SR 37 Flooding & Sea Level Rise

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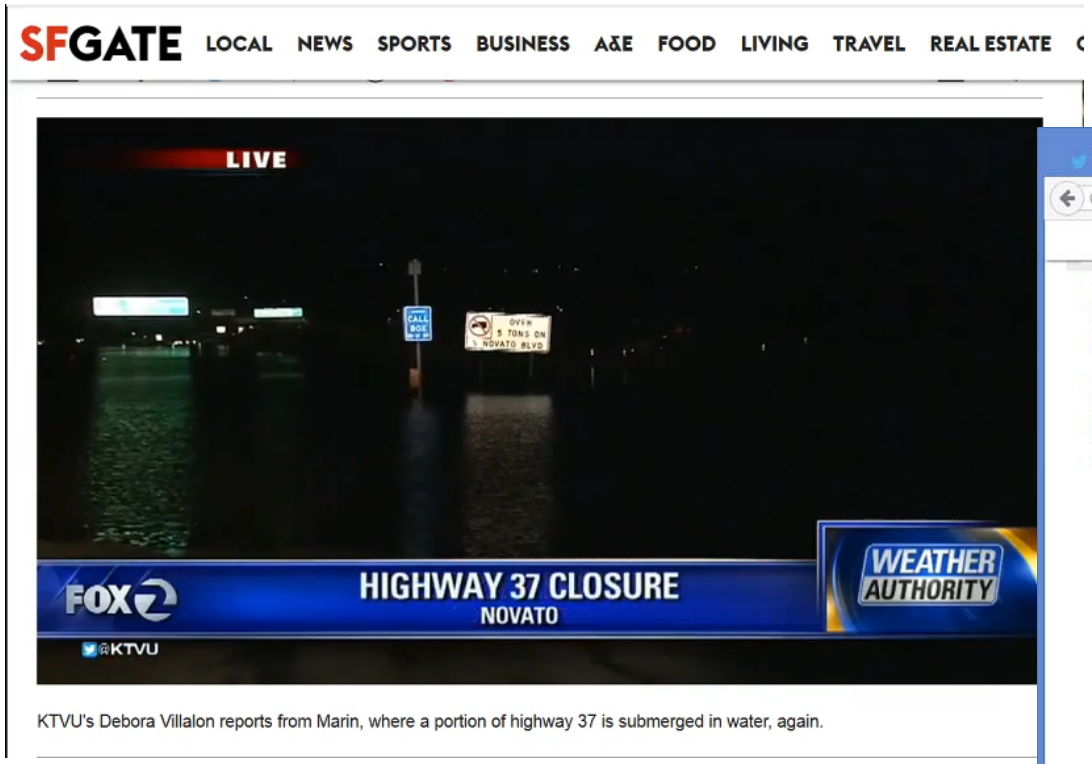
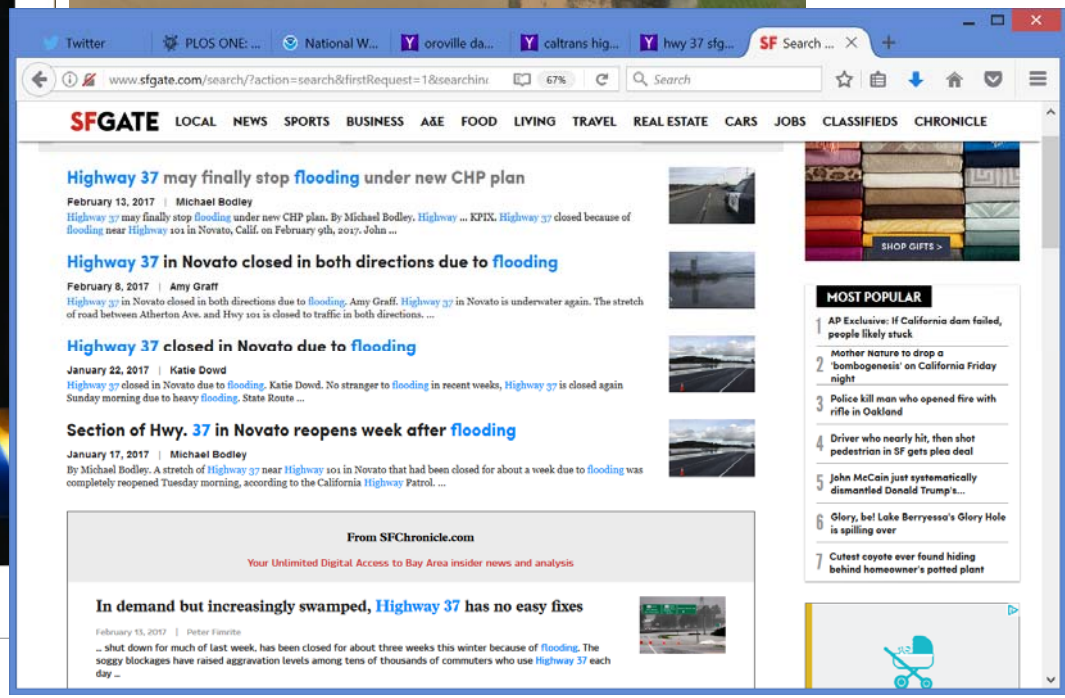
What is happening, where, how, and why?

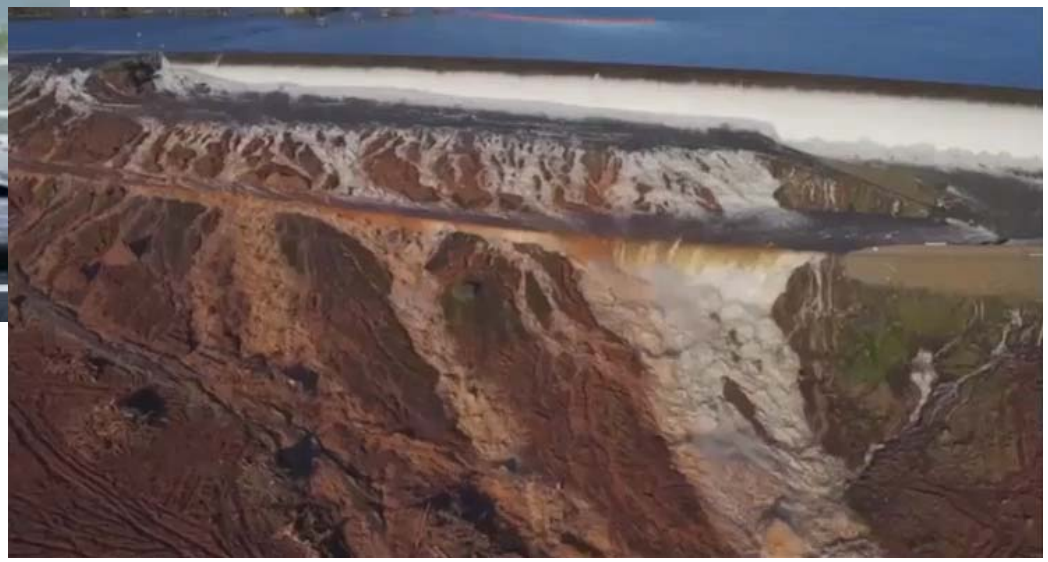
- “Flooding” (nuisance, inevitable, cost of business)
- Locations (actual vs. predicted)
- Causes (natural and exacerbated, proximal causes)
- Adaptive action (monitor, test, act, monitor)

In the news … again





Part of #newnormal, or just an anomaly



Did we dodge a bullet?

Elevation

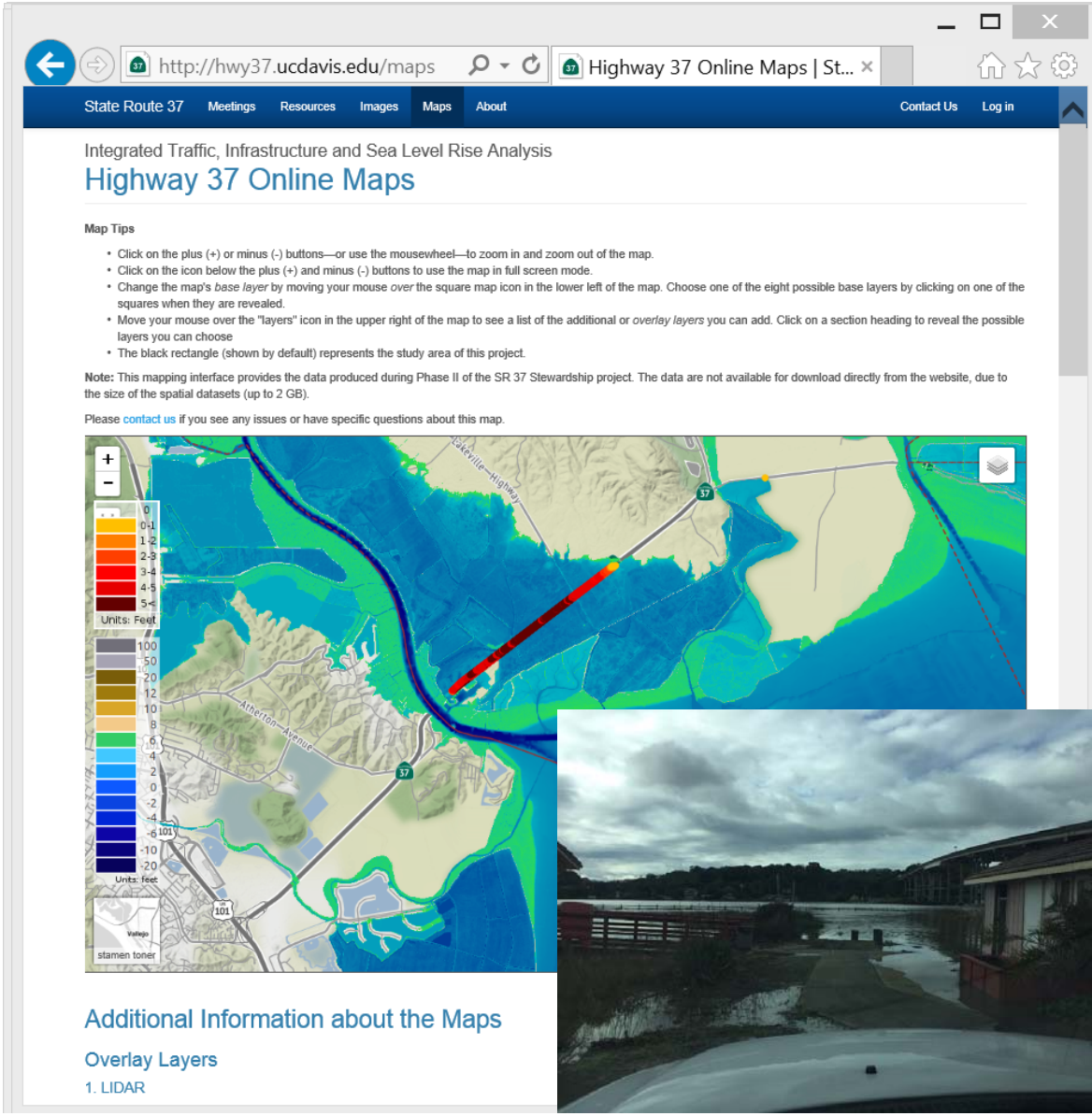
24” flooding

36” (100 yr storm)

36” (100 yr storm)

Other areas

24” flooding

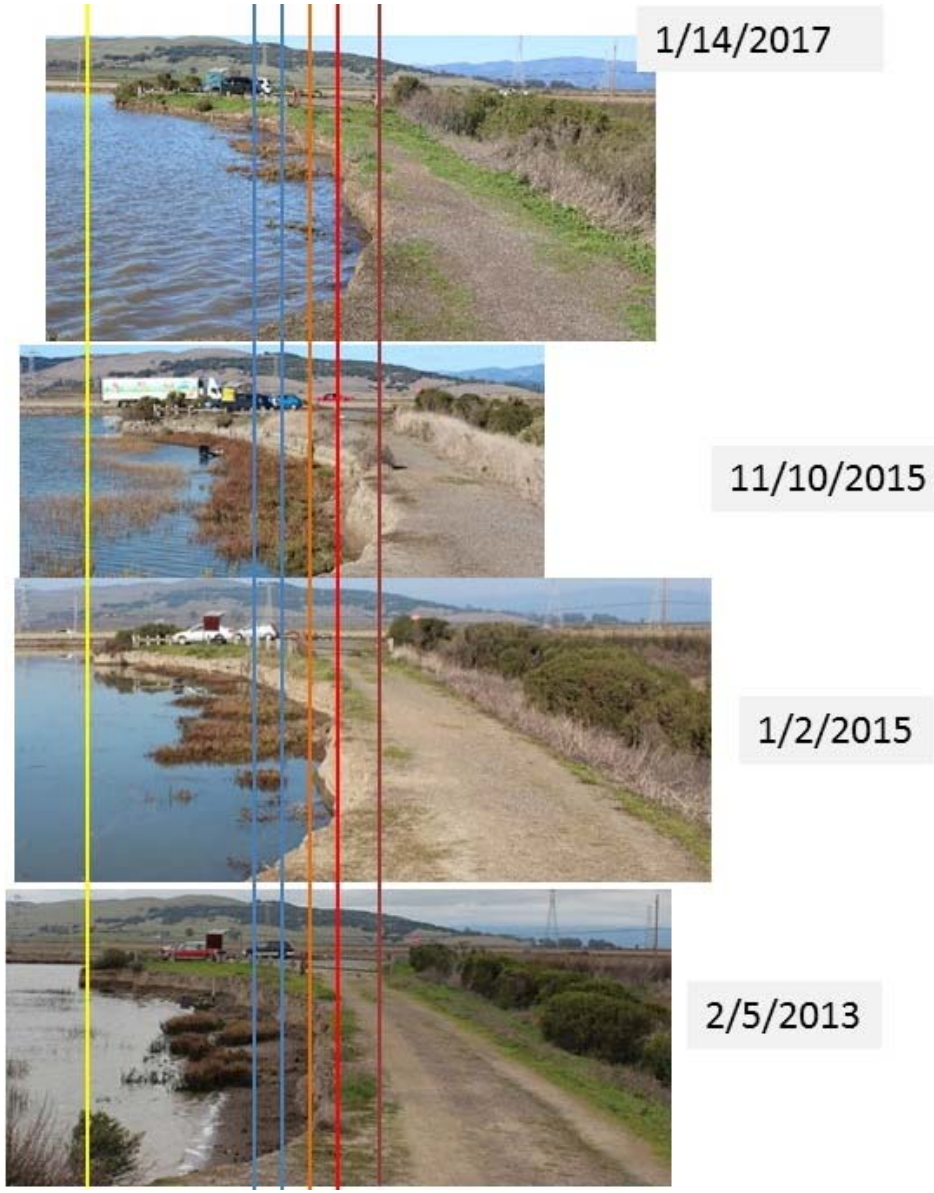


Critical infrastructure is eroding

Critical infrastructure is eroding

Tolay Lagoon/Hwy 37

This shows the approximate movement of the erosion front on the Tolay Lagoon levee (E end of lagoon) between 2/2013 and 1/2017.



Hwy 37 1.0 & 2.0

Transit

Re-align/Move

SEA LEVEL RISE

STAKEHOLDERS

Levee

4 LANES

Rail

TIDAL MARSH

CAUSEWAY

Timeframe

CONGESTION

Responsible/Lead

Tunnel

Cost

Hwy 37 1.0 & 2.0

Transit

Re-align/Move

SEA LEVEL RISE

STAKEHOLDERS

Levee

4 LANES

Rail

TIDAL MARSH

CAUSEWAY

Floating Bridge

Timeframe

CONGESTION

Responsible/Lead

Tunnel

Cost

Hwy 37 1.0 2.0 & 3.0

Transit

Privatization

SEA LEVEL RISE

Levee

Stakeholders

4 LANES

Rail

CAUSEWAY

TIDAL MARSH

Timeframe

CONGESTION

Responsible/Lead

Flooding

Cost

Will this simplified path be adaptive?

- Depth to bedrock?
- Actual landscape ground-elevations?
- Adaptive structures connected to ??? Communities, other roadways, marshes
- What is going on in and under the marshes?
- How fast are changes happening, and
- Are our predictive models working?

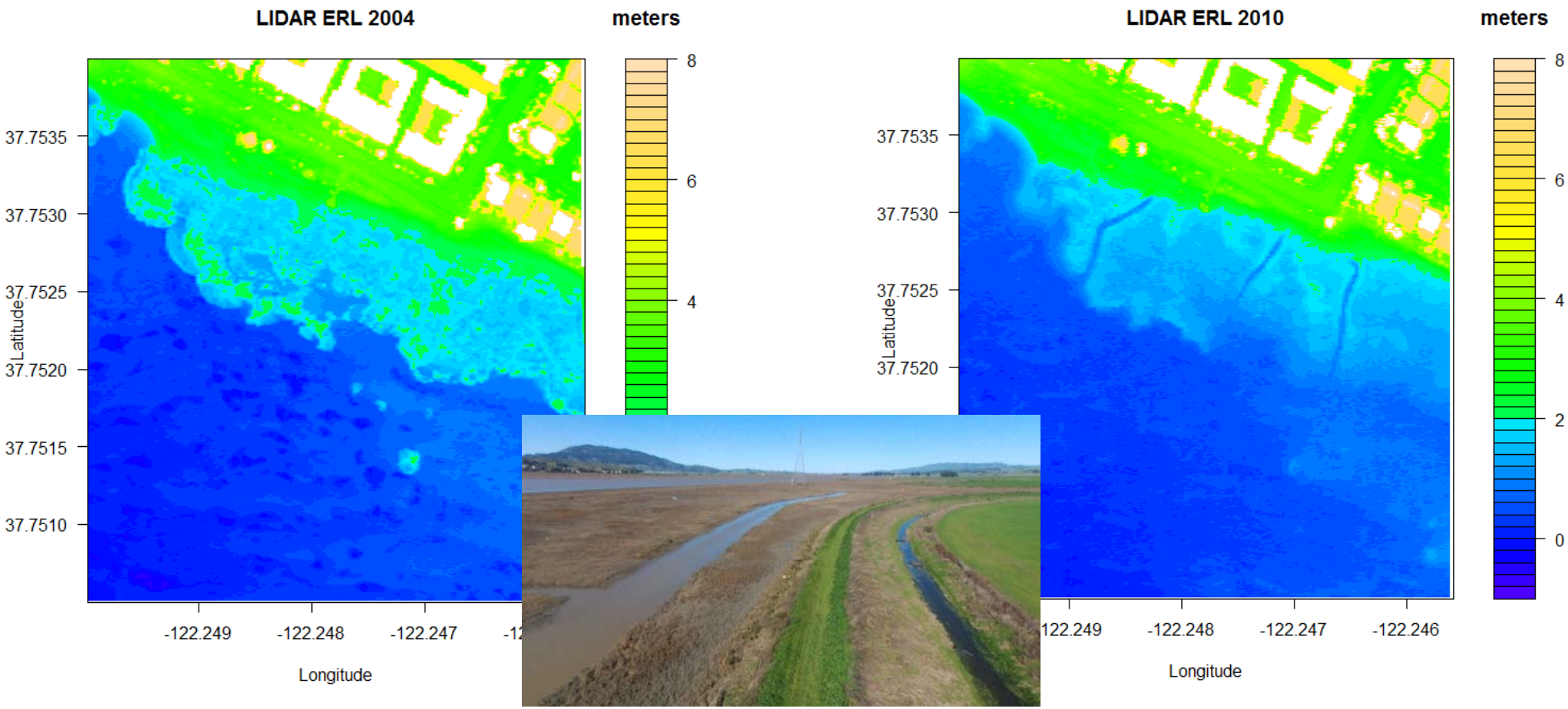
UC Davis Shoreline Tracking Program

Road Ecology Center (Shilling) Lead

Ted Grosholz, Susan Ustin, John Largier, Erik Grijalva, David Waetjen

UGA, GA-Tech Partners

Elevation Change at 10 Sites 2004-2010

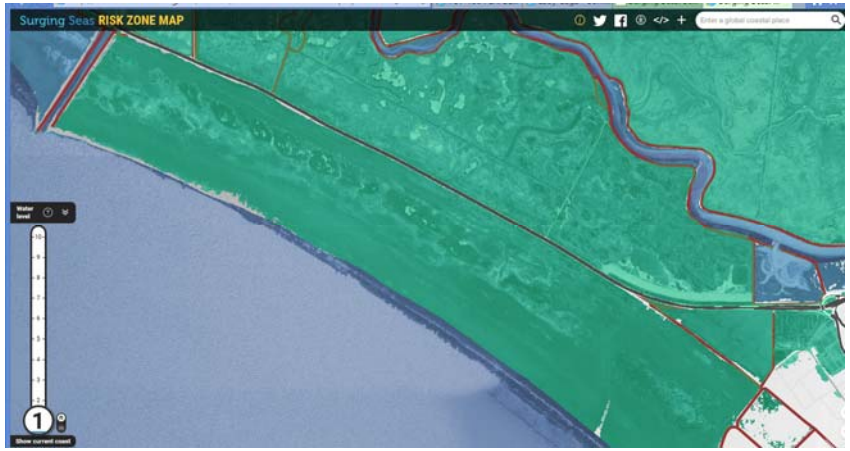


Marshes

Nov 7 4.3(4.6)’
Dec 7 5.9(5.9)’
Jan 7 6.4(7.0)’
Jan 8 6.7(7.9)’
Jan 10 7.2(8.0)’
(at this point, tidally connected to Bay)
Feb 7 6.7(7.9)’

Quantifying Change

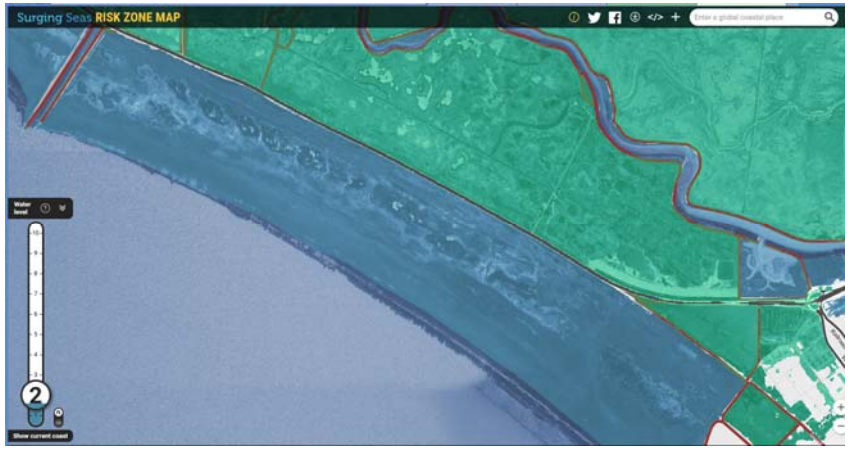
Validating Models



Solano-Sonoma Marsh

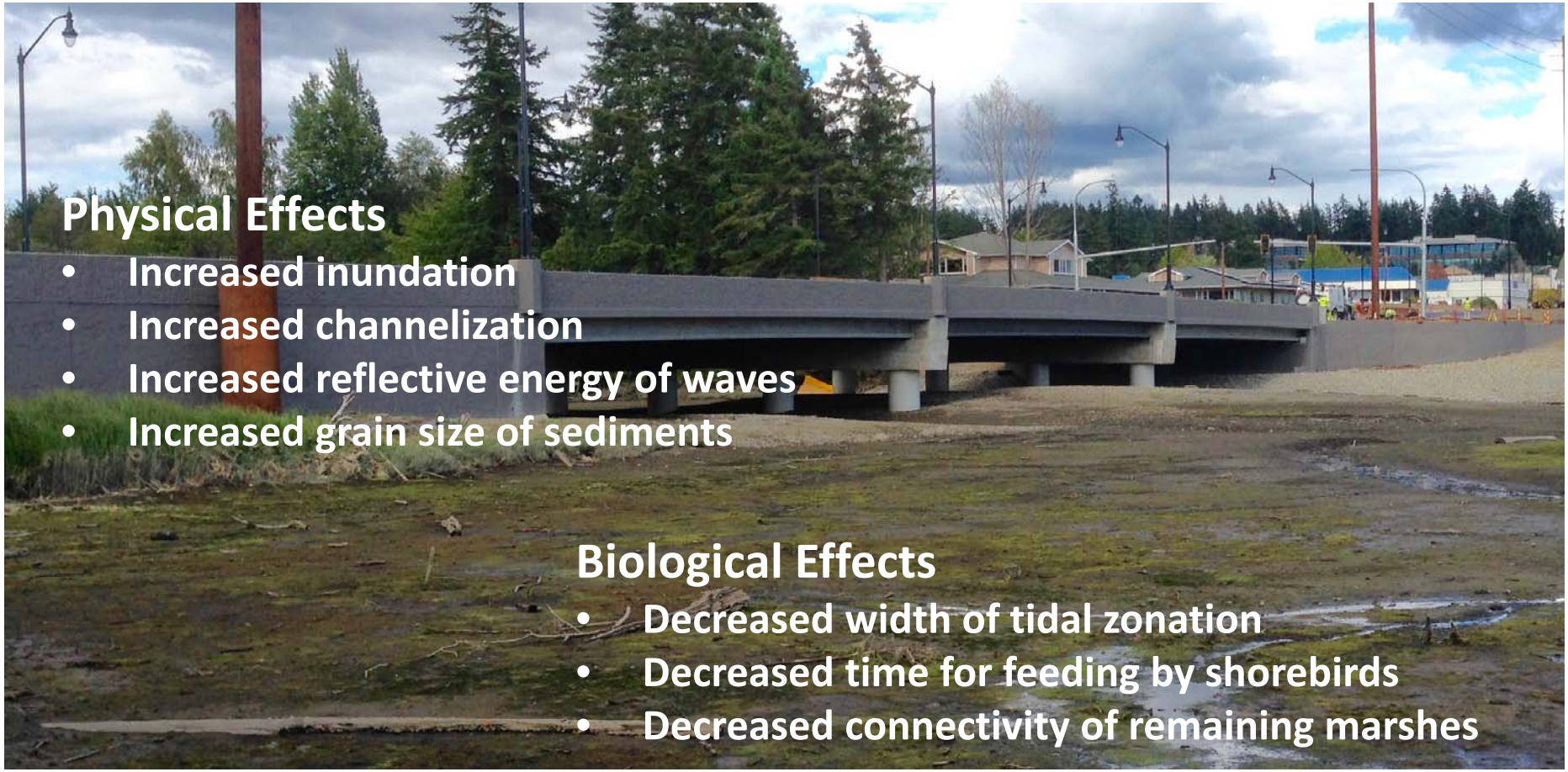
12”

24”



Surging Seas

Mechanisms: Armoring Effects on Marsh Adaptation to SLR



Physical Effects

- Increased inundation
- Increased channelization
- Increased reflective energy of waves
- Increased grain size of sediments

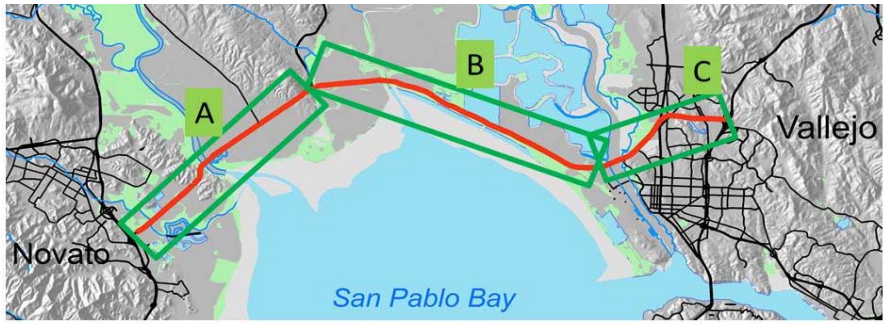
Biological Effects

- Decreased width of tidal zonation
- Decreased time for feeding by shorebirds
- Decreased connectivity of remaining marshes

Enhance road proposals with transit, ferry, non-motorized access and connectivity.
Give economic sectors and communities a strong voice in the process.
Focus on enhancing the environment of the North Bay through environmentally sensitive design.
Consider the impact of SR 37 on the entire transportation network of the North Bay and region.

Be ready with funding packages when opportunities arise!

Developing Resilient Landscapes



"keep the big picture in mind of the North Bay economies, communities, ecosystems"

Beyond corridors (preserving structures)

Grabbing the third rail (preserve function)

More Information

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