# Transportation Concept Report

## State Route 37

## District 4

The information and data contained in this document are for planning purposes only and should not be relied upon for final design of any project. Any information in this Transportation Concept Report (TCR) is subject to modification as conditions change and new information is obtained. Although planning information is dynamic and continually changing, the District 4 Division of Transportation Planning & Local Assistance makes every effort to ensure the accuracy and timeliness of the information contained in the TCR. The information in the TCR does not constitute a standard, specification, or regulation, nor is it intended to address design policies and procedures.

**California Department of Transportation**

**Provide a safe, sustainable, integrated and efficient transportation system to enhance California's economy and livability**

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# CALTRANS MISSION

Provide a safe, sustainable, integrated and efficient transportation system to enhance California's economy and livability

## Goals

***Safety and Health -*** Provide a safe transportation system for workers and users, and promote health through active transportation and reduced pollution in communities.

***Stewardship and Efficiency -*** Money counts. Responsibly manage California's transportation-related assets

***Sustainability, Livability and Economy*** - Make long-lasting, smart mobility decisions that improve the environment, support a vibrant economy, and build communities, not sprawl.

***System Performance*** - Utilize leadership, collaboration and strategic partnerships to develop an integrated transportation system that provides reliable and accessible mobility for travelers.

***Organizational Excellence*** - Be a national leader in delivering quality service through excellent employee performance, public communication, and accountability.

# ABOUT THE TRANSPORTATION CONCEPT REPORT

## 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 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. The TCR also incorporates the goals of *Plan Bay Area,* the regional transportation and land use plan created to address emissions and climate change.

## STAKEHOLDER PARTICIPATION

The State Route (SR) 37 TCR utilized information and input from the *Highway 37 Stewardship Study*[1], which was completed in 2012. The study was a multi-functional and multi-agency assessment of alternative future concepts for SR 37. Through a series of stakeholder[2] meetings, workshops and other outreach, transportation, natural resource protection agency and community stakeholders were convened to define the corridor context, identify critical issues, and explore alternative improvement strategies for SR 37. The TCR was circulated for review and comments to the following agencies: Transportation Authority of Marin (TAM), Sonoma County Transportation Authority (SCTA), Solano Transportation Authority (STA).

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[1] See *Appendix C: Studies* for further information and the corridor study website at: http://hwy37.ucdavis.edu/

[2] Stakeholder groups included Congestion Management Agencies (CMAs), governmental and non-governmental natural resource agencies, Audubon and wildlife protection groups, Native American tribal representatives, agricultural and landowner groups, marshland restoration and preservation groups, county and city government officials, and concerned private citizens.

# EXECUTIVE SUMMARY

SR 37 follows 21 miles along the northern shore of San Pablo Bay linking US 101 in Novato, Marin County with Interstate 80 (I-80) in Vallejo, Solano County. It serves as a vital connection between the eastern and western counties of the northern San Francisco Bay Area, and the Central Valley. It is the northernmost non-mountainous east-west link between US 101 and I-5 (via I-80 and I-505) in the State.

From US 101 to the signalized SR 121 intersection at Sears Point, SR 37 is a four-lane expressway. Another signalized intersection is at Lakeville Road. East of Sears Point, it becomes a two-lane conventional highway with a median barrier as it crosses the Napa-Sonoma marshlands. At Mare Island, a four-lane freeway begins. The route continues eastward, mostly on an elevated structure, to its termination at I-80. This segment crosses SR 29 in the City of Vallejo.

SR 37 is an important regional connection linking the north, east and west San Francisco Bay sub-regions. By connecting US 101 to I-80, SR 37 connects job markets and housing within Marin, Sonoma, Napa, and Solano Counties. It also links popular destinations such as the Golden Gate National Recreation Area in Marin County and Sonoma Raceway with Solano County and the Central Valley. Travelers from San Francisco and Marin Counties and the East Bay can use SR 37 to reach destinations in the Napa and some Sonoma County wine growing regions. The commute, freight movement, and recreational functions of the route require efficient traffic management on both weekdays and weekends. Also, the highway is a parallel route north of the Richmond-San Rafael Bridge (I-580), functions as a State Recovery Route[3] and is part of the Interregional Roads System (IRRS) between US 101 and I-80.

This TCR focuses on how the facility interacts with the ecosystems adjacent to the majority of the roadway, and how this relationship affects concept development. Another important issue is the highway's vulnerability to sea level rise and how current and future operation, alignment and design will have to consider this critical concern.

Weekday afternoon-evening eastbound commute congestion generally occurs west of the junction of SR 37 and SR 121.

There is no through public transit or rail service in the corridor.

Although bicycling is legal in segments A & B, few cyclists use SR 37 as it has two bridges (Novato Creek and Petaluma River Bridges) with very narrow (less than two feet wide) shoulders. The corridor has no pedestrian facilities, except for a section of the Bay Trail on the south side of the Napa River Bridge. Since this is a chiefly rural route, there is very little demand for sidewalks along the highway.

## CONCEPT SUMMARY

The most defining issue for Highway 37 is its vulnerability to flooding during heavy storms. Flooding has repeatedly occurred in the past, requiring closure of the roadway. With rising sea levels, flooding events will likely grow more frequent.

The concept identifies the two-lane conventional segment between SR 121 (Sears Point) and Mare Island (Vallejo) as a candidate for widening from two to four lanes in order to close the gap between the two four-lane segments on either end. This widening would alleviate the PM eastbound peak hour commute congestion caused by the lane reduction. There is concern that increasing the number of lanes on any facility creates only temporary congestion relief and in the long run will result in additional travel

[3] Recovery Routes are a subset of the California Lifeline Route System. Lifeline Routes take first priority in terms of route recovery/restoration following a major incident or disaster for the purpose of emergency movement of goods and services. Recovery Routes are considered the next priority for recovery/restoration to further expand the movement of goods and services after major incidents or disasters.

demand. In the case of SR 37, because of the local geography and environment, the lack of population centers and very limited development along the corridor, building out Segment B (see Table 1 for segmentation) to conform to Segments A and C is not expected to significantly increase demand, and could allow HOV/ transit options to be introduced in the corridor.

The Department recognizes the significance of the marshland environment, and the presence of threatened and endangered species and habitat, thus the objective of concept development and future roadway improvements is to minimize impacts on these natural resources as well as to develop projects that maximize both transportation and environmental objectives.

The *Highway 37 Stewardship Study* (2012) identified five possible improvement scenarios for Segments A and B ranging from "no expansion" to "expanded footprint", "causeway", "strategic co-alignment", and "tunnel." Three improvement options were selected for further study, a roadway elevated on a levee, on a "monopod" concrete post causeway, and on wood or concrete "trellis." Public multi-modal access to the resources in the corridor should be provided and the potential for appropriate transit options studied.

Table 1 summarizes concept and strategies that would improve performance, add mode choice, and minimize the impact of the transportation facility on the surrounding marshlands.

**TABLE 1: SR 37 CORRIDOR CONCEPT AND STRATEGIES TO ACHIEVE CONCEPT**

| SEG | DESCRIPTION | EXISTING FACILITY | 20-25 YEAR FACILITY CONCEPT | LONG-TERM CONCEPT AND STRATEGIES | |
|---|---|---|---|---|---|
| | | | | SEGMENT-SPECIFIC | ENTIRE CORRIDOR |
| A | US 101 (NOVATO) IN MARIN COUNTY TO SR 121 (SEARS POINT) IN SONOMA COUNTY | 4E* | 4E* | ▪ MAINTAIN FACILITY<br>▪ ELEVATE ROADWAY TO PROTECT FACILITY FROM SEA LEVEL RISE AND FLOODING<br>▪ BUILD FACILITY TO MAXIMIZE BENEFITS TO MARSHLAND RESTORATION<br>▪ PROVIDE CONTINUOUS BIKE FACILITIES<br>▪ MULTI-MODAL SERVICES<br>▪ ADD MARSHLANDS ACCESS POINTS | ▪ MAINTAIN AND IMPROVE FACILITY<br>▪ PROTECT ROADWAY FROM PROJECTED RISING SEA LEVELS AND FLOODING (STUDY WIDENING OPTIONS: MIXED FLOW/ HOV/ TRANSIT/ HOT)<br>▪ BUILD FACILITY TO MAXIMIZE BENEFITS TO MARSHLAND RESTORATION<br>▪ CONTINUOUS BIKE FACILITIES AND CONNECTIONS (SUPPORT DEVELOPMENT OF THE BAY TRAIL)<br>▪ MULTI-MODAL ACCOMODATION<br>▪ ITS INFRASTRUCTURE<br>▪ FERRY SERVICE VALLEJO TO LARKSPUR |
| B | SR 121 (SEARS POINT) IN SONOMA COUNTY TO MARE ISLAND (VALLEJO) IN SOLANO COUNTY | 2C* | 4 C*OR E* | ▪ ELEVATE ROADWAY TO PROTECT FACILITY FROM FLOODING AND WIDEN TO 4 LANES (STUDY WIDENING OPTIONS: MIXED FLOW/ TRANSIT/ HOV/ HOT)<br>▪ BUILD FACILITY TO MAXIMIZE BENEFITS TO MARSHLAND RESTORATION<br>▪ PROVIDE CONTINUOUS BIKE FACILITIES<br>▪ MULTI MODAL SERVICES<br>▪ IMPROVED ACCESS TO WETLANDS | |
| C | MARE ISLAND TO I-80 INTERCHANGE IN SOLANO COUNTY | 4F* | 4F* | ▪ MAINTAIN FACILITY<br>▪ IMPROVE BIKE FACILITIES AND CONNECTIONS | |

***C=CONVENTIONAL; E=EXPRESSWAY; F=FREEWAY**

# CORRIDOR OVERVIEW

SR 37 follows 21 miles along the northern shore of San Pablo Bay linking US 101 in Novato, Marin County with Interstate 80 (I-80) in Vallejo, Solano County. It serves as a vital connection between Marin and Contra Costa Counties and the Central Valley. It is the northernmost non-mountainous east-west link between US 101 and I-5 (via I-80 and I-505) in the State.

By connecting US 101 to I-80, SR 37 connects job markets and housing within Marin, Sonoma, Napa, and Solano Counties. It also provides access to popular destinations such as the Golden Gate National Recreation Area in Marin County, Sonoma Raceway, Six Flags Discovery Kingdom, Napa and Sonoma wine regions and the North Coast. Its commute, freight movement and recreational functions require efficient traffic management on both weekdays and weekends.

The corridor currently functions as a motor vehicle route. There is currently no through transit and passenger rail service, and very little bicycle and pedestrian usage.

## SEGMENTATION

A transportation corridor is divided into smaller segments based on criteria such as changes in terrain, changes in facility type or function, or county boundaries, in order to facilitate description and analysis. The SR 37 corridor is divided into three segments reflecting a change in the number of lanes as well as in the designation of the facility.

The SR 37 post mile begins at 11.20, because in the 1950s the route was planned to extend to Highway 1 in western Marin County. These plans were never pursued.

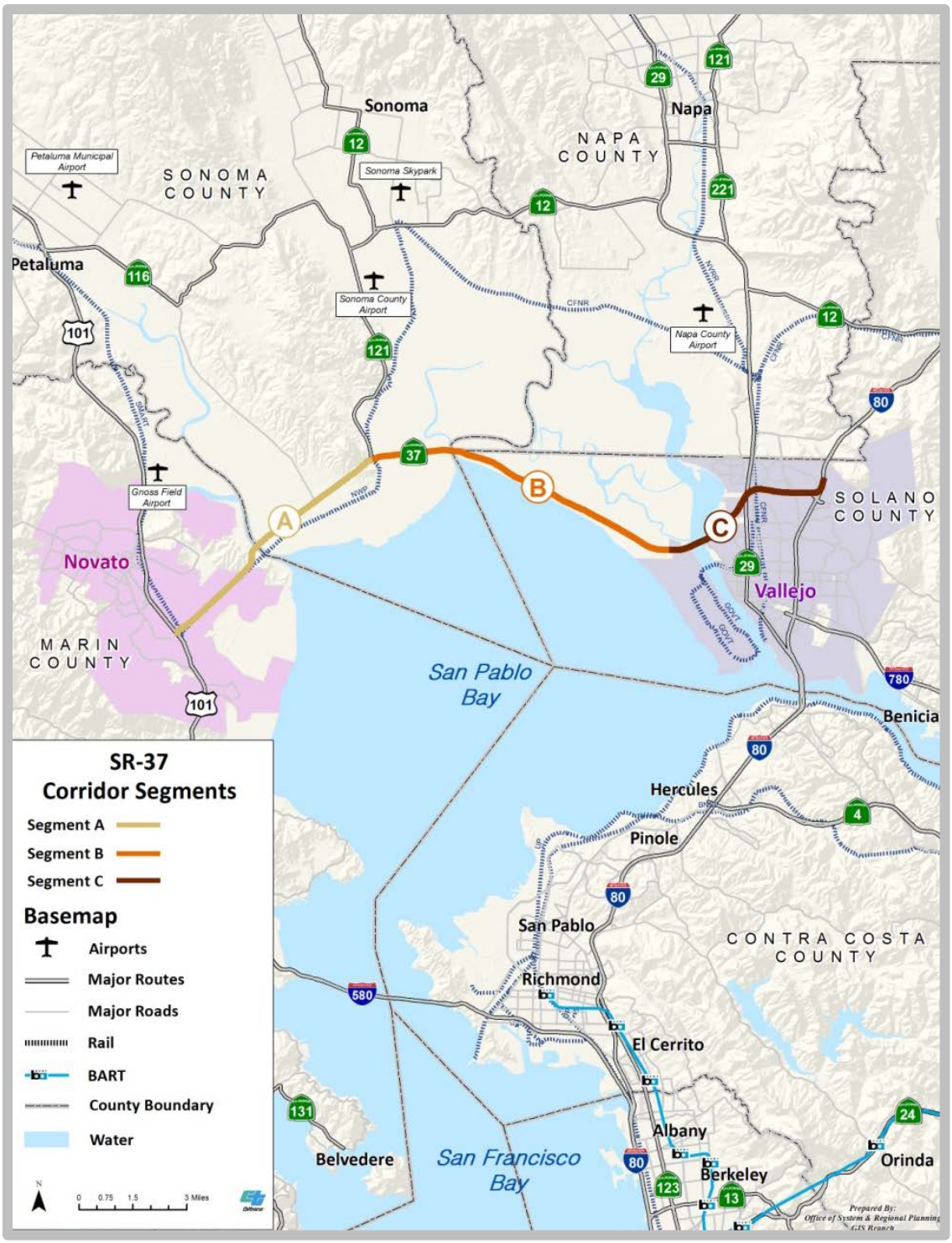
**TABLE 2 – SR 37 ROUTE SEGMENTATION**

| SEG | LOCATION DESCRIPTION | BEGIN PM | END PM |
|---|---|---|---|
| A | US 101 (NOVATO) IN MARIN COUNTY TO SR 121 (SEARS POINT) IN SONOMA COUNTY | MRN 11.20 | SON 3.91 |
| B | SR 121 (SEARS PT.) IN SONOMA COUNTY TO MARE ISLAND (VALLEJO) IN SOLANO COUNTY | SON 3.91 | SOL R6.95 |
| C | MARE ISLAND (VALLEJO) TO I-80 INTERCHANGE IN SOLANO COUNTY | SOL R6.95 | SOL R12.00 |

## CORRIDOR DESCRIPTION

Existing SR 37 begins at US 101 in Novato, with a freeway interchange that connects SR 37 with both US 101 and Novato Boulevard. From US 101 to Sears Point the route was once part of historic El Camino Real, linking Mission San Rafael to Mission Sonoma, the northernmost of the California missions. Segment A is a four-lane expressway which passes through bay and fluvial plains. The land along the low, flat segment that connects Novato to Black Point, the Petaluma River and Sears Point is agricultural (grain production for animal feed, and cattle grazing). There are rural-suburban residential neighborhoods in the hilly area at Black Point and there is also some light industrial and maritime recreational use south of the highway and a small marina at the mouth of the Petaluma River.

Highway 37 continues eastward to a signalized intersection at Lakeville Road. Continuing to Sears Points is the SR 37/SR 121 junction, where SR 121 veers off in a northeasterly direction, providing access to the cities of Sonoma and Napa and their eponymous wine growing regions.




A few hundred feet further east is an at-grade railroad crossing. The rail tracks, which roughly parallel Highways 37 and 121, are owned by Sonoma-Marin Area Rail Transit (SMART) and used by the North Coast Railroad Authority (NCRA) for infrequent freight service.

The Sonoma/Solano County line is at Sonoma Creek. This segment (B) traverses the most environmentally sensitive part of the corridor, also the most vulnerable to flooding from seasonal storms and tidal action. Flood-related closures are expected to increase over the next decades with the sea level rises and storm severity.

The route gains elevation where it borders the northwestern edge of Mare Island and crosses the Napa River to the City of Vallejo. The elevated freeway structure and route terminate at the I-80 junction.

Environmental and flooding issues will be addressed in *The Corridor Environment* chapter.

## Community Characteristics

Highway 37 connects suburban and urban centers at both ends of the corridor, crossing marshes, canals, sloughs, wetlands, and agriculture (on land that was formerly wetlands and marshlands). Except for a hilly suburban area and a small marina, both adjacent to the Petaluma River Bridge, denser development is limited to Segment C within the City of Vallejo.

### Demographics and Land Use

The SR 37 traverses the southern portions of Marin, Sonoma, and Solano Counties. Growth in those counties as well as Napa County as an employment and tourism destination will determine changes in the future use of the corridor.

According to *Plan Bay Area*, the 2040 Regional Transportation Plan, much of the growth affecting the corridor will occur in Priority Development Areas (PDAs) in Vallejo and American Canyon. Population and job growth along the I-80 corridor in Solano and Contra Costa Counties also affect SR 37. Population and job growth along the US 101 corridor will largely take place in Sonoma County.

**TABLE 3 - POPULATION GROWTH FORECASTS BY COUNTY**

| COUNTY | 2010 | 2040 | PERCENTAGE CHANGE |
|---|---|---|---|
| ALAMEDA | 1,510,271 | 1,988,025 | 32 |
| CONTRA COSTA | 1,049,025 | 1,334,970 | 27 |
| MARIN* | 252,409 | 285,323 | 13 |
| NAPA* | 136,484 | 163,609 | 20 |
| SAN FRANCISCO | 805,235 | 1,085,641 | 35 |
| SAN MATEO | 718,451 | 906,072 | 26 |
| SANTA CLARA | 1,781,642 | 2,425,648 | 36 |
| SOLANO* | 413,344 | 511,482 | 24 |
| SONOMA* | 483,878 | 598,382 | 24 |
| TOTAL | 7,150,739 | 9,299,153 | 30 |

*SR 37 COUNTIES Data from: ABAG

The Association of Bay Area Governments (ABAG) has projected that the Bay Area overall will grow by 30 percent by 2040. North Bay Counties are seeing less than region wide average growth, as Table 3 shows.

The majority of **Marin County** population centers are in the eastern parts of the county, within a few miles of the Bay. Over 70 percent of the county is protected open space, the highest proportion for any county in the Bay Area. Half of this open space consists of federal and State parks. Until 2010, Marin had the highest per-capita income of any county in California, since eclipsed by Santa Clara and San Mateo Counties high-paying tech industries. Unemployment rates in Marin County are usually below the State average. Marin job growth is projected to be 17 percent (ABAG).

It is suspected that much of the commute traffic on SR 37 results from a stronger job market and a higher cost for housing in Marin County and to some extent in Sonoma County. Many commuters travel from Solano County, where the median home price is close to $335,000 (2014) to Marin, where the $900,000 median home price is beyond the reach of most middle-income workers. In Sonoma County the median home price is just above $500,000. It is a little higher in the southern part of the county, in Petaluma the median is above $550,000.

By contrast, **Solano County** is growing faster, with a projected jobs increase of 36 percent by 2040 (ABAG). Its population is expected to increase by 24 percent between 2010 and 2040. Solano County has almost fifty percent of the Bay Area farmland and more than half of its wetlands. Once a

predominantly rural county, Solano has seen rapid sub-urbanization, primarily because of affordable land prices and large-tract housing developments. The county has also seen significant commercial and retail growth, primarily along I-80, but has also a higher percentage of below-poverty-level populations (for example, Vallejo 16 percent compared to 7.4 percent for Novato or American Canyon, per 2010 US Census).

**Sonoma County** is geographically the largest of the nine Bay Area counties, with the largest amount of undeveloped acreage. Urban development is concentrated in the southern half and the center of the county along the US 101 corridor in the cities of Petaluma, Cotati, Rohnert Park, Santa Rosa, and Windsor. Almost two-thirds of the county's population lives in these five cities. Population growth is accordingly divided: 90 percent in already urbanized areas, ten per cent in the county's rural and agricultural zones. Santa Rosa is the largest city between San Francisco and Eugene, Oregon. In less-urbanized areas, the wine industry and visitor-serving businesses are important elements of the Sonoma County job market. Jobs are projected to grow 34 percent in the county. Sonoma County is also seeing a strengthening in its technology sector. This figure is similar to expectations for the Bay Area jobs market, which is expected to grow by 36.4 percent between 2010 and 2040.

### Mobility for Aging Populations

One of the transportation challenges for the North Bay will be to provide for the growing population over 65 years of age – per ABAG it is predicted to grow by 137 percent by 2040. Marin, Sonoma, and Napa Counties have a higher percentage (14-17 percent) of those 65 years and older than the Bay Area as a whole (11-13 percent).

The growing senior population will increasingly face challenges to their personal mobility if investments are not made in public and demand responsive transportation, and in-town walkable housing.

Figure 2 – Westbound Highway 37 approaching Novato Creek Bridge Photo: Google Streetview

## System Characteristics

**Segment A**, from US 101 to Sears Point and SR 121, is a four-lane facility divided by a wide earthen median. It is designated an expressway except for the first half-mile, where a small section, mostly the approach to the interchange, is designated freeway. There is a signalized intersection at Lakeville Road, and another one at SR 121, where double eastbound left-turn pockets accommodates traffic bound for the Napa and Sonoma Valleys. There is a "bottleneck" where Segments A and B meet, as the four-lane facility narrows to two lanes. Sonoma Raceway near the SR 37/SR 121 intersection contributes to event-related congestion. During NASCAR events, changeable message signs are placed on the roads of the North Bay to inform travelers of heavy congestion and detours.

Much of Segment A is vulnerable to flooding during severe storms and rising sea levels in the future. There was a closure due to flooding at Novato Creek in 2005 and 2014.

**Segment B**, east of Sears Point is a two-lane conventional highway with a concrete divider. The barriers in this segment, designed with small cutouts (called scuppers) at the road surface, allow endangered Salt Harvest Mice to migrate across the roadbed. This segment transverses the most environmentally sensitive part of the corridor, and it is surrounded by active marshlands restoration projects, although Segment A also has some restoration areas.

In March of 2011, SR 37 was closed due to flooding just east of the intersection with SR 121.

Both Segments A and B experience continual settling of the roadway from the Petaluma River Bridge to Mare Island in both directions and eastbound from US 101 to Atherton Avenue. This is an annual maintenance which requires ongoing repairs. In some areas the repairs only last three years because the settling is so severe. The water-saturated land and unstable fill could make segments A and B very susceptible to seismic failure from liquefaction.

Caltrans provided eight million dollars to the U.S. Navy to clean up Skaggs Island as mitigation for the San Francisco-Oakland Bay Bridge Project. Approximately 3,300 acres of Skaggs Island was transferred from the U.S. Navy to USFWS and is now part of the San Pablo Bay National Wildlife Refuge.

**Segment C** is entirely within City of Vallejo. This segment begins at Mare Island, where the highway crosses the Napa River and becomes an elevated four-lane freeway crossing SR 29 and connecting to I-80. This segment provides access to Six Flags Discovery Kingdom and the Solano County Fairgrounds, major trip generators in the summer months.

Segment C was a mostly at-grade 2-4 lane highway until 2005 when the freeway was completed. There were major environmental impacts resulting from transforming a two-lane conventional highway to a four-lane freeway. To protect White Slough while allowing the widening of SR 37, the *White Slough Protection and Development Act* was passed in 1990. In compliance, Caltrans created 14.8 acres of mudflats and sub-tidal sloughs, 29.1 acres of tidal wetland habitat, and 5.6 acres of upland refuge habitat, over four times the amount of wetland habitat impacted by the construction of the freeway. Over nine thousand cubic meters of fill created by the freeway project was used to raise the land around the Guadalcanal Village area to a viable wetlands elevation.

Figure 3 – North Bay counties and SR 37 segments

**TABLE 4 - SYSTEM CHARACTERISTICS**

| SEGMENT | A | B | C | COMMENTS |
|---|---|---|---|---|
| GENERAL PURPOSE LANES | 4-E | 2-C | 4-F | (E=EXPRESSWAY, C=CONVENTIONAL HIGHWAY, F=FREEWAY) |
| SCENIC HIGHWAY | ELIGIBLE | ELIGIBLE | PARTLY ELIGIBLE | C: ELIGIBLE WEST OF SR 29 ONLY. |
| FREEWAY & EXPRESSWAY | YES | YES | YES | |
| NATIONAL HIGHWAY SYSTEM | YES | YES | YES | |
| INTERREGIONAL ROADS SYSTEM | YES | YES | NO | |
| FEDERAL FUNCTIONAL CLASSIFICATION | FREEWAY/ EXPRESSWAY/ PRINCIPAL ARTERIAL | PRINCIPALARTERIAL | FREEWAY | |
| HIGH-EMPHASIS/ FOCUS ROUTE | NO | NO | NO | |
| STAA TRUCK RTE | YES | YES | YES | |
| POSTED SPEED LIMIT | 65 mph | 55 mph | 65 mph | |
| TERRAIN | FLAT/ROLL | ROLL/FLAT | FLAT | |
| RURAL/URBAN/URBANIZED | URBANIZED/RUR | RURAL | URBANIZED | A: URB. FR US-101 TO MRN/SON LINE |
| HOV or HOT LANES | NO | NO | NO | |
| TOLL LANES | NO | NO | NO | |
| BUS RAPID TRANSIT | NO | NO | NO | |
| ON-FACILITY BIKE/PED ACCESS [4] | YES, ROAD SHOULDERS (PARTIAL) | YES, ROAD SHOULDERS | NO (Fwy) | BAY TRAIL ROUGHLY PARALLEL TO PART OF SEGMENT C |
| PASSING LANES | NO | NO | NO | |
| AUX LANES | NO | NO | YES | EB: FAIRGROUNDS DR. TO I-80 INTERCHANGE, WB: I-80 TO FAIRGROUNDS DR. I/C |
| TRUCK CLIMBING LANES | NO | NO | NO | |
| DISTRESSED PAVEMENT | YES | YES | NO | CONSTANT SETTLING IN WETLANDS AREAS |
| TMS ELEMENTS | 3 | 1 | 9 | ALL LOOP DETECTORS |
| TRIBAL LAND | NO | NO | NO | |
| AIR DISTRICT | BAY AREA AIR QUALITY MANAGEMENT DISTRICT | | | |
| CONGESTION MANAGEMENT AGENCY | TRANSPORTATION AUTHORITY OF MARIN/SONOMA COUNTY TRANSPORTATION AUTHORITY | SONOMA COUNTY TRANSPORTATION AUTHORITY/ SOLANO TRANSPORTATION AUTHORITY | SOLANO TRANSPORTATION AUTHORITY | |
| METROPOLITAN PLANNING ORGANZIATION | METROPOLITAN TRANSPORTATION COMMISSION | | | |

[4] See following page for more detailed information on bicycle and pedestrian facilities.

## Bicycle and Pedestrian Facilities

There are no designated bike or pedestrian facilities in Segments A and B except for small sections of the Bay Trail that roughly parallel parts of the corridor. Except for the two bridges in Segment A (Novato Creek Bridge and Petaluma River Bridge), which have less than two-foot shoulder widths, there is sufficient shoulder (> 4 feet) for cycling or walking along the highway. High vehicle speeds of 60 plus mph make riding and walking very stressful, however.

Segment C is a freeway; bicycle and pedestrian access is mostly prohibited. Bikes and peds may use the separated path on the eastbound side of the Napa River Bridge and then must exit the elevated structure at Wilson Street. There is a Class 1 path at ground level which parallels the freeway as far as SR 29. Turning south on Wilson Street instead, there are Class 1 and 2 bike paths for about 2/3 of a mile to the Vallejo Transit Center. The path then proceeds all the way to the Carquinez Bridge. The Napa Bridge crossing and the path leading south across the Carquinez Bridge are all part of the Bay Trail.

**TABLE 5 – BICYCLE FACILITY DATA**

| | SEGMENT: | A | B | C |
|---|---|---|---|---|
| STATE HIGHWAY | ROAD DESIGNATION | EXPRESSWAY | CONVENTIONAL | FREEWAY |
| | POSTED SPEED LIMIT | 65 mph | 55 mph | 65 mph |
| | VEHICLE VOLUMES | HIGH | HIGH | HIGH |
| | PAVED SHOULDER? | YES | YES | YES |
| | OUTSIDE PAVED SHOULDER WIDTH | 1-12’ | 1-12’ | N/A |
| | BICYCLE ACCESS PROHIBITED? | NO | NO | YES |
| | ISSUES | NARROW NOVATO CREEK & PETALUMA RIVER BRIDGES (1-2’ SHOULDER WIDTH) | HIGH TRAFFIC SPEED, TRUCKS | N/A |
| PARALLEL BICYCLE FACILITY | PARALLEL FACILITY? | NONE | NONE | PARTIAL |
| | FACILITY TYPE | N/A | N/A | I |
| | NAME | N/A | N/A | BAY TRAIL |
| | LOCATION DESCRIPT | N/A | N/A | PARTIALLY PARALLELS FWY |
| | BIKE CONNECTION MILES | 7.1 | 9.3 | 4.3 |
| | DRIVING MILES | 7.1 | 9.3 | 4.4 |

## Transit Facilities

Sonoma County Transit has one weekday route between San Rafael and the City of Sonoma, but there are no stops along SR 37. There is currently no direct public transit connection between Vallejo and Novato.

## Freight

SR 37 is an important truck corridor, both because it provides access from the Central Valley to Marin and Sonoma Counties and accommodates commercial traffic that supports the wine and hospitality industries in Napa and Sonoma Counties. Not surprisingly, truck traffic is highest in Vallejo where SR 37

**TABLE 6 - TRUCK VOLUMES (2012)**

| SEG | CNTY | DESCRIPTION | VEHICLE AADT | TRUCKS | | TRUCKS: AXLE COUNT | | | | TRUCKS: AXLE COUNT % | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | AADT # | AADT % | 2 | 3 | 4 | 5+ | 2 | 3 | 4 | 5+ |
| A | MRN | JCT. US 101 | 36,500 | 1,343 | 4 | 484 | 132 | 51 | 676 | 36 | 10 | 4 | 50 |
| A | MRN | PETALUMA CREEK | 36,500 | 1,354 | 4 | 630 | 107 | 43 | 574 | 47 | 8 | 3 | 42 |
| A/B | SON | JCT. SR 121 (A) | 44,000 | 1,993 | 5 | 403 | 109 | 60 | 1,421 | 20 | 5 | 3 | 71 |
| A/B | SON | JCT. SR 121 (B) | 32,500 | 2,100 | 6 | 384 | 91 | 47 | 1,577 | 18 | 4 | 2 | 75 |
| C | SOL | WALNUT AVE | 32,500 | 4,079 | 13 | 1,454 | 327 | 144 | 2,154 | 36 | 8 | 4 | 53 |
| C | SOL | JCT. I-80 | 95,000 | 5,567 | 6 | 1,064 | 373 | 126 | 4,003 | 19.12 | 7 | 2 | 72 |

intersects with SR 29 and I-80. SR 37 is a STAA Terminal Access Route. There is one weigh station mini-site in Segment A.

Truck volumes impact maintenance needs, as trucks degrade road surfaces at a much higher rate than smaller vehicles. This is important on SR 37, as Segments A and B require frequent repair due to degradation caused by berm settling and earth compaction.

## Corridor Performance

### Travel Patterns

Job markets and high housing costs in Marin and Sonoma Counties result in workers seeking out more affordable housing in Solano County. SR 37 weekday peak hour congestion is to a large extent due to commuters. In addition, there are no public transit options in corridor, forcing all workers to use personal vehicles.

SR 37 is used by residents and tourists from San Francisco, the Peninsula, and Marin County to access the Napa and Sonoma Valleys. There are over five million visitors annually. There are no convenient public transit options to access these areas, thus, most residents and tourists either drive or book private tours. Tourism-related traffic is heaviest on weekends and during the summer months.

**TABLE 7 - MOTOR VEHICLE TRAFFIC DATA (2012)**

| SEG | COUNTY | POSTMILE | | DESCRIPTION | PEAK HOUR | PEAK MONTH | AADT |
|---|---|---|---|---|---|---|---|
| A | MRN | | 13.773 | ATHERTON AVE | 3,550 | 39,500 | 37,000 |
| | MRN | | 14.473 | PETALUMA CREEK | 3,550 | 38,500 | 37,000 |
| | MRN | | 14.617 | MRN/SON COUNTY LINE | 3,550 | 38,500 | 37,000 |
| | SON | | 0 | MRN/SON COUNTY LINE | | | |
| | SON | | 2.06 | LAKEVILLE ROAD | 3,550 | 38,500 | 37,000 |
| | SON | | 3.9 | JCT. RTE. 121 NORTH | 4,300 | **47,500** | **44,500** |
| B | SON | R | 6.245 | MRN/SON COUNTY LINE | 2,750 | 36,000 | 33000 |
| | SOL | R | 0 | MRN/SON COUNTY LINE | | | |
| | SOL | R | 7.213 | WALNUT AVE | 2,750 | 36,000 | 33,000 |
| C | SOL | R | 8.01 | WILSON AVE | 3,200 | 37,000 | 34,500 |
| | SOL | | 10.94 | VALLEJO, FAIRGROUNDS DR. | 5,500 | 72,000 | 69,000 |
| | SOL | R | 11.41 | JCT. RTE. 80 | 7,300 | 96,000 | 92,000 |

Currently, SR 37 experiences PM eastbound commute congestion at SR 121, where the four-lane highway narrows to two lanes. The AM westbound commute at SR 37/Mare Island (where the four-lane freeway narrows to two) experiences some congestion, but less than the eastbound PM backup.

### Vehicle Traffic and Delay

Detailed weekday traffic conditions are described in the text boxes below.

There are currently no notable safety issues in the corridor. Segment B had a history of severe and fatal crossover head-on collisions, resulting in 58 fatalities between 1966 and 1996. A median barrier was built in 1996. It eliminated the passing lanes, sometimes worsening congestion. There have been no crossover collisions since the barriers were installed.

#### Westbound Traffic Conditions

***AM Peak:*** During peak commute hours, traffic at the I-80/WB SR 37 connector slows down due to weaving and maneuvering. The reduction from four to two lanes after the Mare Island overcrossing can result in backups of over half a mile. In the summer, when the Discovery Kingdom is in full operation, the segment of WB SR 37 between Route 80 and Fairgrounds Drive becomes congested due to traffic going to the park. Occasionally, the queue extends to I-80 causing the right lane to back up in both EB and WB directions.

***PM Peak:*** As in the AM peak, there is slowing between I-80 and Fairgrounds Drive due to vehicles weaving and maneuvering either to continue onto WB SR 37 and/or exit at Fairgrounds Drive. The off-ramp to Fairgrounds Drive gets congested from local traffic and traffic bound for American Canyon and Napa.

Further west, the single-lane section of SR 37 operates at capacity with average vehicle speeds of 50 mph.

#### Eastbound Traffic Conditions

Weekday PM Commute traffic causes the only predictable congestion on SR 37.

***AM Peak:*** None/little

***PM Peak:*** During the afternoon peak hour, four-lane eastbound SR 37 becomes congested as it approaches the junction of SR 121 with a mandatory through lane and two mandatory left-turn lane to NB SR 121. During peak hours, typically between 4-6 PM, the queue can extend over a mile from that junction to the intersection at Lakeville Road. The traffic signal at the SR 121 intersection has been optimized, however, due to limited capacity east of intersection, eastbound SR 37 traffic waits an average of two and a half signal cycles to get through the intersection during the peak period. Between SR 121 and Mare Island, SR 37 operates at capacity.

## Traffic Forecasting

Growing housing demand in Marin and Sonoma Counties has produced a housing market that a high percentage of workers and middle-class families cannot afford. It is assumed that many employees commute long distances to Marin and Sonoma job locations from more affordable communities in Solano and Contra Costa Counties. This jobs/housing imbalance is one contributor to congestion Bay Area wide, including SR 37.

The 2040 traffic volume forecast was derived from the 2012 Marin County Travel Demand Model for the North Bay. The model's future land use is based on ABAG projections for population and job growth. Per

the region's 2040 Regional Transportation Plan, Plan Bay Area, growth will be focused in the denser cities of the region, closer to shopping and transit and more conducive to biking and walking. Recent land use forecasts may result in less traffic growth than is currently projected for this corridor.

Projected traffic volumes, as shown in Table 8, predict an increase in congestion on the current facility. At this time, capacity increases are not possible, given environmental constraints. Improvement strategies are currently being studied as part of the effort to maintain and enhance the SR 37 corridor connection. As the replacement or rebuilding of SR 37 is most likely over ten years in the future, other congestion management methods such as ITS technology and providing transit could be implemented.

**TABLE 8 - 2040 TRAFFIC VOLUME FORCAST**

| | 2013 VOLUMES | | | | | | 2040 FORECASTS | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEG | AM PK HR | AM PK HR | PM PK HR | PM PK HR | 2013 AADT | | AM PK HR | AM PK HR | PM PK HR | PM PK HR | 2040 AADT | |
| | EB | WB | EB | WB | EB | WB | EB | WB | EB | WB | EB | WB |
| A | 1000 | 2200 | 2300 | 1250 | 20, 300 | 20,100 | 1850 | 3500 | 3750 | 3000 | 34,650 | 37,500 |
| B | 1250 | 1650 | 1850 | 1250 | 20,350 | 19,100 | 2000 | 2500 | 3500 | 2700 | 35,800 | 34,500 |
| C | 3100 | 3100 | 3900 | 3200 | 49,200 | 45,200 | 3500 | 3700 | 5150 | 4400 | 5600 | 58,200 |

Figure 4 – Eastbound SR 37 east of SR 121 intersection Photo: Chris Riley, Vallejo Times-Herald

# THE CORRIDOR ENVIRONMENT

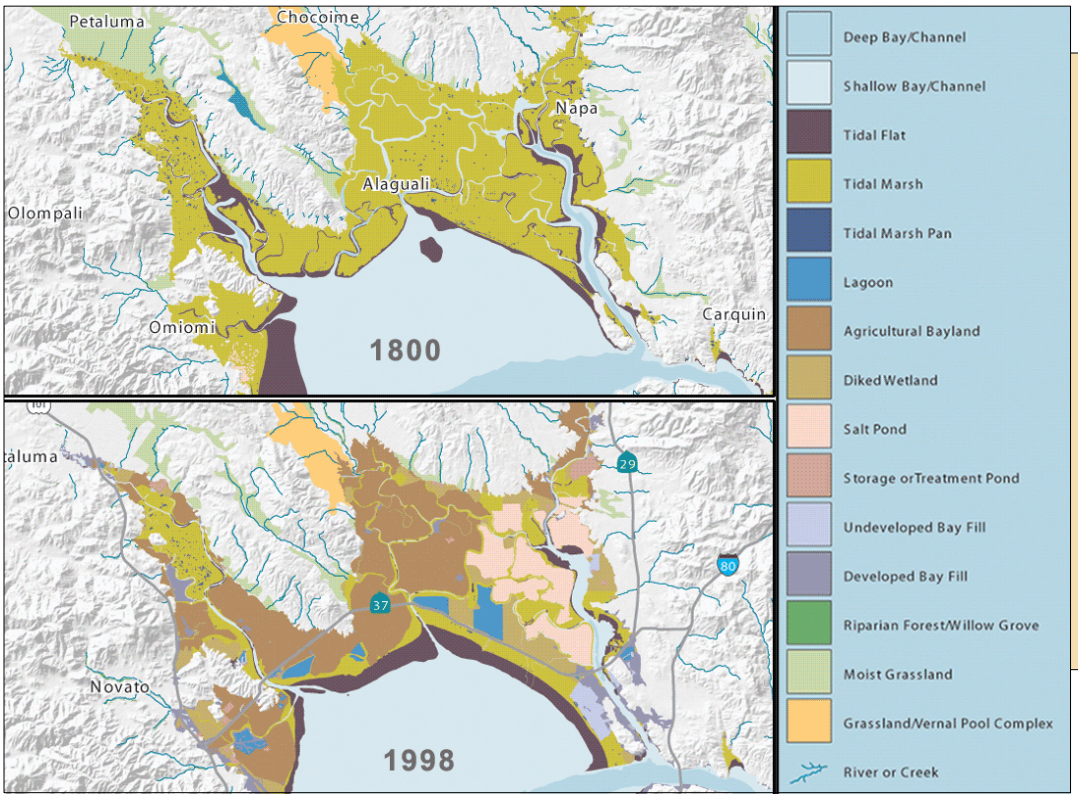
The greatest challenges to Highway 37 stem from its location and placement, traversing extensive wetlands areas, and its low elevation and proximity to San Pablo Bay, making the roadway vulnerable to tidal erosion, overtopping during severe storms, and exposure to rising sea levels.

Figure 12 (p. 21) shows not only wetlands and habitat of threatened species, but also agricultural land, much of which is within the San Pablo Bay National Wildlife Refuge. Important farmlands are designated by county Boards of Supervisors and the State. Designations can be changed where farmland is to be restored to its native ecosystems.

## ENVIRONMENTAL CONTEXT

Historically, the wetlands abutting San Pablo Bay comprised one of the largest tidal marsh complexes on the Pacific coast of North America. However, the area has been significantly altered by human activities such as hydraulic mining, salt production, draining, filling, agriculture, and development. About 85 percent of San Pablo Bay's tidal marshes have been changed. The Napa Sonoma Marsh represents one of the few sizeable marshland expanses where restoration is feasible. Ongoing restoration of historic wetlands, the preservation of existing open space and further efforts are in various planning and implementation stages. Various local, State, and federal agencies as well as private/non-profit groups are involved and investing considerable resources in marshlands and habitat restoration and endangered species recovery efforts.

The benefits of a healthy marshland include biodiversity support, water quality improvement, storm surge buffering, carbon regulation, nursery habitat, and recreation and cultural opportunities. A vibrant marshland environment could attract tourism, improving the economies of Vallejo and American Canyon. The challenge for the design of any roadway improvements in this environment will be to both improve mobility and support marshlands restoration and preservation efforts.




*The upper map to the left shows pre-1850 historic marshlands and tribal areas.*

*The map below portrays a radically changed environment.*

*The most damaging period was between 1850 and 1900, when 85 percent of the marshlands were drained to create farmland, primarily to grow livestock feed.*

Figure 5 – North Bay marshlands

Graphic: San Francisco Estuary Institute

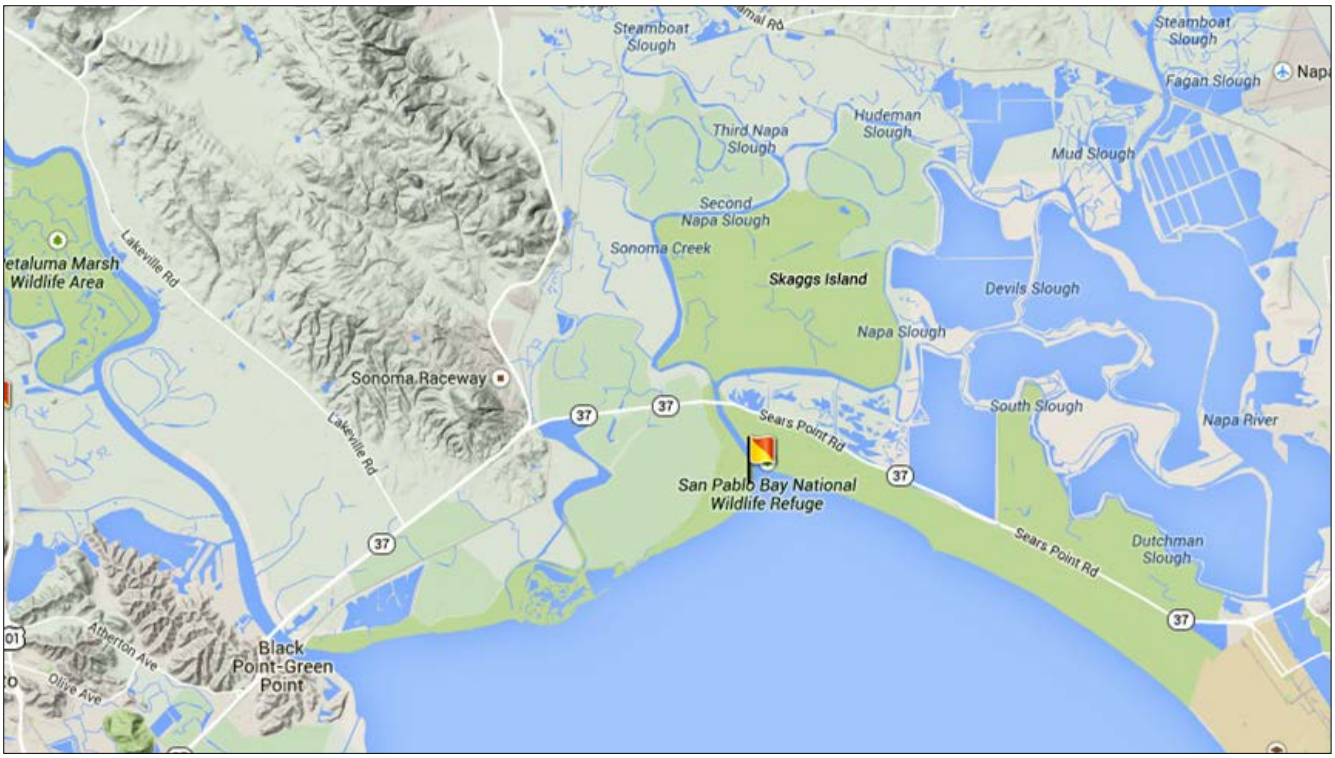



Figure 6 – San Pablo Bay National Wildlife Refuge Image: Google Maps

## Critical Ecosystems

SR 37 traverses wetlands, including habitats of listed endangered and threatened species, such as the California clapper rail and the salt marsh harvest mouse. The highway is a barrier to animal and fish migration, tidal flow, and the marshland interaction with the Bay. Roadway runoff can degrade water quality in adjacent ponds, sloughs, and marshes.

SR 37 crosses the San Pablo Bay National Wildlife Refuge, which covers 13,190 acres. The refuge extends along the northern shore of San Pablo Bay from the mouth of the Petaluma River to Tolay and Sonoma Creeks, and Mare Island. It contains the largest remaining continuous patch of pickleweed-dominated tidal marsh in northern San Francisco Bay.

In 2011, 3,300-acre Skaggs Island ownership was transferred from the U.S. Navy to the Fish and Wildlife Service and is now part of the San Pablo Bay National Wildlife Refuge. Sonoma Land Trust purchased

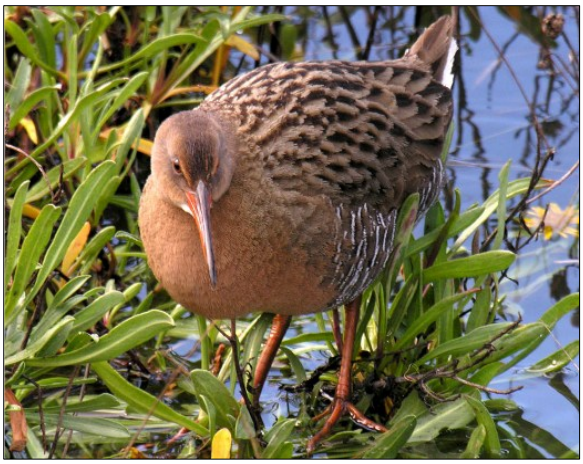


Figure 7 - Clapper Rail
Photo: U.S. Fish and Wildlife Service

Figure 8 – Salt Marsh Harvest Mouse
Photo: Wikimedia Commons

Figure 9 - Skaggs Island Photo: U.S. Fish and Wildlife Service

the adjacent 1,092-acre Haire Ranch in 2013, which will enable over 4,400 acres of diked baylands to be restored to wetlands.

The wetlands region includes a variety of habitats including open water, mudflats, tidal marshes, and seasonal and managed wetlands. San Pablo Bay refuge provides critical migratory and wintering habitat for shorebirds and waterfowl and year-round habitat for endangered, threatened, and sensitive species such as the California clapper rail, salt marsh harvest mouse, California black rail, San Pablo song sparrow, and Suisun shrew. Numerous species require tidal marsh habitat for their survival, including 11 fish species that swim through San Pablo Bay to reach their fresh water spawning grounds.

In Segments A & B, the highway is built on a levee which constricts the free tidal flow from the Bay to the marshlands. This prevents replenishing marsh and stream nutrients, obstructs the cleansing action, and impedes silting. Altering or removing the highway levee could restore natural hydrology, but with so many other factors at play such as privately-maintained levees, sea level rise, buried toxins, and more frequent drought years, restoration of the marshlands is likely to be a lengthy and complex endeavor.

Figure 10 - Canvasback Ducks Photo: Ducks Unlimited

## Ongoing Environmental Restoration Projects (partial list)[5]

- **The Sears Point Restoration Project**: Near the SR 37/SR 121 junction, this 2,327-acre restoration project includes extending the Bay Trail, an environmental education pavilion for the San Pablo Bay National Wildlife Refuge headquarters, and a native plant nursery. http://www.sonomalandtrust.org/news_room/press_releases/1406-sears-point.html
- **Cullinan Ranch**: Located north of SR 37 in Solano County just west of the Napa Bridge, the project is will restore 1,549 acres of estuarine marsh and 26 acres of associated uplands. It also includes a parking area for 10 vehicles accessible only from Westbound SR 37. http://restorecullinan.info/index.htm
- **Skaggs Island:** Skaggs Island is a former US Navy Communications base decommissioned since 1993. The project of restoring Skaggs Island is a partnership of Caltrans, Bay Area Transportation Authority (BATA), the California Transportation Commission (CTC), the U.S. Navy, the U.S. Fish and Wildlife Service (FWS) and the San Francisco Bay Conservation and Development Commission (BCDC). http://www.sfestuary.org/the-island-that-came-in-from-the-cold/
- **Cargill Salt Ponds** and other Managed Wetlands: Large area, high-value wildlife habitat undergoing staged rehabilitation of over three thousand acres of former solar evaporation salt production ponds. http://www.cooperativeconservation.org/viewproject.asp?pid=692
- **San Pablo Bay National Wildlife Refuge**: The addition and restoration of land with high aquatic life and wildlife habitat value or good habitat restoration potential to the San Pablo Bay National Wildlife Refuge would be in accord with Bay Plan Policies. The California Department of Fish and Game and the U.S. Fish and Wildlife Service are carrying out a cooperative program to acquire, restore and manage areas of high aquatic life and wildlife habitat value in San Pablo Bay. http://www.fws.gov/refuges/profiles/index.cfm?id=81644
- **Proposed Marin Baylands National Wildlife Refuge**: The U.S. Fish and Wildlife Service proposes to include tidal marsh, seasonal marsh and uplands in a national wildlife refuge located on the west side of San Pablo Bay from the Petaluma River to an area south of Gallinas Creek in Marin County. The proposed wildlife refuge would be in accord with Bay Plan policies.
- Areas diked from the Bay have high-value wildlife habitat and restoration potential. **Petaluma Marsh**, the largest remaining intact tidal marsh within the Bay, contains characteristic historic tidal marshes including an extensive system of channels, pans (ponds) and natural transitions to adjacent upland habitats. http://www.sonomaopenspace.org/Content/?p=10089/preview.html
- **Napa-Sonoma Marshes Wildlife Area** (Napa River Unit): The California Coastal Conservancy, U.S. Army Corps of Engineers (USACE), and California Department of Fish and Wildlife propose to restore over 13,000 acres of salt ponds on the west side of the Napa River. http://en.wikipedia.org/wiki/Napa_Sonoma_Marsh
- **White Slough Flood Control and Improvement Project** The proposed phase of the project will cut two 100-foot gaps in an illegal fill crossing the Slough, separating it from the mainland and increasing water circulation in the Slough. A culvert crossing of Austin Creek will be removed and the Creek restored in that reach. For flood control purposes, an overflow weir will be cut into the East levee of Austin Creek. This USACE project is scheduled for completion in 2016. A EIR/EIS has been prepared for the project. http://bairwmp.org/projects/white-slough-flood-control-and-improvement-project

[5] A list of agencies working in the SR 37 Corridor Marsh Area can be found in Appendix C.

## Sea Level Rise Vulnerability and Flood Risk

Rising sea levels as a result of climate change will critically impact both wildlife zones and the built environment in coastal areas. Climate scientists predict that seasonal storms are likely to grow more frequent and more severe from the effects of global warming. Combined with rising tides, roads in low-lying areas are expected to flood. For Highway 37, this will likely lead to more frequent and potentially long-term or permanent closures and harsher storms will damage the berm upon which the roadway is built, if the road is not reconstructed to withstand rising seas and storm surges.

The highway has, in the past, been closed due to overtopping. The most recent closure was in December of 2014 both westbound lanes at Novato Creek were closed for one day. Eastbound lanes were also flooded, but passable. over seven days water pumping prevented extended closure during that storm event. In February of 1996, the roadway was closed at Novato Creek for 20 days due to flooding, and again for 21 days in January, 2005. In 2000 the highway at Tulocay Creek was overtopped, but passable.

Another major issue is the continual settling of the roadway from unstable soil structures and heavy truck traffic. This constant soil densification requires frequent roadway repairs. In some areas the settling is so severe that repair projects require restoration every few years.

**SEA LEVEL RISE MODELS** (Baseline – 2000)[6]

| Year | Range | Average of Models | Range of Models |
|---|---|---|---|
| 2030 | | 7 in (18 cm) | 5-8 in (9-17 cm) |
| 2050 | | 14 in (36 cm) | 10-17 in (26-43 cm) |
| 2070 | Low | 23 in (59 cm) | 17-27 in (43-70 cm) |
| | Medium | 24 in (62 cm) | 18-29 in (46-74 cm) |
| | High | 27 in (69 cm) | 20-32 in (51-81 cm) |
| 2100 | Low | 40 in (97 cm) | 31-50 in (78-128 cm) |
| | Medium | 47 in (121 cm) | 37-60 in (95-152 cm) |
| | High | 55 in (140 cm) | 43-69 in (110-176 cm) |

[6] Data source: Caltrans *Guidance on Incorporating Sea Level Rise (2011)* which uses data from the California Ocean Protection Council

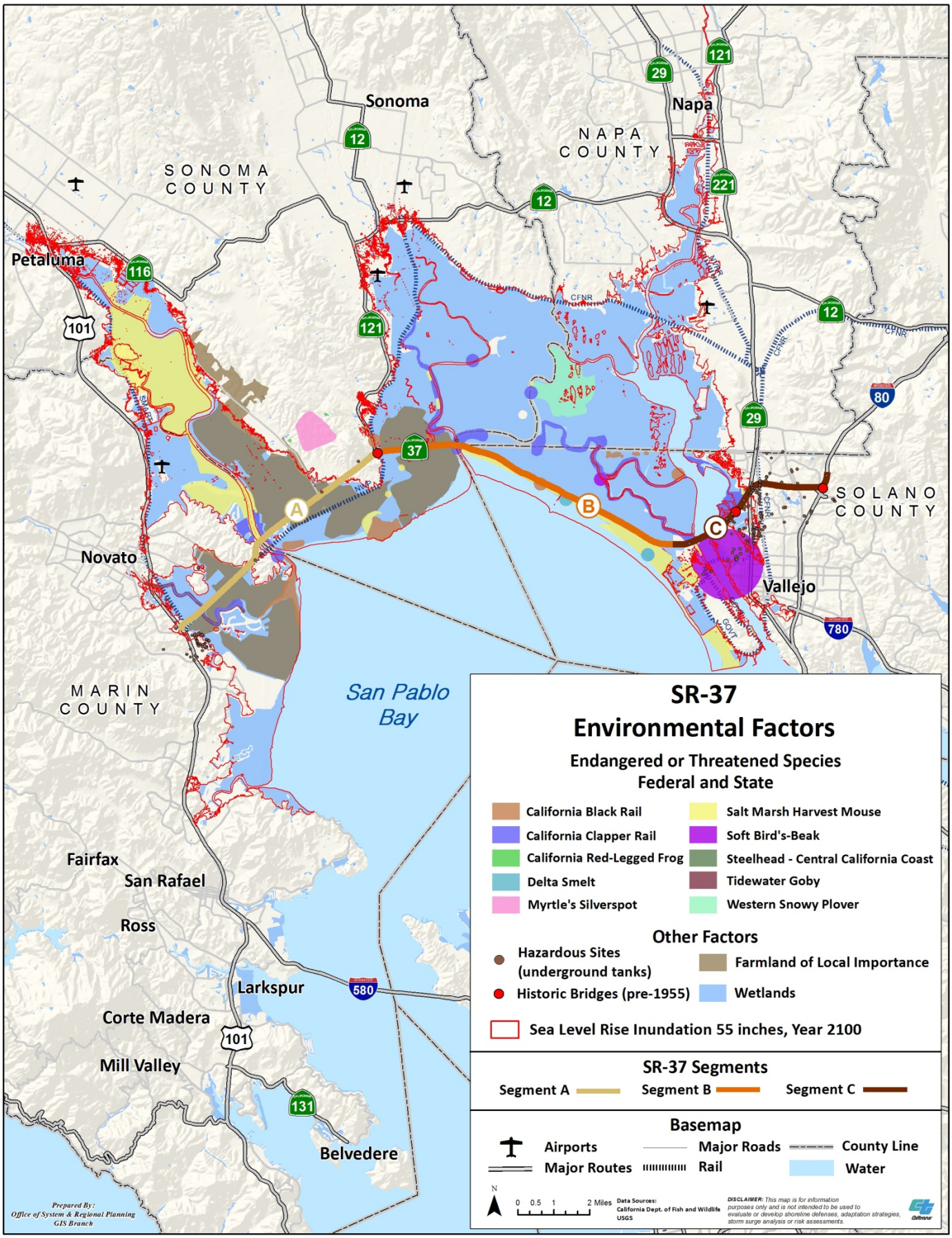



Figure 11 - SR 37 Environmental Factors map showing North Bay habitats and projected sea level rise inundation by 2100

# KEY CORRIDOR ISSUES

The most defining issue for Highway 37 is its vulnerability to closure because of flooding. With rising sea levels, these occurrences will likely grow more frequent.

The challenge of highway maintenance or improvement project will be to understand the function of the highway not only as a transportation facility but also as an impediment to the surrounding environment and as a protecting structure to levees and farmland.

The following is a list of issues that are critical in defining improvement options for the corridor:

## Auto/Freight

- Congestion, eastbound PM peak hours at SR 121 junction and westbound AM after the Mare Island overcrossing where the roads narrows from four to two lanes.

## Transit

- There is no transit in this corridor. This is an equity concern and of particular importance to people who do not drive, or do not want to drive (seniors, lower income populations, etc.).

## Bicycle/Pedestrian

- There is very little pedestrian activity along this corridor, but increasing access to wetlands could bring more foot traffic in Segments A & B, where pedestrians are permitted.
- Two bridges in Segment A have very narrow (less than two feet) shoulder widths, forcing cyclists to merge with high speed traffic and pedestrians into the roadway.
- High motor vehicle speeds, rumble strips and debris in shoulders cause most cyclists to avoid this route, even though it is the shortest route between Novato and Vallejo.

## Aging Populations

- Napa, Sonoma and Marin Counties have the highest percentage of population over 65 years of age of the Bay Area Counties, and fastest growing populations of older adults. A significant portion of the population will have mobility issues as they are no longer able to drive.

## Sea Level Rise and Marshland Restoration

- Overtopping during high tides and storms causes highway closure.
- Projected future sea levels will permanently inundate the current facility at various locations.
- Bicycle and pedestrian facilities and trails will be inundated by sea level rise
- Coordination of road improvements with ongoing efforts to restore marshlands and habitat
- Presence of multiple endangered or threatened species and habitats
- Lack of access points, trailhead parking, and wayfinding for hikers, birders, other wildlife area visitors
- Routine maintenance is hindered by limitations on soft-shoulder egress, and various chemical bans

## Economic/Equity Issues

- Important route and resource for adjacent residents, in particular lower income residents of Vallejo who travel to jobs in Marin and Sonoma Counties.
- Vallejo has highest mean travel-to-work time (33 minutes) in corridor area.
- Growing jobs/affordable housing imbalance increasing congestion on SR 37.

# CORRIDOR CONCEPT

Given the importance of SR 37 for the North Bay, the concept focuses on maintaining this critical highway within the context of large-scale restoration of the surrounding marshes. The nominal concept for the corridor is to remain the same for Segments A (4E) and C (4F). The concept identifies the two-lane conventional segment between SR 121 (Sears Point) and Mare Island (Vallejo) as a candidate for widening from two to four lanes in order to close the gap between the two four-lane segments on either end. There is concern that increasing the number of lanes on any facility creates only temporary congestion relief and in the long run will result in additional travel demand. In the case of SR 37, because of the local geography and environment, the lack of population centers and very limited development along the corridor, building out Segment B to conform to Segments A and C is not expected to significantly increase demand, and could allow HOV/ transit options to be introduced in the corridor.

This TCR, more than most others, focuses on how the facility concept development is driven by the ecosystems that surround the roadway. The document recognizes the significance of the marshland environment, the presence of threatened and endangered species and habitats, and the restoration efforts of our stakeholder agencies. Within this context, the following projects and strategies are proposed to maintain and improve long-term access, operations, safety, mode choice, and maintenance in the corridor while minimizing impacts on natural resources.

**TABLE 9: SR 37 CORRIDOR CONCEPT AND STRATEGIES TO ACHIEVE CONCEPT**

| SEG | DESCRIPTION | EXISTING FACILITY | 20-25 YEAR FACILITY CONCEPT | LONG-TERM CONCEPT AND STRATEGIES | |
|---|---|---|---|---|---|
| | | | | SEGMENT-SPECIFIC | ENTIRE CORRIDOR |
| A | US 101 (NOVATO) IN MARIN COUNTY TO SR 121 (SEARS POINT) IN SONOMA COUNTY | 4E* | 4E* | ▪ MAINTAIN FACILITY<br>▪ ELEVATE ROADWAY TO PROTECT FACILITY FROM SEA LEVEL RISE AND FLOODING<br>▪ BUILD FACILITY TO MAXIMIZE BENEFITS TO MARSHLAND RESTORATION<br>▪ PROVIDE CONTINUOUS BIKE FACILITIES<br>▪ MULTI-MODAL SERVICES<br>▪ ADD MARSHLANDS ACCESS POINTS | ▪ MAINTAIN AND IMPROVE FACILITY<br>▪ PROTECT ROADWAY FROM PROJECTED RISING SEA LEVELS AND FLOODING (STUDY WIDENING OPTIONS: MIXED FLOW/ HOV/ TRANSIT/ HOT)<br>▪ BUILD FACILITY TO MAXIMIZE BENEFITS TO MARSHLAND RESTORATION<br>▪ CONTINUOUS BIKE AND PED FACILITIES AND CONNECTIONS (SUPPORT DEVELOPMENT OF THE BAY TRAIL)<br>▪ MULTI-MODAL ACCOMODATION<br>▪ ITS INFRASTRUCTURE<br>▪ FERRY SERVICE VALLEJO TO LARKSPUR |
| B | SR 121 (SEARS POINT) IN SONOMA COUNTY TO MARE ISLAND (VALLEJO) IN SOLANO COUNTY | 2C* | 2 OR 4 C*OR E* | ▪ ELEVATE ROADWAY TO PROTECT FACILITY FROM FLOODING AND WIDEN TO 4 LANES (STUDY WIDENING OPTIONS: MIXED FLOW/ TRANSIT/ HOV/ HOT)<br>▪ BUILD FACILITY TO MAXIMIZE BENEFITS TO MARSHLAND RESTORATION<br>▪ PROVIDE CONTINUOUS BIKE FACILITIES<br>▪ MULTI MODAL SERVICES<br>▪ IMPROVED ACCESS TO WETLANDS | |
| C | MARE ISLAND TO I-80 INTERCHANGE IN SOLANO COUNTY | 4F* | 4F* | ▪ MAINTAIN FACILITY<br>▪ IMPROVE BIKE FACILITIES AND CONNECTIONS | |

*C=CONVENTIONAL; E=EXPRESSWAY; F=FREEWAY

## Projects and Strategies to Achieve Concept

### Long-term Maintenance and Adaptation

- Maintain and improve corridor mobility and public access to surrounding areas and develop long-term design solutions for the corridor that withstand rising seas, storm severity and tidal action and support restoration of surrounding marshlands.

### Transit Feasibility Studies

- Study feasibility of transit and rail between Marin/Sonoma/Solano/Alameda Counties, and how to integrate transit service to existing transit networks.
- Study efficient public transportation routes for visitors to and from Napa and Sonoma tourist regions, and transit for visitors within these regions.

### Bicycle and Pedestrian Projects

- Support completion of the Bay Trail along the corridor and access to existing and future Bay Trail segments, including parking areas for cars, bikes, buses.
- Provide links of existing and future bicycle facilities with networks in Napa and Solano Counties to the east, and Sonoma and Marin and the SMART multi-use pathway to the west.

### Operational Strategies

- Evaluate feasibility of providing improved bike/pedestrian access on the Novato Creek Bridge and Petaluma River Bridge (Segment A).
- Implement Intelligent Transportation Systems (ITS) improvements at the junctions of SR 37 with US 101, SR 121, SR 29, and I-80. On weekdays, weekends, and special events, changeable message signs could give real time travel information to travelers, or warn of road closures or congested situations and recommend alternative routes.
- Sensors or cameras could both adjust signal timing and/or meter traffic entering congested areas.
- Encourage off-peak work schedules and maintain and expand van-and-car pooling programs in Marin and Sonoma Counties.

### Studies

Caltrans and U.C. Davis Road Ecology Center have recently procured funding for the *State Route 37 Integrated Traffic, Infrastructure and Sea Level Rise Analysis* study (see Appendix C for further details) . To be completed in December of 2015, the study will evaluate the effects of sea level rise on the existing roadway and the following three highway reconstruction options:

- Roadway elevated on levee
- Roadway elevated on “monopod” concrete post causeway
- Roadway elevated on wood or concrete “trellis” causeway.

## SUMMARY OF KEY ISSUES AND STRATEGIES BY MODE/ISSUE

Table 11 presents a summary of the issues identified in this document and strategies to maintain and improve access and mobility throughout the corridor.

**TABLE 10 – SUMMARY OF KEY ISSUES AND STRATEGIES**

| | ISSUE | LOCATION | STRATEGY | TIMEFRAME* | COMMENTS |
|---|---|---|---|---|---|
| AUTO FREIGHT | PM PEAK HOUR CONGESTION | SEG A WEST OF SR 121 I/S | RECONSTRUCT SEGMENT B WITH 2 ADDITIONAL TRAVEL LANES | LONG TERM | FEASIBILITY STUDY UNDERWAY (COMPLETION DEC 2015) STUDY WIDENING OPTIONS: MIXED FLOW/ TRANSIT/ HOV/ HOT |
| | CONGESTION | A & C | IMPLEMENT ITS AND TOS ELEMENTS | MID TERM/ LONG TERM | |
| | SEASONAL FLOODING, OVERTOPPING | A & B | RECONSTRUCT SEGMENTS | LONG TERM | FEASIBILITY STUDY UNDERWAY (COMPLETION DEC 2015) |
| TRANSIT RIDESHARE | NO TRANSIT IN CORRIDOR | ENTIRE CORRIDOR | STUDY TRANSIT FEASIBILITY AND OPTIONS | SHORT TERM/ LONG TERM | ORIGIN/DESTINATION DATA IS A FIRST STEP TO DETERMINE TRANSIT DEMAND |
| | AM/PM COMMUTE CONGESTION | A & C | PROVIDE MODAL CHOICES: TRANSIT, VANPOOLS, RIDE SHARE | MID TERM | |
| BICYCLE PEDESTRIAN | NARROW SHOULDERS ON TWO BRIDGES | A | BRIDGE REPLACEMENT OR PARALLEL FACILITY | LONG TERM | RECONSTRUCTED HIGHWAY WILL INCLUDE BRIDGE WITH SHOULDERS |
| | | | STUDY FEASIBILITY OF NEARER-TERM SOLUTIONS | MID TERM | RESTRIPING LANES TO ADD MORE SHOULDER WIDTH? |
| | HIGH VEHICLE SPEEDS | A & B | WORK WITH ABAG TO COMPLETE BAY TRAIL (NOVATO TO VALLEJO) | LONG TERM | INTEGRATE BAY TRAIL IN FACILITY PLANNING |
| SEA LEVEL RISE MITIGATION AND MARSHLAND RESTORATION | OVERTOPPING DURING STORMS, HIGH TIDES | A & B | RAISE ROAD BED ABOVE TIDAL LIMITS | LONG TERM | FEASIBILITY STUDY UNDERWAY (COMPLETION DEC 2015) |
| | PERMANENT CLOSURE FROM SLR INUNDATION | A & B | RAISE ROAD BED ABOVE TIDAL LIMITS | LONG TERM | |
| | HIGHWAY BERM BLOCKS NATURAL TIDAL HYDROLOGY AND MIGRATION OF ANIMALS | A & B | RAISE HIGHWAY ONTO CAUSEWAY OR MORE PERMEABLE BERM | LONG TERM | SOME STUDY SCENARIOS WOULD INCREASE TIDAL ACTION |
| | HIGHWAY CONFLICTS WITH MARSH RESTORATION EFFORTS | A & B | COORDINATE HIGHWAY AND RESTORATION PLANNING | ONGOING | NEED FOR CONTINUED STAKEHOLDER INVOLVEMENT AND COLLABORATION |
| | MAINTENANCE AREA IS TOO NARROW FOR SAFE ROAD WORK AND USE OF CHEMICALS IS RESTRICTED | A & B | WIDEN HIGHWAY, RELOCATE | LONG TERM | |
| EQUITY ISSUES | IMPORTANT CONNECTION TO JOB SITES AND RECREATIONAL RESOURCE | ENTIRE CORRIDOR | MAINTAIN AND IMPROVE CORRIDOR AND ACCESS, EXPAND MODE CHOICES | MID TERM/ LONG TERM | VALLEJO HAS HIGHEST BELOW-POVERTY-LINE POPULATION IN NORTH BAY |
| | TRANSPORTATION NEEDS OF AGING POPULATIONS | ENTIRE CORRIDOR | EXPAND MODE CHOICES | MID TERM/ LONG TERM | NORTH BAY COUNTIES HAVE HIGHEST PERCENTAGE OF 65+ POPULATIONS OF BAY AREA COUNTIES |

*Short Term= 0-5 years; Medium= 0-10 yrs; Long=0-25 yrs

## Programmed Projects

Below is the list of all programmed projects on SR 37. All are State Highway Operation and Protection Program (SHOPP)-funded safety and maintenance projects. There are currently no capital improvement projects planned or programmed.

**TABLE 11 - 10-YEAR SHOPP (2014)**

| COUNTY | PM-FR | PM-TO | PROJECT DESCRIPTION | LOCATION DESCRIPTION |
|---|---|---|---|---|
| MRN | 11.2 | 14.6 | CAPITAL PREVENTIVE MAINTENANCE | US 101 TO PETALUMA RIVER |
| SON | 0 | 6.2 | CAPITAL PREVENTIVE MAINTENANCE | PETALUMA RIVER TO SONOMA CR. BRIDGE |
| SOL | 0 | 8.3 | CAPITAL PREVENTIVE MAINTENANCE | SONOMA CR. BRIDGE TO WILSON AVE. EXIT |
| SON | 2.6 | 2.6 | INSTALL WEIGH-IN-MOTION SYSTEM | 1.5 MILES E. OF LAKEVILLE RD. INTERSECTION |

**TABLE 12 - 2012 SHOPP (UPDATED 07/03/14)**

| | | | | |
|---|---|---|---|---|
| SOL | 3.2 | 3.2 | REPAIR BRIDGE STRUCTURE WING WALLS | 0.7 MILE W OF SR 121, WATERTANK CATTLE PASS BRIDGE # 20-239. |
| MRN | 0.1 | 0.1 | REPAIR BRIDGE JOINT ASSEMBLY | PETALUMA RIVER BRIDGE (#. 27-0013) |

Figure 12 - San Pablo Bay National Wildlife Refuge

Photo: U.S. Fish and Wildlife Service

# APPENDICES

## APPENDIX A: ACRONYMS AND DEFINITIONS

### Acronyms

| | |
|---|---|
| **AADT** | Annual Average Daily Traffic |
| **ADA** | Americans with Disabilities Act of 1990 |
| **ADT** | Average Daily Traffic |
| **ATG** | (or VTG) Auto (or Vehicle) Trips Generated |
| **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 |
| **HOT** | High Occupancy Toll |
| **HOV** | High Occupancy Vehicle |
| **IGR** | Intergovernmental Review |
| **ITS** | Intelligent Transportation System |
| **LOS** | Level of Service |
| **MPO** | Metropolitan Planning Organizations |
| **NCCP** | Natural Community Conservation Plan |
| **NEPA** | National Environmental Policy Act |
| **PID** | Project Initiation Document |
| **PSR** | Project Study Report |
| **RHNA** | Regional Housing Needs Allocation |
| **RTP** | Regional Transportation Plan |
| **RTIP** | Regional Transportation Improvement Program |
| **RTPA** | Regional Transportation Planning Agencies |
| **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 |
| **TOS** | Traffic Operations Systems |
| **VMT** | Vehicle Miles Traveled |

## Definitions

**Annual Average Daily Traffic** (AADT) - the total volume for the year divided by 365 days.

**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. Sometimes "fixing" a bottleneck causes another upstream.

**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.

**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 sometimes included as informational purposes.

**Facility Concept** –Facility strategies that may be needed within 20-25 years.

**Facility Type** – The facility type describes the State Highway facility type (freeway, expressway, etc.)

**Freight Generator** – Any truck-dependent facility, business, manufacturing plant, distribution center, industrial development, or industry.

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

**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.

**Level of Service** (LOS)

- Motor Vehicle LOS: Rating of facility or intersection based on individual vehicle flow or congestion
- Bicycle (BLOS): measure of **on-road** bicyclist comfort level as a function of a roadway's geometry and traffic conditions, perception of safety
- Pedestrian (PLOS): Examines pedestrian facility availability, connectivity, network, safety, crowding, and experience
- Modal LOS or Person-throughput LOS: measures integrated motor vehicle travel, transit service, bicycle, and pedestrian travel into a single indicator of mobility. Person-trips replace vehicle- trips as the basis for the capacity of a transportation facility

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

**Peak Hour** – The hour in which the maximum motor vehicle 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.

**Peak Period** – Is a part of the day during which auto congestion on the individual route is at its highest. Normally, this happens twice a day during the periods when the most drivers commute.

**Planned Project**– A planned improvement or action is a project in a fiscally constrained section of a long-term plan, such as an approved Regional or Metropolitan Transportation Plan (RTP or MTP), Capital Improvement Plan, or measure.

**Post Mile** (PM) – A post mile is an identified point on the State Highway System. The milepost values increase from the beginning of a route within a count 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 relocated, 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 reminder of the route within the county will remain unchanged.

**Programmed Project** – A near-term project with identified funding from sources such as the State Transportation Improvement Program, the State Highway Operations and Protection Program (SHOPP), regional or local funds.

**Rural** – Fewer than 5,000 in population designates a rural area. Limits are based upon population density as determined by the U.S. Census Bureau.

**Segment** – A portion of a facility between two points used for descriptive purposes.

**Threatened Species (or Habitats) -** any species (including animals, plants, fungi, etc.) or areas containing them which are vulnerable to endangerment in the near future.

**Transportation Management System** (TMS) –Tools, field elements and communications systems that help maximize the productivity of the motor vehicle transportation system.

**Urban** – 5,000 to 49,999 in population designates an urban area. Limits are based upon population density as determined by the U.S. Census Bureau.

**Urbanized** – Over 50,000 in population designates an urbanized area. Limits are based upon population density as determined by the U.S. Census Bureau.

**Vehicle Miles Travelled** (VMT) – Is the total number of miles traveled by motor vehicles on a road or highway segments.

**Wetland and Natural Habitat Mitigation** - Provides policy and procedures for the evaluation and mitigation of adverse environmental impacts to wetlands and natural habitat resulting from Federal-aid projects.

**Watershed-Based Planning** - Defined by the Environmental Protection Agency (EPA) as a strategy and work plan for achieving water resource goals for a geographically defined watershed.

# Appendix B: Governmental Plans, Programs, and Deputy Directives

## FEDERAL

### Moving Ahead for Progress in the 21st Century Act (MAP-21)

Map-21 provides funding for surface transportation programs. It was signed into law in July 2012 and amended in 2014. MAP-21 is the first long-term highway authorization bill enacted since 2005. It created a streamlined, performance-based, and multimodal program to address the many challenges facing the U.S. transportation system. These challenges include improving safety, improving and/or maintaining the existing transportation infrastructure , reducing traffic congestion, improving efficiency of the system and freight movement, protecting the environment, and reducing delays in project delivery.

### Federal Transportation Improvement Program (FTIP)

All federally funded projects, and regionally significant projects (regardless of funding), must be listed in the FTIP per federal law. A project is not eligible to be programmed in the FTIP until it is programmed in the *State Transportation Improvement Program* (STIP) or in the *State Highway Operations and Protection Program* (SHOPP). Other types of funding such as Federal Demonstration, Congestion Mitigation and Air Quality (CMAQ), Transportation Enhancement Activities (TEA), and Surface Transportation Program (STP) must be officially approved before the projects can be included in the FTIP.

## STATE

### California Transportation Plan (CTP) 2035

The CTP is a long-range policy framework to meet our future multi-modal mobility needs and reduce greenhouse gas and particulate matter (PM) emissions. The CTP defines goals, performance-based policies, and strategies to achieve our collective vision for California's future Statewide, integrated, multimodal transportation system. An update of the CTP (CTP 2040) is currently underway and is expected to be finalized in 2015. It will focus on meeting new trends and challenges, such as economic and job growth, climate change, freight movement, and public health. In addition, performance measures and targets will be developed to assess performance of the transportation system to meet the requirements of MAP-21.

### Interregional Transportation Strategic Plan (ITSP), 2013 Status Upate

The ITSP is a California Department of Transportation document that provides guidance for the identification and prioritization of interregional State highway projects. The ITSP promotes the State of California's role of improving mobility while providing opportunity for efficient goods movement. It also provides summary information regarding other interregional transportation modes—in particular, intercity passenger rail. The ITSP highlights critical planning considerations such as system planning, complete streets, and climate change. The ITSP 2015 is expected to be released in June, 2015.

### California Interregional Blueprint (CIB)

Responding to Senate Bill 391 of 2009, CIB informs and enhances the State's transportation planning process. Similar to requirements for regional transportation plans under Senate Bill 375, SB 391 requires the State's long-range transportation plan to meet California's climate change goals under Assembly Bill 32. In response to these statutes, Caltrans is preparing a State-level transportation blueprint to inform CTP 2040 and articulate the State's vision for an integrated, multi-modal interregional transportation system that integrates the Regional Blueprint Program (see the Regional appendix section) and complements regional transportation plans. The CIB will integrate the State's

long-range multi-modal plans and Caltrans-sponsored programs with the latest technology and tools to enhance our ability to plan for and manage a transportation system that will expand mode choices and meet future increases in transportation needs and still meet the GHG-reduction targets or SB 375.

### State Transportation Improvement Program (STIP)

The STIP is a multi-year capital improvement program of transportation projects on and off the State Highway System, funded with revenues from the Transportation Investment Fund and other funding sources. Caltrans and the regional planning agencies prepare transportation improvement plans for submittal. Local agencies work through their Regional Transportation Planning Agency (RTPA), County Transportation Commission, or Metropolitan Planning Organization (MPO), as appropriate, to nominate projects for inclusion in the STIP.

### Interregional Transportation Improvement Program (ITIP)

The Interregional Transportation Improvement Program (ITIP) is a State-funding program for the Interregional Improvement Program (IIP) and is a sub-element of the State Transportation Improvement Program. The 2014 ITIP is a five year program of projects from fiscal years 2014-15 through 2018-19. The TIP is a State funding category created in SB 45 for intercity rail, interregional road or rail expansion projects outside urban areas, or projects of Statewide significance, which include projects to improve State highways, the intercity passenger rail system, and the interregional movement of people, vehicles, and goods. Caltrans nominates and the California Transportation Commission approves a listing of interregional highway and rail projects for 25 percent of the funds to be programmed in the STIP (the other 75% are Regional Improvement Program funds). Only projects planned on State highways or railways are to be included in this program.

### State Highway Operation and Protection Program (SHOPP)

Caltrans prepares the SHOPP for the expenditure of transportation funds for major capital improvements necessary to preserve and protect the State Highway System. The SHOPP is a four-year funding program. SHOPP projects include capital improvements for maintenance, safety, and rehabilitation of State highways and bridges. The 10-Year SHOPP anticipates long-term projected expansion and maintenance needs.

### Senate Bill 45 (SB 45) (1997)

SB 45 established guidelines for the California Transportation Commission to administer the allocation of funds appropriated from the Public Transportation Account for capital transportation projects designed to improve transportation facilities.

### Senate Bill 391 (SB 391) (2009)

Senate Bill 391 (SB 391) requires requires the Department to update the California Transportation Plan (CTP) by December 31, 2015, and every 5 years thereafter. The bill requires the plan to address how the State will achieve maximum feasible emissions reductions in order to attain a statewide reduction of greenhouse gas emissions to 1990 levels by 2020 and 80% below 1990 levels by 2050. The CTP has to identify the statewide integrated multimodal transportation system needed to achieve these results.

### California Strategic Growth Plan

The Governor and Legislature have initiated the first phase of a comprehensive Strategic Growth Plan to address California's critical infrastructure needs over the next 20 years. California faces over $500 billion in infrastructure needs to meet the demands of a population expected to increase by 23 percent over the next two decades. In November 2006, the voters approved the first installment of that 20-year vision to rebuild California by authorizing a series of general obligation bonds totaling $42.7 billion.

Smart Mobility Framework (SMF)

Caltrans released *Smart Mobility 2010: a Call to Action for the New Decade* in February 2010. SMF was prepared in partnership with US Environmental Protection Agency, the Governor's Office of Planning and Research, and the California Department of Housing and Community Development to address both long-range challenges and short-term pragmatic actions to implement multi-modal and sustainable transportation strategies in California.

*Smart Mobility 2010* provides new tools and techniques to improve planning. It links land use "place types," considers growth scenarios and how growth will best gain the benefits of smart mobility.

The SMF emphasizes travel choices, healthy, livable communities, reliable travel times for people and freight, and safety for all users. This vision supports the goals of social equity, climate change intervention, and energy security as well as a robust and sustainable economy.

California Freight Mobility Plan (CFMP)

Caltrans released the California Freight Mobility Plan in December 2014. The CFMP has been created to respond to MAP-21 guidance and to address additional State priorities and issues. In creating the Plan, Caltrans worked closely with a 62-member California Freight Advisory Committee and others. The Plan has four primary components: 1) Policies, Strategies, and Implementation; 2) Freight System Assets, Condition, Performance, and Forecast; 3) Context of Freight Issues in California; and 4) Appendices that include a comprehensive list of freight projects, fact sheets detailing specific freight facilities and regions, information regarding applicable regulations and processes used in developing the CFMP, and a set of freight trend analyses that highlight key issues and initiatives.

Corridor System Management Plan (CSMP)

A Corridor System Management Plan is a comprehensive, integrated management plan for increasing transportation options, decreasing congestion, and improving travel times in a transportation corridor. A CSMP includes all travel modes in a defined corridor – highways and freeways, parallel and connecting roadways, public transit (bus, bus rapid transit, light rail, intercity rail) and bikeways, along with intelligent transportation technologies, which include ramp metering, coordinated traffic signals, changeable message signs for traveler information, incident management, bus/carpool lanes and car/vanpool programs, and transit strategies. Each CSMP identifies current management strategies, existing travel conditions and mobility challenges, corridor performance management, planning management strategies, and capital improvements.

California State Rail Plan 2013 (CSRP)

A plan for Passenger and freight rail to help address environmental, economic development, and population growth challenges such as increased travel demand, traffic congestion, and Greenhouse Gas (GHG) Emissions. CSRP programs additional funding for capital investments, ongoing operations, and maintenance is needed. The 2013 CSRP provides a planning framework for improving California's rail system. It notes improvements made over the past decade, addresses future needs, and details plans for expansion and integration of rail services.

Caltrans Deputy Directive 64-R1 *Complete Streets - Integrating the Transportation System*

This Deputy Directive expresses Caltrans commitment to provide for the needs of all travelers including pedestrians, bicyclists and persons with disabilities in all programming, planning, maintenance, construction, operations, and project development activities and products.

State Assembly Bill 32 (AB 32) *Global Warming Solutions Act*

This bill requires the State's greenhouse gas emissions to be reduced to 1990 levels by the year 2020. Caltrans' strategy to reduce global warming emissions has two elements. The first is to make transportation systems more efficient through operational improvements. The second is to integrate

emission reduction measures into the planning, development, operations and maintenance of transportation elements.

Senate Bill 375 (SB 375) Addressing Greenhouse Gas Emissions from the Transportation Sector

SB 375 provides a means for achieving AB 32 goals from cars and light trucks. The transportation sector contributes over 40 percent of the GHGs throughout the State. Automobiles and light trucks alone contribute almost 30 percent. SB 375requires the California Air Resources Board (ARB) to develop regional GHG emission reduction targets for cars and light trucks for each of the 18 Metropolitan Planning Organizations (MPOs). Through their planning processes, each of the MPOs is required to develop plans to meet their regional GHG reduction target, to be accomplished through either the financially constrained "sustainable communities strategy" as part of their regional transportation plan (RTP) or an unconstrained alternative planning strategy. SB 375 also provides streamlining of California Environmental Quality Act (CEQA) requirements for specific residential and mixed-use developments.

Caltrans Climate Action Plan

GHG emissions and the related subject of global climate change are emerging as critical issues for the transportation community. Caltrans recognizes the significance of cleaner, more energy efficient transportation. On June 1, 2005 the State established emissions-reduction targets for California that lead to development of the Climate Action Program. This program highlights reducing congestion and improving efficiency of transportation systems through smart land use, operational improvements, and Intelligent Transportation Systems (objectives of the State's Strategic Growth Plan). The Climate Action Plan approach also includes institutionalizing energy efficiency and GHG emission reduction measures and technology into planning, project development, operations, and maintenance of transportation facilities, fleets, buildings, and equipment.

## REGIONAL

Regional Transportation Plan - Plan Bay Area

Plan Bay Area is a long-range integrated transportation and land-use/housing strategy through 2040 for the San Francisco Bay Area. On July 18, 2013, the Plan was jointly approved by the Association of Bay Area Governments (ABAG) Executive Board and by the Metropolitan Transportation Commission (MTC). The Plan includes the region's Sustainable Communities Strategy and the 2040 Regional Transportation Plan and represents the next iteration of a planning process that has been in place for decades.

*Plan Bay Area* is a long-range plan to meet the requirements of California Senate Bill 375, which calls on the State's 18 metropolitan areas to develop a Sustainable Communities Strategy to accommodate future population growth and reduce greenhouse gas emissions from cars and light trucks. The Plan advances initiatives to expand housing and transportation choices, create healthier communities, and build a stronger regional economy. Performance targets measure and evaluate various land use scenarios and transportation investments and policies.

Regional Transportation Improvement Program (RTIP)

The Regional Transportation Improvement Program is a sub-element of the State Transportation Improvement Program (STIP) and the Inter-regional Transportation Improvement Plan (ITIP). The Metropolitan Transportation Commission is responsible for developing regional project priorities for the RTIP for the nine counties of the Bay Area. The biennial RTIP is then submitted to the California Transportation Commission for inclusion in the STIP.

# APPENDIX C: STUDIES

## State Route 37 Integrated Traffic, Infrastructure andSea Level Rise Analysis(2014-15)

Caltrans and U.C. Davis Road Ecology Center have procured funding for the *State Route 37 Integrated Traffic, Infrastructure and Sea Level Rise Analysis* study. To be completed in December of 2015, the study will evaluate the effects of sea level rise on the existing roadway and the following three highway reconstruction options:

1) Roadway elevated on levee: This scenario is expected to generate extensive environmental mitigation costs, as much of the facility traverses wildlife protection area, with many threatened or endangered species and habitats present.
2) Roadway elevated on "monopod" concrete post causeway: This scenario would generate fewer mitigation requirements, but construction costs are expected to be greater than for option 1.
3) Roadway elevated on wood or concrete "trellis" causeway: This scenario would generate fewer mitigation requirements, construction costs are expected to be greater than scenario one, but less than scenario two.

The study will engage stakeholders and Caltrans functional units to establish costs estimates for the conceptual designs developed for the three scenarios.

All the scenarios will study ways of adding pedestrian and bicycle access and the feasibility of public transit options and HOV/express lanes as a way to encourage transit and carpooling.

## Highway 37 Stewardship Study (2011-12)

Caltrans and UC Davis Road Ecology Center secured federal (SHRP 2) funding for this study, which compares a collaborative ecological stewardship concept development methodology to a more typical project-based permit-and-mitigate concept and project development approach. Since SR 37 passes through important wetlands environments in California, the study sought strategies and outcomes that would minimize roadway impacts on the surrounding ecosystems, and protect mobility as sea levels rise.

STUDY SUPPORTS STATE GOALS AND DIRECTIVES :

- Safety and Mobility
- Context Sensitive Solutions, Complete Streets
- Develop an early-integrated transportation and environmental planning process by promoting collaboration of stakeholders.
- Meet current and future capacity/travel demands in the North Bay region including multi-modal transportation.

BENEFITS OF THE STUDY:

- Provide upfront knowledge of constraints for designing future projects.
- Support marsh restoration efforts of more than 20 natural resource agencies.
- Enhance recreational access to natural resources and preserved lands.

TASKS AND OUTPUTS OF THE RESEARCH STUDY:

- GIS modeling approaches and valuation of ecosystem services and transportation were used to compare 4 scenarios for the replacement of the highway, and a no-build option. Study Stakeholders

met to weigh the benefits and impacts to the environment and surrounding communities of each scenario.
- Build collaborative partnerships and vision for SR 37 that meets multiple goals.
- Create framework for integrated planning and decisions in the corridor.
- Establish potential ecological and transportation actions for the SR 37 corridor.
- Develop foundation for model agreements among infrastructure and resources agencies.

## Study Stakeholders (partial list – completed and ongoing studies)

### Non Profit & Private Organizations

- Sonoma Land Trust
- Bay Area Audubon Council
- Bay Area Open Space Council
- Bay Planning Coalition
- Citizen's Committee to Complete the Refuge
- Ducks Unlimited
- National Audubon Society
- Pacific Gas and Electric Company
- PRBO Conservation Science
- Save the Bay
- Sierra Club
- The Bay Institute
- Sonoma County Agricultural Preservation and Open Space District

### Public Agencies

- Bay Conservation and Development Commission
- California Coastal Conservancy
- California Department of Fish and Wildlife
- Caltrans
- Contra Costa Vector and Mosquito Control District
- National Fish and Wildlife Foundation
- National Marine Fisheries Service
- Natural Resource Conservation Service
- San Francisco Bay Regional Water Quality Control Board
- San Francisco Estuary Project
- U.S. Army Corps of Engineers
- U.S. Environmental Protection Agency
- U.S. Fish & Wildlife Service
- U.S. Geological Survey
- Wildlife Conservation Board
- U.C. Davis Road Ecology Center
- San Francisco Bay Trail