.

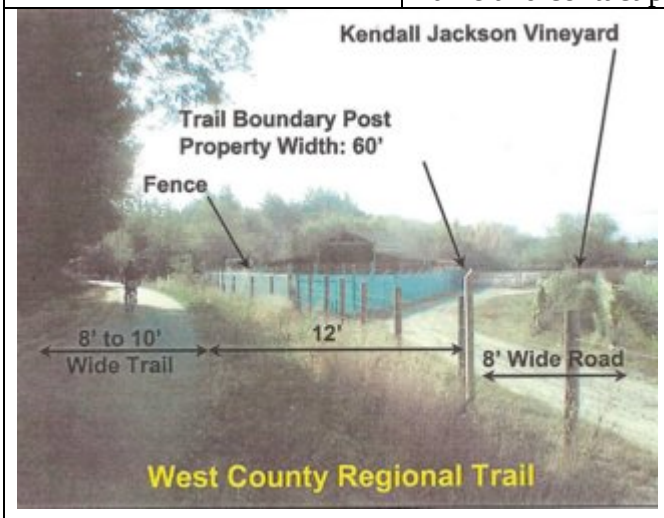
Agricultural landowners may particularly benefit from fee-simple acquisition, which may provide a significant amount of money in exchange for the sale of the parcel. However, for landowners who wish to retain ownership for the property, there are additional opportunities for smaller financial gains. The sale of an easement may provide suitable compensation for public access in the form of a one-time payment. Alternately, the donation of an easement may simply provide reduced property taxes, which may be an attractive offer to landowners with smaller agricultural operations. Similarly, long term leases may provide incremental payments to landowners in exchange for the use of their land.

Conclusion

Public access to private land is by nature a contested issue. However, the opportunity exists to reframe the issue of public access to highlight the benefits to landowners, recreational users, and the communities in which they are already coexisting. The proposed Napa Valley Greenway has the potential to serve as a representative facility, demonstrating the ability of both agricultural landowners and trail users to work together, recognizing the significant role they each play in the future of the Napa Valley.

Grower	Kendall Jackson
Contact:	Tel # 292 3468 Walt Chavoor Vineyard Manager for 7 + years.
Number of years trail in existence	Trail built in 1996
Location of vineyard near trail	Two vineyards, total 80 acres near West County Trail • Occidental Road • Ross Road is an organic vineyard.
Experience with trail users	
• Trespassers	Occidental road vineyard has a three strand barbed wire fence separating it from the trail. Has had a couple of thefts (see below) Ross Road vineyard has deer fence (8' high) has had no problems.
• Litter	No
• Dogs	No
• Theft/Vandalism	Has had barn broken into. Cannot state for certain that the thief came from the trail, as the vineyard is also accessible from Occidental Road.. Employee at same location had wallet stolen from car.
• Operations e.g. Spraying	"Some people look for problems in the vineyards". People's perceptions rather than what is actually happening. People in that part of the County are very "environmentally" involved and tend to regard any spraying even with organic materials as a problem and often have "bad attitudes" to vineyard management practices. Employees always wear "moon suits" when spraying even if the material does not require the employee to wear protective clothing. This sometimes fuels people's phobias. Agreed that there had been a considerable reduction in chemicals in the past decade. At the Ross Road vineyard all organic. Uses Stylid oil, Trilogy. Not very much in the way of insecticides. Occasional use of herbicide (Roundup).
• Sheriff/Police reports	Did not recall filing any reports on the two incidents.
Other issues	
What works to reduce potential problems?	Education about what activities are going on in the vineyard. Fencing. Does not post when he is dusting sulfur, but does it at

	night when there is no one using the trail. Has not had a lot of complaints.
What would you improve?	Has not contacted the Parks Department about posting during spraying in the past, but took the park managers name and contact phone #.



Grower	Russian River Vineyards
Contact:	Eric Anderson, Winery Manager Tel # 887 3344 2+ years.
Number of years trail in existence	Trail built in 1999.
Location of vineyard near trail	Forestville near Kay Lane. Vineyards on both sides of West County Trail Total 12.5 acres
Experience with trail users	
• Trespassers	No
• Litter	No
• Dogs	No
• Theft/Vandalism	No
• Operations e.g. Spraying	Uses Biodynamic techniques, minimal spraying of organic material. No issues with the public complaining about management practices.
• Sheriff/Police reports	None.
Other issues	Deer use trail to access vineyards, but vineyards are not fenced with deer proof fencing.
What works to reduce potential problems?	Believes that the vineyard manager/winery manger can deter anti social activity by being proactive. Upkeep of property, paying attention and addressing problems, neighbors. Keeping up the property.
What would you improve?	Would encourage County to spend money on it to beautify the trail more. Would like a direct access (gate) from trail to tasting room through the vineyard. Does not consider trespass an issue. “If someone eats a grape or two, who cares”.

Grower	Sebastiani Vineyards
Contact:	Peter Hoffman 227 7585 10 years 1 year as Sebastiani's vineyard manager
Number of years trail in existence	Trail built in 1980s. 25 years appx.
Location of vineyard near trail	Sonoma. Vineyards on both sides of Sonoma Bike Path.
Experience with trail users	
• Trespassers	No problems, because it is fenced.
• Litter	Yes. Not large items, (they experience large items such as mattresses appliances dumped at other vineyards near roads). At this location, mainly beer cans thrown over fence.
• Dogs	No problem because of fence.
• Theft/Vandalism	None
• Operations e.g. Spraying	No sulfur used here because of proximity to trail and housing. However uses organic fungicides (Sonata & Seranade) that do not drift as much . Also uses Style toil organic Organics are more expensive. Posts the trail prior to any spraying and says that this keeps the public happy.
• Sheriff/Police reports	None
Other issues	None
What works to reduce potential problems?	Fencing. Prior to any spraying posting the area.
What would you improve?	None.

Grower	Benzinger Family Winery
Contact:	Chris Benzinger 479 8631 Partner
Number of years trail in existence	Trail and vineyard have been there for over 30 years+
Location of vineyard near trail	Jack London State Park. Lake Trail next to vineyard And close to parking lot 60 feet.
Experience with trail users	
• Trespassers	None to speak of.
• Litter	None
• Dogs	None. State Parks do not allow dogs
• Theft/Vandalism	None. People who want to go on trails are "good" people.
• Operations e.g. Spraying	Benzinger has a biodynamic vineyard. Has not had people complain about spraying of organic material, and pointed out that there is a "right to farm" ordinance in Sonoma County.
• Sheriff/Police reports	None
Other issues	
What works to reduce potential problems?	If the landowner uses the trail. It helps the landowner understand the trail and trail users. The vineyard is also fenced with deer fence.
What would you improve?	Put trails to put through agriculture land for education. Would be an opportunity for both grape growers/landowners and the trail user.

Grower	The Patch Organic Farm
Contact:	Betty Kolstad 939 8125 Since 1989
Number of years trail in existence	Trail built in 1980s 25 years appx.
Location of vineyard near trail	Bike trail next to organic farm.
Experience with trail users	
• Trespassers	Did at first with teenagers coming in occasionally beer cans. No harm done. Fence is higher now.
• Litter	Sometimes beer cans.
• Dogs	No
• Theft/Vandalism	Some before they had a light on the property near the barn. Happened before it was fenced. People may have driven in from street.
• Operations e.g. Spraying	Small spray area by hand sprayer for sulfur on grapes along the fence.
• Sheriff/Police reports	One robbery of tools in early 1990s.
Other issues	
What works to reduce potential problems?	Fencing and light at tool shed. People being around using the trail.
What would you improve?	None. “The bike path is a great thing. It increases business at the vegetable stand. People are thrilled to come by (on the bike path) and have the “on farm” experience.

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Appendix B

Telephone Survey With Grape Growers Along Trails

January 2008

Grower	Kendall Jackson
Contact:	Tel # 292 3468 Walt Chavoor Vineyard Manager for 7 + years.
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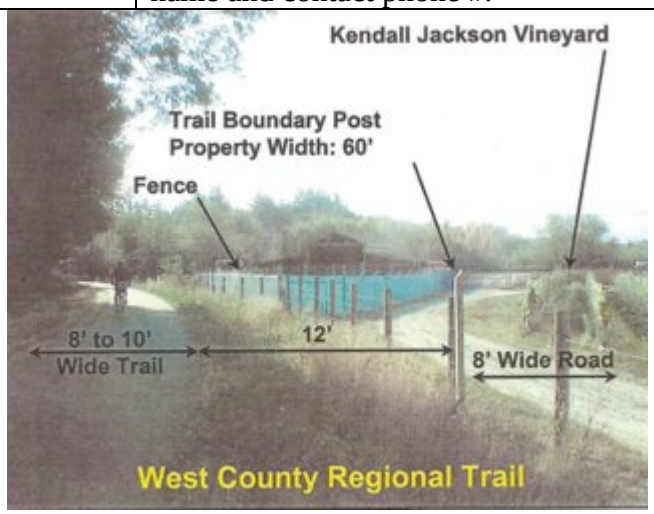
Experience with trail users	
• Trespassers	Occidental road vineyard has a three strand barbed wire fence separating it from the trail. Has had a couple of thefts (see below) Ross Road vineyard has deer fence (8' high) has had no problems.
• Litter	No
• Dogs	No
• Theft/Vandalism	Has had barn broken into. Cannot state for certain that the thief came from the trail, as the vineyard is also accessible from Occidental Road.. Employee at same location had wallet stolen from car.
• Operations e.g. Spraying	"Some people look for problems in the vineyards". People's perceptions rather than what is actually happening. People in that part of the County are very "environmentally" involved and tend to regard any spraying even with organic materials as a problem and often have "bad attitudes" to vineyard management practices. Employees always wear "moon suits" when spraying even if the material does not require the employee to wear protective clothing. This sometimes fuels people's phobias. Agreed that there had been a considerable reduction in chemicals in the past decade. At the Ross Road vineyard all organic. Uses Stylid oil, Trilogy. Not very much in the way of

	insecticides. Occasional use of herbicide (Roundup).
• Sheriff/Police reports	Did not recall filing any reports on the two incidents.
Other issues	
What works to reduce potential problems?	Education about what activities are going on in the vineyard. Fencing. Does not post when he is dusting sulfur, but does it at night when there is no one using the trail. Has not had a lot of complaints.
What would you improve?	Has not contacted the Parks Department about posting during spraying in the past, but took the park managers name and contact phone #.
	

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Experience with trail users	
• Trespassers	No
• Litter	No
• Dogs	No
• Theft/Vandalism	No
• Operations e.g. Spraying	Uses Biodynamic techniques, so no spraying . No issues with the public complaining about management practices.
• Sheriff/Police reports	None.
Other issues	Deer use trail to access vineyards, but vineyards are not fenced with deer proof fencing.
What works to reduce potential problems?	Believes that the vineyard manager/winery manger can deter anti social activity by being proactive. Upkeep of property, paying attention and addressing problems, neighbors. Keeping up the property.
What would you improve?	Would encourage County to spend money on it to beautify the trail more. Would like a direct access (gate) from trail to tasting room through the vineyard. Does not consider trespass an issue. “If someone eats a grape or two, who cares”.

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• Litter	Sometimes beer cans.
• Dogs	No
• Theft/Vandalism	Some before they had a light on the property near the barn. Happened before it was fenced. People may have driven in from street.
• Operations e.g. Spraying	Small spray area by hand sprayer for sulfur on grapes along the fence.
• Sheriff/Police reports	One robbery of tools in early 1990s.
Other issues	
What works to reduce potential problems?	Fencing and light at tool shed. People being around using the trail.
What would you improve?	None. “The bike path is a great thing. It increases business at the vegetable stand. People are thrilled to come by (on the bike path) and have the “on farm” experience.