



Transportation Concept Report

State Route 1

District 01

March 2016

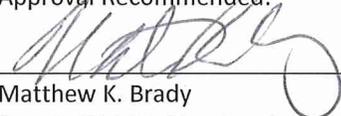


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California Department of Transportation

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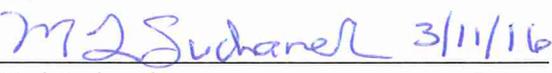
Approval Recommended:


Matthew K. Brady
Deputy District Director, Program/Project Management
Caltrans District 1

3/18/16

Date

Approval Recommended:


Mark Suchanek
Deputy District Director, Maintenance and Operations
Caltrans District 1

3/11/16

Date

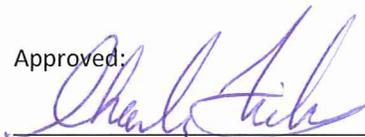
Approved:


Brad Mettam
Deputy District Director, Planning and Local Assistance
Caltrans District 1

3/15/16

Date

Approved:


Charles C. Fielder
District Director
Caltrans District 1

March 22, 2016

Date

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ABOUT THE TRANSPORTATION CONCEPT REPORT

System Planning is the long-range transportation planning process for the California Department of Transportation (Caltrans). The System Planning process fulfills Caltrans' statutory responsibility as owner/operator of the State Highway System (SHS) (Gov. Code §65086) by evaluating conditions and proposing enhancements to the SHS. Through System Planning, Caltrans focuses on developing an integrated multimodal transportation system that meets Caltrans' goals of Safety & Health; Stewardship & Efficiency; Sustainability, Livability & Economy; System Performance; and Organizational Excellence.

The System Planning process for District 1 is primarily composed of three parts: the District System Management Plan (DSMP), the DSMP Project List, and the Transportation Concept Report (TCR). The district-wide DSMP is a strategic policy and planning document that focuses on maintaining, operating, managing, and developing the transportation system. The DSMP Project List is a list of planned and partially programmed transportation projects used to advance projects for funding. The TCR is a planning document that identifies the existing and future route conditions as well as future needs for each route on the SHS. These System Planning products are also intended as resources for stakeholders, the public, regional agencies, and local agencies. This TCR is formatted in conformance with the statewide TCR Template.

TCR Purpose

California's State Highway System needs long range planning documents to guide the logical development of transportation systems as required by CA Gov. Code §65086 and as necessitated by the public, stakeholders, and system users. The purpose of the TCR is to evaluate current and projected conditions along the route and communicate the vision for the development of each route in each Caltrans District during a 20-25 year planning horizon. The TCR is developed with the goals of increasing safety, improving mobility, providing excellent stewardship, and meeting community and environmental needs along the corridor through integrated management of the transportation network, including the highway, transit, pedestrian, bicycle, freight, operational improvements and travel demand management components of the corridor.

STAKEHOLDER PARTICIPATION

An Outreach Plan was drafted for the Route 1 Transportation Concept Report (TCR) update cycle. Internal and external stakeholders were identified and drafts of the TCR were sent for comment. Internal stakeholders include: Caltrans District 4, Headquarters System Planning, District 1 functional units, and Regional functional units. External Stakeholders include: Mendocino Council of Governments, the County of Mendocino, the City of Fort Bragg, the City of Point Arena, California Coastal Commission, California Coastal Conservancy, Bureau of Land Management, California State Parks, and the Mendocino Land Trust. Additionally, the draft TCR was sent to the following sovereign governments: the Bear River Band of Rohnerville Rancheria, the Laytonville Rancheria, Round Valley Indian Tribes, and Sherwood Valley Rancheria. In addition to standard outreach efforts, a collaborative meeting was held with California Coastal Commission staff.

EXECUTIVE SUMMARY

State Route 1 is a legislatively designated route that traverses much of California’s Coast. The route travels through 12 counties encompassed by 5 Caltrans districts. In District 1, Route 1 begins at the Sonoma/Mendocino County line, and continues north along most of the Mendocino Coast, serving several rural communities as well as the cities of Point Arena and Fort Bragg. Route 1 turns east just north of the community of Westport, and terminates at the junction of Route 1 and U.S. 101 in the community of Leggett. The Mendocino Coast is well known for its scenic nature, and Route 1 is a popular choice for tourists using both motorized and non-motorized means of travel.

CONCEPT SUMMARY

Table 1

Concept Summary	Segment Description	Existing Facility	20-25 Year Facility Concept	20-25 Year Operations and Management Concept	Post-25 Year Concept
Segment 1, PM 0.000/40.273	SON/MEN line to SR. 128	2L-C	2L-C	Safety, maintenance, rehabilitation, non-motorized improvements	2L-C
Segment 2, PM 40.273/47.500	SR 128 to Little River Airport Rd.	2L-C	2L-C	Safety, maintenance, rehabilitation, non-motorized improvements	2L-C
Segment 3, PM 47.50/59.25	Little River Airport Rd. to Fort Bragg City Limit	2L-C,E/4L-E	2L-C/4L-C,E	Safety, maintenance, rehabilitation, non-motorized improvements	2L-C,E/4L-C,E
Segment 4, PM 59.35/62.36	Fort Bragg	2L-C,E/4L-C,E	2L-C/4L-C,E	Safety, maintenance, rehabilitation, non-motorized improvements	2L-C,E/4L-C,E
Segment 5, PM 62.36/R64.858	Fort Bragg City Limit to MacKerricher S.P.	2L-C	2L-C	Safety, maintenance, rehabilitation, non-motorized improvements	2L-C
Segment 6, PM R64.858/77.66	MacKerricher S.P. to Westport	2L-C,E	2L-C,E	Safety, maintenance, rehabilitation, non-motorized improvements	2L-C,E
Segment 7, PM 77.66/105.578	Westport to U.S. 101	2L-C,E	2L-C,E	Safety, maintenance, rehabilitation, non-motorized improvements	2L-C,E

L=Lane, C=Conventional Highway, E=Expressway, S.P. =State Park

Ultimate Facility Concept

The general Ultimate Facility Concept for Route 1 is a safe, efficient, and scenic two-lane highway. It is the goal of Caltrans District 1 to provide a sustainable facility that is compliant with Caltrans’ Design Standards and regulatory oversight while meeting the transportation needs of the Mendocino Coast.

The Ultimate Facility Concept differs in the greater Fort Bragg area where traffic volumes may warrant greater capacity and shoulder width.

Strategies to achieve the Ultimate Facility Concept:

- Safety: safety is the highest priority of Caltrans and our regional partners. Necessary safety improvements will be made as needs are identified.
- Shoulder improvement: future projects should focus on completing a connected shoulder over the entire route. When shoulder widening projects are considered, priority should be given to locations with no existing shoulders, uphill segments (southbound), and curvilinear segments.
- Complete Streets: where Route 1 serves as a main street, projects should focus on meeting transportation needs in a way that enriches all forms of transportation, and enhances the local sense of community.
- Integration of the Pacific Coast Bike Route (PCBR) and California Coastal Trail (CCT): in rural areas between communities provide adequate shoulder width for cyclist and pedestrian use. Support partnerships in developing off highway trail segments as alternatives where feasible.

CORRIDOR OVERVIEW

ROUTE SEGMENTATION

Figure 1



Table 2

Segment	Location Description	County, Route, Beginning PM	County, Route, End PM
1	Sonoma/Mendocino County Line to SR 128	MEN-001-0.000	MEN-001-40.273
2	SR 128 East to Little River Airport Road	MEN-001-40.273	MEN-001-47.500
3	Little River Airport Road South to Fort Bragg City Limit	MEN-001-47.500	MEN-001-59.250
4	City of Fort Bragg	MEN-001-59.250	MEN-001-62.360
5	Fort Bragg City Limit North to MacKerricher State Park	MEN-001-62.360	MEN-001-R64.858
6	MacKerricher State Park to Westport	MEN-001-R64.858	MEN-001-77.660
7	Westport North to U.S. 101	MEN-001-77.660	MEN-001-105.578

Segmentation for Route 1 is based primarily on major changes in traffic volumes. An exception is Segment 7, which was segmented based on a change in terrain from rolling to mountainous

ROUTE DESCRIPTION

Route Location

Route 1 in District 1 follows nearly the full length of the Mendocino Coast. From the Sonoma/Mendocino County line, Segment 1 of Route 1 travels through rolling terrain with limited shoulders and low traffic volumes to the route's junction with Route 128. From Route 128 Segments 2 and 3 approach Fort Bragg and the route's alignment straightens, shoulder widths increase, and traffic volumes increase. Within Segment 4 traffic volumes peak and Route 1 functions as a main street for the City of Fort Bragg. After the City of Fort Bragg, traffic volumes decrease in Segments 6 and 7 as the route follows a curvilinear alignment along the coast until turning inland at Westport. Segment 7 continues inland as it traverses coastal mountains to the route's end at its junction with U.S. 101 near the community of Leggett. In Mendocino County, Route 1 begins at postmile 0.000, the Mendocino/Sonoma County line, and ends at its junction with U.S. 101 at postmile 105.578.

Route Purpose

Route 1 serves as access to the cities of Fort Bragg and Point Arena as well as local unincorporated communities. All of Route 1 is functionally classified as a Minor Arterial, and as such it provides for mobility along the Mendocino Coast. Additionally, Route 1 functions as the main street for: Gualala, Anchor Bay, Point Arena, Manchester, Elk, Fort Bragg, Cleone, and Westport. Although Route 1 is not a major route for interregional travel in District 1, it is an important route for tourism and intraregional travel along the Mendocino Coast.

Major Route Features:

The highest concentration of traffic volumes on Route 1 occurs between the route's junction with Route 128 and the northern city limits of Fort Bragg¹. Fort Bragg is the Mendocino Coast's largest city and a popular destination for coastal residents for work, school, and retail. Furthermore, communities along the Mendocino Coast are a popular destination for non-motorized and motorized recreational travel due to an abundance of state parks, scenic views, historical sites, coastal access, and businesses tailored to tourism.

Route 1 is a portion of the legislatively designated Pacific Coast Bike Route (PCBR), a bicycle touring route that begins in Vancouver, British Columbia and continues along the coast through the United States to the border with Mexico. According to the 2015 PCBR Bicycle Survey, approximately 96% of travel on the PCBR is from north to south. Through District 1 the PCBR utilizes U.S. 101 until Leggett where the PCBR proceeds to follow Route 1 down the Mendocino Coast into Sonoma County. Similarly, portions of Route 1 are designated as part of the California Coastal Trail (CCT), an approximately 1300 mile trail that weaves along the entire California Coast. Consequently, many cyclists and hikers frequent the many State Parks, State Reserves, and campgrounds along Route 1.

¹ See Figure 5, Route 1 Traffic Volume Map, Page 22

ROUTE DESIGNATIONS AND CHARACTERISTICS

Table 3

Segment #	1	2	3	4	5	6	7
Postmile	0.00-42.73	42.73-47.50	47.50-59.25	59.25-62.36	62.36-64.858	64.858-77.66	77.66-105.578
Expressway	No	No	Yes	Yes	No	No	No
Percent Expressway	N/A	N/A	60.5%	18.5%	N/A	N/A	N/A
National Highway System	No	No	No	No	No	No	No
Strategic Highway Network	No	No	No	No	No	No	No
Scenic Highway	Eligible	Eligible	Eligible	Eligible	Eligible	Eligible	Eligible
Interregional Road System	Yes	Yes	Yes	Yes	Yes	Yes	Yes
High Emphasis	No	No	No	No	No	No	No
Focus Route	No	No	No	No	No	No	No
Federal Functional Classification	Minor Arterial	Minor Arterial	Minor Arterial	Minor Arterial	Minor Arterial	Minor Arterial	Minor Arterial
Goods Movement Route	No	No	No	No	No	No	No
Truck Designation	CA Legal, Advisory 30' KPRA ²	CA Legal, Advisory 30' KPRA	California Legal Network	California Legal Network	California Legal Network	CA Legal, Advisory 30' KPRA	CA Legal, Advisory 30' KPRA
Rural/Urban/Urbanized	Rural	Rural	Rural	Small Urban	Rural	Rural	Rural
Regional Transportation Planning Agency	MCOG ³	MCOG	MCOG	MCOG	MCOG	MCOG	MCOG
Local Agency	Mendocino County, City of Point Arena	Mendocino County	Mendocino County	Mendocino County, City of Fort Bragg	Mendocino County	Mendocino County	Mendocino County
Tribes	Pomo	Pomo	Pomo	Pomo	Pomo	Pomo, Cahto, Coastal Yuki	Pomo, Cahto, Coastal Yuki, Sinkyone
Air District	MCAQMD ⁴	MCAQMD	MCAQMD.	MCAQMD	MCAQMD	MCAQMD	MCAQMD
Terrain	Rolling	Rolling	Rolling	Flat	Rolling	Rolling	Mountainous

² Kingpin to Rear Axle (KPRA)

³ Mendocino Council of Governments (MCOG)

⁴ Mendocino County Air Quality Management District (MCAQMD)

COMMUNITY CHARACTERISTICS

Table 4

Population Census Designated Places	
Gualala	2,093
Anchor Bay	340
Point Arena (City)	449
Manchester	195
Elk	208
Albion	168
Little River	117
Mendocino	894
Caspar	509
Fort Bragg (City)	7,273
Cleone	618
Westport	60
Leggett	122
Population Mendocino County	
Mendocino County	87,428
Age Distribution Mendocino County	
0-19	24.6%
20-39	23.4%
40-59	28.4%
60+	23.5%
Race by Percentage Mendocino County	
White	62.3%
Hispanic	14.3%
Native American and Alaska Native	4.9%
Asian	1.7%
Black	0.7%
Pacific Islander	0.1%
Two or More Races	4.5%
Other Race	11.5%
Transport Mendocino County	
Drove to work alone	71.8%
Carpooled	12.2%
Worked from home	8.5%
Walked to work	4.9%
Bicycle	1.2%
Public transport	0.7%
Other	0.7%
Commuter time (minutes)	18.5
Unemployment	
California	11.0%
Mendocino County	11.6%
Median Household Income	
California	\$61,400
Mendocino County	\$43,721
Top 3 Employers Mendocino County	
Education services, health care and social assistance	21.4%
Retail trade	14.0%
Arts, entertainment, recreation, accommodation, and food services	10.6%

Table compiled from 2010 Census data

Although the timber industry has slowed substantially from historic levels, the Mendocino Coast has a higher than state average employment in agriculture, construction, and resource extraction. Furthermore, much of the Mendocino Coast economy is driven by tourism. According to The California Employment Development Department, tourism is the primary industry in Mendocino County.

Most of the rural communities along Route 1 offer lodging and food services geared towards tourists. In addition, local communities along the Mendocino Coast have a strong and vibrant artisan culture. As a result, much of the retail along the Mendocino Coast can be described as cottage industry and/or tourist serving. According to Visit Mendocino County, a tourism and travel advocacy group, there are 398 lodging properties from Gualala to just north of Fort Bragg. These lodging properties include hotels, bed and breakfasts, vacation rentals, and camp grounds.

LAND USE

Table 5

Land Use	Percent of Total
Forest Land	84.75%
Rangeland	9.01%
Urban or Built-up	3.87%
Agricultural Land	1.19%
Barren Land	0.77%
Water	0.28%
Wetland	0.13%
Urban or Built-up	Percent of Urban or Built-up
Residential	65.36%
Transportation, Communications, Utilities	10.45%
Commercial and Services	9.85%
Mixed Urban or Built-up	7.21%
Industrial	4.82%
Other urban or Built-up	2.28%
Industrial and Commercial Complexes	0.04%

* Data taken from a 5 mile buffer of Route 1 of 2014 US Forest Service CALVEG GIS Data. Land Use classifications based on USGS Anderson Classification System. A full definition of Land Use types is available in Appendix D. Data displayed as a map in Figure 2

Land use on the Mendocino Coast is primarily open space forest, followed by rangeland. The majority of developed land (Urban or Built-up) is found in segments 4 and 5, and in isolated areas in small coastal communities throughout the route. Most of the communities along Route 1 qualify as either Rural Towns or Rural Settlements in the Smart Mobility Framework, with Fort Bragg falling under the Compact Communities classification. According to the Smart Mobility Framework, Rural Towns or Rural Settlements generally contain a mix of housing and services, and can vary in size and complexity from a full unincorporated community to a handful of buildings at a crossroads. Alternatively, Compact Communities are usually historic cities, with a defined community design.⁵

The 2012 *City of Fort Bragg Georgia-Pacific Mill Site Reuse Study* examines redeveloping the predominately vacant industrial land to the west of Route 1 (PM 60.25-62.25) into mixed-use residential, retail, and open space areas. This would include three districts, with residential development occurring in the northern district, retail development occurring in the central district, and reserved space for urban development in the southern district⁶. Although currently on hold, future development of this could significantly impact city-wide transportation patterns, including conditions on Route 1.

Growth and development along Route 1 is strongly influenced by economic conditions and tourism. Route 1 serves as an essential life-line for residents of the Mendocino Coast. Due to the rural nature of the Mendocino Coast and low anticipated growth, no major long term right of way needs are anticipated. Some right of way is likely to be needed to develop additional multi-use shoulders.

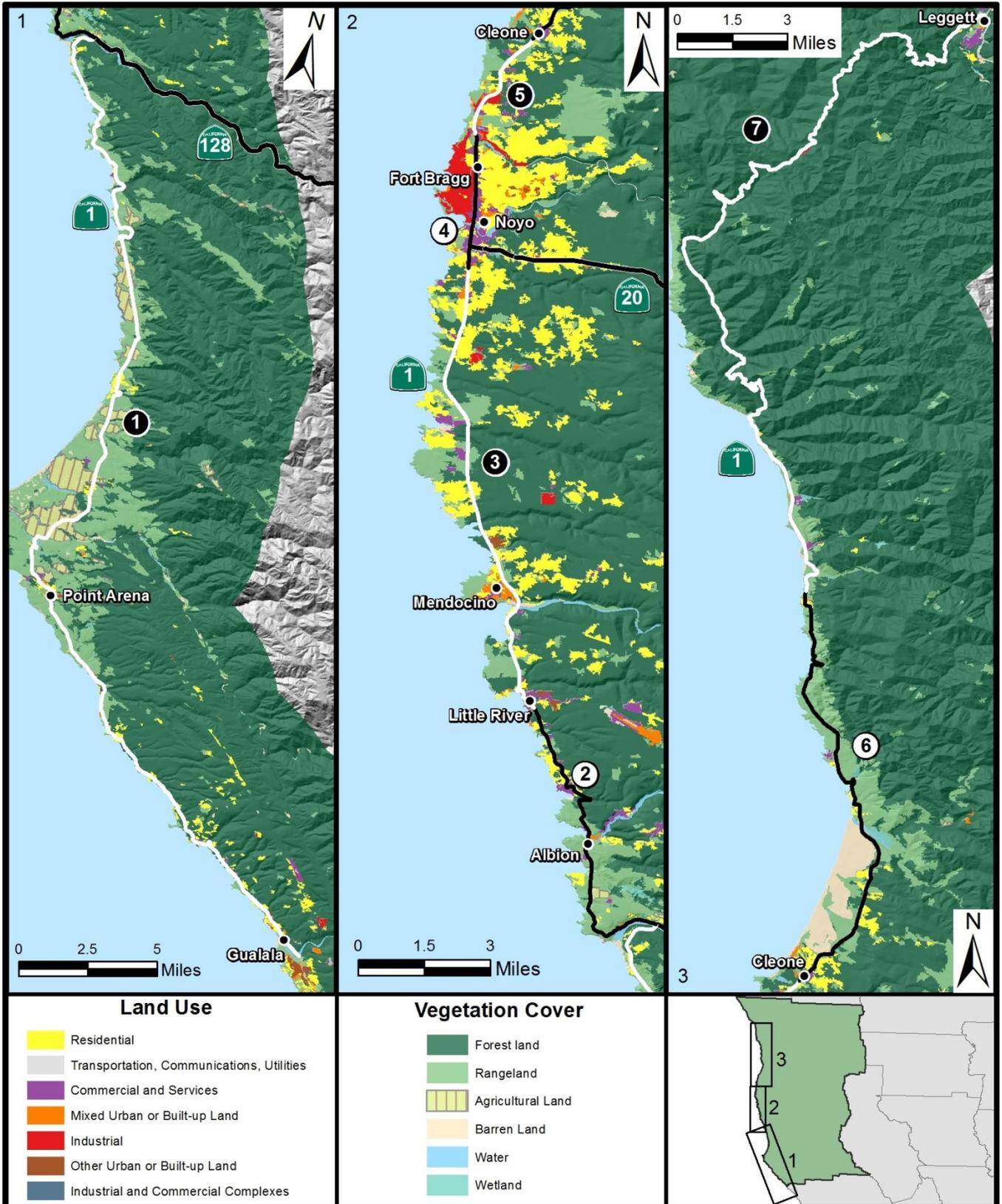
A Summary map of land use along Route 1 is provided on the following page. This map is provided as an overview of land use, and is for planning purposes only. CALVEG GIS data used in the map provides full coverage for Caltrans District 1 at an adequate scale and accuracy for planning purposes.

⁵ Full definitions for Place Types in the *Smart Mobility Framework* are available at: http://www.dot.ca.gov/hq/tpp/offices/ocp/smf_files/SMF_Handbook-TAC_Draft_5-23-09%20v4.pdf

⁶ The full *Mill Site Specific Plan* available at: <https://city.fortbragg.com/DocumentCenter/Home/View/1787>

LAND USE MAP

Figure 2



*Data taken from a 5 mile buffer of Route 1 of 2014 US Forest Service CALVEG GIS Data. Land Use classifications based on USGS Anderson Classification System. A full definition of Land Use types is available in Appendix D.

SYSTEM CHARACTERISTICS

EXISTING AND CONCEPT FACILITY TABLE

Table 6

Segment #	1	2	3	4	5	6	7
Existing Facility							
Postmile	0.00-42.73	42.73-47.50	47.50-59.25	59.25-62.36	62.36-64.858	64.858-77.66	77.66-105.578
Facility Type	C	C	C/E	C/E	C	C/E	C/E
General Purpose Lanes	2	2	2/4	2/4	2	2	2
Lane Miles	80.55	14.45	24.50	9.85	5.00	25.60	55.84
Centerline Miles	40.27	7.23	11.75	3.11	2.50	12.80	27.92
Median Width	N/A	N/A	N/A (part) 22' (part)	N/A (part) 12' (part)	N/A	N/A	N/A
Median Characteristics	N/A	N/A	N/A (part) Unpaved (part)	N/A (part) Turn Lane (part)	N/A	N/A	N/A
Concept Facility							
Facility Type	C	C	C/E	C/E	C	C/E	C/E
General Purpose Lanes	2	2	2/4	2/4	2	2	2
Lane Miles	80.55	14.45	24.50	9.85	5.00	25.60	55.84
Centerline Miles	40.27	7.23	11.75	3.11	2.50	12.80	27.92
Post 25 Year Facility							
Facility Type	C	C	C/E	C/E	C	C/E	C/E
General Purpose Lanes	2	2	2/4	2/4	2	2	2
Lane Miles	80.55	14.45	24.50	9.85	5.00	25.60	55.84
Centerline Miles	40.27	7.23	11.75	3.11	2.50	12.80	27.92
TMS Elements							
TMS Elements (BY) ⁷	N/A	N/A	N/A	EMS, HAR ⁸	N/A	CCTV ⁹	N/A
TMS Elements (HY) ¹⁰	Changeable Message Sign, Traffic Count Station	Traffic Count Station	Changeable Message Sign ¹¹ , Traffic Count Station	Traffic Count Station	Traffic Count Station	Traffic Count Station	Changeable Message Sign, Traffic Count Station

⁷ Base Year (BY)

⁸ Extinguishable Message Sign (EMS), Highway Advisory Radio (HAR)

⁹ Closed Circuit Television (CCTV)

¹⁰ Horizon Year (HY)

¹¹ Changeable Message Sign planned near Jug Handle Creek. The exact location of the sign has not been finalized due to visual impact concerns. Alternative locations are being considered as of March 2015.

BICYCLE FACILITIES

BICYCLE FACILITIES TABLE

Table 7

Existing State Bicycle Facility								
Segment	Post Mile	Location Description	Bicycle Access Prohibited	Facility Type	Outside Paved Shoulder Width	Facility Description	Daily Vol.	Posted Speed Limit
1	0.000-40.273	SON/MEN County line to Junction Route 128.	No	2-C	0'-4' (some 8')	Shoulder	11-20 (6/12 counts)	25-55
2	40.273-47.500	Junction Route 128 to Little River Airport Road	No	2-C	0'-4'	Shoulder	12-14 (6/12 counts)	45-55
3	47.500-59.250	Little River Airport Road to South Fort Bragg City Limit	No	2-4 C/E	1'-8'	Shoulder	10-24 (2/10 & 6/12 counts)	35-55
4	59.250-62.360	South Fort Bragg City Limit to North Fort Bragg City Limit	No	2-4 C/E	0'-12'	Shoulder	43-52* (7/12 counts)	25-45
5	62.360-R64.858	North Fort Bragg City Limit to MacKerricher State Park	No	2-C	0' (some 5')	Shoulder	No counts	35
6	R64.858-77.660	MacKerricher State Park to Westport, North	No	2 C/E	0'-4' (some 8')	Shoulder	19-32 (7/12 counts)	35-55
7	77.660-105.578	Westport, North to junction with U.S. 101	No	2 C/E	0'-4' (some 8')	Shoulder	26-36 (7/12 counts)	55

* Additional counts from 8/30/10 – 9/2/10 at Simpson Lane in Fort Bragg show an average of 108 daily cyclist trips.

As previously noted, Route 1 in Mendocino County is designated as a portion of the Pacific Coast Bike Route (PCBR). The PCBR is an internationally known bicycle route that travels from Canada to the U.S. Mexico Border. As part of the PCBR, Route 1 is traveled extensively in the summer months by cyclists from multiple countries. The majority of these trips travel south along Route 1 into Sonoma County/Caltrans District 4. Caltrans has oversight of the designation of the “official” and “alternate” PCBR routing. Where possible, cyclists are encouraged to use routes that are separated from vehicular traffic. This is desirable for both safety and traveler experience. While there are some parallel roads or streets in cities and communities along Route 1 that are available for use by bicyclists, these generally require out of direction travel or significant elevation gain. Unfortunately, few of Route 1’s parallel roads could be considered as an alternative bicycle facility. One noteworthy exception is in the Fort Bragg area, where an extensive multi-use path network is being developed. The MacKerricher State Park Haul Road is a popular non-motorized parallel route to Route 1. State Parks is in the process of a resurfacing project that will greatly improve the surface of this alternative to the existing PCBR “official” route. Similarly, the City of Fort Bragg is in the process of completing the Noyo Headlands Park Coastal Trail through the old Georgia Pacific Mill site. Together, these routes will make more than six miles of continuous parallel routes for use by non-motorized travelers. When complete, Caltrans will work with the City and State parks to evaluate designation of the route as the “official” or “alternate” PCBR.

Due to environmental and economic considerations along Route 1 non-standard solutions and staged implementation will most likely be necessary to achieve appropriate bicycle facilities across the route. This could include use of short segments of shoulder in critical areas that would act as “Bicycle Turnouts”¹² and “Bicycle Climbing Lanes.” These improvements would provide an opportunity for motorized vehicles to pass cyclists safely, especially on uphill sections of travel where cyclists cannot maintain a speed relatively close to motorized vehicles. The rugged terrain of Route 1 may make complete shoulders in some areas infeasible. In these circumstances adding shoulder may only be possible in a single direction, and would be most appropriate for southbound travel as this is the primary direction of travel for bicycle traffic. In addition to specialized shoulder areas, Intelligent Transportation Systems such as bicycle activated warning signs could be placed as interim features.

¹² Highway Design Manual 204.5 Sustained Grades Section 4 Turnouts

It is a priority of both Caltrans District 1 and the Mendocino Council of Governments (MCOG) to develop paved shoulders where feasible for Route 1. In an effort to examine areas for bicycle and pedestrian improvements the *Pacific Coast Bike Route/California Coastal Trail Engineered Feasibility Study* was accepted by MCOG in February 2013. Potential improvement segments from the study are located in Appendix C and have a cost per mile ranging from \$1.61 to \$11.28 million. These priority locations are candidates for future study and inclusion in existing projects, or as standalone projects should appropriate funding sources become available. Below are six priority locations identified through the Alta Planning Engineered Feasibility Study.

North of Gualala to Anchor Bay (PM 1.25-4.211)

Considered a high priority, this area has predominantly no shoulders and a curvilinear alignment near the ends of the segment, and 0 to 2-foot shoulders with a relatively straight alignment through the middle portion of the segment. It contains numerous houses, businesses, and lodging units.

North of Anchor Bay (PM 5.034-8.90)

The ends of this segment are curvilinear with no shoulder, while the middle of the segment is relatively straight with 2-foot shoulders. Consequently, this area would benefit from full shoulders, or “bicycle climbing lanes” and “bicycle turnouts” at the end of the segment.

South of Point Arena (13.11-14.81)

The southern approach into Point Arena is on a straight alignment with no shoulder and a 55 mph speed limit. Route 1 then enters a curvilinear alignment dropping to a 45 mph speed limit two tenths of a mile before Point Arena.

Elk school zone north (34.225-34.829)

Within the community of Elk near the school zone, shoulder is present on the southbound side of the highway. After the school zone, Route 1 has predominantly no shoulder with straight alignment.

North of Fort Bragg (62.2-70.4)

In June of 2014, a Project Study Report (PSR) for this section was completed and signed. The PSR includes provisions to improve shoulders to 8 feet from PM 62.2-R64.8 and 4 Feet from R64.8/70.4 to increase bicycle access to the Mendocino Coast. Originally this project was envisioned as a Transportation Enhancement (TE) funded project, but is currently unfunded. Funding for segments of this project could include the Active Transportation Program (ATP), through collaboration with MCOG, or the new SHOPP Asset Management program (see p.28). Considering that the 8 foot shoulder portion of the project is parallel to the existing MacKerricher State Park Haul Road (see discussion on p. 10), it is likely that a design exception to build 4 foot shoulders for the entire project could be justified.

Westport north (71.58-78.58)

This segment is relatively curvilinear with no shoulder. For southbound traffic Route 1 has a long downhill section into a tight corner, and then proceeds into an uphill climb. If shoulders cannot be constructed throughout this area, possible alternatives include bicycle turnouts provided at the base of the downhill corner section with a southbound bicycle climbing lane. Portions of this area are included in a proposed 2014 ATP project by MCOG. The Westport Bike Lanes project would include 0.67 miles of 4 foot shoulders from postmile 77.48 to 78.15.

For most of Route 1 North of Westport (Segment 7) adding bicycle facilities will be difficult due to mountainous terrain and curvilinear alignment. As such, additions of “bicycle turnouts” or short paved shoulder sections should be considered when possible as stated in the *Highway Design Manual 204.5 Sustained Grades Section 4 Turnouts*.

PEDESTRIAN FACILITIES

PEDESTRIAN FACILITIES TABLE

Table 8

Segment	Post mile	Location Description	Ped. Access Prohibited	Sidewalk Present	Sidewalk Width	Crossing Distance	Alt. Facility
1	0.000- 40.273	SON/MEN County line to Junction Route 128.	No	No*	N/A	20'-32'	No
2	40.273-47.500	Junction Route 128 to Little River Airport Road	No	No	N/A	22'-32'	No
3	47.500-59.250	Little River Airport Road to South Fort Bragg City Limit	No	No	N/A	32'-58'	No
4	59.250-62.360	South Fort Bragg City Limit to North Fort Bragg City Limit	No	Yes	6'	30'-80'	Yes
5	62.360-64.858	North Fort Bragg City Limit to MacKerricher State Park	No	No	N/A	30'-46'	No
6	64.858-77.660	MacKerricher State Park to Westport, North	No	No	N/A	22'-40'	No
7	77.660-105.578	Westport, North to Junction U.S. 101	No	No	N/A	20'-32'	No

* Some sidewalks exist in the City of Point Arena and some unincorporated communities

Few sidewalks exist on Route 1, with the exception of the Cities of Fort Bragg and Point Arena. Due to Route 1's importance as a main street through local communities, the addition of sidewalks has been proposed by community action plans and the *2010 Mendocino Regional Plan*. As of 2016, Gualala is programmed to receive pedestrian improvements including sidewalks, crosswalks, and other Complete Streets improvements.

California Coastal Trail

The California Coastal Trail (CCT) was established by the California State Legislature as a trail network reaching from Oregon to Mexico. It is the goal of the Coastal Initiative to provide a scenic journey for non-motorized users along the entire California Coast. Consequently, the trail takes a variety of forms including paved paths, unpaved paths, and sidewalks. The most desirable routing of the CCT is off highway as it retains the scenic nature of the trail; however the rugged terrain of the Mendocino Coast requires portions of the CCT to utilize the right of way of Route 1. Generally shoulder use occurs when the CCT must cross major rivers, creeks, or gullies.

According to the Coastal Conservancy, 86 miles of the California Coastal Trail (CCT) in Mendocino County are in need of improvements. Of the 86 miles of CCT in need of improvements, 54 miles would require improvements to Route 1. When providing full shoulders is infeasible, District 1 supports collaborative efforts to provide off highway trails through the use of Active Transportation Program (ATP) Grants or other programs. Eventually, projects such as the Route 128 Valley Trail¹³ may intersect Route 1, and feed foot traffic into the CCT creating a viable trail network from Anderson Valley to the coast.

¹³ State Route 128 Corridor Valley Trail Feasibility Study

http://www.dot.ca.gov/dist1/d1transplan/system_planning/128_corridor_valley_trail_feasibility_study_final_report_july_2014.pdf

TRANSIT FACILITIES

TRANSIT FACILITIES TABLE

Table 9

Segment	Mode & Collateral Facility	Name	Route End Points	Headway	Operating Period	Stations on Route 1		Bikes Allowed on Transit
						Cities & Communities	Postmile	
1	Traditional Bus	MTA Route 75	Gualala to SR 1 SR 128 Junction	One round trip Daily	Mon-Sat	Gualala, Anchor Bay, Point Arena Manchester, Elk	0.000/ 40.273	Yes
		MTA Route 95	Point Arena to Santa Rosa	One round trip Daily	7 Days/Week	Point Arena, Anchor Bay, Gualala	0.000/ 16.100	Yes
2	Traditional Bus	MTA Route 60	SR 1 SR 128 Junction to Fort Bragg	4 round trips Daily	Mon-Friday	Albion	43	Yes
3	Traditional Bus	MTA Route 60	SR 1 SR 128 Junction to Fort Bragg	4 round trips Daily	Mon-Friday	Little River, Mendocino, Caspar	48/56	Yes
4	Traditional Bus	MTA Route 5	Fort Bragg Local	Hourly	Mon-Friday	Fort Bragg	59/62	Yes
		MTA Route 60	SR 1 SR 128 Junction to Fort Bragg	Mon-Friday	Mon-Friday	Fort Bragg	59/62	Yes
		MTA Route 65	Fort Bragg to Santa Rosa	1 round trip Daily	7 Days/Week	Fort Bragg	59/62	Yes

Segments 5, 6, and 7 do not have bus service
 Traditional Bus ~35 passenger single deck bus
 State Route (SR)

Mendocino Transit Authority (MTA) provides transit service in and around the City of Fort Bragg, and on all of Route 1 south of the City of Fort Bragg. No transit service is provided on Route 1 north of the City of Fort Bragg.

On demand dial-a-ride service is available to the general public in the greater Fort Bragg area. Hours of operation are 8 AM to 5 PM on weekdays, and 10 AM to 5 PM on Saturdays. ADA paratransit service is available to disabled persons within $\frac{3}{4}$ of a mile of an MTA bus route.

Similar to truck restrictions, Route 1 has advisory restrictions to bus and motorhome lengths over 40 feet. These restrictions coincide with 30' King Pin to Rear Axle (KPRI) restrictions for Route 1.

FREIGHT

FREIGHT FACILITIES TABLE

Table 10

Freight Generator	Location	Mode	Major Commodity	Comments/Issues
Local	Segments 1, 2, and 3 (PM 0.00/50.6)	Truck	General freight	California Legal Advisory Route (30' maximum kingpin to rear axle(KPRA) length)
Local	Segments 4 and 5 (PM 50.6/65.2)	Truck	General freight	California Legal Truck Access
Local	Segment 6 and 7 (PM 65.2/105.7)	Truck	General freight	California Legal Advisory Route (30' maximum kingpin to rear axle length)
Timber Industry	Segments 1,2,6,7	Truck	Timber	Timber transferred from Forest to Saw Mills

Local denotes truck traffic coming from U.S. 101, Route 20, or Route 128. These trucks carry general freight necessary for coastal communities.

Figure 3



Historically, forest and seafood products were significant freight generators for Route 1 in Mendocino County. While these commodities continue to generate freight on Route 1, both industries have declined substantially. Currently, Route 1 primarily carries general freight to support the cities and communities along the Mendocino Coast.

Route 1 serves two harbors in Mendocino County: Point Arena Harbor and Noyo Harbor. Both harbors serve commercial fishing fleets and recreational boaters. However, neither harbor generates a significant amount of freight.

Truck volumes on Route 1 in Mendocino County range from 5% to 15% of total traffic volumes. The high (15%) truck percentage occurs on the northern portion of Route 1 where total Annual Average Daily Traffic (AADT) is less than 1,000.

Approved logging sites up to 2014, compiled from logging permits by CAL FIRE

ENVIRONMENTAL CONSIDERATIONS

Table 11

Segment	Coastal Zone	Farmland/ Timberland	Floodplain	Climate Change and Sea Level Rise Vulnerability	Hazardous Materials	Naturally Occurring Asbestos	Noise	Waters and Wetlands	Wild and Scenic Rivers	Fish Passage	Special Status* Species Present	Special Status Species per Mile
1	High	Medium	100 yr.	High	Low	Low	Low	High	Low	High	40	0.99
2	High	Medium			Low		Low		High		29	4.01
3	High	Low			Medium		Low		Low		44	3.74
4	High	Low			Medium		Medium		Low		25	8.04
5	High	Low			Medium		Medium		Low		21	8.41
6	High	Medium			Low		Low		Low		37	2.89
7	Medium	Medium			Low		Low		High		16	0.57

Red represents a high probability of being present in the segment, yellow a medium probability, and green a low probability

*Special Status Species taken from a one mile buffer of California Natural Diversity Database data

Biological Resources:

Major Vegetation cover for Route 1 according to a 5 mile buffer of US Forest Service land cover data includes: 46.27% Conifer Forests, 33.91% Mixed Conifer and Hardwood Forest, 7.19% herbaceous rangeland, and 3.87% developed land¹⁴. The majority of forested sections of Route 1 lay in segments 1, 6, and 7. Most of the herbaceous rangeland lies predominately on the east side of Route 1 between the highway and foothills in segments 2-5. The highest concentration of developed land occurs in segments 3, 4, and 5. Within Segment 7 at approximately postmile 84.0 Route 1 transitions from a predominantly coastal habitat to an upland habitat. Transition zones are often a delicate balance between adjacent habitats and thus are unique and easily disturbed. After the transition zone Route 1 proceeds through upland habitat which is predominantly Conifer Forest.

Many of the rivers Route 1 crosses were historically used for transport of timber. Consequently, years of timber transport has adversely impacted local aquatic environments. According to the *Regional Water Board*,[†] the following rivers and watersheds along Route 1 are sediment impaired: the Gualala River, Garcia River, Navarro River, Albion River, Big River, Russian Gulch Creek, Noyo River, Ten Mile River, and the South Fork of the Eel River watershed. Consequently, impacts to water quality and anadromous fish¹⁵ should be analyzed when a project's scope of work includes drainage or bridge crossings.

A species count from the California Natural Diversity Database (CNDDDB) was performed for a one mile buffer around Route 1 and is listed on the next page in the Special Species Table. The table contains species present in over half of the segments for Route 1. A complete table of species by segment for a one mile buffer of Route 1 is available in Appendix F. While this document uses the CNDDDB to provide context for the route, it is not an exhaustive inventory, and these species counts are included as planning level data only. Additional data sources and biological studies will be conducted at specific locations when necessary during the project development process.

¹⁴ Full break down of Vegetation Cover available in Appendix E. Land Cover data derived from a 5 mile buffer of Route 1 of 2014 US Forest Service CALVEG GIS Data. Land Use classifications based on USGS Anderson Classification System. A full definition of land use types is available in Appendix D.

[†] From *State of California North Coast Regional Water Quality Control Board: Regional Water Board Staff Work Plan to Control Excess Sediment in Sediment-Impaired Watersheds (2008)*

¹⁵ Anadromous fish: fish that hatch in freshwater, migrate to the open ocean, and return to freshwater to spawn

Special Species Table

Table 12

Common Name	Number of Segments Present in	Common Name	Number of Segments Present in
Mendocino Coast paintbrush	7	southern torrent salamander	5
Blasdale's bent grass	6	Baker's goldfields	4
pink sand-verbena	6	Grand Fir Forest	4
short-leaved evax	6	Howell's spineflower	4
swamp harebell	6	Pacific gilia	4
coast lily	5	Point Reyes horkelia	4
deceiving sedge	5	pygmy cypress	4
maple-leaved checkerbloom	5	Sonoma tree vole	4
perennial goldfields	5	tidewater goby	4

Information present in this table is for planning purposes only

California Coastal Zone

Much of Route 1 south of postmile 91 is in, or acts as the boundary for, the California Coastal Zone. The California Coastal Commission is tasked with the conservation of the California Coast by the California Coastal Act of 1976. Historically, in reviewing coastal permit applications, the California Coastal Commission has been concerned with Caltrans projects that could be impacted by coastal hazards and that could affect coastal wetlands, water quality, environmentally sensitive habitat areas (ESHA's), the coastal viewshed, and public access to the shoreline and along the coast.

The Mendocino Coast is home to a variety of freshwater and saltwater coastal wetlands. According to the California Coastal Commission, a coastal wetland will exhibit one or more of the following conditions: hydric soils¹⁶, vegetation adapted to inundation, or seasonal or permanent water near or above the surface.

Environmentally Sensitive Habitat Areas are defined by the Coastal Act as: "Any area in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and which could be easily disturbed or degraded by human activities and developments (Section 30107.5)." Furthermore, The Mendocino County Coastal Zoning Code defines ESHA's to "include: anadromous fish streams, sand dunes, rookeries and marine mammal haul-out areas, wetlands, riparian areas, areas of pygmy vegetation which contain species of rare or endangered plants and habitats of rare and endangered plants and animals (Ord. No. 3785 (part), adopted 1991)."

Depending on the project and type of work required, additional context sensitive solutions maybe necessary. One such example is the use of SRT-10 bridge rails¹⁷ with aesthetic modifications to ensure minimal impact to the coastal viewshed.

Coastal Development Permit Requirements

Coastal Development Permits are required for new development¹⁸ projects within the California Coastal Zone. While exclusions to the requirement for Coastal Development Permit exist, staff should consult local Coastal Commission Staff for projects were the need for a Coastal Development Permit is in question.

¹⁶ Permanently or seasonally inundated soils that are anaerobic

¹⁷ Please refer to *Bridge Rails and Barriers*

http://www.dot.ca.gov/hq/LandArch/16_la_design/aesthetics/barriers/pdf/Caltrans_Bridge_Rails_and_Barriers.pdf for further information

¹⁸ The definition of a development is found in section 30106 of the California Public Resources Code: <http://www.leginfo.ca.gov/cgi-bin/displaycode?section=prc&group=30001-31000&file=30100-30122>

Standard of Review

The policies found in Chapter 3 of the California Coastal Act (and the Local Coastal Program (LCP) of the corresponding local government boundary that includes a project's boundaries) comprise the standard of review for a coastal development permit.

Retained Jurisdiction

In some locations the California Coastal Commission retains regulatory jurisdiction over the California Coastal Zone. In these locations coastal design permits are submitted directly to the Coastal Commission instead of delegated local governments. Decisions made by the delegated local governments can be appealed to the California Coastal Commission.

Consolidated Permits

For projects that fall partly within a local government's delegated jurisdiction and the Coastal Commission's direct jurisdiction, a single coastal development application may be submitted directly to the Coastal Commission.¹⁹

Exclusions from Permit Requirements

Certain repair and maintenance activities are excluded from the permit process. Section 30610 of the Coastal Act²⁰ states in part "...no coastal development permit shall be required for... (c) Repair or maintenance activities that do not result in an addition to, or enlargement or expansion of, the object of such repair or maintenance activities; provided, however, that if the Commission determines that certain extraordinary methods of repair and maintenance that involve a risk of substantial adverse environmental impact, it shall, by regulation, require that a permit be obtained under this chapter." According to the 1978 Document Repair Maintenance and Utility Hook-Up Exclusion from Permit Requirements²¹, a permit is not required for the following activities and comparable construction activities²²: "(A) Roads. No permit is required for repair and maintenance of existing: public roads including landscaping, signalization, lighting, signing, resurfacing, installation or expansion of retaining walls, safety barriers and railings and other comparable development within the existing right-of-way as specified below. Maintenance activities are generally those necessary to preserve the highway facility as it was constructed, including: construction of temporary detours, removal of slides and slip cuts, restoration and repair of drainage appurtenances, slope protection devices, installation of minor drainage facilities for preservation of the roadway or adjacent properties, restoration, repair and modifying for public safety bridges and other highway structures, restoring pavement and base to original condition by replacement, resurfacing, or pavement grooving. A permit is required for excavation or disposal of fill outside of the roadway prism." It should be noted that the Coastal Commission retains the right to jurisdiction over a project with an exclusion.

¹⁹ Note consent of the local government is required

²⁰ <http://www.leginfo.ca.gov/cgi-bin/displaycode?section=prc&group=30001-31000&file=30600-30614>

²¹ <http://www.coastal.ca.gov/legal/rmu-exclusions.pdf>

²² Comparable activities should be checked with the Regional Coastal Commission staff

Fish Passage

Senate Bill 857, concerning fish passage, was enacted into law effective January 1, 2006. The bill requires Caltrans to incorporate assessments into project design when project funding decisions are made, and to complete an assessment prior to construction project and submit it to the Department of Fish and Wildlife (CDFW). For projects programmed that affect a stream crossing on a stream where anadromous fish are, or historically were found, Caltrans is required to ensure that an assessment of potential barriers to fish passage to be completed prior to final project design; and,

- a) If any barrier exists, its remediation shall be included in the project design; and,
- b) New projects shall be constructed so as not to create new barriers.

Climate Change

Current scientific consensus indicates global climate change will continue to affect sea level, weather patterns, and coastal processes. Consequently, District 1 must continue to adapt to meet new and increased planning, design, and maintenance challenges created by global climate change. On the California coast climate change will exacerbate existing coastal hazards such as coastal bluff erosion, dune erosion, 1-percent flood²³ events, landslide frequency, and wildfire severity. In addition to existing coastal hazards, sea level rise has the potential to inundate low lying coastal areas.

Coastal Hazards

For the purpose of this document bluff erosion, dune erosion, 1-percent flood events, and salt water inundation will be discussed. To estimate coastal hazards this document uses data from the 2009 Study: *The Impacts of Sea-Level Rise on the California Coast* prepared by the Pacific Institute, which was funded by the California Energy Commission, the California Environmental Protection Agency, the Metropolitan Transportation Commission, Caltrans, and the California Ocean Protection Council. Sea level rise estimates for the Pacific Institute were checked against the 2012 National Research Council (NRC) report: *Sea-Level Rise for the Coasts of California, Oregon, and Washington: Past, Present, and Future*. A summary for both reports is included in table 13 below.

Table 13

SLR South of Cape Mendocino	
National Research Council	
Time Period (Year 2000 Baseline)	Rise
By 2030	2-12 in (4-30 cm)
By 2050	5-24 in (12-61 cm)
By 2100	17-66 in (42-167 cm)
Pacific Institute	
By 2100	55 in (140 cm)

Information from the two reports was utilized to develop a location map for possible coastal hazard locations by the year 2100. GIS data from the Pacific Institute²⁴ was selected for a 100 foot radius around Route 1, and bluff erosion, dune erosion, 100 year flood risk, and salt water inundation locations were created. Salt Water Inundation data was checked against National Research Council sea level rise projections modeled on 2014 USGS digital elevation models (DEM)²⁵. Data in the map include on the following page is included for planning purposes only.

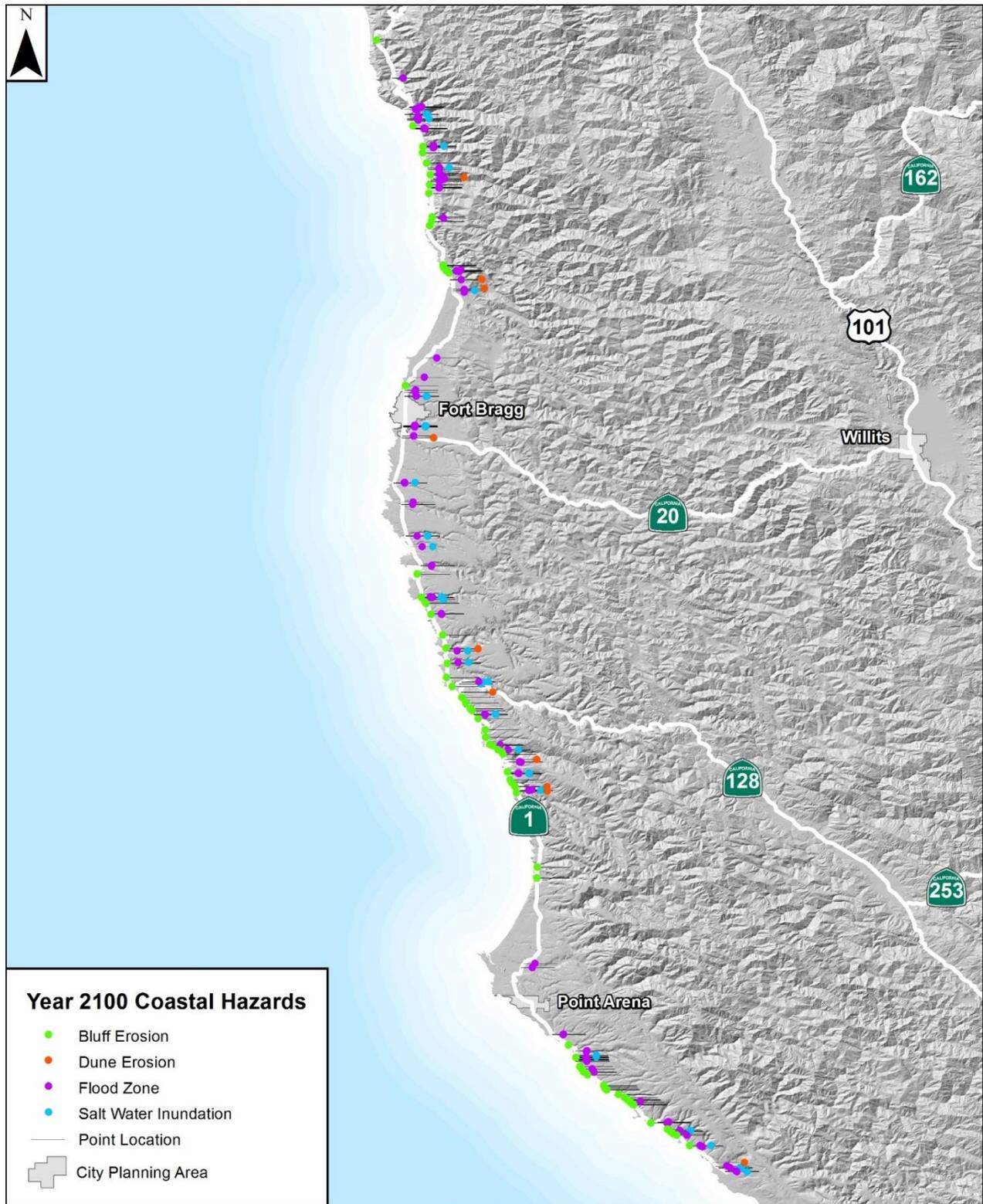
²³ Update FEMA definition for 100 year flood event <http://www.fema.gov/flood-zones>

²⁴ Pacific Institute GIS information <http://pacinst.org/the-impacts-of-sea-level-rise-on-the-california-coast-gis-data-downloads/>

²⁵ 2014 1/3 arcsecond DEM utilized <http://viewer.nationalmap.gov/launch/>

26 Year 2100 Coastal Hazard Hotspot Map

Figure 4



²⁶ Data compiled from *The Impacts of Sea-Level Rise on the California Coast* and checked for accuracy against *Sea-Level Rise for the Coasts of California, Oregon, and Washington: Past, Present, and Future*. Note this map does not account for elevation of the roadway from Coastal Hazards, and is applicable for planning purposes only. For site specific GIS data contact the Caltrans District 1 GIS Coordinator

Coastal Hazard Guidance

Information for coastal hazard guidance was taken from the 2015 *Coastal Commission Sea Level Rise Policy Guidance* and the 2014 *District 1 Climate Change Vulnerability Assessment and Pilot Studies FHWA Climate Resilience Pilot Final Report*. Please review these documents for more specific guidance. In general adaptation strategies can be divided into three categories: protect (defend²⁷), accommodate, or retreat. Where applicable projects should consider one or more of these climate change adaptation strategies. The following are a subset of specific Coastal Hazards applicable to projects along Route 1:

Bluff Erosion: in instances where bluff erosion occurs, the state highway is potentially exposed to damages from various slides and slips. Often when the highway is located on a seaside cliff or bluff few alternative routes are feasible. In these circumstances protection strategies may be the only viable strategy. When considering protection strategies, impacts to beach access should be considered when applicable²⁸.

Dune Erosion: while dune erosion may not directly impact roadway integrity, dunes, beaches, and wetlands afford Route 1 protection from storm surge, and flooding. Adaptation strategies to protect or elevate the roadway may be necessary near dune erosion sights, and proactive protection strategies for natural armoring should be considered when feasible.

1-Percent Annual Chance Flood: the combination of increased sea levels and climate change induced variations in storm severity has the potential to increase flood related closures of Route 1. Adaptation strategies for flooding generally include accommodating by elevating the roadway, or retreating from flood zones.

Salt Water Inundation: Route 1 is expected to experience minimal salt water inundation by 2100. Route 1's resilience to SLR can be attributed to elevation, and natural armoring²⁹. Although no major inundation is expected along Route 1, areas crossed by bridges may become inundated requiring minor protection strategies be considered. Furthermore, saltwater inundation, dune erosion, and bluff erosion may bring sections of Route 1 closer to tidal influences exacerbating other coastal hazards.

While the information above is offered as general guidance, each project will need to consider site specific details in order design facilities that are safe, sustainable, efficient, cost effective, meet motorized & non-motorized needs, and maintain Route 1's scenic nature.

Cultural Resources

Route 1 travels through the traditional homeland of the Pomo, Coast Yuki, Sinkyone, and Cahto tribes. The Southern portion of Mendocino Coast is the traditional homeland of the Pomo People. Among the Pomo Native Americans there are 7 unique dialects associated with geographical regions. These geographical regions can further be divided into bands, which were often determined by the population of individual villages. The Coastal Yuki were predominately settled in the South Fork of the Eel River watershed to Rockport on the coast. The Sinkyone people settled along the coast north of Rockport and inland past Leggett. In contrast, the Cahto would seasonally travel to the coast from the area around Laytonville. Due to the decentralized nature of the Native American culture along the Mendocino Coast and the likelihood of cultural and archeological resources along Route 1 the tribes, reservations, and Rancherias along the coast should be consulted early in the project planning process.

²⁷ Bracketed information refers to language used in the 2014 *District 1 Climate Change Vulnerability Assessment and Pilot Studies FHWA Climate Resilience Pilot Final Report* http://www.dot.ca.gov/dist1/d1transplan/system_planning/ccps/final_report-main_document.pdf

²⁸ Refer to page 123 of the 2015 *Coastal Commission Sea Level Rise Policy Guidance* for further information <http://www.coastal.ca.gov/climate/slrguidance.html>

²⁹ Natural impediments to tidal action. Please consult chapter 7 of the 2015 *California Coastal Commission Sea Level Rise Policy Guidance* for more information

Many of the communities along Route 1 are historic logging towns with buildings dating back to the 1850's. Due to the historic significance of these buildings many are included in the National Register of Historic Places as well as the California Register of Historical Resources. Furthermore, On March 11th 2014 the boundaries of the California Coastal National Monument were expanded by President Barack Obama to include The Point Arena-Stornetta Public Lands. The California Coastal National Monument was declared a National Monument by President Bill Clinton January 11th 2000, and is under the jurisdiction of the Bureau of Land Management.

CORRIDOR PERFORMANCE

Traffic volumes on Route 1 are generally low except in the greater Fort Bragg area where volumes can exceed 20,000 Average Annual Daily Traffic (AADT). Furthermore, truck volumes are generally low throughout Route 1. North of Fort Bragg traffic volumes steadily decrease (750 AADT north of Westport), indicating Route 1 predominantly serves local traffic as opposed to interregional traffic. A map on the following page illustrates traffic volumes in the greater Fort Bragg Area.

Level of service (LOS) is constrained in many locations, due to narrow shoulder widths and the lack of passing opportunities. In the Fort Bragg area, high traffic volumes, signalized intersections, and two-lane sections impact LOS. Within Fort Bragg and other communities where Route 1 functions as a main street non-motorized traffic can also impact LOS. Due to Route 1's function as a main street and frequent non-motorized use, especially during the summer months, Caltrans District 1 and the City of Fort Bragg do not identify a threshold LOS for Route 1 within the greater Fort Bragg area.

CORRIDOR PERFORMANCE TABLE

Table 14

Segment	1	2	3	4	5	6	7
BASIC SYSTEM OPERATIONS							
AADT* (Base Year)	1,750	3,200	9,500	18,500	5,950	1,150	750
AADT* (Horizon Year)	1,850	3,400	10,000	19,400	6,250	1,200	800
LOS Method**	2-LN	2-LN	2-LN	4-LN, URB	2-LN	2-LN	2-LN
LOS (Base Year)**	C	D	D	†	C	C	B
LOS (Horizon Year)**	C	D	D	†	C	C	B
DVMT (Base Year)	70,300	23,500	112,800	58,100	15,000	14,500	20,900
DVMT (Horizon Year)	73,800	26,900	129,400	66,700	17,200	15,200	22,000
TRUCK TRAFFIC							
Total Average Annual Daily Truck Traffic (AADT) (Base Year)	110	220	220	620	120	120	105
Total Trucks (% of AADT) (Base Year)	7.7%	6.9%	6.9%	3.0%	15.2%	15.2%	15.1%
5+ Axle Average Annual Daily Truck Traffic (AADT) (Base Year)	20	70	70	90	55	55	50
5+ Axle Trucks (As a % of AADT) (Base Year)	1.2%	2.2%	2.2%	0.4%	6.8%	6.8%	6.7%
PEAK HOUR TRAFFIC DATA							
Peak Hour Length	1	1	1	1	1	1	1
Peak Hour Direction	S	S	S	S	S	S	S
Peak Hour Time of Day	1300	1300	1300	1300	1300	1300	1300
Peak Hour Directional Split	68	68	68	68	68	68	68
Peak Hour VMT (Base Year)	9,350	3,300	14,100	5,900	2,500	2,550	3,200
Peak Hour VMT (Horizon Year)	9,800	3,800	16,200	6,750	2,900	3,000	3750

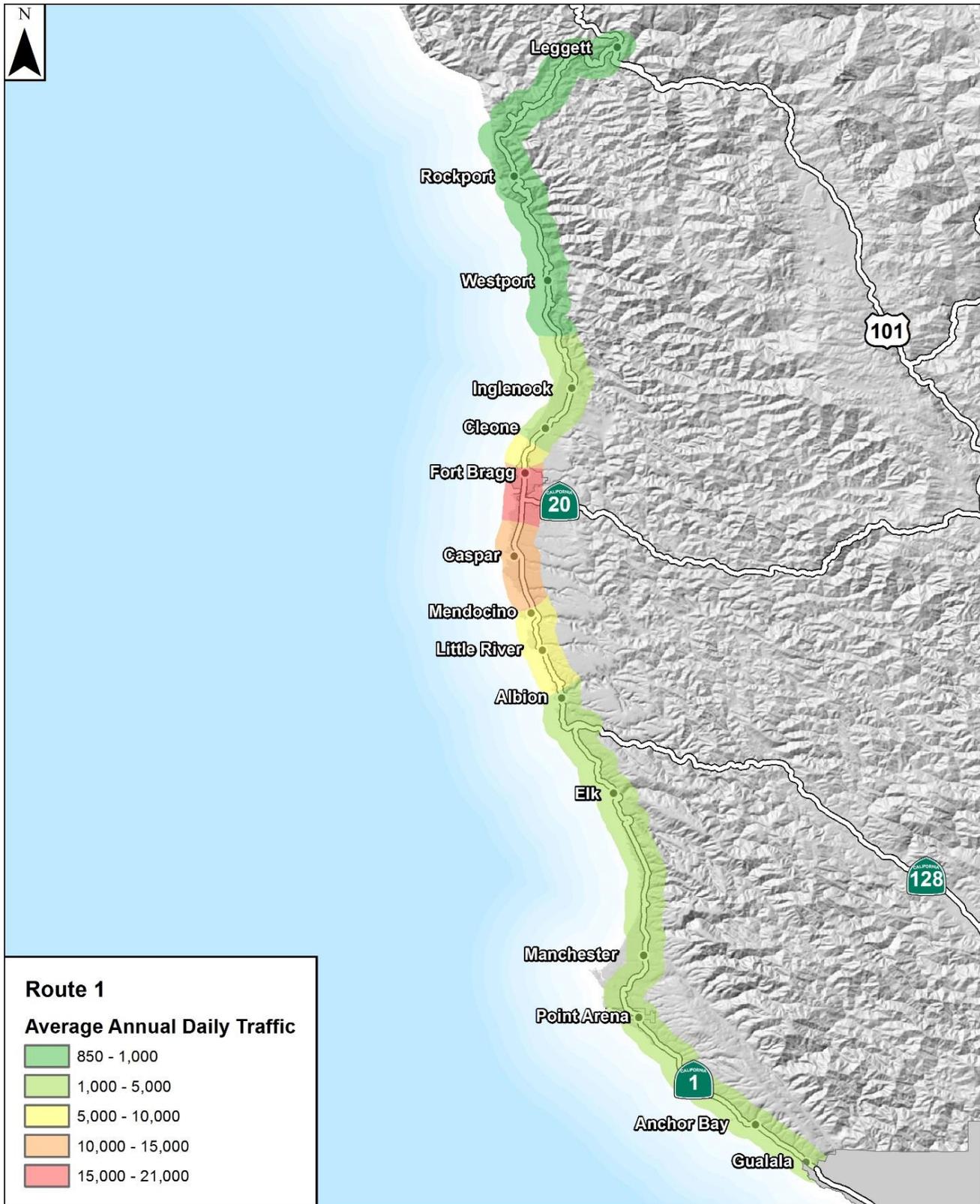
* Base Year AADT taken from 2012 Traffic Volumes on California State Highways, Horizon Year AADT projected with 2013 District 1 growth factors

**Level of Service calculated using Highway Capacity Manual (HCM) 2010 software

†Route 1 Experiences unstable flow (LOS F) through Fort Bragg at peak hours due to Route 1's function as a main street

30 ROUTE 1 TRAFFIC VOLUME MAP

Figure 5



³⁰ Volumes from Caltrans Traffic Census Program <http://traffic-counts.dot.ca.gov/>

KEY CORRIDOR ISSUES

Shoulder Width

Caltrans District 1 must balance the need to increase non-motorized access through the addition or widening of shoulders on Route 1 with California Coastal Commission regulations, the Mendocino County Local Coastal Program, Caltrans Design Standards, community concerns, and funding availability.

Shoulders are designed to provide a variety of uses for roadways including: enhancing safety, non-motorized use, emergency parking, maintenance, drainage, improved visibility, and structural support of the pavement edge. Shoulder standards were developed from long standing operational history, observed traffic patterns, scientific research, and industry standards. Design Standards are quantified in terms of AADT as this is the most reliable metric for quantifying highway use, and has shown correlations with metrics for: safety, efficiency, stewardship, and maintenance. Safety benefits of shoulder widths on bridges is clearly illustrated in the 2000 study *Accident Mitigation Guide for Congested Rural Two-Lane Highways* which found increasing bridge shoulders from 0' to 8' reduced the accident rate by 85%, and increasing 4' shoulders to 8' shoulders reduced the accident rate by 50%.

The *California Coastal Act* of 1976, Section 30254, states: "New or expanded public works facilities shall be designed and limited to accommodate needs generated by development or uses permitted consistent with the [Coastal Act]; however, that it is the intent of the Legislature that State Highway Route 1 in rural areas of the coastal zone remain a scenic two-lane road." With the exception of the Fort Bragg area (which is considered an Urban Cluster by the US Census), the route has retained these characteristics.

Section 3.8-6 of the *Coastal Element of the Mendocino County General Plan* states, in part: "It shall be a goal of the Transportation Section to achieve, where possible and consistent with other objectives of The Coastal Act and plan policies for Highway 1, a road bed with a vehicle lane width of 16 feet including the shoulder to achieve a 32 foot paved roadway [12-foot vehicle lane and 4-foot paved shoulder]. The minimum objective shall be a 14-foot vehicle lane width [10-foot vehicle lane and 4-foot paved shoulder]." A 32 foot paved roadway objective meets current³¹ Caltrans Design Standards for approximately two-thirds of Route 1. However, for the higher volume areas around Fort Bragg, Design Standards may call for additional travel lanes and 8 foot shoulders. The minimum objective stated in the General Plan (10 foot lanes) would require a Mandatory Design Exception.

Depending on the type of project being constructed, different design standards for shoulder widths apply. Each project type has criteria and thresholds to determine minimum standards for shoulder widths.

The scenic qualities of the route, as well as its inclusion in the PCBR, attract a significant number of cyclists. As a result, the Mendocino Council of Governments (MCOG) has classified Route 1 in high need for shoulders for decades, most recently in the *2012 Regional Bikeway Plan* and in the *2013 Pacific Coast Bike Route & California Coastal Trail Engineered Feasibility Study*. In addition, community planning documents for coastal communities call for complete streets improvements along Route 1.

Due to the complexity of Route 1 and the surrounding environment, providing shoulders can be very challenging. Often, no explicit funding source exists for shoulder widening projects. Consequently, it is important to incorporate shoulder widening into appropriate projects and to find alternative funding sources when possible.

³¹ Current as of 2015, Caltrans Design Standards are subject to change. Please consult the most recent Highway Design Manual for up to date design standards. <http://www.dot.ca.gov/hq/oppd/hdm/hdmtoc.htm>

Structures

The term “structure” refers to a variety of facilities constructed by Caltrans including, bridges, tunnels, viaducts, overpasses, etc. Most structures on Route 1 are bridges spanning steep terrain and waterways. The minimum HDM standard for shoulders on most new bridges is 8-feet (locations with over 1,000 AADT). However, depending on the type of project and the characteristics of the location, required cross-sections can vary. Different types of rehabilitation projects may have different shoulder requirements than bridge replacements. Design exceptions may be justified, based on the local context. For example, recent bridge projects at Greenwood Creek and Ten Mile River were developed with 6 foot shoulders and a separate pedestrian path on the southbound side of the Bridge in collaboration with the Coastal Commission. These bridges received design exceptions for non-standard shoulder in part due to their volumes being relatively close to the AADT threshold, and the inclusion of separated pedestrian paths.



Route 1 as a main street in the community of Point Arena



Surf carrying debris at Seaside Beach Creek

Main Street Communities

Throughout the Mendocino Coast Route 1 serves as a main street for multiple communities. Each of these Mendocino Coast communities has differing improvement needs. Some of these improvements include: sidewalk infill, curb ramps, and bicycle lanes. Compounding the issue, some communities lack parallel facilities to Route 1, which can lead to congestion on the route. Furthermore, local communities have unique historical and environmental considerations. Consequently, it is important to maintain a dialogue with our local transportation partners as well as community members to ensure mobility needs along Route 1 are met in a way that enriches local communities.

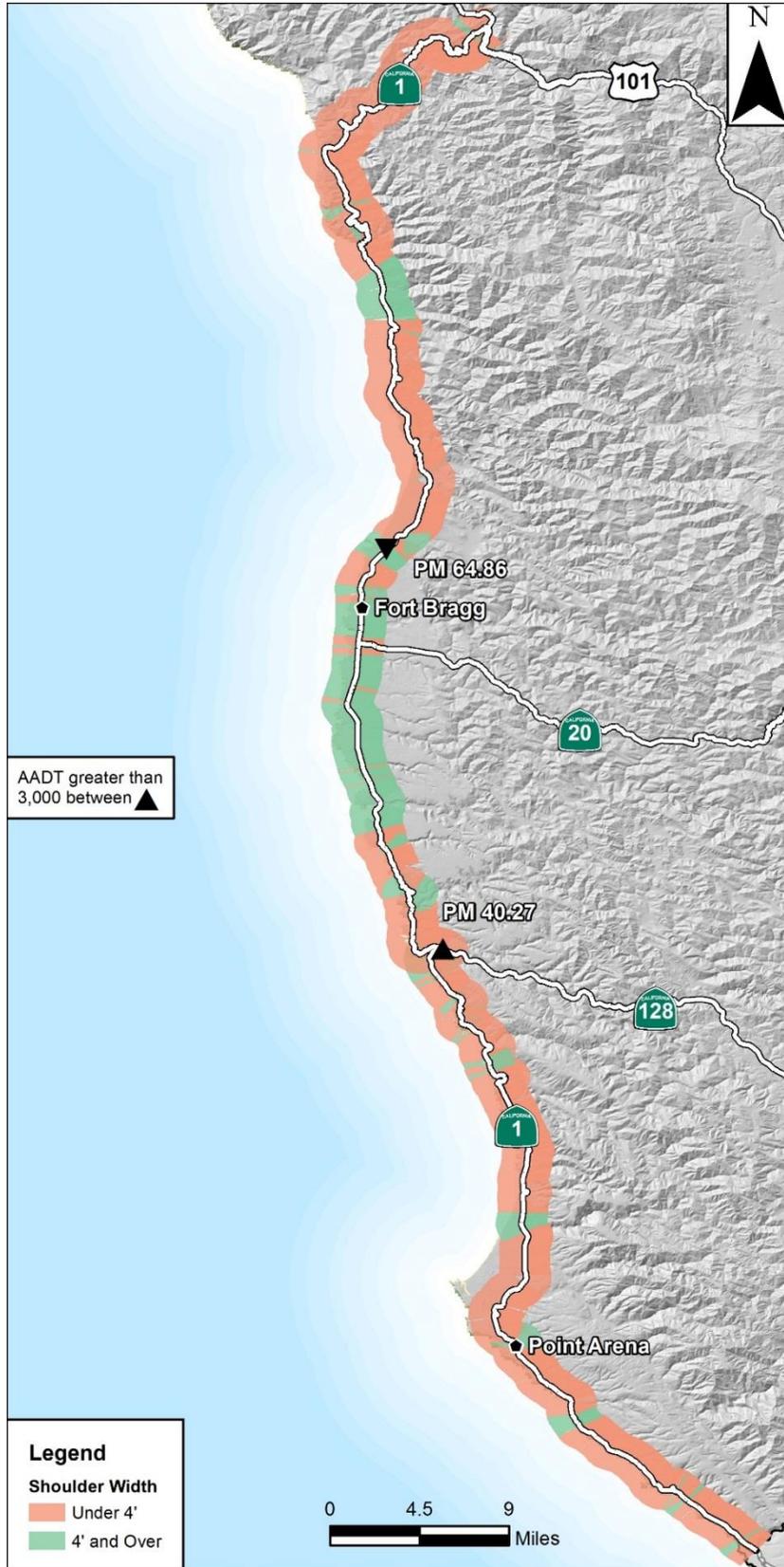
Coastal Environment

Route 1's rural nature, rugged terrain, and often inclement weather make the route challenging to maintain. Inclement weather coupled with sea swell can wash debris onto Route 1 at locations close to tidal influence. Along with debris storms will cause flooding in the low lying areas of Route 1. The degree of flooding and response can vary from temporary warning signs advising of pooled water in low areas of the road, to full closures of Route 1. The most notable flooding location is the Garcia River floodplain. This area floods frequently enough that gates have been installed for temporary road closures. Depending on storm severity, flooding can isolate Point Arena residents requiring substantial out of direction travel³². Consequently, maintenance should be consulted early in the project design process, so as to utilize their extensive knowledge of field conditions to develop projects that are easier to maintain, reducing long term maintenance costs.

³² Cost estimates for alternatives to existing facilities can be found in the 2014 *District 1 Climate Change Vulnerability Assessment and Pilot Studies FHWA Climate Resilience Pilot Final Report*

³³ APPROXIMATE EXISTING SHOULDER WIDTH ROUTE 1

Figure 6



³³ Shoulder taken from the Caltrans Transportation System Network (TSN) State Highway Inventory Database

CORRIDOR CONCEPT

CONCEPT RATIONALE

The Ultimate Facility Concept serves as a guide for long range planning of route improvements that satisfy Caltrans Design requirements, community needs, meets regulatory policies, and fosters collaboration with partner agencies. The Ultimate Facility Concept functions to protect the State's investment in Route 1, while recognizing the unique aesthetic, environmental, and cultural characteristics of the route. The Ultimate Facility Concept also maintains consistency with Route 1's functional classification as a Minor Arterial, and for the route's intraregional use.

ULTIMATE FACILITY CONCEPT

The Ultimate Facility Concept for Route 1 is a rural two-lane highway, with the exception of some parts of the greater Fort Bragg Area, where high traffic volumes and congestion warrant a four-lane facility. Furthermore, when feasible it is the goal of Caltrans District 1 to provide shoulders that meet Caltrans Design Standards, meet regulatory policies, and provide adequate width for non-motorized use. Within communities along Route 1, District 1 will partner with local agencies to implement Complete Streets improvements that are consistent with design standards, local plans, regulatory policies, and appropriately meet transportation needs. Achieving the Ultimate Facility Concept for Route 1 may not be feasible within the 20 year planning horizon due to: environmentally sensitive areas, cultural resources, topography, and funding availability. As a result, design exceptions and mitigation may be necessary to achieve needed improvements.

Capacity enhancing improvements may be necessary in the greater Fort Bragg area to maintain stable flow over the 20 year planning period and beyond. Between approximately postmile 58.5 (SR1/Boice Lane) and postmile 59.8 (junction SR1/SR20) traffic volumes may warrant expansion to four lanes. Any improvements will be carried out in cooperation with the City of Fort Bragg, the California Coastal Commission, and the Mendocino Council of Governments (MCOG).

PLANNED AND PROGRAMMED PROJECTS

Table 15

Segment	Project	Description	Planned or Programmed	Location	Source	Purpose	Implementation Phase
1	Gualala Community Improvement	Reduce lane widths to 11 feet, add two way left turn lane, add class II bicycle lanes, add 8 foot sidewalks, add three crosswalks with refuge islands, add landscape treatments	Programmed	Community of Gualala	Gualala Community Action Plan	Complete Streets	Short Term and Long Term
1	Point Arena Community Improvement	Sidewalk infill, bulbouts, street landscaping, ADA improvements (partially constructed)	Planned	City of Point Arena	Point Arena Community Action Plan	Complete Streets:	Partially Constructed/Long Term
1	Crosswalks and Bike Lanes	Adds Crosswalks and Bike lanes in Point Arena	Planned	PM 14.90-15.20	SHOPP	Safety, Complete Streets	Short Term
1	Pacific Coast Bike Route	Non-motorized improvements at spot locations	Planned	PM 14.70-21.80	STIP	Non-motorized improvements	Long Term
1/4	Two Bridges (Elk Creek Bridge and Hare Creek Bridge)	Widen Bridge decks to accommodate non-motorized traffic, and standardized bridge rails.	Planned	PM 31.30/59.80	SHOPP	Safety, Bridge Rehabilitation	Long Term
1/2	Albion/Navarro Metal Beam Guard Rail (MBGR)	Increase lane width to 12 feet, add 4 foot shoulders, add rumble strips and MBGR	Programmed	PM 40.10-40.90	SHOPP	Safety	Short Term
2	Salmon Creek* Bridge Replacement	Replace Salmon Creek Bridge with 12 foot lanes, 8 foot shoulders, and 5 foot pedestrian walkway	Programmed	PM 42.40-43.30	SHOPP	Safety, Bridge Rehabilitation	Short Term
2	Albion River* Bridge Replacement	Replace Albion River Bridge, add shoulder width, add pedestrian walkways, redesign curve	Programmed	PM 43.30-44.20	SHOPP	Safety, Bridge Rehabilitation	Short Term
3	Caspar Flashing Beacon	Install a pedestrian activated warning beacon	Programmed	PM 55.0	SHOPP	Safety	Short Term
4/5	Four Bridges	Widen Shoulders to 8', Upgrade Bridge Rails; add pedestrian facilities on 3 of 4 bridges.	Programmed	PM 48.05/62.12	SHOPP	Safety, Bridge Rehabilitation	Short Term
5/6	STIP Shoulder Widening	Widen Shoulders to provide better bicycle access	Planned	PM 62.2-70.4	TBD	Non-motorized improvements	Long Term
6	Seaside Beach	Repair Storm Damage, add 4 foot shoulders.	Programmed	PM 70.30-70.70	STORM DAMAGE	Storm Damage Repair	Short Term
7	Westport Bike Lanes	Improve shoulders to 4'	Planned	PM 77.48-78.15	MCOG ATP	Improve non-motorized Access	Grant Application

Short Term Projects: Programmed for construction within 5 years

* Geometric cross section for these projects has yet to be finalized

STRATEGIES TO ACHIEVE THE ULTIMATE FACILITY CONCEPT

Table 16

Segment	Description	Location	Source	Purpose	Implementation Phase
1-6	Improve livability in communities along Route 1	Gualala, Point Arena, Manchester Elk, Fort Bragg, and Cleone	Community Action Plans, Caltrans D1	Safety, Complete Streets	Short and Long Term
1-7	Widen Shoulders to accommodate non-motorized traffic	All of Route 1 in Mendocino County	Caltrans D1*	Safety, Improve Non-motorized Access	Long term
1,6,7	Interim cyclists improvements including: Cyclist activated warnings, bicycle climbing lanes, bicycle turnouts	At locations where full shoulder improvements are prohibitively costly	Caltrans	Improve Bicyclist Access to PCBR	Short Term

*2008 State Route 1 Corridor Study Update, 2013 Pacific Coast Bike Route/California Coastal Trail Engineered Feasibility Study, Caltrans Internal Shoulder Inventory

Due to the nature of the Projects along Route 1 Active Transportation Program (ATP) funds may be available to our local partners. In order for ATP funds to be utilized, local agencies such as MCOG must act as the applicant/sponsor and apply for most of the funds.³⁴

Strategies to Achieve the Ultimate Facility Concept

- **Safety:** safety is the highest priority of Caltrans and our regional partners. Necessary safety improvements will be made as needs are identified.
- **Shoulder improvement:** the locations stated in the Bicycle section of this TCR represent a starting point for shoulder widening projects along Route 1. Future shoulder widening projects should focus on completing a continuous shoulder over the entire route. When shoulder widening projects are considered, priority should be given to locations with no existing shoulders, uphill segments where cyclist cannot maintain speed, and curvilinear segments that obscure vehicles vision of cyclist. As an interim step bicycle turnouts and climbing lanes should be developed in locations with priority conditions, especially in the southbound direction as this is the primary direction of cyclist travel.
- **Complete Streets:** where Route 1 serves as a main street projects should focus on meeting transportation needs in a way that enriches a local sense of community. Some of these projects include: sidewalk infill, ADA improvements, enhanced pedestrian crossing facilities, street landscaping, improvements for cyclists, and transportation art. Coordination with our local partners is vital to the success of Complete Streets projects.
- **Integration of the Pacific Coast Bike Route (PCBR) and California Coastal Trail (CCT):** in the rural areas between communities provide adequate shoulder width for cyclist and pedestrian use. Support partnerships in developing off highway trail segments where feasible.
- **SHOPP Asset Management Program:** The State Highway Operation and Protection Program (SHOPP) is in the process of adopting a new paradigm for facility rehabilitation projects, "Asset Management." This program will pool funds from a variety of areas within the SHOPP to build projects that address multiple deficiencies through a single project. For example, a rehabilitation project might also address complete streets, hydraulics, fish passage, and Americans with Disabilities (ADA) requirements—all in one project. This has the potential to allow us to make many long-needed improvements.

³⁴ Visit <http://www.dot.ca.gov/hq/LocalPrograms/atp/> for more information on the ATP

APPENDIX A
GLOSSARY OF TERMS AND ACRONYMS

Acronyms

AADT- Annual Average Daily Traffic
ADA – Americans with Disabilities Act of 1990
ADT- Average Daily Traffic
CALTRANS – California Department of Transportation
CMA- Congestion Management Agencies
CEQA- California Environmental Quality Act
CSS – Context Sensitive Solutions
FHWA – Federal highway Administration
FSR – Feasibility Study Report
FSTIP- Federal Statewide Transportation Improvement Program
FTIP – Federal Transportation Improvement Program
GHG- Green House Gas
GIS – Geographic Information System
HCP- Habitat Conservation Plan
IGR-Intergovernmental Review
ITS – Intelligent Transportation System
KPRA – Kingpin to Rear Axle
LOS – Level of Service
MPO- Metropolitan Planning Organizations
NOA – Naturally Occurring Asbestos
NCCP- Natural Community Conservation Plan
NEPA- National Environmental Policy Act
PA&ED – Project Approval and Environmental Document
PID-Project Initiation Document
PS&E – Plans Specifications and Estimate
PSR- Project Study Report
RHNA- Regional Housing Needs Allocation
RTP- Regional Transportation Plan
RTIP – Regional Transportation Improvement Program
RTPA- Regional Transportation Planning Agencies
SAFETEA - Safe, Accountable, Flexible and Efficient Transportation Equity Act of 2005
SCS- Sustainable Community Strategies
SHOPP- State Highway Operation Protection Program
STIP – State Transportation Improvement Program
TEA-21 Transportation Equity Act for the 21st Century
TDM – Transportation Demand Management
TMS – Transportation Management System
TSN- Transportation System Network
VMT – Vehicle Miles Traveled

APPENDIX B DEFINITIONS

AADT – Annual Average Daily Traffic is the total volume for the year divided by 365 days. The traffic count year is from October 1st through September 30th. 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 annual average daily traffic by compensating for seasonal influence, weekly variation and other variables which may be present. Annual ADT is necessary for presenting a statewide picture of traffic flow, evaluating traffic trends, computing accident rates, planning and designing highways and other purposes.

Base year – The year that the most current data is available to the Districts

Bikeway Class I (Bike Path) – Provides a completely separated right of way for the exclusive use of bicycles and pedestrians with cross flow by motorists minimized.

Bikeway Class II (Bike Lane) – Provides a striped lane for one-way bike travel on a street or highway.

Bikeway Class III (Bike Route) – Provides for shared use with pedestrian or motor vehicle traffic.

Bottlenecks – A bottleneck is a location where traffic demand exceeds the effective carrying capacity of the roadway. In most cases, the cause of a bottleneck relates to a sudden reduction in capacity, such as a lane drop, merging and weaving, driver distractions, a surge in demand, or a combination of factors.

Capacity – The maximum sustainable hourly flow rate at which persons or vehicles reasonably can be expected to traverse a point or a uniform section of a lane or roadway during a given time period under prevailing roadway, environmental, traffic, and control conditions.

Capital Facility Concept – The 20-25 year vision of future development on the route to the capital facility. The capital facility can include capacity increasing, State Highway, bicycle facility, pedestrian facility, transit facility (Intercity Passenger Rail, Mass Transit Guideway etc.), grade separation, and new managed lanes.

Complete Streets – A transportation facility that is planned, designed, operated, and maintained to provide safe mobility for all users, including bicyclists, pedestrians, transit riders, and motorists appropriate to the function and context of the facility

Concept LOS – The minimum acceptable LOS over the next 20-25 years.

Conceptual – A conceptual improvement or action is a project that is needed to maintain mobility or serve multimodal users, but is not currently included in a financially constrained plan and is not currently programmed.

Corridor – A broad geographical band that follows a general directional flow connecting major sources of trips that may contain a number of streets, highways, bicycle, pedestrian, and transit route alignments. Off system facilities are included as informational purposes and not analyzed in the TCR.

Facility Type – The facility type describes the state highway facility type. The facility could be freeway, expressway, conventional, or one-way city street.

Freight Generator – Any facility, business, manufacturing plant, distribution center, industrial development, or other location (convergence of commodity and transportation system) that produces significant commodity flow, measured in tonnage, weight, carload, or truck volume.

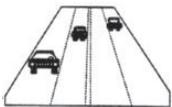
Headway – The time between two successive vehicles as they pass a point on the roadway, measured from the same common feature of both vehicles.

Horizon Year – The year that the future (20-25 years) data is based on.

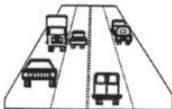
Intermodal Freight Facility – Intermodal transport requires more than one mode of transportation. An intermodal freight facility is a location where different transportation modes and networks connect and freight is transferred (or “transloaded”) from one mode, such as rail, to another, such as truck.

ITS – Intelligent Transportation System improves transportation safety and mobility and enhances productivity through the integration of advanced communications technologies into the transportation infrastructure and in vehicles. Intelligent transportation systems encompass a broad range of wireless and wire line communications-based information and electronics technologies to collect information, process it, and take appropriate actions.

LOS – Level of Service is a qualitative measure describing operational conditions within a traffic stream and their perception by motorists. A LOS definition generally describes these conditions in terms of speed, travel time, freedom to maneuver, traffic interruption, comfort, and convenience. Six levels of LOS can generally be categorized as follows:



LOS A describes free flowing conditions. The operation of vehicles is virtually unaffected by the presence of other vehicles, and operations are constrained only by the geometric features of the highway.



LOS B is also indicative of free-flow conditions. Average travel speeds are the same as in LOS A, but drivers have slightly less freedom to maneuver.



LOS C represents a range in which the influence of traffic density on operations becomes marked. The ability to maneuver with the traffic stream is now clearly affected by the presence of other vehicles.



LOS D demonstrates a range in which the ability to maneuver is severely restricted because of the traffic congestion. Travel speed begins to be reduced as traffic volume increases.



LOS E reflects operations at or near capacity and is quite unstable. Because the limits of the level of service are approached, service disruptions cannot be damped or readily dissipated.



LOS F is a stop and go, low speed conditions with little or poor maneuverability. Speed and traffic flow may drop to zero and considerable delays occur. For intersections, LOS F describes operations with delay in excess of 60 seconds per vehicle. This level, considered by most drivers unacceptable often occurs with oversaturation, that is, when arrival flow rates exceed the capacity of the intersection.

Multi-modal – The availability of transportation options using different modes within a system or corridor, such as automobile, subway, bus, rail, or air.

System Operations and Management Concept – Describe the system operations and management elements that may be needed within 20-25 years. This can include Non-capacity increasing operational improvements (Aux. lanes, channelization's, turnouts, etc.), conversion of existing managed lanes to another managed lane type or characteristic (e.g. HOV land to HOT lane), TMS Field Elements, Transportation Demand Management, and Incident Management.

Peak Hour – The hour of the day in which the maximum volume occurs across a point on the highway.

Peak Hour Volume – The hourly volume during the highest hour traffic volume of the day traversing a point on a highway segment. It is generally between 6 percent and 10 percent of the ADT. The lower values are generally found on roadways with low volumes.

Peak Period – Is a part of the day during which traffic congestion on the road is at its highest. Normally, this happens twice a day, once in the morning and once in the evening; the time periods when the most people commute. Peak Period is defined for individual routes, not a district or statewide standard.

Planned– A planned improvement or action is a project in a long-term financially constrained plan, such as an approved Regional Transportation Plan (RTP or MTP) or Capital Improvement Plan.

Post Mile – A post mile is an identified point on the State Highway System. The milepost values increase from the beginning of a route within a county to the next county line. The milepost values start over again at each county line. Milepost values usually increase from south to north or west to east depending upon the general direction the route follows within the state. The milepost at a given location will remain the same year after year. When a section of road is realigned, new milepost (usually noted by an alphabetical prefix such as "R" or "M") are established for it. If relocation results in a change in length, "milepost equations" are introduced at the end of each relocated portion so that mileposts on the remainder of the route within the county will remain unchanged.

Programmed – A programmed improvement or action is a project in a near-term programming document identifying funding amounts by year, such as the State Transportation Improvement Program or the State Highway Operations and Protection Program.

Railroad Class I – The Surface Transportation Board (STB) defines a Class I railroad in the U.S. as a carrier having annual operating revenues of \$250 million or more. This class includes the nation's major railroads. In California, Class I railroads include Union Pacific Railroad (UP) and Burlington Northern Santa Fe Railway (BNSF).

Railroad Class II – STB defines a Class II railroad in the U.S. as having annual carrier operating revenues of less than \$250 million but more than \$20 million. Class II railroads are considered mid-sized freight-hauling railroad in terms of operating revenues. They are considered "regional railroads" by the Association of American Railroads.

Railroad Class III – Railroads with annual carrier operating revenues of \$20 million or less. The typical Class III is a short line railroad, which feeds traffic to or delivers traffic from a Class I or Class II railroad.

Route Designation –A route's designation is adopted through legislation and identifies what system the route is associated with on the State Highway System. A designation denotes what design standards should apply during project development and design. Typical designations include but not limited to National Highway System (NHS), Interregional Route System (IRRS), Scenic Highway System,

Rural – Fewer than 5,000 in population designates a rural area. Limits are based upon population density.

APPENDIX C

POTENTIAL IMPROVEMENT SEGMENTS (Bicycle and Pedestrian)

As identified in the Pacific Coast Bike Route & California Coastal Trail Engineered Feasibility Study
Alta Planning and Design, Feb. 4, 2013

Post Mile	Segment	Description	Planning Level Cost Estimate (Millions)	Cost/Mile (Millions)
0.0/0.5 1.0/1.75	Sonoma Co. Line to Gualala	No. Sea Ranch to Gualala	\$14.1	\$11.28
1.75/ 3.25	Gualala to Glennen Gulch	Residential/Lodging North of Gualala	\$8.1	\$ 5.4
3.25/ 6.00	Anchor Bay	Local and visitor serving Bike and Pedestrian Access	\$20.9	\$7.6
10.25/ 14.75	Hearn Gulch to Point Arena	Bike/Ped Access to popular recreational area	\$22.8	\$5.07
16.0/ 18.75	Point Arena to Garcia River	Connection to Manchester State Beach	\$13.2	\$5.28
32.25/ 33.75	Greenwood State Beach/Bridge and Elk	Popular, visitor serving complex	\$14.3	\$9.53
33.75/ 34.75	Elk to Cuffey's Cove	Popular recreational destination	\$2.2	\$2.2
39.75/ 48.0	Navarro River to Little River	Access to the community of Little River and Van Damme State Park	\$51.8	\$6.28
50.5/ 57.75	Mendocino to Fort Bragg	Complete improvements thru densely populated area	\$11.7	\$1.61
69.25/ 73.25	Abalobadiah Gulch to Chadbourne Gulch	South of Westport, access to Seaside Beach	\$35.3	\$9.47
75.25/ 78.5	Westport to Westport Union Landing	Includes community of DeHaven (locally high interest)	\$23.1	\$7.11

APPENDIX D USGS ANDERSON LAND COVER CLASSIFICATION

A full description of every land class is available at <http://landcover.usgs.gov/pdf/anderson.pdf>
Land Classes used in this TCR are described below. Information from: *A Land Use and Land Cover Classification System For Use With Remote Sensor Data* By James R. Anderson, Ernest E. Hardy, John T. Roach, and Richard E. Witmer. United States Government Printing Office, Washington: 1976.

Urban or Built-up Land: Included in this category are cities, towns, villages, strip developments along highways, transportation, power, and communications facilities, and areas such as those occupied by mills, shopping centers, industrial and commercial complexes, and institutions that may, in some instances, be isolated from urban areas.

Residential: Residential: Land uses range from high density, represented by the multiple-unit structures of urban cores to low density, where houses are on lots of more than an acre.

Commercial and Services: Commercial areas are those used predominantly for the sale of products and services.

Industrial: Industrial areas include a wide array of land uses from light manufacturing to heavy manufacturing plants.

Transportation, Communications, and Utilities: Generally included in other categories unless they can be mapped separately at whatever map scale is being employed.

Industrial and Commercial Complexes Category includes those industrial and commercial land uses that typically occur together or in close functional proximity. Such areas commonly are labeled with terminology such as "Industrial Park."

Mixed Urban or Built-up Land: The Mixed Urban or Built-up category is used for mixture of Level II Urban or Built-up uses where individual uses cannot be separated at mapping scale. Where the intermixed land use or uses total less than one-third of the specific area.

Other Urban or Built-up Land: Other Urban or Built-up Land typically consists of uses such as golf driving ranges, zoos, urban parks, cemeteries, waste dumps, water-control structures and spillways.

Agricultural Land: Agricultural Land may be defined broadly as land used primarily for production of food and fiber.

Rangeland: Rangeland historically has been defined as land where the potential natural vegetation is predominantly grasses, grass-like plants, forbs, or shrubs and where natural herbivory was an important influence in its pre-civilization state.

Forest Land: Forest Lands have tree-crown areal density of 10 percent or more, are stocked with trees capable of producing timber or other wood products, and exert an influence on the climate or water regime.

Wetland: Wetlands are those areas where the water table is at, near, or above the land surface for a significant part of most years.

Barren Land: Barren Land is land of limited ability to support life and in which less than one-third of the area has vegetation or other cover.

Beaches: Beaches are the smooth sloping accumulations of sand and gravel along shorelines. The surface is stable inland, but the shoreward part is subject to erosion by wind and water and to deposition in protected areas.

APPENDIX E
FULL VEGETATION COVER

A full breakdown of Vegetation within a 5 mile radius of Route 1 is listed below. Data taken from U.S. Forest Service Land Cover Datum. This information is included for context only, and is not appropriate for biological risk assessments.

Vegetation Type	Percent
Agricultural Land	0.84%
Cropland and Pasture	0.35%
Herbaceous Rangeland	7.19%
Shrub and Brush Rangeland	1.78%
Mixed Conifer Hardwood Forest	33.91%
Conifer Forest	46.27%
Hardwood Forest	4.58%
River/Stream/Canal	0.24%
Perennial Lake or Pond	0.03%
Reservoir	0.01%
Intermittent Lake or Pond	0.00%
Forested Wetland	0.09%
Non-forested wetland	0.04%
Beaches	0.07%
Sandy Area Other than Beaches	0.41%
Mixed Barren Land	0.30%
Built-up land	3.87%

APPENDIX F

SPECIES BY SEGMENT

Species Count Taken from a one mile buffer of Route 1. This is provided for Route Context only. Additional data sources and biological assessments will be conducted during project development.

Scientific Name	Common Name	Segment
<i>Abronia umbellata</i> var. <i>breviflora</i>	pink sand-verbena	1
<i>Agrostis blasdalei</i>	Blasdale's bent grass	1
<i>Aplodontia rufa nigra</i>	Point Arena mountain beaver	1
<i>Arborimus pomo</i>	Sonoma tree vole	1
<i>Calystegia purpurata</i> ssp. <i>saxicola</i>	coastal bluff morning-glory	1
<i>Campanula californica</i>	swamp harebell	1
<i>Carex lyngbyei</i>	Lyngbye's sedge	1
<i>Carex saliniformis</i>	deceiving sedge	1
<i>Castilleja mendocinensis</i>	Mendocino Coast paintbrush	1
Coastal & Valley Freshwater Marsh	Coastal & Valley Freshwater Marsh	1
Coastal Brackish Marsh	Coastal Brackish Marsh	1
Coastal Terrace Prairie	Coastal Terrace Prairie	1
<i>Corynorhinus townsendii</i>	Townsend's big-eared bat	1
<i>Cuscuta pacifica</i> var. <i>papillata</i>	Mendocino dodder	1
<i>Danaus plexippus</i>	monarch butterfly	1
<i>Erigeron supplex</i>	supple daisy	1
<i>Eucyclogobius newberryi</i>	tidewater goby	1
<i>Fritillaria roderickii</i>	Roderick's fritillary	1
<i>Gilia capitata</i> ssp. <i>pacifica</i>	Pacific gilia	1
<i>Glyceria grandis</i>	American manna grass	1
Grand Fir Forest	Grand Fir Forest	1
<i>Hesperovax sparsiflora</i> var. <i>brevifolia</i>	short-leaved evax	1
<i>Hesperocyparis pygmaea</i>	pygmy cypress	1
<i>Horkelia tenuiloba</i>	thin-lobed horkelia	1
<i>Lasthenia californica</i> ssp. <i>bakeri</i>	Baker's goldfields	1
<i>Lasthenia californica</i> ssp. <i>macrantha</i>	perennial goldfields	1
<i>Lasthenia conjugens</i>	Contra Costa goldfields	1
<i>Lavinia symmetricus parvipinnis</i>	Gualala roach	1
<i>Lilium maritimum</i>	coast lily	1
<i>Microseris paludosa</i>	marsh microseris	1
<i>Oncorhynchus gorbuscha</i>	pink salmon	1
<i>Rana boylei</i>	foothill yellow-legged frog	1
<i>Rana draytonii</i>	California red-legged frog	1
<i>Rhyacotriton variegatus</i>	southern torrent salamander	1
<i>Sidalcea calycosa</i> ssp. <i>rhizomata</i>	Point Reyes checkerbloom	1
<i>Sidalcea malachroides</i>	maple-leaved checkerbloom	1
<i>Sidalcea malviflora</i> ssp. <i>patula</i>	Siskiyou checkerbloom	1
<i>Sidalcea malviflora</i> ssp. <i>purpurea</i>	purple-stemmed checkerbloom	1

Speyeria zerene behrensii	Behren's silverspot butterfly	1
Usnea longissima	long-beard lichen	1
Scientific Name	Common Name	Segment
Abronia umbellata var. breviflora	pink sand-verbena	2
Agrostis blasdalei	Blasdale's bent grass	2
Arborimus pomo	Sonoma tree vole	2
Ascaphus truei	Pacific tailed frog	2
Calystegia purpurata ssp. saxicola	coastal bluff morning-glory	2
Campanula californica	swamp harebell	2
Carex californica	California sedge	2
Castilleja mendocinensis	Mendocino Coast paintbrush	2
Coptis laciniata	Oregon goldthread	2
Corynorhinus townsendii	Townsend's big-eared bat	2
Erigeron supplex	supple daisy	2
Gilia capitata ssp. pacifica	Pacific gilia	2
Grand Fir Forest	Grand Fir Forest	2
Hesperovax sparsiflora var. brevifolia	short-leaved evax	2
Hesperocyparis pygmaea	pygmy cypress	2
Lasthenia californica ssp. bakeri	Baker's goldfields	2
Lasthenia californica ssp. macrantha	perennial goldfields	2
Lilium maritimum	coast lily	2
Mendocino Pygmy Cypress Forest	Mendocino Pygmy Cypress Forest	2
Mitellastra caulescens	leafy-stemmed mitrewort	2
Northern Coastal Salt Marsh	Northern Coastal Salt Marsh	2
Oceanodroma homochroa	ashy storm-petrel	2
Pinus contorta ssp. bolanderi	Bolander's beach pine	2
Rhyacotriton variegatus	southern torrent salamander	2
Sanguisorba officinalis	great burnet	2
Sidalcea calycosa ssp. rhizomata	Point Reyes checkerbloom	2
Sidalcea malachroides	maple-leaved checkerbloom	2
Sidalcea malviflora ssp. patula	Siskiyou checkerbloom	2
Sphagnum Bog	Sphagnum Bog	2
Scientific Name	Common Name	Segment
Abronia umbellata var. breviflora	pink sand-verbena	3
Agrostis blasdalei	Blasdale's bent grass	3
Arctostaphylos nummularia ssp. mendocinoensis	pygmy manzanita	3
Ascaphus truei	Pacific tailed frog	3
Calileptoneta wapiti	Mendocino leptonetid spider	3
Calystegia purpurata ssp. saxicola	coastal bluff morning-glory	3
Campanula californica	swamp harebell	3
Carex californica	California sedge	3
Carex livida	livid sedge	3
Carex lyngbyei	Lyngbye's sedge	3
Carex saliniformis	deceiving sedge	3
Castilleja affinis ssp. litoralis	Oregon coast paintbrush	3

<i>Castilleja ambigua</i> ssp. <i>humboldtiensis</i>	Humboldt Bay owl's-clover	3
<i>Castilleja mendocinensis</i>	Mendocino Coast paintbrush	3
<i>Chorizanthe howellii</i>	Howell's spineflower	3
<i>Coptis laciniata</i>	Oregon goldthread	3
<i>Cuscuta pacifica</i> var. <i>papillata</i>	Mendocino dodder	3
<i>Erigeron supplex</i>	supple daisy	3
<i>Fratercula cirrhata</i>	tufted puffin	3
<i>Gilia capitata</i> ssp. <i>pacifica</i>	Pacific gilia	3
<i>Gilia millefoliata</i>	dark-eyed gilia	3
Grand Fir Forest	Grand Fir Forest	3
<i>Hesperavax sparsiflora</i> var. <i>brevifolia</i>	short-leaved evax	3
<i>Hesperocyparis pygmaea</i>	pygmy cypress	3
<i>Horkelia marinensis</i>	Point Reyes horkelia	3
<i>Juncus supiniformis</i>	hair-leaved rush	3
<i>Lasthenia californica</i> ssp. <i>bakeri</i>	Baker's goldfields	3
<i>Lasthenia californica</i> ssp. <i>macrantha</i>	perennial goldfields	3
<i>Lilium maritimum</i>	coast lily	3
Mendocino Pygmy Cypress Forest	Mendocino Pygmy Cypress Forest	3
<i>Microseris borealis</i>	northern microseris	3
<i>Mitellastra caulescens</i>	leafy-stemmed mitrewort	3
Northern Coastal Salt Marsh	Northern Coastal Salt Marsh	3
<i>Oceanodroma homochroa</i>	ashy storm-petrel	3
<i>Packera bolanderi</i> var. <i>bolanderi</i>	seacoast ragwort	3
<i>Pinus contorta</i> ssp. <i>bolanderi</i>	Bolander's beach pine	3
<i>Plebejus idas lotis</i>	lotis blue butterfly	3
<i>Rana aurora</i>	northern red-legged frog	3
<i>Rana boylei</i>	foothill yellow-legged frog	3
<i>Rana draytonii</i>	California red-legged frog	3
<i>Rhyacotriton variegatus</i>	southern torrent salamander	3
<i>Sanguisorba officinalis</i>	great burnet	3
<i>Sidalcea malachroides</i>	maple-leaved checkerbloom	3
Sphagnum Bog	Sphagnum Bog	3
Scientific Name	Common Name	Segment
<i>Agrostis blasdalei</i>	Blasdale's bent grass	4
<i>Blennosperma nanum</i> var. <i>robustum</i>	Point Reyes blennosperma	4
<i>Campanula californica</i>	swamp harebell	4
<i>Carex californica</i>	California sedge	4
<i>Carex saliniformis</i>	deceiving sedge	4
<i>Castilleja mendocinensis</i>	Mendocino Coast paintbrush	4
<i>Chorizanthe howellii</i>	Howell's spineflower	4
<i>Clarkia amoena</i> ssp. <i>whitneyi</i>	Whitney's farewell-to-spring	4
<i>Collinsia corymbosa</i>	round-headed Chinese-houses	4
<i>Cuscuta pacifica</i> var. <i>papillata</i>	Mendocino dodder	4
<i>Erysimum menziesii</i> ssp. <i>menziesii</i>	Menzies' wallflower	4
<i>Eucyclogobius newberryi</i>	tidewater goby	4

<i>Gilia capitata</i> ssp. <i>pacifica</i>	Pacific gilia	4
<i>Hesperevax sparsiflora</i> var. <i>brevifolia</i>	short-leaved evax	4
<i>Hesperocyparis pygmaea</i>	pygmy cypress	4
<i>Horkelia marinensis</i>	Point Reyes horkelia	4
<i>Lasthenia californica</i> ssp. <i>bakeri</i>	Baker's goldfields	4
<i>Lasthenia californica</i> ssp. <i>macrantha</i>	perennial goldfields	4
<i>Lilium maritimum</i>	coast lily	4
Mendocino Pygmy Cypress Forest	Mendocino Pygmy Cypress Forest	4
<i>Packera bolanderi</i> var. <i>bolanderi</i>	seacoast ragwort	4
<i>Phacelia insularis</i> var. <i>continentis</i>	North Coast phacelia	4
<i>Pinus contorta</i> ssp. <i>bolanderi</i>	Bolander's beach pine	4
<i>Puccinellia pumila</i>	dwarf alkali grass	4
<i>Viola palustris</i>	alpine marsh violet	4
Scientific Name	Common Name	Segment
<i>Abronia umbellata</i> var. <i>breviflora</i>	pink sand-verbena	5
<i>Agrostis blasdalei</i>	Blasdale's bent grass	5
<i>Blennosperma nanum</i> var. <i>robustum</i>	Point Reyes blennosperma	5
<i>Campanula californica</i>	swamp harebell	5
<i>Carex saliniformis</i>	deceiving sedge	5
<i>Castilleja mendocinensis</i>	Mendocino Coast paintbrush	5
<i>Charadrius alexandrinus nivosus</i>	western snowy plover	5
<i>Chorizanthe howellii</i>	Howell's spineflower	5
<i>Coelus globosus</i>	globose dune beetle	5
<i>Collinsia corymbosa</i>	round-headed Chinese-houses	5
<i>Erysimum menziesii</i> ssp. <i>menziesii</i>	Menzies' wallflower	5
<i>Eucyclogobius newberryi</i>	tidewater goby	5
<i>Gilia millefoliata</i>	dark-eyed gilia	5
<i>Hesperevax sparsiflora</i> var. <i>brevifolia</i>	short-leaved evax	5
<i>Lasthenia californica</i> ssp. <i>macrantha</i>	perennial goldfields	5
<i>Noyo intersessa</i>	Ten Mile shoulderband	5
<i>Phacelia insularis</i> var. <i>continentis</i>	North Coast phacelia	5
<i>Rana aurora</i>	northern red-legged frog	5
<i>Sidalcea malviflora</i> ssp. <i>purpurea</i>	purple-stemmed checkerbloom	5
<i>Triquetrella californica</i>	coastal triquetrella	5
<i>Viola palustris</i>	alpine marsh violet	5
Scientific Name	Common Name	Segment
<i>Abronia umbellata</i> var. <i>breviflora</i>	pink sand-verbena	6
<i>Arborimus pomo</i>	Sonoma tree vole	6
<i>Ascaphus truei</i>	Pacific tailed frog	6
<i>Calamagrostis crassiglumis</i>	Thurber's reed grass	6
<i>Campanula californica</i>	swamp harebell	6
<i>Carex lyngbyei</i>	Lyngbye's sedge	6
<i>Carex saliniformis</i>	deceiving sedge	6
<i>Carex viridula</i> ssp. <i>viridula</i>	green yellow sedge	6
<i>Castilleja affinis</i> ssp. <i>litoralis</i>	Oregon coast paintbrush	6

<i>Castilleja mendocinensis</i>	Mendocino Coast paintbrush	6
<i>Charadrius alexandrinus nivosus</i>	western snowy plover	6
<i>Chorizanthe howellii</i>	Howell's spineflower	6
<i>Clarkia amoena</i> ssp. <i>whitneyi</i>	Whitney's farewell-to-spring	6
Coastal & Valley Freshwater Marsh	Coastal & Valley Freshwater Marsh	6
Coastal Brackish Marsh	Coastal Brackish Marsh	6
<i>Coelus globosus</i>	globose dune beetle	6
<i>Collinsia corymbosa</i>	round-headed Chinese-houses	6
<i>Erysimum menziesii</i> ssp. <i>menziesii</i>	Menzies' wallflower	6
<i>Eucyclogobius newberryi</i>	tidewater goby	6
Fen	Fen	6
<i>Gilia millefoliata</i>	dark-eyed gilia	6
Grand Fir Forest	Grand Fir Forest	6
<i>Hesperovax sparsiflora</i> var. <i>brevifolia</i>	short-leaved evax	6
<i>Horkelia marinensis</i>	Point Reyes horkelia	6
<i>Lilium maritimum</i>	coast lily	6
Northern Coastal Salt Marsh	Northern Coastal Salt Marsh	6
<i>Noyo intersessa</i>	Ten Mile shoulderband	6
<i>Oenothera wolfii</i>	Wolf's evening-primrose	6
<i>Phacelia insularis</i> var. <i>continentis</i>	North Coast phacelia	6
<i>Progne subis</i>	purple martin	6
<i>Rana aurora</i>	northern red-legged frog	6
<i>Rhyacotriton variegatus</i>	southern torrent salamander	6
<i>Rhynchospora alba</i>	white beaked-rush	6
<i>Sidalcea malachroides</i>	maple-leaved checkerbloom	6
<i>Sidalcea malviflora</i> ssp. <i>purpurea</i>	purple-stemmed checkerbloom	6
<i>Triquetrella californica</i>	coastal triquetrella	6
<i>Viola palustris</i>	alpine marsh violet	6
Scientific Name	Common Name	Segment
<i>Abronia umbellata</i> var. <i>breviflora</i>	pink sand-verbena	7
<i>Accipiter gentilis</i>	northern goshawk	7
<i>Agrostis blasdalei</i>	Blasdale's bent grass	7
<i>Arborimus pomo</i>	Sonoma tree vole	7
<i>Astragalus agnicidus</i>	Humboldt milk-vetch	7
<i>Calamagrostis foliosa</i>	leafy reed grass	7
<i>Castilleja affinis</i> ssp. <i>litoralis</i>	Oregon coast paintbrush	7
<i>Castilleja mendocinensis</i>	Mendocino Coast paintbrush	7
<i>Clarkia amoena</i> ssp. <i>whitneyi</i>	Whitney's farewell-to-spring	7
<i>Erythronium revolutum</i>	coast fawn lily	7
<i>Horkelia marinensis</i>	Point Reyes horkelia	7
<i>Piperia candida</i>	white-flowered rein orchid	7
<i>Rhyacotriton variegatus</i>	southern torrent salamander	7
<i>Sidalcea malachroides</i>	maple-leaved checkerbloom	7
Upland Douglas Fir Forest	Upland Douglas Fir Forest	7
<i>Usnea longissima</i>	long-beard lichen	7

APPENDIX G RESOURCES

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