

# State Route 37 Transportation and Sea Level Rise Corridor Improvement Plan

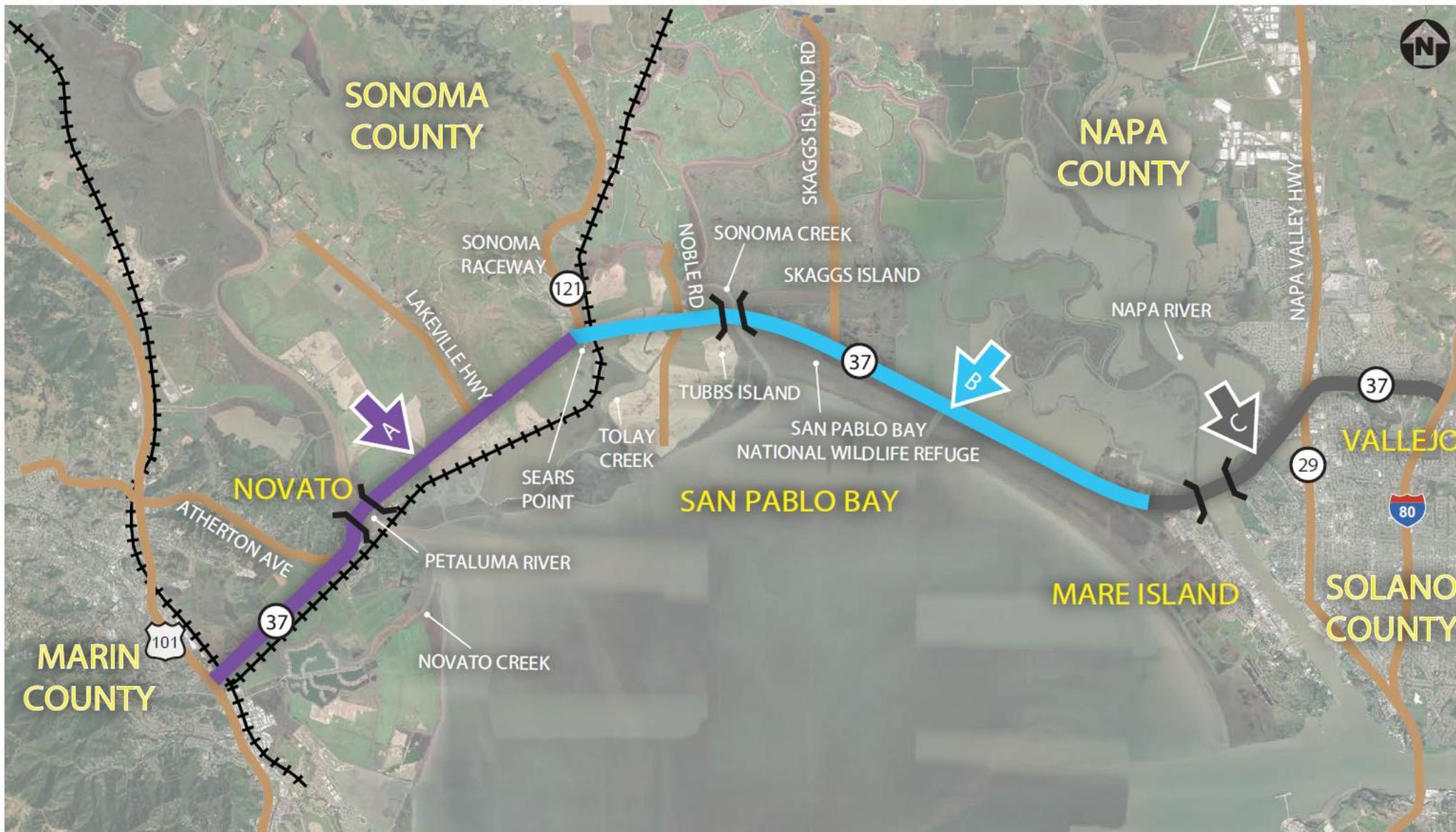
Policy Committee: September 25, 2017



With Support From:



# The SR 37 Corridor



# Goals and Objectives



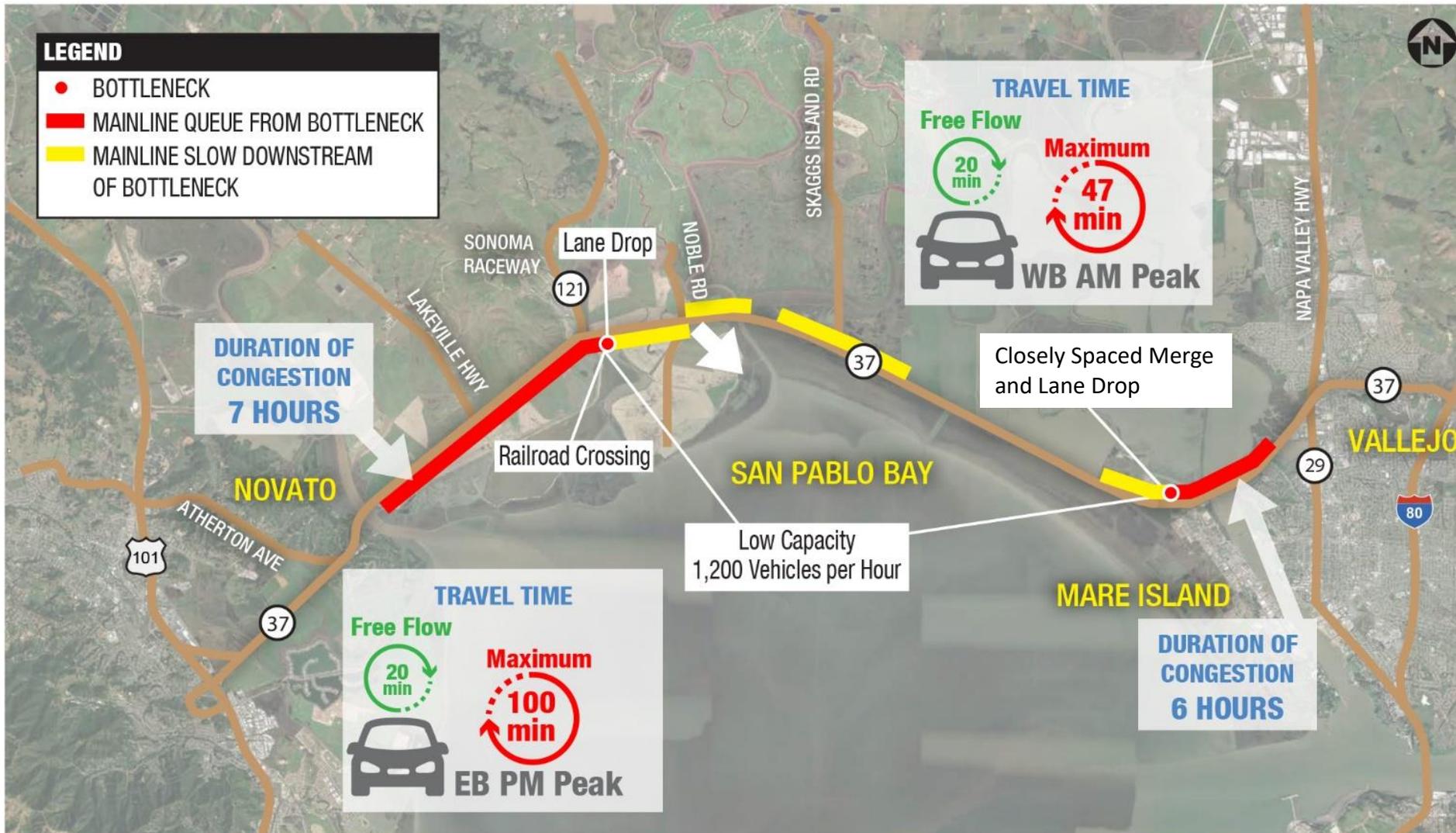
**Produce an integrated transportation and ecosystem design**

**Improve mobility across all modes and maintain public access**

**Increase corridor for resiliency to storm surges and sea level rise**



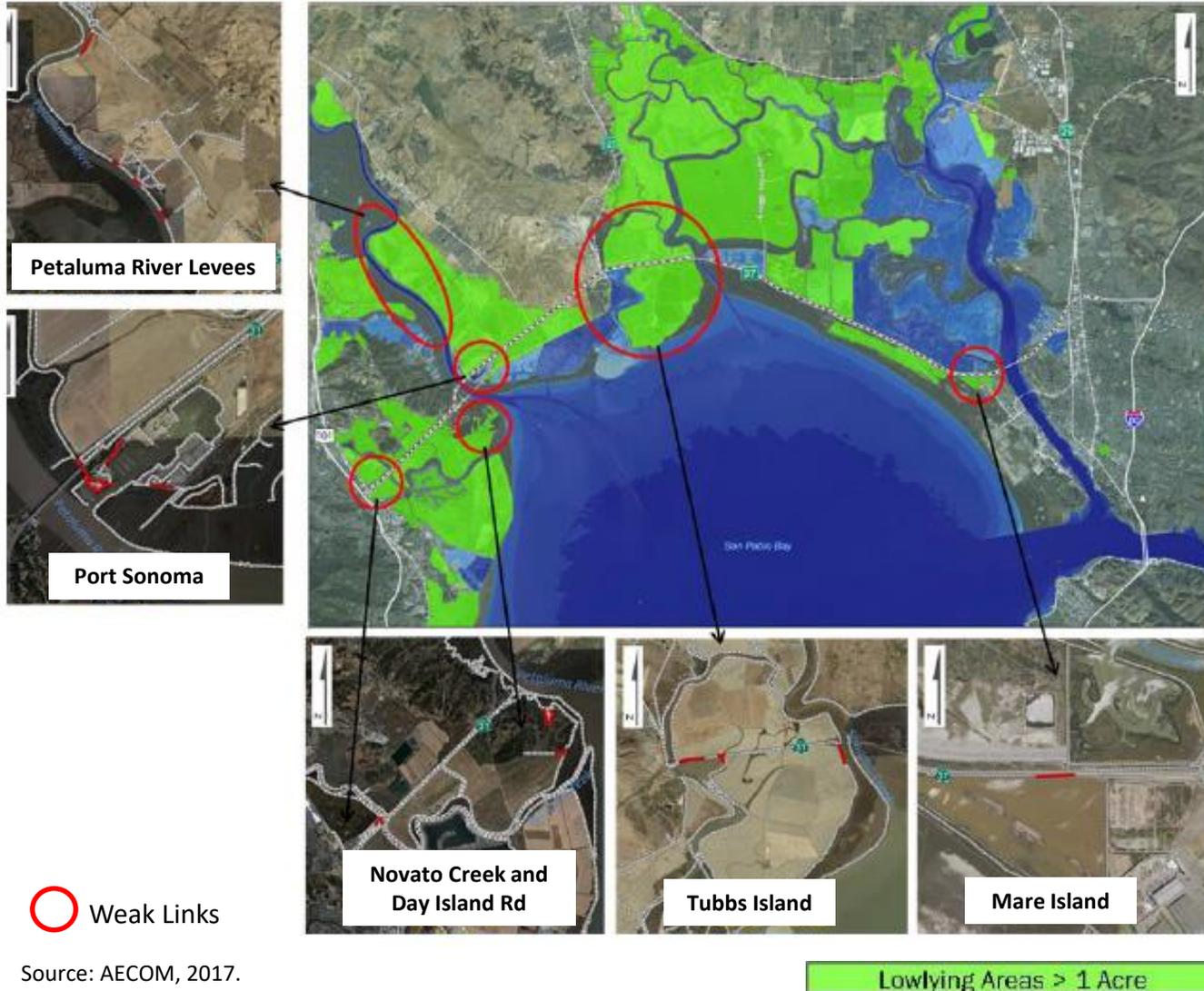
# 100 Minutes to Travel Back Home Every Day



Source: Kimley-Horn, 2017.

- **6 Hours** of Congestion During Weekday AM Commute (Westbound)
- **7 Hours** of Congestion During Weekday PM Commute (Eastbound)
- **Weekend** Congestion Throughout Most of the Day
- **No Transit** Services

# Parts of SR 37 Already Flood During Heavy Storms



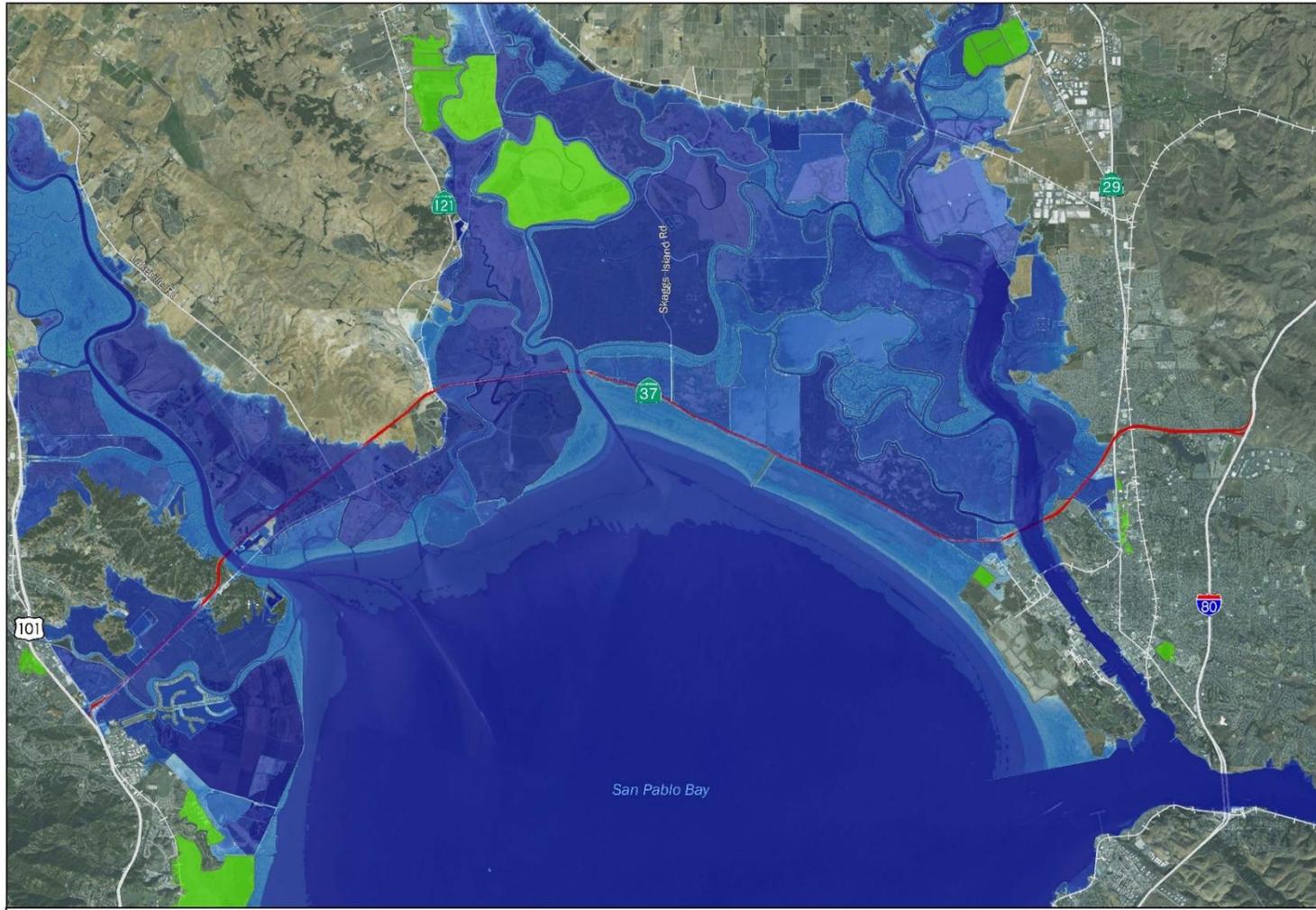
Source: AECOM, 2017.

- Weak Links Are Most Vulnerable to Short Term Flooding and Eventual SLR

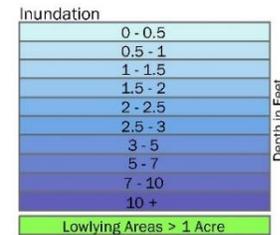
## Recent Floods in Spring, 2017



# Majority of SR 37 Will Be Inundated by 2050 Conditions with Sea Level Rise & Storm Surges



**California State Route 37  
Inundation Mapping**  
MHHW + 36" SEA LEVEL RISE  
12" SLR + 5-yr Storm Surge  
6" SLR + 10-yr Storm Surge  
0" SLR + 25-yr Storm Surge



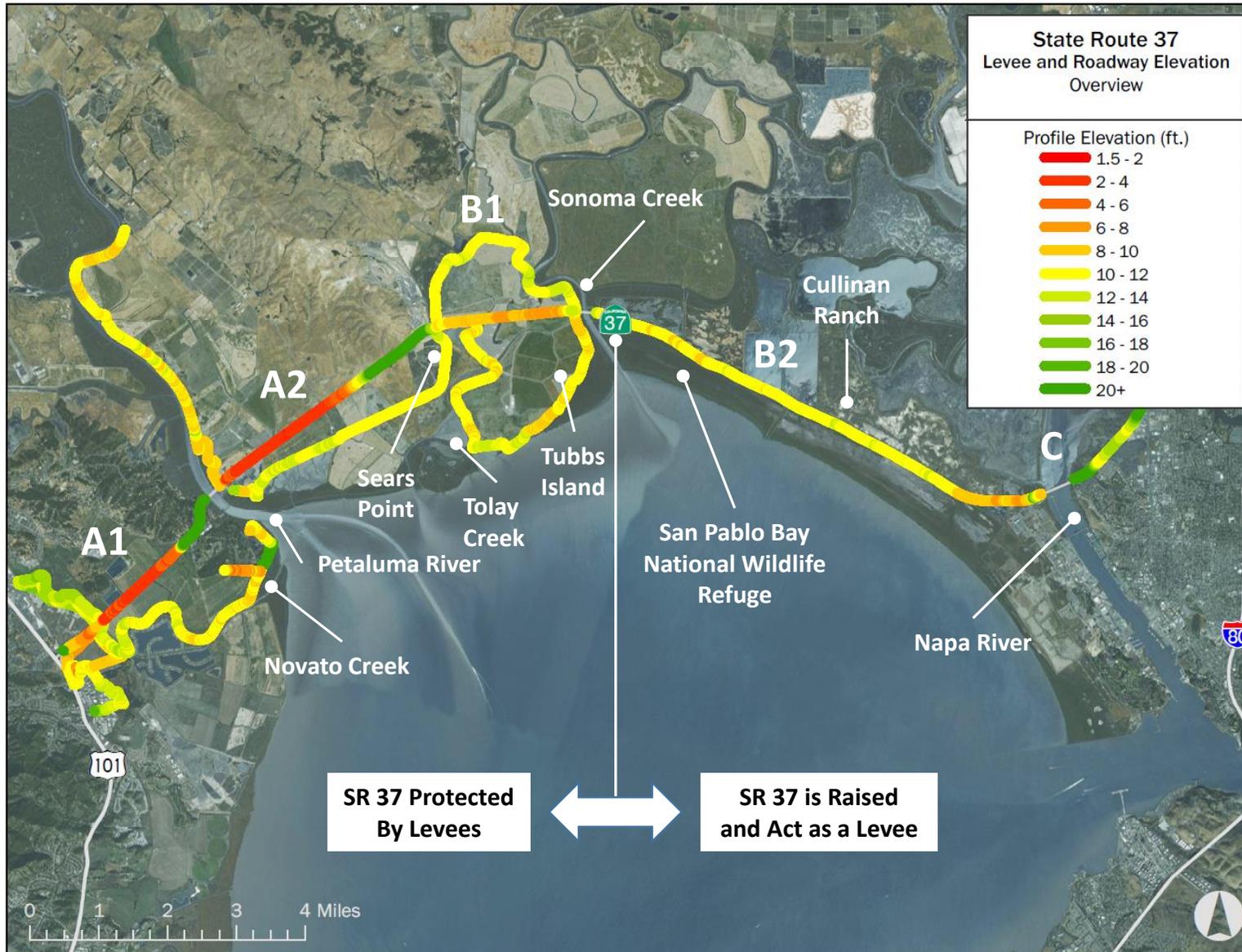
Report: NAD 1983 California II; North America Datum 1983 Date: 8/21/2013



- Year 2100 Sea Level Rise Scenario
- Permanent Inundation Expected by 2050: Segment A and Segment B from SR 121 to Sonoma Creek
- SR 37 Closure Would Divert Traffic to Other Already Congested Routes: I-80, US 101, I-580, SR 12, SR 121, etc.
- State and Federal-Protected Species Lose Habitat

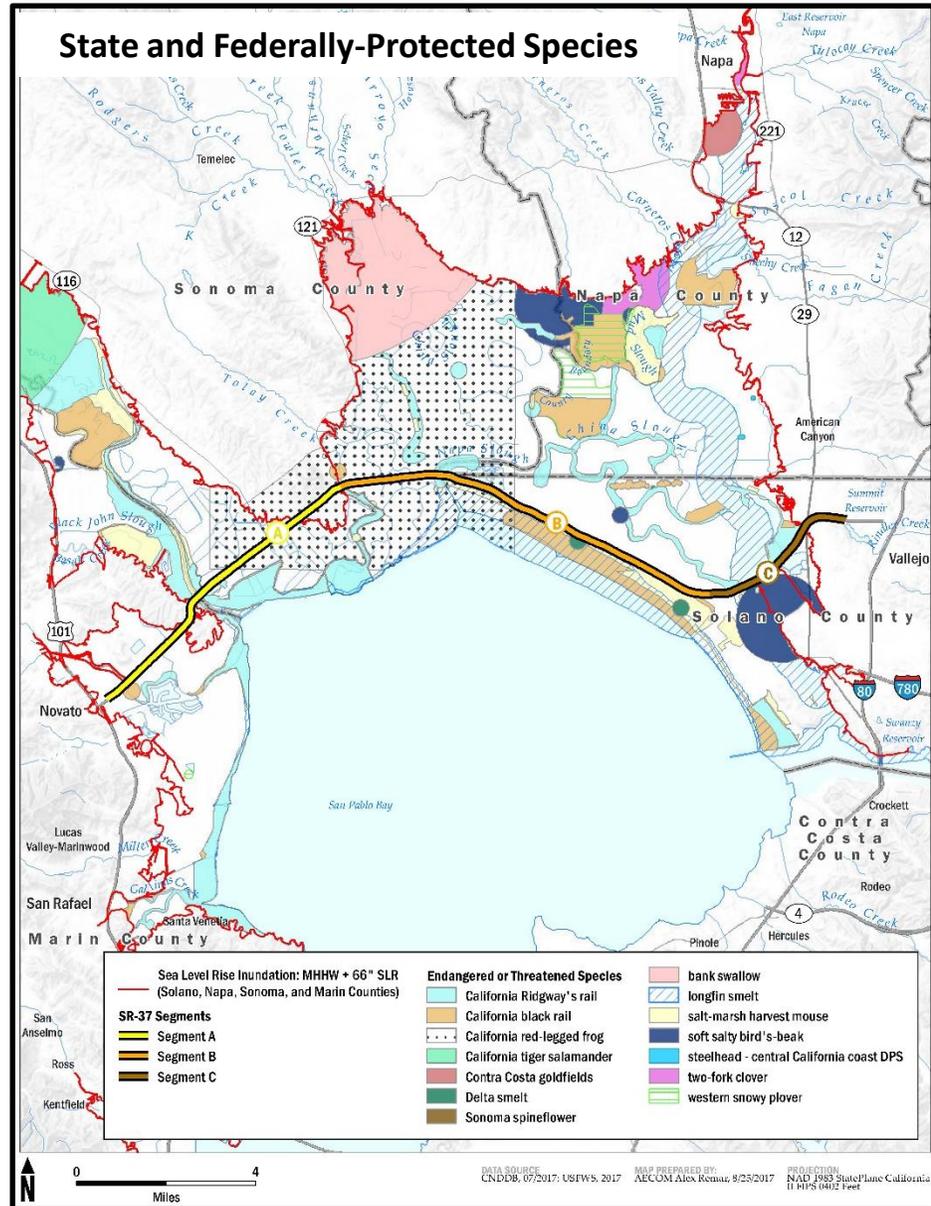
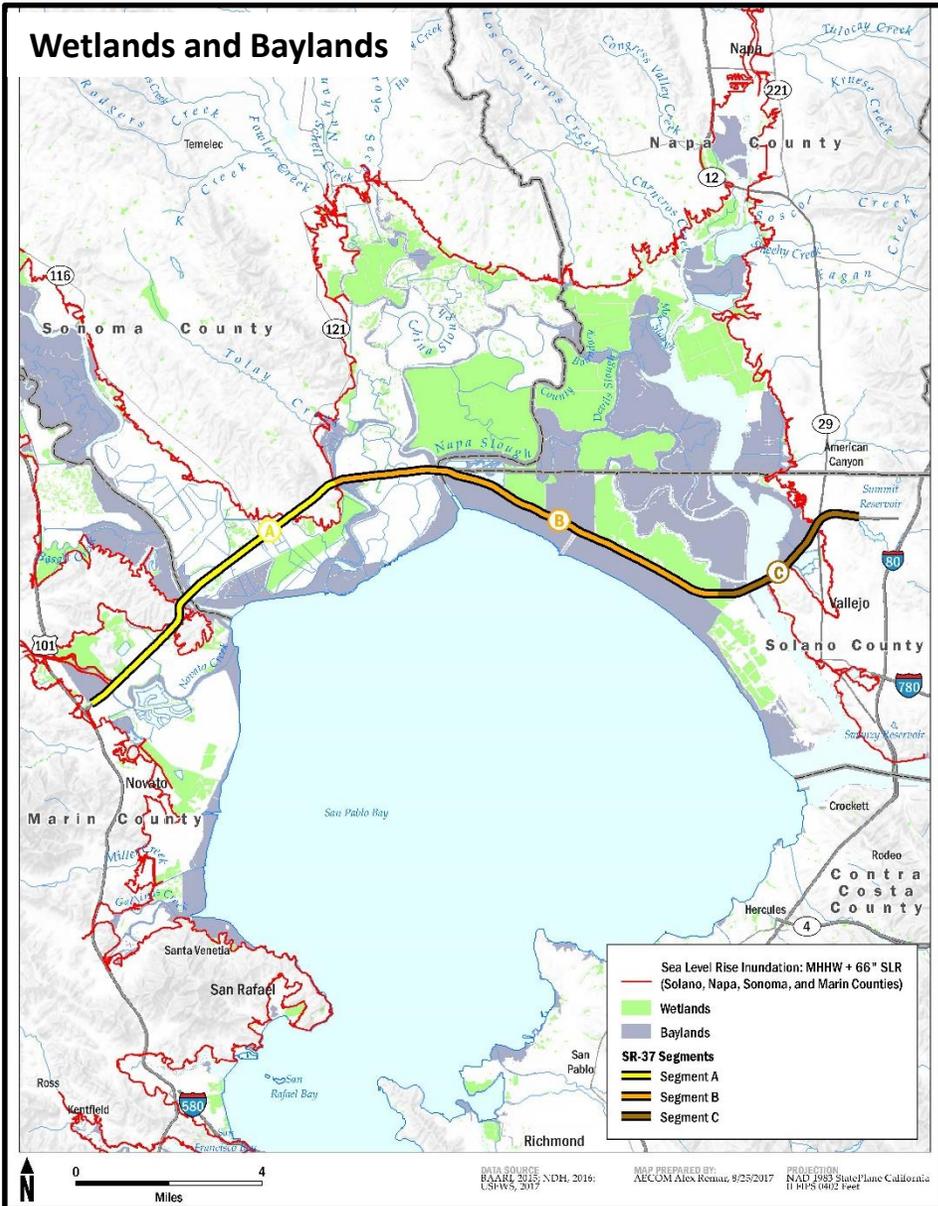
Disclaimer: The inundation maps and the associated analyses are intended as planning level tools to illustrate the potential for inundation and coastal flooding under a variety of future sea level rise and storm surge scenarios. The maps depict possible future inundation that could occur if nothing is done to adapt or prepare for sea level rise over the next century. The maps do not represent the exact location or depth of flooding. The maps relied on a 5-ft digital elevation model created from LIDAR data collected in 2010. Although care was taken to capture all relevant topographic features and coastal structures that may impact coastal inundation, it is possible that structures narrower than the 5-ft horizontal map scale may not be fully represented. In addition, inundation and flooding of bridges along the SR 37 alignment was not evaluated. The maps are based on model outputs and do not account for all of the complex and dynamic San Francisco Bay processes or future conditions such as erosion, subsidence, future construction or shoreline protection upgrades, or other changes to San Francisco Bay or the region that may occur in response to sea level rise. For more context about the maps and analyses, including a description of the data and methods used, please see project documentation for the State Route 37 Integrated Traffic, Infrastructure and Sea Level Rise Analysis Study (UC Davis Road Ecology Center and Caltrans District 4).

# Many of the Adjacent Levees Protecting SR 37 Are Privately Owned



- Private Levees Not Constructed Specifically for Protecting SR 37
  - Ancillary Benefit for SR 37
  - Challenges with Maintaining and Upgrading Private Levees
- A Number of Low Elevation Hotspots Along Corridor

# SR 37 Rich with Wetlands, Baylands, and State and Federally-Protected Species



- Wetlands and Baylands
- State and Federally-Protected Species:
  - Salt Marsh Harvest Mouse
  - CA Ridgeway's Rail
  - CA Black Rail
  - Steelhead
  - Green Sturgeon
  - Longfin Smelt
  - CA Red Legged Frog

# Environmental Resilience and Transportation Strategies for SR 37

Not an Option



Focus on Protecting and Accommodating



**Retreat**

Available Capacity on  
Alt. Roadways  
Rail Alternative  
w/o SR 37  
Ferry Alternative  
w/o SR 37

**Protect**

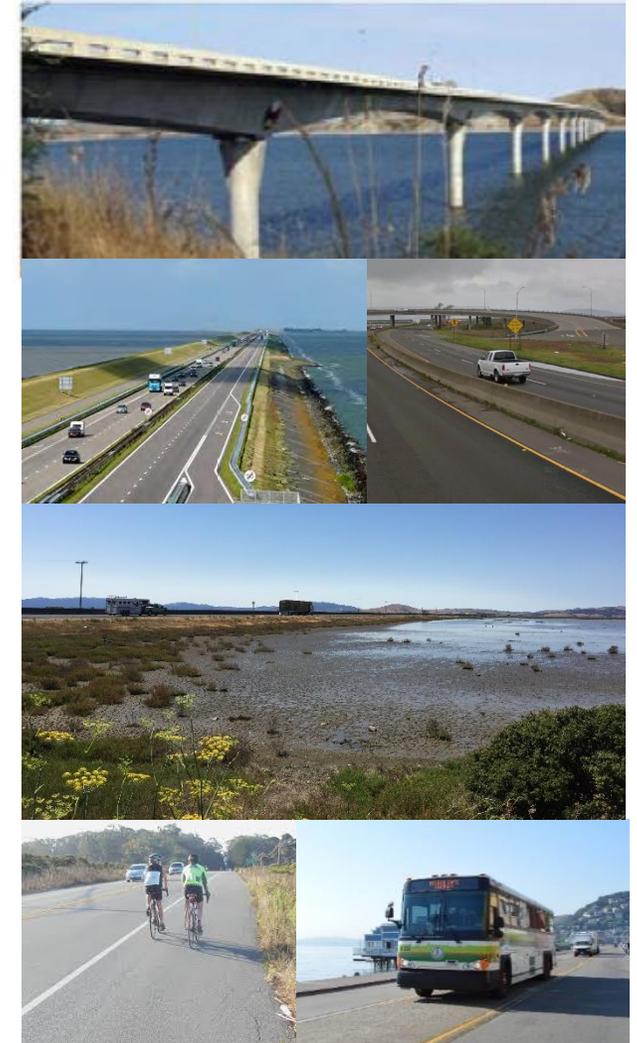
Maintain Existing  
Roadway  
- Near-Term Operational  
Improv.  
Flood Protection  
- Levee Improv.  
- Building Seawall  
- Marshland Restoration

**Accommodate**

Raised Roadway (SLR  
Adaptation)  
- Improve Capacity on  
Segment B  
Integrated Transportation  
and Ecosystem Design  
Advanced Mitigation  
Planning Process-Ready

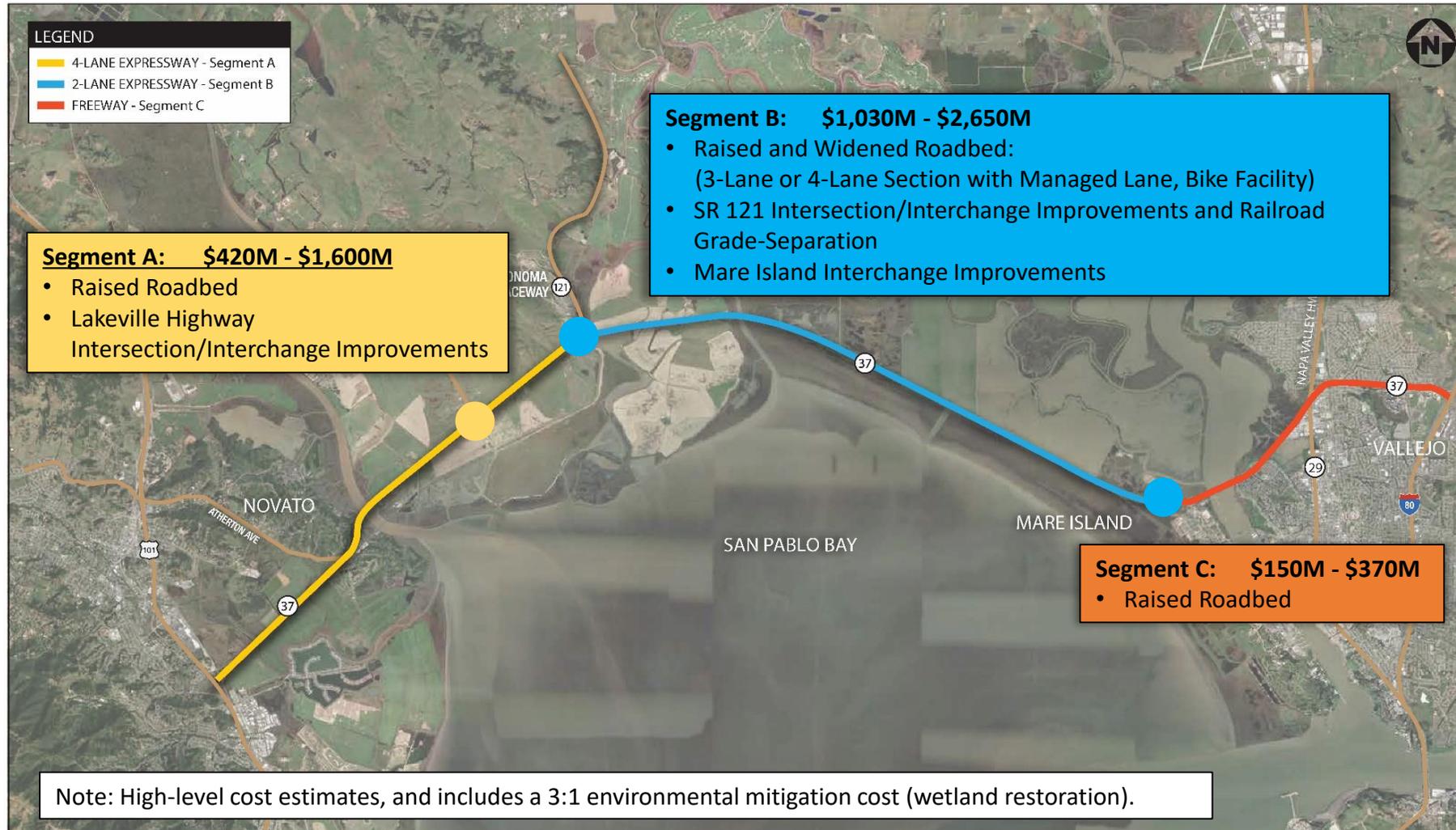
# A Corridor Vision for SR 37

- **A Raised Roadbed That Provides Resiliency to Long Term Sea Level Rise Threat through Year 2100**
  - Design for 66" SLR + 100-Year Storm
  - New Elevation: 17' - 20' (NAVD 88)
- **Ecological Enhancement**
  - Wetland Hydrological Connectivity
  - Living Levees that Provides Habitat Opportunities
- **Improve Capacity in Segment B**
  - New Managed Lane(s)
- **Multimodal and Local Access Improvements**
  - Improve Bay Trail/Bike Access, Provide Transit Service
  - Intersection and Interchange Improvements at SR 121, Mare Island, and Lakeville Highway



# The SR 37 Project

- Total Project Cost (Entire Corridor): \$1,600M – \$4,620M
- Project Delivery: Between 10 – 30 Years



# Segment B is the Priority Segment

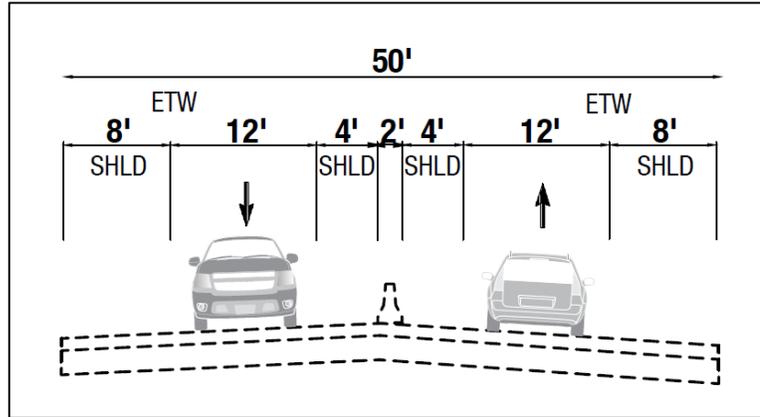


Segment Risk Rating	Segment A	Segment B	Segment C
Effect on Existing Traffic Congestion	1	3	1
Effects on Environmental Resources	2	3	1
Impacts Due to Sea Level Rise	3	3	1
Economic Impact on Commuters	3	3	3
Economic Impact on Goods Movement	2	3	3
Impacts to Recreational Activities	2	3	2
Length of Segment Impacted/Capital Improvement Cost	3	3	1
<b>Composite Risk Rating</b>	<b>2</b>	<b>3</b>	<b>2</b>

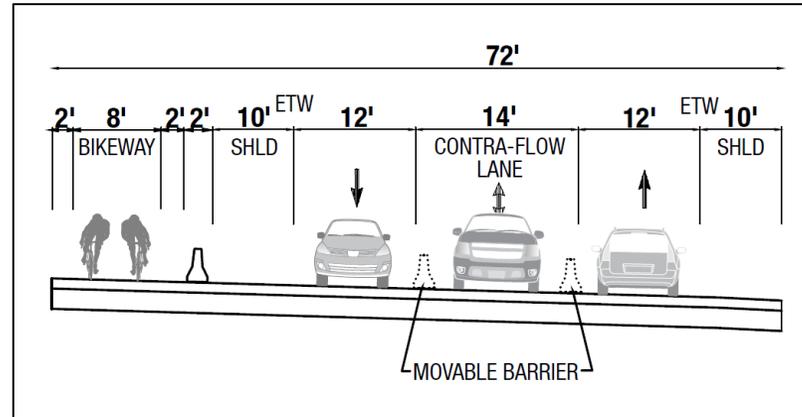
Note: Risk ratings were assigned as follows: 1.0 - 1.4 (low), 1.5 - 2.4 (moderate), and a 2.5 - 3.0 (high)

# Segment B Design Considerations – Cross Section

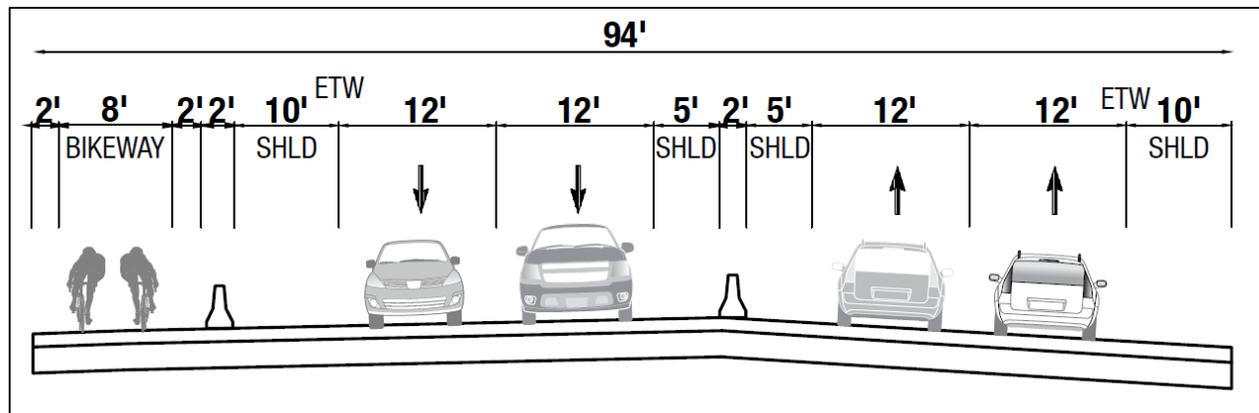
- Deliver Between 7 - 10 Years
- Construction Cost Range: \$1,030M – \$2,650M



Existing Segment B



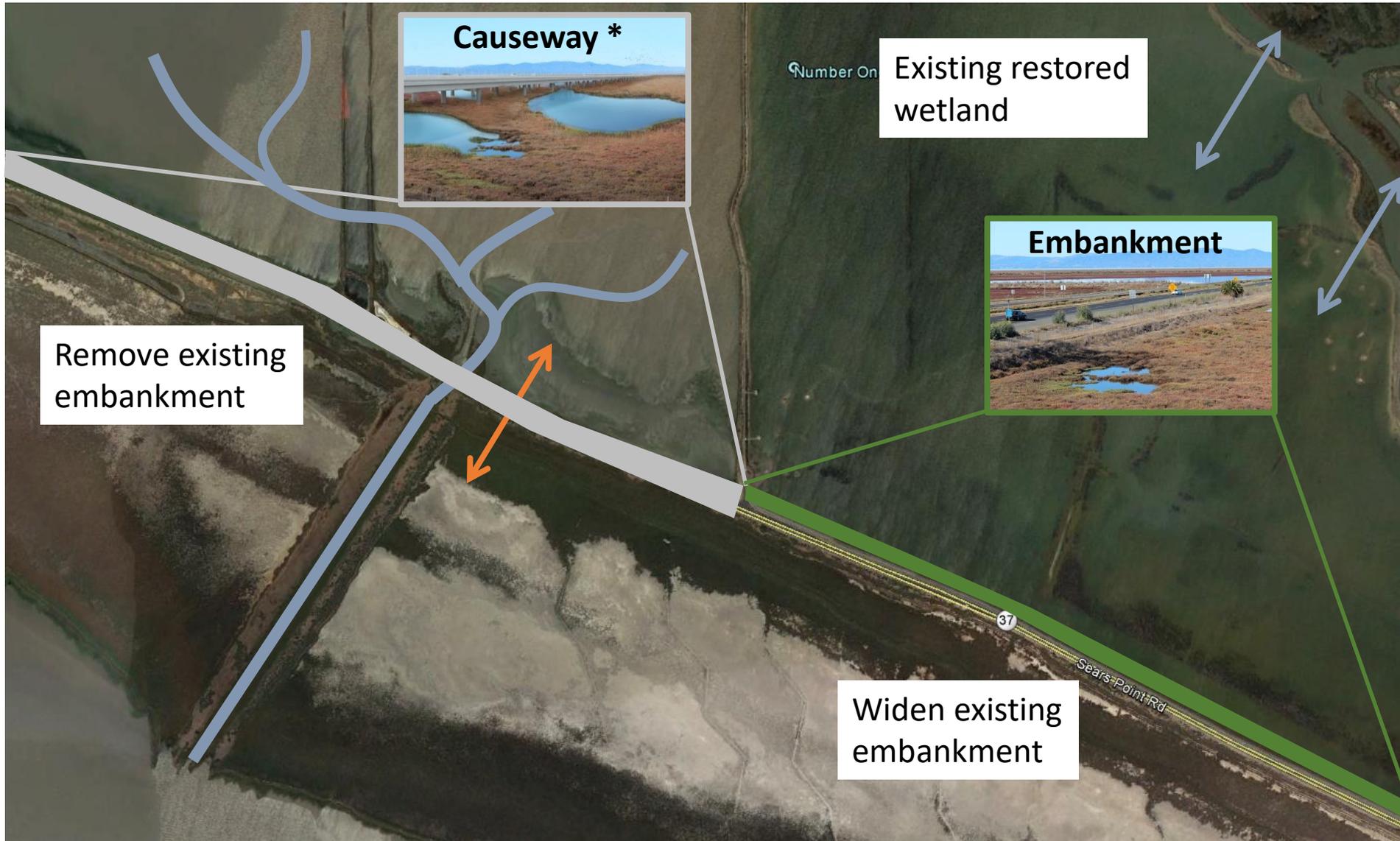
3-Lane Segment B – Contra-Flow Lane with Movable Barriers



4-Lane Segment B

- New Lane(s) be HOV/Managed Lanes
- Bay Trail/Bike Facility Options
- Footprint Consideration: Environmental, Future CV/AV Impacts on Roadbed Use and Lane Widths

# Priority Segment B Design Considerations – Raised Roadbed



## Hybrid project design

The causeway would create wetland restoration opportunities, by reconnecting the hydrologic and ecological landscape, and reconfigure tidal exchange.

The levee/embankment would provide an option as a living levee, improve access to public viewing areas.

\* Box culvert is also an option.

Note that this is an illustrative restoration scenario, not a proposed plan.

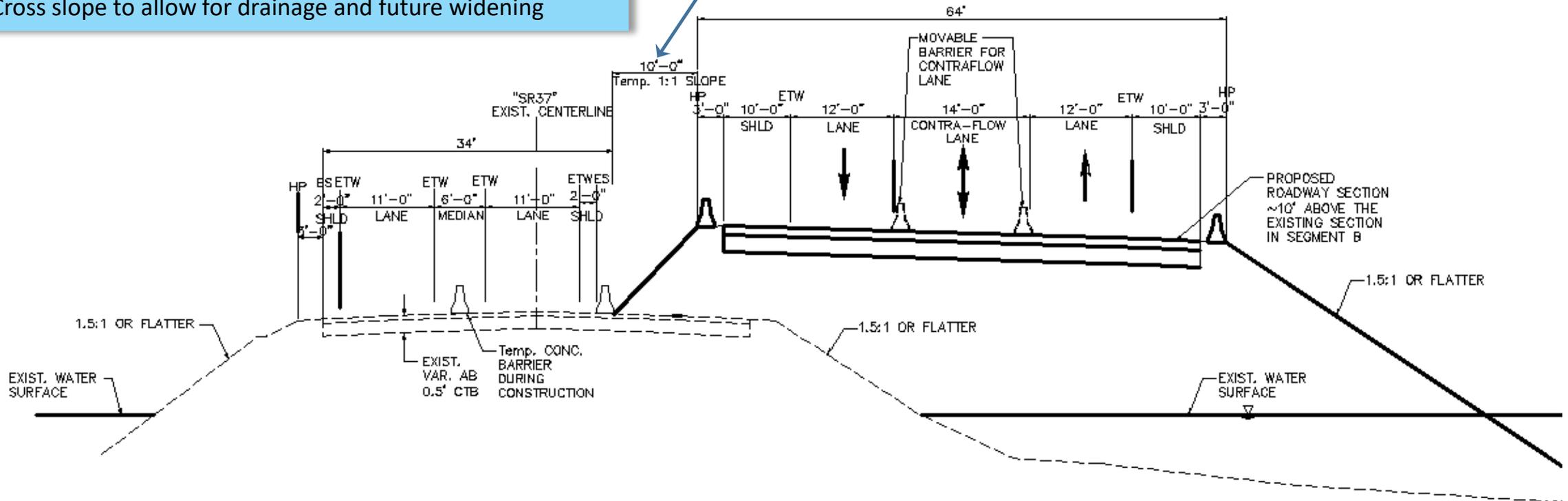
# Construction Staging Consideration

## Example: 3 Lanes Contra-Flow Lane With Movable Barrier

### Segment B

- Embankment Option Shown; Other Options
  - Causeway
  - Box Culvert
  - Hybrid Section with Net Zero Environmental Impact
- Bike Lane Options
- Cross slope to allow for drainage and future widening

Most Conservative Assumption Shown  
(Range: 2' – 10')



# Integrated Ecosystem Design

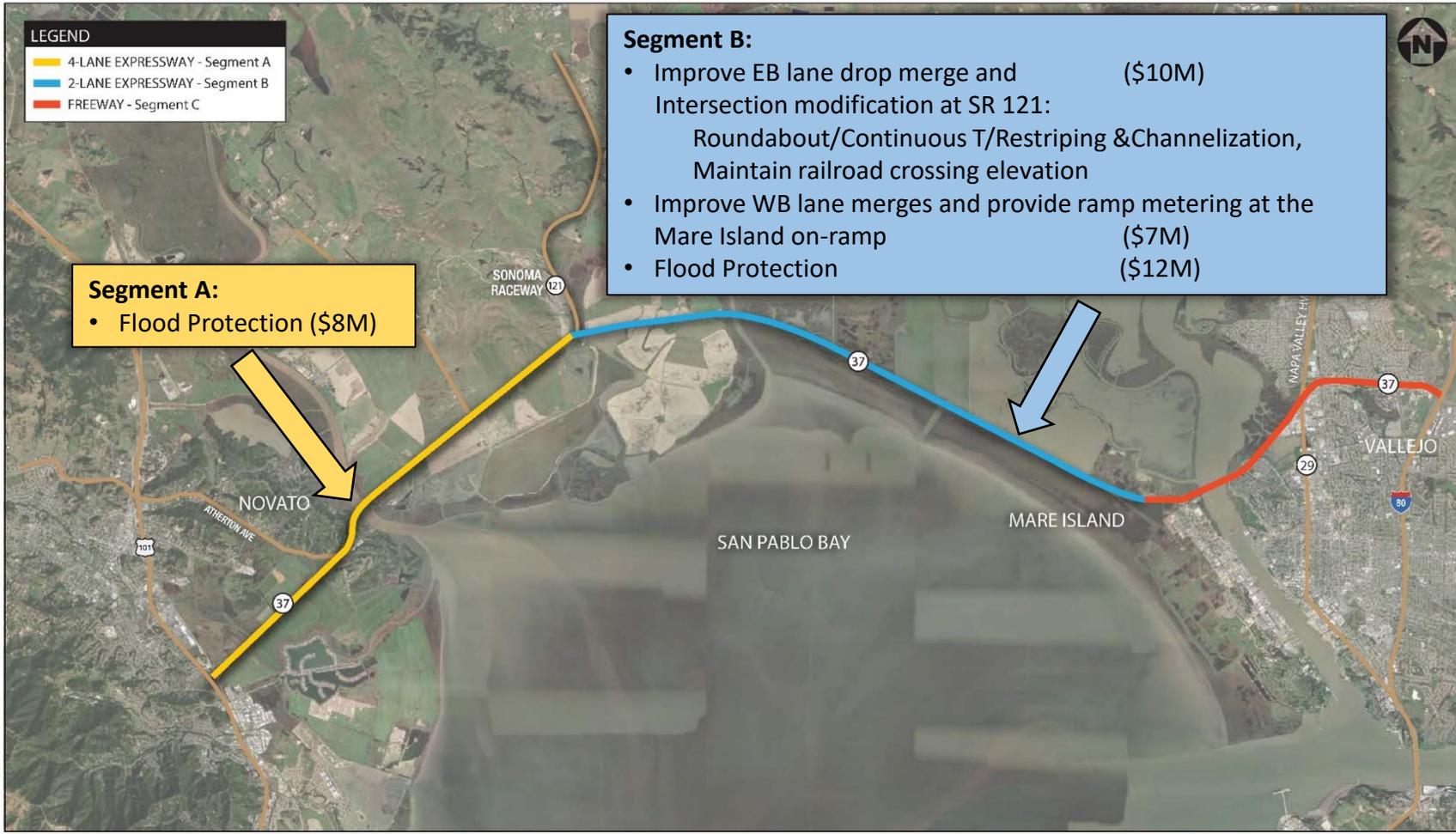
## Net-Zero Wetland Loss and Mitigation Integration

- Collaborate with On-Going Restoration Efforts
- Advanced Mitigation Planning Process Ready
- Hybrid Project Design: Embankment/Causeway/Box Culvert
- Large-scale offsite or onsite restoration

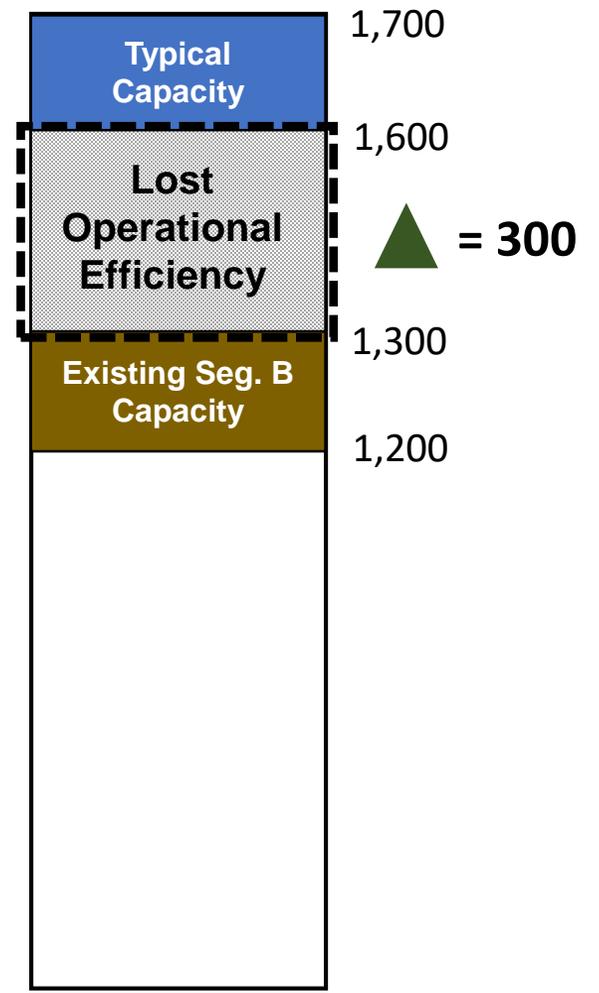


# Near-Term, Low-Cost, High-Impact Operational Improvements And Flood Protection Improvements

A \$43M Improvement Package Delivered Between 1 to 5 Years



2-Lane Rural Highway



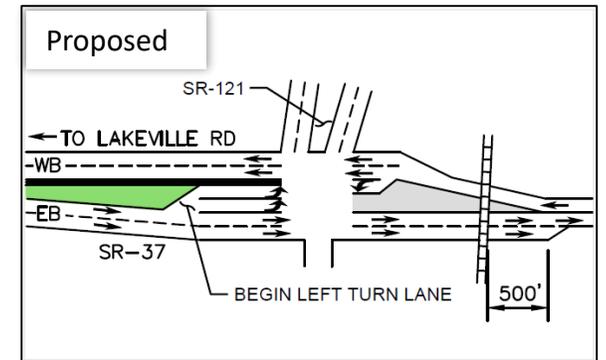
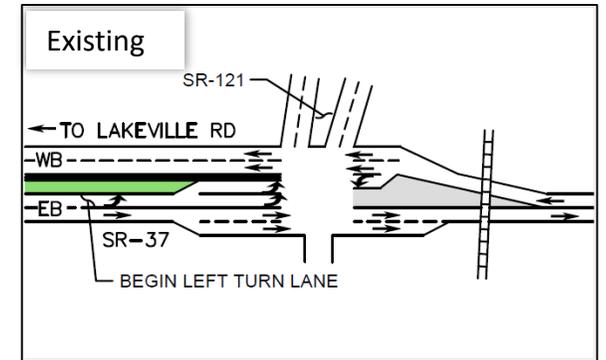
Note: High-level cost estimates, subject to further refinement.

Vehicles Per Hour

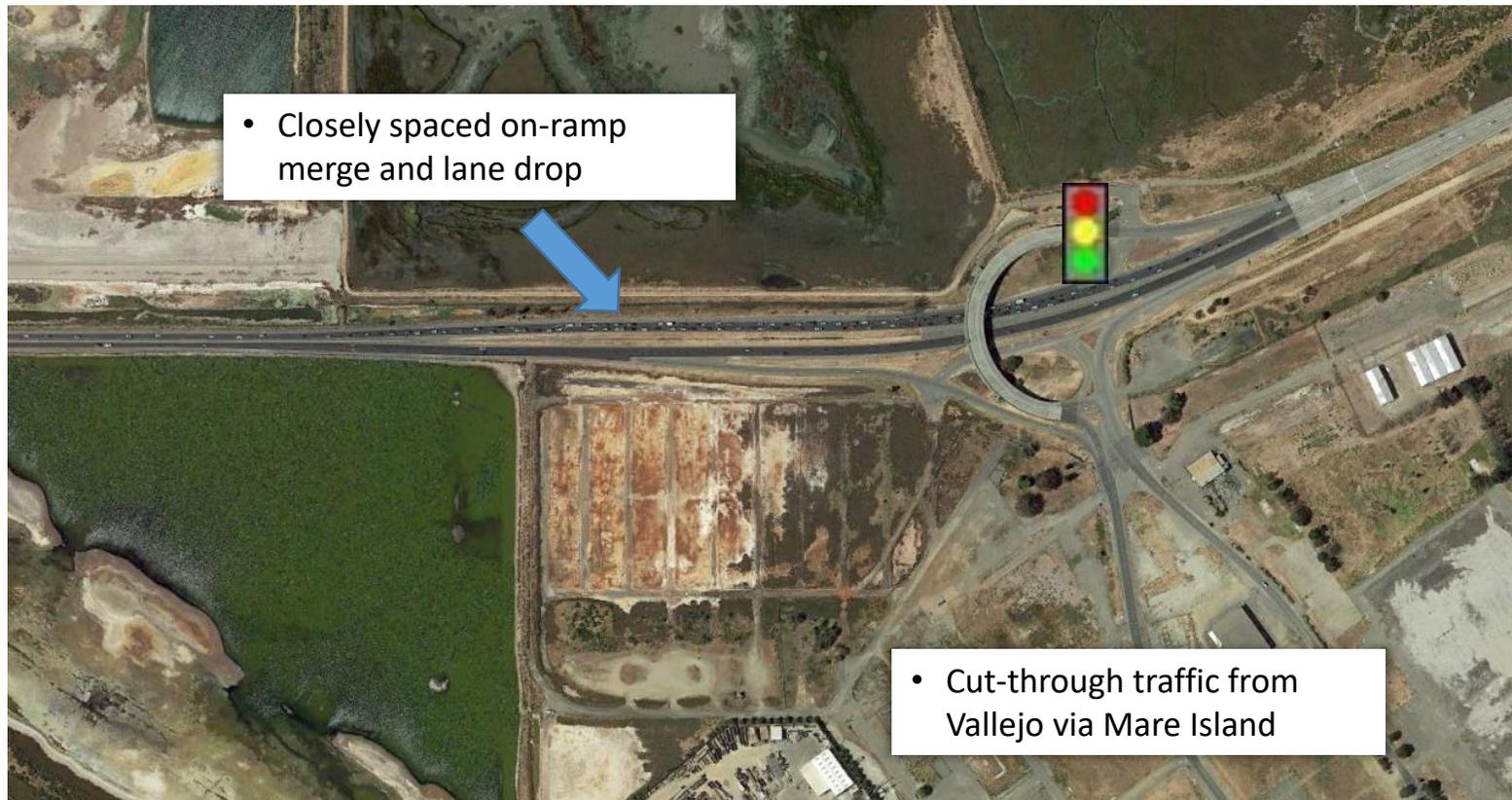
# Near-Term Operational Improvements at SR 121



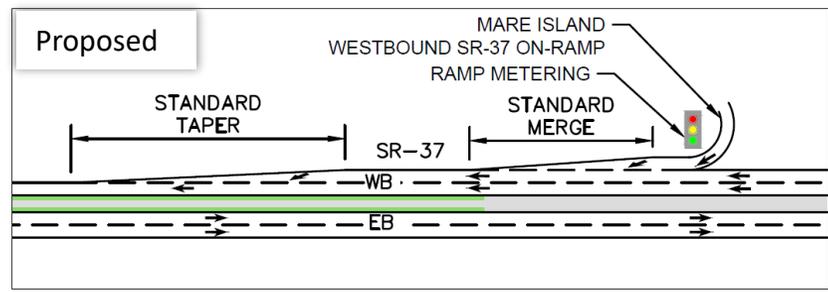
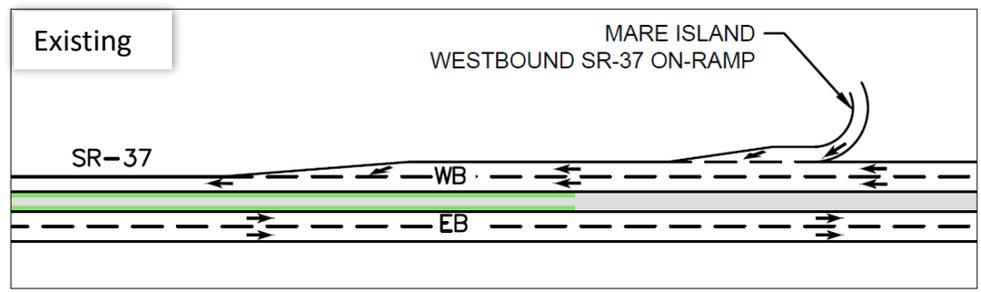
- Extend 2 Eastbound Lanes East of Railroad Crossing
- SR 121 Intersection Improvements
- Increase Existing Throughput



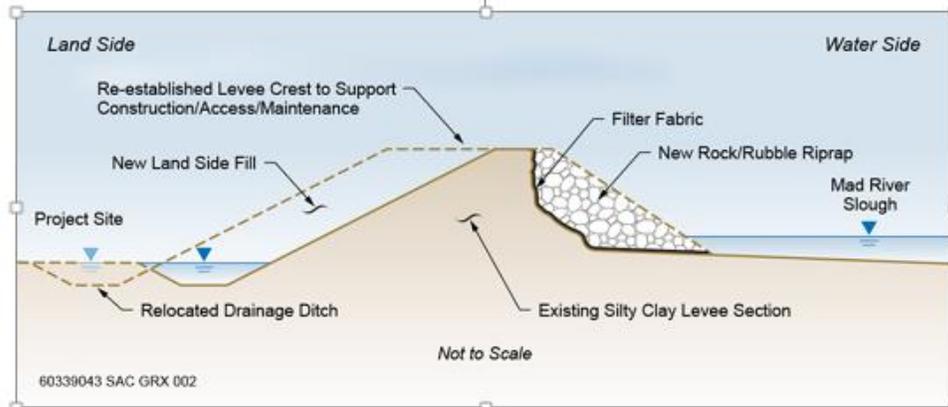
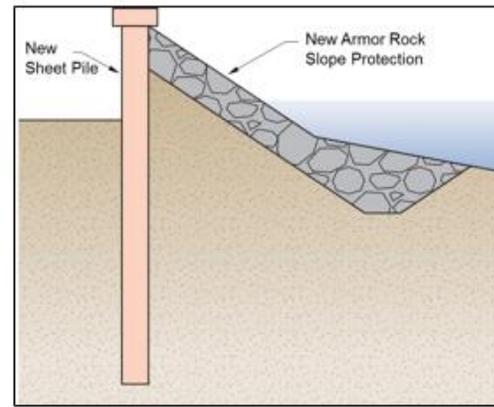
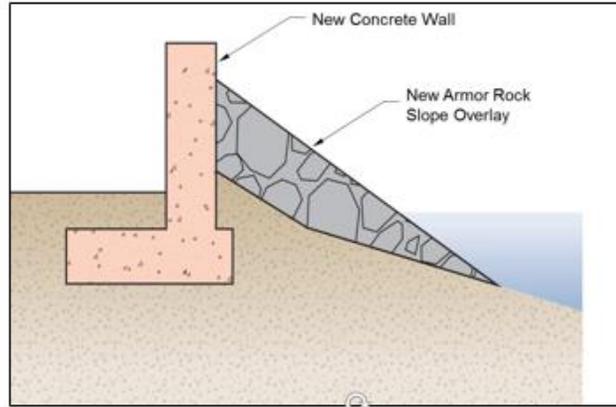
# Near-Term Operational Improvements – WB at Mare Island



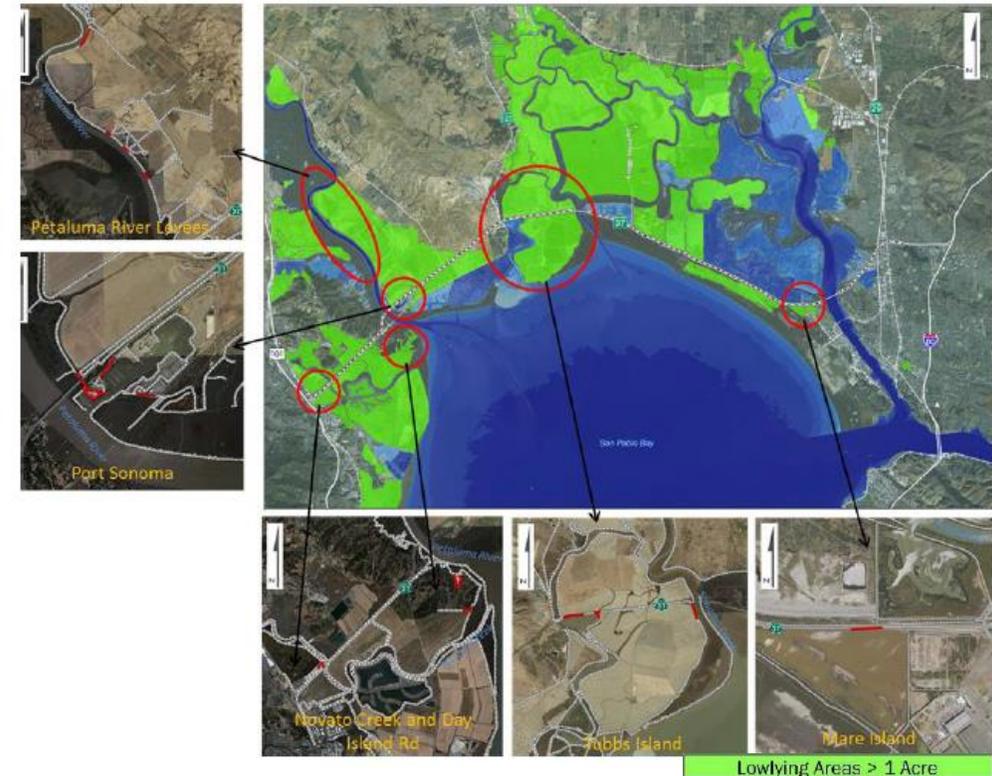
- Metering Westbound on-ramp
- Improve on-ramp and lane drop merges
- Increase Existing Throughput



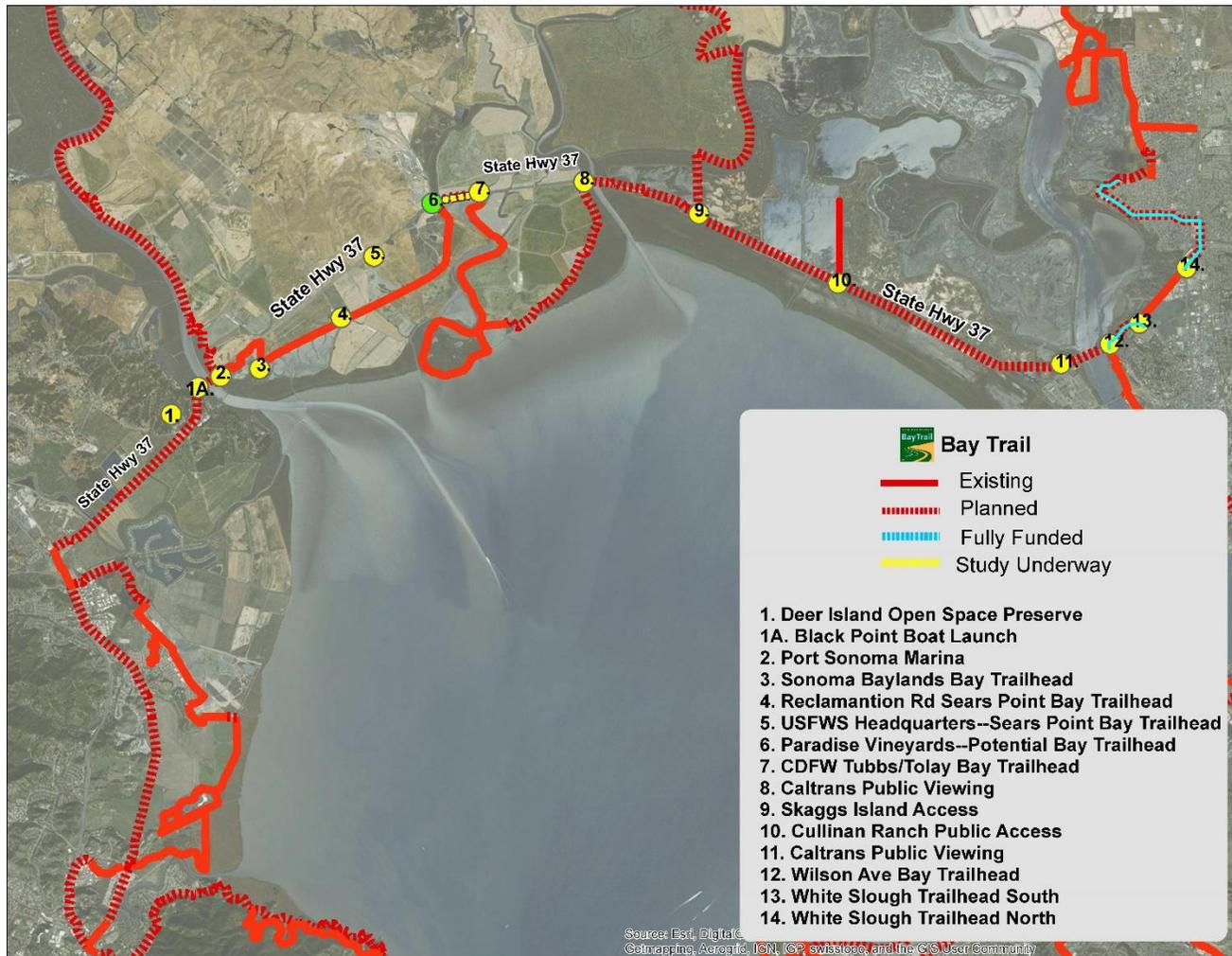
# Near-Term Improvements: Shoreline/Flood Protection Strategies



- Raising Levee Crest with Fill
- Install Sheet Pile Wall in Levee
- Install Flood Barrier
- Raising a Small Section of Roadway at Low Spots



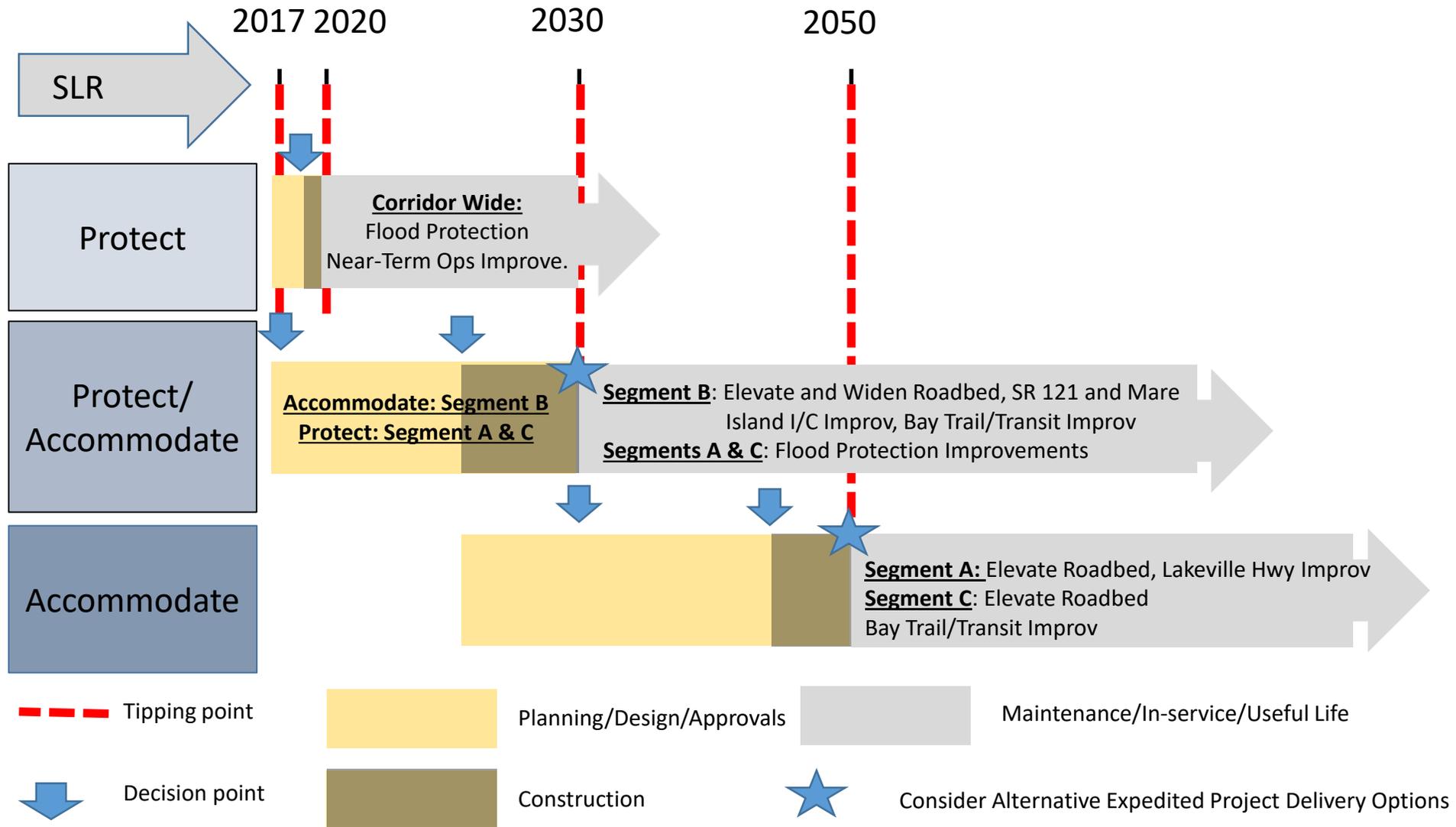
# Multimodal Corridor: Bay Trail and Transit Services



Source: Bay Trail Project, 2017

- Bay Trail/Bike Facility Options
  - Existing and Planned
  - Potential Improvements
- Potential Transit Markets
  - Fairfield, Vallejo, Novato, San Rafael
- Match Transit Options with Needs/Demand
- Rideshare and Vanpool Options
- Park and Ride:
  - SR 37 at Fairgrounds in Vallejo (STA is currently leading the planning work)

# Implementation Timeline



# Next Steps – Focus on Priority Segment B

- Develop Preliminary Design for Segment B:
  - 3-Lane and 4-Lane Options
  - Hybrid Roadbed Design Option: Causeway/Box Culvert/Levee
  - Interchange Improvements at Mare Island and SR 121
  - Bay Trail/Bike Facility options
  - Refine Cost Estimates
- Near-Term Operational Improvements at SR 121 and at Mare Island
- Conduct Traffic Analysis for the Corridor
- Develop Shoreline/Flood Protection Strategies (Near-Term)
- Evaluate Transit Options for the Corridor
- Environmental Community Outreach & Public Outreach
- Complete Phase II/Design Alternative Assessment by Spring, 2018

# Public Outreach



## Highway 37 Improvement Plan

Join us for an **Informational Open House**  
Come to the one nearest you!

In response to impacts from **sea-level rise, flooding** and **increased traffic** along the corridor, the counties of Marin, Napa, Sonoma and Solano, in partnership with Caltrans and the MTC, are planning to **improve access and safety** along Highway 37.

The Open Houses will aim to:

- **Inform** residents and Highway 37 users about the status of the planning process
- Provide an opportunity for participants to share their concerns and **provide feedback**

### NOVATO - Wednesday, Sept. 20<sup>th</sup>

6 pm to 8 pm at The Key Room  
1385 Hamilton Parkway, Novato

### AMERICAN CANYON - Wednesday, Sept. 27<sup>th</sup>

6 pm to 8 pm at the American Canyon Council Chambers  
4381 Broadway Street, American Canyon

### SONOMA - Thursday, Sept. 28<sup>th</sup>

6 pm to 8 pm at Sonoma Veterans Memorial Building  
126 First Street West, Sonoma

### VALLEJO - Monday, Oct. 2<sup>nd</sup>

6 pm to 8 pm at the Vallejo Naval and Historical Museum  
734 Marin Street, Vallejo

Project led in partnership by:



# Stay Engaged!



## STATE ROUTE 37 IMPROVEMENT PLAN Upcoming Outreach Activities

As the planning process for State Route 37 moves forward, we anticipate hosting and conducting a number of different outreach activities to keep the public informed and provide opportunities for input. To ensure broad participation, outreach activities will provide opportunities for people to participate in-person, via the internet and by telephone. The outreach activities and opportunities for public participation proposed for the next year include:



Open Houses  
September 20th, 27th, 28th, and October 2nd



Focus Groups



Online Survey



Community Workshops



Telephone Town Hall

## Stay Engaged!

Learn more at:

[scta.ca.gov/highway37](http://scta.ca.gov/highway37) | [tam.ca.gov](http://tam.ca.gov) | [sta.ca.gov](http://sta.ca.gov) | [nvta.ca.gov](http://nvta.ca.gov) | [facebook.com/route37](https://facebook.com/route37)