Central Coast
Highway 1 Climate Resiliency Study
Public Workshop
August 29, 2019
Study Timeline

August 2019
- Outreach and Community Engagement

December 2019
- Outreach and Community Engagement

June 2020
- Adoption of Final Adaptation Strategy

Summer-Winter 2019

- Identify Existing Conditions
- Develop Adaptation Concepts & Scenarios
- Evaluation of Adaptation Alternatives & Benefit-Cost Analysis
Workshop Objectives

- Provide an overview of the study: work completed to date, where we are now, where we’re headed
- Provide background of climate change impacts for Highway 1, Elkhorn Rail and Elkhorn Slough
- Provide community the opportunity to ask questions and provide comments
Workshop Schedule

- 6:00 - 6:10 PM - Arrivals/Introductions
- 6:10 - 6:30 PM - Study Presentation
- 6:30 - 7:00 PM - Q&A
- 7:00 - 7:45 PM - Interactive Session
- 7:45 - 8:00 PM - Wrap Up & Next Steps
Workshop Ground Rules

- Interact respectfully
- Honor the agenda and time limits for discussion
- Focus your input on the meeting topics/Objectives
- Turn off or silence cell phones

We want to hear from you:

1. Q&A or Interactive Session
2. Comment card
3. Send comment via email (hadamson@ambag.org)
Elkhorn Slough -
Wonderful open space
Critical transportation corridor

Photo: © Kenneth & Gabrielle Adelman
Project Goals

- Identify sea level rise adaptation approaches for Highway 1 and rail that can:
  - Promote healthy and resilient coastal habitats
  - Improve transportation safety & efficiency
  - Provide economic security and benefits to the local community
Elkhorn Slough

• Important habitat for many species
• Scientific research
• Recreation
  (e.g. kayaking, hiking, birding)
• Community resource
Elkhorn Slough

- 2,600 acres intertidal habitat
- Extensive healthy seagrass
- 100 species fish
- 500 species inverts
- 20,000 migratory birds
- Nesting snowy plovers
- 100 otters
- Prized by locals
- High visitation

Wetland of International Importance
2,600 acres intertidal habitat
Extensive healthy seagrass
100 species fish
500 species inverts
20,000 migratory birds
Nesting snowy plovers
100 otters
Prized by locals
High visitation
Habitat Types
- Estuarine
- Mudflat
- Salt marsh
- Transitional marsh

Habitats are vulnerable to sea level rise
Irregularly flooded Estuarine Marsh
Regularly flooded Estuarine Marsh
Tidal Flat and Salt Panne
Transportation Corridor

Highway 1
- Extremely congested corridor with safety concerns
  - Warrants improvements and/or widening
- 2015 Population: 763,000 → 2040 Projected population: 883,300
- Monterey Bay Sanctuary Scenic Trail

Railway
- Monterey County Rail Extension Project
  - Passenger rail extension from Santa Clara County to Salinas
Climate Change Impacts

- Highway 1 - increasing flooding

- Railway - increasing flooding

- Habitat - potential loss and/or degradation due to flooding
Study Overview

Develop and evaluate highway and rail adaptation strategies to enhance the resilience of transportation infrastructure and Elkhorn Slough habitats under future climate conditions and transportation needs.
# Summary of Roadway Flooding Thresholds

## Notes
- GIS data and flooding thresholds based off of previous work for TNC Coastal Resilience: Southern Monterey Bay.
- Coastal and fluvial storm thresholds for 100-yr recurrence interval

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<thead>
<tr>
<th>REACH</th>
<th>FLOOD TIME HORIZON for COASTAL STORM</th>
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<tbody>
<tr>
<td>1</td>
<td>TODAY</td>
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<tr>
<td>2</td>
<td>BY 2040</td>
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<td>3</td>
<td>BY 2045</td>
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Monthly tidal; Coastal storm; Riverine
Potential Adaptation Strategies

▶ Adapt in Place
  ▶ Elevate highway and railway on fill or pylons
    ▶ Natural infrastructure to protect transportation assets
    ▶ Phased implementation
    ▶ Coordinate with local planning efforts

▶ Realignment
  ▶ Re-routing corridor inland
Adapt in Place

Road/Rail on Fill

Road/Rail on Pylons
Potential Realignment
Modeling

For each adaptation alternative:

- Model transportation benefits
- Model sea level rise for new topography and hydrology
- Quantify sea level rise resilience for
  - Transportation
  - Habitats
- Model economic benefit-cost
Benefit-Cost Analysis

- Compare cost of taking no action to benefits of pursuing adaptation strategies
- Evaluate adaptation alternatives to determine:
  - Is it economically worthwhile?
  - Which is the best choice?
  - How long can action be delayed before costs exceed benefits?
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June 2020
Question and Answer
Interactive Session

Central Coast Highway 1 Climate Resiliency Study

• Identify sea level rise adaptation approaches for Highway 1 and rail that can:
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