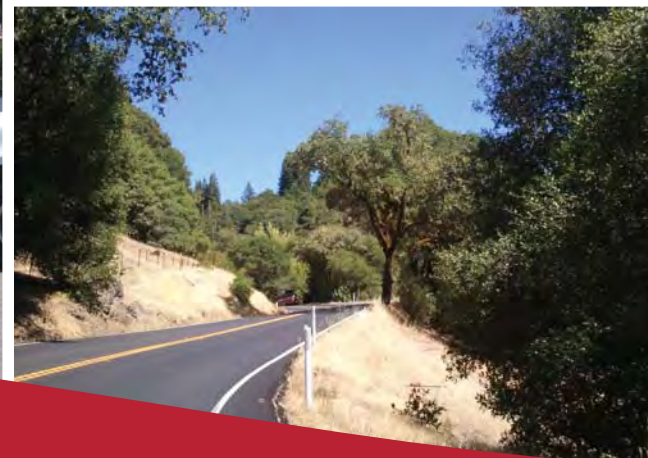




State Route 128 Corridor Valley Trail Feasibility Study

Final Draft
July 2014

PREPARED BY:

Alta Planning + Design

IN ASSOCIATION WITH:

Local Government Commission

GHD, Inc.

PREPARED FOR:

Mendocino Council of Governments

California Department of Transportation



SR 128 Corridor Valley Trail Feasibility Study

Final Draft

July 28, 2014

Prepared for:

Mendocino Council of Governments

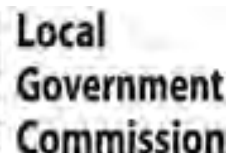
California Department of Transportation

Prepared by:

Alta Planning + Design

Local Government Commission

GHD, Inc.



This page intentionally left blank.

Acknowledgements

Thank you to the community members and agency staff who provided input during public workshops and advisory group meetings throughout the planning process. Your participation and contributions are key to this and future efforts to develop the Valley Trail in Mendocino County.

Management Team

Phil Dow, Mendocino Council of Governments
Janet Orth, Mendocino Council of Governments
Rex Jackman, Caltrans District 1
Jaime Hostler, Caltrans District 1
Dave Carstensen, Caltrans District 1
John Thurston, Caltrans District 1

Consultant Team

Alta Planning + Design
Local Government Commission
GHD, Inc.

Technical Advisory Group*

Kathy Bailey, Hendy Woods Community,
Anderson Valley Chamber of Commerce
Patti Black, Mendocino County Department of
Transportation (DOT)
Sarah Bennett, Navarro Vineyards
Deborah Cahn, Navarro Vineyards
Shelly Englert, Anderson Valley (AV) Land Trust
Barbara Goodell, interested community member
Linda MacElwee, Mendocino County Resource
Conservation District (MCRCD)/Navarro River
Resource Center
Andrea Mapes, California State Parks
Kathleen McKenna, Anderson Valley Community
Services District (AVCSD)/Valley Trail
Melissa Meader, Valley Trail/Cycked
Star White, Pennyroyal Farm

* Participation in the Technical Advisory Group (TAG) does not imply endorsement of the Study or its recommendations by TAG members or their organizations.

This report was funded through a FY 2012/13 California Department of Transportation Community-Based Transportation Planning grant (\$135,000) and a local match from Mendocino Council of Governments (\$15,000). The project budget includes one contract with Alta Planning + Design at \$134,936, covering a team of consultants and subcontractors: Alta (\$76,430), Local Government Commission (\$30,100), and GHD, Inc. (\$28,408).

This page intentionally left blank.

Table of Contents

1	Executive Summary.....	1-1
1.1	Study Objectives	1-1
1.2	Study Process	1-1
1.3	Study Outcomes	1-2
2	Background.....	2-1
2.1	Project Scope and Objectives.....	2-1
3	Setting.....	3-1
3.1	Land Use.....	3-1
3.2	Transportation.....	3-4
3.3	Physical Characteristics and Major Study Segments.....	3-9
3.4	Biological Resources.....	3-12
3.5	Cultural Resources	3-13
4	Public Engagement.....	4-1
4.1	TAG Meetings.....	4-1
4.2	Focus Group Meetings.....	4-2
4.3	Boonville Walking Assessment	4-5
4.4	Bus Tour	4-5
4.5	Community Workshops.....	4-5
4.6	Public Review Draft Study	4-7
5	Design Standards.....	5-1
5.1	Overview	5-1
5.2	References.....	5-1
5.3	Design Toolbox.....	5-2
6	Evaluation Criteria	6-1
7	Design Concepts.....	7-1
7.1	Segment 1: The Redwoods (Post Mile 1 – Post Mile 14).....	7-1
7.2	Segment 2: Upper Valley (PM 14 – PM 24.4).....	7-5
7.3	Segment 3: The “New” Highway/Anderson Valley Way (PM 24.4 – PM 28.3)	7-17
7.4	Segment 4: Central Boonville (PM 28.3 – PM 29.6).....	7-21

7.5	Segment 5: Hills and Valleys (PM 29.6 – PM50.9).....	7-30
8	Implementation Plan	8-1
8.1	Preliminary Cost Estimates.....	8-1
8.2	Project Prioritization	8-3
8.3	Recommended Funding Strategy.....	8-8
8.4	Next Steps	8-8
8.5	Caltrans Project Development Process.....	8-12
	Appendix A. Draft Regulatory Permit and Environmental Compliance Memorandum	A-1
	Appendix B. Public Engagement Notes	B-1
	Appendix C. GIS and Field Analysis Methodology	C-1
	Appendix D. Cost Estimates.....	D-1
	Appendix E. Funding Sources	E-1
	Appendix F. Yorkville Highlands Growers and Vintners Association’s Letter	F-1

List of Figures

Figure 1-1: Study Corridor Segments.....	1-2
Figure 1-2: Recommended Project Phasing.....	1-4
Figure 3-1: Anderson Valley Wineries Source: Mendocino Winegrowers, Inc.....	3-3
Figure 3-2: Study Corridor Segments.....	3-10
Figure 3-3: Biological Resource Context along Segment 1 (top) and Segment 2 (bottom).....	3-15
Figure 3-4: Biological Resource Context along Segment 3 (top) and Segment 4 (bottom).....	3-16
Figure 3-5: Biological Resource Context along Segment 5.....	3-17
Figure 7-1: Segment 1 Redwoods - Design Concepts	7-3
Figure 7-2: Conceptual Trail Alignment Through Redwoods.....	7-4
Figure 7-3: Rub Rail Rub.....	7-4
Figure 7-4: Conceptual Minor Trailhead.....	7-4
Figure 7-5: Segment 2 Upper Valley - Design Concepts	7-13
Figure 7-6: Conceptual Cross Sections Showing Cut and Fill Along SR 128 (Segment 2: Upper Valley).....	7-14
Figure 7-7: Conceptual Major Trailhead (Location To Be Determined)	7-14
Figure 7-8: Potential Philo - Hendy Woods State Park Connections (Segment 2: Upper Valley).....	7-15

Figure 7-9: Segment 3 The “New” Highway Design Concepts	7-19
Figure 7-10: Central Anderson Valley Way Entrance (Enlargement)	7-20
Figure 7-11: Southern Anderson Valley Way Entrance (Enlargement)	7-20
Figure 7-12: Segment 4 Central Boonville Design Concepts	7-23
Figure 7-13: 4B Existing (Top) and Conceptual (Bottom) Cross Sections, Facing Northwest	7-25
Figure 7-14: Conceptual Bike Lane Treatments Include Colored Pavment (Left) and Standard Bike Lanes (Right)	7-26
Figure 7-15: Conceptual Crossing Improvements Include Pedestrian Refuge Islands (Top) and Curb Extensions (Bottom)	7-26
Figure 7-16: Conceptual Improvements to SR 128/Mt. View Road Intersection	7-27
Figure 7-17: 4A Existing (Top) and Conceptual (Middle and Bottom) Cross Sections, Facing Northwest	7-28
Figure 7-18: Back-In Angled Parking	7-29
Figure 7-19: Segment 5 Hills and Valleys (West Half) – Design Concepts	7-31
Figure 7-20: Segment 5 Hills and Valleys (East Half) – Design Concepts	7-32
Figure 8-1: Recommended Project Phasing	8-4

List of Tables

Table 1-1: Short-Range Project List and Cost Estimate	1-5
Table 1-2: Mid-Range Project List and Cost Estimate	1-6
Table 1-3: Long-Range Project List and Cost Estimate	1-7
Table 3-1: SR 128 Actual 2012 Average Daily Traffic	3-5
Table 3-2: SR 128 Projected 2032 Average Daily Traffic	3-6
Table 3-3: Collisions Involving Bicyclists (2008–2012)	3-7
Table 3-4: SR 128 Proposed Improvement Projects	3-7
Table 3-5: Proposed Bikeway Improvement Projects	3-8
Table 5-1: Caltrans Bikeway Design Standards	5-3
Table 5-2: Class I Bike Path Design Standards	5-5
Table 5-3: Buffered Bike Lanes	5-6
Table 5-4: Shared Lane Markings	5-7
Table 5-5: Recreational Trail Design Standards	5-8

Table 5-6: ADA-Accessible Pathway Design Standards.....	5-9
Table 5-7: Highway Shoulders	5-11
Table 5-8: Clear Recovery Zone	5-12
Table 7-1: Field Data Category Descriptions	7-6
Table 8-1: Cost Estimates by Segment	8-2
Table 8-2: Short-Range Project List and Cost Estimate	8-4
Table 8-3: Mid-Range Project List and Cost Estimate	8-5
Table 8-4: Long-Range Project List and Cost Estimate	8-7

1 Executive Summary

1.1 Study Objectives

The purpose of the State Route (SR) 128 Corridor Valley Trail Feasibility Study (Study) is to evaluate the feasibility of a multi-use, non-motorized trail along SR 128 in Mendocino County (Study Corridor) from the Sonoma/Mendocino County line to the SR 128/SR 1 junction in Mendocino County and develop a plan that provides implementable options leading to the eventual funding, planning, design, and construction of a shared-use trail in prioritized segments. The Study includes assessment of some parallel, off-highway alignments on State Parks land and Mendocino County roads; however, the Study emphasis is on potential facility improvements within California Department of Transportation (Caltrans) right-of-way (ROW). This project is funded through a Caltrans Community-Based Transportation Planning Grant and the Mendocino Council of Governments (MCOG).

1.2 Study Process

The project team, consisting of MCOG, Mendocino County Department of Transportation (County DOT), Caltrans, and consultants, worked closely with a technical advisory group (TAG). The TAG consists of representatives from these agencies, local stakeholder organizations, and interest groups. The Study process centered on an extensive public outreach process, including two community workshops designed to gain community and stakeholder input on the Valley Trail concept. A series of focused public meetings were conducted to supplement the public workshops, including meetings in the various communities, with Boonville business owners, students, and a pre-workshop walking tour and bus tour.

The approximately 51-mile length of the Study Corridor was divided into five sections based on community boundaries, changes in the landscape setting, and highway facility characteristics (see Figure I-1). The project team performed a high-level analysis on each of the segments to understand the existing conditions, the feasibility of associated trail improvements, and cost/benefit considerations.

The consultant team developed conceptual improvements based on the segment analysis results and community and stakeholder input. The level of detail included for the improvement types ranges from prototypical improvement sections that are associated with typical existing conditions along the Study Corridor to conceptual-level plans and sections that respond to specific areas in and around schools, parks, and downtown destinations. During the first community workshop approximately 60 people listened to a presentation on the project scope and objectives, opportunities and constraints along the corridor, and an overview of potential pedestrian and bicycle facility improvements. After the presentation, attendees gathered around design tables with Study Corridor maps to discuss and draw their ideas and considerations.

During the second community workshop, participants reviewed the proposed improvement concepts and discussed how to prioritize the implementation of improvements. In general, participants prioritized improvements for areas with concentrated populations, such as the connections between Boonville and Philo. Additional support was voiced for safety improvements around schools, completing small gaps in

bike and sidewalk facilities, and demonstration projects including a trailhead with the first mile of a shared-use path.



Figure 1-1: Study Corridor Segments

1.3 Study Outcomes

1.3.1 Design Concepts

The design concepts presented in this Study seek to address gaps and challenge areas in pedestrian and bicycle accommodation and connectivity along the highway corridor. They respond to the standards and criteria established with the TAG. The design concepts vary by segment, in response to site conditions along SR 128, adjoining land uses, and community preferences. They also vary in the level of detail of design, and the nature of the planning or design product, in response to the length and complexity of the segments, and ability to resolve design details within the context of the Study.

The improvements recommended in this Study are located within State ROW, County road ROW, or other public property such as State Parks lands, with the following exceptions:

- Based on Caltrans ROW maps, the portion of SR 128 approximately between post miles 20.5 and 20.8 (north of Hendy Woods SP and southeast of Philo-Greenwood Road) has prescriptive ROW. Caltrans can maintain the existing roadway; however, widening the southern shoulder would require access acquisition.
- This Study recommends major trailheads in Segments 2 and 3, the locations of which are to be determined.

Acquisition of access over private properties would be pursued only on a willing-seller basis.

This Study examined some connections on private property (e.g., a connection to Navarro Ridge Road in Segment 1 and a connection to the southeast side of Hendy Woods SP in Segment 2); however, these connections are not included in the recommended projects in this Study.

The design concepts by Segment include:

- **Segment 1: The Redwoods.** The design concept for Segment 1 is a 4- to 8-foot wide off-highway trail generally within California State Parks property on the south side of SR 128. The recreational trail would wind through the redwood trees, to minimize tree loss and cut and fill.
- **Segment 2: Upper Valley.** The design concept for Segment 2 is to provide 4-foot wide paved shoulders with 2-foot wide unpaved shoulders or buffers concentrated on the south side of the highway to accommodate pedestrian connections between Philo and Hendy Woods State Park.
- **Segment 3: The “New” Highway.** The community-preferred design concept for Segment 3 is a shared-use path meeting Class I bike path design standards on the south side of SR 128 and a 4-foot wide recreational trail and Class III bike route along Anderson Valley Way.
- **Segment 4: Central Boonville.** The design concept for Segment 4 is continuous sidewalks and bike lanes, crossing improvements, and street trees, phased-in over time. This Study recommends implementation of improvements (e.g., colored asphalt shoulders; curb, gutter, and sidewalk; street trees; curb extensions; and/or pedestrian refuge islands), which would visually narrow the highway and provide traffic calming benefits.
- **Segment 5: Hills and Valleys.** The design concept for Segment 5 is to provide 4-foot wide paved shoulders with 2-foot wide unpaved shoulders or buffers in selected areas in and around Yorkville.

1.3.2 Phasing Recommendations and Cost Estimates

This Study divides projects into short-, mid-, and long-range lists, based on public and stakeholder input and consideration of the Evaluation Criteria presented in Chapter 6. The Evaluation Criteria prioritize safety, usage and connections, community priorities, conformance with existing plans and standards, environmental justice, environmental impact, private property impacts, traffic impacts, and cost/constructability. Conceptually the short-range project list includes projects to be pursued first, within the next five years. The mid- and long-range project lists should be pursued after strategic portions on the short-range project list have been implemented. Figure I-2 presents the recommended project phasing.

Actual project phasing is likely to be opportunity-driven, based on funding availability, ability to forge agreements and partnerships, and/or opportunities to incorporate improvements into other public or private projects. Each recommended project may be subdivided into smaller projects based on funding availability and other considerations. It is always advantageous to implement “low hanging fruit” portions of the trail that can be completed with minimal funding and maximum community involvement to demonstrate progress and maintain interest on the overall effort.

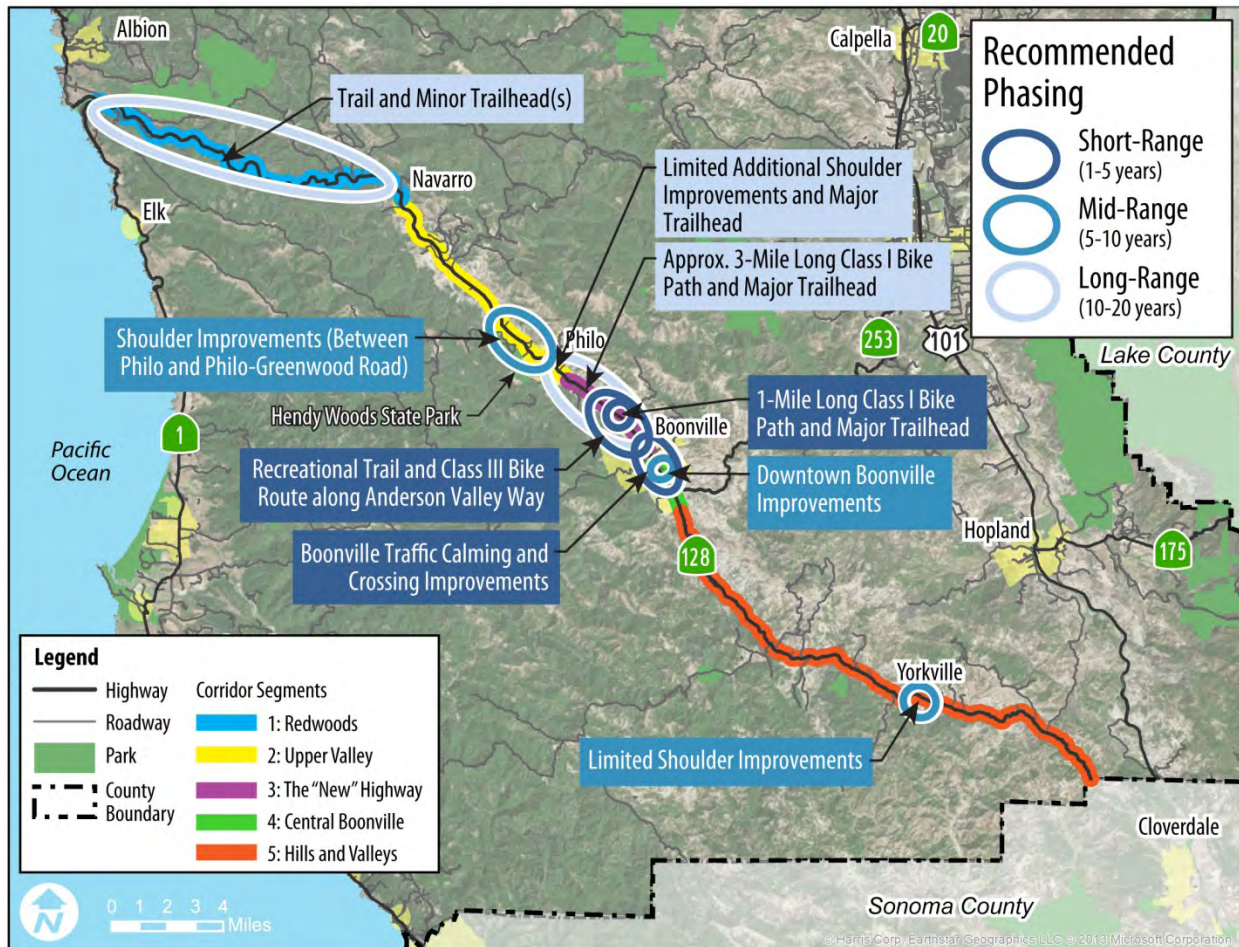


Figure 1-2: Recommended Project Phasing

Short-Range (1 to 5 Years) Project List

Short-range projects are those recommended to be undertaken in the next five years. Table 1-1 presents the recommended short-range projects and associated cost estimates.

Table 1-1: Short-Range Project List and Cost Estimate

Segment	Post Miles	Facility Length (Miles)	Project Description	Cost Estimate
3 - New Highway	26.9 – 28.0	1.1	Class I Bike Path and Major Trailhead - Demonstration Project	\$1,500,000 (trail) and \$175,000 (major trailhead)
3 - New Highway	N/A	2.7	Recreational Trail and Class III Bike Route along Anderson Valley Way	\$420,000
4 - Central Boonville	28.3 – 29.6	1.2	Boonville Traffic Calming and Crossing Improvements	\$2,799,142
Total				\$4,894,142

The short-range project list focuses on improvements between Boonville and Philo, including:

- **Segment 3 Class I Bike Path and Major Trailhead - Demonstration Project.** The demonstration project comprises an approximate one-mile long bike path and with a major trailhead, or with access from an existing parking area that could function as a major trailhead, on the south side of the highway. Caltrans Class I bike paths accommodate pedestrian and bicyclist use. Likely termini for the demonstration project would be from the SR 128/County Road 150 intersection (near Anderson Valley Elementary School) to the SR 128/Anderson Valley Way/Schoenahl Road intersection (see Figure 7-9). The Class I bike path would connect residences to the Anderson Valley Elementary School and provide an opportunity for both locals and visitors to experience a Class I bike path and visualize the eventual expansion of the Valley Trail. Building a segment of the Valley Trail in this location is a strategic investment in that it would serve an immediate need for safer pedestrian and bicycle routes to school and would eventually be strengthened with the addition of pedestrian and bicycle improvements targeted for Anderson Valley Way and Central Boonville.
 - Estimated cost for 1.1-mile long trail: \$1,500,000.
 - Estimated cost for prototypical major trailhead: \$175,000.
- **Segment 3 Recreational Trail and Class III Bike Route along Anderson Valley Way.** The recreational trail could be a relatively low-cost community-sponsored project that could cost less than the estimate. The signage and sharrows would require participation from County DOT and/or an outside funding source, but constitute a relatively inexpensive project.
 - Estimated cost: \$420,000
- **Segment 4 Boonville Traffic Calming and Crossing Improvements.** This would include colored shoulders/bike lanes, sidewalks with street trees north and south of downtown (including a south-side sidewalk from the edge of downtown to the Senior Center), intersection improvements at Mountain View Road, advance warning signage and yield lines at all crosswalks, and curb extensions at crosswalks north and south of downtown.
 - Estimated cost: \$2,799,142

Mid-Range (5 to 10 Years) Project List

Mid-range projects are those recommended to be undertaken in the next 5 to 10 years. Table 1-2 presents the recommended mid-range projects and associated cost estimates.

Table 1-2: Mid-Range Project List and Cost Estimate

Segment	Post Miles	Facility Length (Miles)	Project Description	Cost Estimate
2 - Upper Valley	20.1 – 23.1	3.0	Shoulder Widening between Philo and Philo Greenwood Road (Southbound Shoulder Only)	\$6,371,500
4 - Central Boonville	28.3 – 29.6	1.2	Downtown Boonville Improvements (sidewalks with street trees, parking delineation, bike lanes, curb extensions at crossings)	\$1,337,867
5 - Hills and Valleys	TBD	1.0	Limited Shoulder Widening in focused areas in and around Yorkville.	\$2,000,000
Total				\$9,709,367

The mid-range project list focuses on improvements in downtown Boonville, along Anderson Valley Way, between Philo and Philo-Greenwood Road, and around Yorkville, including:

- **Segment 2 Shoulder Improvements between Philo and Philo-Greenwood Road.** Philo residents place a high priority on improved access to Hendy Woods SP. This Study reviewed cost estimates for improvements along the northbound and southbound shoulders separately. The northbound shoulder would cost approx. \$3.7 million to improve. The southbound shoulder would cost approx. \$6.4 million to improve. In order to minimize the need for pedestrians and bicyclists to cross SR 128 and considering the high cost of the improvements, shoulder widening along the southbound shoulder only is recommended.
 - Estimated cost for three miles of widened shoulder: \$6,371,500 (southbound shoulder only).
- **Segment 4 Downtown Boonville Improvements** (sidewalks with street trees, parking delineation, bike lanes, curb extensions at crossings). This project depends on the support of the Boonville business community and on the ability to secure grants for the highway improvements.
 - Estimated cost: \$1,337,867
- **Segment 5 Shoulder Widening.** It is not recommended or anticipated that the entire 21.5 miles of shoulders would ever be widened, considering the substantial cost (estimated at almost \$280 million). Considering potential offers of easement dedication, it would be far more cost effective to work to acquire access rights for an off-highway trail, which is beyond the scope of this Study to plan. In this case a challenge would be finding safe crossing points to connect to any on-highway portions.

However, based on further study and prioritization, and/or in conjunction with Caltrans highway improvement projects, additional portions of the shoulders should be widened over

time, potentially with a focus on connections in or near the community of Yorkville. A “placeholder” budget allowance is assumed for this purpose.

- o Cost allowance for additional shoulder widening in priority locations: \$2,000,000

Long-Range (10 to 20 Years) Project List

Long-range projects are those recommended to be undertaken in the next 10 to 20 years. Table 1-3 presents the recommended long-range projects and associated cost estimates.

Table 1-3: Long-Range Project List and Cost Estimate

Segment	Post Miles	Facility Length (Miles)	Project Description	Cost Estimate
1 - Redwoods	1.0 – 14.0	14.0	Trail and Minor Trailhead(s)	\$16,061,000 (trail), \$25,000 (per minor trailhead)
2 - Upper Valley	TBD	TBD	Additional Shoulder Widening and Major Trailhead	\$2,000,000 (shoulder widening) and \$175,000 (per major trailhead)
3 - New Highway	24.4 – 28.3	2.8	Class I Bike Path and Major Trailhead Completion	\$13,903,492 to \$13,309,492 (bike path) and \$175,000 (per major trailhead)
Total				\$31,820,500 to \$32,414,500 (assumes four trailheads in Segment 1 and one trailhead each in Segments 2 and 3)

The long-range project list includes completion of the Class I bike path in Segment 3, focused shoulder improvements and a major trailhead in Segment 2, and a connection from Navarro to SR 1.

- **Segment 1 Trail Improvements and Minor Trailhead(s) – the Navarro River Trail.** This project depends on local initiative and fund raising, and could be a nearer-term project, implemented in phases following a shorter demonstration project, or a very long-term project that might never be fully implemented. Construction of any minor trailheads would be in conjunctions with trail construction.
 - o Estimated cost for 16 miles of paved, 4-foot to 8-foot wide trail: \$16,061,000
 - Prototypical improved pullout estimated cost: an additional \$25,000 each
 - o Cost range for 1-mile demonstration project including a minor trailhead, assuming relatively unconstrained area: \$447,000 to \$1,000,000 (cost increases exponentially in constrained areas requiring retaining walls, boardwalks, etc.)
- **Segment 2 Additional Shoulder Improvements and Major Trailhead.** It is not recommended or anticipated that the entire 10.4 miles of shoulders would ever be widened, considering the substantial cost (estimated at \$53,950,000 overall). It would be more cost effective to work to acquire access rights for an off-highway trail, which is beyond the scope of this Study to plan. In this case a challenge would be finding safe crossing points to connect to any on-highway portions. However, based on further study and prioritization, and/or in conjunction with Caltrans highway improvement projects, limited additional portions of the shoulders should be

widened over time, with a focus on connections from the community of Philo east. A “placeholder” budget allowance is assumed for this purpose.

- o Cost allowance for additional shoulder widening in priority locations: \$2,000,000
 - o Prototypical major trailhead estimated cost: \$175,000.
- **Segment 3 Class I Bike Path and Major Trailhead – Trail Completion.** Completing this Class I bike path would have the greatest combined benefit for local residents as well as tourists.
 - o Estimated cost for an additional three miles of Class I path with bridge and road crossing improvements: \$13,903,492 to \$13,309,492.
 - o Prototypical major trailhead estimated cost: \$175,000.

1.3.3 Next Steps

The Final Study will be used to advance the Valley Trail project through the next steps to implementation. MCOG, Caltrans, County of Mendocino, local agencies, and the Valley Trail Coalition will be able to utilize the Study to seek federal, state, regional, and local funding for implementation of priority projects. The Study will also inform decision makers regarding appropriate non-motorized access improvements to incorporate into future roadway or development frontage projects that coincide with the Valley Trail.

2 Background

The SR 128 corridor extends from the Sonoma/Mendocino County line to the SR 128/SR 1 junction in Mendocino County through Anderson Valley—a distance of approximately 51 miles. SR 128 is a conventional, rural two-lane state highway that also serves as the "Main Street" for several small towns along the SR 128 corridor, including Navarro, Philo, Boonville, and Yorkville. Local residents who walk or bicycle for transportation or recreation purposes often have no other options than to use the highway corridor. Walking and bicycling opportunities are limited due to the narrow shoulder width which varies throughout the project area. MCOG secured a Caltrans Community-Based Transportation Planning (CBTP) grant to fund the current study.



SR 128 is a primary route between U.S. 101 and the central Mendocino Coast. It also serves as the "Main Street" and is virtually the only route for travel between Anderson Valley's rural communities of Navarro, Philo, Boonville, and Yorkville.

2.1 Project Scope and Objectives

The purpose of the Study is to evaluate the feasibility of a multi-use, non-motorized trail along the Study Corridor and develop a plan that provides implementable options leading to the eventual funding, planning, design, and construction of a multi-use trail in prioritized segments. The Study includes assessment of some parallel, off-highway alignments; however, the Study emphasis is on potential facility improvements within Caltrans ROW.

The consultant team worked closely with MCOG, County DOT, the California Department of Transportation (Caltrans), TAG consisting of representatives of these agencies and local stakeholder organizations and interest groups. The Study process centered on an extensive public outreach process, including two community workshops and several focus group meetings designed to gain community and stakeholder input on the Valley Trail concept.

This Study summarizes existing physical conditions along the Study Corridor and planned improvements in adopted regulatory documents, as well as TAG, stakeholder, and public input gained throughout preparation of the Study. The document also provides design standards for the trail improvements and lists prioritization criteria to assist with project prioritization. This Study identifies potential pedestrian and bicycle facility improvement concepts developed for the Study Corridor and presents a strategy for project implementation.

MCOG, Caltrans, County of Mendocino, local agencies, and community groups will be able to utilize the Study to seek federal, state, regional, or local funding for design, environmental analysis and permitting, construction of improvements, and on-going maintenance of the trail facilities. The Study will also be useful to inform planners, designers, and decision makers on future highway and roadway projects that

2 | Background

may provide the opportunity to help implement, or at least preserve the opportunity for, the Valley Trail. Trail implementation is anticipated to occur over a long-term horizon, segment-by-segment, based on feasibility, priority, and funding/implementation opportunity.

3 Setting

This chapter describes the pertinent conditions and considerations for trail planning in the Study Corridor.

3.1 Land Use

The Navarro River drainage and the geology, climate, and natural resources of the westernmost Coast Range shape and define Anderson Valley. With its unique topography, major river system, and a climate strongly influenced by its proximity to the ocean, Anderson Valley's natural beauty and rural character are major assets.

Boonville, the largest community in Anderson Valley (population 1,370) encompasses a mix of land uses, including residential, commercial, offices, civic facilities, and lodging. The Boonville Airport is located near Anderson Valley High School, and the Mendocino County Fairgrounds are located in Boonville. Philo (population of 1,098) includes residential, limited commercial, and agricultural land uses. Yorkville (population 317) includes residential, limited commercial, and agricultural uses. Navarro (population 130) contains residential and limited commercial uses, with much of the property in and around the community owned by the Mendocino Redwood Company (MRC). Floodgate, south of Navarro, is a long-established commercial area. Significant pockets of residential development lie in the hills east and west of Boonville, along Greenwood Road, at Sky Ranch near Cold Springs Mountain, and at the Yorkville Ranch between Philo and Navarro on the Holmes Ranch and Nash Ranch subdivisions, , and in Rancho Navarro, a large subdivision located west of Navarro.

Historically, sheep ranching and other types of farming, including apple orchards, formed the basis for the Valley's economy. In recent years, those agricultural activities have been mostly replaced by wine grapes, which is a now major tourism draw for the Valley. Timber production, while less prominent than in the past, remains important, with two mills located in Philo and several portable mills in operation. Dense stands of coast redwoods and Douglas fir dominate much of the south face of the Valley.

Recreation in Anderson Valley centers on outdoor activities such as kayaking, hiking, biking, horseback riding, fishing, and camping. Campgrounds at Hendy Woods State Park (SP), Dimmick in Navarro River Redwoods SP, Indian and Creek County Park (CP) augment private visitor-serving facilities. Wine tasting rooms and special wine events are a major focus of tourist activity. The Anderson Valley Brewery makes a variety of beers and hosts a large annual event. The annual three-day Mendocino County Fair and Apple Show, the Wool and Fiber Festival, and, increasingly, various annual music-related events bring large numbers of people to the Mendocino County Fairgrounds in Boonville and other areas of the community on weekends throughout the year. Art and craft galleries, plant nurseries, a newly expanded Health Center, the Community Park, the Anderson Valley Historical Society Museum (Museum), a lending library, farmers' market, cafes, stores, and other small businesses serve locals and visitors alike.

The Anderson Valley Community Services District (CSD) owns and operates the Boonville Airport and the land and facilities of the Museum, as well as maintains small lighting districts in Boonville and Philo. Its recreation committee supports a youth activities program, a teen center, and some sports and music classes for adults.

The Anderson Valley Unified School District serves more than 634 students (in 2008) at facilities in and near Boonville. The Anderson Valley Adult School offers courses regularly.

3.1.1 Public Lands and Access Easements

Public lands along SR 128 generally consist of highway and roadway rights-of-way maintained by Caltrans and County DOT, respectively; County Fairgrounds properties, owned by the County of Mendocino and maintained by a non-profit group; the Boonville Airport and the Museum, owned and operated by the Anderson Valley CSD; and State and County parks.

According to County Geographic Information System (GIS) data, most creeks in Anderson Valley lie within privately owned properties. The MRC and SP shared property line in the western portion of the Study Corridor appears to run along the centerline of the Navarro River, so that the north bank of the river is in SP land and the south bank is within MRC lands. Per the County Code of Ordinances (Section 16.30.080 Watercourse Protection), persons owning property through which a watercourse passes are responsible for keeping that part of the watercourse within the property reasonably free of trash, debris, and other obstacles that would pollute, contaminate, or significantly hinder the flow of water through the watercourse.

3.1.2 Key Destinations

Key land uses in Anderson Valley which could attract pedestrian and bicycle activity are described below.

Schools

Schools in Anderson Valley include Anderson Valley Elementary School, Anderson Valley Junior/Senior High School, and Rancheria Continuation School - Rancheria High School. School locations and enrollment data are presented below.

- Anderson Valley Elementary School is located at 12300 Anderson Valley Way, Boonville. Year 2012-13 enrollment consisted of 270 students in Kindergarten through 6th Grade and 20 Preschool students. The school sponsors a “walk along” once per month. Buses stop at a parking area approximately one mile to the north on Anderson Valley Way. Teachers accompany children walking along the side of the road.
- Anderson Valley Junior/Senior High School is located at 18200 Mt. View Road, Boonville. Year 2012-13 enrollment consisted of 262 students in Grades 7 through 12.
- Rancheria Continuation School - Rancheria High School is located at 12300 Anderson Valley Way, Boonville. It serves 30 to 50 students.

Mendocino County Fairgrounds

Mendocino County Fairgrounds, located in Boonville, includes an RV park and allows year-round camping. In addition, numerous events are held at the Fairgrounds, including:

- County Fair and Apple Show – This three-day event occurs in September
- Boonville Beer Festival – This one day event is held in May at a location near the Fairgrounds and many festival-goers camp at the Fairgrounds.

- Sierra Nevada World Music Festival – This three or four day festival is held in June
- Quinceañeras and other events

Wineries

There are approximately 40 wineries in Anderson Valley, most of which have tasting rooms. The area includes three appellations distinguished by weather, elevation, and soil types: the "Mendocino Ridge" appellation is on the ridge tops along both sides of SR 128, the "Anderson Valley" appellation (approx. mile marker 33.89), and the "Yorkville Highlands" appellation (approx. mile marker 50.71). Figure 3-1 presents an overview of vineyards in Anderson Valley.

Lodging

Anderson Valley includes a number of lodging options, including inns, a hotel, and bed & breakfasts accessible from SR 128. Generally, lodging is located near Yorkville, Boonville, and Philo.



Figure 3-1: Anderson Valley Wineries
Source: Mendocino Winegrowers, Inc.

Hendy Woods State Park

The 845-acre Hendy Woods SP is located near Philo, a half-mile south of SR 128, and eight miles northwest of Boonville. The park is popular for hiking, picnicking, camping, swimming, kayaking, and canoeing. Two miles of nature trails guide the visitor through both Big and Little Hendy old-growth redwood groves. The park includes 25 picnic sites, 92 campsites, four small cabins, and a hike-and-bike

camp. The park also features interpretive exhibits, Junior Ranger nature walks, miles of trails, access to the Navarro River, and campfire programs. Fishing is not allowed in the park, but is permitted in the Navarro River watershed down river from the bridge at the park entrance. The non-profit Hendy Woods Community staffs the visitor center and leads interpretive walks.

Navarro River Redwoods State Park, Navarro Beach, and Paul M. Dimmick Campground

Navarro River Redwoods SP is located along the Navarro River and extends from the Pacific Ocean to east of Navarro Ridge Road. The park consists of 660 acres along a 14-mile-long contiguous river corridor. The park is popular with anglers, canoeists, and kayakers in the late winter and spring. Visitors can picnic, swim, and camp at the Paul M. Dimmick campground, which includes 26 campsites, and at Navarro Beach, which includes 10 primitive campsites.

Campgrounds

Indian Creek County Park Campground

Mendocino County General Services Agency operates Indian Creek County Park Campground, which is located approximately one-half-mile east of Philo on the bank of the Indian Creek. The Park and Campground includes 10 sites and is open during the summer months only.

Private Camps and Retreats

Anderson Valley includes a several private camps and retreats, including Camp Rancheria. Camp Rancheria is located off SR 128 near Boonville. The 180-acre private facility is rented to one group at a time. The facility accommodates 80 people in cabins and is open during the summer months.

3.2 Transportation

SR 128 is a primary route between US 101 and the central Mendocino Coast, and the main road to Anderson Valley. The SR 128 ROW varies in width from 50 to 150 feet. With the closure of lumber mills on the coast, SR 128 has become a major route for trucks hauling logs to mills in Ukiah and Cloverdale. It is the key transportation corridor for shipment of lumber and wood products milled in Philo and for other products such as grapes, apples, and wine originating in Anderson Valley. Walking and bicycling opportunities along SR 128 are limited due to the narrow shoulder width, which varies along the highway and the intermittent nature of existing sidewalks. Public transportation services are limited, with one round trip through Anderson Valley each day (Mendocino Transit Authority's Route 75), and a van operated by the Anderson Valley Senior Center.

3.2.1 Traffic Volumes

Annual Average Daily Traffic (AADT)

AADT is the total traffic volume for the year divided by 365 days. The traffic count year is from October 1st through September 30th. Very few locations in California are actually counted continuously. Traffic counting is generally performed by electronic counting instruments moved from location to location throughout the State in a program of continuous traffic count sampling. The resulting counts are

adjusted to an estimate of AADT by compensating for seasonal influence, weekly variation and other variables which may be present. AADT is necessary for presenting a statewide picture of traffic flow, evaluating traffic trends, computing accident rates, planning and designing highways, and other purposes.

Back AADT usually represents traffic South or West of the count location and is the total volume for the year divided by 365 days. Ahead AADT usually represents traffic North or East of the count location and is the total volume for the year divided by 365 days. AADT's capture both directions of travel in the count, so adding them together will result in erroneous data. AADT along SR 128 varies from 1,600 at SR 1 to 6,100 at Mountain View Road near downtown Boonville (see Table 3-1), with the greatest traffic volume concentrated in the Boonville area. Future AADT along SR 128 is estimated to increase to between 2,080 at SR 1 and 7,930 at Mountain View Road by the year 2032 (see Table 3-2).

Peak Month Average Daily Traffic (ADT)

The peak month ADT is the average daily traffic for the month of heaviest traffic flow. This data is obtained because, on many routes, high traffic volumes that occur during a certain season of the year are more representative of traffic conditions than the AADT. Peak month ADT along SR 128 varies from 2,000 at SR 1 to 7,800 at Mountain View Road near downtown Boonville (see Table 3-1). Future Peak Month ADT along SR 128 is estimated to increase to between 2,600 at SR 1 and 10,140 at Mountain View Road by the year 2032 (see Table 3-2).

Peak Hour

Peak hour traffic volume is useful to traffic engineers in estimating the amount of congestion experienced, and shows how near to capacity the highway is operating. Peak hour values indicate the volume in both directions. A few hours each year are higher than the "peak hour," but not many. In urban and suburban areas, the peak hour normally occurs every weekday, during what is considered "rush hour" traffic. On roads with large seasonal fluctuations in traffic, the peak hour is the hour near the maximum for the year but excluding a few (30 to 50 hours) that are exceedingly high and are not typical of the frequency of the high hours occurring during the season. Peak hour traffic volume along SR 128 varies from 190 near Yorkville and the Mendocino/Sonoma County line to 960 at Mountain View Road near downtown Boonville (see Table 3-1). Future Peak hour traffic volume along SR 128 is estimated to increase to between 266 near Yorkville and the Mendocino/Sonoma County line and 1,248 at Mountain View Road by the year 2032 (see Table 3-2).

Table 3-1: SR 128 Actual 2012 Average Daily Traffic

Post Mile	Description	Back Peak Hour	Back Peak Month	Back AADT	Ahead Peak Hour	Ahead Peak Month	Ahead AADT
0	Jct. Rte. 1	--	--	--	210	2000	1600
11.67	Flynn Creek Rd	210	2000	1600	260	2400	1900
22.59	West limits Philo	610	5600	4500	530	4900	4000

Post Mile	Description	Back Peak Hour	Back Peak Month	Back AADT		Ahead Peak Hour	Ahead Peak Month	Ahead AADT
26.84	Con Creek			510	4700	4100	530 4900	4000
28.09	Boonville Maintenance Station			590	5200	4500	880 7100	5400
28.4	Mountain View Rd			960	7800	6100	860 6400	4800
29.58	Jct. Rte. 253 East			740	5600	4200	270 2700	2100
41.13	West limits Yorkville			190	2200	1600	190 2200	1650
50.90	Mendocino/Sonoma Co Line			190	2050	1650	-- --	--
This data is extracted from Caltrans 2012 traffic volume data								

Table 3-2: SR 128 Projected 2032 Average Daily Traffic

Post Mile	Description	Back Peak Hour	Back Peak Month	Back AADT	Ahead Peak Hour	Ahead Peak Month	Ahead AADT
0	Jct. Rte. 1				273	2600	2080
11.67	Flynn Creek Rd	273	2600	2080	338	3120	2470
22.59	West limits Philo	793	7280	5850	689	6500	5200
26.84	Con Creek	663	6110	5330	689	6500	5590
28.09	Boonville Maintenance Station	767	6760	5850	1144	9230	7020
28.4	Mountain View Rd	1248	10140	7930	1118	8320	6240
29.58	Jct. Rte. 253 East	962	7280	5460	351	3510	2730
41.13	West limits Yorkville	266	3080	2240	266	3080	2310
50.90	Mendocino/Sonoma Co Line	266	2870	2310			
The data is extracted from Caltrans 2012 traffic volume data							
Growth Factors are taken from 2006 D1 System Planning Growth Factor Update							

3.2.2 Collision Data Involving Pedestrians and Bicyclists

The Statewide Integrated Traffic Records System (SWITRS) is a database managed by the California Highway Patrol (CHP) that serves as a means to collect and process data gathered from a collision scene. Traffic collision data was acquired through SWITRS in December 2013 for the period between 2008 and 2012 for SR 128, Anderson Valley Way, and Navarro Ridge Road. A review of the collision data shows that two collisions involving bicyclists occurred on SR 128 during the study period (see Table 3-3). In both cases, the bicyclists were found to have violated the Vehicle Code, perhaps demonstrating a need for additional bicyclist education. No collisions involving pedestrians occurred during the study period.

Table 3-3: Collisions Involving Bicyclists (2008–2012)

Month and Year	Location	Post Mile	Primary Collision Factor
January 2008	SR 128, 1320 feet east of Salmela Rd	15.01	Vehicle Code Violation (bicyclist at fault)
February 2011	SR 128, 1056 feet west of Mountain View Rd	28.2	Vehicle Code Violation (bicyclist at fault)
Source: SWITRS, 2013			

3.2.3 Planned Improvements Along SR 128

The Caltrans Route Concept Report from 2002 serves as a guide for long-range planning improvements. The Report states that existing shoulder widths are generally minimal, and improved shoulders would better accommodate bicyclists and pedestrians (Section 2). However, the Report goes on to state that these standards may not be possible due to costs to widen narrow sections in rugged terrain, existing issues with vertical and horizontal alignment, and environmental impacts. The document does not identify any long-term shoulder widening projects.

Caltrans is in the process of rehabilitating several culverts and storm drainages along the SR 128 corridor. Table 3-4 summarizes the planned improvements.

Table 3-4: SR 128 Proposed Improvement Projects

Project Nickname	Description	Location	BPM	EPM	Program Year	Start Date	End Project
22 Culverts	Culvert Rehabilitation	0.5 mile east of Route 253/128 junction to Mountain House Rd	30.1	48.4	2015	2015	2016
21 Culverts	Culvert Rehabilitation	Navarro 1 mile west of Navarro Ridge Rd to Indian Creek Bridge near Philo	10.6	23.3	2014	2014	2014
51 Culverts	Culvert Rehabilitation	Various Locations near Boonville from west of Mill Creek Bridge to east of Beebe Creek Bridge	14.3	40.6	2013	2013	2015
76 Culverts	Culvert Rehabilitation	From east of Route 1 to Flynn Creek Bridge near Navarro	0.2	11.1	2014	2015	2016
Smoot Sink	Storm Damage Repair	4.9 miles east of Boonville from Shearing Creek Bridge #10-59 to 0.7 miles west of Maple Creek Bridge #10-55	34.5	35.5	2013	2013	2016
Beebe Creek Slip and Slide	Storm Damage Repair	Near Yorkville from 0.7 to 1.0 miles east of Beebe Creek Bridge	39.5	39.8	2014	2016	2017

3.2.4 Existing and Planned Pedestrian and Bicycle Facilities

3.2.4.1 Pedestrian Facilities

Existing pedestrian facilities are concentrated largely in Boonville and include scattered sidewalks along SR 128 and a soft-surface trail in the High School property along the creek, which is maintained by Anderson Valley High School.

The 2010 Mendocino County ADA Comprehensive Access Plan (Access Plan) evaluates features of the County-maintained road system that are appropriate for pedestrian infrastructure and recommends improvements that are in compliance with the federal Americans with Disabilities Act and applicable provisions in the California Building Code. The Access Plan includes a focused review of walking conditions in “key” areas with urban population density, including Boonville. The plan contains the following notes and recommendations:



Sidewalks are intermittent through Boonville.

- Sidewalks along SR 128 comprise many different types and are generally not a continuous pedestrian system suitable for access by those with disabilities
- Much effort will be necessary to sort through the various conditions to improve the southwest side of SR 128
- Conditions along the northeast side of SR 128 involve very old walks and sidewalks that could be considered hazards, many curb ramps missing or not code compliant, and parking that severely interferes with developing a pedestrian walk system
- A crosswalk is recommended across SR 128 at Lambert Lane due to distances between existing crossings—markings, signage, and striping should be assessed on a warrant basis and heavy bar striping with warning paddle signs is recommended for pedestrian safety crossing SR 128

3.2.4.2 Bicycle Facilities

Currently no designated bikeways are present in Anderson Valley. The Mendocino County Regional Bikeway Plan Inventory of Proposed Bikeways section identifies all bikeway projects that have been previously proposed by County DOT, and the cities of Ukiah, Fort Bragg, Willits, and Point Arena, as well as potential bikeways that have been identified by the communities and by MCOG (see Table 3-5).

Table 3-5: Proposed Bikeway Improvement Projects

Roadway Name	Extent		Caltrans Class	Need
	From	To		
Mountain View Rd	CR 126 Airport Rd	SR 128 at Boonville	III	M
SR 128	Sonoma County Line	SR 1 Navarro	III	M
SR 253	SR 128 Boonville	SR 101 Ukiah	III	L
Navarro Ridge Rd	SR 1 at Navarro River	MP 6.0	III	M

Roadway Name	Extent		Caltrans Class	Need
	From	To		
L = Low M = Medium H = High				
Source: Mendocino County Regional Bikeway Plan, 2012				

3.2.4.3 Mendocino County Safe Routes to School Plan

Mendocino County developed a Safe Routes to School Plan for schools in the unincorporated areas of the County. The Safe Routes to School Plan will make recommendations for five complementary strategies that help to support children walking to school. The Safe Routes to School Plan includes both schools in Anderson Valley, and Anderson Valley Elementary is one of the pilot schools in the Safe Routes to School Plan. The Safe Routes to School Plan was completed in April 2014 and will be available on County DOT website.

3.2.4.4 Navarro River Water Trail Assessment

The Anderson Valley Land Trust in cooperation with the National Park Service Rivers Trails and Conservation Assistance Program is evaluating the Navarro River from Hendy Woods SP downstream to Navarro Beach as a potential non-motorized boating water trail. In 2012, the Anderson Valley Land Trust completed the Navarro River Water Trail Assessment. Its purpose was to assess the practicality of defining a water trail along all or part of the river.¹

3.2.5 Other Planned Improvements

Mendocino County DOT is in the process of rehabilitating and widening the Philo-Greenwood Road Bridge over Navarro River. The bridge is a key connection to Hendy Woods SP.

3.3 Physical Characteristics and Major Study Segments

The landscape, communities, and highway facilities along the 51-mile-long SR 128 corridor have some distinct characteristics. To facilitate the study process the corridor was divided into five major segments, as described below and shown on Figure 3-2. This overview, moving southeast from SR 1 at the coast to the Mendocino/Sonoma County line northwest of Cloverdale, describes some of the major relevant conditions for the Study. The consultant team's analysis approach and level of detail varies by segment in response to segment-specific characteristics.

¹ http://andersonvalleylandtrust.org/wp-content/uploads/2012/09/AVLT_Navarro_River_WT_Full_Report_9-12.pdf



Figure 3-2: Study Corridor Segments

3.3.1 Segment 1: The Redwoods (Post Mile [PM] 1 – PM 14)

This segment starts at the junction with SR 1 at the bridge over the Navarro River, where there are little to no shoulders due to the highway's location on steep slopes above the river. From SR 1 east for a distance of approximately 14 miles, the highway follows the Navarro River then the North Fork of the Navarro River, mostly in the flatter river bottoms winding through the redwoods, often with mature trees close by on both sides of the road and typically with no paved shoulders. Most of the river floodplain on either side of the highway is owned by California State Parks. The dense redwood forests and rugged terrain end just beyond the small community of Navarro.



SR 128 winds through redwood trees between the coast and Navarro (Segment 1).

3.3.2 Segment 2: Upper Valley (PM 14 – PM 24.4)

Beyond Navarro the slopes adjacent to the highway are less steep and forested, with redwoods mostly giving way to oak woodlands, vineyards, orchards, grazing land, rural residential areas, and occasional commercial uses. The road remains winding, and features more descents and climbing than Segment 1. Some portions of this segment have virtually no paved shoulders, while some have intermittent paved shoulders of three to four feet wide. The speed limit is 55 mph, but vehicles often travel faster. The speed limit is reduced to 30 mph in Philo. Clark Road and Gschwend Road form parallel routes on the west for short distances, but generally there are no alternative parallel public roads to the highway. Hendy Woods SP is a major local and tourist destination and the park entrance is located on the south side of the Navarro River near the community of Philo. At a point approximately 1.5 miles southeast of Philo, the highway ROW becomes wider and straighter.



SR 128 between Philo and Navarro (Segment 2).



The New Highway portion features wider shoulders (Segment 3).

3.3.3 Segment 3: The “New” Highway/Anderson Valley Way (PM 24.4 – PM 28.3)

At approximately PM 24.4 the highway becomes straighter and wider—a limited-access higher-speed route with a speed limit of 55 mph and paved, 8-foot-wide shoulders in a ROW approximately 80 feet wide. Near Anderson Valley Elementary School and Road 150B the highway has two lanes separated by a paved median or left turn lanes.

The original highway alignment, now Anderson Valley Way, parallels the current highway to the south, starting in a cul-de-sac just south of the intersection with County Road 151 and continuing to Anderson Valley Elementary School near Road 150B. From this point Anderson Valley Way continues approximately three miles to the Caltrans maintenance yard near the Anderson Creek Bridge, where the divided highway ends. Anderson Valley Way offers a pleasant, winding, and partially wooded alternative route to SR 128, but it is narrow, has virtually no shoulders along much of its length, and has many adjacent barriers to widening or adding a trail, such as large trees, ditches, narrow bridges, private residential frontage improvements, and utility poles.

3.3.4 Segment 4: Central Boonville (PM 28.3 – PM 29.6)

At the Anderson Creek Bridge, SR 128 becomes the “main street” of Boonville with a speed limit dropping gradually to 30 mph. The highway has a two-way center turn lane from the bridge at Anderson Creek

until the left turn lane at Mountain View Road. Anderson Valley High School and Middle School are located a short distance southwest of SR 128 on Mountain View Road, followed by the Boonville Airport and the Anderson Valley Health Center. Through central Boonville the highway has two lanes and very wide paved shoulders, in some cases affording angled parking in front of certain businesses. There are four striped high-visibility crosswalks, the most northerly of which is a school crosswalk. Downtown crosswalks have high visibility (SSX striping) and are accompanied by pedestrian crossing signage (Assembly B). The downtown main crosswalk also has an in-street yield paddle sign. The Mendocino County Fairgrounds is a major landmark and destination in the central part of Boonville, while the Anderson Valley Brewing Company is a landmark at the south end, on the corner of SR 128 and SR 253.



SR 128 through downtown Boonville (Segment 4).

3.3.5 Segment 5: Hills and Valleys (PM 29.6 – PM 50.9)

From a point near the CDF Fire Station a few hundred feet east of SR 253/Boonville/Ukiah Road to the Sonoma/Mendocino County line northwest of Cloverdale, SR 128 is typically winding and often steep and narrow, traversing the ridge between the Navarro River and Russian River Watersheds. The highway has a 55 mph speed limit through this winding area. There is typically little to no paved shoulders. The highway then follows the valley of Rancheria Creek past the very small community of Yorkville. This segment has portions of highway that are flat, straight, and with a 55 mph speed limit. Some portions have paved shoulders, but they are not continuous. Southeast of Yorkville the highway again enters an area of more rugged terrain, with more hills, curves, and lower speed limits.



SR 128 becomes winding and steep between Boonville and the Sonoma County line (Segment 5).

3.4 Biological Resources

Preparation of this Study included a pre-project screening of potential special-status plant and animal species that could be present in the Study Corridor and identification of potential permits/compliance requirements required for project implementation. Based on biologist review of online environmental databases, it appears there are approximately 28 special-status plant species and 31 special-status animal species with moderate to high likelihood to occur in or near the Study Corridor. Additionally, the potential to encounter wetlands within the Study Corridor is present, as several creeks and other water crossings can be seen from satellite imagery. Appendix A provides a comprehensive list of species known to occur on the project quadrangles, or with potential to occur in the vicinity, and a preliminary pre-project screening of species with moderate to high likelihood to occur on or nearby to the Study Corridor. It also describes the environmental permits and processes that may be required depending on

what resources are suspected or present in the Study Corridor. Figure 3-3 through Figure 3-5 present drainages, wetlands, and areas within the 100-year flood zone along the Study Corridor.

MRC, which has significant land holdings in northwest Anderson Valley, is in the process of developing a Habitat Conservation Plan (HCP) and a Natural Communities Conservation Plan (NCCP). MRC's proposed plan seeks to protect, enhance, and increase habitat for rare, threatened or endangered species covered in the plan; mitigate the impact of land management on covered species; maintain and improve biodiversity on MRC lands; contribute to the recovery of threatened and endangered species; and attain "regulatory certainty" for endangered species management.

The consultant team conducted field investigations of the Study Corridor in January 2014, which helped informed the design concepts presented later in this Study.

3.5 Cultural Resources

Known sensitivity for cultural resources along SR 128 includes both archaeological and ethnographically important areas. Most of the SR 128 ROW was surveyed in 2010 for archaeological sites located on the surface. Cultural resources that were inventoried as part of this survey include Native American gathering areas, potential ethnographic resources, prehistoric sites, and remains of a historic homestead. There is a strong possibility for buried archaeological resources in certain areas along SR 128 and this potential would need to be addressed in any project that is constructed along the route. The study data included consideration of known or suspected areas of cultural resources along the route (which were not displayed due to their sensitivity). Where applicable a "placeholder" budget is provided for archaeological studies and mitigation measures, along with consultation with local Native American Tribes as required to assist in the understanding of how projects could impact traditional or sacred locations.

This page intentionally left blank.

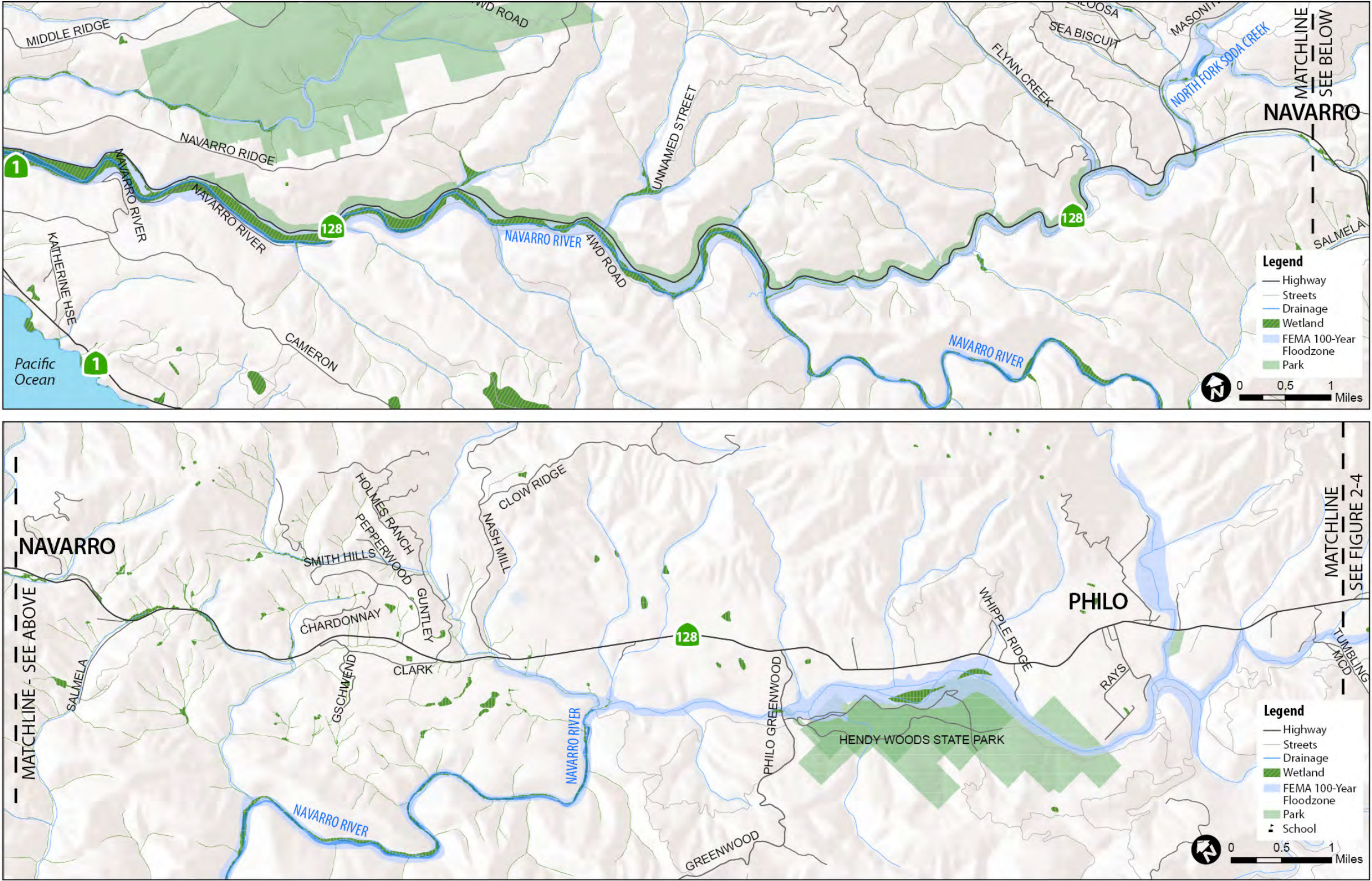


Figure 3-3: Biological Resource Context along Segment 1 (top) and Segment 2 (bottom)

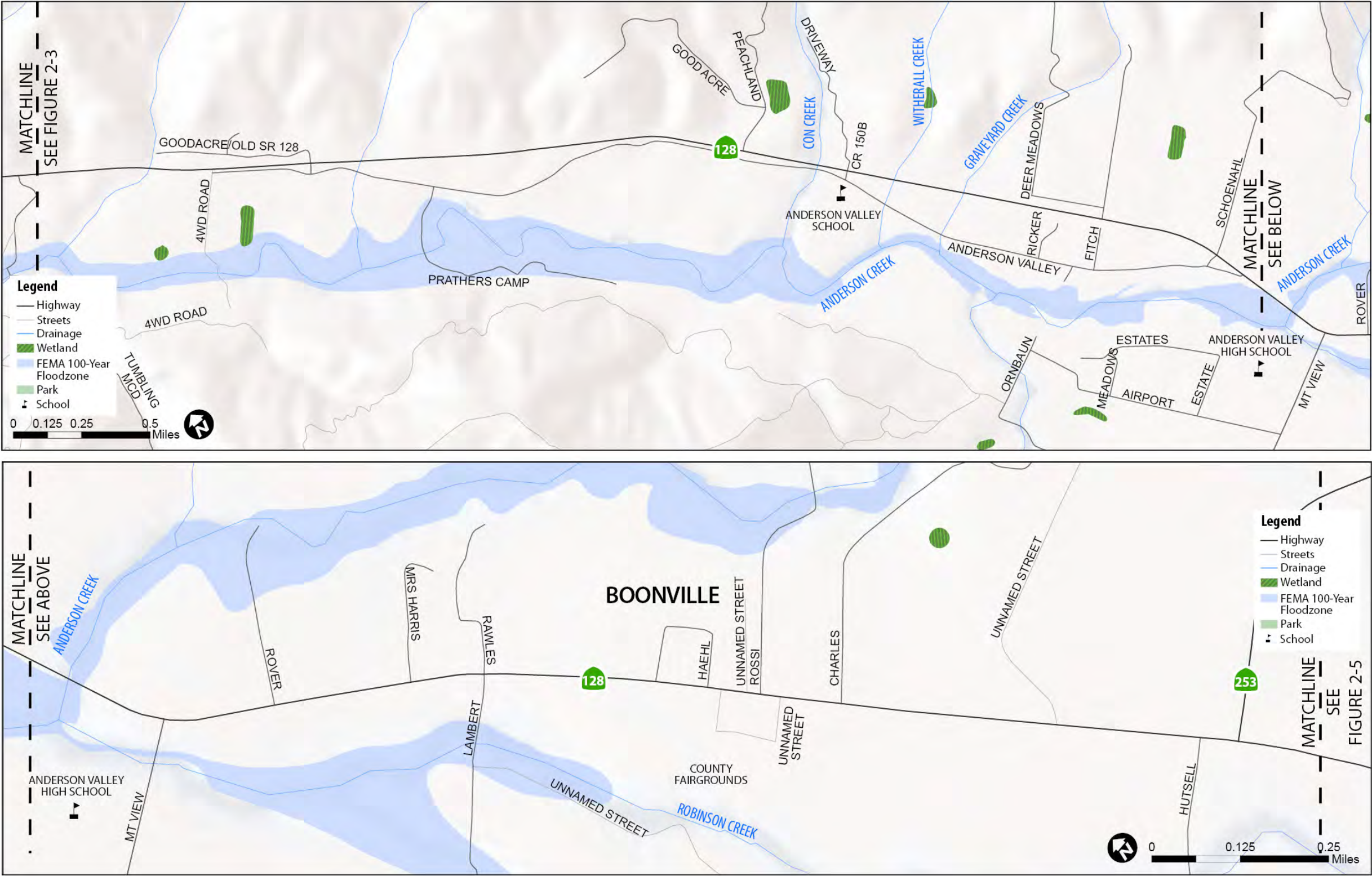


Figure 3-4: Biological Resource Context along Segment 3 (top) and Segment 4 (bottom)

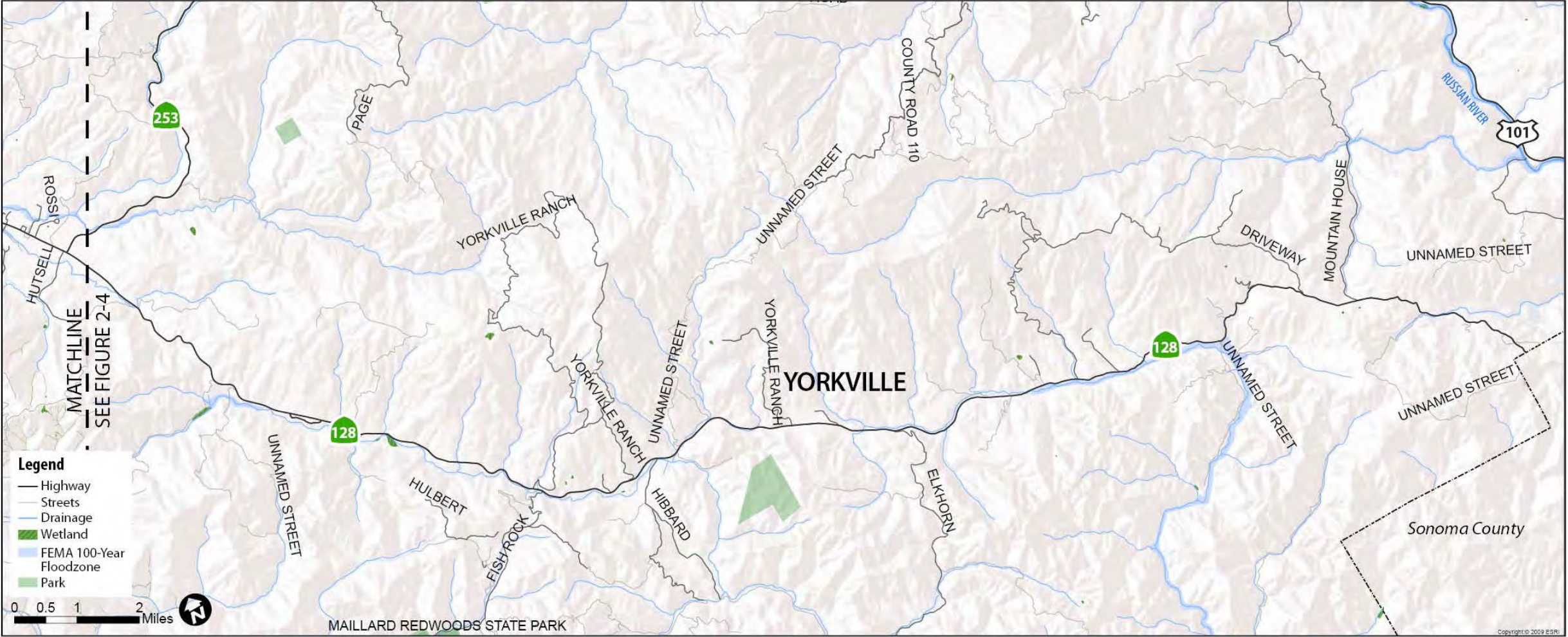


Figure 3-5: Biological Resource Context along Segment 5

This page intentionally left blank.

4 Public Engagement

This section presents a summary of outreach events, meetings, and workshops held to gather community input. **Appendix B** includes meeting notes, a list of stakeholders, and description and examples of outreach materials, flyers, posters, news releases, activities, and events.

4.1 TAG Meetings

The project Technical Advisory Group (TAG) provided input during the preparation of the Study. The TAG consists of representatives from county and state agencies including MCOG, Caltrans, County DOT, and State Parks, as well as stakeholder agencies and groups in the Anderson Valley, including the Valley Trail Coalition, Anderson Valley Community Services District, Anderson Valley Land Trust, and the Navarro River Center.

4.1.1 TAG Meeting #1

TAG Meeting #1 was held on September 19, 2013 in Boonville at the Anderson Valley Community Services District (Fire Station). Participants included representatives from the Hendy Woods Community, State Parks, CSD, Valley Trail Coalition, County DOT, Navarro Vineyards, Anderson Valley Land Trust, Caltrans, MCOG, and the consultant team. At the meeting, the project team introduced the project scope and objectives and discussed the role of the TAG. TAG members described their vision of an ideal trail, which included safety; improved pedestrian and bicycle access to the ocean, rivers, open spaces and transit; and separation from the highway. The TAG then discussed opportunities and constraints for the trail, such as potential destinations and off-highway alignments. The project team then presented the outreach process for review and comment. The TAG provided input on the preferred outreach schedule, potential meeting venues, and groups to contact (e.g., the school district, local land trust, and bike groups).

4.1.2 TAG Meeting #2

TAG Meeting #2 was held on December 12, 2013 at the Boonville Hotel. Participants included representatives from County DOT, Valley Trail Coalition, Navarro Vineyards, Pennyroyal Farms, the Hendy Woods Community, Caltrans, MCOG, and the consultant team. The TAG reviewed a summary of comments from the Workshop #1 series, including the focus groups, Boonville walking assessment, bus tour, and workshop. The project team and TAG discussed the project scope and objectives in light of community comments. The project team presented the proposed analysis approach to be used to develop concept alternatives for review and comment.



4.1.3 TAG Meeting #3

TAG Meeting #3 was held on February 13, 2014 at the Boonville Hotel. Participants included representatives from County DOT, Valley Trail Coalition/Cycked, Navarro Vineyards, the Hendy Woods Community, Anderson Valley Community Services District, Anderson Valley Land Trust, MCRCD/Navarro River Center, Caltrans, MCOG, and the consultant team. The TAG provided comments on the Existing Conditions Report and reviewed the Workshop #2 agenda and project schedule. The project team presented and the TAG provided comment on the preliminary design concepts for each project segment.

4.1.4 TAG Meeting #4

TAG Meeting #4 was held on May 15, 2014 at the Boonville Hotel. Participants included representatives from County DOT, Valley Trail Coalition/Cycked, Navarro Vineyards, Anderson Valley Community Services District, Anderson Valley Land Trust, MCRCD/Navarro River Center, Caltrans, MCOG, and the consultant team. The TAG provided initial comments on the Public Review Draft Report.

4.2 Focus Group Meetings

Prior to Workshop #1 the consultant team met with each Anderson Valley community individually. The listening sessions provided an opportunity for each community to provide specific feedback regarding the improvements they would like to see along the corridor. It was also a chance for them to learn about the project.

4.2.1 Yorkville Listening Session

Approximately 12 community members along with representatives from MCOG, County DOT, and the consultant team met in Yorkville for the Yorkville Listening Session on November 12, 2013. Attendee priorities associated with a trail include safety, access to walking/biking opportunities, and beauty. The group discussed how the lack of shoulders and steep topography make the Yorkville area a constrained segment of SR 128. Attendees voiced concern that improving capacity along “easy” segments of the highway will, in turn, increase the number of cyclists in Yorkville and thus exaggerate this segment of the route’s safety hazard issues, and emphasized that this Study needs to address the entire corridor. There was a strong interest in off-street alignments and it was communicated that many community members would be willing and eager to grant easements for a separated (Class I) trail. The group expressed interest in connecting the trail to wineries and B&Bs in Yorkville to support local businesses and discussed alternative routes such as the one into Lake Sonoma.



Yorkville Listening Session

4.2.2 Boonville Listening Session

Approximately three community members along with representatives from the County Fairgrounds, MCOG, County DOT, Caltrans, the TAG, and the consultant team attended the Boonville Listening Session on November 12, 2013 in Boonville. The group stated interest in a trail from Boonville to the coast, preferably off highway (e.g., Anderson Valley Way and along the Navarro River), and safe connection to schools. Attendees noted that Boonville already has pedestrian and bicycle activity and expressed interest in increasing that activity. They discussed the opportunity to improve the “transition zones” into town to slow traffic and improve bicycle circulation. Attendees voiced concern about the potential for improvements to impact on-highway parking in Boonville. It was noted the Fairgrounds can accommodate parking during non-event times. Fairgrounds representatives discussed the need to maintain internal circulation and restrict access from outside the Fairgrounds property during events, communicating that a route through the Fairgrounds may not be desirable. It was noted there is greater economic development potential associated with routing the trail along SR 128 through Boonville than along a route that takes trail users further from businesses.



Boonville Listening Session



Junior High School Listening Session

4.2.3 Junior High School Students

A representative of the consultant team met with several junior high school students on November 12, 2013. The students stated they don't walk or ride bikes in Philo, but would like to get to Hendy Woods SP from Philo. The students identified places where it is difficult to walk or ride a bicycle and stated they prefer walking and bicycling on Anderson Valley Way instead of on SR 128.



4.2.4 Philo Listening Session

On November 13, 2013, five representatives from MCOG, Caltrans, County DOT, and the consultant team met with approximately five community members in Philo for the Philo Listening Session. Attendees stated an interest in active transportation for valley residents, recreation, safety, and support for local businesses. Attendees stated most walking and biking is done in Hendy Woods SP. They



Philo Listening Session

stated an interest in on- and off-highway trails, including a possible trail along portions of Navarro River and bike lanes along the highway. Some participants expressed an interest in exploring alternate access routes to Hendy Woods SP via Philo. It was stated that business owners would prefer trail users cross the fronts of their properties (e.g., along SR 128) to utilize main public entrances rather than the back of their properties.

4.2.5 Navarro Listening Session

The Navarro Listening Session, held on November 13, 2013 in Navarro, was attended by approximately five community members with representatives from Mendocino Redwood Company (MRC), California State Parks, MCOG, Caltrans, County DOT, the Valley Trail Coalition, local road associations and the consultant team. Common priorities for the trail included safety, preservation of biological and scenic resources, and ability to fund long-term maintenance of the facility. Attendees expressed interest in off-highway trails on private and public land and discussed off-highway routes, such as Flynn Creek Road to Comptche, a possible Big River Trail connection, and Navarro Ridge Road (seasonal use only). It was discussed that an off-highway trail could adversely impact biological resources (namely the second-growth redwoods and fish populations), which should be avoided.



Navarro Listening Session

MRC representatives voiced several concerns related to a possible trail through their properties. MRC's Habitat Conservation Plan imposes restrictions that could affect public use of logging access roads. MRC representatives stated a concern about increased public access associated with increased fire danger, illegal crop grows, and potential conflicts between active management and recreational use. MRC stated the company would consider granting access along the periphery of their properties where there are constraints along SR 128. They stated that any trails on MRC property would require cooperative maintenance agreements and another entity to manage the trail.

The State Parks representatives stated that State Parks must balance public needs with meeting the mission of resource protection. Any trails on State Park land would require maintenance agreements and a dedicated funding source. State Parks will consider trails through Navarro River Redwoods SP and new non-motorized access to Hendy Woods SP.

4.2.6 Boonville Business Owners Meeting

The Boonville Business Owners Meeting, held on February 13, 2014 at Lauren's Restaurant, was attended by approximately nine Boonville business owners, and representatives from MCOG, Caltrans, Hendy Woods Community, AVCSD, the Valley Trail Coalition/Cycked, Anderson Valley Land Trust, and the consultant team. The meeting included a presentation covering the project background, work completed

to date, potential funding sources, and next steps. The consultant team presented the draft design concepts for Boonville, answered questions, and collected input. The potential to reduce onstreet parking compared to existing conditions was a key concern and participants noted that a parking shortage exists during the County Fair. Some participants expressed support for the idea of back-in angled parking while others shared doubts on whether it would work. Participants stated their interest in speed reduction through Boonville and asked about the potential for lowered speed limits, rumble strips, speed humps, raised crosswalks, and speed-feedback signs. The project team discussed limitations to implementing some measures (e.g., speed humps) on a state highway and mentioned how several design elements (e.g., sidewalks with curbs, curb extensions, and street trees) would visually narrow the highway, which has demonstrated traffic calming benefits. Participants expressed interest in seeing how the proposed design would work for each business.

4.3 Boonville Walking Assessment

Approximately ten community members and representatives from MCOG, County DOT, Caltrans, and the consultant team attended the Boonville Walking Assessment on November 12, 2013. Attendees expressed challenges they experience when walking or biking through Boonville along SR 128, such as wrong way bicycling, intermittent sidewalks, and high vehicular traffic speeds. Attendees also discussed potential improvements to downtown Boonville that would have community support.



Boonville Walking Assessment

4.4 Bus Tour

On November 14, 2013, the project team conducted a bus tour of the approximately 5.5-mile portion of SR 128 between Boonville and Philo. Approximately 12 community members with representatives from MCOG, County DOT, Caltrans, and the consultant team attended the tour. Attendees discussed walking and bicycling conditions and opportunities for improvement.



4.5 Community Workshops

4.5.1 Workshop #1

The first workshop was held on November 14, 2013 in Boonville. The workshop was attended by approximately 60 people. The workshop included a presentation on the project scope and objectives, opportunities and constraints along the corridor, and an overview of potential pedestrian and bicycle facility improvements. After the presentation,



Bus Tour

4 | Public Engagement

attendees gathered around design tables with Study Corridor maps to discuss and draw their ideas and considerations.

Attendees expressed support to improve non-motorized access through Boonville and Philo and to schools, Hendy Woods, the rivers and creeks, the County Fairgrounds, and wineries. Attendees also requested consideration of alternate routes (e.g., along Navarro River, Masonite Rd, Nash Mill to Clow Ridge, through the Fairgrounds). Other ideas included implementation of a Class I path from Boonville as far as feasible to the “New” Highway (Segment 3), a safe bike route to Philo from Boonville (as much off road as possible) and signing Anderson Valley Way as a bike route.

4.5.2 Workshop #2

The second workshop was held on March 27, 2014 in Boonville. The workshop was attended by approximately 35 people. The workshop included a presentation summarizing input received during the October and November outreach events and presenting the draft design concepts. After the presentation, attendees gathered around design tables with Study Corridor maps to discuss and provide input on the design concepts.

Attendees expressed general support for the design concepts, particularly the off-highway trail through Segment 1, the Class I bike path and improvements along Anderson Valley Way in Segment 3, and sidewalks and traffic calming in Boonville (Segment 4). Attendees had mixed opinions on the idea of back-in angled parking in downtown Boonville and expressed concern over the potential loss of parking associated with parallel parking in this area. Some attendees felt more comprehensive traffic calming treatments are needed in central Boonville. Attendees stressed the importance of providing a safe facility connecting with Anderson Valley schools. Attendees expressed interest in the off-highway connection to Hendy Woods SP, asking how this connection could happen and who would be responsible for maintaining it.



Community Workshop #1



Community Workshop #2

4.6 Public Review Draft Study

The Public Review Draft Study was made available for review between May 9, 2014 and June 8, 2014. The project team emailed the TAG and the project email list, issued a press release to the media, and posted announcements online to notify the community of the review period and the availability of hard copies of the Study in Boonville, and to provide a link to MCOG's website where they could download the Study. Twenty-one comment letters were received. This section presents a summary of the comments. The comment letters have been provided to MCOG, Caltrans, and County DOT for consideration. However, with the exception of Yorkville Highlands Growers and Vintners Association's (YHGVA's) letter (see **Appendix F**), the comment letters were not included in this Study to protect the privacy of the commenters. YHGVA specifically requested their letter be part of the public record.

Where appropriate, comments have been incorporated into the Final Study. It should be noted that several commenters believed the Study recommended a 51-mile long trail; the Study has been revised to clarify this is not the case.

Key comments on the Public Review Draft Study include:

- Support for the project.
- Concern over potential increase in traffic, roadway widening, tree removal, ecological impacts (including pollution to the Navarro River), and aesthetic impacts associated with a trail.
- Support for a trail in Segments 3 (The "New" Highway) and 4 (Central Boonville).
- Concern over high cost of improvements.
- Concern over high vehicular speeds in Boonville. Request for signs, beacons, and a lower speed limit.
- Support for safety is the most important consideration.
- Request to prioritize connections to schools (specifically, Anderson Valley Elementary and High Schools) as short-range projects.
- Request for a two-way trail along Anderson Valley Way from Tin Man to the Elementary School.
- Request for pedestrian and bicycle improvements across Anderson Creek Bridge and safer crossings of SR 128 for students.
- Support for sidewalks or pedestrian paths for students and senior citizens to access schools, the Senior Center, and Anderson Valley Health Center.
- Insistence that safety improvements along SR 128 through Yorkville be accomplished prior to the development of the Valley Trail west of Segment 5 (see **Appendix F**).
- Desire to evaluate path connections within the Mendocino County ROW along Mt. View Road to the High School, along Anderson Valley Way to the Elementary School, and along Philo-Greenwood Road to Hendy Woods SP as part of the Study.
- Support for the project from members of the Santa Rosa Cycling Association.

This page intentionally left blank.

5 Design Standards

5.1 Overview

This section presents an overview of pedestrian and bicycle facility design standards and guidelines, including applicable Americans with Disabilities Act (ADA), Manual on Uniform Traffic Control Devices (MUTCD), Highway Design Manual (HDM), and American Association of State Highway and Transportation Officials (AASHTO) guidelines, as supplemented by National Association of City Transportation Officials (NACTO) and Federal Highway Administration (FHWA) best practices. The purpose is to provide readers and project designers with an understanding of the potential trail facility types and features.

In California, roadway design, including bikeway design, is governed by the HDM and the California MUTCD, which is based on the Federal Highway Administration's MUTCD. Caltrans uses the CA MUTCD 2012 Edition, which incorporates the Federal Highway Administration's MUTCD 2009 Edition.

Not all of the design treatments described in this section are compliant with the CA MUTCD. In the event that a specific treatment is not in the California MUTCD, it may be necessary to go through experimental testing procedures. Experimental testing is overseen by the California Traffic Control Devices Committee.

The Mendocino County General Plan (2009) requires that bicycle facilities be designed in accordance with the State Bikeway Design Criteria.² The County of Mendocino Road and Development Standards (2008), which applies to any road improvements requiring county approval, identifies walkway width minimums and pavement material standards.³

5.2 References

The following is a list of references and sources utilized to develop these design guidelines.

5.2.1 Federal Guidelines

- 2010 Americans with Disabilities Act (ADA) Standards for Accessible Design, 2010. Department of Justice.
- AASHTO Guide for the Development of Bicycle Facilities,⁴ 1999. American Association of State Highway and Transportation Officials, Washington, D.C.
- AASHTO Guide for the Development of Pedestrian Facilities, 2000. American Association of State Highway and Transportation Officials, Washington, D.C.

² Policy DE-152, Mendocino County General Plan (2009)

³ C.3.F, Mendocino County Road and Development Standards (2008)

⁴ The Guide for the Development of Bicycle Facilities is currently being updated, and the new document cannot be quoted at the time of this writing. However, many of the facilities under consideration for the update are included in these design guidelines.

- AASHTO Policy on Geometric Design of Highways and Streets, 2004. American Association of State Highway and Transportation Officials, Washington, D.C.
- Accessibility Guidelines for Buildings and Facilities, 2002. United States Access Board, Washington, D.C. <http://www.access-board.gov/adaag/html/adaag.htm>
- Americans with Disabilities Act Accessibility Guidelines, (ADAAG), 2002. United States Access Board, Washington D.C.
- Architectural Barriers Act Accessibility Guidelines; Outdoor Developed Areas, 2013. United State Access Board. Washington, D.C.
- Manual on Uniform Traffic Control Devices (MUTCD), 2009. Federal Highway Administration, Washington, D.C.
- Public Rights-of-Way Accessibility Guidelines (PROWAG), 2007. United States Access Board, Washington, D.C.

5.2.2 State and Local Guidelines

- Highway Design Manual (HDM). (2012). California Department of Transportation.
- California Manual of Uniform Traffic Control Devices for Streets and Highways (CAMUTCD). (2012). California Department of Transportation.
- Pedestrian and Bicycle Facilities in California: A Technical Reference and Technology Transfer Synthesis for Caltrans Planners and Engineers. (2005). California Department of Transportation.
- Design Information Bulletin 82-05: Pedestrian Accessibility Guidelines for Highway Projects. (2013). California Department of Transportation.
- ADA Comprehensive Access Plan for the County Maintained Road System. (2010). Mendocino County.

5.2.3 Best Practices Documents

- Designing Sidewalks and Trails for Access. (2001). FHWA.
- Urban Bikeway Design Guide, Second Edition. (2014). National Association of City Transportation Officials (NACTO).
- Safety Effects of Marked Versus Unmarked Crosswalks at Uncontrolled Locations. (2005). FHWA Report HRT-04-100.

5.3 Design Toolbox

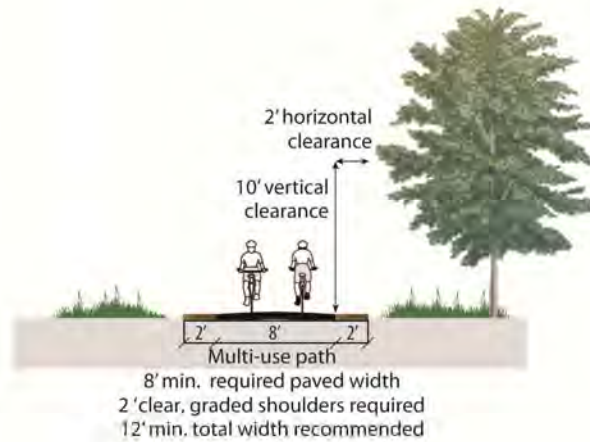
The following tables summarize guidance for the design of pedestrian and bicycle facilities.

Table 5-1: Caltrans Bikeway Design Standards

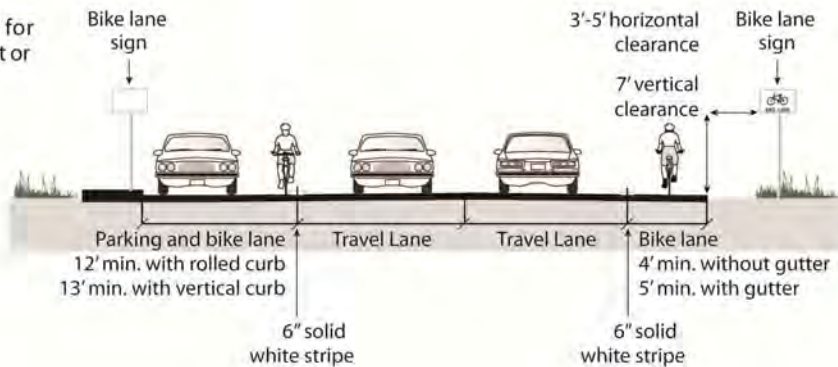
Description	
Caltrans defines three types of bikeways in the Highway Design Manual: Class I/Bike Path, Class II/Bike Lane, and Class III/Bikeways. This document uses the generic terms “bikeway”, “bike lane” and “bike route”.	
Design Summary	
Class I Bike Path Width:	<i>Class I Bike Path</i>
8 feet is the minimum allowed for a two-way bicycle path and is only recommended for low traffic situations.	
10 feet is recommended in most situations and will be adequate for moderate to heavy use.	
12 feet is recommended for heavy use situations with high concentrations of multiple users such as joggers, bicyclists, rollerbladers, and pedestrians. A separate track (5' minimum) can be provided for pedestrian use.	
Class II Bike Lane Width with Adjacent On-Street Parking:	<i>Class II Bike Lane</i>
5' minimum recommended when parking stalls are marked.	
Bike Lane Width without Adjacent Parking:	
4' minimum when no gutter is present (rural road sections).	
5' minimum when adjacent to curb and gutter (3' more than the gutter pan width if the gutter pan is greater than 2').	
Recommended Width: 6' where right-of-way allows.	
Class III Lane Width for Bicycle Route With Wide Outside Lane:	
Fourteen feet (14') minimum is preferred. Fifteen feet (15') should be considered if heavy truck or bus traffic is present. Bike lanes should be considered on roadways with outside lanes wider than 15 feet.	
Guidance	
• Caltrans Highway Design Manual • California MUTCD • AASHTO Guide for the Development of Bicycle Facilities	<i>Class III Bike Route</i>

Table 5-1: Caltrans Bikeway Design Standards (continued)**Recommended Design****CLASS I
Bike Path**

Provides a completely separated right of way for the exclusive use of bicycles and pedestrians with crossflow minimized.

**CLASS II
Bike Lane**

Provides a striped lane for one-way bike travel on a street or highway.

**CLASS III
Bike Route
Signed Shared Roadway**

Provides for shared use with pedestrian or motor vehicle traffic, typically on lower volume roadways.

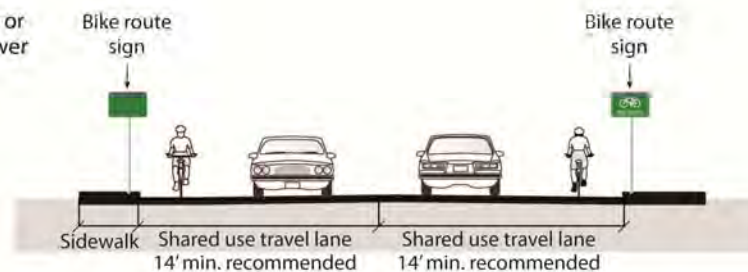


Table 5-2: Class I Bike Path Design Standards

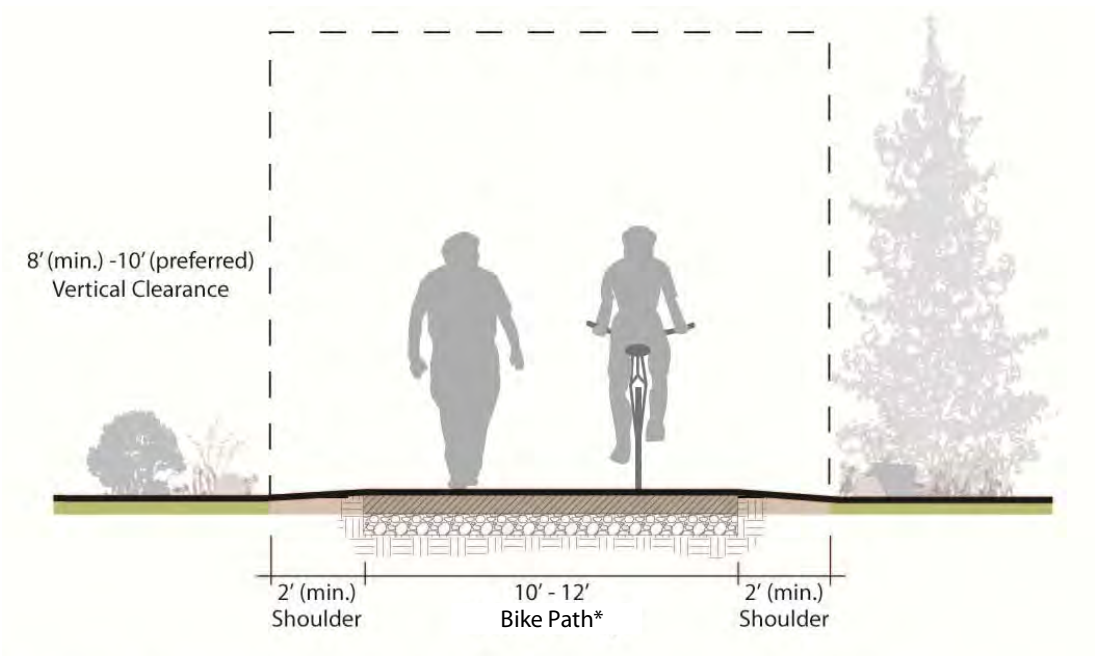
Description
Class I bike paths are facilities with exclusive right-of-way (ROW) for bicycles and pedestrians, with cross flows by motorists minimized. Experience has shown that if significant pedestrian use is anticipated, a completely separate facility for pedestrians is necessary to minimize conflicts. The anticipated range of users and forecast level of use by different user groups should dictate the design of each specific facility. At a minimum, Class I bike paths require a minimum eight-foot-wide paved surface and a minimum of two-foot-wide clear, graded shoulders on both sides. For moderate to high-use segments, a wider paved surface of 10 feet to 12 feet (minimum) should be considered. In areas where a variety of users are expected, expanded unpaved shoulders should be included where possible. Class I bike paths immediately parallel and adjacent to highways must be separated from automobile traffic by a five-foot horizontal separation or a two-foot separation with barrier, per the Caltrans Highway Design Manual. Under certain circumstances, Caltrans may approve exceptions to the Class I bike path design standards.
Graphic
 * Pathway surfacing material to be determined during design development and may include pervious pavement. <i>This graphic is presented to illustrate classification standards and not meant as design guidelines.</i>
Standards
• 10'-12' paved width (8' min.) for a two-way bike path • 12' width where path doubles as an access route for maintenance or emergency vehicles • 2' minimum required clear graded shoulder width on each side, 3' preferred • 8' minimum vertical clearance, 10' preferred • 2% cross slope to facilitate drainage • A grade of 2% or less accommodates the widest range of cyclists and is recommended. A 5% (maximum) grade allowed. Steeper grades can be tolerated for short segments (up to about 500 feet), although design speeds should be increased and path width should allow for additional maneuverability. • The CA MUTCD provides guidance on appropriate signage and controls at trail roadway intersections.

Table 5-3: Buffered Bike Lanes

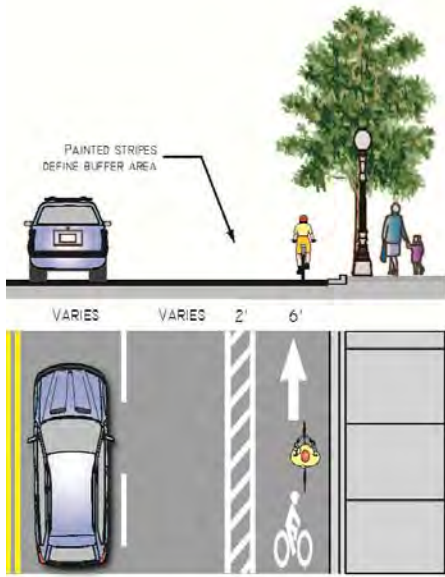
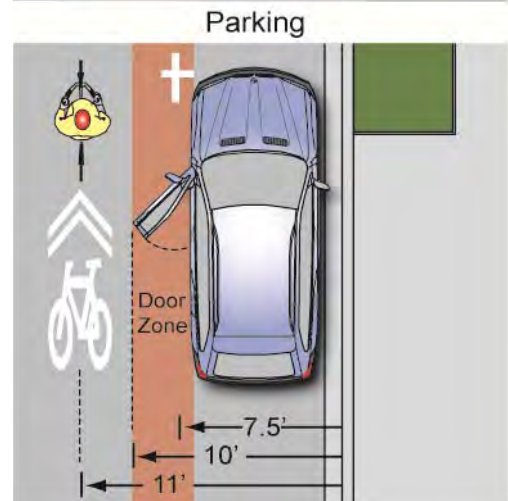
Description	
Bike lanes on high-volume or high-speed roadways can be dangerous or uncomfortable for cyclists, as automobiles pass or are parked too close to bicyclists. Buffered bike lanes are designed to increase the space between the bike lanes and the travel lane or parked cars. This treatment is appropriate on roads with high automobile traffic volumes and speed or high volumes of truck or oversized vehicles, and on bike lanes adjacent to parked cars. If there is a high frequency of right turns by motor vehicles at major intersections, buffer striping should be truncated approaching the intersection. Advantages of buffered bike lanes: • Provides cushion of space to mitigate friction with motor vehicles. • Provides space for cyclists to pass one another without encroaching into the travel lane. • Provides space for cyclists to avoid potential obstacles in the bike lanes, including drainage inlets, manholes, or debris. • Parking side buffer provides cyclists with space to avoid the 'door zone' of parked cars. • Provides motorists greater shy distances from cyclists in the bike lane. Disadvantages / potential hazards: • Requires additional roadway space. • Requires additional maintenance for the buffer striping. • Frequency of parking turnover should be considered prior to installing buffered bike lanes.	 <i>Recommended buffered bike lane design.</i>
Design Summary	
• Width: 6' recommended • Minimum of 2' buffer area	 <i>Buffered bike lanes in San Rafael, CA</i>
Guidance	
• City of Portland, OR Bikeway Design Best Practices for the 2030 Bicycle Master Plan • NACTO Urban Bikeway Design Guide	

Table 5-4: Shared Lane Markings**Description**

Shared lane marking stencils (also called “sharrows”) have been introduced for use in California as an additional treatment for Class III facilities. The stencil can serve a number of purposes, such as making motorists aware of bicycles potentially in their lane, showing bicyclists the direction of travel, and, with proper placement, reminding bicyclists to bike further from parked cars to prevent “dooring” collisions. Placed in a linear pattern along a corridor, shared lane markings also encourage cyclists to ride in a straight line so their movements are predictable to motorists.

**Design Summary**

- Use D11-1 “Bike Route” Sign as specified for shared roadways
- Place shared lane markings in a linear pattern along a corridor (typically every 100’-200’)
- Centered at least 11’ from face of curb (or shoulder edge) on streets with on-street parking
- Centered at least 4’ from face of curb (or shoulder edge) on streets without on-street parking
- Shared lane markings should generally not be placed on roadways with a speed limit over 35 mph (CA MUTCD)
- Marking should be placed immediately after an intersection and spaced at intervals no greater than 250’ thereafter (CA MUTCD)

**Guidance**

- California MUTCD
- AASHTO Guide for the Development of Bicycle Facilities
- NACTO Urban Bikeway Design Guide

Shared lane markings can assist bicyclists with lateral positioning in a shared lane and alert road users of the location bicyclists are likely to occupy within the traveled way

Table 5-5: Recreational Trail Design Standards

Description
Unless designated otherwise, all recreational trails are considered multipurpose pathways. Multipurpose pathways are designed and managed for <u>all</u> types of non-motorized users. Anticipated levels of use, local public opinion, resource sensitivity, and site evaluations should be used to determine whether or not a multipurpose trail is an appropriate solution. These trails, while constructed with native surface materials, provide wide treads and clearances potentially accommodating significant volumes of hikers and bicyclists. The Caltrans Highway Design Manual Chapter 1000, (Section 1003.4) acknowledges that: <i>“Trails are generally, unpaved multipurpose facilities suitable for recreational use by hikers, pedestrians, equestrians, and off-road bicyclists. While many Class I facilities are named as trails (e.g. Iron Horse Regional Trail, San Gabriel River Trail), trails as defined here do not meet Class I bikeways standards and should not be signed as bicycle paths. Where equestrians are expected, a separate equestrian trail should be provided.”</i>
Graphic
 This graphic is presented to illustrate classification standards and not meant as design guidelines.
Standards
• Recreational trail width varies from 4' to 8' • Allowance for passing • Native materials • Obstacles occasionally present • Blockages cleared to define route and protect resources • Prevailing grade five percent, with limited steeper segments • Clearances and turning radius to accommodate all uses

Table 5-6: ADA-Accessible Pathway Design Standards**Description**

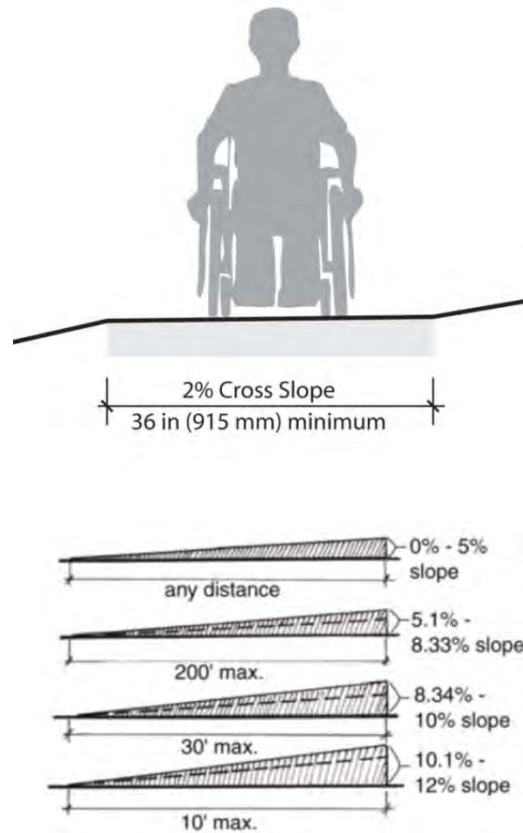
The Americans with Disabilities Act (ADA) requires that public facilities be designed so that people of all abilities can access and use them. Often, local site characteristics present constraints that make meeting ADA guidelines difficult and sometimes prohibitive. The 2013 Architectural Barriers Act Accessibility Guidelines; Outdoor Developed Areas establish accessibility guidelines pursuant to the Architectural Barriers Act (ABA) for camping facilities, picnic facilities, viewing areas, trails, and beach access routes that are constructed or altered by or on behalf of the Federal government. These guidelines also apply to local agencies that are using Federal funds to design or construct a facility.

The technical provisions for ADA-accessible pathways require the surface to be firm and stable, a minimum clear tread width of 36 inches, passing spaces at least 60 inches wide and maximum obstacle heights of 1/2 to 2 inches depending on surface type. Additional provisions address openings, slopes, resting intervals, protruding objects, gates, and barriers.

Caltrans Design Information Bulletin 82-05 (DIB 82-05): Pedestrian Accessibility Guidelines for Highway Projects is the primary reference for Caltrans' ADA guidelines. DIB 82-05 provides design guidance on a number of items, including walkway surface, clear width, vertical clearance, grade, and curb ramps.

California State Parks' Accessibility Guidelines (2009) present principles for providing accessibility within the State Parks. The Guidelines include standards and recommendations for numerous facilities common to parks, including pathways. As stated in the Guidelines, every effort should be made to install and maintain accessible pathways. To this end, the Guidelines contain standards for accessible pathways such as maximum running slopes, minimum width and frequency of resting spaces, maximum acceptable gaps in the pathway surface, optimal clearances and signage requirements. The Guidelines further state that accessible pathways should represent the most significant features and environmental experiences unique to the area.

The following table represents the best practices as outlined by the California State Parks Accessibility guidelines and the U.S. Access Board's Architectural Barriers Act Accessibility Guidelines; Outdoor Developed Areas.



Trail gradients as recommended by the California State Parks Accessibility Guidelines

Table 5-6: ADA-Accessible Pathway Design Standards (continued)

Standards		
Item	Recommended Treatment	Purpose
Pathway Surface	Hard surface such as asphalt, concrete, wood, compacted gravel	Provide smooth surface that accommodates wheelchairs
Pathway Gradient (running slope)	5% maximum without landings 8.33% maximum with landings 10% maximum for a distance of 30 feet 12% maximum for a distance of 10 feet	Greater than 5% is too strenuous for wheelchair users
Pathway Cross Slope	2% maximum	Provide positive pathway drainage, avoid excessive gravitational pull to side of trail
Pathway Width	36" minimum, 60" passing areas	Accommodate a wide variety of users and allows for the passage of two wheelchairs
Pathway amenities, phones, drinking fountains and pedestrian-actuated buttons	Place no higher than 4' off ground	Provide access within reach of wheelchair users
Detectable pavement changes at curb ramp approaches	Place at top of ramp before entering roadways	Provide visual and/or tactile queues for visually impaired users
Trailhead Signage	Accessibility information such as pathway gradient/profile, distances, tread conditions, location of drinking fountains and rest stops	User convenience and safety
Parking	Provide at least one accessible parking area per every 25 vehicles spaces at each trailhead	User convenience and safety
Rest Areas	On pathways specifically designated as accessible, provide rest areas or widened areas on the pathway optimally at every 300 feet	User convenience and safety

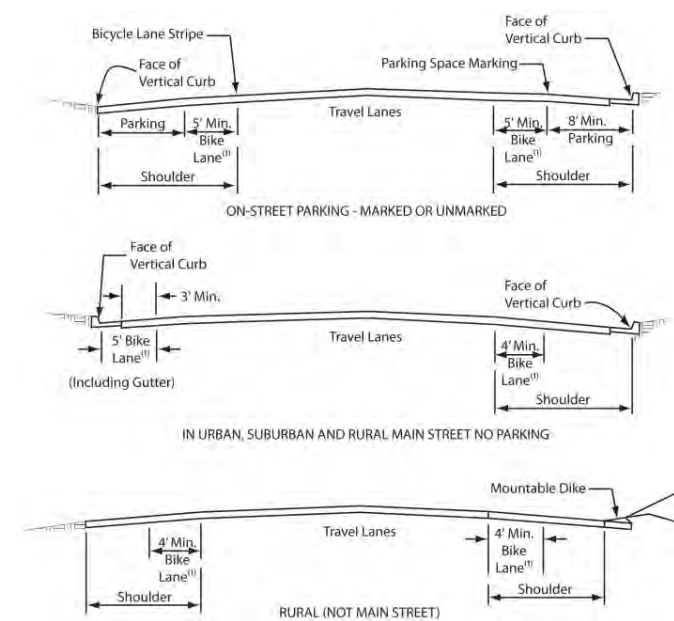
Table 5-7: Highway Shoulders**Discussion**

The design of bike route improvements that would widen SR 128 shoulders and design of a potential parallel trail or other pedestrian facility in the right-of-way raise important policy issues for Caltrans and the Mendocino Council of Governments (MCOG). These issues become particularly important for the design of bridge structures. The agencies' policies are in conflict in some respects, and resolving the specific acceptable design requires inter-agency discussions. Consensus on a preferred design is often only feasible on a project-specific basis.

Per the Caltrans District 1 Route 128 Corridor Route Concept Report, current rehabilitation standards (3R) in the Caltrans HDM indicate that SR 128 is not wide enough to permit rehabilitation at present width over most segments. Widening segments, which do not meet 3R width standards is generally not considered prudent for the following reasons: high costs, the existing vertical and horizontal alignment does not meet current standards, and anticipated significant environmental impacts.



The design of bike route improvements that would widen SR 128 shoulders raises important policy issues

Standards

Caltrans Standards for Class II Bike Lanes on Rural Highways (Figure 301.2A)

Design Summary

The Caltrans HDM states that the standard minimum shoulder width for all state highways is 8 feet of paved shoulder (Table 302.1 Mandatory Standards for Paved Shoulder Widths on Highways)⁵. Table 302.1 states that shoulders adjacent to abutment walls, retaining walls in cut locations, and noise barriers must be a minimum of 10 feet wide.

Per Caltrans Design Information Bulletin 79-03, for resurfacing, restoration, and rehabilitation projects (3R projects) on two-lane conventional highways, standards for shoulder widths are based on traffic volumes (Average Daily Traffic or ADT) as follows:

- On a highway: 4-foot shoulders where there is up to 3,000 ADT and 8-foot shoulders when the ADT is above 3,000.
- On a bridge: 4-foot shoulders where there is up to 1,000 ADT and 8 foot shoulders when the ADT is above 1,000.

Guidance

- Caltrans Design Information Bulletin 79-03, in Table 2
- Caltrans Highway Design Manual, Table 302.1, Footnote 8

⁵ The exception is a 4-foot minimum shoulder on a slow-moving vehicle lane, such as a climbing or passing lane section only. California HDM Section 301.2(1) specifies that where bike lanes are present, shoulders must be a minimum of 4 feet wide, except adjacent to on-street parking (minimum 5 feet) or where posted speeds are greater than 40 mph (6 feet required).

Table 5-8: Clear Recovery Zone

Description
The Clear Recovery Zone (CRZ) is addressed under topic 309-Clearances in the California HDM. CRZ widths are identified for the specific type of roadway facility. For Conventional Highways, the CRZ is 20 feet. Note: Clear recovery zone widths do not apply to conventional highways with posted speeds less than or equal to 40 miles per hour. When the standard CRZ widths are “impractical,” the HDM provides guidance for minimum clearances for all objects that are closer to the edge of traveled way than the clear recovery zone distance⁶ as follows: • Walls: Minimum 10 feet • Conventional highways without curbs: standard shoulder width or minimum four feet when shoulder is less than four feet wide When a Class I Bike Path is closer than five feet from the edge of the shoulder and is within the CRZ, a physical barrier is required. The separation is unpaved and does not include curbs or sidewalks. Separations less than 10 feet from the edge of the shoulder shall include landscaping or other features that provide a continuous obstacle to prevent bicyclists from encroaching onto the highway. Suitable obstacles may include fences or dense shrubs if speeds are less than 45 miles per hour. Low obstacles or intermittent obstacles (e.g., curbs, dikes, raised traffic bars, posts connected by cable or wire, flexible channelizers, etc.) shall not be used because bicyclists could fall over them into the roadway.⁷

⁶ 309.1 (3) Minimum Clearances

⁷ 1003.1(6) Bike Paths Parallel and Adjacent to Streets and Highways

6 Evaluation Criteria

The project team used a well-established design criteria system, with TAG concurrence, for identifying and evaluating trail, bikeway, and pedestrian improvement options. Potential ranking criteria include:

- **Safety (existing conflicts between bicyclists, pedestrians, and cars).** Documented bike and pedestrian accidents.
- **Conformance with Existing Plans and Standards.** Review of relevant county planning documents as described in this document, as well as the Caltrans Highway Design Manual (HDM) and the American Association of State Highway and Transportation Officials (AASHTO).
- **Existing Conditions within the ROW.** Physical conditions that tend to be less safe, such as steep hills, horizontal curves (especially with limited line-of-sight), areas with higher posted speed limits, and areas with high traffic volumes; input from public and stakeholders about unsafe locations.
- **Community Priorities.** Community input was received during meetings with the Technical Advisory Group, stakeholder listening sessions, and community workshops.
- **Environmental Justice.** Improving non-motorized travel for under-served portions of the population including school children (safe routes to school) and the Hispanic community.
- **Environmental Impact.** Avoiding or minimizing impact or conflict with sensitive resources and associated potential implementation costs or “fatal flaws”.
- **Impact on Adjacent Land Uses.** Logging, agriculture, viticulture, and other land uses requiring heavy machinery, tend to conflict with recreational trail use.
- **Security.** Visibility and sight-lines in-to and out-from the trail corridor.
- **Right-of-Way Needs.** Availability of land directly adjacent to SR 128 for potential bicycle and pedestrian improvements.
- **Cost/Constructability.** Existing physical conditions that present opportunities and constraints for wider shoulders and a parallel trail, and the approximate estimated cost of the improvements.
- **Usage and Connections (Appeal to Different User Groups and Abilities).** Commuter routes and other frequently used routes. Routes between communities; access to destinations (e.g. parks, schools that are otherwise isolated).
- **Traffic Impacts.** Review of existing traffic count data along SR 128.

This page intentionally left blank.

7 Design Concepts

This section identifies potential multi-use non-motorized trail route and improvement options. The design concepts seek to address gaps and challenge areas in pedestrian and bicycle accommodation and connectivity along the highway corridor. They respond to the standards and criteria established with the TAG. The design concepts vary by segment, in response to site conditions along SR 128, adjoining land uses, and community preferences. They also vary in the level of detail of design, and the nature of the planning or design product, in response to the length and complexity of the segments, and ability to resolve design details within the context of the Study. See **Figure 1-1** for segment extents.

The majority of improvements recommended in this Study are located within State right-of-way (ROW). Where an improvement is recommended outside State ROW such that access acquisition over one or multiple private properties would be needed, that need is identified by Segment in this Chapter. Where access acquisition over private properties would be needed for project implementation, access would only be acquired on a willing-seller basis.

7.1 Segment 1: The Redwoods (Post Mile 1 – Post Mile 14)

The vision for this segment expressed by the community was a trail along the Navarro River separated from the highway, rather than widened shoulders. Such widening would be very challenging in many locations due to dense redwood trees and rugged topography. The design concept for Segment 1 is a 4- to 8-foot wide off-highway trail generally within California State Parks property on the south side of SR 128. The recreational trail would wind through the redwood trees, to minimize tree loss and cut and fill (see **Figure 7-1** Cross Section 1A and **Figure 7-2**). General public and stakeholder preference is for a paved trail to facilitate year-round pedestrian and bicycle use, and minimize maintenance needs. The trail would pass through a second-growth redwood forest, and trail surfacing and subgrade design options that minimize potential impacts to this sensitive resource (e.g., minimize impact on roots, soil compaction and surface run-off) are recommended.

For user safety, the trail should be located within sight distance of the highway. The 8-foot minimum width, a 65-foot minimum turn radius, and a 5% maximum grade are recommended to comply with Caltrans Class I bike path standards. However, due to the constraints of trees, topography, and other factors, it is anticipated that the width, gradient and curve radii will need to depart from these standards.

Several locations along the potential trail route are susceptible to flooding. Special design and maintenance consideration will be required to maximize the preservation of the trail and minimize potential maintenance needs associated with flooding.

In constrained areas, typically where the river and highway are in close proximity with significant side slopes (see areas circled in red on **Figure 7-1**), the trail would narrow, be located closer to the highway, and include barriers and railings consistent with Caltrans and ADA design guidelines (see **Figure 7-1** Cross Section 1B). Rub rails (smooth, flat panels attached to the insides of railings) are recommended to help keep trail users and their gear from catching railing members (see **Figure 7-3**).

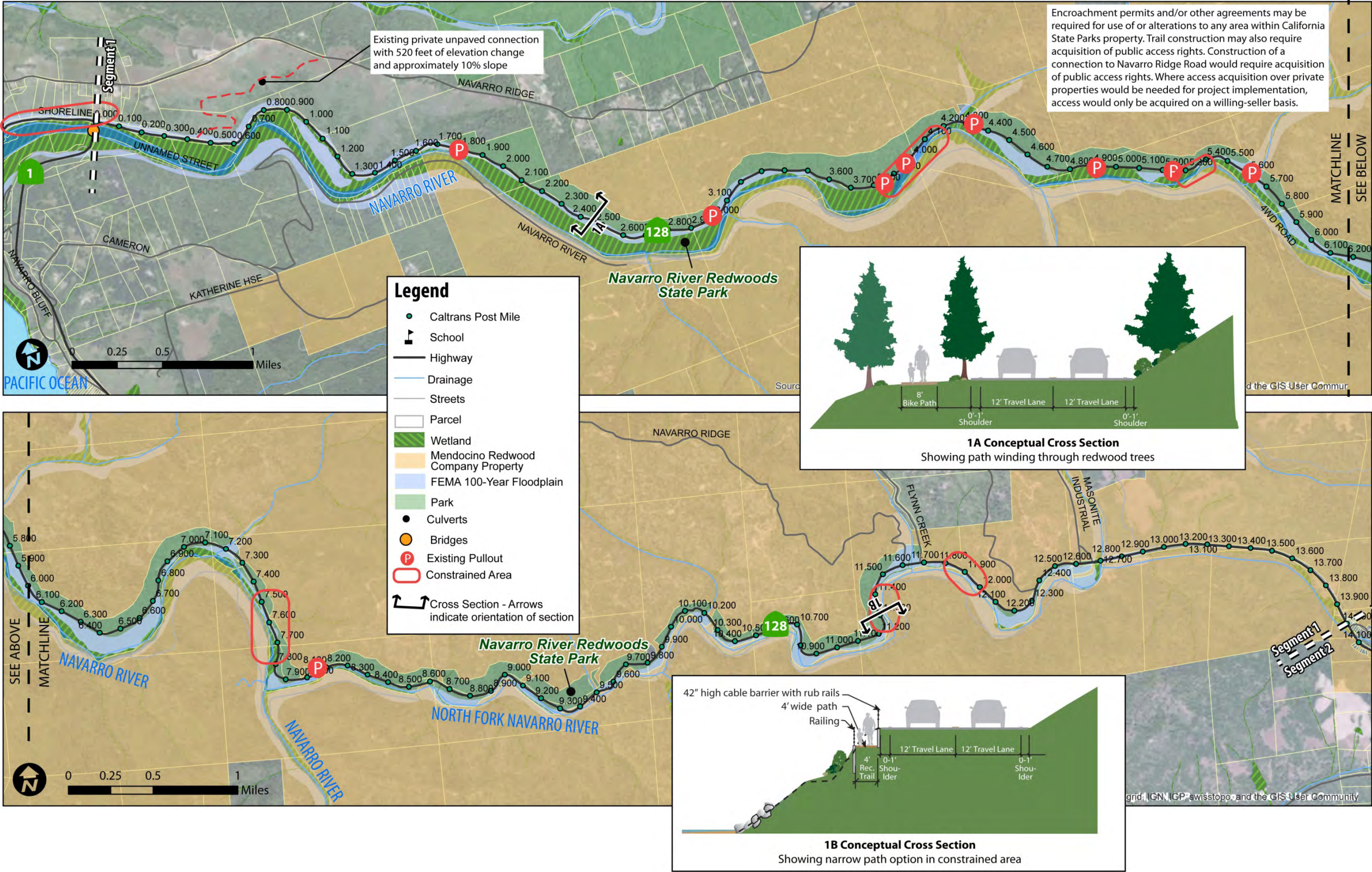
7 | Design Concepts

Encroachment permits and/or other agreements may be required for use of or alterations to any area within California State Parks property.

A trail that extends through the central portions of MRC's properties is not recommended due to safety, management, and environmental concerns associated with routing the public through active timberlands or areas that are subject to environmental restoration and protection. However, MRC representatives have stated a willingness to consider encroachments onto MRC property near property lines shared with Caltrans or California State Parks, where the encroachment would facilitate access through a constrained area.

Though outside of the study area, it should be noted that conditions along SR 1 west of the SR 128/SR 1 junction are highly constrained, with virtually no space to construct a trail off the highway. An alternative to continuing west along SR 1 could be to connect to Navarro Ridge Road. This would require acquisition of public access rights across one or more private parcels; for example an existing private unpaved roadway (see **Figure 7-1**) that features a 520-foot elevation change and approximate 10 percent slope. Once on Navarro Ridge Road, pedestrians and bicyclists could continue west to the shoreline and other destinations along SR 1, such as the adjacent community of Albion, and Mendocino to the north.

Segment 1 includes several pullouts, which facilitate passing of slower-moving vehicles along the two-lane highway. These pullouts present an opportunity for improvement to include parking for trail access. **Figure 7-4** presents a conceptual design for an approximately 30-foot wide pullout that includes an 8-foot wide parking aisle and additional width to facilitate getting into and out of vehicles. Selection of which pullouts would include parking should consider potential environmental impacts (e.g., tree impacts and earthworks needs), the ability to provide direct access to the trail, and adequate sightlines along SR 128. Any modified or new pullouts would need to meet Caltrans design standards.



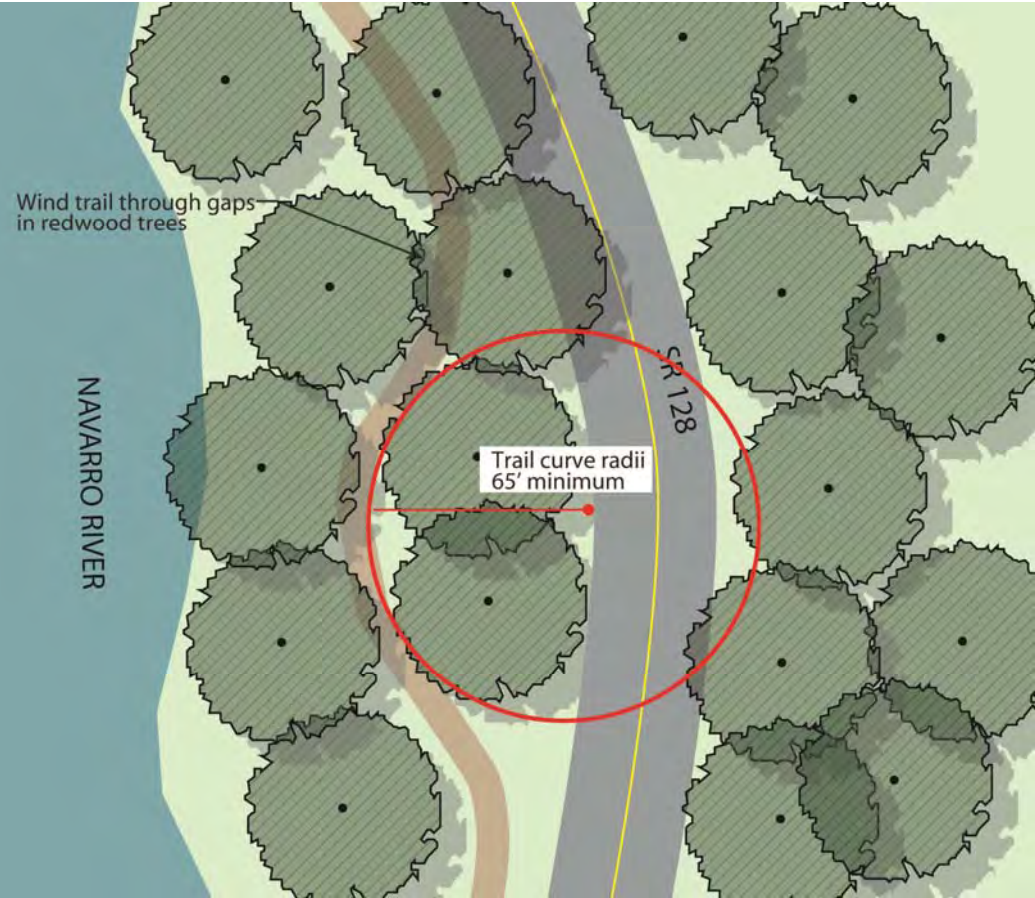


Figure 7-2: Conceptual Trail Alignment Through Redwoods



Figure 7-3: Rub Rail
Rub rails (smooth, flat panels that attach to the insides of railings) are recommended where railings are included along the trail. Rub rails keep trail users and their gear from catching railing members.
Photo source: <http://www.fhwa.dot.gov>

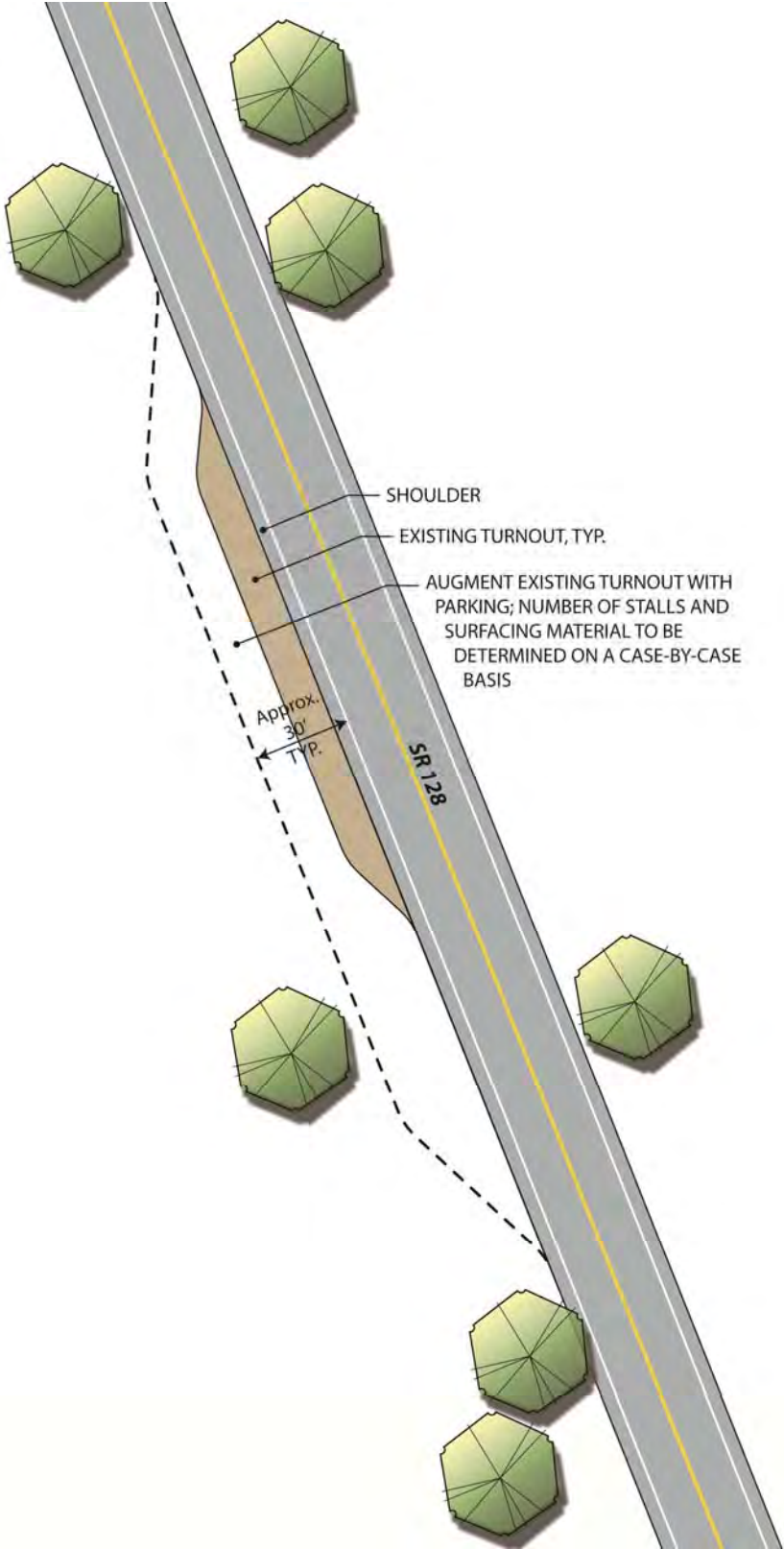


Figure 7-4: Conceptual Minor Trailhead

7.2 Segment 2: Upper Valley (PM 14 – PM 24.4)

The general improvement design concept for Segment 2 is to provide 4-foot wide paved shoulders with 2-foot wide unpaved shoulders or buffers concentrated on the south side of the highway to accommodate pedestrian connections between Philo and Hendy Woods State Park. Because the improvement concept involved widening the highway, it lent itself to a GIS-based analysis, design and cost estimating methodology developed by the consultants for use on long highway corridors.

7.2.1 GIS and Field Analysis Methodology

This section presents a summary of the analysis methodology prepared to assess feasibility of providing the design concept. Appendix C presents a detailed description of the analysis methodology.

GIS and Caltrans Data

The feasibility assessment for providing the design concept in Segments 2 and 5 is based on Geographic Information System (GIS) data collected from field inventory; inventory conducted using Google Earth and Streetview; and data from Caltrans, Mendocino County, Google Maps, and other public sources.

Field Data

The field data for Segments 2 and 5 were collected by driving the corridor using tablet computers to input observations of the civil engineer and biologist. This planning-level assessment did not include point-specific data collection, given the many factors being inventoried over a 31.7-mile area. The Study Corridor was divided into 1/5-mile segments, and the relative presence or absence of the relevant conditions was assessed and recorded in an Excel table. Each condition was assigned a value in the table such that an overall score is generated for the feasibility and cost of improving that 1/5-mile segment. The assessment table has separate tabs with conditions for the northbound (NB) or east side of the highway, and the southbound (SB) or west side of the highway. Table 7-1 presents definitions and examples of the conditions that were observed. The most significant factors were the existing available width of paved shoulder and the adjacent topography; whether flat, gentle or steep. The latter conditions were classified into three types – A, B, and C, illustrated at the end of the table. A set of corresponding engineered cross-sections and unit cost estimates provided the basis for estimating the cost of widening the highway on each side in each 1/5-mile segment.

Table 7-1: Field Data Category Descriptions

Column	Coding Guide*	Example Photo
Physical Factors		
Key_ID	1/5-Mile Segment	
Guardrails	At least 25 linear feet of guardrail was present in this segment	
Culvert	The total number of culverts present in each segment were divided by the segment mileage to determine how many culverts are present in each 1/5-mile segment.	 
Ditches and Parallel Drainages	At least 25 linear feet of parallel ditch or drainage was present in this segment	
Creek or Stream	At least 25 linear feet of parallel creek or stream was present in this segment Widening shoulder would impact creek bank	 

Column	Coding Guide*	Example Photo
Slope Stabilization / Riprap	At least 25 linear feet of slope stabilization/riprap was present in this segment	
Retaining Walls	At least 25 linear feet of a retaining wall was present in this segment	
Steep Driveways (Conform Needed)	At least one steep driveway with little or no flat run-out was present in this segment	
Dense Tree Cover – Redwoods	At least 10 redwood trees (>24"DBH) in this segment	 

7 | Design Concepts

Moderate Tree Cover - Redwoods	At least two redwood trees (>24"DBH) in this segment	
Other Significant Trees/Dense Vegetation	At least two other significant trees (>18"DBH) in this segment	
Requires Right-of-Way Acquisition	The alignment passes through private property in this segment	
Bridges - (Existing) Pedestrian Facilities - 4' Min. Sidewalks	Number of bridges with a min. 4-foot wide sidewalk present in this segment	
Bridges - (Existing) Bicycle Facilities - 5' Min. Shoulders	Number of bridges with min. 5-foot wide shoulders present in this segment	

Bridges - Length	Total linear feet of bridge in this segment	
Type A	0%-40% slope directly adjacent to paved shoulder Minimal grading required to widen shoulder	
Type B	40%-100% slope directly adjacent to paved shoulder Moderate grading required to widen shoulder	
Type C	>100% slope directly adjacent to paved shoulder Significant grading required to widen shoulder. May require viaduct or cantilevered structures	
Shoulder Width	0' – encompasses paved shoulder of 0'-1' width 3' – encompasses paved shoulder of 1'-8' width 8' – encompasses paved shoulder of >8' width	
* Parameters for physical factors potentially impacted by widening for pedestrian and/or bicycle facilities.		

Biological/Environmental Field Inventory Notes

The following categories were assessed by biologists in the field, and recorded as a yes/no regarding their presence in each 1/5-segment:

- Potential wetland
- Observed wetland
- Potential riparian
- Observed riparian
- Observed creeks or drainages

Potential Impacts to Cultural and Historic Resources

Information was provided by a Caltrans archaeologist indicating whether cultural and historic resources may be present within each 1/5-mile segment along State Route 128.

7.2.2 Analysis Results

Figure 7-5 presents the resulting opportunities and constraints to widen the shoulders to provide a 4-foot paved shoulder and 2-foot unpaved clear area along Segment 2. This figure reflects the cumulative cost/scores of the conditions and constraints factors for each 1-5 mile of the highway, including existing shoulder width, adjacent slopes types and severity, various types of obstructions, and various types of environmental resources. The analysis has separate, color-coded results for each side of the highway, as follows:

- **Blue segments** represent areas that are already improved to the desired standard. No further widening or improvements are necessary.
- **Green segments** represent areas where it would be relatively simple to widen the shoulder. Minor grading, vegetation removal and drainage improvements would be required (see Figure 7-6). The cost range for green segments per 1/5-mile is less than \$115,000, or less than \$575,000 per mile.
- **Yellow segments** represent areas where it would be moderately complex to widen the shoulder. Moderate grading, vegetation removal and drainage improvements would be required (see Figure 7-6). The cost range for yellow segments per 1/5-mile is between \$115,000 and \$1 million per 1/5-mile, or \$1 million to \$5 million per mile.
- **Red segments** represent areas where it would be very complex to widen the shoulder. Major grading, vegetation removal, and drainage improvements would be required. Retaining walls would also need to be constructed (see Figure 7-6). The cost range for red segments per 1/5-mile is greater than \$1 million per 1/5-mile, or greater than \$5 million per mile.

The cost estimates generated by the GIS analysis spreadsheet (explained in detail in Appendix D) are necessarily very high-level and conservative overall, though they are quite detailed and realistic relative to the assumed improvements that are assigned per 1/5-mile. Using the data in the GIS spreadsheet and associated map files, future trail planners could prepare a more detailed evaluation, conceptual plan and cost estimate for any portion of the route that is chosen as a focused project area, which could result in a refined design and reduced cost.

Segment 2 does not include any 1/5-mile long areas currently meeting the design concept (which would be highlighted in blue). The analysis found that the majority of the Segment comprises green segments; areas where it would be relatively simple to widen the shoulders. Shoulders in certain locations (e.g., near river crossings) would be moderately complex to construct. In other locations (e.g., where long stretches of the highway have steep side slopes), it would be very complex to widen the shoulders.

7.2.3 Additional Potential Connections and Improvements

There was discussion and study of other improvements in Segment 2 in addition to the field and GIS-based analysis of widening the highway shoulders.

Bridge and Highway Improvements

Public comment during the bus tour and subsequent workshops highlighted the need for widening or replacement of the Indian Creek Bridge, just east of the community of Philo. The current bridge has minimal 1- to 2-foot shoulders and sidewalks, and is in a potentially important route between Philo and Indian Creek County Park. This bridge replacement is not included in the trail cost estimates as it is considered a highway improvement project. The highway west of the bridge has steep embankments on either side with little or no shoulder, and was mentioned in public comment as another priority for improvement. The analysis results include concepts and costs for retaining walls to provide clearance for wide shoulders.

Trailheads

Public input suggested that one or more trailheads in Segment 2 to provide parking could facilitate access to the improved shoulders in Segment 2 and the potential adjoining trails in Segments 1 and 3. **Figure 7-7** presents a conceptual trailhead design, which includes a consolidated driveway off SR 128, several standard parking stalls, one handicap parking stall, a prefab concrete toilet, and a map board. This type of trailhead is referred to as a major trailhead. The actual design and location of any trailheads would be determined at a later design phase.

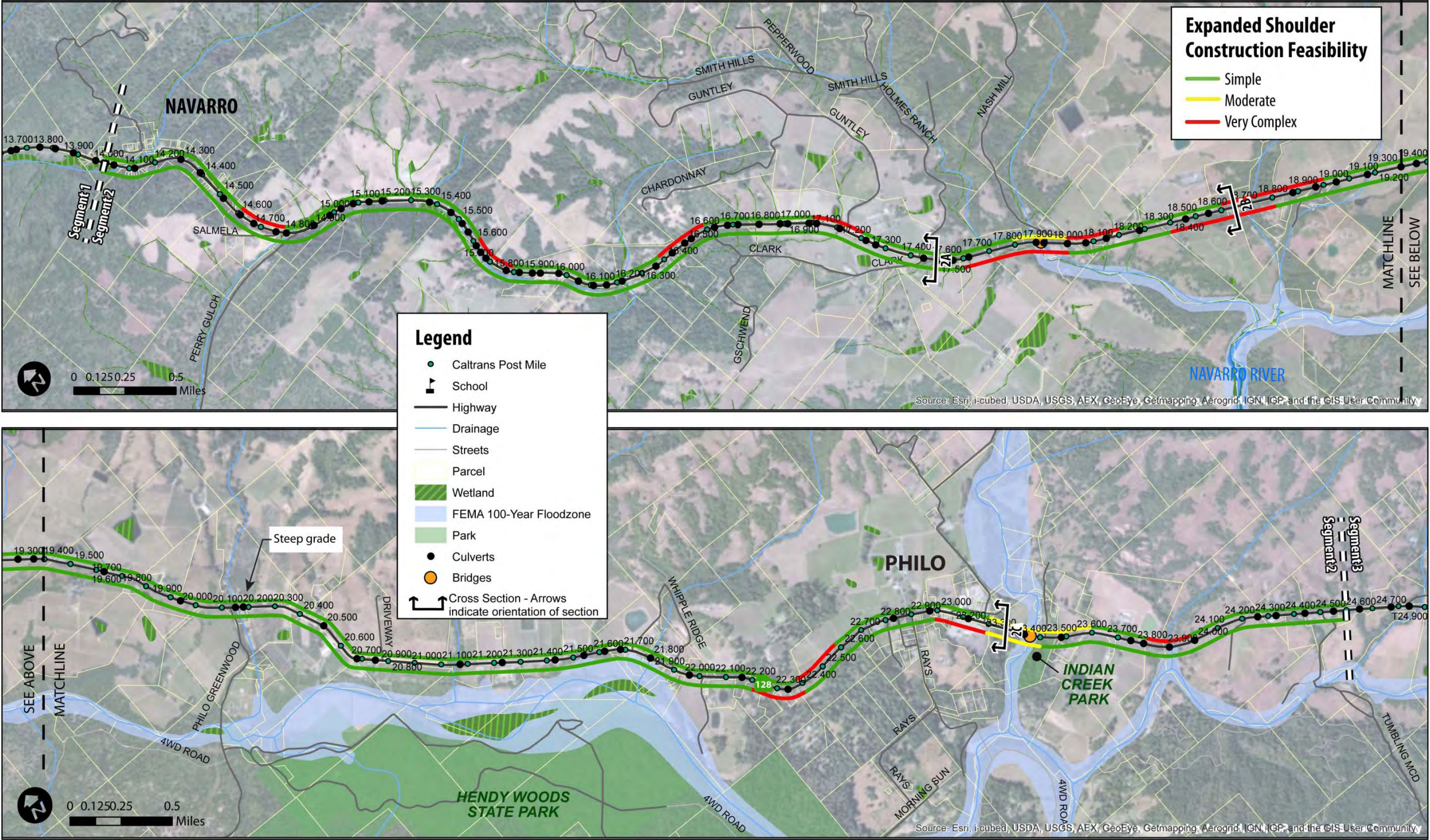
Philo-Hendy Woods SP Connection

Community members expressed a desire for improved pedestrian and bicycle access between Hendy Woods SP and Philo. Philo residents must drive approximately 3.5 miles on SR 128 and utilize Philo-Greenwood Road to reach the park entrance. A connection from Philo to the southeast side of Hendy Woods SP could reduce the distance traveled to approximately one mile. SP staff have stated they are amenable to non-motorized access to the southeast side of the park.

Figure 7-8 shows the area between Philo and Hendy Woods SP, including public and private roadways and parcel lines. A connection would require acquisition of public access as the several potential routes pass through private properties. Ideally the accessway would connect with central Philo, where housing densities are highest and so as to provide an off-highway connection, which is anticipated to appeal to a greater number of pedestrians and bicyclists (i.e., those who may not feel comfortable walking or bicycling along the highway shoulders). The current study does not propose a specific route; it would be up to local individuals and organizations such as the Valley Trail Coalition to investigate, make contact

7 | Design Concepts

with property owners, raise funds, and negotiate for the purchase of easement(s) to allow for the construction of this connection, along with, presumably, a new bicycle/pedestrian bridge over the Navarro River. Encroachment permits and/or other agreements may be required for use of or alterations to any area within Hendy Woods SP. The cost for this long-term conceptual project is not estimated in the current study, which is focused on improvements in the highway ROW.



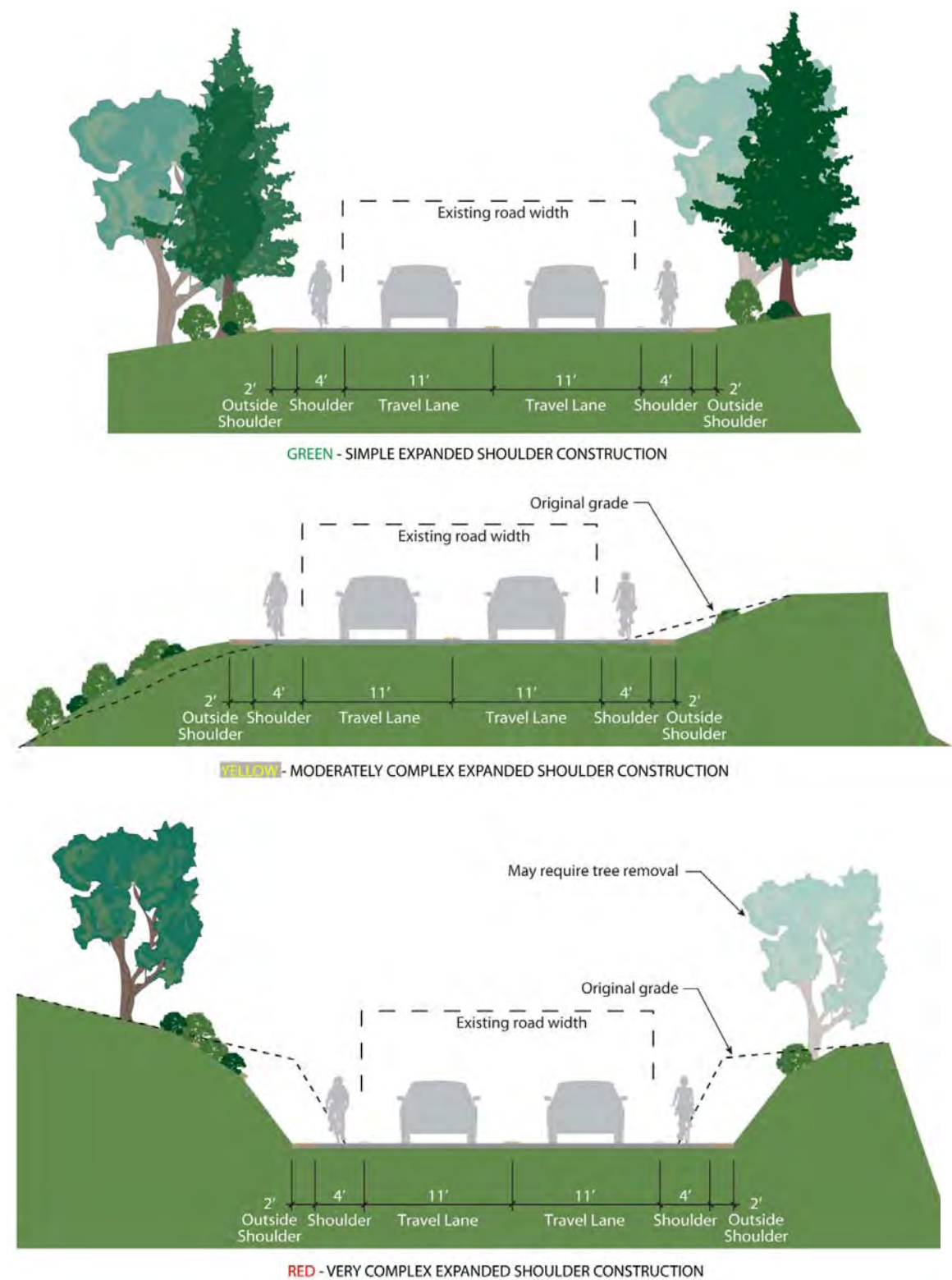


Figure 7-6: Conceptual Cross Sections Showing Cut and Fill Along SR 128 (Segment 2: Upper Valley)

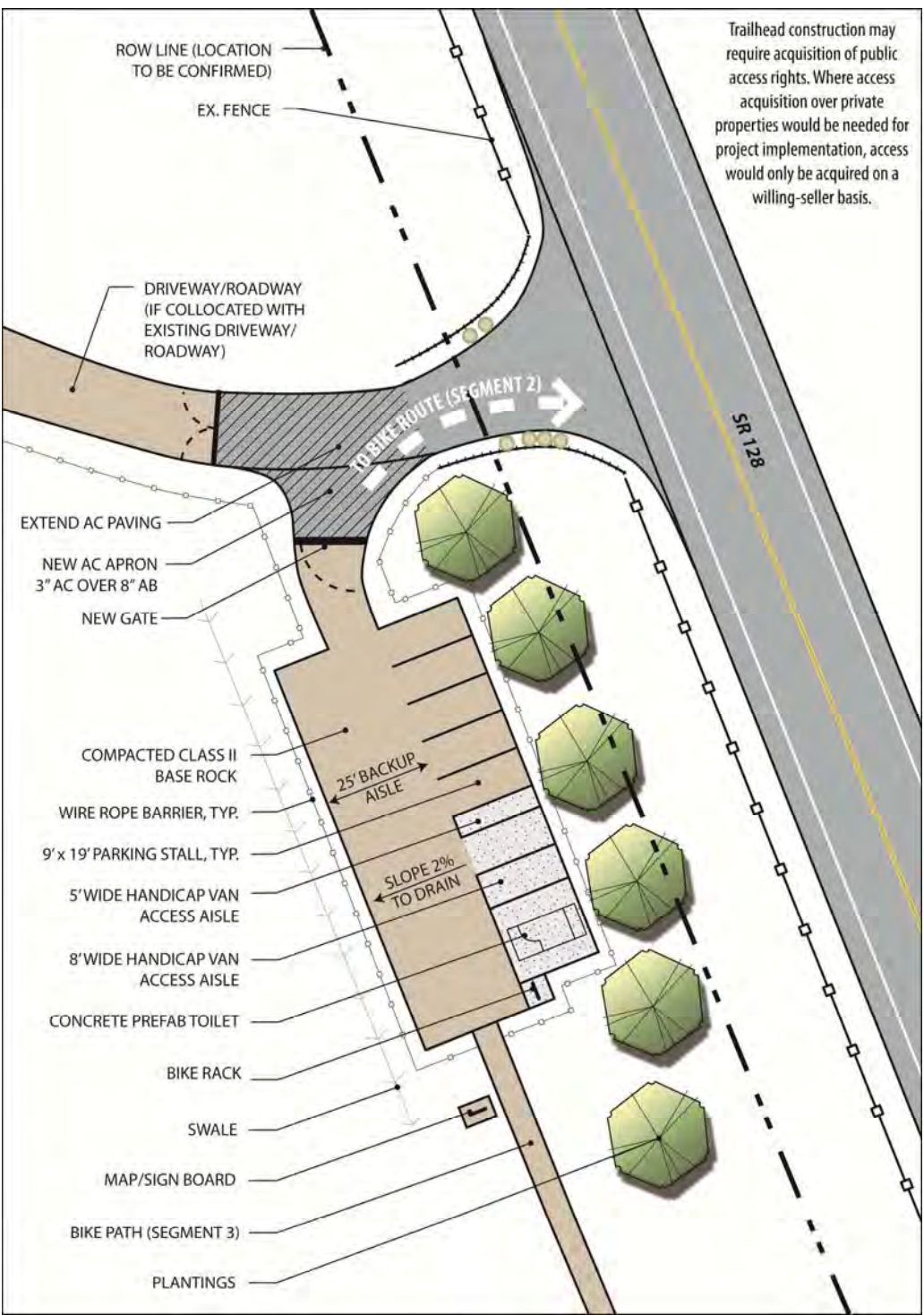


Figure 7-7: Conceptual Major Trailhead (Location To Be Determined)

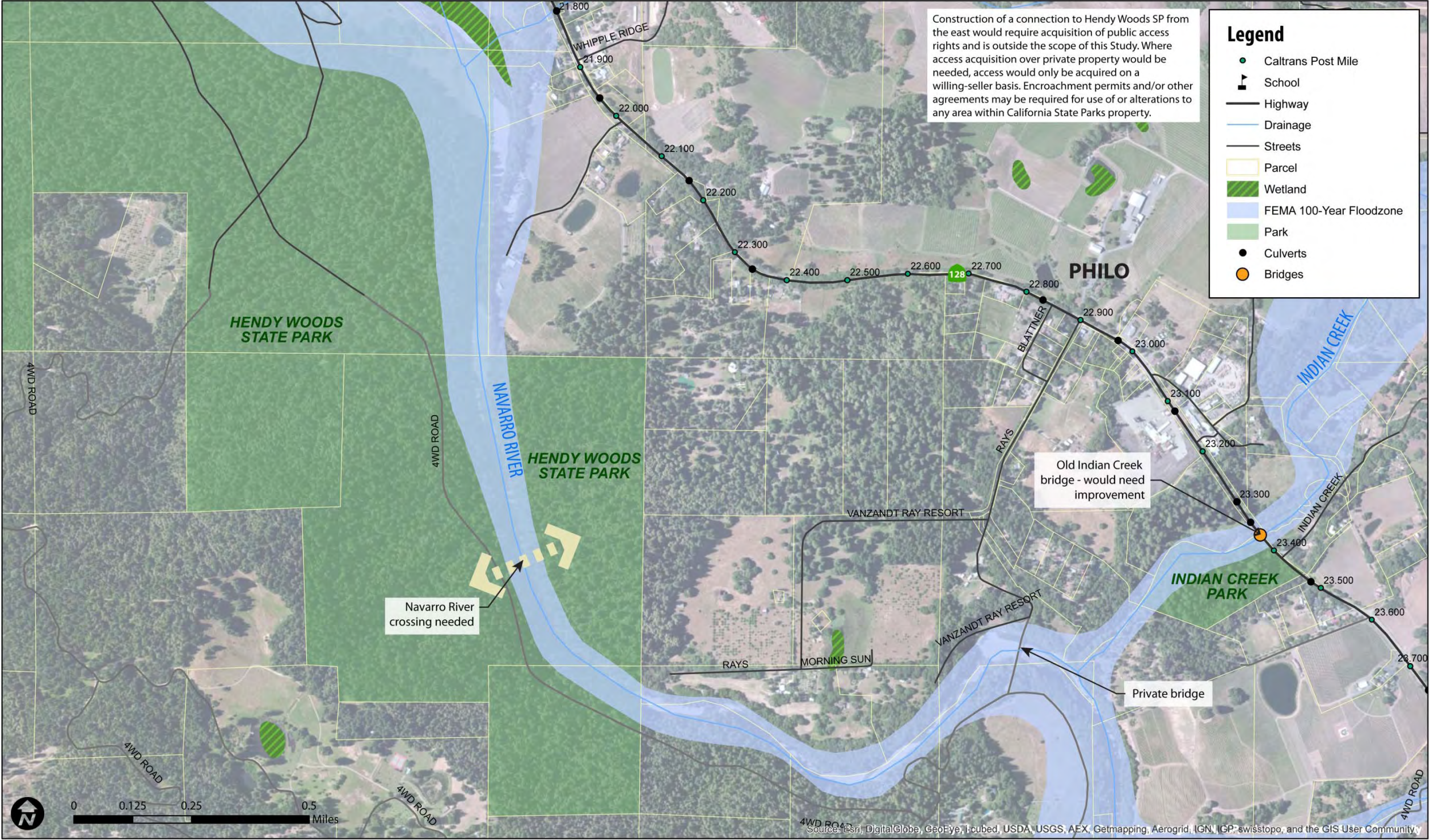


Figure 7-8: Potential Philo - Hendy Woods State Park Connections (Segment 2: Upper Valley)

This page intentionally left blank.

7.3 Segment 3: The “New” Highway/Anderson Valley Way (PM 24.4 – PM 28.3)

The community-preferred design concept for Segment 3 is a shared-use path meeting Class I bike path design standards on the south side of SR 128 and a recreational trail and Class III bike route along Anderson Valley Way (see Figure 7-9).

7.3.1 Class I Bike Path Improvements along SR 128

A bike path on the south side of SR 128 is made possible by the wide ROW acquired for the portion of the highway that was realigned and straightened. This bike path is recommended to better facilitate access between the greatest number of residents and Anderson Valley schools and other points of interest, which are generally located on the south side of the highway. A trail meeting Caltrans Class I bike path design standards is recommended to accommodate users of a variety of age ranges and abilities and two-way bicycle use. A paved path is recommended to facilitate year-round and bicycle use, and to minimize maintenance costs.

SR 128 through Segment 3 already includes 8-foot wide shoulders. The proposed 10-foot wide, paved trail would be separated from the highway shoulder by a minimum 5-foot wide buffer, or where there is less space available, by a railing (see Figure 7-9 Cross Section 3A). The SR 128 ROW varies from approximately 80 to 150 feet wide (approximately 40 to 75 feet from the centerline), so that it may be possible to construct the trail further from the ROW than the cross section shows. In constrained areas where steep side slopes or other constraints exist, retaining walls would be required to construct the trail and it would tend to move closer to the roadway (see Figure 7-9 Cross Section 3B). The analysis for Segment 3, shown in Figure 7-9, includes an assessment of where minor improvements would be needed, where trees and other impeding objects would need to be removed, and where retaining walls and/or major grading would be needed for trail construction. Much of the route would require only minor improvements; however, some portions, such as along creek crossings, would require more substantial work. The Class I path would cross Anderson Creek along a new pedestrian bridge.

The trail would cross several County roadways, which generally have wide (approximately 80-foot wide) turning radii. This Study recommends Caltrans and County DOT consider reducing the turn radii at roadway intersections to shorten the crossing distance and encourage drivers to slow their approach when turning off of SR 128 (see Figure 7-10 and Figure 7-11). Roadway crossings should include high visibility crosswalks.

7.3.2 Recommended Anderson Valley Way Improvements

Community members expressed a desire for improved non-motorized access along Anderson Valley Way. Potential pedestrian improvements along Anderson Valley Way include an approximately four-foot wide, soft surface recreational trail on one side of the roadway and connecting with the Class I bike path along SR 128 (see Figure 7-10 and Figure 7-11). This path is envisioned as an informal community-based project implemented largely by volunteers. It would require context-sensitive design and broad local support to minimize impact on private improvements and natural landscape in the road ROW.

7 | Design Concepts

Potential bikeway improvements include signing as a Class III bike route and sharrows to help direct bicyclists and alert drivers of the shared roadway. Signing and pavement marking improvements would be focused at roadway intersections, where bicyclists and drivers first enter the roadway. To provide traffic calming at roadway intersections, this Study recommends County DOT consider reducing the turn radii and/or striping narrower turn radii to encourage drivers to slow down through these turns.

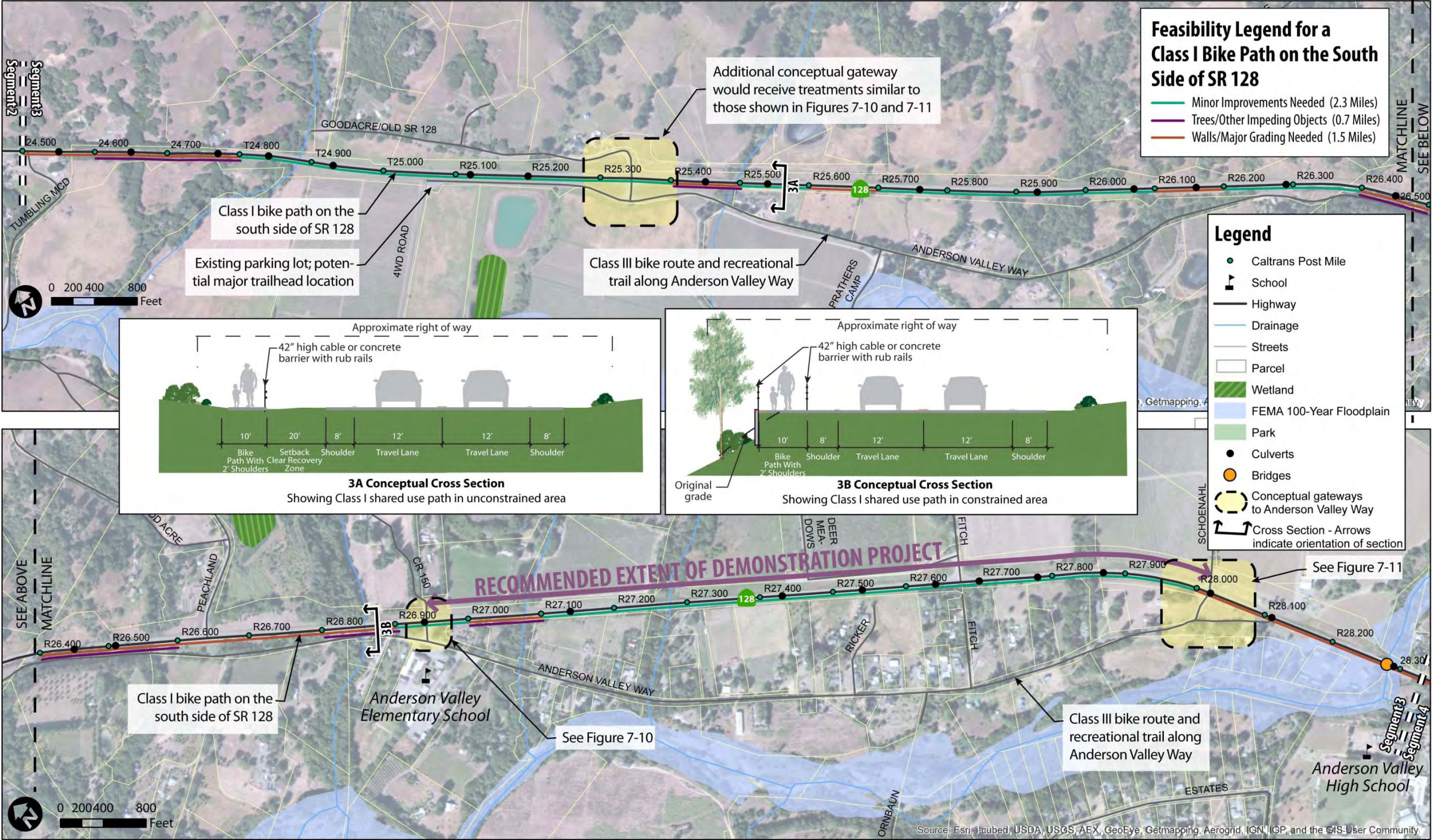


Figure 7-9: Segment 3 The “New” Highway Design Concepts



Figure 7-10: Central Anderson Valley Way Entrance (Enlargement)

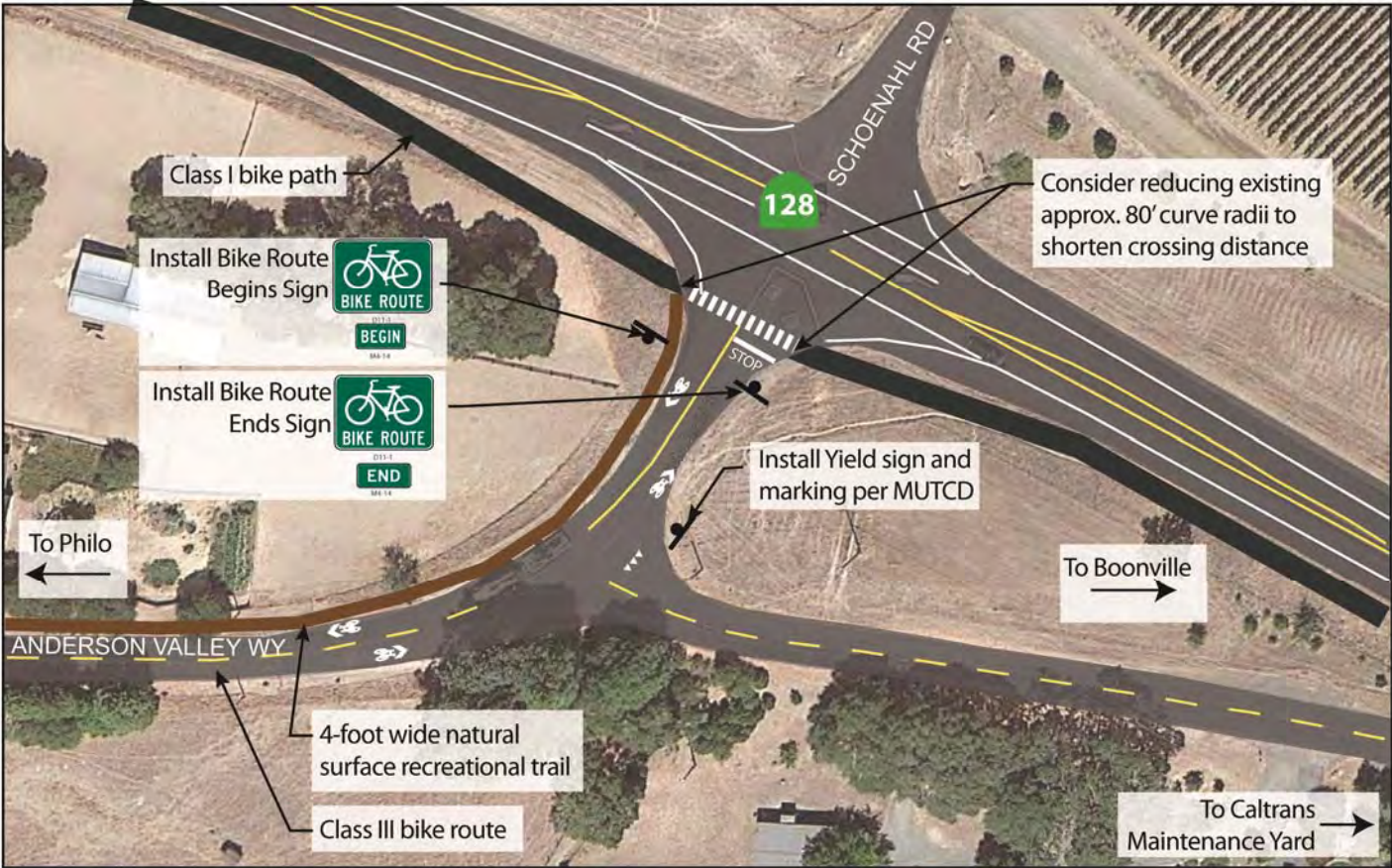


Figure 7-11: Southern Anderson Valley Way Entrance (Enlargement)

7.4 Segment 4: Central Boonville (PM 28.3 – PM 29.6)

The design concept for Segment 4 is continuous sidewalks and bike lanes, crossing improvements, and street trees, phased-in over time (see Figure 7-12). This Study recommends implementation of improvements (e.g., colored asphalt shoulders; curb, gutter, and sidewalk; street trees; curb extensions; and/or pedestrian refuge islands), which would visually narrow the highway and provide traffic calming benefits.

The Boonville community expressed support for slowing traffic through Boonville and several community members requested speed limit reductions in Boonville. This Study also recommends Caltrans consider speed limit reductions through Central Boonville after construction of the improvements recommended in this Study. Studies show that the 85th percentile speed is the one characteristic of traffic speeds most conforming to a safe and reasonable speed limit. The 5 mph increment at or immediately below the 85th percentile (or the upper limit of the pace) is the numerical value selected for posting a realistic and enforceable speed limit. Speed limits set lower than the critical speed will make a large number of drivers “illegal” for each five mph increment that speed is reduced.⁸ Speed limit changes should be coordinated with visible changes in roadway conditions or roadside development. Several variables other than the posted speed limit influence the 85th percentile free-flow operating speed. These variables include the number of access points per unit distance, median type, parking along the street, and pedestrian activity level.⁹

An important design criterion for these improvements, requiring specific attention during subsequent detail phases of design, is to ensure that the design and materials are consistent with the rural character of the area. Use of colored and textured concrete and other materials that are durable yet subdued will help achieve this goal.



Rustic concrete finishes (e.g., tan-colored concrete with light sandblasting) such as those pictured above would help maintain Boonville's rural character.

⁸ Realistic Speed Zoning: Why and How, 1998. Automobile Club of Southern California. Costa Mesa, CA.

⁹ National Cooperative Highway Research Program Report 504. Design Speed, Operating Speed, and Posted Speed Practices, 2003. Transportation Research Board. Washington D.C.

This page intentionally left blank.

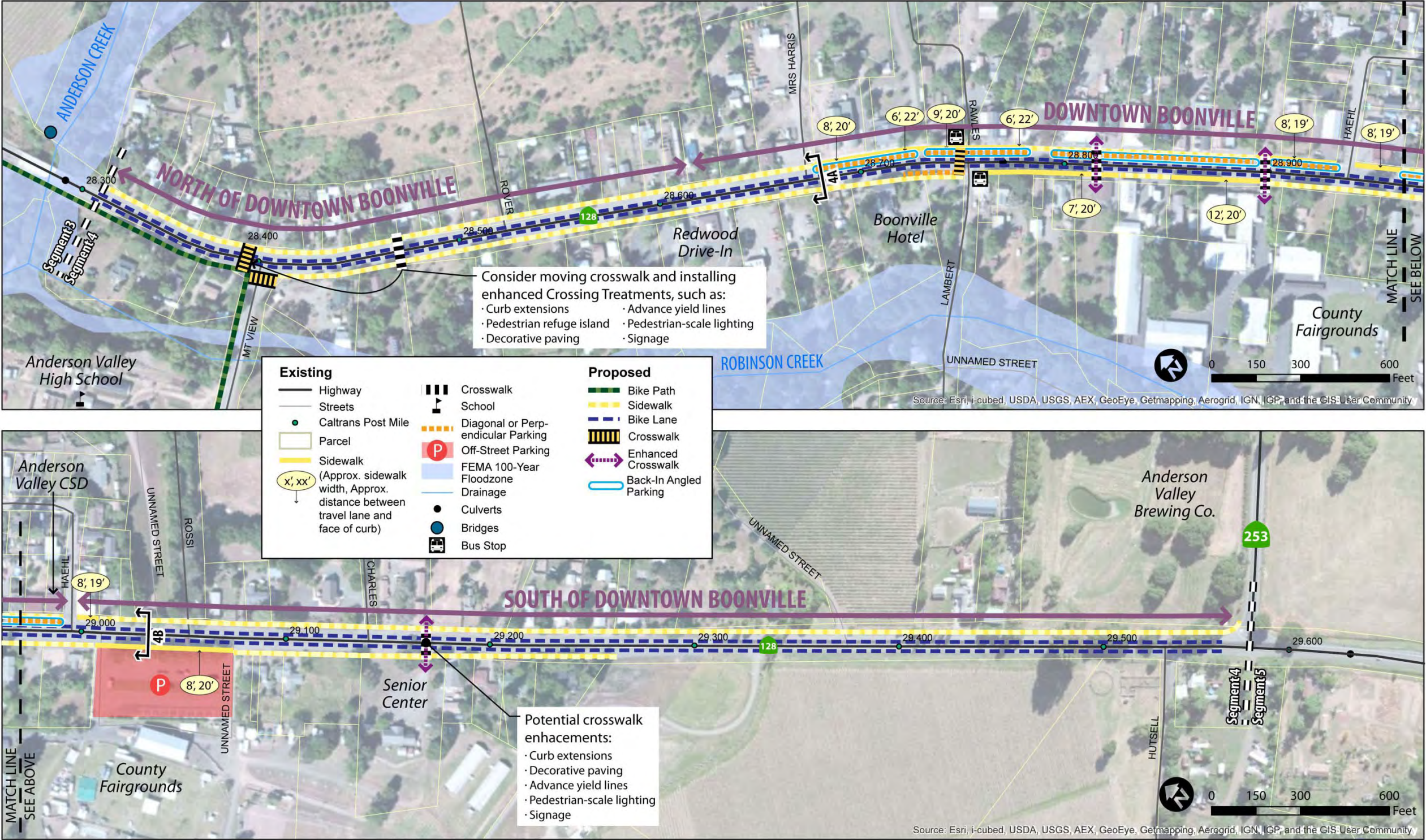


Figure 7-12: Segment 4 Central Boonville Design Concepts

This page intentionally left blank.

7.4.1 Areas North and South of Downtown Boonville

The design concept for the areas north and south of downtown Boonville includes 8-foot wide sidewalks with planting strips and 6-foot wide bike lanes (see Figure 7-13). Sidewalks are recommended along the east side of SR 128 from the northernmost residential property to the SR 128/SR 253 intersection. Sidewalks are recommended on the west side of SR 128 from the Class I Bike Path terminus to the southernmost residential property (south of the Senior Center). Bike lanes are recommended the length of Segment 4. Considering the speed limits in Boonville (30 to 40 mph), wide bike lanes are recommended for improved bicyclist comfort and to allow greater “shy space” between bicyclists and on-street parking.

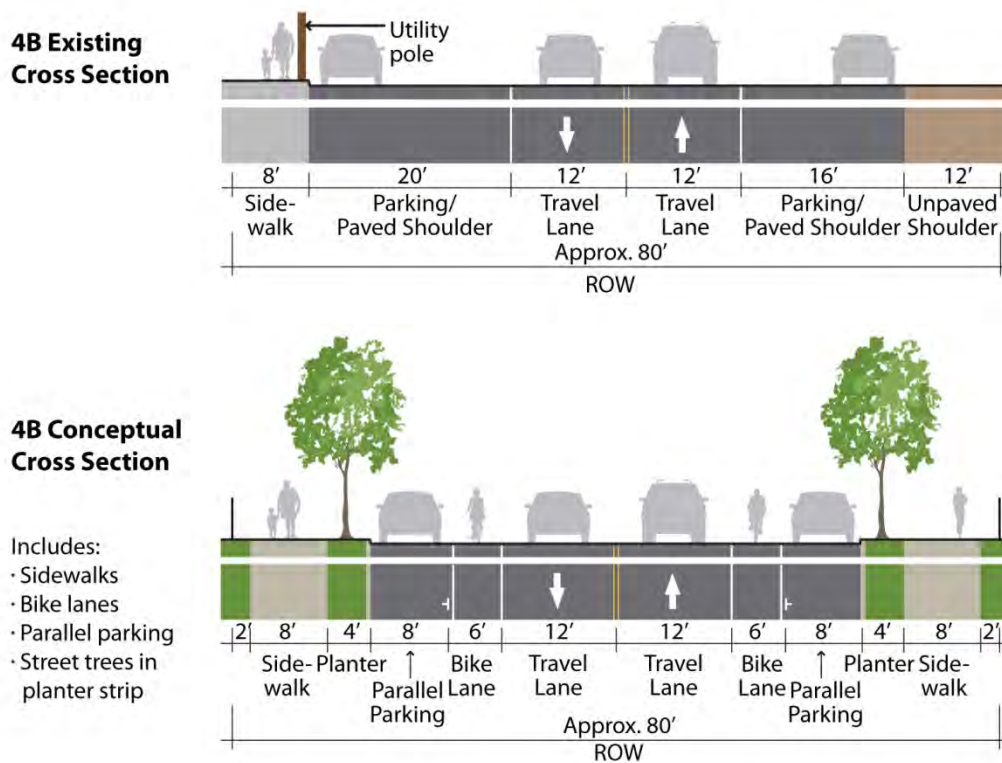
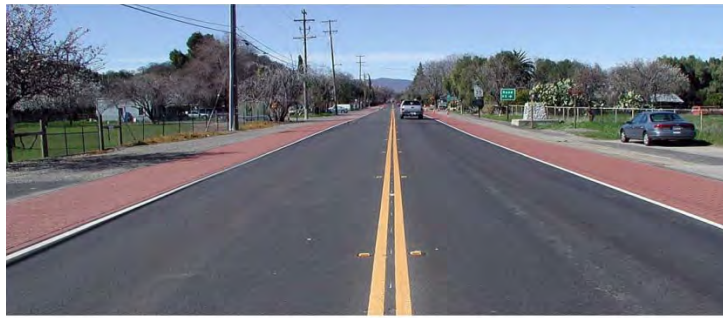


Figure 7-13: 4B Existing (Top) and Conceptual (Bottom) Cross Sections, Facing Northwest



Colored pavement shoulders



Bike lanes

Figure 7-14: Conceptual Bike Lane Treatments Include Colored Pavement (Left) and Standard Bike Lanes (Right)

Recommended crossing improvements include high visibility crosswalks, curb extensions, and pedestrian refuge islands (where ROW and roadway geometries allow) (see Figure 7-15). These treatments alert drivers to anticipate pedestrians in the roadway and improve visibility of pedestrians. Curb extensions also give pedestrians a clearer view of oncoming traffic.

The Class I bike path proposed in Segment 3 would transition to Class II bike lanes and sidewalks in Segment 4. From approx. mile post 28.3, the Class I path would continue south along SR 128 to Mountain View Road, where it could turn southwest along Mountain View Road to connect with Anderson Valley High School. This Study recommends Caltrans consider a new crossing and crosswalk improvements at Mountain View Road, as illustrated in the inset in Figure 7-16. If a crossing at Mountain View Road is not pursued, this Study recommends the Class I bike path continue south along SR 128 to the existing crosswalk.



Pedestrian refuge island with decorative paving



Curb extension

Figure 7-15: Conceptual Crossing Improvements Include Pedestrian Refuge Islands (Top) and Curb Extensions (Bottom)

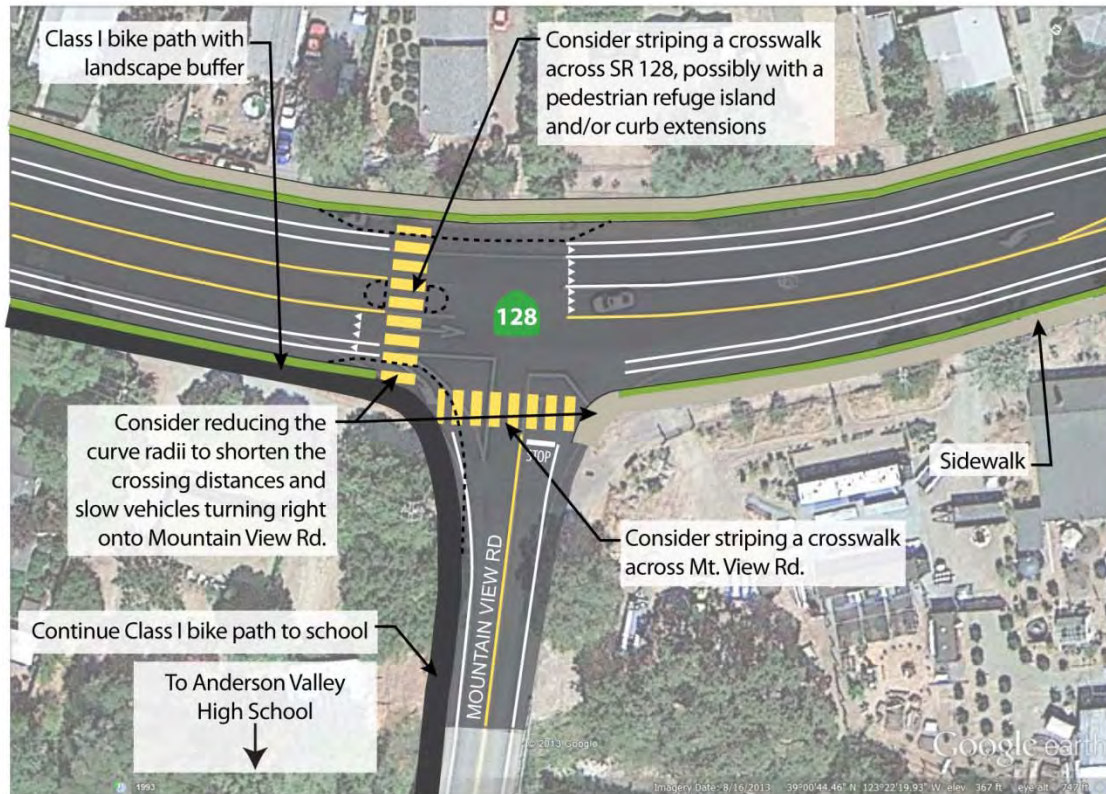
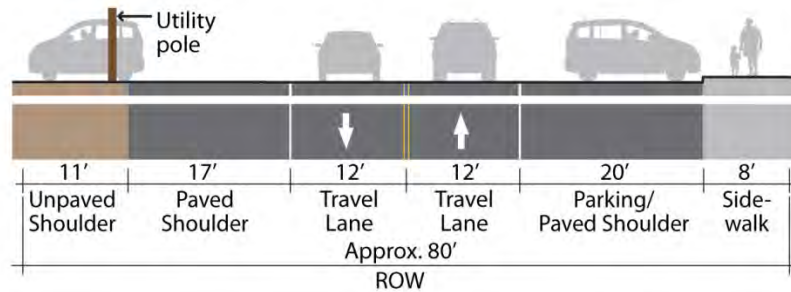


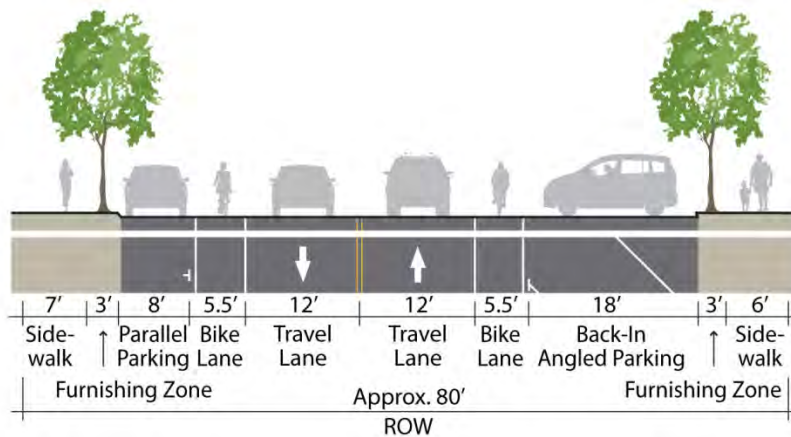
Figure 7-16: Conceptual Improvements to SR 128/Mt. View Road Intersection

7.4.2 Downtown Boonville

The design concept for downtown Boonville, roughly defined as extending from Redwood Drive-In to the Anderson Valley Community Services District offices, includes 6- to 10-foot wide sidewalks with furnishing zones and 5.5- to 6-foot wide bike lanes (see Figure 7-17). Retaining on-street parking is a key interest to community members, including business owners. The existing wide paved areas fronting many businesses, especially on the north side, create a conflict with the proposed bike lanes. Parking patterns vary widely (which in itself could present a hazard), but tend toward angled front-in parking. Large vehicles tend to project into the space that would be required for the bike lanes, and the movements of front-in parking, specifically backing out when sight distance is blocked, can create conflicts with passing bicyclists or vehicles.

4A Existing Cross Section**4A Conceptual Cross Section Option A**

- Includes:
- Sidewalks
 - Bike lanes
 - Back-in angled and parallel parking
 - Street trees

**4B Conceptual Cross Section Option B**

- Includes:
- Sidewalks
 - Bike lanes
 - Parallel parking
 - Street trees

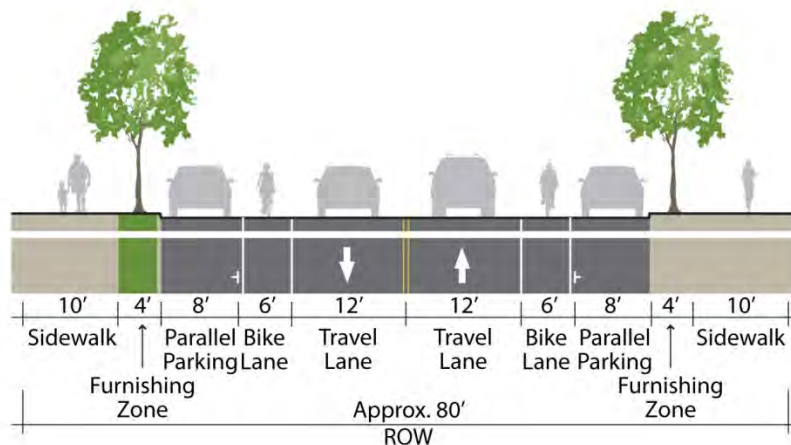


Figure 7-17: 4A Existing (Top) and Conceptual (Middle and Bottom) Cross Sections, Facing Northwest

This Study proposes two conceptual cross sections for downtown Boonville: an option with back-in angled parking on the east side of SR 128 and parallel parking on the west side of SR 128, and an option with parallel parking along both sides of SR 128. Striping for any back-in angled parking would need to be resolved on a site by site basis, and would require Caltrans approval. Prior to implementation of improvements in downtown Boonville that would involve parking loss, the opportunities for off-street parking should be investigated. A parking inventory, approximating the number of existing parking stalls, would help to better quantify the parking loss. Providing a shuttle service during events (e.g., at

the Fairgrounds) could help accommodate visitors during times with high parking demand. Other recommended improvements include street trees and signing off-street parking areas. County Fairgrounds representatives have stated that the Fairgrounds operators are amenable to allowing public use of the parking lot when there are no other events at the Fairgrounds.

This Study recommends a phased approach to implementation of improvements in central Boonville. The initial phase would focus on traffic calming at either end of downtown Boonville. Improvements in downtown Boonville would occur after the traffic calming improvements are in place.

On-Street Parking Considerations

Caltrans has stated that, for safety reasons, the agency generally chooses alternates to angled parking along State Routes where the vehicles would be backing up into the travel lanes. Caltrans can support parallel parking and may support angled parking under certain circumstances. If there is adequate room to maneuver outside of the traveled-way, angled parking may be permissible. If angled parking is pursued, this Study recommends back-in angled parking; with back-in angled parking, drivers have a clear view of oncoming vehicles and bicyclists when exiting the stall. At the time of preparation of this Study, the roadway cross section cannot accommodate back-in angled parking. However, back-in angled parking may be feasible in the future after traffic calming measures are in place. Any proposed, formalized angled parking would be highly scrutinized by Caltrans' Traffic Operations, Safety and Permits staff.

If Caltrans standards were imposed on the current informal parking arrangements, on-street parking would either need to be converted to parallel parking, with a significant loss of parking capacity, or back-in angled parking. Striping back-in angled parking is anticipated to result in minimal parking loss.

Back-in angled parking requires the same motions as front-in angled parking, but in reverse (see Figure 7-19). With back-in angled parking, a driver signals, comes to a stop, then backs into a parking stall. When exiting the stall, the driver has a clear view of oncoming vehicles and bicyclists. Back-in angled parking is generally recommended only on slow speed and low volume roadways.

Back-in angled parking has been implemented in other jurisdictions with varied success. In March 2014,



Figure 7-18: Back-In Angled Parking Allows Drivers a Clear View of Oncoming Vehicles and Bicyclists

MCOG staff met with the City of Ukiah's Assistant City Manager who was familiar with their experiment with back-in angled parking. City staff striped back-in angled parking on Clay Street near the Civic Center/City Hall (at Seminary Drive) where City employees and the public park on-street. Per City of Ukiah staff, drivers complied with the back-in parking initially, but ultimately stopped. Due to the lack of compliance, the City reverted to conventional front-in parking.

Several Boonville residents and business owners have expressed concern about back-in angled parking, while others are more open to the idea. One resident attempted back-in angled parking in downtown Boonville, first slowing to a stop on SR 128. This resident found that, if a car was behind them, that driver would stop close behind and wait, blocking the driver in front from potentially backing up to back-in angle park.

7.5 Segment 5: Hills and Valleys (PM 29.6 – PM50.9)

Community members emphasized the severe traffic safety hazards of this segment. While this segment is understood to be hazardous, it is no more so than other two-lane rural roadways in mountainous terrain (according to the State Average Accident Rate cited in SWITRS). Because of this and the high cost of improvements, it is unlikely that the segment will receive adequate funding for bicycle or pedestrian access improvements in the foreseeable future. The Study acknowledges this corridor segment's conditions as well as the community concerns and recommends the following solutions.

The design concept evaluated for Segment 5 improvement is 4-foot wide paved shoulders with 2-foot wide outside shoulders/clear area (similar to Segment 2) in selected areas in and around Yorkville. An analysis using the same methodology as that described under Segment 2 was prepared to assess the feasibility of implementing the design concept (see **Figure 7-19** and **Figure 7-20**). These figures reflect the cumulative scores of the conditions and constraints factors for each 1/5-mile of the highway, including existing shoulder width, adjacent slopes types and severities, various types of obstructions, and various types of environmental resources. The analysis found that shoulders along Segment 5 feature long portions that would be relatively simple to widen, interspersed with sections that would be very complex to widen, such that provision of continuous shoulders would be extremely challenging and costly. It may be more feasible to widen shorter segments that provide local connections.

This Study recommends discouraging bicyclists from riding along this segment of 128 by signing alternative bicycle routes and noting the lack of bicycle facilities, presence of steep grades, and limited sightlines along this segment of SR 128 on any bicycle maps or information distributed for public use. Construction of trailheads along other segments of the highway would encourage bicyclists to drive then bike from a trailhead.

Public comment on Segment 5 during the first community workshop included an offer from a private property owner to dedicate an easement for an off-highway trail over a distance of approximately one mile (see **Figure 7-16**). It was also stated that some other property owners in Segment 5 may be willing to grant an easement for a trail. The maps illustrate the particular challenge areas and the extent of easements and construction that would be necessary to bypass them. Any trail planning along Segment 5 would require additional discussions with property owners and Caltrans to identify a preferred alignment that minimizes or does not require highway crossings and connects potential trail users with a destination.

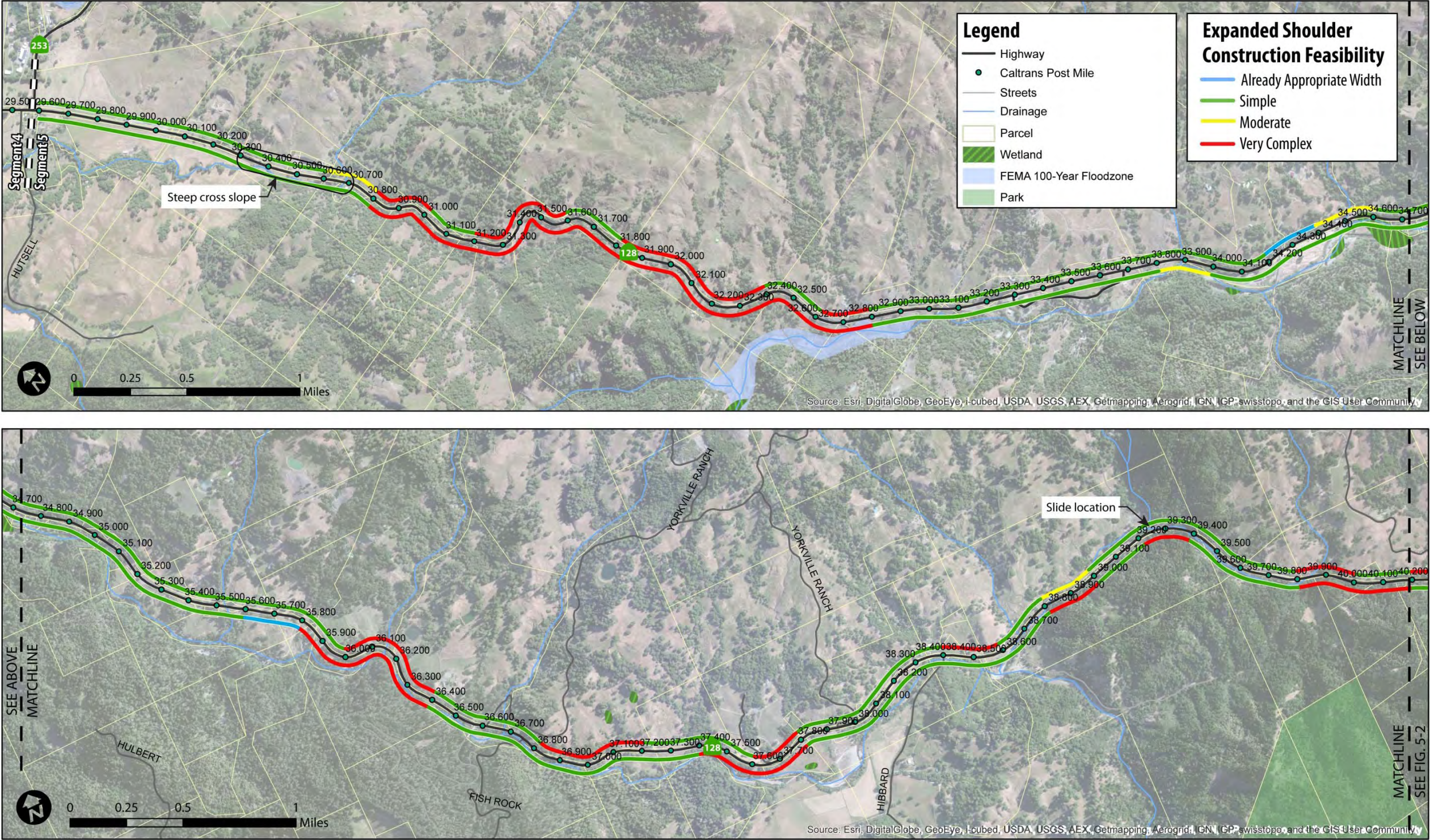
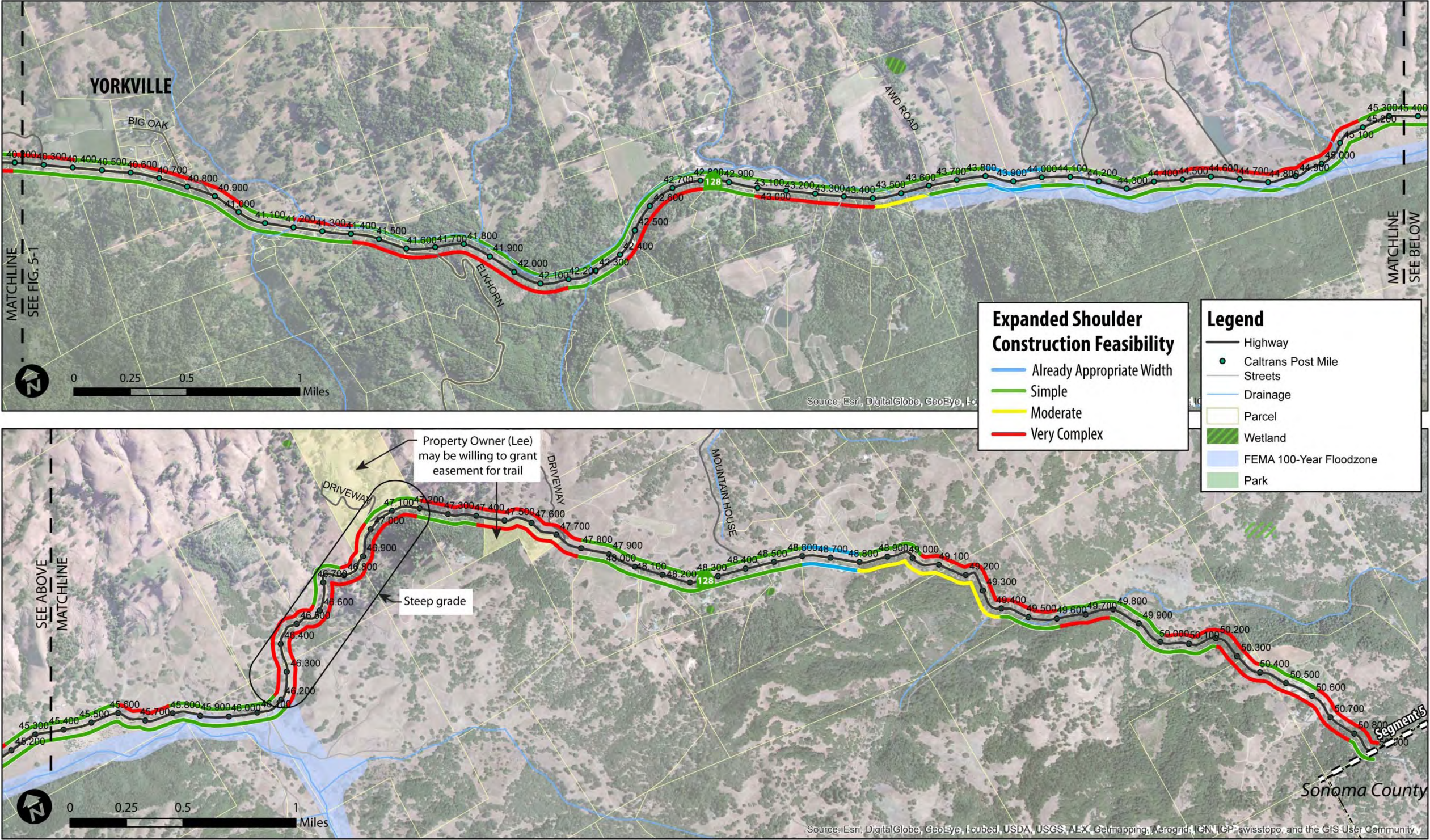


Figure 7-19: Segment 5 Hills and Valleys (West Half) – Design Concepts



8 Implementation Plan

This chapter presents the costs, phasing, implementation steps and funding strategy for recommended or potential trail projects.

8.1 Preliminary Cost Estimates

Planning-level cost estimates were prepared for the proposed trail improvements. The summary (Table 8-1) presents the estimated total cost for each trail segment. Detailed estimates are presented in Appendix D. The totals per segment reflect the cost if the entire segment was improved, but the Study does not recommend proceeding with all segments at the same time; rather with the priority segments and phases described in section 8.2.

The cost for Segment 1, the trail through the redwoods, was prepared on a per-mile basis based on costs for comparable projects. This is a very high-level concept, and correspondingly approximate cost. The design and cost will need to be refined as the project proceeds to more detailed stages.

The cost for shoulder widening in Segments 2 and 5 was calculated in a GIS spreadsheet on a per 1/5-mile basis, and aggregated. This spreadsheet is too extensive to present in this document will be provided separately. The cost estimates generated by the GIS analysis (explained in detail in Appendix D) are necessarily very high-level and conservative overall, though they are quite detailed and realistic relative to the assumed improvements that are assigned per 1/5-mile. Using the data in the GIS spreadsheet and associated map files, future trail planners could prepare a more detailed evaluation, conceptual plan and cost estimate for any portion of the route that is chosen as a focused project area, which could result in a refined design and reduced cost.

The cost for Segment 3 was prepared based on the engineered cross-sections and costs used for the GIS analysis, but applied to the specific length of conditions for the Class I path as observed in the field, augmented by unit prices and estimated quantities for the improvements along Anderson Valley Way.

The cost for Segment 4 was prepared in conventional planning-level estimate fashion, using typical unit prices and quantity take-offs.

The cost estimates include planning, design, construction, and other anticipated implementation steps. The cost estimates required numerous assumptions about the details of construction and associated requirements. The estimate and assumptions reflect data available to the consultant team based on similar projects.

The estimates include cost “placeholders” for each stage of project implementation, based on factors of the construction cost, including:

- A contingency for the level of accuracy of the estimate is included at 20%-35% of total construction. This includes construction overhead costs (mobilization, traffic control, SWPPP, and insurance). Segments 1 and 3 have a higher estimating contingency to account for the level of project definition and potential environmental studies and mitigations. Allowances for environmental studies and mitigations have been built into the GIS-based estimates for Segments 2 and 5. Segment 4 has a lower contingency because it is in an urban area where

environmental resources are not likely to occur, and the design and estimate are relatively detailed.

- Design and other implementation costs allowances are included at the following percentages of construction cost:
 - Survey; boundary and topographic – 2.5%
 - Plans, specifications and estimates, including technical studies such as geotechnical or hazardous waste investigations – 10%
 - Environmental analysis and documentation and related permits – 8%-10%
 - Mitigation (actual cost will be based on existing conditions and scope of proposed changes) – 2%
 - Construction engineering – 10%

Table 8-1: Cost Estimates by Segment

Description		Totals
Segment 1 - Redwoods		
Construction	--	\$9,475,382
Survey, design, environmental, and admin	34.5%	\$3,269,007
Contingency (35%)	35.0%	\$3,316,384
Total	--	\$16,060,773
Segment 2 - Upper Valley		
Note: This cost estimate reflects shoulder widening along both sides of SR 128 for the length of Segment 2. This Study recommends select shoulder improvements in Segment 2 (see Section 8.2).		
Construction	--	\$44,761,649
Survey, design, environmental, and admin	20.0%	\$8,952,330
Contingency (20%)	20.0%	\$8,952,330
Total	--	\$62,666,309
Segment 3 - New Highway		
Construction	--	\$9,113,534
Survey, design, environmental, and admin	32.0%	\$2,916,331
Contingency (30%)	30.0%	\$2,734,060
Total	--	\$14,763,924
Segment 4 - Central Boonville		
Construction	--	\$2,626,672
Survey, design, environmental, and admin	32.0%	\$853,669
Contingency (20%)	20.0%	\$656,668
Total	--	\$4,137,009

Description		Totals
Segment 5- Hills and Valleys		
Note: This cost estimate reflects shoulder widening along both sides of SR 128 for the length of Segment 5. This Study recommends select shoulder improvements in Segment 5 (see Section 8.2).		
Construction	--	\$199,128,995
Survey, design, environmental, and admin	20.0%	\$39,825,799
Contingency (20%)	20.0%	\$39,825,799
Total	--	\$278,780,593
Corridor Total		
Note: This cost estimate reflects shoulder widening along both sides of SR 128 for the length of Segments 2 and 5. This Study recommends select shoulder improvements in Segments 2 and 5 (see Section 8.2).		
Total	--	\$376,408,608

8.2 Project Prioritization

This Study divides projects into short-, mid-, and long-range lists, based on public and stakeholder input and consideration of the Evaluation Criteria identified in Chapter 6. Generally, the short-range project list includes projects to be pursued first. The mid- and long-range project lists should be pursued after strategic portions on the short-range project list have been implemented. The Evaluation Criteria prioritize safety, usage and connections, community priorities, conformance with existing plans and standards, environmental justice, environmental impact, private property impacts, traffic impacts, and cost/constructability. **Figure 8-1** presents the recommended project phasing.

Actual project phasing is likely to be opportunity-driven, based on funding availability, ability to forge agreements and partnerships, and/or opportunities to incorporate improvements into development proposals. Each recommended project may be subdivided into smaller projects based on funding availability and other considerations. It is always advantageous to implement “low hanging fruit” portions of the trail that can be completed with minimal funding and maximum community involvement to demonstrate progress and maintain interest on the overall effort.

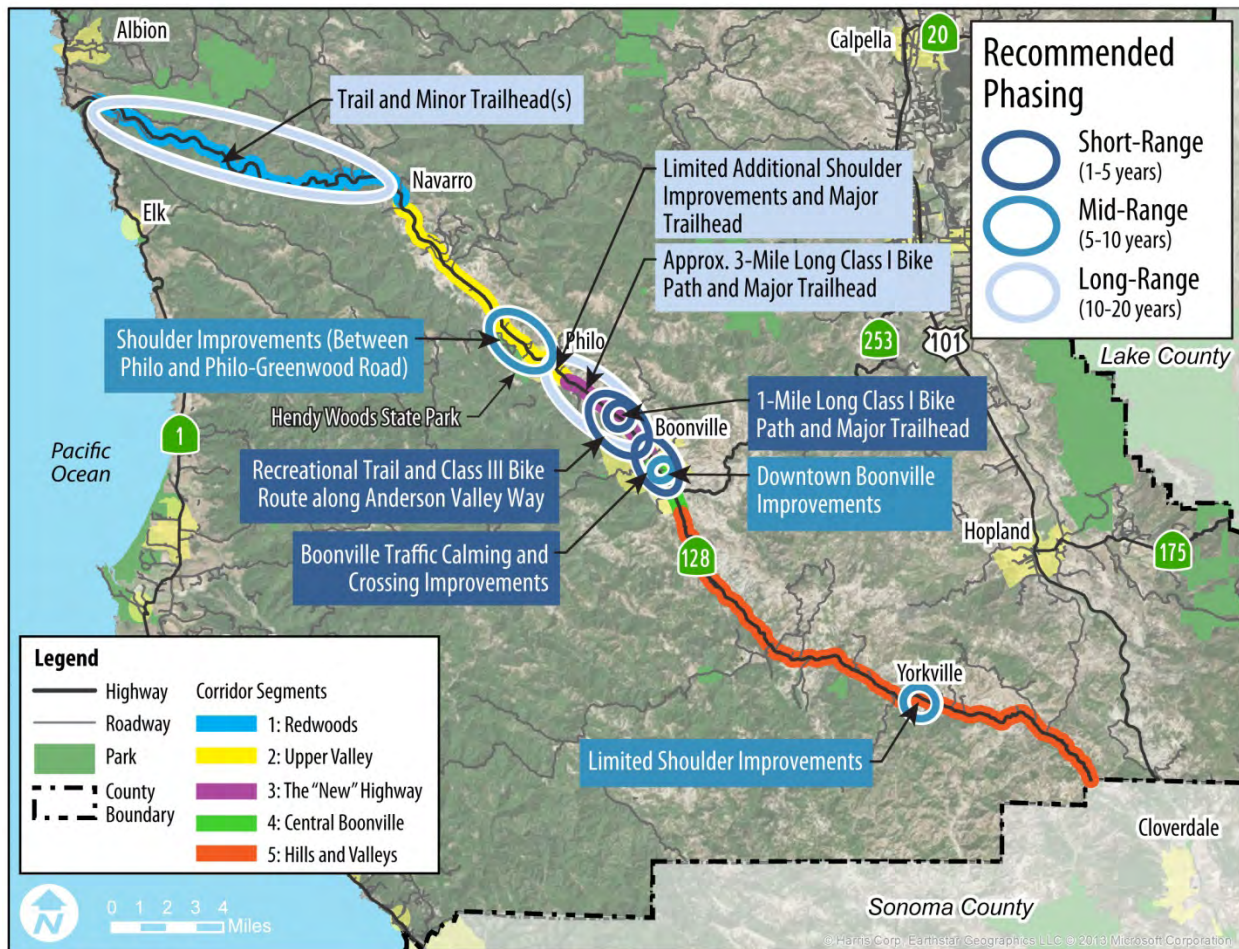


Figure 8-1: Recommended Project Phasing

8.2.1 Short-Range (1 to 5 Years) Project List

Short-range projects are those recommended to be undertaken in the next five years. Table 8-2 presents the recommended short-range projects and associated cost estimates.

Table 8-2: Short-Range Project List and Cost Estimate

Segment	Post Miles	Facility Length (Miles)	Project Description	Cost Estimate
3 - New Highway	26.9 – 28.0	1.1	Class I Bike Path and Major Trailhead - Demonstration Project	\$1,500,000 (trail) and \$175,000 (major trailhead)
3 - New Highway	N/A	2.7	Recreational Trail and Class III Bike Route along Anderson Valley Way	\$420,000
4 - Central Boonville	28.3 – 29.6	1.2	Boonville Traffic Calming and Crossing Improvements	\$2,799,142
Total				\$4,894,142

The short-range project list focuses on improvements between Boonville and Philo, including:

- **Segment 3 Class I Bike Path and Major Trailhead - Demonstration Project.** The demonstration project comprises an approximate one-mile long bike path and with a major trailhead, or with access from an existing parking area that could function as a major trailhead, on the south side of the highway. Caltrans Class I bike paths accommodate pedestrian and bicyclist use. Likely termini for the demonstration project would be from the SR 128/County Road 150 intersection (near Anderson Valley Elementary School) to the SR 128/Anderson Valley Way/Schoenahl Road intersection (see **Figure 7-9**). The Class I bike path would connect residences to the Anderson Valley Elementary School and provide an opportunity for both locals and visitors to experience a Class I bike path and visualize the eventual expansion of the Valley Trail. Building a segment of the Valley Trail in this location is a strategic investment in that it would serve an immediate need for safer pedestrian and bicycle routes to school and would eventually be strengthened with the addition of pedestrian and bicycle improvements targeted for Anderson Valley Way and Central Boonville.
 - Estimated cost for 1.1-mile long trail: \$1,500,000.
 - Estimated cost for prototypical major trailhead: \$175,000.
- **Segment 3 Recreational Trail and Class III Bike Route along Anderson Valley Way.** The recreational trail could be a relatively low-cost community-sponsored project that could cost less than the estimate. The signage and sharrows would require participation from County DOT and/or an outside funding source, but constitute a relatively inexpensive project.
 - Estimated cost: \$420,000
- **Segment 4 Boonville Traffic Calming and Crossing Improvements.** This would include colored shoulders/bike lanes, sidewalks with street trees north and south of downtown, intersection improvements at Mountain View Road, advance warning signage and yield lines at all crosswalks, and curb extensions at crosswalks north and south of downtown.
 - Estimated cost: \$2,799,142

8.2.2 Mid-Range (5 to 10 Years) Project List

Mid-range projects are those recommended to be undertaken in the next 5 to 10 years. Table 8-3 presents the recommended mid-range projects and associated cost estimates.

Table 8-3: Mid-Range Project List and Cost Estimate

Segment	Post Miles	Facility Length (Miles)	Project Description	Cost Estimate
2 - Upper Valley	20.1 – 23.1	3.0	Shoulder Widening between Philo and Philo Greenwood Road (Southbound Shoulder Only)	\$6,371,500
4 - Central Boonville	28.3 – 29.6	1.2	Downtown Boonville Improvements (sidewalks with street trees, parking delineation, bike lanes, curb extensions at crossings)	\$1,337,867

Table 8-3: Mid-Range Project List and Cost Estimate (cont.)

Segment	Post Miles	Facility Length (Miles)	Project Description	Cost Estimate
5 - Hills and Valleys	TBD	1.0	Limited Shoulder Widening in Focused Areas in and Around Yorkville.	\$2,000,000
Total				\$9,709,367

The mid-range project list focuses on improvements in downtown Boonville, along Anderson Valley Way, between Philo and Philo-Greenwood Road, and around Yorkville, including:

- **Segment 2 Shoulder Improvements between Philo and Philo-Greenwood Road.** Philo residents place a high priority on improved access to Hendy Woods SP. This Study reviewed cost estimates for improvements along the northbound and southbound shoulders separately. The northbound shoulder would cost approx. \$3.7 million to improve. The southbound shoulder would cost approx. \$6.4 million to improve. In order to minimize the need for pedestrians and bicyclists to cross SR 128 and considering the high cost of the improvements, shoulder widening on the along the southbound shoulder only is recommended.
 - Estimated cost for three miles of widened shoulder: \$6,371,500 (southbound shoulder only).
- **Segment 4 Downtown Boonville Improvements** (sidewalks with street trees, parking delineation, bike lanes, curb extensions at crossings). This project depends on the support of the Boonville business community and on the ability to secure grants for the highway improvements.
 - Estimated cost: \$1,337,867
- **Segment 5 Shoulder Widening.** It is not recommended or anticipated that the entire 21.5 miles of shoulders would ever be widened, considering the substantial cost (estimated at almost \$280 million). Considering potential offers of easement dedication, it would be far more cost effective to work to acquire access rights for an off-highway trail, which is beyond the scope of this Study to plan. In this case a challenge would be finding safe crossing points to connect to any on-highway portions.

However, based on further study and prioritization, and/or in conjunction with Caltrans highway improvement projects, additional portions of the shoulders should be widened over time, potentially with a focus on connections in or near the community of Yorkville. A “placeholder” budget allowance is assumed for this purpose.

- Cost allowance for additional shoulder widening in priority locations: \$2,000,000

8.2.3 Long-Range (10 to 20 Years) Project List

Long-range projects are those recommended to be undertaken in the next 10 to 20 years. Table 8-4 presents the recommended long-range projects and associated cost estimates.

Table 8-4: Long-Range Project List and Cost Estimate

Segment	Post Miles	Facility Length (Miles)	Project Description	Cost Estimate
1 - Redwoods	1.0 – 14.0	14.0	Trail and Minor Trailhead(s)	\$16,061,000 (trail), \$25,000 (per minor trailhead)
2 - Upper Valley	TBD	TBD	Additional Shoulder Widening and Major Trailhead	\$2,000,000 (shoulder widening) and \$175,000 (per major trailhead)
3 - New Highway	24.4 – 28.3	2.8	Class I Bike Path and Major Trailhead – Trail Completion	\$13,903,492 to \$13,309,492 (bike path) and \$175,000 (per major trailhead)
Total				\$31,820,500 to \$32,414,500 (assumes four trailheads in Segment 1 and one trailhead each in Segments 2 and 3)

The long-range project list includes completion of the Class I bike path in Segment 3, focused shoulder improvements and a major trailhead in Segment 2, and a connection from Navarro to the SR 1.

- **Segment 1 Trail Improvements and Minor Trailhead(s) – the Navarro River Trail.** This project depends on local initiative and fund raising, and could be a nearer-term project, implemented in phases following a shorter demonstration project, or a very long-term project that might never be fully implemented. Construction of any minor trailheads would be in conjunctions with trail construction.
 - Estimated cost for 16 miles of paved, 4-foot to 8-foot wide trail: \$16,061,000
 - Prototypical improved pullout estimated cost: an additional \$25,000 each
 - Cost range for 1-mile demonstration project including a minor trailhead, assuming relatively unconstrained area: \$447,000 to \$1,000,000 (cost increases exponentially in constrained areas requiring retaining walls, boardwalks, etc.)
- **Segment 2 Additional Shoulder Improvements and Major Trailhead.** It is not recommended or anticipated that the entire 10.4 miles of shoulders would ever be widened, considering the substantial cost (estimated at \$53,950,000 overall). It would be more cost effective to work to acquire access rights for an off-highway trail, which is beyond the scope of this Study to plan. In this case a challenge would be finding safe crossing points to connect to any on-highway portions. However, based on further study and prioritization, and/or in conjunction with Caltrans highway improvement projects, limited additional portions of the shoulders should be widened over time, with a focus on connections from the community of Philo east. A “placeholder” budget allowance is assumed for this purpose.
 - Cost allowance for additional shoulder widening in priority locations: \$2,000,000
 - Prototypical major trailhead estimated cost: \$175,000.
- **Segment 3 Class I Bike Path and Major Trailhead – Trail Completion.** Completing this Class I bike path would have the greatest combined benefit for local residents as well as tourists.

- o Estimated cost for an additional three miles of Class I path with bridge and road crossing improvements: \$13,903,492 to \$13,309,492.
- o Prototypical major trailhead estimated cost: \$175,000.

8.3 Recommended Funding Strategy

Grant funding will be needed for detailed design, surveying, property or easement acquisition (e.g., for any trailheads outside the public ROW), environmental documents, preparation of construction and permit documents, and for construction. Often the available funding is phased, covering only a part of the implementation process. The design concepts and costs in this Study provide good starting material for preparing grant applications and project funding proposals. Funding for the improvements could come from a number of potential funding sources that potentially could be secured by MCOG, County DOT, Caltrans or partners.

It is anticipated that MCOG would pursue funding for implementation of improvements within Caltrans ROW, County DOT would pursue funding for improvements within County ROW (e.g., along Anderson Valley Way and Mountain View Road), and Valley Trail Coalition would pursue funding for improvements on State Parks property or that require public access acquisition (e.g., connections between Navarro Ridge Road and SRI and between Philo and Hendy Woods SP). Close coordination between these entities will be needed.

Appendix E provides information on potential funding sources for bicycle, pedestrian and trail improvements from federal, state and local government agencies and private sources. As of June 2014, Caltrans' Active Transportation Program (ATP) is anticipated to be the most likely, major funding source for the recommended improvements.

Funding and other forms of support from private sources could play a significant role in the implementation of the improvements. The Napa Valley Vine Trail is an example of a similar project that has received strong private support in recognition of its benefits for tourism and local residents and workers (<http://vinetrail.org/>). A relatively small amount of local private funding, augmented by a large amount of local time and energy, can leverage large amounts of grant funding.

8.4 Next Steps

This section describes the typical implementation steps that may be required to take the project from the current concepts through construction, anticipating the particular challenges unique to each project type and location. It also describes the permits and approvals that may be required for project implementation.

The SR 128 Corridor Valley Trail Feasibility Study accomplished three major milestones: 1) the collection of existing conditions base data in Geographic Information System (GIS) format that can be used for more detailed planning and design; 2) the identification of specific community-supported design concepts, and associated cost estimates, consistent with pertinent agencies' policies and standards; and 3) the establishment of public and stakeholder priorities and strategies for implementing the design concepts.

This planning-level study is the foundation for further planning and implementation of the design concepts. Generic next steps toward project implementation are outlined below:

- Coordinate between MCOG, Caltrans, County DOT, Valley Trail Coalition, and other relevant public agencies and stakeholders to refine the design concepts, and to update and applicable plans to incorporate the conceptual improvements;
- Coordinate between MCOG, Caltrans, County DOT, and Valley Trail Coalition to pursue funding for implementing the design concepts;
- Prepare grants and coordinate with other projects by utilizing the GIS analysis data, improvement cross section typologies, and initial planning-level cost estimates to advance study of the design concepts. During the project definition stage for projects proposed in the future, Caltrans will study the feasibility of improving key portions of the Study Corridor in greater detail;
- Continuation of public and stakeholder engagement on the development of the design concepts and incorporate study concepts throughout the project development process.

8.4.1 Typical Project Implementation Steps

Once the project is scoped, funding is secured, and the environmental review process is completed, it can move through the more detailed stages of design and into construction. A general description of elements and steps to build a project is provided below.

Obtain Funding

As discussed in Section 8.3, funding will be needed for detailed design, surveying, property or easement acquisition, environmental documents, preparation of construction and permit documents, and for construction. See **Appendix E** for information on potential funding sources.

Project Agreements - Access Permission

Acquisition or permission for use of private property would only be acquired on a willing-seller basis. If acquisition or permission for use of property for the improvements is required, this will need to be secured, at least tentatively, before significant study or design work can begin. Permission from a private property owner to enter the private property for environmental studies or site surveys would be required early in the project.

Environmental Studies and Documentation

State and federal law and nearly all grant programs require environmental studies and findings to comply with the California Environmental Quality Act (CEQA). If federal funds or interests are involved the document may also need to address the National Environmental Policy Act (NEPA), which has slightly different processes and document requirements. The environmental document must review and address a broad range of potential issues. Often the most complex issues to address are special status (rare, threatened, or endangered) plant and animal species that are protected under law.

Technical Studies

Technical studies are often required for design and/or to support environmental documentation. This often includes site-specific studies of biological and cultural resources, bluff retreat, hydrology, traffic, soil borings and geotechnical studies for design or foundations for bridges or other factors critical to design and/or project approval. These may be completed before, during or after Preliminary Design, depending on the purpose and type of study.

Site Survey - Base Maps and Information

Detailed CAD base maps with ROW/property lines, topography (contour lines and/or spot elevations) and features such as roads, trees, buildings, and fences must be prepared by a land surveyor or civil engineer identifying the improvements and adjacent areas. The pertinent codes, policies, adjacent properties, utilities, and other background information must be analyzed to prepare specific design parameters for the project.

Preliminary Design

More detailed plans would be developed, = and would have relatively accurate locations, dimensions, materials and features, to allow a correspondingly detailed preliminary cost estimate, but they would not have all the information required for bidding and constructing the project. The preliminary plans would be the basis for environmental documents and public and agency review of the project.

Project Agreements - Right-of-Way Acquisition

Typically, acquisition or permission for use of property for the improvements must be finalized after design is completed (after the feasible/desired alignment is defined) and before construction is advertised.

Permits

Project sponsors may need to obtain several types of permits and agreements. Potentially required permits are described in detail below. Preparing applications and completing the permitting process in areas with sensitive resources and many legal conditions and constraints can be time-consuming and expensive in settings such as along or across streams and wetlands.

Construction Documents

The preliminary plan drawings and descriptions will need to be translated into detailed construction plans, specifications, and estimates that can be used to obtain permits that require such detail, and for bidding by contractors.

Bidding and Contracting

If state or federal funds are involved, contract bid documents for the project must be prepared, and the project must be advertised for public bid. The bids must be analyzed, and the sponsoring agency must award a construction contract to the lowest responsible bidder.

Construction

In addition to the work of the contractor, construction of a public project entails responsible agency and/or consultant staff to oversee the contractor and administer the project, including any grant-imposed procedures or paperwork.

8.4.2 Environmental Permitting and Approvals

Where projects involve work in or near a creek, river, or other jurisdictional wetland area, special environmental permits will be required. This section summarizes the major types of permits that may be required and the basic process for each.

U.S. Army Corps of Engineers (USACE) Permit

A Section 404 Permit application to the USACE for placement of fill, including consultation with the U.S. Fish and Wildlife Service, may be required to satisfy the requirements of Section 404(b)(1) of the Clean Water Act (CWA).

A Jurisdictional Delineation Report, or wetland delineation is part of the technical studies required in any location where there is potential for wetlands to occur. This report maps and obtains USACE concurrence on jurisdictional “Waters of the U.S.,” including wetlands (if present), and/or “Waters of the State.”

Section 401 Water Quality Certification - Regional Water Quality Control Board (RWQCB)

The project will be required to prepare a RWQCB CWA Section 401 Water Quality Certification (WQC) notification/application to the local RWQCB, which may include a Storm Water Pollution Prevention Plan (SWPPP). The issuance of the WQC is necessary prior to the issuance of an USACE CWA Section 404(b) (1) permit.

Streambed Alteration Agreement – California Department of Fish and Wildlife (CDFW)

A Section 1602 Lake or Streambed Notification/Application for a Streambed Alteration Agreement will need to be submitted to CDFW for any work that may impact a stream or related riparian habitat.

8.4.3 County Review

As a County project within County limits potential trail projects would not require formal County permits, but the plans, whether developed in-house or by an outside party would require review by the applicable departments – Planning and Building; Transportation and Building, for compliance with codes and standards. However, the County is not exempt from the California Coastal Act and its implementation through the Mendocino County Local Coastal Plan, which could require specific exhibits and reviews for the approximately 2.6 miles of Segment 1 from SR1 to PM 2.6.

8.4.4 Encroachment Permit - Caltrans or County DOT

Where the project involves work or permanent improvements within the state highway ROW or county road ROW that would be built or maintained by others, an encroachment permit from Caltrans or

County DOT will be required. This typically requires a maintenance agreement with either a public agency or a non-profit organization to ensure that the facilities in the highway and/or County ROW will be adequately maintained.

8.5 Caltrans Project Development Process

Many of the recommended improvements are in the state ROW and would need to be incorporated into the Caltrans project development process. This process includes most of the generic project implementation steps described in Section 8.4, but is more involved and rigorous. It begins with feasibility studies and ends with the completion of construction. The current Study is a feasibility study, but the goal is to identify potential feasible priority projects within a broad corridor at a very conceptual level. The Caltrans project development process is tied to the legal requirements of environmental laws and regulations; it melds engineering requirements and Caltrans' management approval steps with the environmental process.

8.5.1 Planning

Caltrans or the implementing agency will need to prepare a Project Study Report (PSR) as the next stage for any of the potential improvements to move forward. Much of the information for the project-specific PSR is available from the current study, including goals, objectives, benefits and general project scope and cost. The planning-level concept and scope will be reviewed, and updated if appropriate, to define the design concept and scope, including basic design features.

The current Study's analysis of conditions, resources, and requirements is intended to help configure the improvement concepts to avoid "fatal flaws," but the feasibility of some solutions can only be determined through detailed site-specific studies. These often include site-specific studies of biological and cultural resources, hydrology, traffic, soil borings and geotechnical studies for design of foundations for retaining walls or bridges, or other factors critical to design and/or project approval. These may be completed before, during or after Preliminary Design, depending on the purpose and type of study.

A statement of the project need and purpose will be developed from the summary description and scoring against criteria in the current study, regarding project relationship to State, regional, and local goals and objectives. Alternative solutions that avoid or reduce significant adverse environmental impacts are evaluated. The alternative selected is the one that causes the least environmental damage while still serving the essential transportation need.

8.5.2 Funding - Grant Applications

Funding will be needed for detailed design, surveying, property or easement acquisition, environmental documents, preparation of construction and permit documents, and for construction. Often the funding is phased, covering only a part of the implementation process. A basic map, description, photos, and cost estimate for the proposed project must be prepared, at a minimum, to support a grant application and to compete for public or private funding. The trail concepts and costs in this Plan provide good starting material for preparing grant applications and project funding proposals. Funding for the improvements could come from a number of potential funding sources secured by Caltrans, Mendocino County, or partners.

8.5.3 Environmental Process

All projects initiated by Caltrans are subject to the California Environmental Quality Act (CEQA). Projects that require federal approval, change access control on an access-controlled highway, or use federal funding are subject to the National Environmental Policy Act (NEPA). Most documents are prepared in such a manner to fulfill the requirements of both laws. CEQA was modeled after NEPA and the laws are very similar. Some differences do exist. Subtle differences in the requirements for document preparation, some terminology differences, and differences in the reviewing/permitting agencies are some examples. Both processes are done simultaneously to streamline the time it takes to obtain project approval. The process for most projects is lengthy; however, and Caltrans appreciates the patience of the public during the project development phase (which includes the environmental process) and the construction phase. Caltrans also appreciates public and agency input and encourages residents to become informed about the environmental process, projects in their area, and to take an active role in the review of projects.

Scoping

Scoping helps to focus the difficult task that goes into documenting the environmental resources and impacts of a proposed project. Major scoping tasks include:

- Preliminary studies to define project alternatives
- Preliminary studies to assess potential environmental impacts
- Notifying regulatory agencies of a proposed project
- At times, conducting a public open house
- Preliminary engineering design

Alternatives Analysis

This is the second step in the environmental review process. Alternative analysis consists of developing a reasonable range of alternatives that satisfy the purpose of and need for the proposed project. Milestones in this phase of the environmental process include the following:

- Review scoping documents
- Develop and define new alternatives
- Engineering and environmental analysis begins
- Prepare draft project report
- Prepare draft environmental document
- Preliminary results of impact assessment
- Develop and obtain concurrence on mitigation if any

Addressing Cultural and Historic Resources

One of the most significant aspects of the environmental process is assessing cultural and historic resources and following the prescribed procedures to protect them. An archaeological survey report must be prepared for any proposed project that includes areas that have not had an archaeological survey conducted. Where cultural or historic resources are present significant studies and mitigation could potentially be required, and the cultural or historic resources could be a factor in the feasibility of the project. Under Section 106 of the National Historic Preservation Act (NHPA) consultation with Native American Tribes is required. Consultation with Native American Tribes and Tribal organizations will need to occur regardless of project funding source (state or federal).

Consultation should occur as early as possible during the planning stages of any project, and carry through to project completion. If federal highway funds are used for the project, the federal lead agency (in this case Caltrans) must consult with Native American Tribes that have ancestral territories within the Study Corridor. Consultation must be initiated between the federal lead agency and the highest member of the Tribe (Tribal Chair) along with the Tribal Historic Preservation Officer (THPO) if a Tribe has a person in this position.

The level of documentation and the amount of required investigation that would need to occur in order to comply with Section 106 of the NHPA must be determined by a Caltrans Professionally Qualified Staff (PQS) for archaeology. Upon a site visit and review of a particular project's impacts within a project segment the Caltrans PQS will be able to make the determination as to the level of study and the documentation that will be required. The ability of PQS to make these determinations would be based on the amount of project information provided

Public and Agency Review, Comment, and Agency Approval

This is the stage of the environmental process where the draft environmental document is released to the reviewing agencies and the public. At this point the lead agency requests comments on the environmental document and proposed project. Milestones in this phase of the environmental process include the following:

- Circulate Draft Environmental Document
- Public/Agency Review and Comment
- Public Hearing
- Formal Response to Comments
- Identify Preferred Alternative
- Present Findings
- Final Environmental Document
- Public Comment
- Decision Document

8.5.4 Project Approval and Subsequent Steps

Steps following completion of the environmental process include:

- Project approval
- Final design
- Acquire ROWs
- Obtain approvals, agreements, and permits (e.g., maintenance agreements)
- Prepare and advertise contract (i.e., final project documents and bud package)
- Conduct and complete construction project