

# Introduction

Stakeholder Meeting #2, December 1, 2022

*China Camp Wetlands and Road  
Resiliency and Adaptation Project*

*San Francisco Bay National Estuarine Research Reserve*

**Stuart Siegel, PhD, PWS**

**Aimee Good**



# Funding Acknowledgements



## 1) 2018-2019 Identify Options

*NERRS Science Collaborative  
(\$175,000)*



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### A Collaborative Process to Develop Solutions for Tidal Road Flooding in China Camp State Park

**Project Type:**  
Catalyst

**Focus Area(s):**  
[Climate Change](#)

**Keyword(s):**  
[planning](#), [adaptation](#), [sea level rise](#)

**Reserve(s):**  
[San Francisco Bay, CA](#)

**Project Duration:**  
September 2018 to August 2019

**Grant Amount:**  
\$157,321.00

**Project Lead(s):**  
Stuart Siegel, San Francisco Bay NERR,  
[siegel@sfsu.edu](mailto:siegel@sfsu.edu)

Aimee Good, San Francisco Bay NERR,  
[aimee@sfsu.edu](mailto:aimee@sfsu.edu)

**Project Record in National Catalog:**  
[NOAA InPort Database](#)



The group evaluated these adaptation options and mapped a path forward to address road flooding at China Camp.

## 2) 2022-2024 Assess Feasibility

*NERRS Science Collaborative  
(\$525,000)*



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### Respecting the Past, Planning for the Future: Integrating Cultural Resources and Watershed Connectivity Into Co-Design of a Road Modification Project

**Project Type:**  
Collaborative Research

**Focus Area(s):**  
[Climate Change](#)

**Keyword(s):**  
[sea level rise](#), [marsh accretion](#), [cultural ecosystem services](#), [hydrology](#), [modeling](#), [construction](#), [adaptation](#)

**Reserve(s):**  
[San Francisco Bay, CA](#)

**Project Duration:**  
September 2021 to October 2024

**Grant Amount:**  
\$524,919.00

**Project and Technical Lead**  
• Stuart Siegel, San Francisco Bay NERR, [siegel@sfsu.edu](mailto:siegel@sfsu.edu)

**Collaborative Lead**  
• Aimee Good, San Francisco Bay NERR, [aimee@sfsu.edu](mailto:aimee@sfsu.edu)



A car drives through a flooded section of China Camp State Park.

## 3) 2023-2024: Assess Engineering Feasibility *Marin County (\$ TBD)*

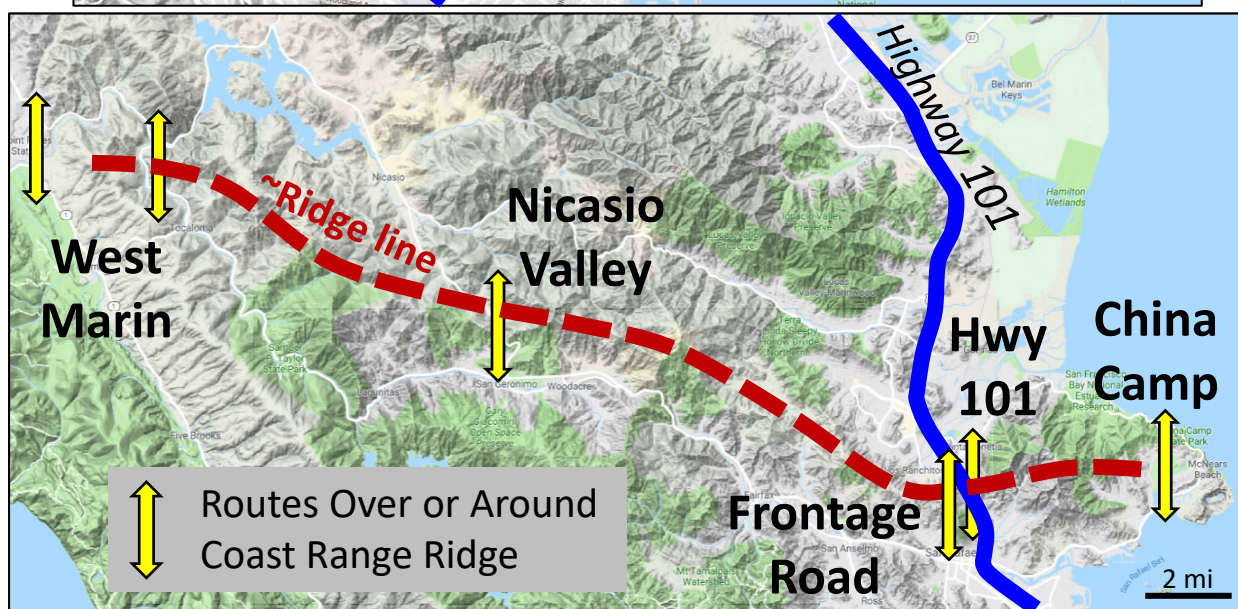
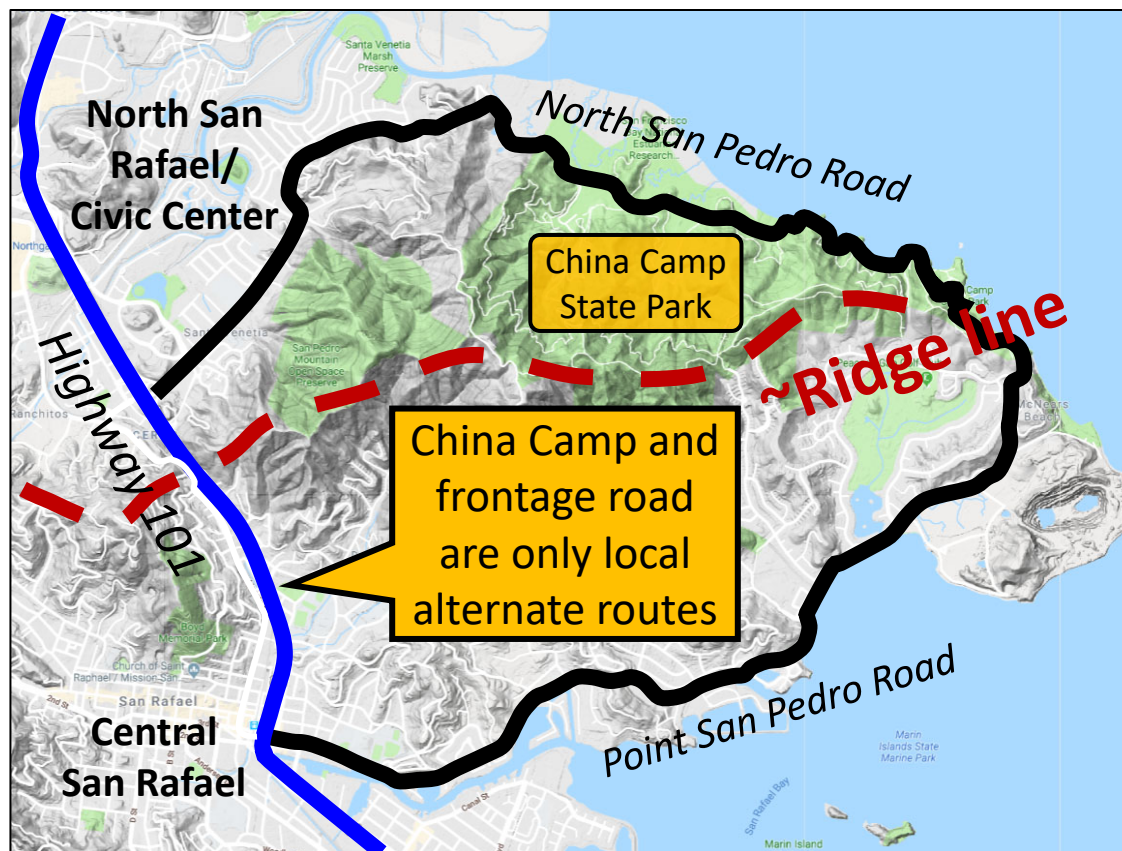
# China Camp: Ecologically Rare, Culturally Significant



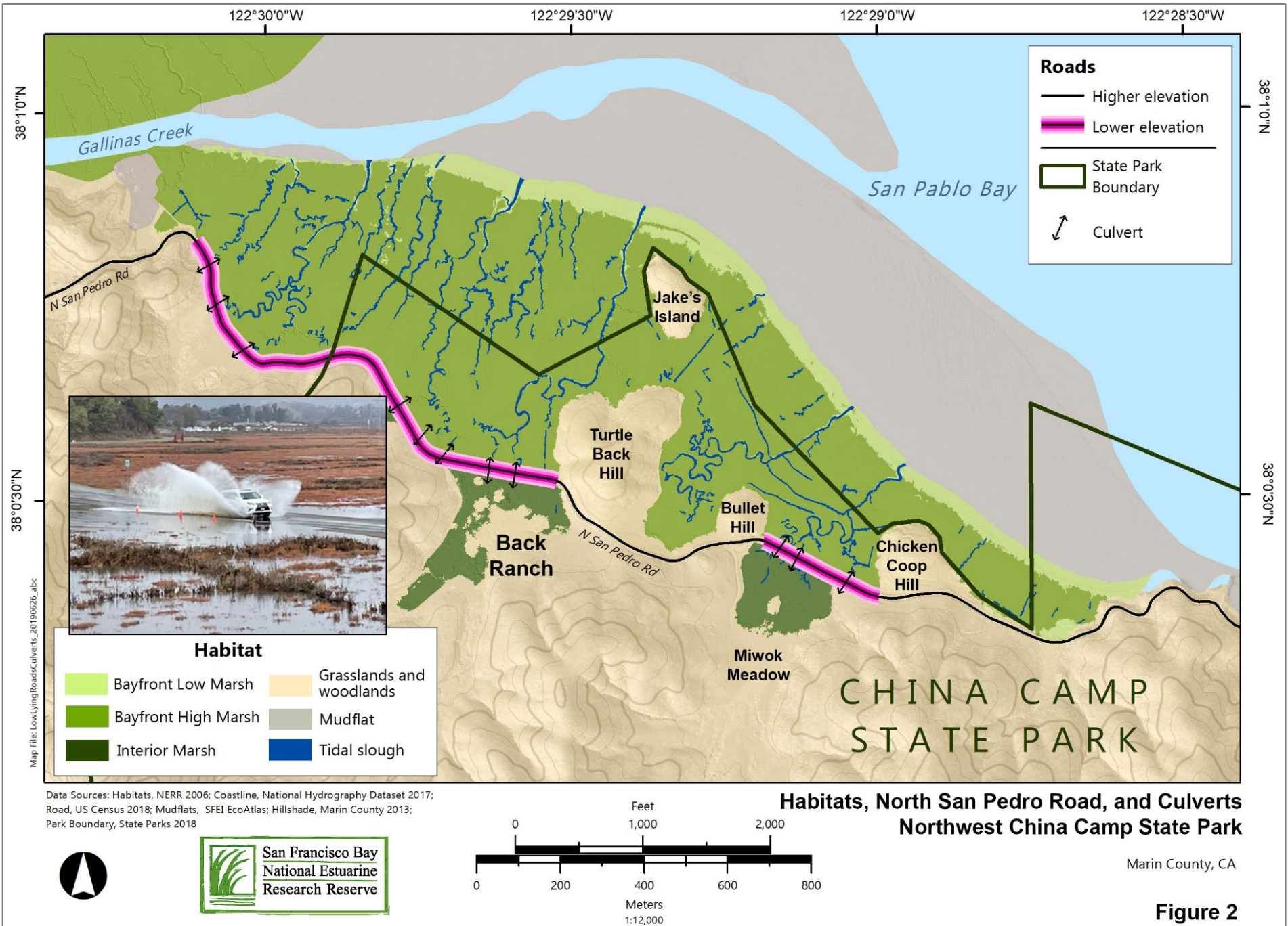
# Road Importance to Transportation Network

## ➤ Connecting San Rafael

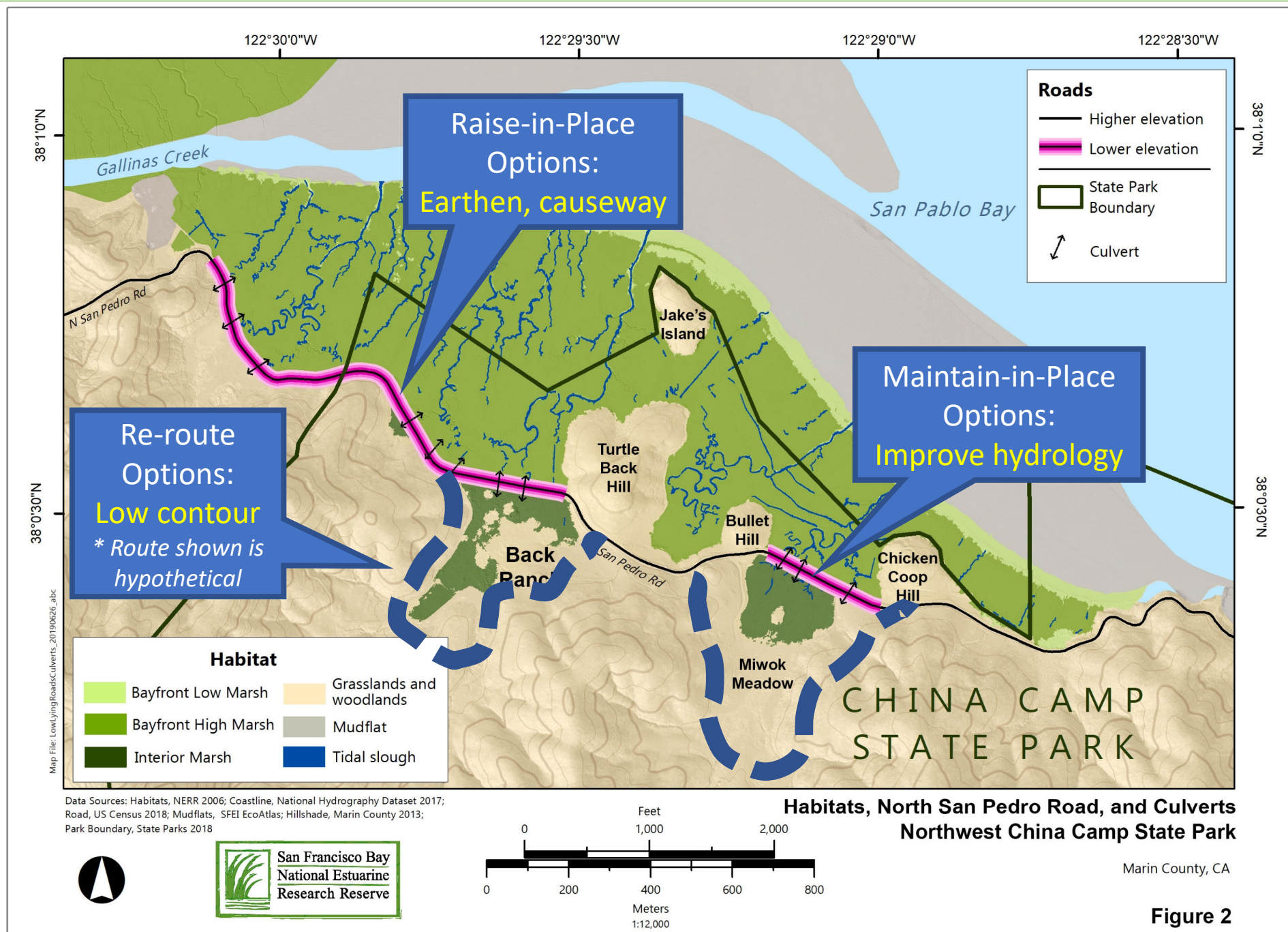
## ➤ Part of Connecting Marin and North Bay



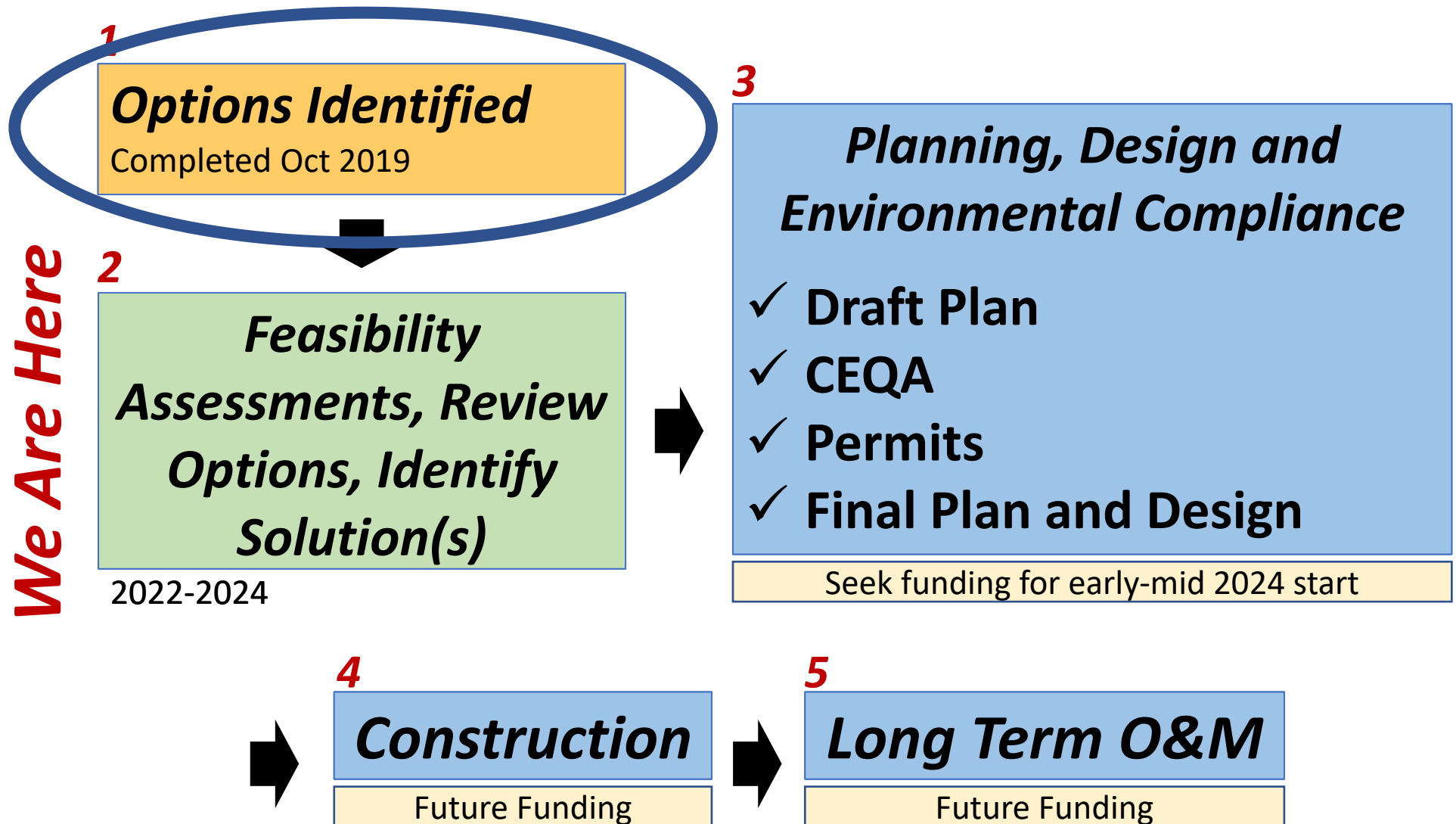
# Low-Lying Road: Increasing Sea Level Rise and Storm Floods Impair Marsh and Road Uses



# 2019 Outcome: Options Considered for Feasibility Assessment



# Process for Finding and Implementing Solutions



Source: Updated from NERR 2019: Road Map to Implementation, China Camp Shoreline Road Adaptation.

# Setting Project Goals

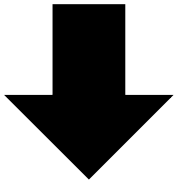
## The Problem

- 1) Road impairs tidal marsh ecology and SLR resiliency
- 2) Flooding impairs road uses

+

## Context

- 1) Ecology: rare ecological setting
- 2) Cultural: tribal and Chinese history and uses
- 3) Park: recreation, education
- 4) Road: park access, commute, emergency responders, evacuation



## GOALS

- 1) **Protect and enhance natural resources**
- 2) **Maintain road access to and through Park**
- 3) **Protect cultural resources**
- 4) **Provide minimum 3' and up to 7' SLR adaptation**

# Developing Solutions (2018-2019)

## Steps in the Process

### 1) Establish Targets

- Characterize Problem
- Discuss Project Goals
- Discuss Feasibility Evaluation Criteria

### 2) Build Options

- Adopt Goals, Evaluation Criteria
- Brainstorm Ideas

*Project team compiled ideas into options, applied feasibility criteria*

### 3) Identify Potentially Viable Options

- Review Assessments
- “Vote” on options to move to feasibility assessment stage

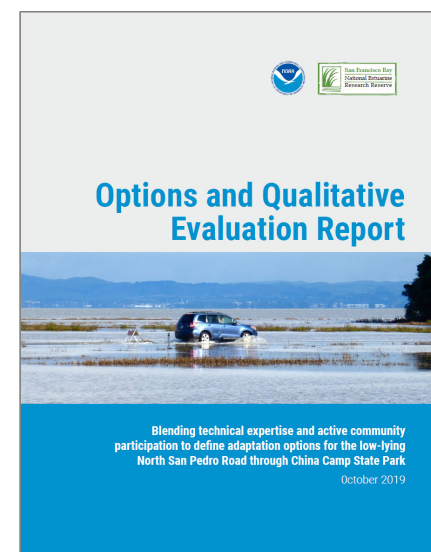
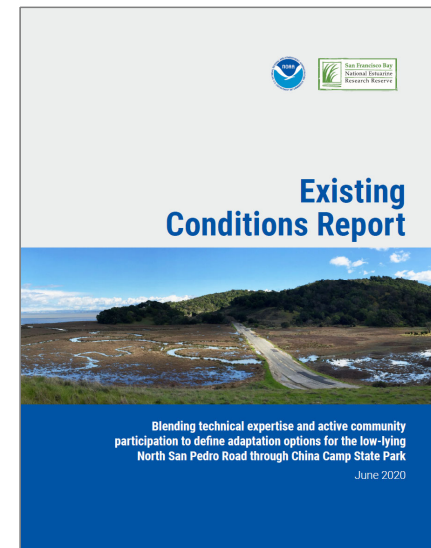
## Stakeholder Meeting

**Nov 30, 2018**

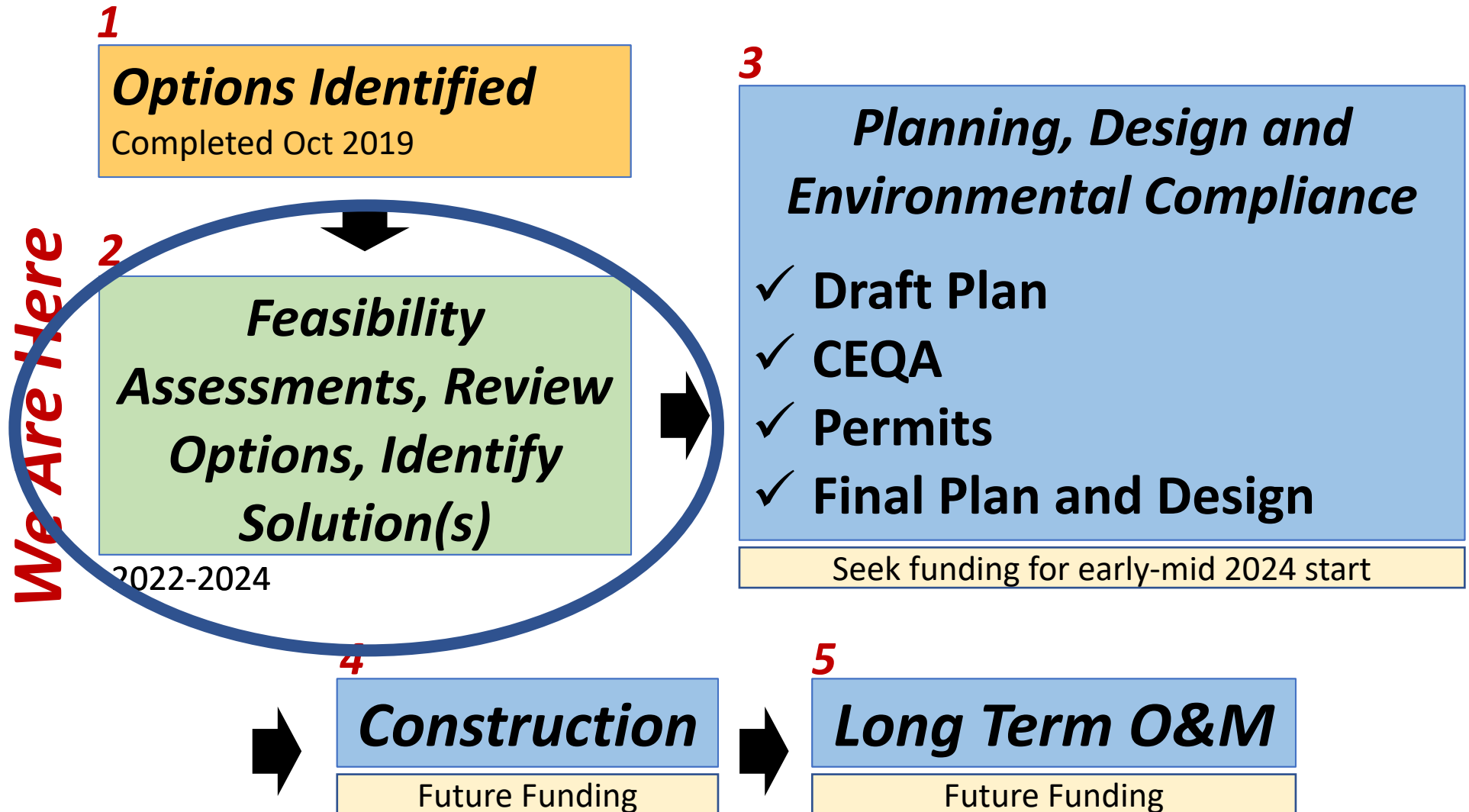
**Feb 19, 2019**

**Jun 12, 2019**

## Reports



# Process for Finding and Implementing Solutions



Source: Updated from NERR 2019: Road Map to Implementation, China Camp Shoreline Road Adaptation.

# Stakeholder Engagement Meetings

<u>Meeting</u>	<u>Timing</u>	<u>Focus</u>
1	Jan 26, 2022	<ul style="list-style-type: none"><li>➤ Review prior outcomes</li><li>➤ Updates</li><li>➤ Overview of upcoming work 2022-2024 grant</li></ul>
2	Dec 1, 2022	<ul style="list-style-type: none"><li>➤ Cultural findings to date and implications</li></ul>
3	Summer 2023	<ul style="list-style-type: none"><li>➤ Physical findings to date and implications</li></ul>
4	Spring 2024	<ul style="list-style-type: none"><li>➤ Synthesize findings</li><li>➤ ID solution(s) to advance to next planning stage</li></ul>

# County Culvert Repairs Fall 2020

- At early meetings, stakeholders asked if County Public Works could repair the six culverts at Back Ranch and Miwok Meadows – partially clogged, eroded road shoulder danger
- County designed, permitted, funded, and constructed these repairs Fall 2020

***Before***



***Slip-lining***



***After***

