



South Bay Salt Pond Restoration Project

Restoring the Wild Heart of the South Bay



April 2008



September 2009



May 2010



October 2010

SALT POND A21 SOUTH BAY SALT POND RESTORATION PROJECT

Kite aerial photographs of a small channel in the northeast corner following the 2006 breach to tidal flow. Field of view is ~ 120 feet. . C. Benton

Stakeholder Forum Meeting, August 15, 2017

Today's Topics

- **Phase 1 Progress**
- **Phase 2: Design, Fill, Truck Routes**
- **Resilient by Design Challenge**
- **Measure AA**
- **Science Program**
- **South Bay Shoreline Study**
- **Looking Ahead to 2018**

Tracking Our Progress: Phase 1



South Bay Salt Pond Restoration Project

Restoring the Wild Heart of the South Bay

2002 Salt Pond Acquisition Area

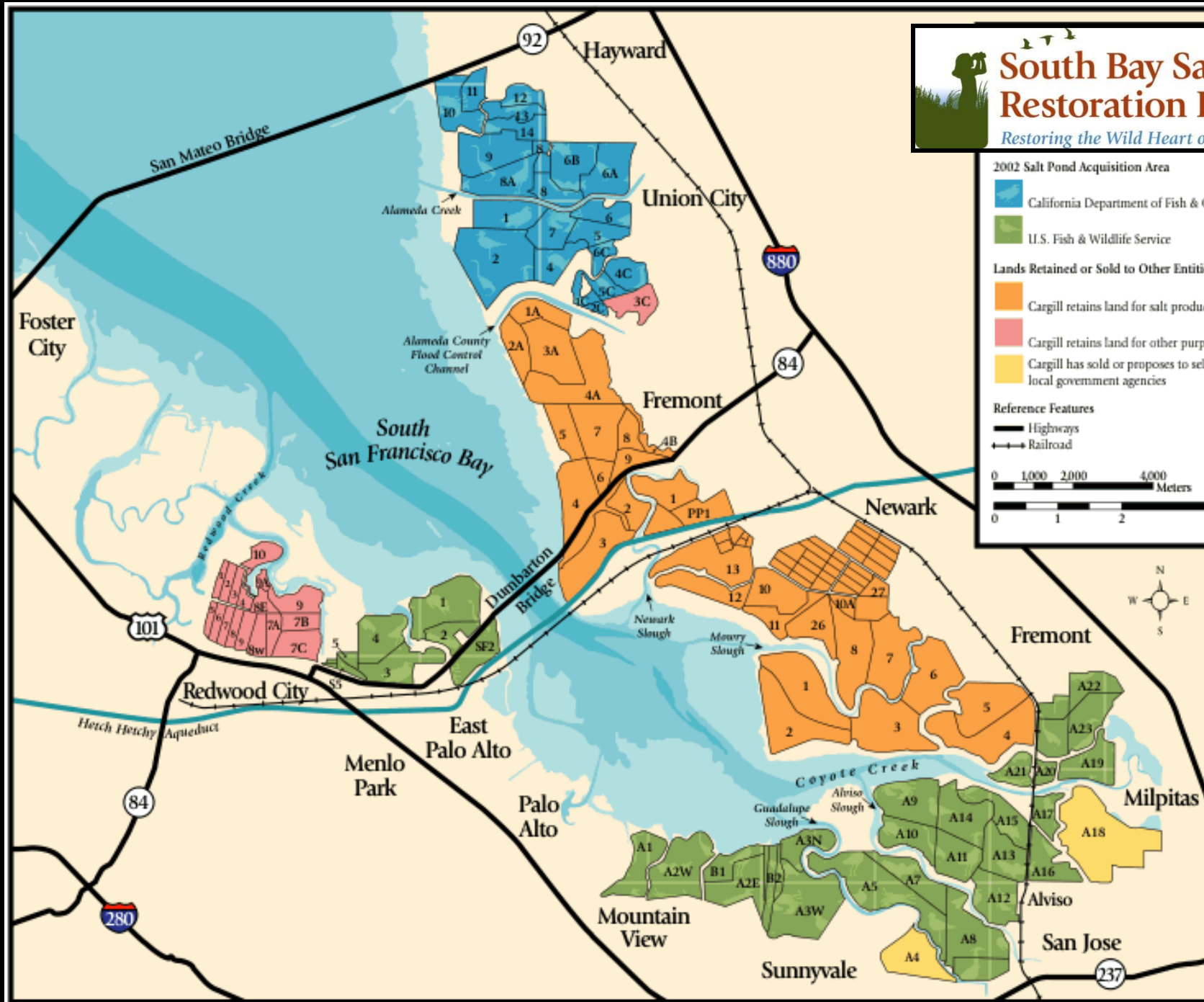
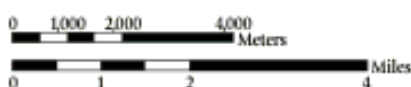
- California Department of Fish & Game
- U.S. Fish & Wildlife Service

Lands Retained or Sold to Other Entities

- Cargill retains land for salt production
- Cargill retains land for other purposes
- Cargill has sold or proposes to sell to local government agencies

Reference Features

- Highways
- Railroad





2003 Transfer: A Public/Private Partnership

- 16,500 acres
 - 15,100 in South Bay
 - 1,400 along Napa River



Key uncertainties

- Wildlife use of changing habitats
- Habitat evolution and sediment dynamics
- Mercury methylation
- Water quality
- Invasive species
- Public access
- Infrastructure support
- Sea level rise and climate change

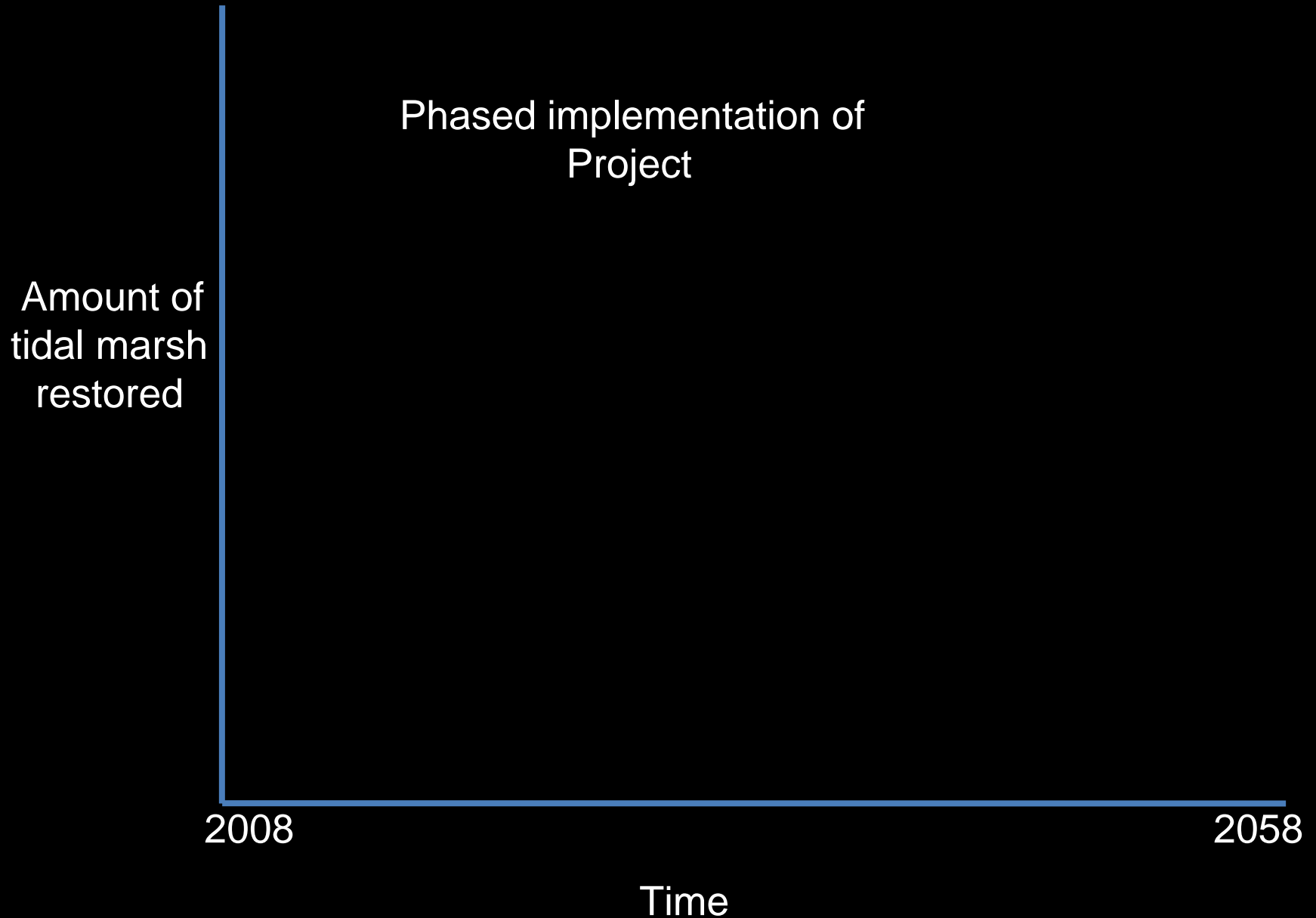


Ecological Trade-offs

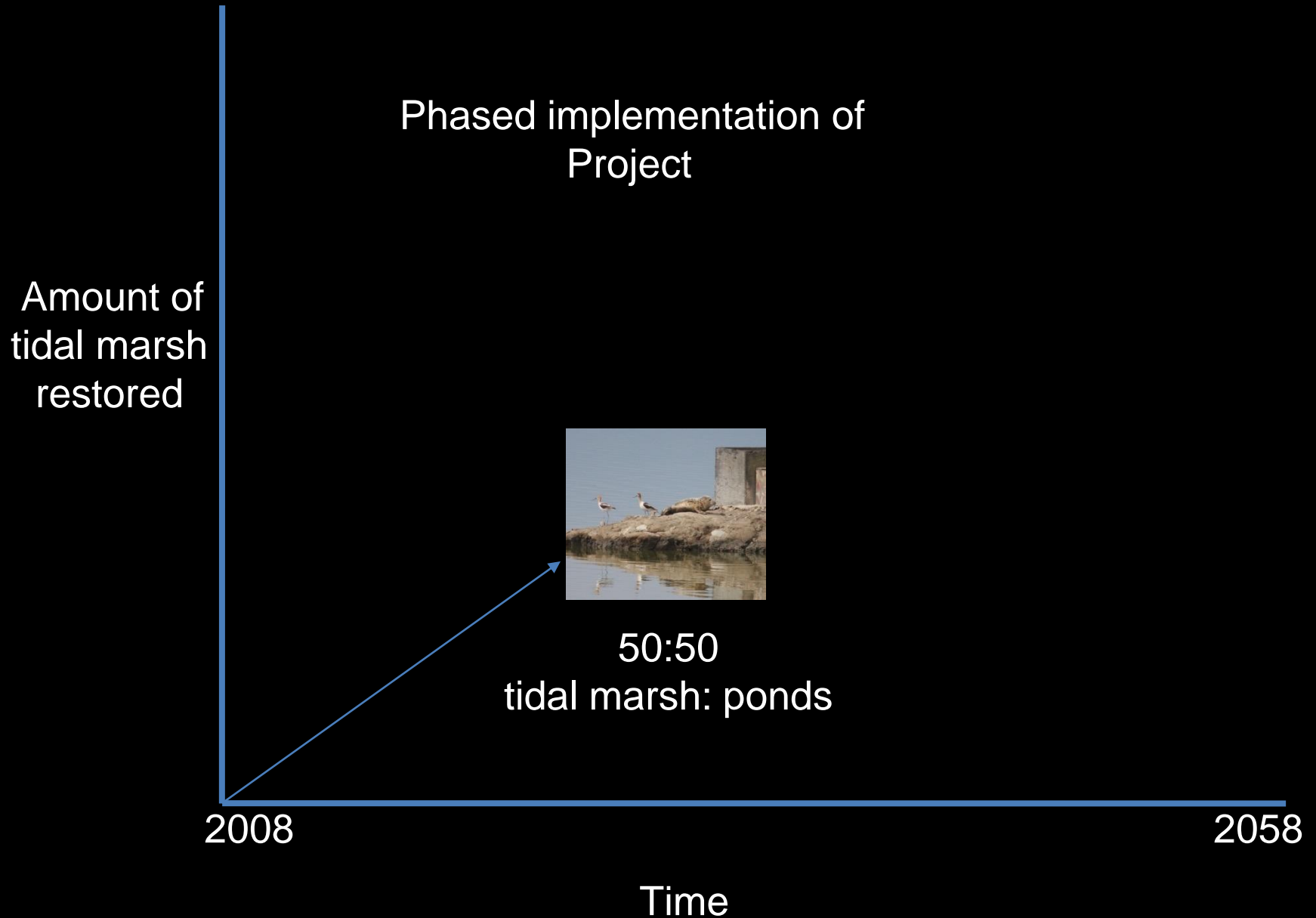
- Tidal Marsh species vs. Salt Pond species



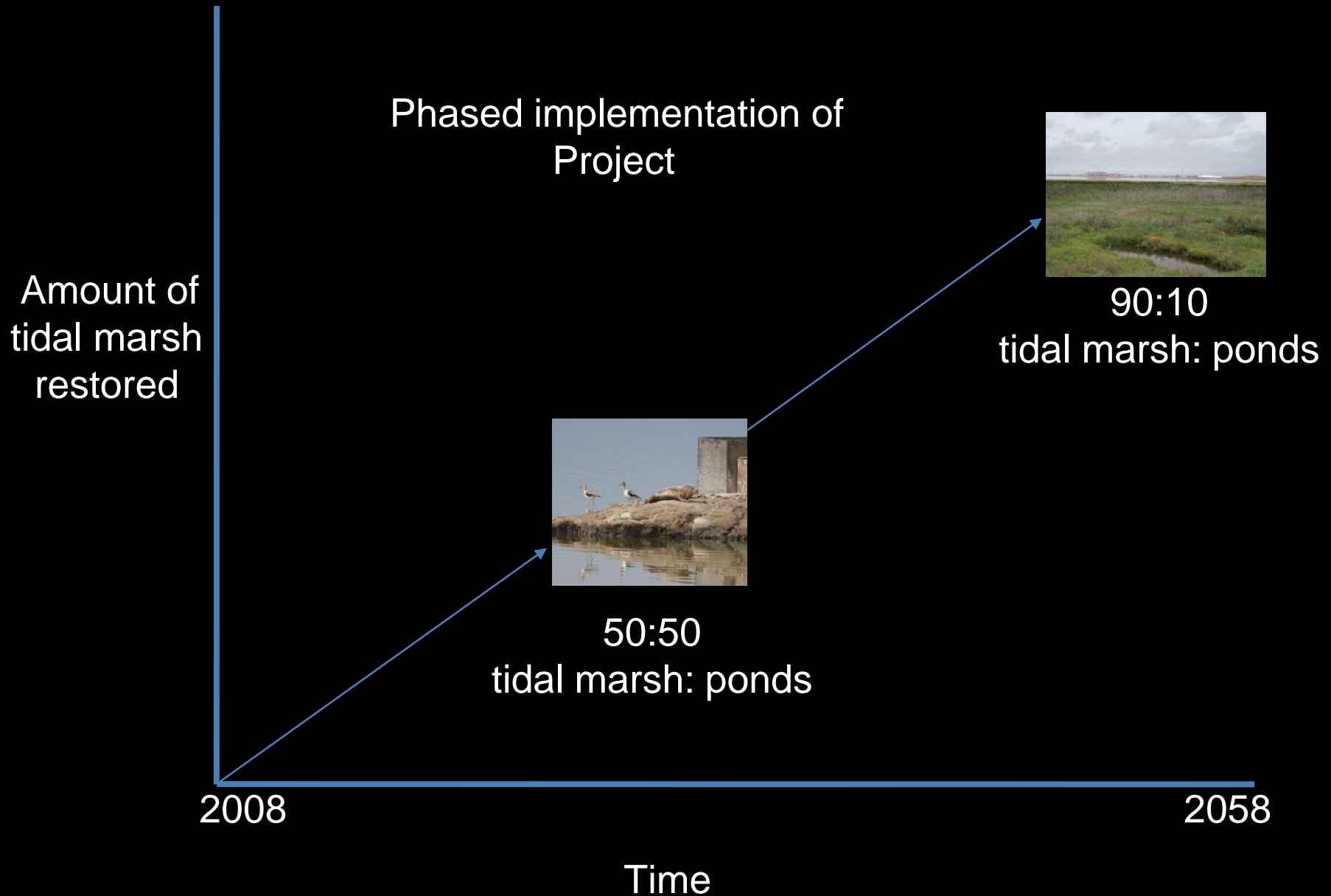
Adaptive Management Restoration

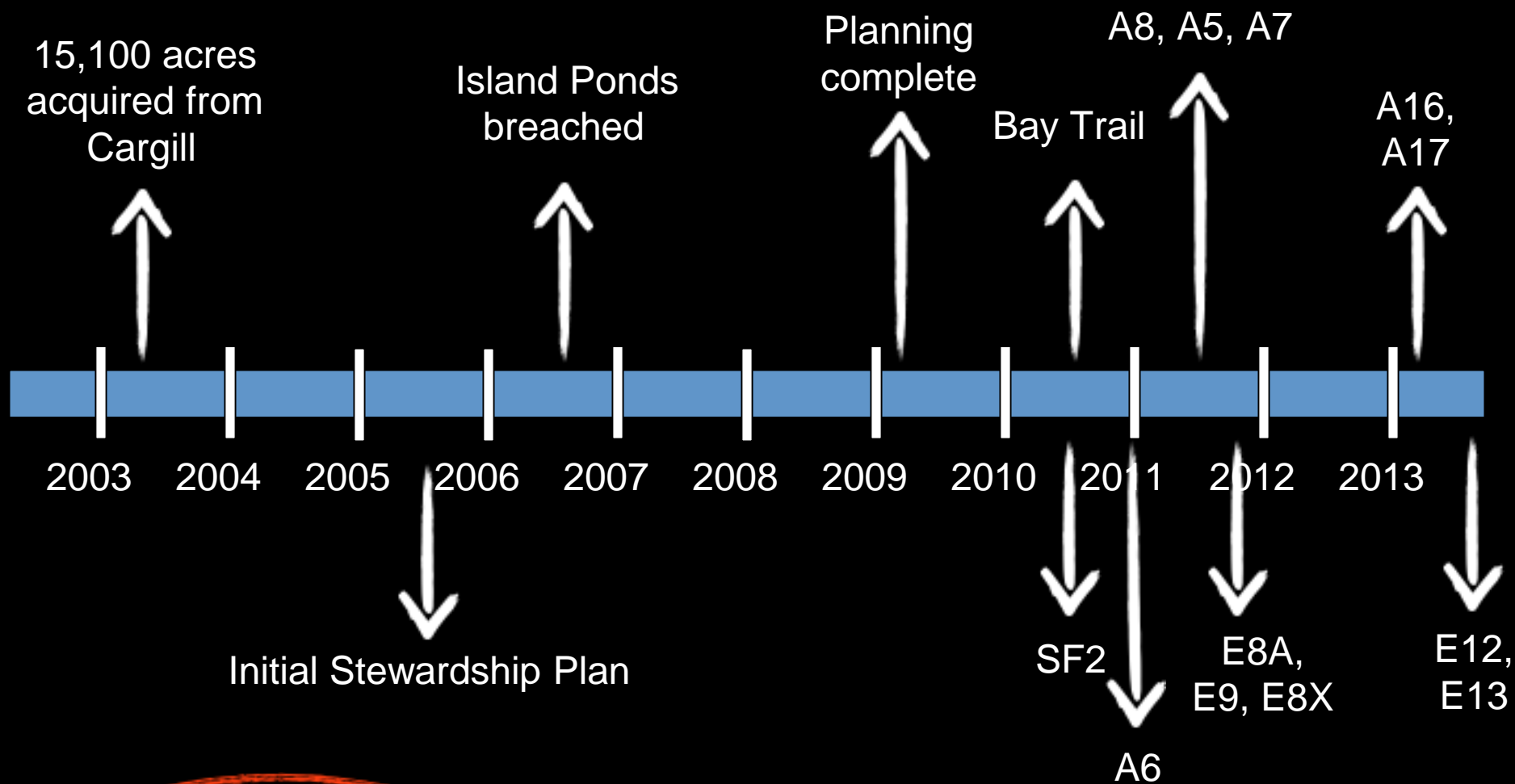


Adaptive Management Restoration



Adaptive Management Restoration





Restored to Date

Tidal: 1,600 ac

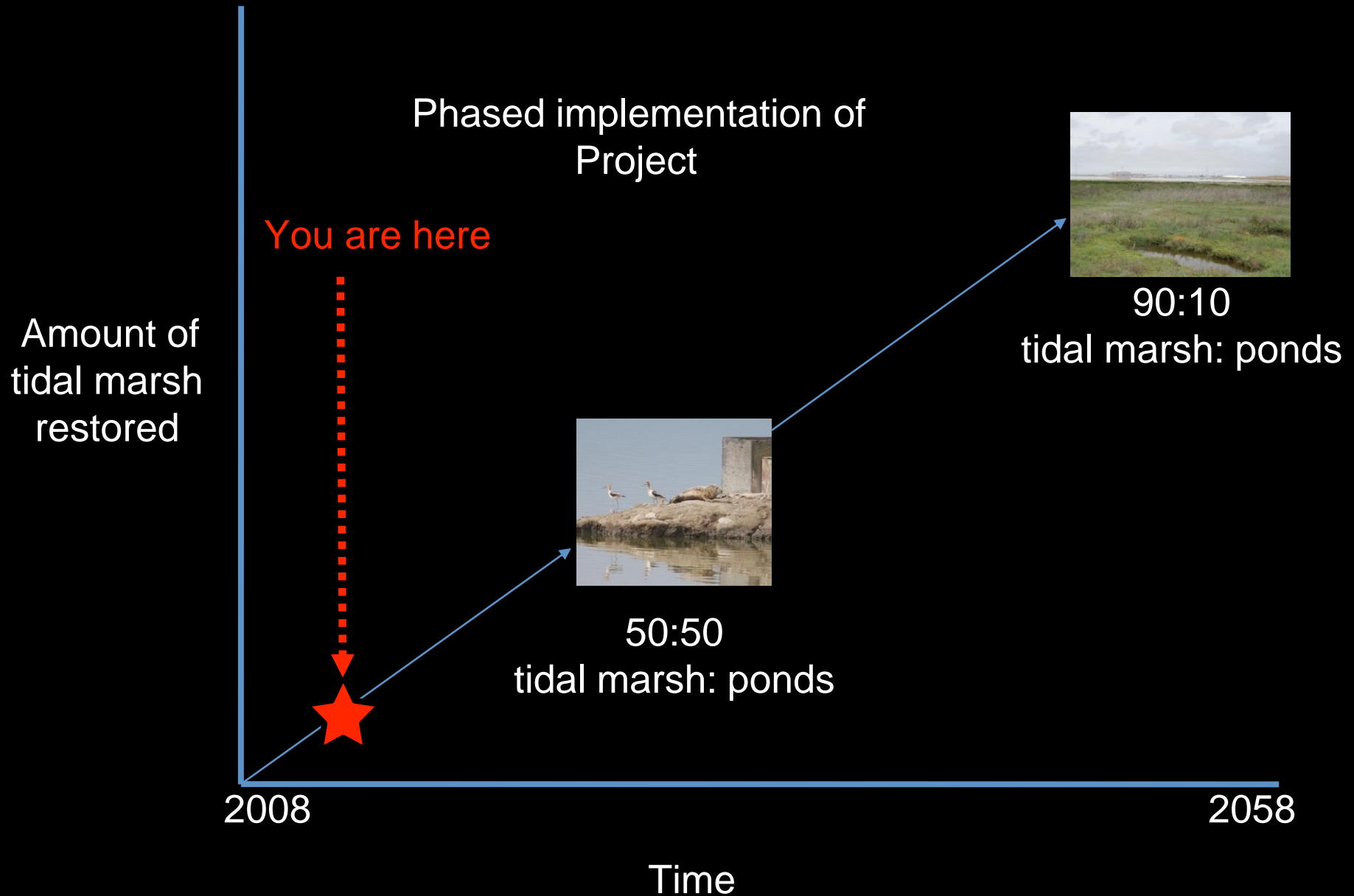
Muted Tidal: 1,440 ac

Reconfigured Ponds: 710 ac

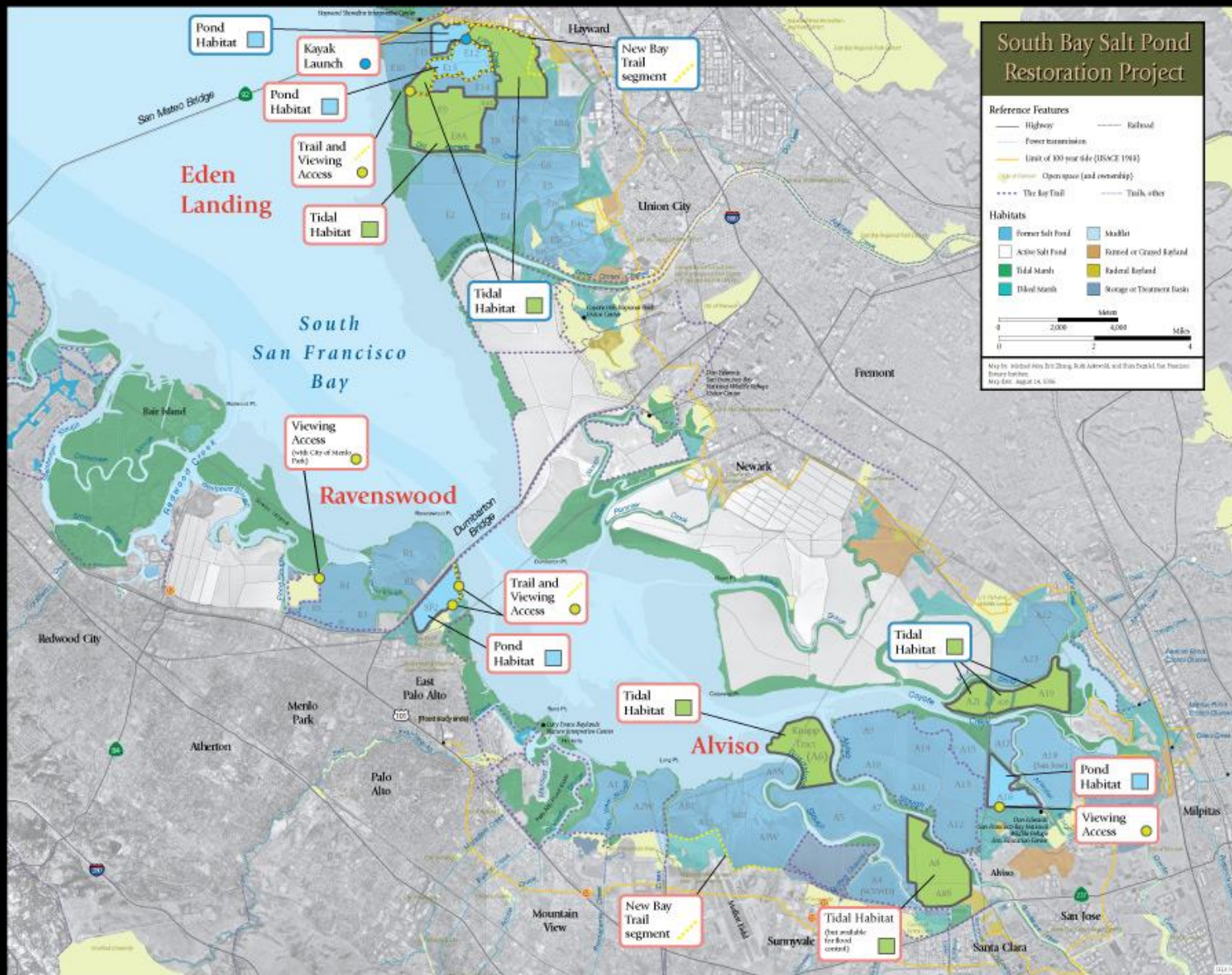
Total: 3,750 ac

New Trails: 7 miles

Adaptive Management Restoration



Tracking our Progress: Phase One Actions



Initial Restoration Actions

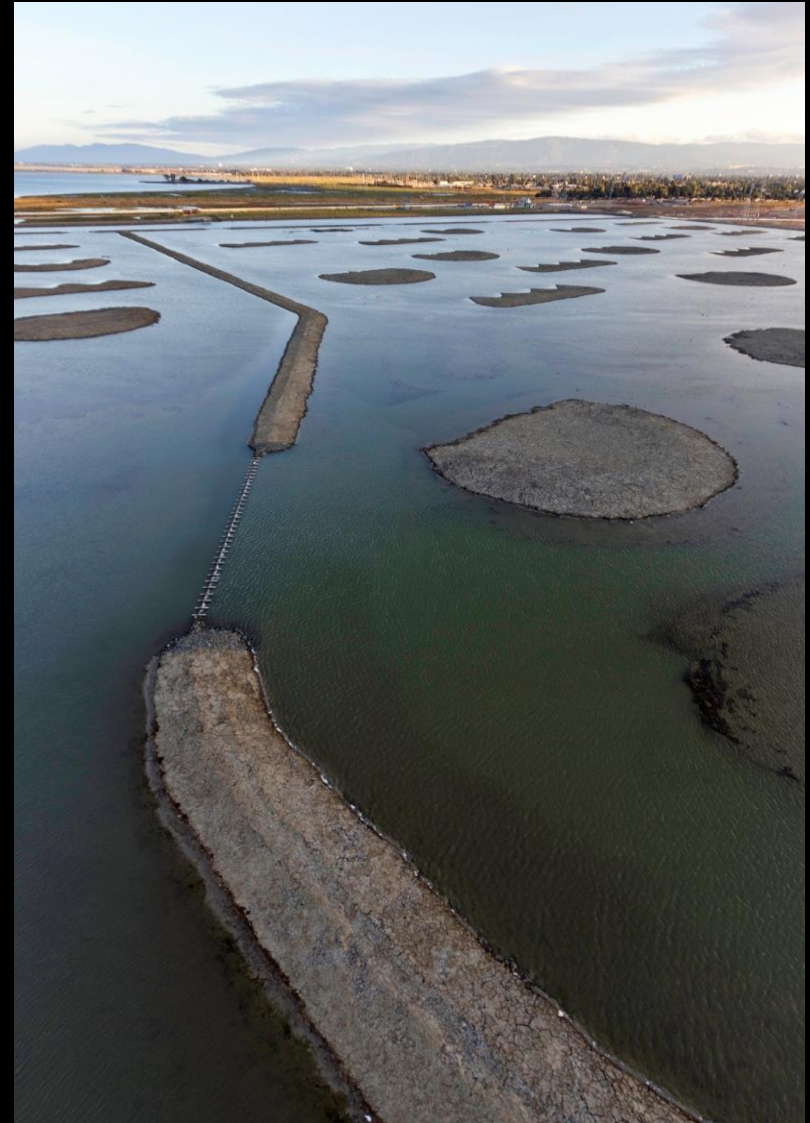
South Bay Salt Pond Restoration Project

2006 - 08 SBSP Phase 1



1,600 acres tidal restoration
1,440 acres muted tidal

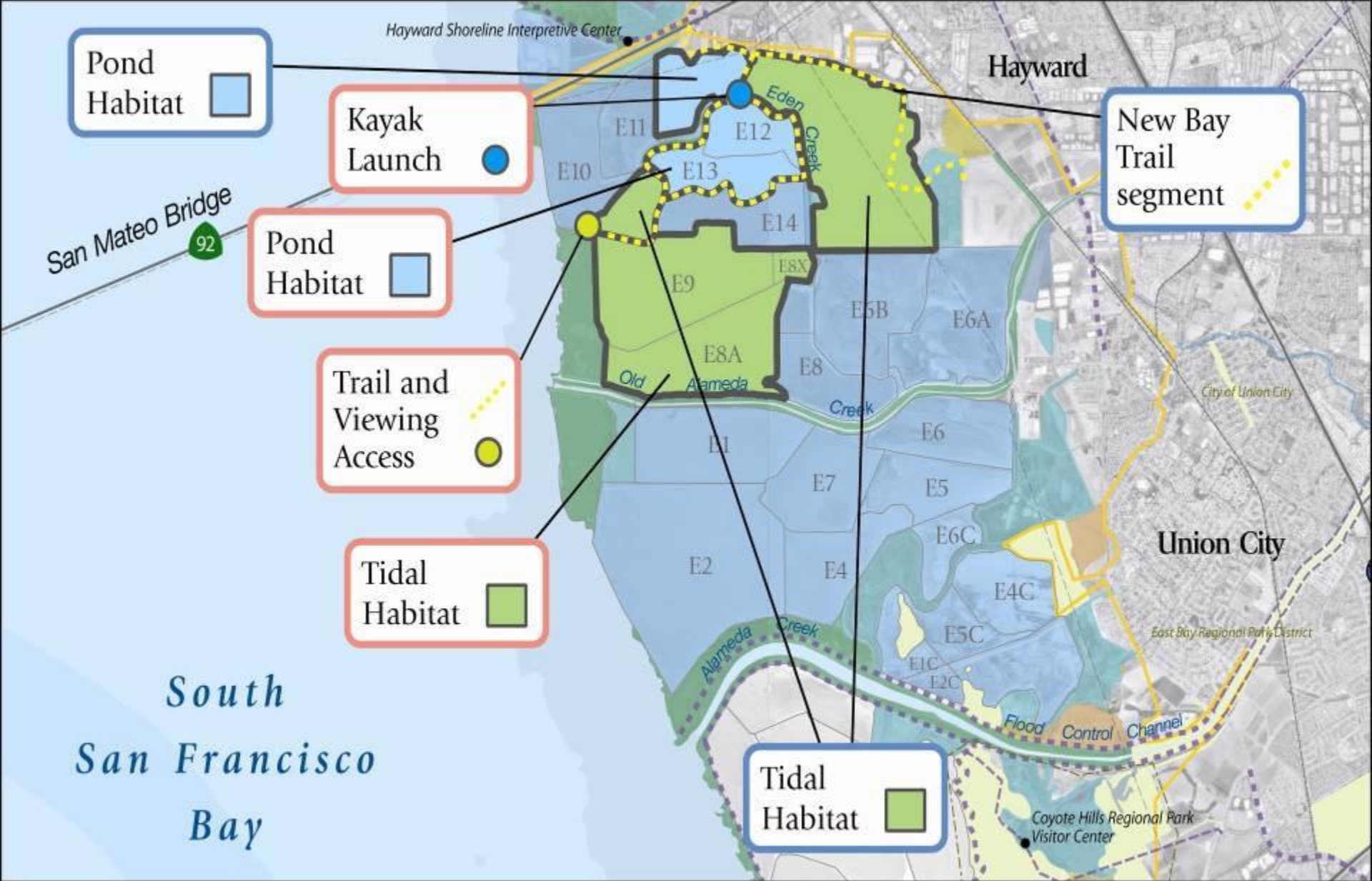
710 acres reconfigured ponds



7 miles of new trails



Eden Landing



Initial Restoration Actions

South Bay Salt Pond Restoration Project—Eden Landing Area



2006 - 08



SBSP Phase 1

E12-E13 Enhanced Ponds



SNPL Enhancements



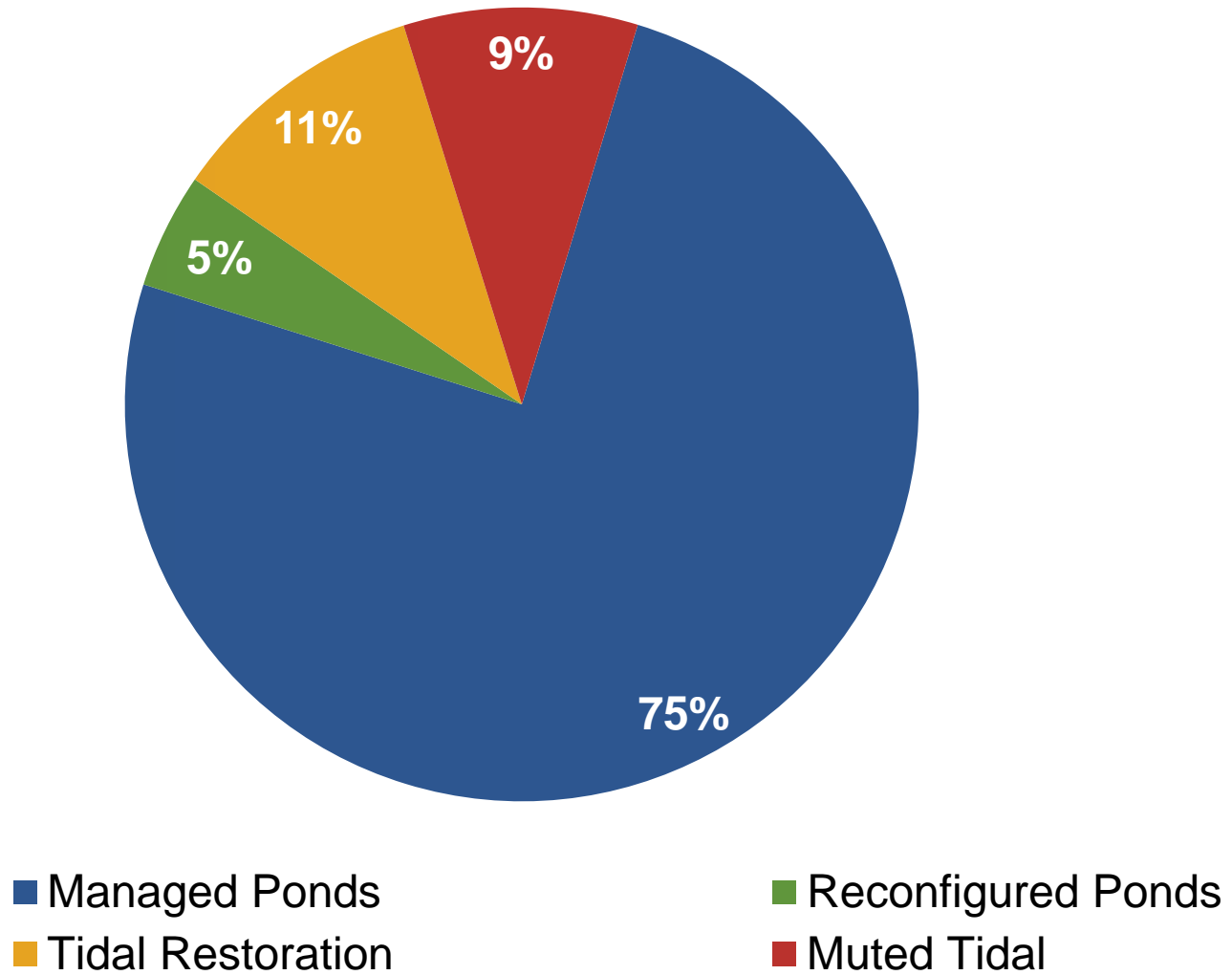
Public Access: Kayak Launch & Saltworks Boardwalk



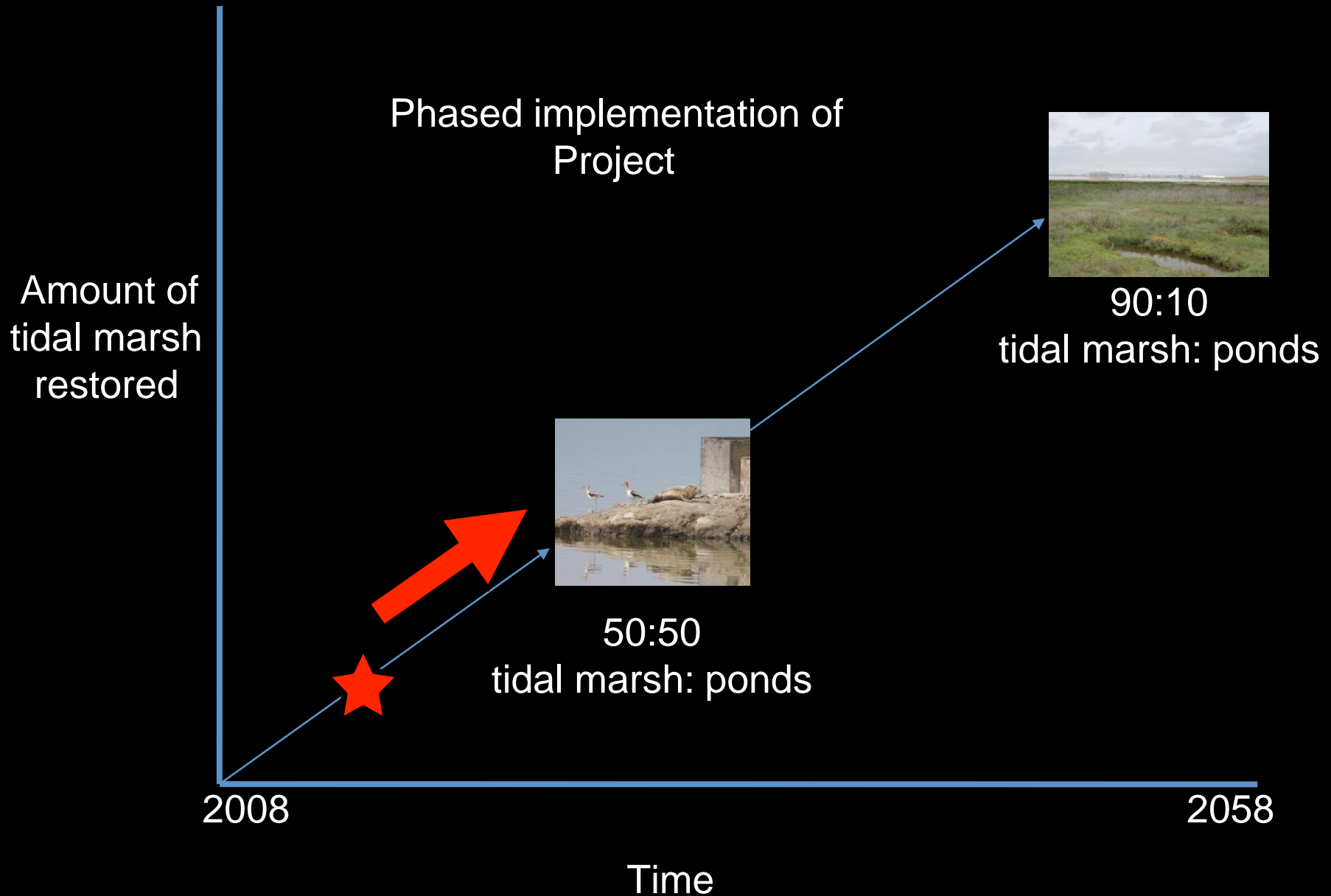
Questions?

Phase 2: Overview

SBSPR Phase 1



Adaptive Management Restoration



THE
Baylands
AND
Climate Change

WHAT WE CAN DO

BAYLANDS ECOSYSTEM HABITAT GOALS
SCIENCE UPDATE 2015



State of California
Coastal Conservancy





WHAT WE CAN DO

- *Restore complete systems, including processes*
- *Restore soon, in areas marshes are likely to persist*
- *Plan for the Baylands to migrate*

Guiding Principles

No actions that will
increase flood risk

Progress toward 50-50
vision (from EIR)

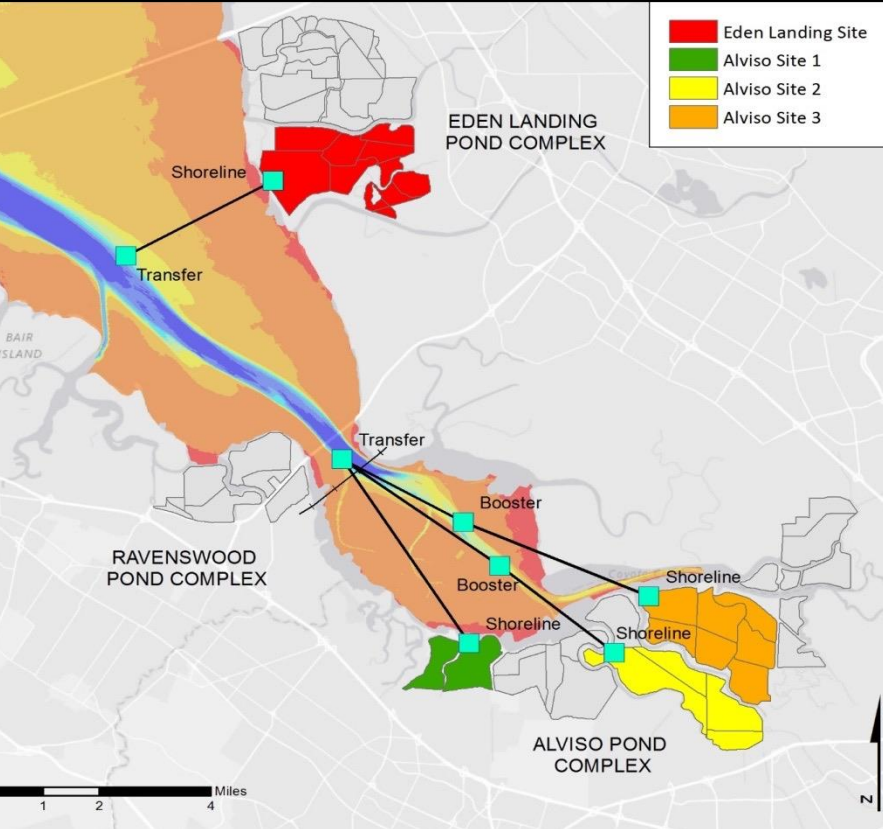
Primary Evaluation Criteria

- Likelihood of progress toward Project objectives
- Opportunities for Adaptive Management studies
- Value in building Project support
- Readiness to proceed / not dependent on precedent actions (e.g., flood levee)
- Input from Stakeholders (over 2 years)

Phase 2 in Eden Landing

Figure ES-3a. Alternative B:
Managed Pond Emphasis
Eden Landing, Year 50





Questions?

Phase 2 in Alviso & Ravenswood

0 0.5 1 2 Miles

CALIFORNIA STATE PLANE COORDINATE SYSTEM ZONE III
NORTH AMERICAN DATUM OF 1983
NORTH AMERICAN VERTICAL DATUM OF 1988
IMAGERY: Esri



Ravenswood

R5
R4
R3
S5

114

109

84

Alviso MOUNTAIN VIEW PONDS

A1
A2W

101

82

85

Alviso ISLAND PONDS

A20
A21
A19

262

Alviso A8 PONDS

A8
A8S

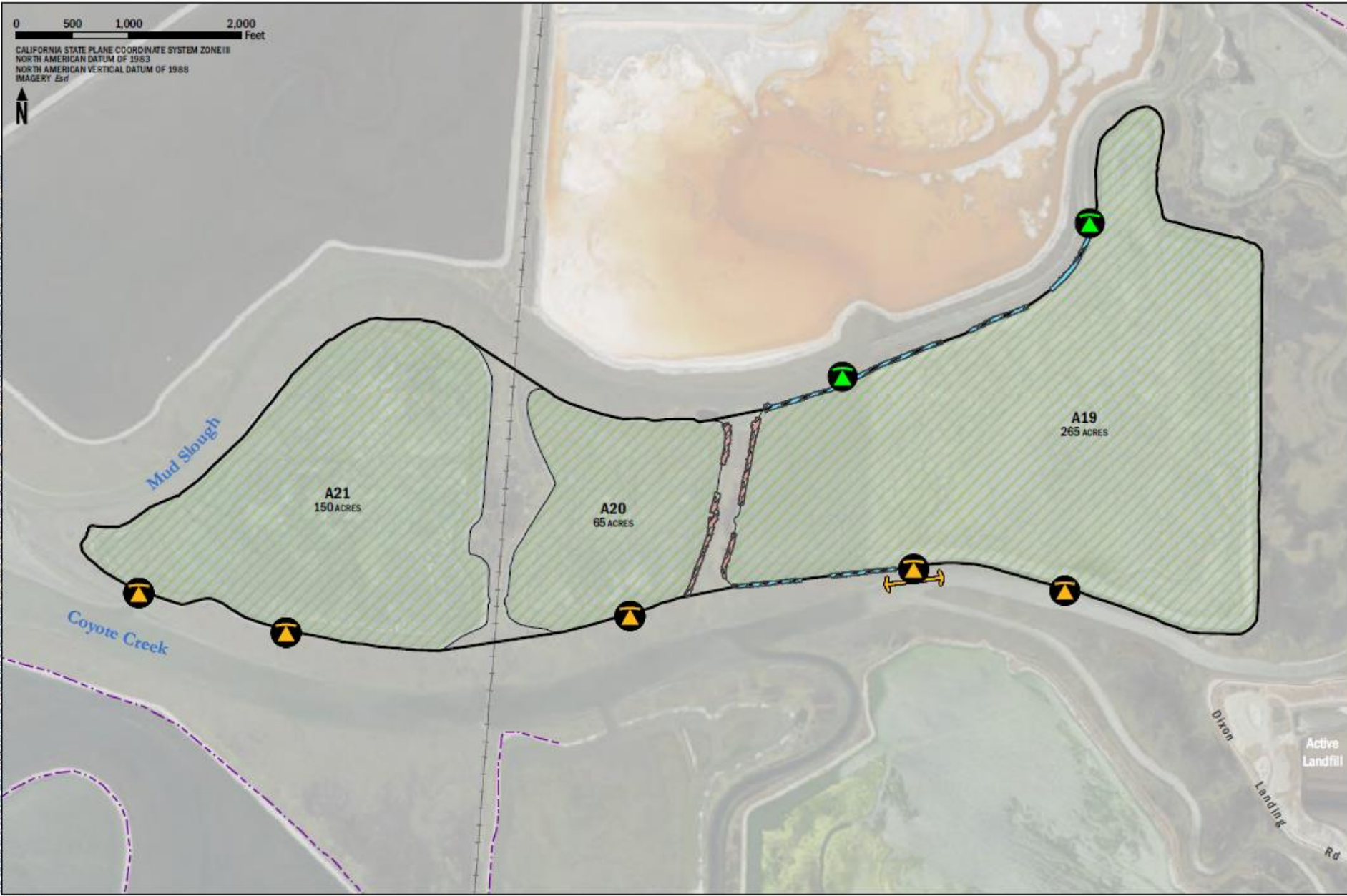
237

680










880

280

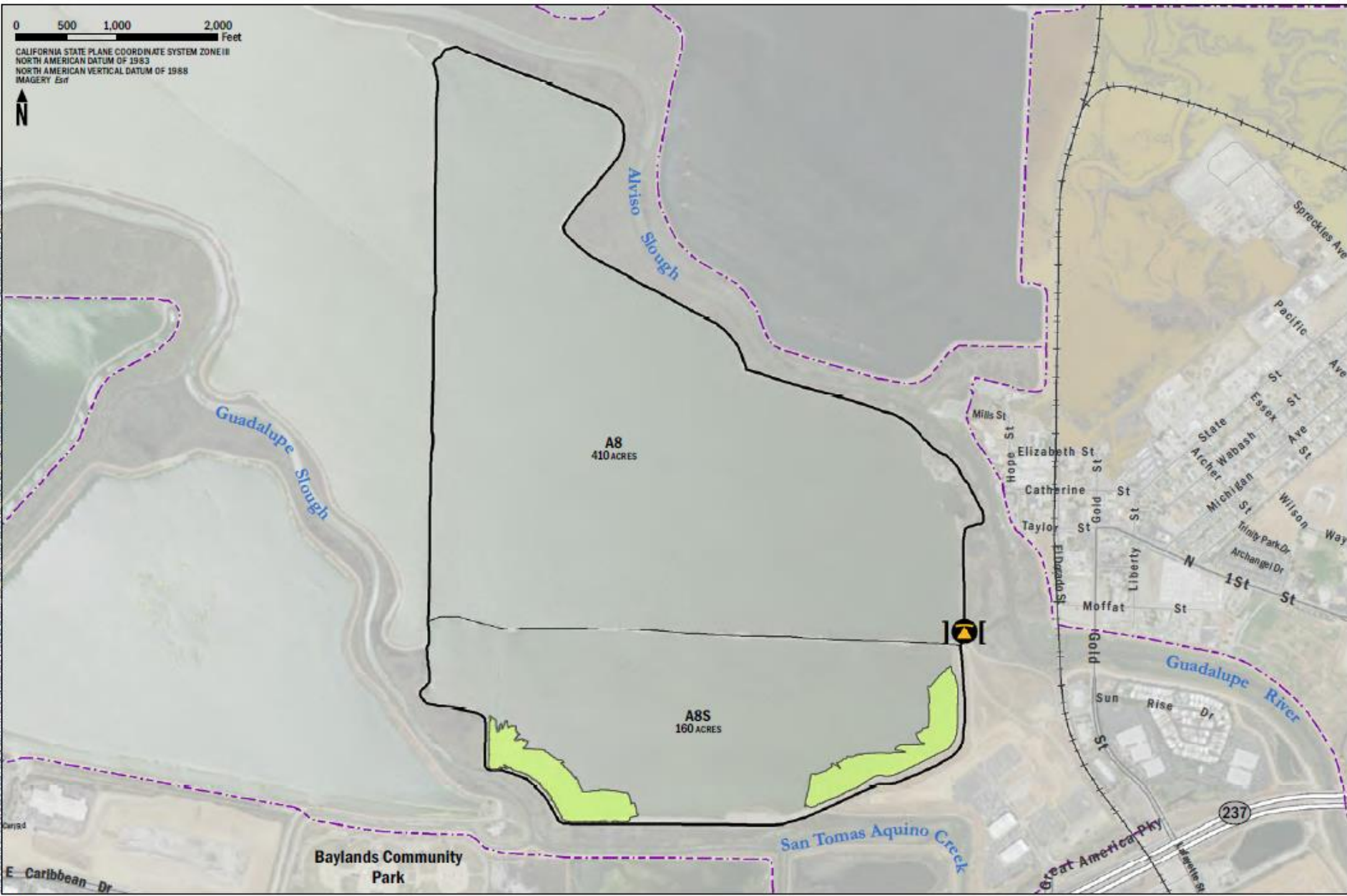
Island Ponds Preferred Alternative








LEGEND

- | | | | | | | |
|---|---|--|--|---|---|---|
|  Proposed breach |  Existing breach |  Expand existing breach |  Railroad |  Removed levee |  Lowered levee |  Tidal marsh |
| |  Existing trail | | | | |  Pond boundary |

Alviso Pond A8 Preferred Alternative



LEGEND

-  Existing reversible armored notch
-  Railroad
-  Existing trail
-  Pond boundary
-  Habitat Transition Zone

Mountain View Preferred Alternative



Charleston Slough

Shoreline Lake

© 2011 Google

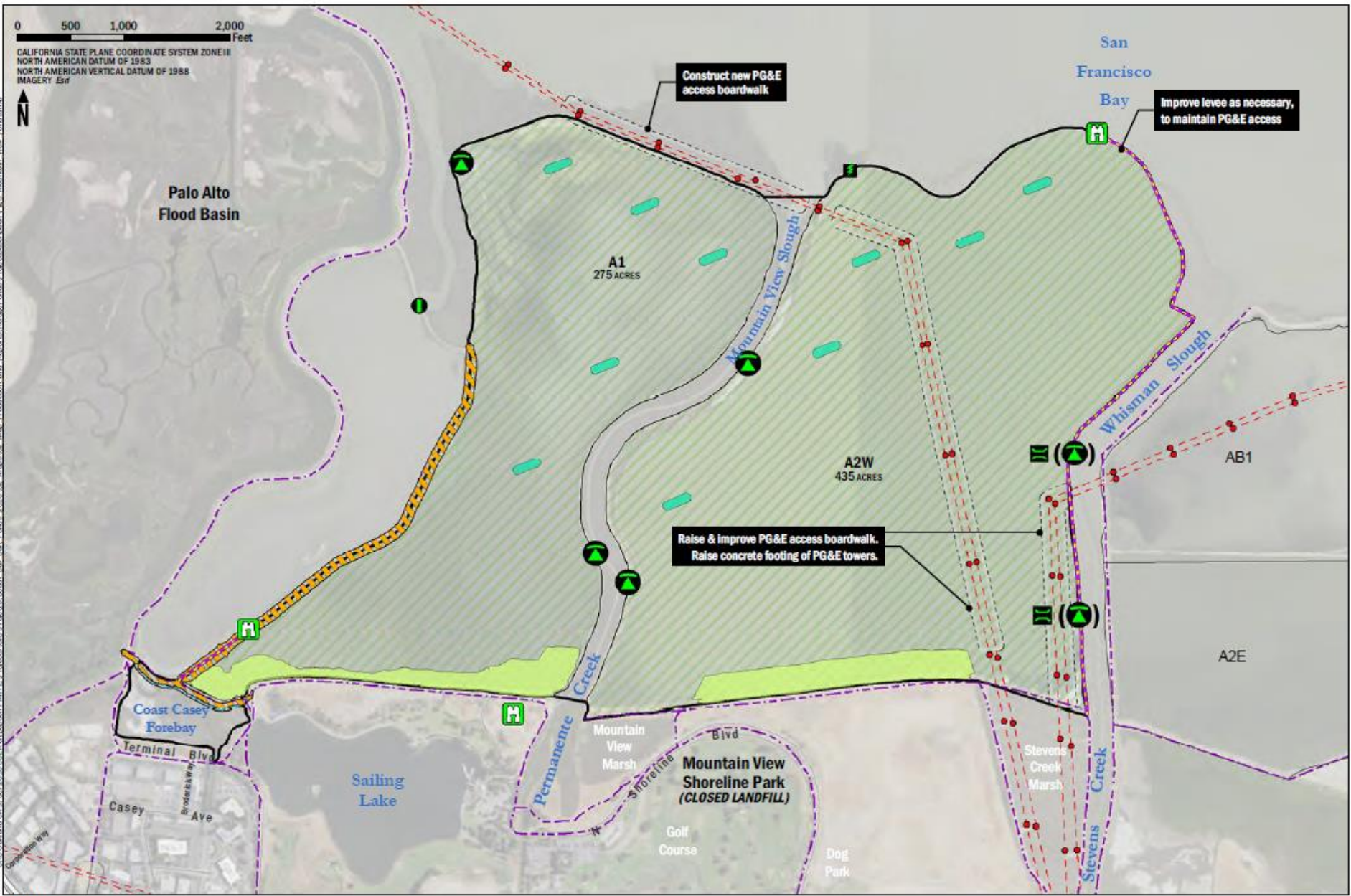
© 2011 Europa Technologies
Image © 2011 TerraMetrics

Google

Image Date: 6/19/2011 1948

37°26'33.86" N 122°04'47.27" W elev 0 m

Eye al



LEGEND

- | | | | | | |
|-----------------------|-------------------------------------|------------------|-----------------|-------------------|-------------------------|
| Existing control gate | Proposed armored breach (two sides) | PG&E turnaround | PG&E tower | Tidal marsh | Habitat Transition Zone |
| Proposed breach | Bridge | Viewing platform | PG&E power line | Levee Improvement | Habitat Island |
| | | | Phase 2 trail | Levee Lowering | Pond Boundary |
| | | | Existing trail | | |

Retain Existing Public Access



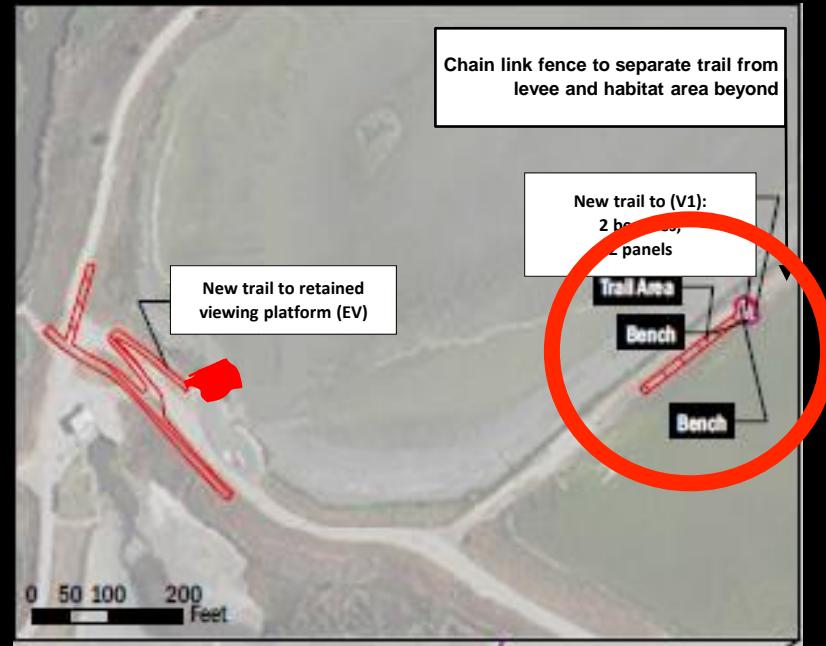
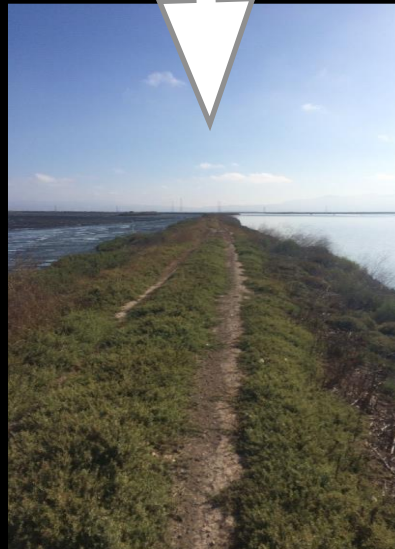
New ramp to be built to existing platform



New Public Access 1



Existing Views

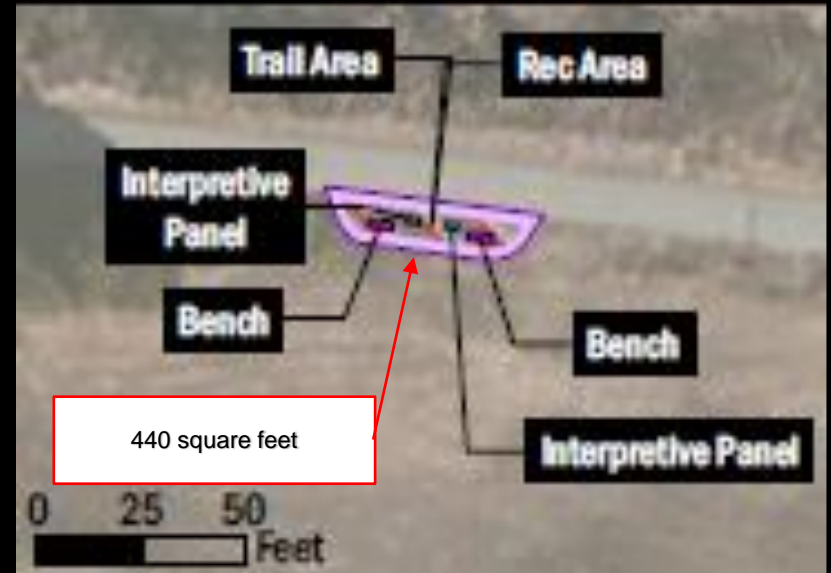


Visual Simulation of V1 & Trail

Between Refuge Pond A1 and MV-owned Charleston Slough



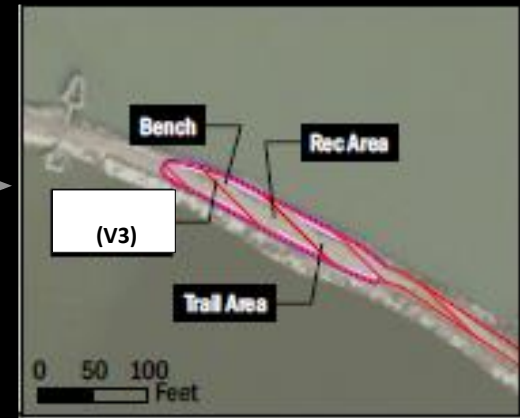
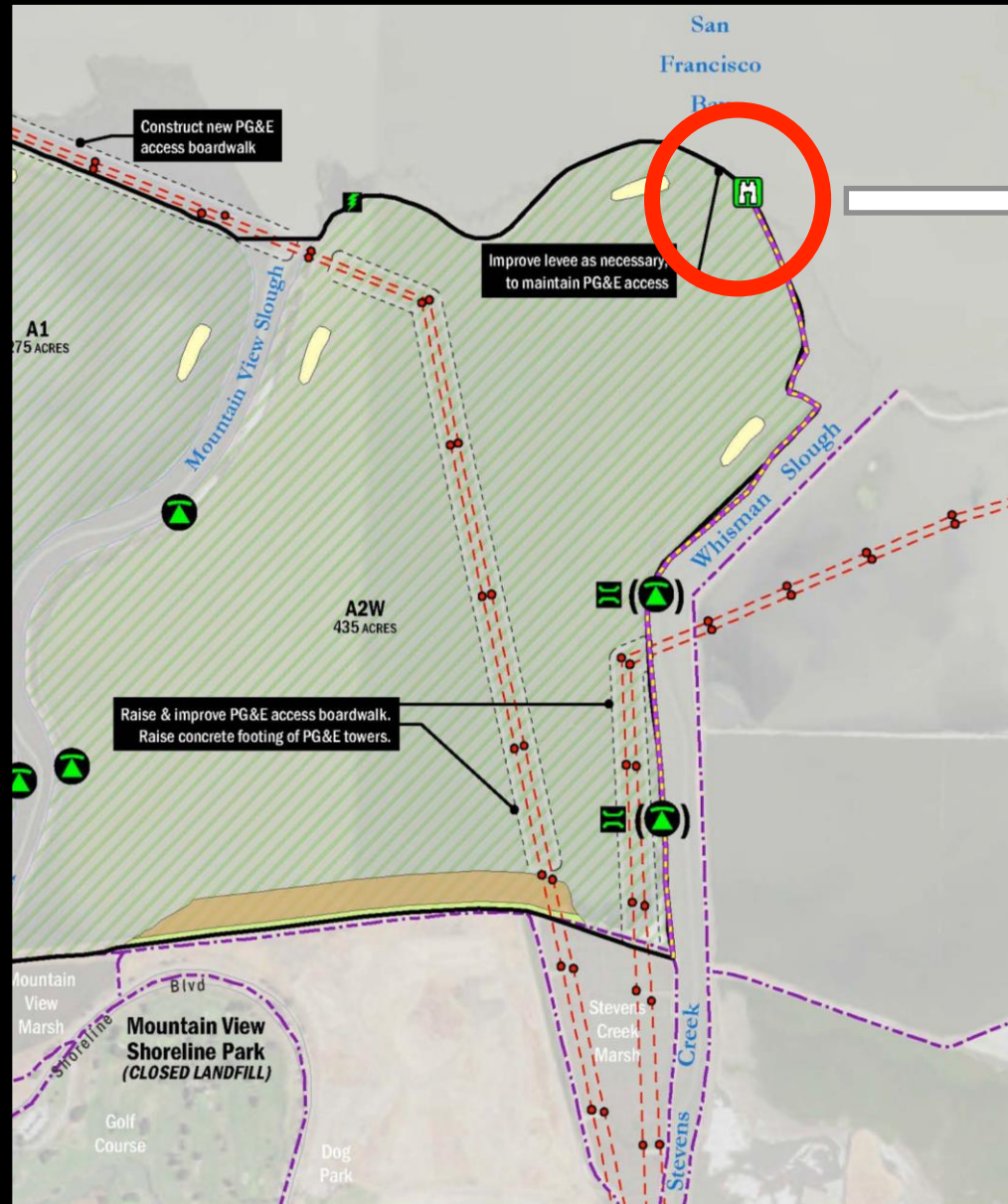
New Public Access 2



Existing
Views



New Public Access 3



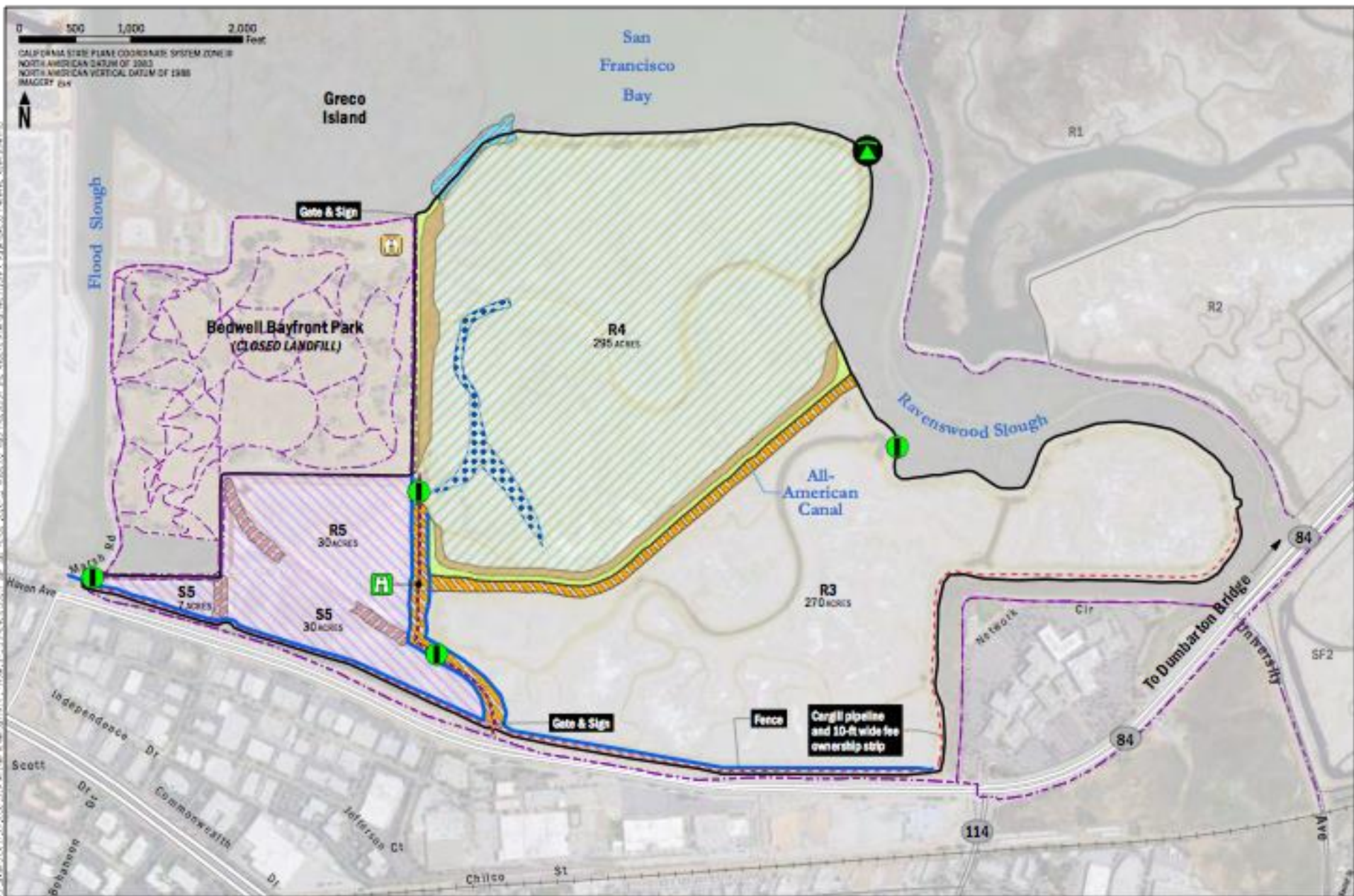
Existing Views



Mountain View Designs: Questions and Comments?

Ravenswood Preferred Alternative

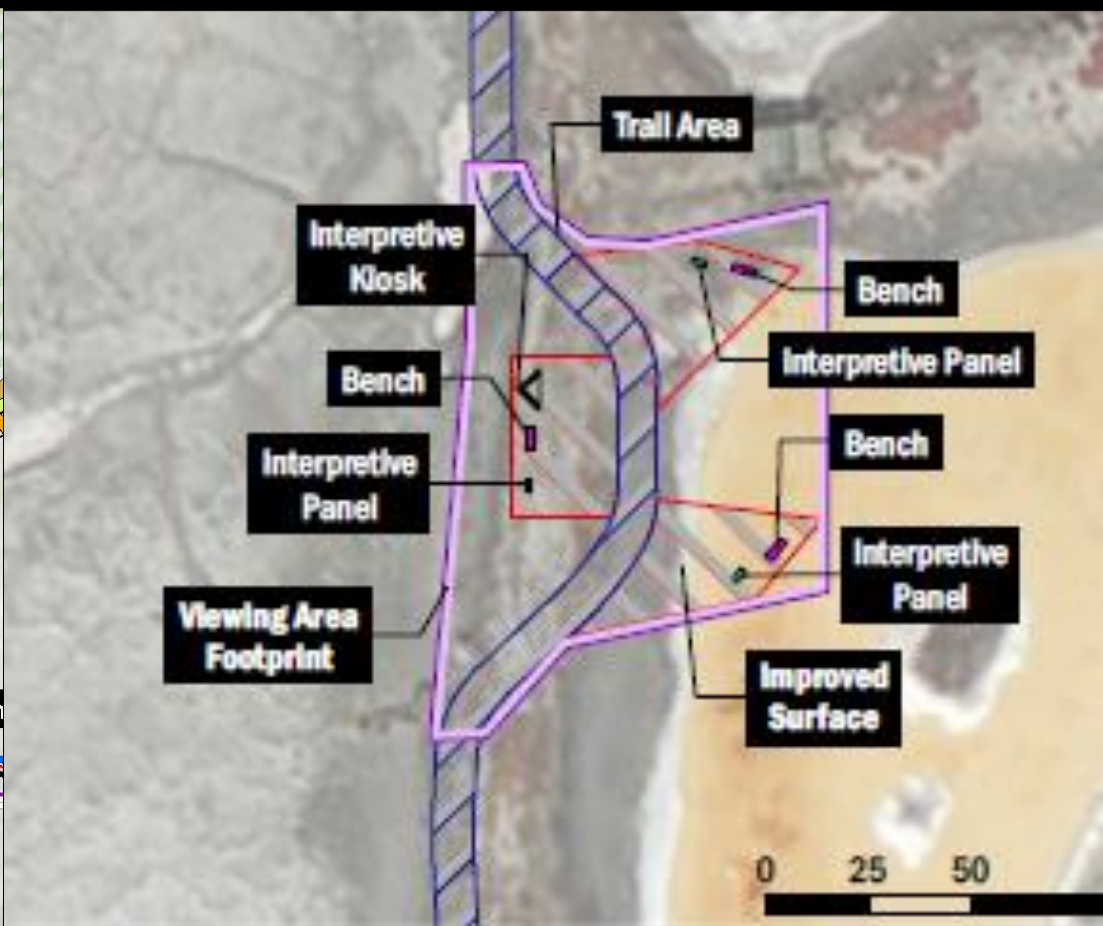
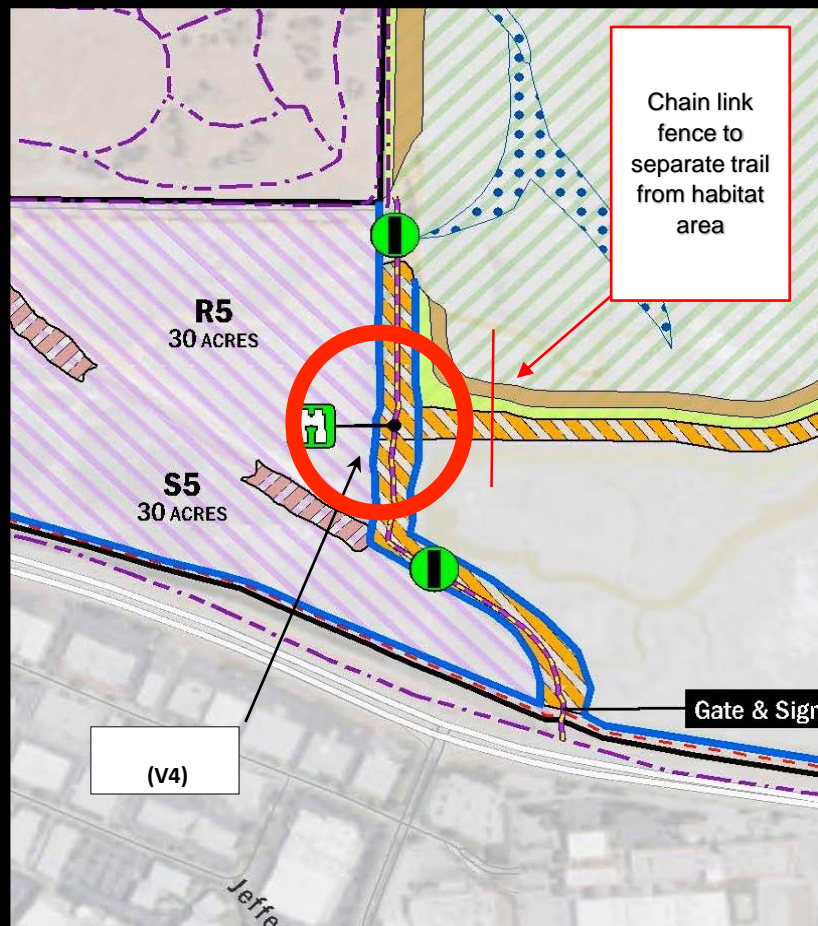




Existing Conditions

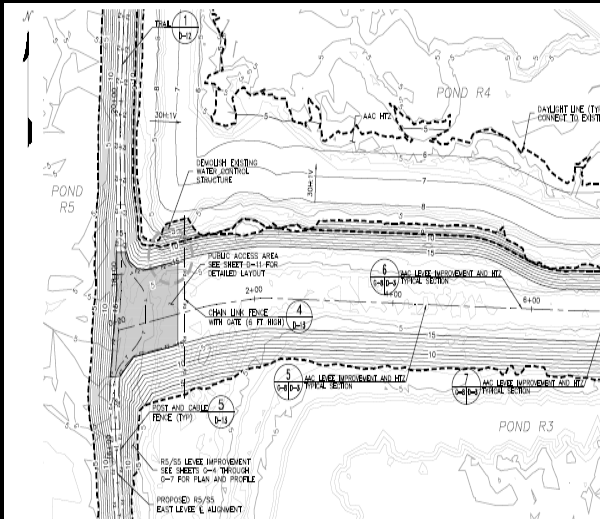


New Public Access



Three red outlined areas above sum to 9,960 square feet.
Each faces a different restoring habitat.
Will be elevated several feet above surrounding areas.

Views Into Three Habitats



Dry salt panne in Pond R3

Tidal marsh in Pond R4

Managed ponds in Ponds R5/S5



Photos of Similar Features

Examples of Signage and Information Panels from Bedwell Bayfront Park and Shoreline Park



Phase 1 Recreation and Public Access Features



Examples: Phase 1 Gates & Fencing



Ravenswood Designs: Questions and Comments?

Project Approach to Upland Transition Habitat

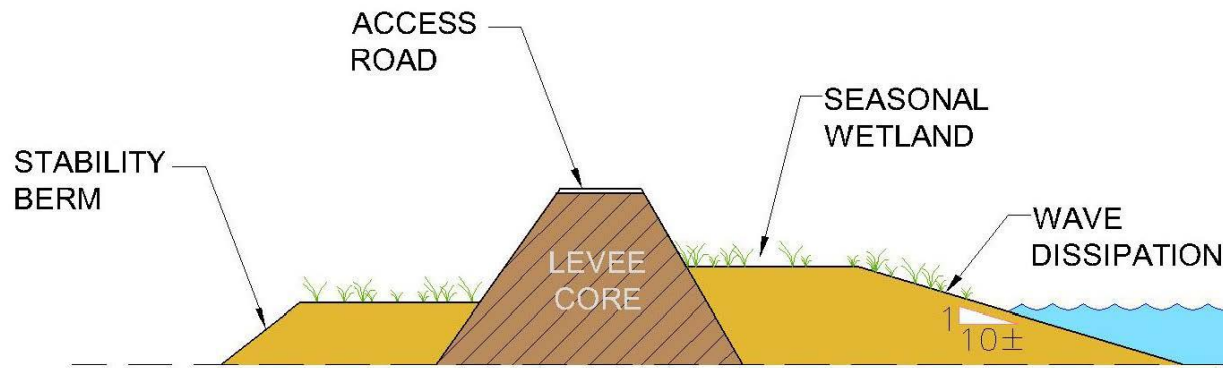
Inner Bair



Sonoma Creek



Petaluma Marsh Habitat Levee

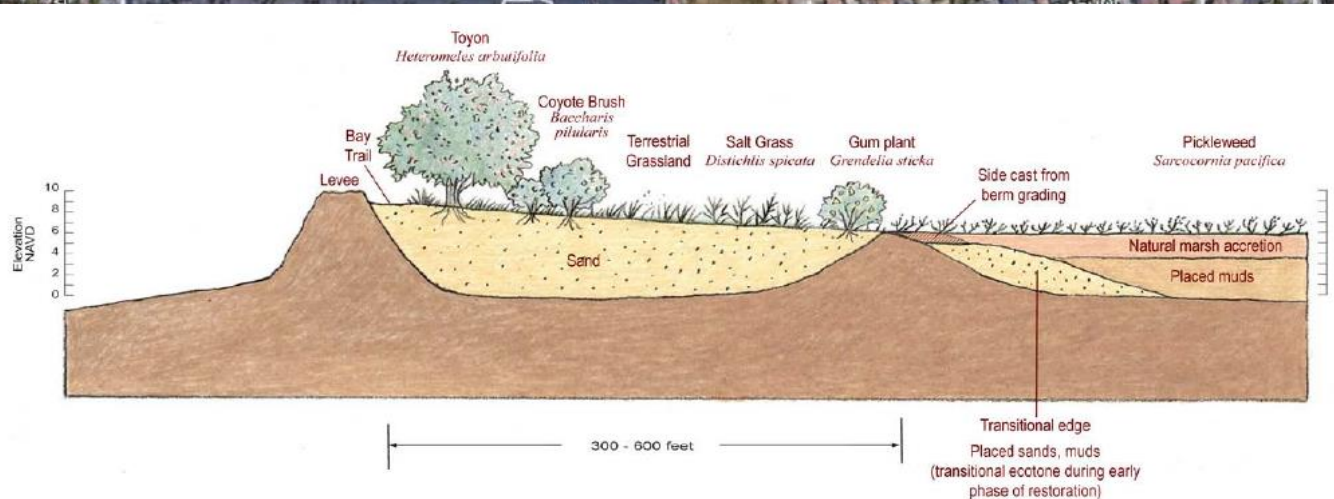


- Onsite Borrow
- Habitat Berm
 - Stability, habitat, wave dissipation
 - Acidic soils impacted vegetation



Hamilton Wildlife Corridor

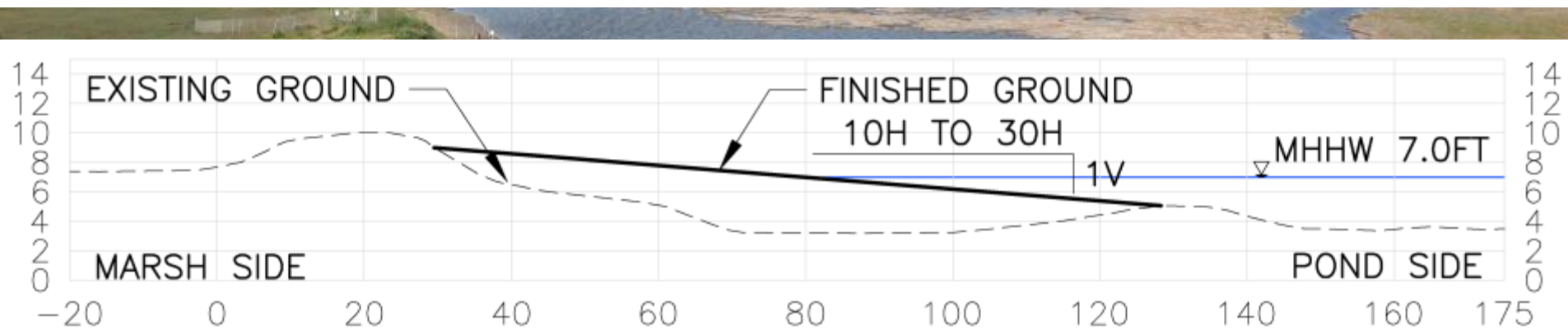
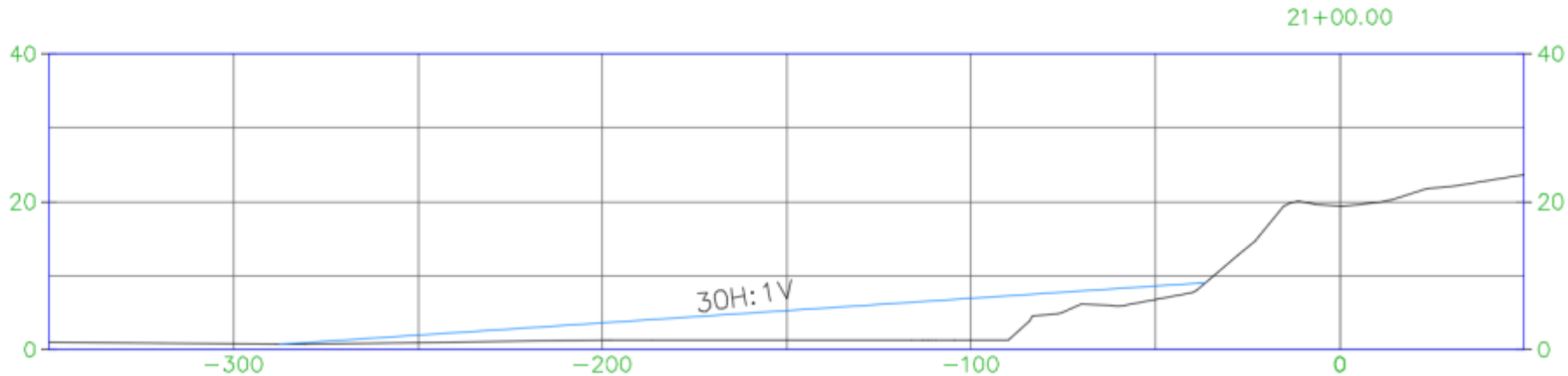
- Limited Sea Level Rise
- Temporary Berms for Construction
- Shaping to create complex shoreline & ponds/pannes



Our Standard Design Criteria

- 30H:1V slopes
 - Or steeper, based on material availability
- Top 9 feet elevation NAVD88
 - Above estimated MHHW
- Planar surface; not concave or convex
- BCDC: meet goal while minimizing fill in Waters
- RWQCB: maximize habitat benefits to be consistent with Basin Plan

Our Typical Designs



Slope Experiment

- Vary slope around 30:1 average to inform
 - Vegetation success
 - Wildlife use
 - Erosion / scour
- Implementing at Mountain View
 - One HTZ entirely at 30:1
 - Another will vary from 10:1 to 40:1 in sections
 - Agencies supportive of experiment

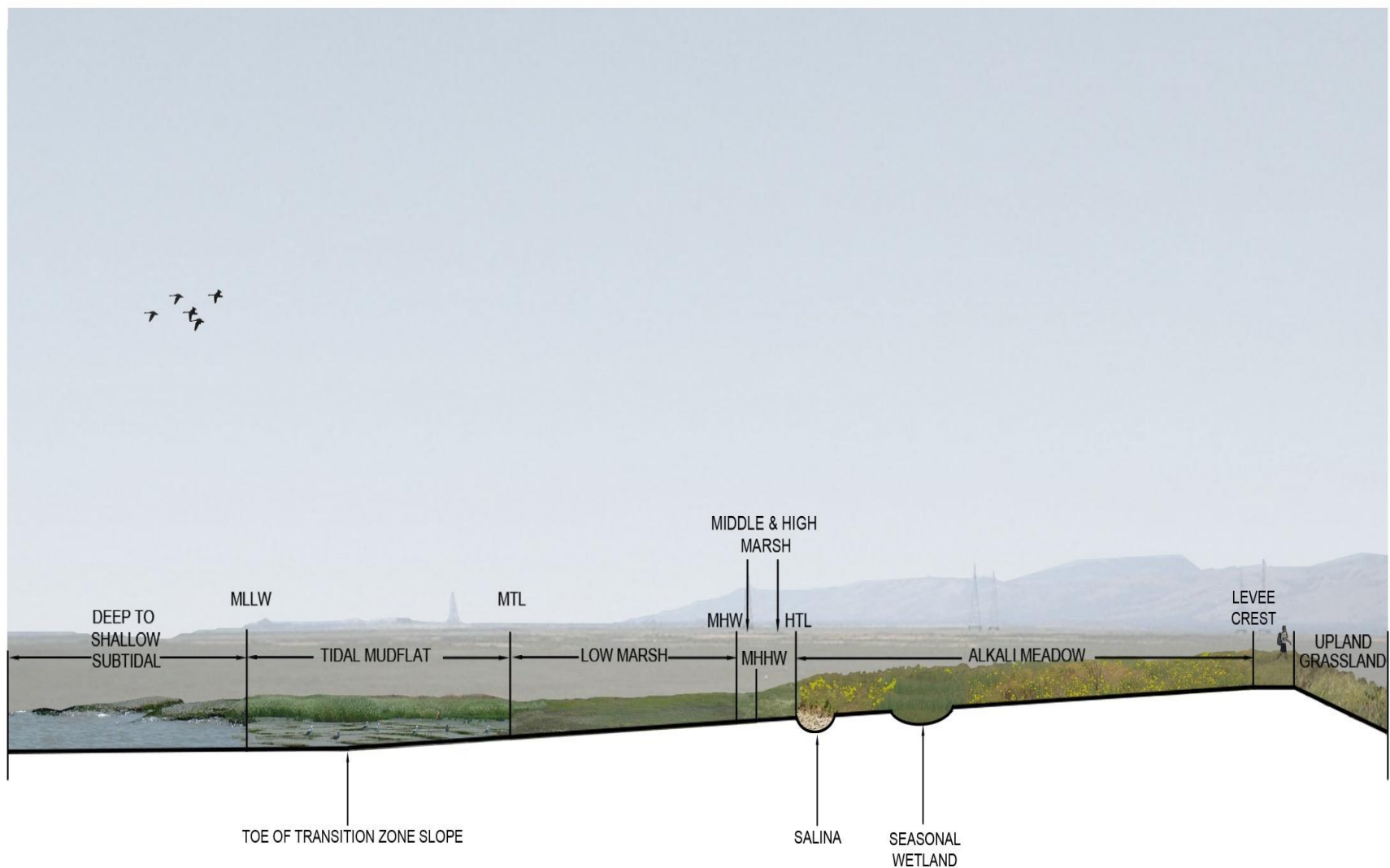
Slope Experiment

SKETCH OF MOUNTAIN VIEW POND A1 HTZ WITH VARYING SLOPES
(10H:1V, 12H:1V, 20H:1V, 30H:1V, 40H:1V, AND TRANSITIONS)



Slope Experiment





Questions and Comments?

Dirt and Truck Traffic Plans

Alviso Dirt Trucking



IMPORTANT NOTICE



SANTA CLARA
COUNTY PARKS

Temporary Trail Closure: August - November 2017

— This segment of the Alviso Slough Trail will be intermittently CLOSED for levee improvements Monday – Friday from 7:30 am until 5:00 pm.

If no safety (orange) fencing is present, trail is open.

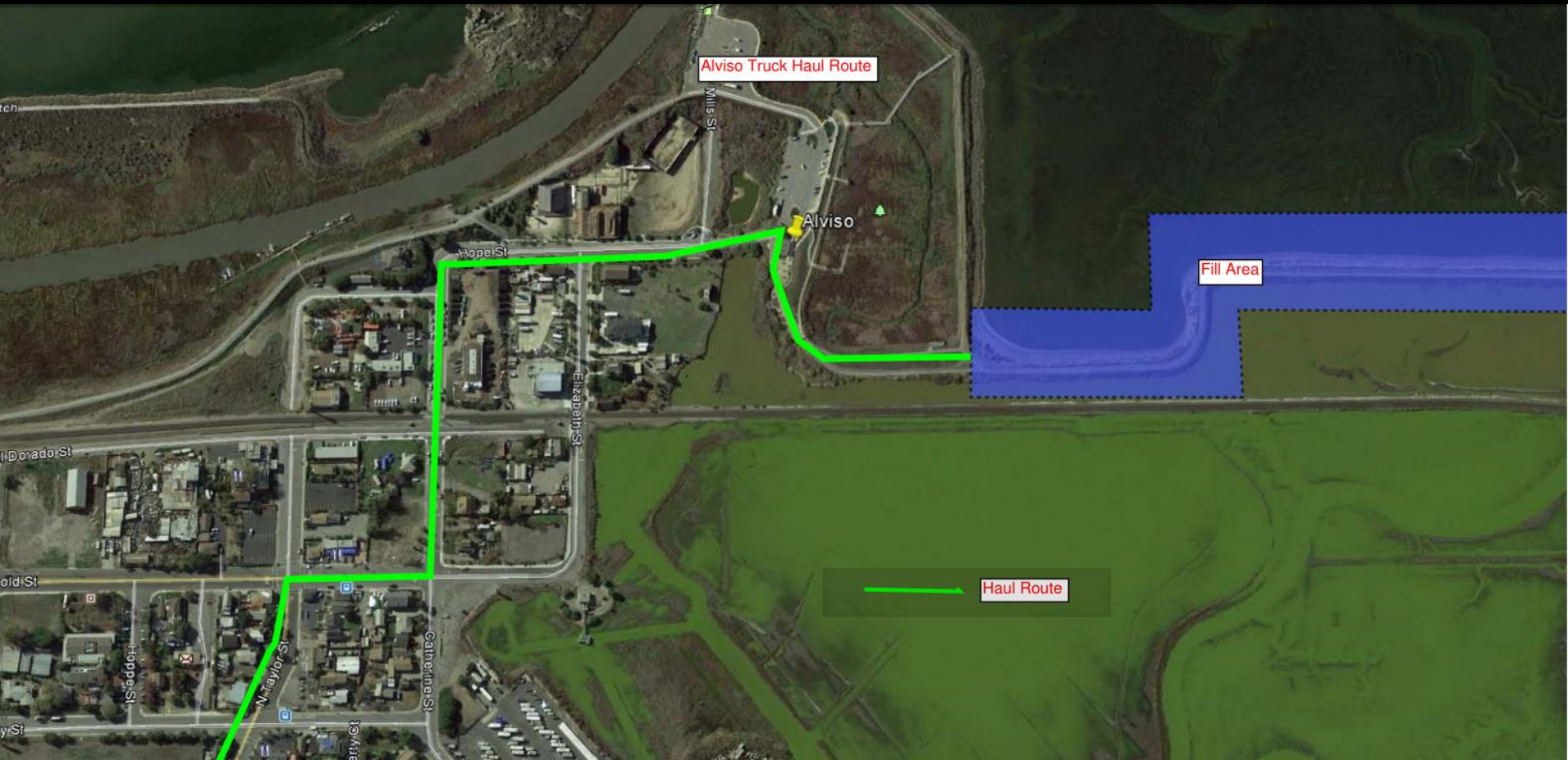
If you have questions, please contact:
Jared Underwood, Refuge Manager
Don Edwards San Francisco Bay
National Wildlife Refuge
510-792-0222 (ext. 125)



Alviso Dirt Trucking – Haul Route

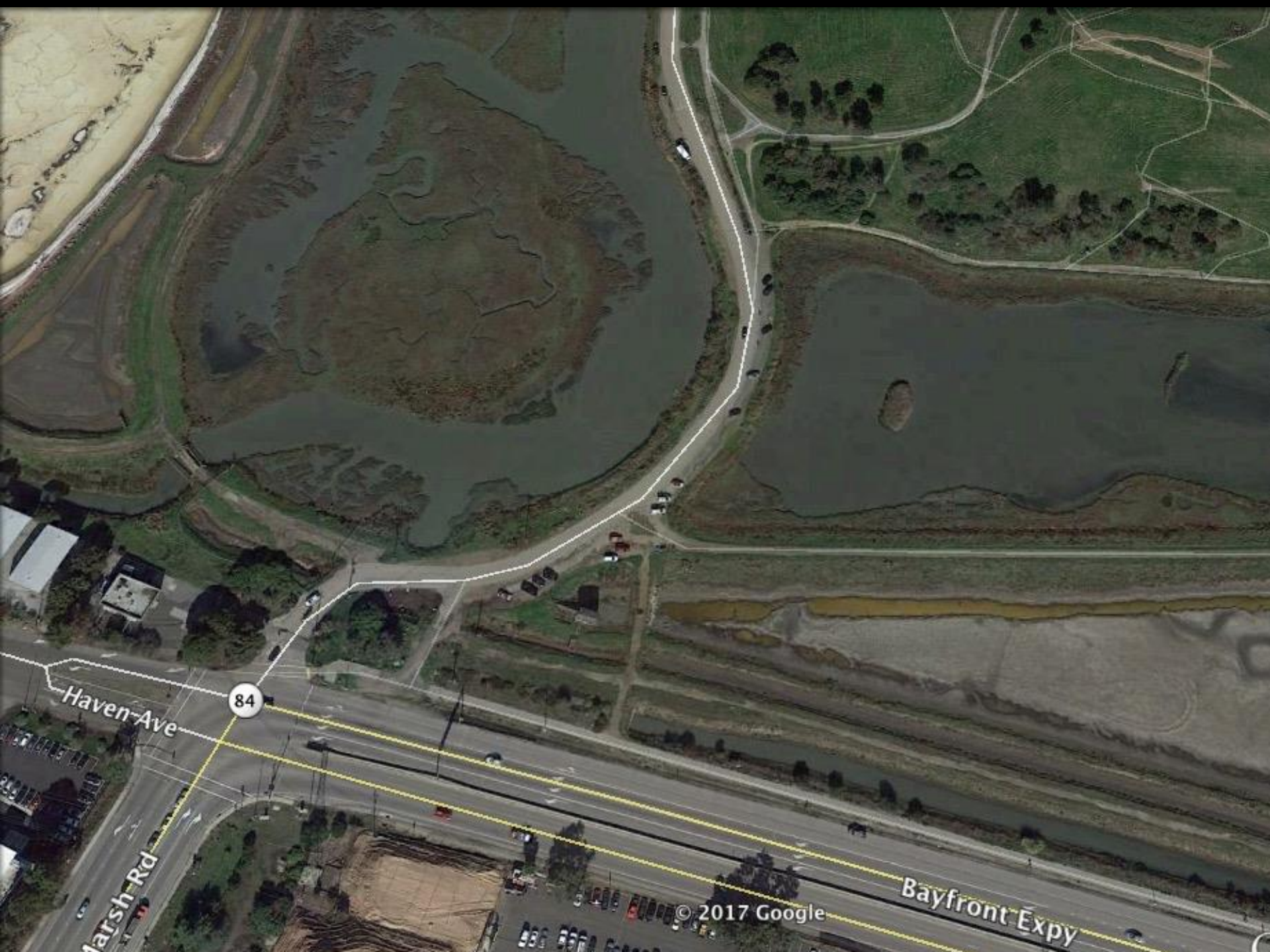


Alviso Dirt Trucking – Haul Route



Ravenswood Dirt Hauling





Haven Ave

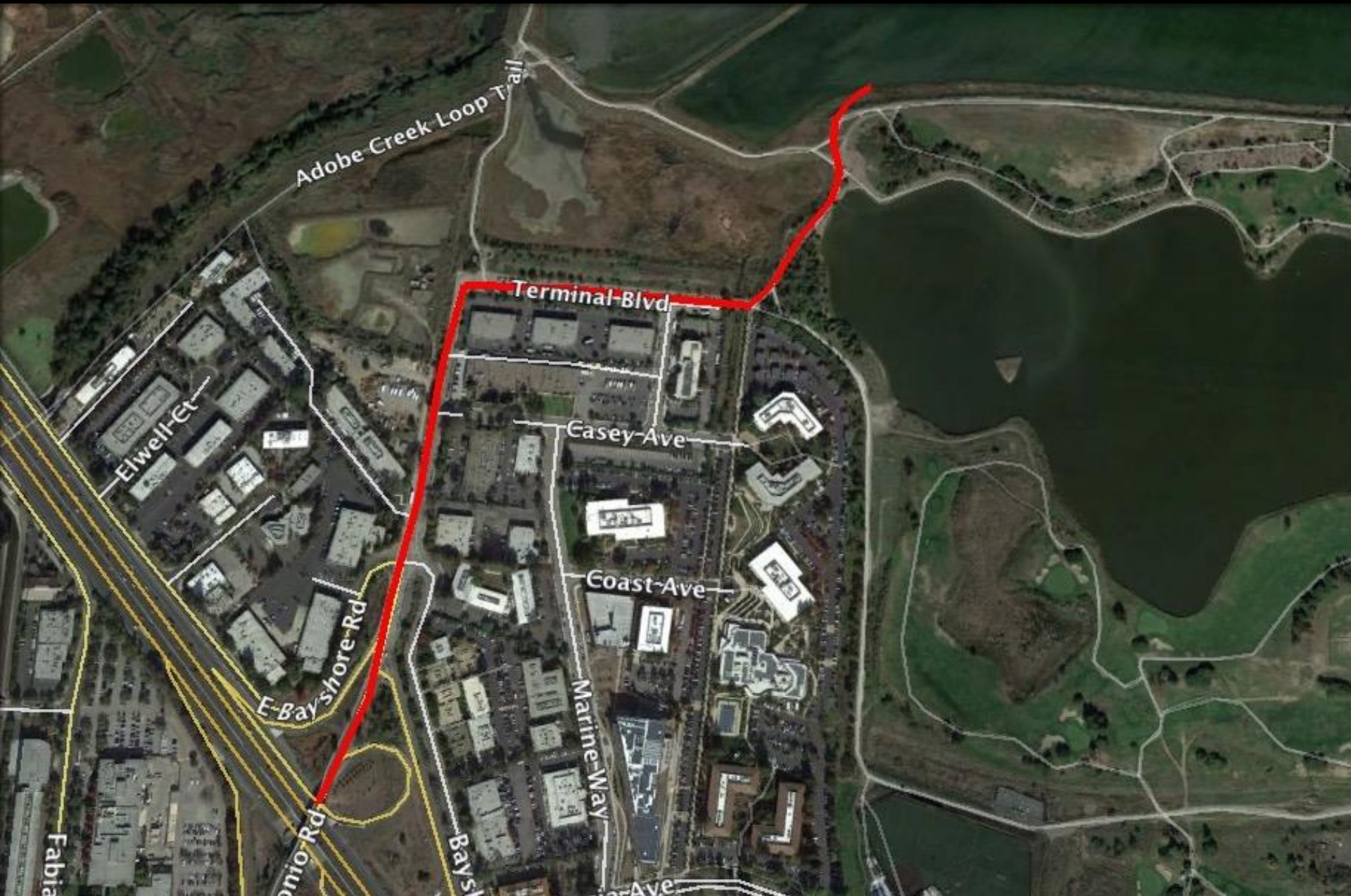
84

Marsh Rd

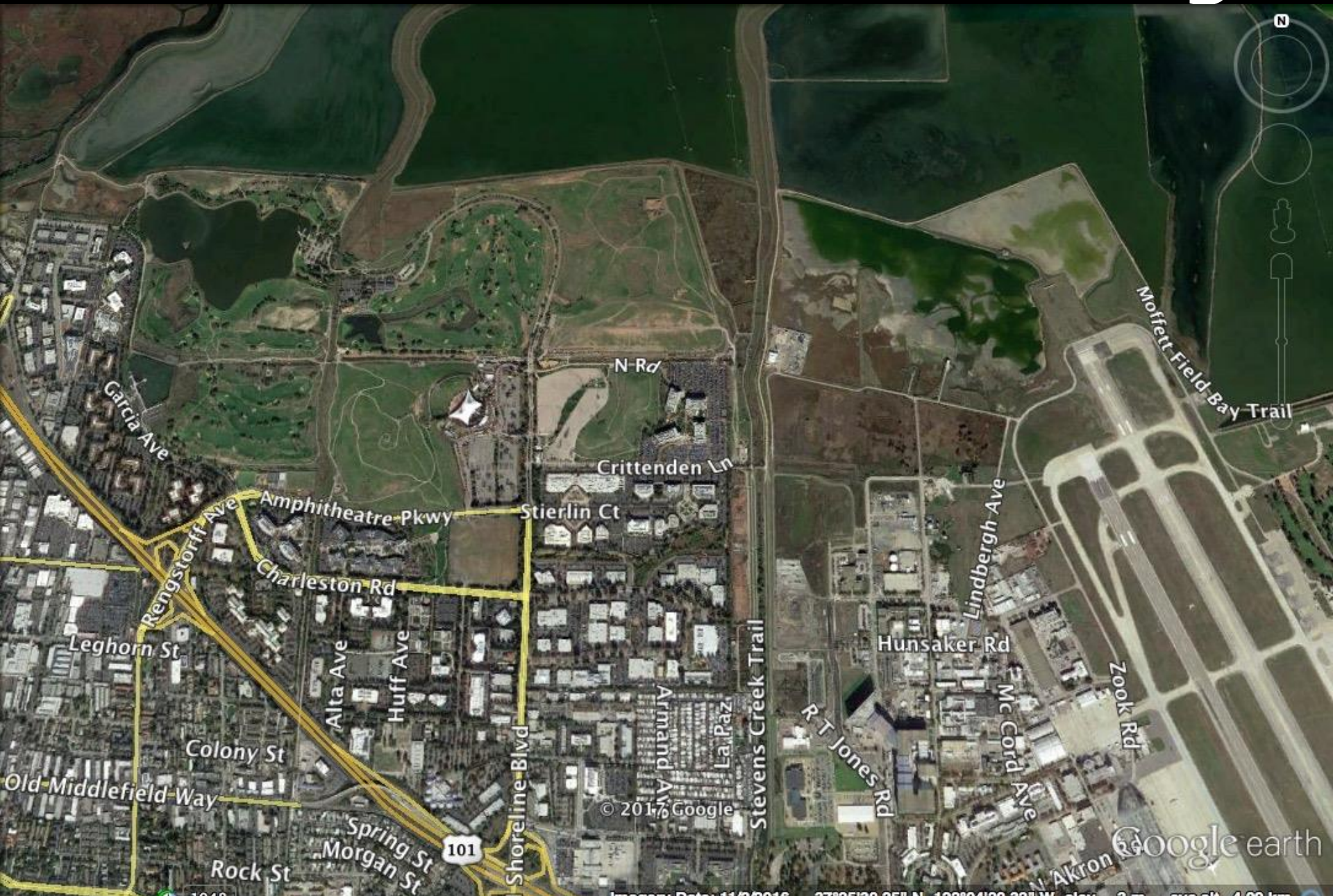
© 2017 Google

Bayfront Expy

Mountain View Dirt Hauling



Mountain View Dirt Hauling



Questions and Comments?

Break



Resilient by Design Bay Area Challenge Update

South Bay Salt Pond Restoration Stakeholder Forum & Working Groups Meeting
August 15, 2017

#ResilientbyDesign

Designing for Resilience

RESILIENT
BAY AREA CHALLENGE BY
DESIGN



#ResilientbyDesign

Bay Area Challenge

Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	2018	Feb	Mar	Apr	May
Challenge Launch			Research Phase			Design Phase						
May 31			September 1			December 1						
RFQ released			Collaborative Research			Collaborative Design Phase						

#ResilientbyDesign

To stay updated, sign up at
resilientbayarea.org

RESILIENT
BAY AREA CHALLENGE BY
DESIGN

#ResilientbyDesign

Measure AA Update:

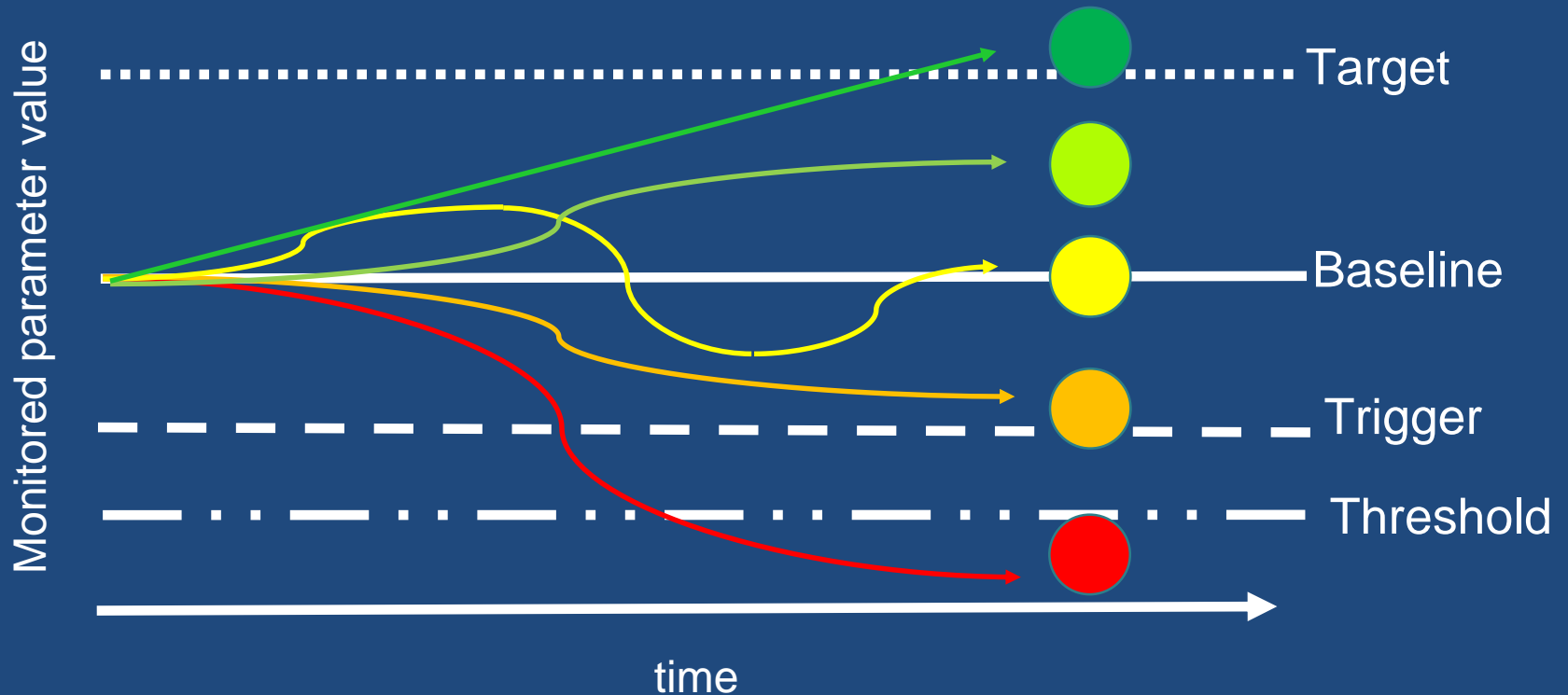
Matt Gerhart, State Coastal Conservancy

Science Update




Lynne Trulio

Interim Lead Scientist

Expanded stoplight and triggers/targets



Sediment and Marshes

Scientific Question	Score
Is current vegetated marsh maintained or increased? Is marsh vegetation establishment trending toward reference marsh quality?	
Will sediment accretion rate in restored tidal areas be adequate to create and support emergent tidal habitat ecosystems within the projected 50-year timeframe?	
Will sediment movement into restored tidal areas significantly decrease mudflat habitat?	



- ✦ Sediment supply fluctuates, but marshes have built quickly in newly-opened ponds
- ✦ Caveat: Sediment supply changes & sea level rise may affect future marsh creation



Rails, Mice, Fish & Seals

Scientific Questions	Score
Do tidal marsh habitat for Ridgway's rails and numbers of birds within the Project area meet recovery plan criteria?	<input checked="" type="radio"/>
Do tidal marsh habitat for salt marsh harvest mice and numbers of mice within the Project area meet recovery plan criteria?	<input checked="" type="radio"/>
Have the number of native adult and juvenile fish increased in estuarine rearing and foraging habitats?	<input checked="" type="radio"/>
To what extent will increased tidal habitats increase survival, growth and reproduction of harbor seals?	<input checked="" type="radio"/>



- † SMHM & Breeding Ridgeway's Rails at the Island Ponds
- † Native fish abound in new tidal marshes
- † Harbor seal numbers holding
- † Caveats: Migrating salmonids trapped in managed ponds? Removing invasive *Spartina* affected rail numbers, but native *Spartina* restoration is underway


Mercury and Species

Scientific Questions	Score
Will pond management increase methylmercury levels in sentinel species and ponds during/immediately after construction?	
Will pond management or tidal marsh restoration increase methylmercury levels in sentinel species and habitats post-construction?	

- ⊕ Studies at A8 showed an increase in MeHg levels in terns and fish after construction, but levels decreased over time
- ⊕ Caveat: Overall MeHg levels in eggs of nesting birds, esp. terns, is a concern



Migratory Waterbirds



Scientific Questions	Score
<ul style="list-style-type: none">• Are the numbers of diving ducks, ruddy ducks, and foraging and roosting habitat for migratory shorebirds maintained?• Will reconfigured and managed ponds significantly increase the prey base for, and pond use by waterbirds?	

- ✚ Migratory bird numbers doubled from 2002 to 2014
- ✚ Caveat: Conversion to tidal marsh will substantially reduce pond habitat for migratory birds in Phase 2





Nesting Birds


Scientific Questions	Score
To what extent will the creation of large isolated pond islands maintain numbers and reproductive success of terns, avocet and stilts ?	
<ul style="list-style-type: none"> • Will California gulls adversely affect nesting birds in managed ponds? • Is the number of California least terns maintained? 	

- ✚ Nesting birds lost islands to tidal marsh & did not use islands created for them
- ✚ Social attraction successful for some species (CATE)
- ✚ Caveat: Gulls & corvids are serious predators; MeHg a concern



Hot off the Press: Nesting California Least Terns at Eden Landing!

Snowy Plovers

Scientific Questions	Score
Will managed ponds provide breeding habitat to support sustainable densities of snowy plovers ?	

- ✚ Breeding bird numbers seem to be increasing
- ✚ Caveat: Conversion to tidal marsh will reduce plover breeding habitat in Phase 2; Predators remain a concern



Photo credit: Jenny Erbes



Photo credit: Karine Tokatlian

Public Access

Scientific Questions	Score
Will trails significantly affect birds or other target species, short-term or long-term?	●
Will new trails and other access provide the recreation and experiences the public wants in the short or long term?	●



- ✚ Wintering shorebirds tolerant of trail use; Waterfowl much less so - stayed 200m from trail users
- ✚ Public happy with trails – recommend more signs, restrooms and connections with trails
- ✚ Caveat: Studies of boating impacts on wildlife needed

In Process: Proposed Phase 2 Science

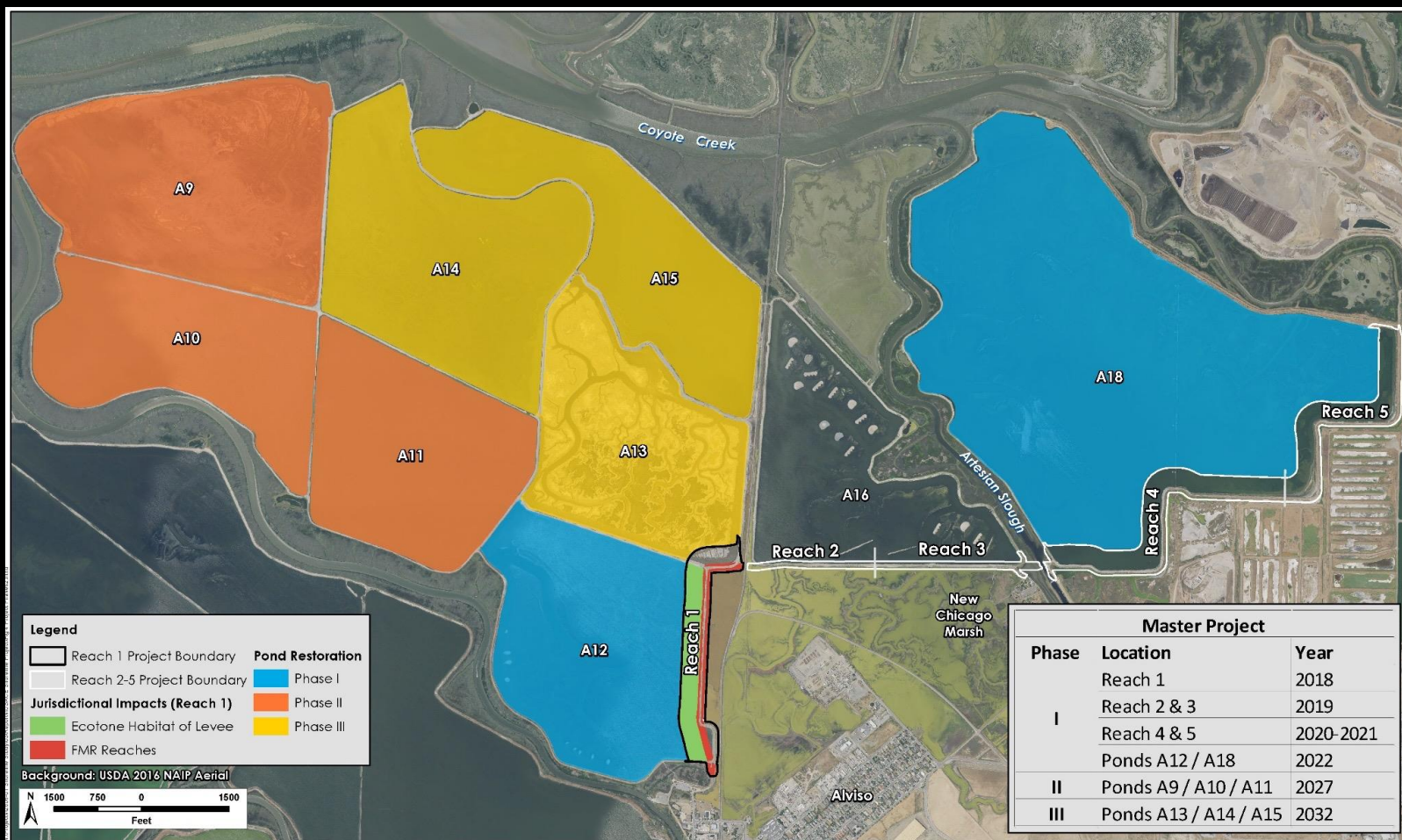
- † Integrated Study approach to monitor multiple restoration targets
- † Climate change and sea level rise foci
- † Invasive species management (esp, gulls & corvids)
- † Nesting bird research –
avocets, stilts, terns, plovers

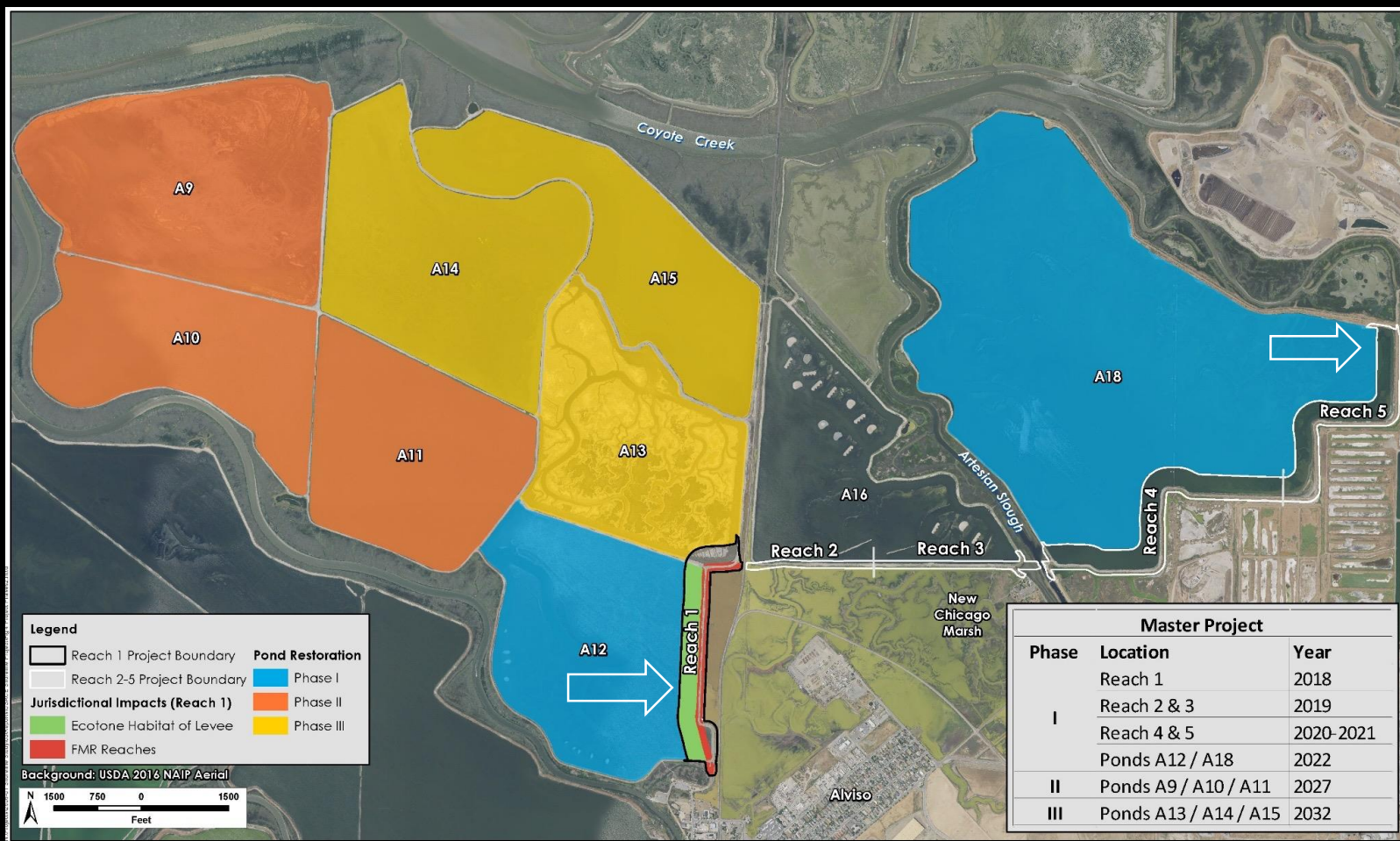


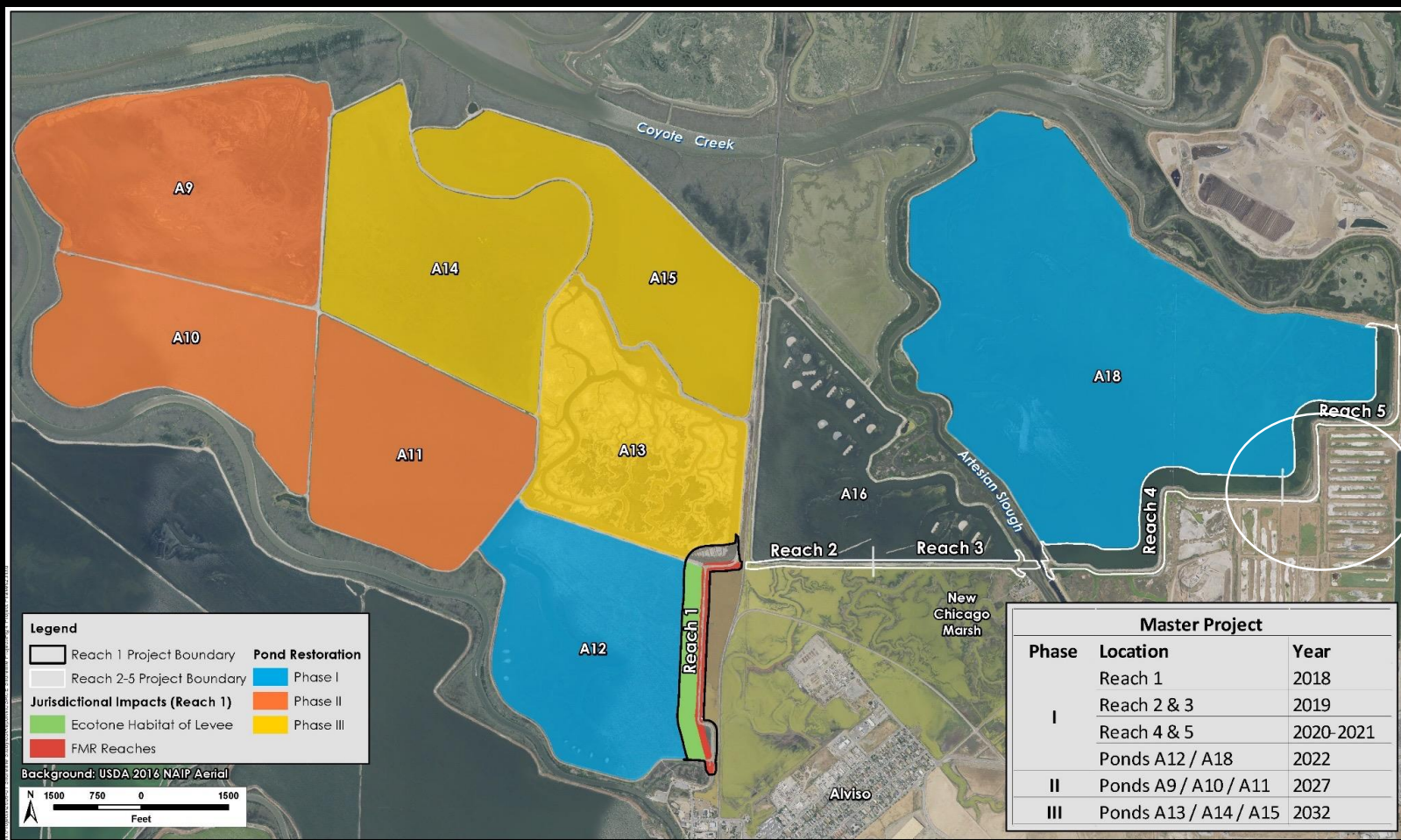
Shoreline Study Update

Brenda Buxton
Coastal Conservancy









Questions?

Summary, Action Items, Looking Forward

Next Steps

- Draft environmental document for Phase 2 Eden Landing: [Fall 2017](#)
- Phase 2 Alviso/Ravenswood Construction Kick-off Event: [Early 2018](#)
- New Project website: [Spring 2018](#)
- Measure AA RFP: [Fall 2017](#)
- Resilient By Design Participation?

**Thank You
For your Interest &
Participation!**



John Bourgeois

California Coastal Conservancy

John.Bourgeois@scc.ca.gov or [408/314-8859](tel:4083148859)

Jared Underwood

Don Edwards San Francisco Bay National Wildlife Refuge

jared_underwood@fws.gov or [510/792-0222](tel:5107920222)

John Krause

California Department of Fish and Wildlife

John.Krause@wildlife.ca.gov or 415/250-0243

www.southbayrestoration.org or, [follow us](#) on Facebook

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Name:
South Bay Salt
Pond Restoration
Project