



South Bay Salt Pond Restoration Project

Restoring the Wild Heart of the South Bay

TODAY'S AGENDA

- Welcome and Introductions
- Project Funding, Including NOAA Stimulus Funds
- Track Our Progress: Phase 1 Actions and Applied Studies
- Mercury Studies: Implications for Short- and Long-Term Restoration
- Snowy Plovers in 2009
- South San Francisco Bay Shoreline Study Update
- Wrap Up

Restoring the Wild Heart of the South Bay

Introductions

Project Funding

Expected Project Funding

- State funds (bonds)
 - Coastal Conservancy
 - Wildlife Conservation Board
- Mitigation/penalty funds
- Local funds
- Federal appropriations

Actual Project Funding

- Federal funds
 - Appropriations
 - Grants
- Mitigation/penalty funds
- Local funds
- State funds (bonds)

Federal Funds - Appropriations

- USFWS appropriations for construction
 - \$4.9 million FY 08
 - \$4 million FY 09
- USGS appropriations for science
 - \$0.5 million FY 08
 - \$0.5 million FY 09

Federal Funds - Grants

- **NOAA-ARRA**
 - \$1.6 million – Pond A6
 - \$1.0 million – Pond A8
 - \$3.2 million – Ponds E8A/9/8X
 - \$1.6 million – Invasive Spartina Control
- **USFWS-NCWC**
 - \$1.0 million – Ponds E8A/9/8X
- **USEPA/SFEP**
 - \$0.4 million – Applied Studies

Mitigation/Penalty Funds

- \$1.1 million Caltrans Ravenswood Pier
- \$0.49 million Menlo Park Bay Account
- \$0.58 million NFWF (Leopard Shark)

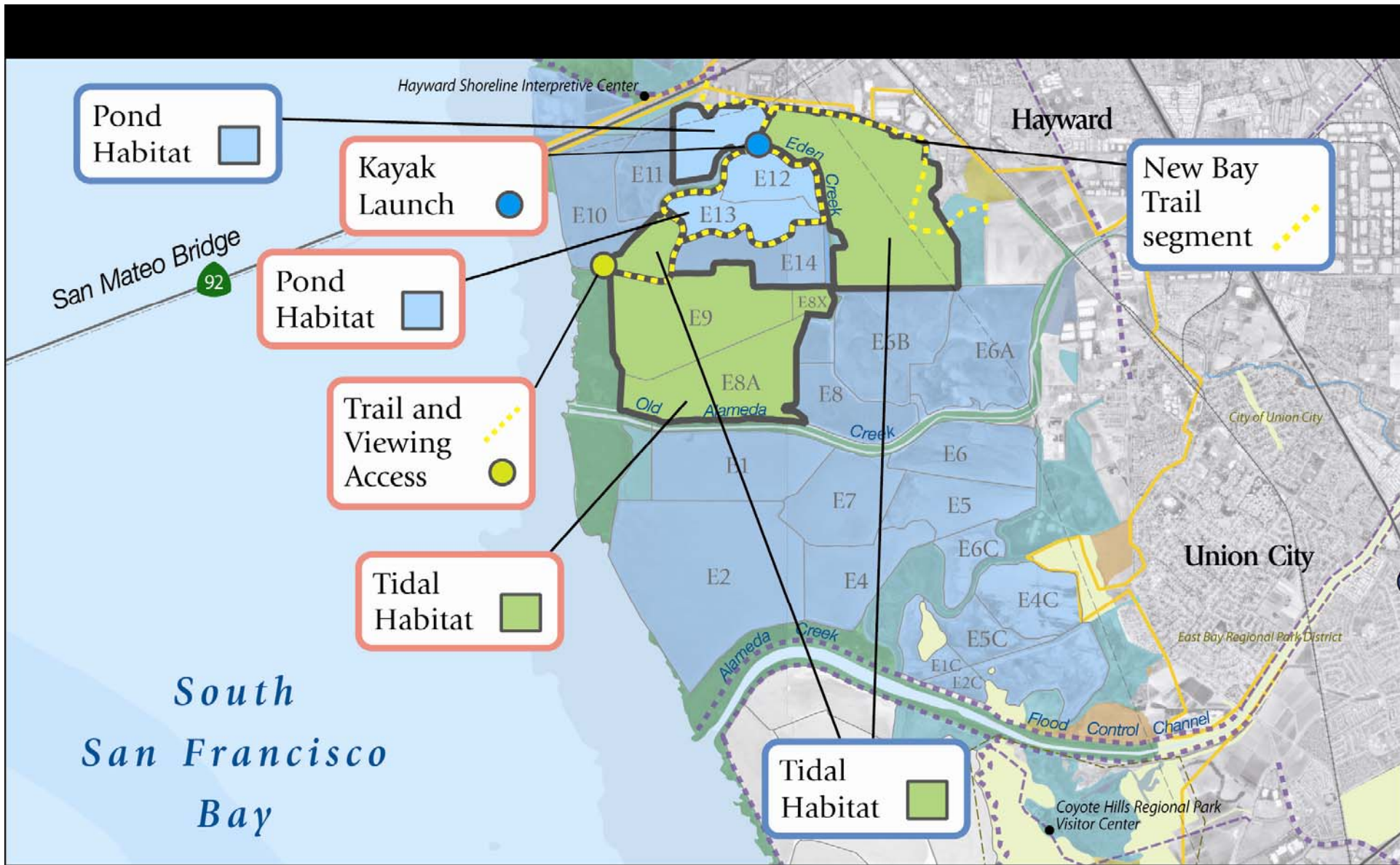
Local Funds

- Santa Clara Valley Water District
 - Pond A8
 - South Bay Shoreline Study
- Alameda County Flood Control District
 - Ponds E8A/9/8X

State Funds

- Coastal Conservancy
 - Design and public participation contracts
 - \$1.5 million – Pond SF2 => Ponds E8A/9/8X
 - \$0.75 million – Applied Studies now
 - \$0.75 million – Applied Studies future
- Wildlife Conservation Board
 - \$10 million – Restoration future

**Track Our Progress:
Phase 1 Actions
and
Applied Studies**



Initial Restoration Actions

South Bay Salt Pond Restoration Project—Eden Landing Area

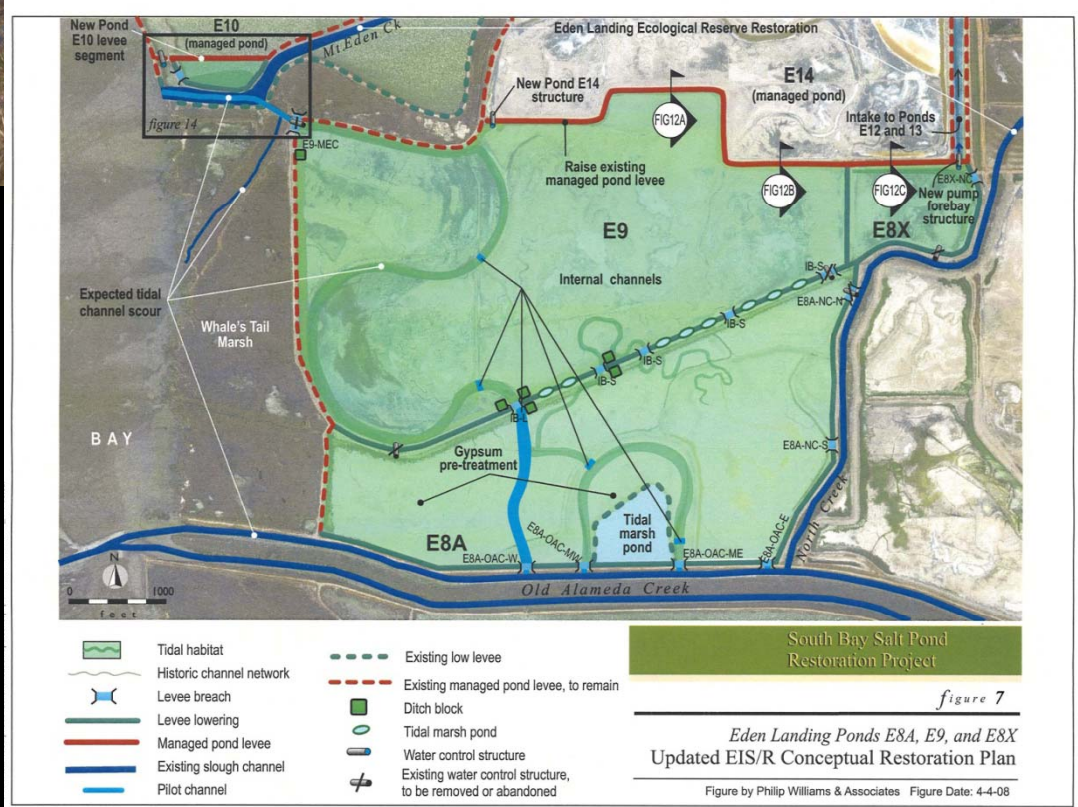
2006 - 08

Proposed Phase 1



Ponds E8A/9/8X Planned Tidal Marsh (630 acres)

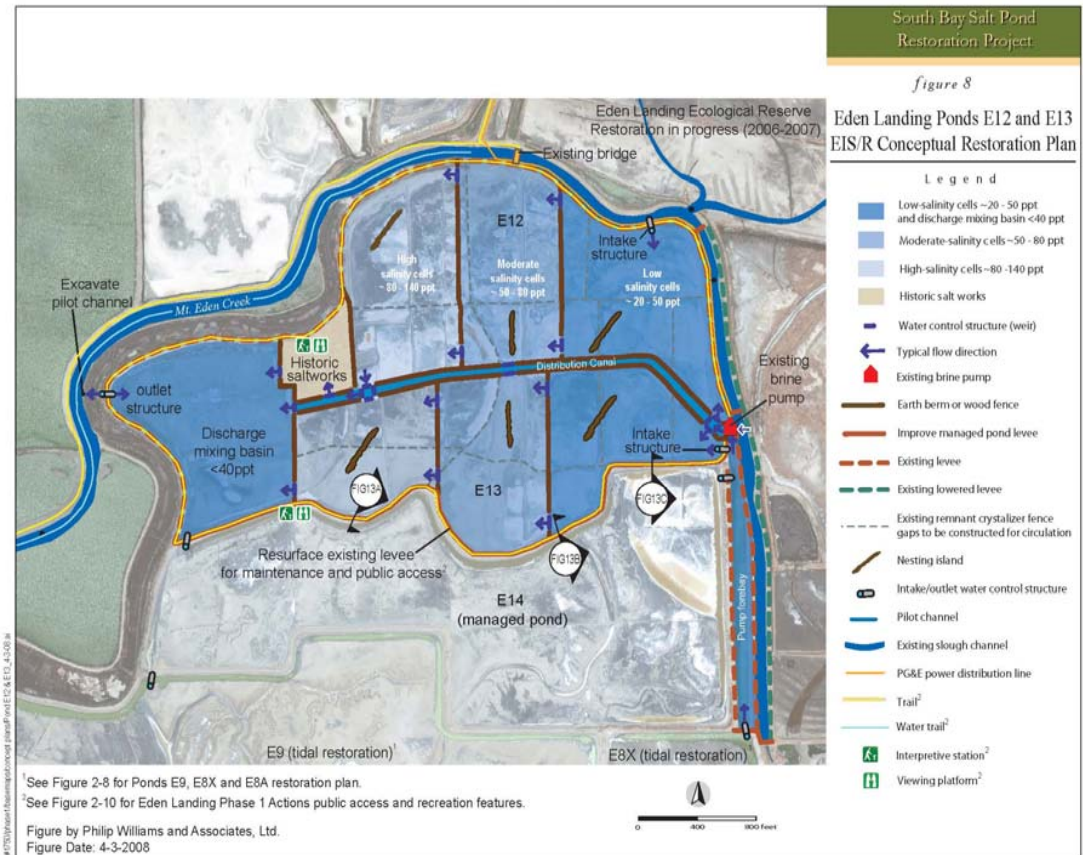
Design 90% complete
Construction to start in early 2010

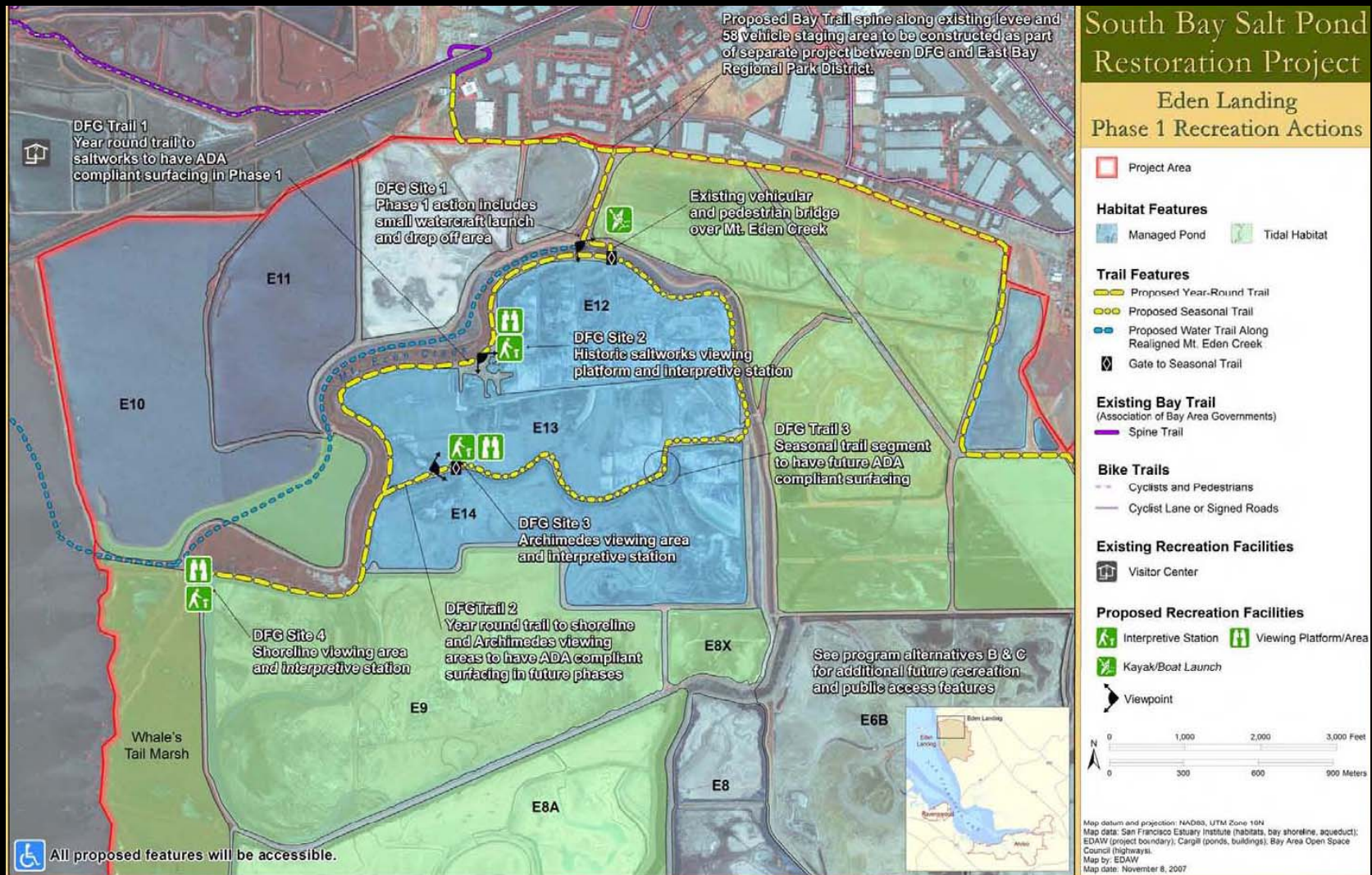


Ponds E12/13

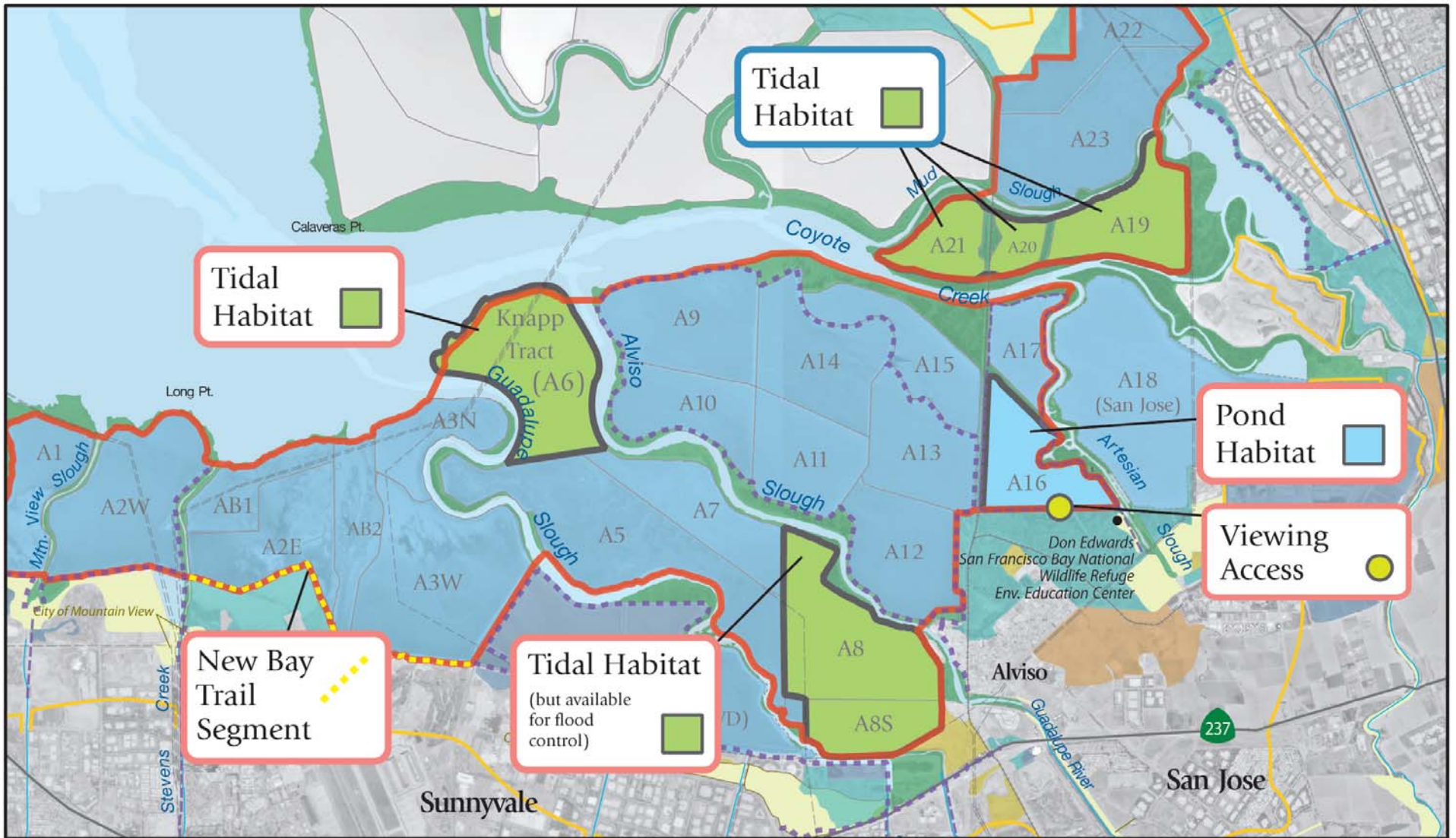
Planned High Salinity Ponds (230 Acres)

Design 30% complete Initial earth moving to start in 2010





Eden Landing Public Access Features
 Design to be complete by end of 2009
 with October Working Group review



Initial Restoration Actions

South Bay Salt Pond Restoration Project—Alviso Area



Pond A6 Planned Tidal Marsh (330 acres)

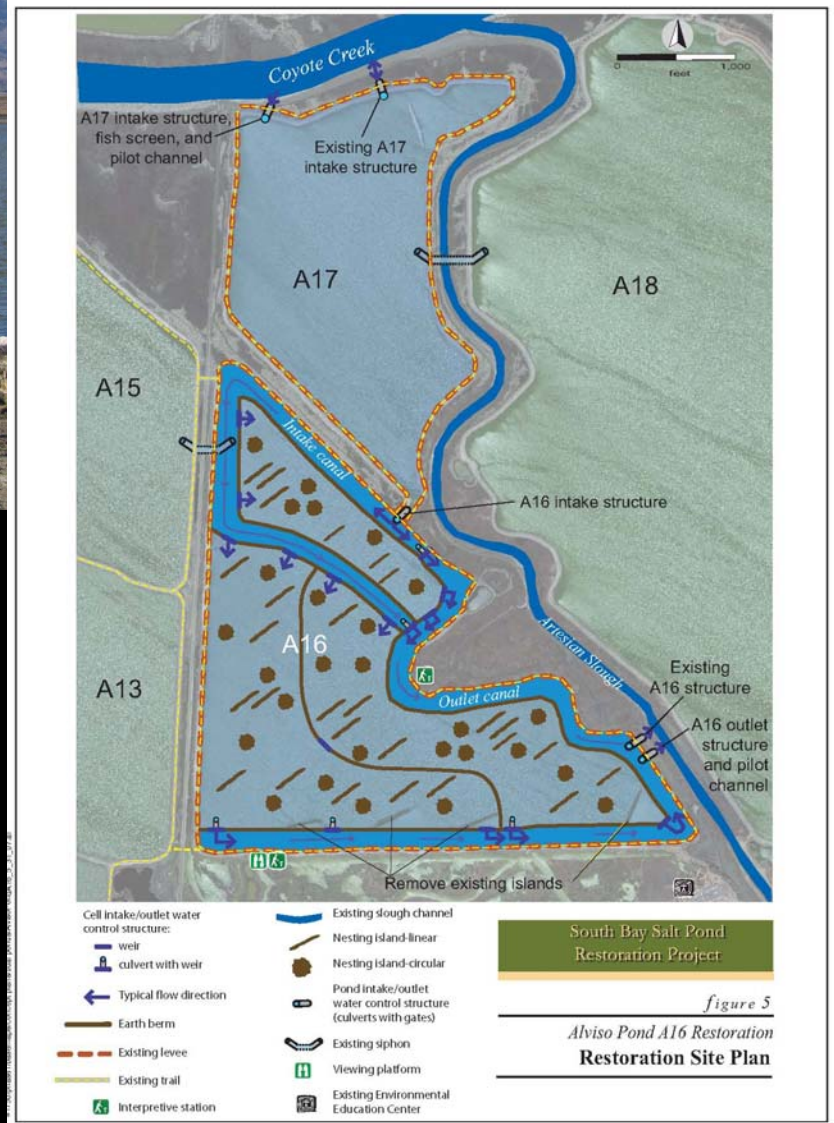
Design to be complete
by end of 2009
Construction in August-
October 2010





Design restarting with review of location choice and other options

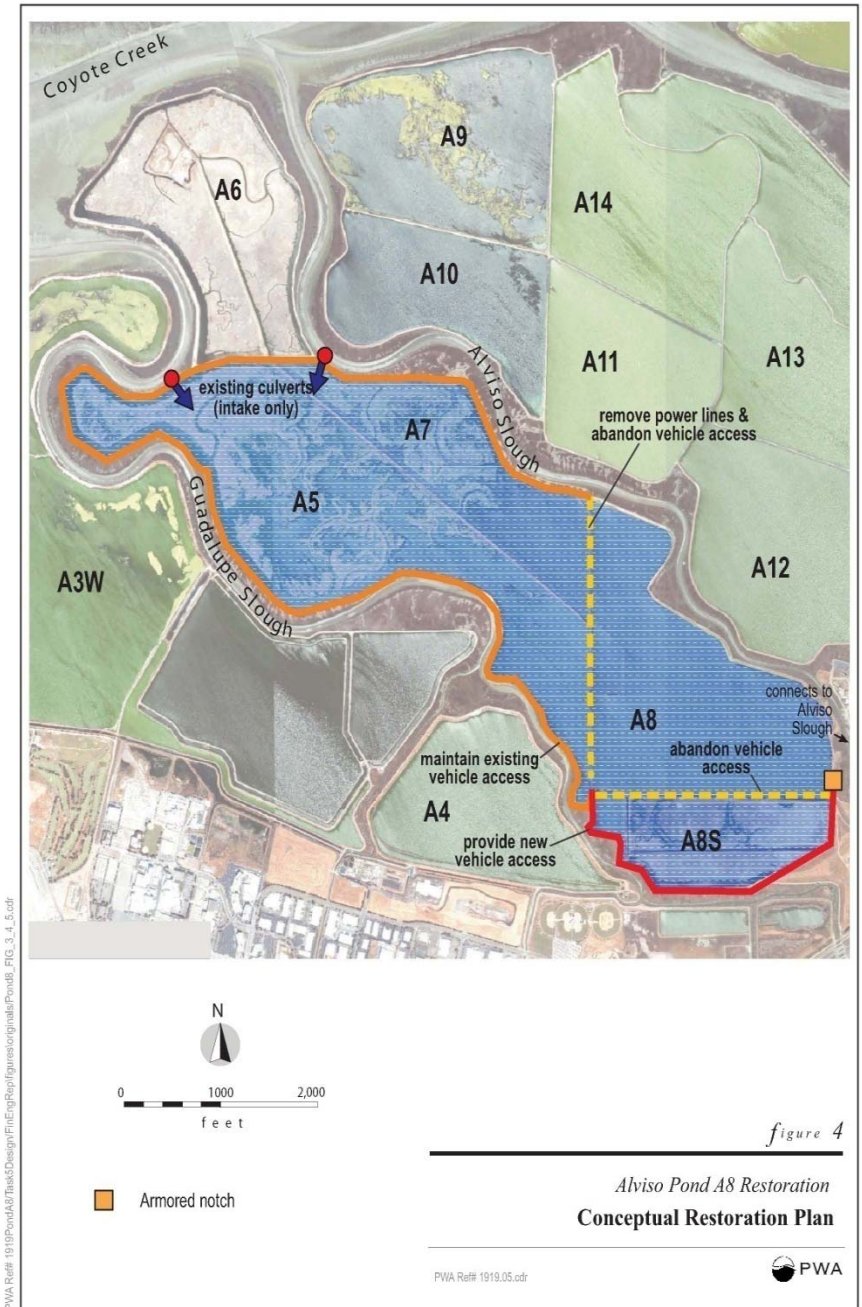
Pond A16 (243 acres)
Shallow water pond
with islands for
nesting/roosting



Ponds A8, A5, A7 (1,400 acres) planned shallow tidal habitat

Project out for bid

Construction to start in late 2009 and complete in late 2010





2.2 Mile Moffett Bay Trail Segment
Awaiting transfer of parcel from Cargill to NASA



Viewing Access
(with City of Menlo Park)

Trail and Viewing Access

Pond Habitat

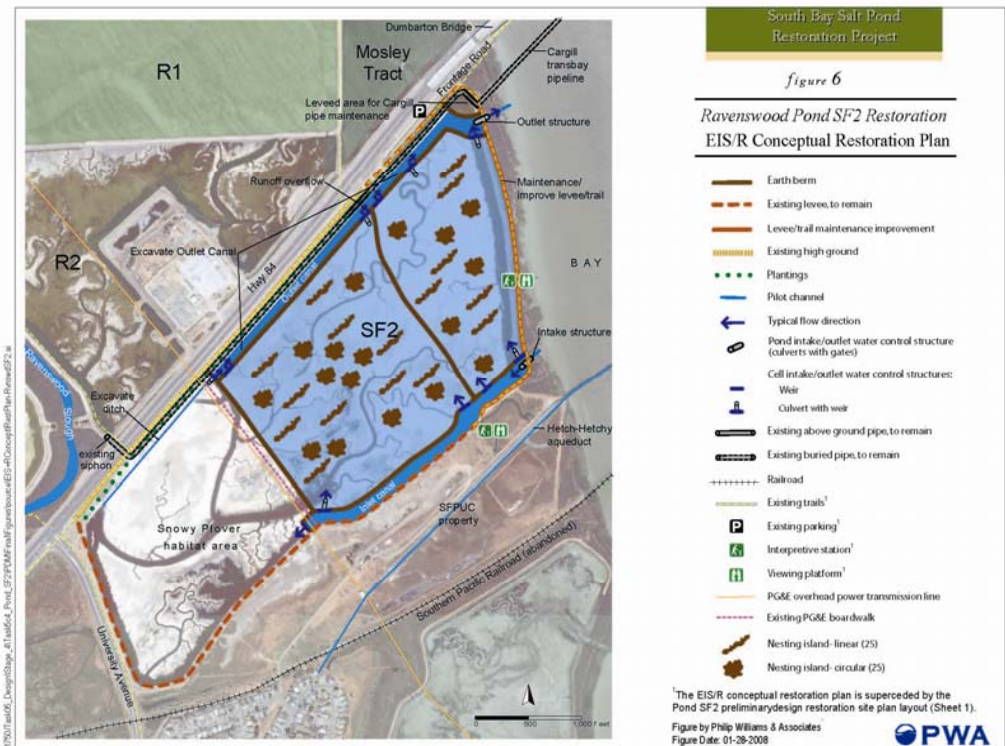
Initial Restoration Actions
South Bay Salt Pond Restoration Project—Ravenswood Area

 proposed Phase 1

Pond SF2 (237 acres)
 Shallow water pond with
 islands for nesting/roosting
 and viewing platforms



Construction began in March
 2009 and expected complete
 by August 2010





Bedwell Bayfront Park planned interpretive signage



Expected installation by end of 2009

**Don Edwards San Francisco Bay
National Wildlife Refuge**
www.southbayrestoration.org



Logos for: Contra Costa County, City of Fremont, City of Moore, City of Richmond, and the National Wildlife Refuge System.

**South Bay Salt Pond
Restoration Project**
A project of the
South Bay Salt Pond Restoration Authority
in partnership with the
City of Richmond





**Pond A21
January
2006**



April 2008



September 2009

Salt Pond A21



South Bay Salt Pond Restoration Project

Restoring the Wild Heart of the South Bay

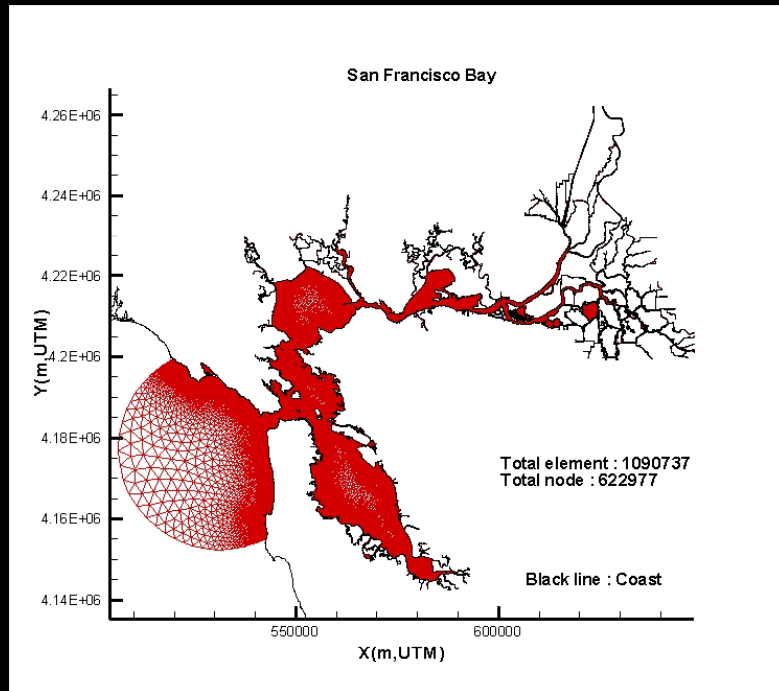
Science Program Update

Laura Valoppi
Lead Scientist

Directed Studies 2009



Projecting Change in San Francisco Bay: development of a SUNTANS hydrodynamic model



Grid with avg.
resolution 25 m



- Will produce scenarios based on management changes - including restoration
- Produced model grid from bathymetric data
- Calibrated the hydrodynamic model (salinity, currents, tides) and did successful coarse and fine grid simulations.
- In process of developing a sediment transport component of the model.
- Also will be modeling climate change

Wetland Sediment Dynamics at the Island Ponds



April 2008



September 2009

Salt Pond A21

- Ponds accumulate sediment at a rapid rate: > 200 mm in 2-3 years in some areas

- Plant recruitment is occurring at higher elevations within Pond A21



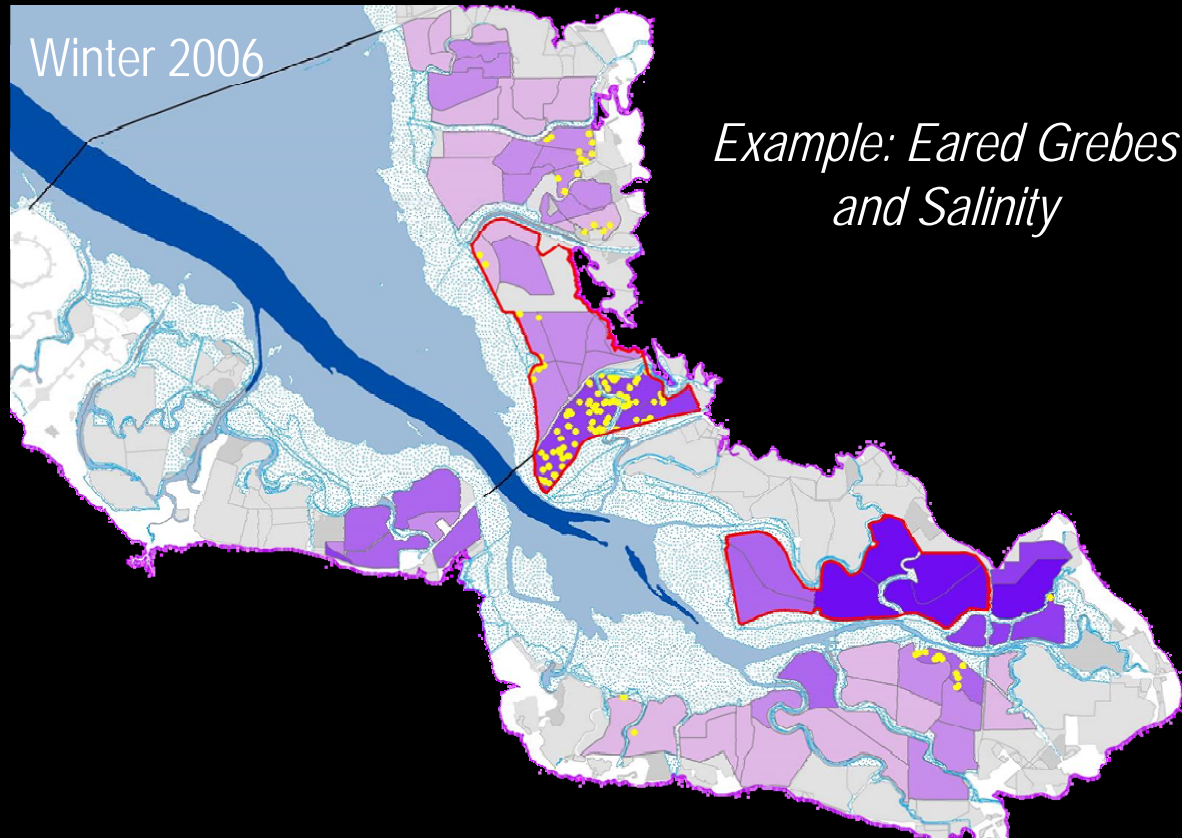
SAN FRANCISCO
STATE UNIVERSITY

Water Quality: Refuge Alviso Ponds

- Installed continuous monitoring (Datasondes in A2W, A3W and A7 in July 2008)
- Two week surveys for DO and other parameters in A3W, A16, A14
- Receiving water in Alviso and Guadalupe Sloughs
- **Preliminary Results: DO < 3.3 mg/L at times in A3W, A7.**
- **DO sometimes low in slough water entering ponds, so pond water discharges further deplete DO, but not always**

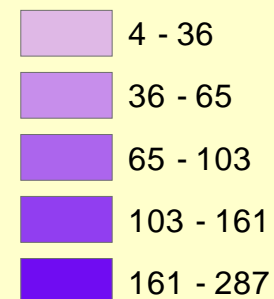


Analysis and mapping of salt pond bird use



1 dot = 50 grebes

salinity (psu)



1990-1992 and 2006-2008 San Francisco Bay shorebird census analysis

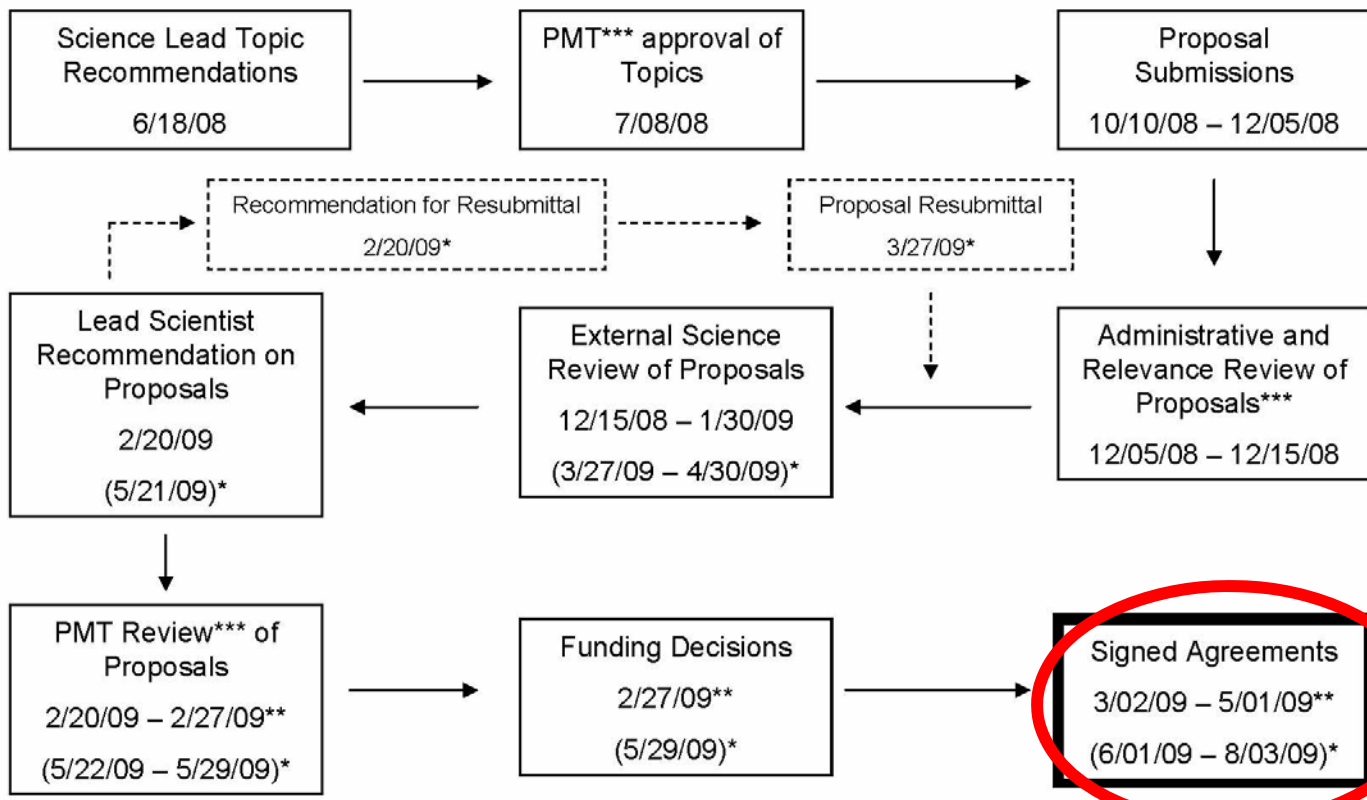


- ~343,000 shorebirds
- Most species have similar counts as prior years
- Some sp. exceptions with lower #s
- San Pablo Bay and South SF Bay had majority of shorebirds
- In process of analyzing data for trends and distribution shifts.
- Report due end of 2009



Request for Proposals (RFP) October 2008

1. Measuring Habitat Evolution Utilizing Satellite Imagery
2. Assessment of Mercury Bioavailability
3. Waterbird Nesting and Foraging in Managed Ponds
4. Waterbird Response to Trail Use
5. Pond, Slough, and Bay Water Quality Interactions
6. Baseline Bird Data and Data Needs Assessment
7. Effects of Restoration on Fish
8. California Gull Displacement Study
9. Open Call for Graduate Fellows



* If resubmittal is required, Funding Decisions would be delayed about 3 months.

** If no need for resubmittal. Funding decisions on proposals that do not require re-submittal may proceed independently of those that do.

*** Includes review by RLF.

Topic 1 Habitat Evolution



Awarded to Brian Fullfrost of Design, Community and Environment



- Satellite imagery (IKONOS at 1 m resolution) and field mapping to track changes in mud flats, channel formation, and vegetation changes in project area.
- Develop habitat models for the image characteristics and ground truth models and refine.
- Link to formation of habitat types supporting listed species (e.g. pickleweed).

Topic 2 Mercury Bioavailability



Awarded to Collin Eagles-Smith of USGS, in cooperation with SFEI and UC Davis



UCDAVIS

- Mercury analysis of:
 - Shorebird eggs in various ponds
 - Fish samples in ponds and sloughs
 - Water column in ponds and sloughs
 - Marshbird blood samples in sloughs
- Focus will be breaching of Pond A8, but other nearby ponds and sloughs included
- Product will be to monitor changes in mercury with restoration



Topic 3 Waterbird nesting and foraging in ponds

Awarded to Josh Ackerman of USGS in cooperation with SFBBO



- Will quantify the benefits of islands within ponds
- Will identify the characteristics of islands that enhance bird use
- Studies at Ponds A12, A16, and SF2 (where islands will be created)
- Three reference sites for island characteristics that enhance bird use



Topic 4 Waterbird response to trail use



Awarded to Lynne Trulio of SJSU in cooperation with USGS, & Sokale Environmental Planning

- Will study response of shorebirds and waterfowl to human trail use, and effectiveness of buffer distances by species.
- Response of nesting snowy plovers to trail use/no use at several ponds.
- Response of nesting birds at SF2 to trail use.
- Trail User Satisfaction Study



Topic 5 Water Quality Interactions

Awarded to Jan
Thompson of USGS



- Goal is to evaluate how the benthic invert community has changed in response to restoration actions.
- Use already collected benthic samples from 1993-1995 (pre-restoration) and 2006-2008 (after restoration started).



Topic 6 Baseline Bird Data

Awarded to Mark Herzog of PRBO in cooperation with SFBBO and USGS



- Develop database of existing bird survey data
- Synthesize existing survey data to establish baseline numbers, trends, and nest success.
- Develop a data needs/gaps assessment
- Develop a pond carrying capacity model for 4 waterbirds based on food resources & bird habitat



Topic 7 Fish Assemblages

UCDAVIS

Awarded to James Hobbs of UC Davis

- Will monitor the effects of restoration on fish species in salt ponds
- Will sample fish at several locations (TBD) in the project area over 3 years
- Determine fish community composition
- Will monitor a sentinel fish species for health (condition, growth, reproduction) and survival.





Topic 8 California gull displacement



Awarded to Josh Ackerman USGS in cooperation with SFBBO, & H.T. Harvey and Associates

- Will assess how gulls will affect the restoration success
- Gull impact on breeding snowy plovers
- Gull impact on breeding Forster's terns
- Gull movement after breach at A6
- Gull colony surveys to estimate population size



Topic 9 – Graduate Fellowships

- Nicole Athearn (UCD) – Develop a model to estimate waterbird abundance based on pond habitat conditions using 4 species (WESA, AMAV, RUDU, NOSH)
- Ariel Rowan (SFSU) – Develop a mudflat carrying capacity model for shorebirds based on energetics.
- Cory Overton (UCD) – Evaluate California clapper rail population dynamics, survival, and recruitment
- Gavin Archbald (SFSU) – Monitor invasive Algerian sea lavender through remote imagery and ground truthing.

SBSP Science information, reports, and presentations available at:

<http://www.southbayrestoration.org/science/>



**Mercury Studies: Implications
for Short- and Long-Term
Restoration**



Unintended consequences of management and the challenge of plovers and construction



Cheryl M. Strong

Eric Mruz

Don Edwards SF Bay NWR



Plover status, 2009

- Nesting success
- Shell plot experiment: improved success?
- Nest cameras and avian predators





Total Plovers

	Eden Landing	Alviso	Ravens -wood	Warm Springs	Hayward	Total Plovers
2004	78	0	10	21	4	113
2005	91	7	3	23	0	124
2006	84	8	3	7	0	102
2007	162	20	23	0	0	207
2008	94	11	24	3	1	133
2009	88	8	21	14	4	135

Based on Pacific Coast-wide surveys completed during May

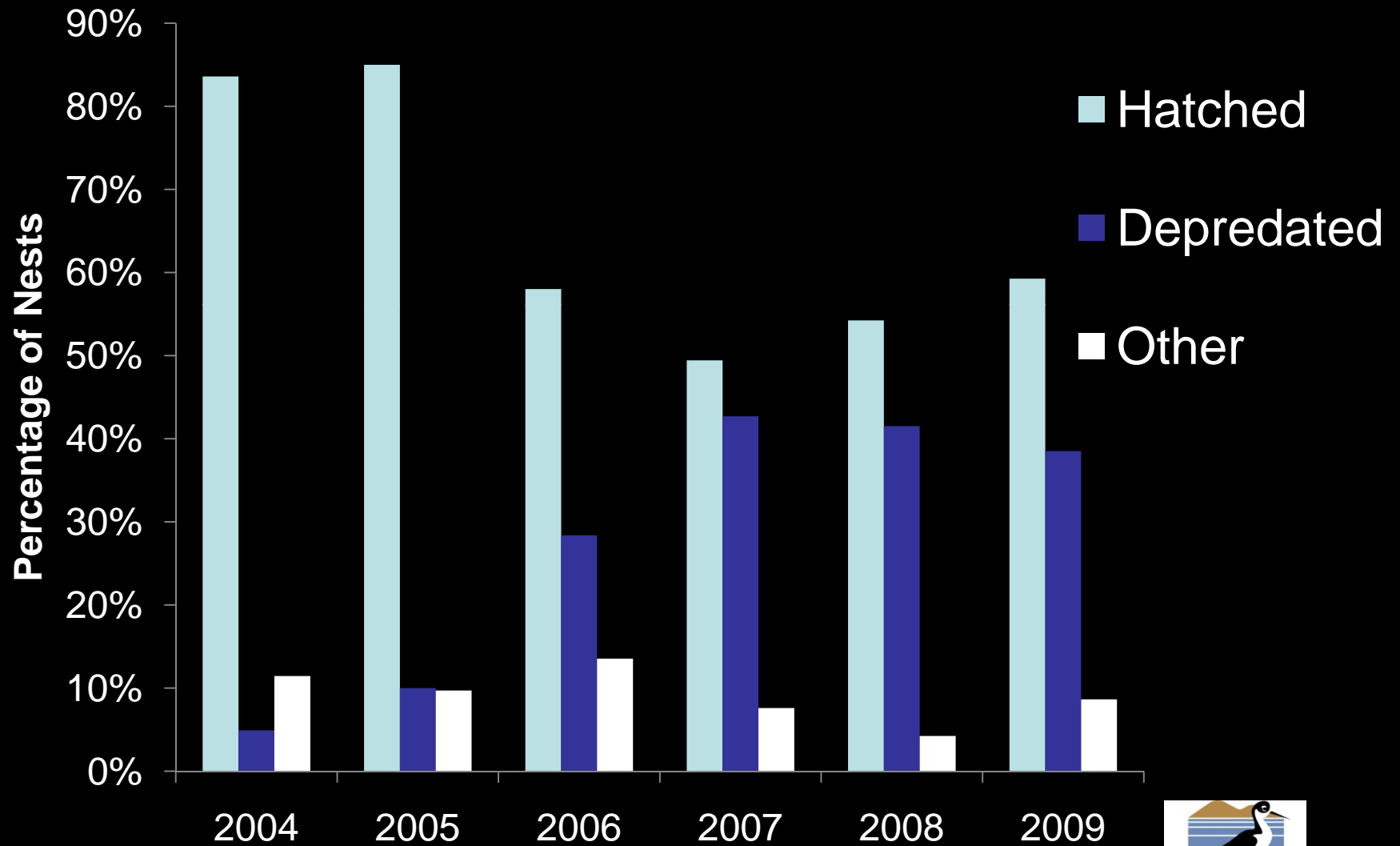




Monitored Nests

	Eden Landing	Alviso	Ravens- wood	Warm Springs	Hayward	Total Nests
2004	48	5	6	0	0	59
2005	7	0	0	13	0	20
2006	70	11	0	0	0	81
2007	80	2	7	0	0	89
2008	90	6	17	4	1	118
2009	97	7	33	21	5	163

Nest Fates, South Bay





Fledging success

	Chicks Banded	Chicks Fledged	Percent Fledged
2008	83	24	28.92
2009	113	24	21.22*

*This number will go up as we re-sight more through September.

Two of our banded birds from 2008 nested in the Bay, and one nested in Ventura County.



Western snowy plover nesting habitat enhancement: mitigating habitat loss

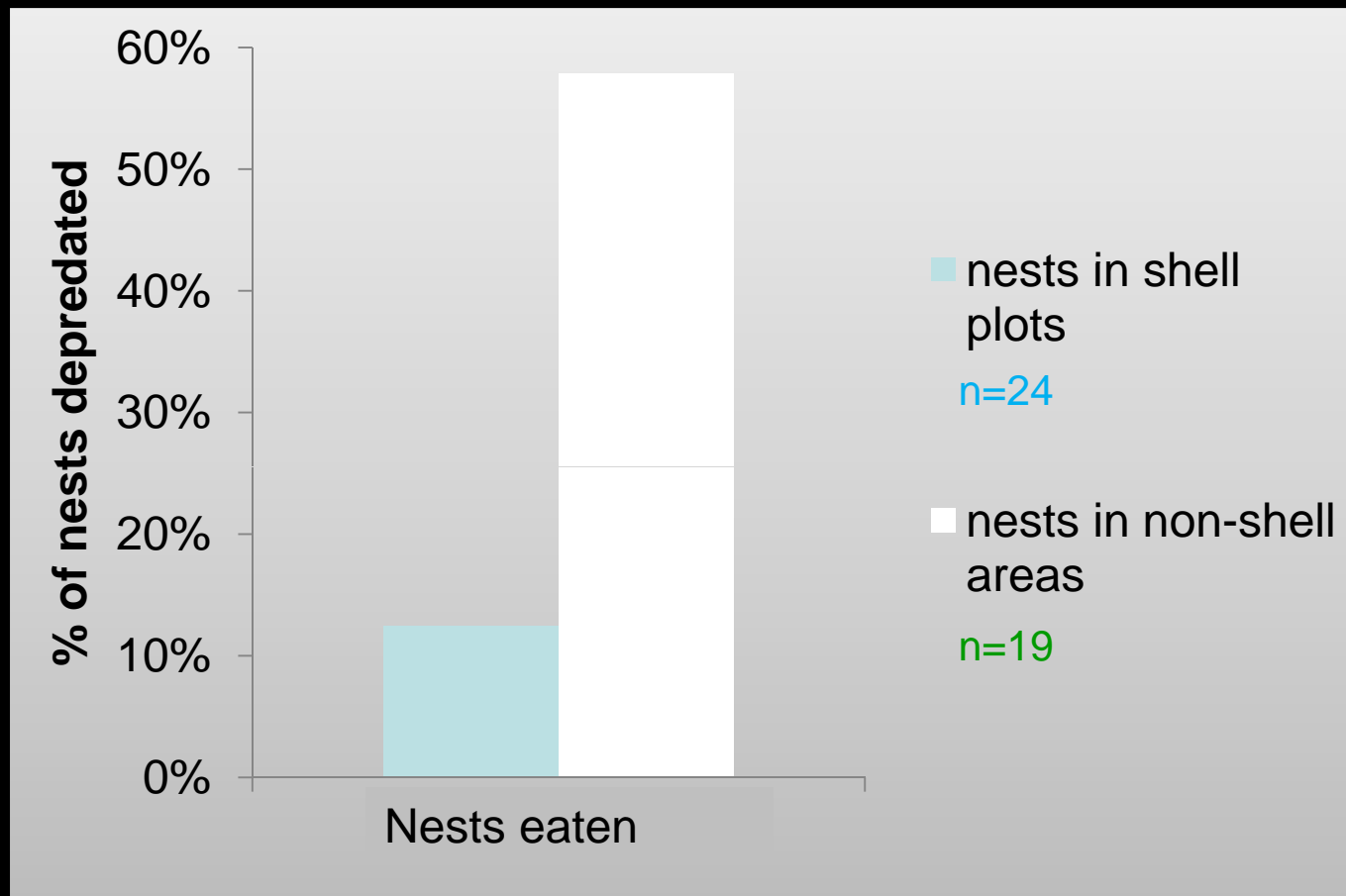




California Conservation Corps placed shells on 1-acre plots at Eden Landing

Shells provide camouflage for eggs, chicks, and adults





Higher hatching success and highest nest densities recorded for the South Bay within shell plots.



we monitored 24 nests with cameras
and captured 8 predation events



H.T. HARVEY & ASSOCIATES
ECOLOGICAL CONSULTANTS



SAN FRANCISCO BAY
BIRD OBSERVATORY



Predator	Number of nests predated
Northern harrier	3*
California gull	2
Red-tailed hawk	2
Common raven	1

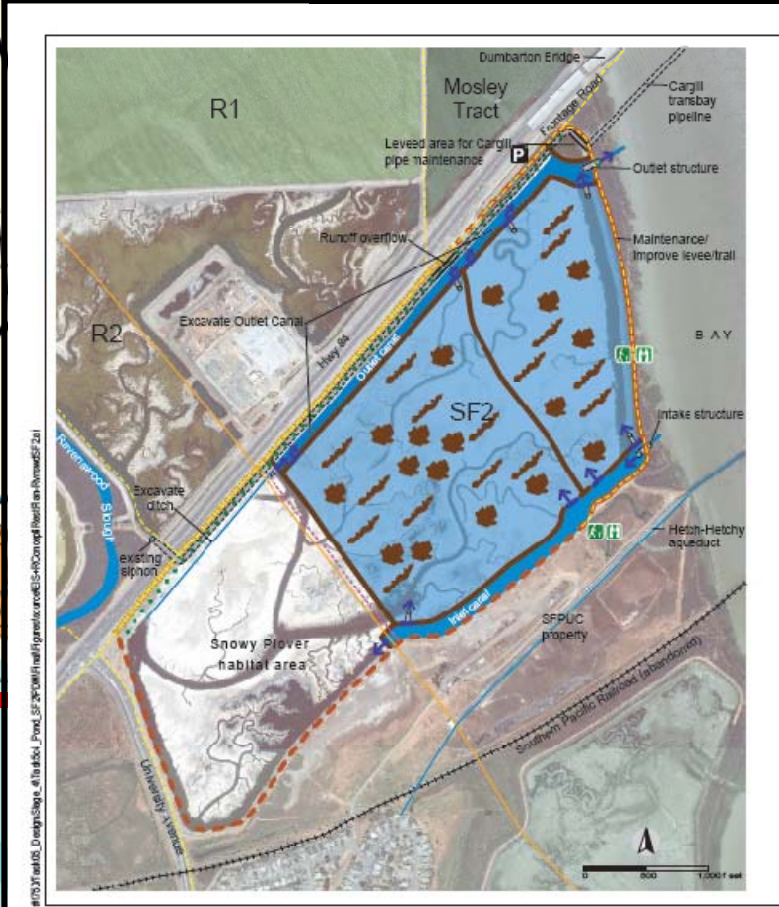
*and one least tern nest





Plovers and construction, 2009







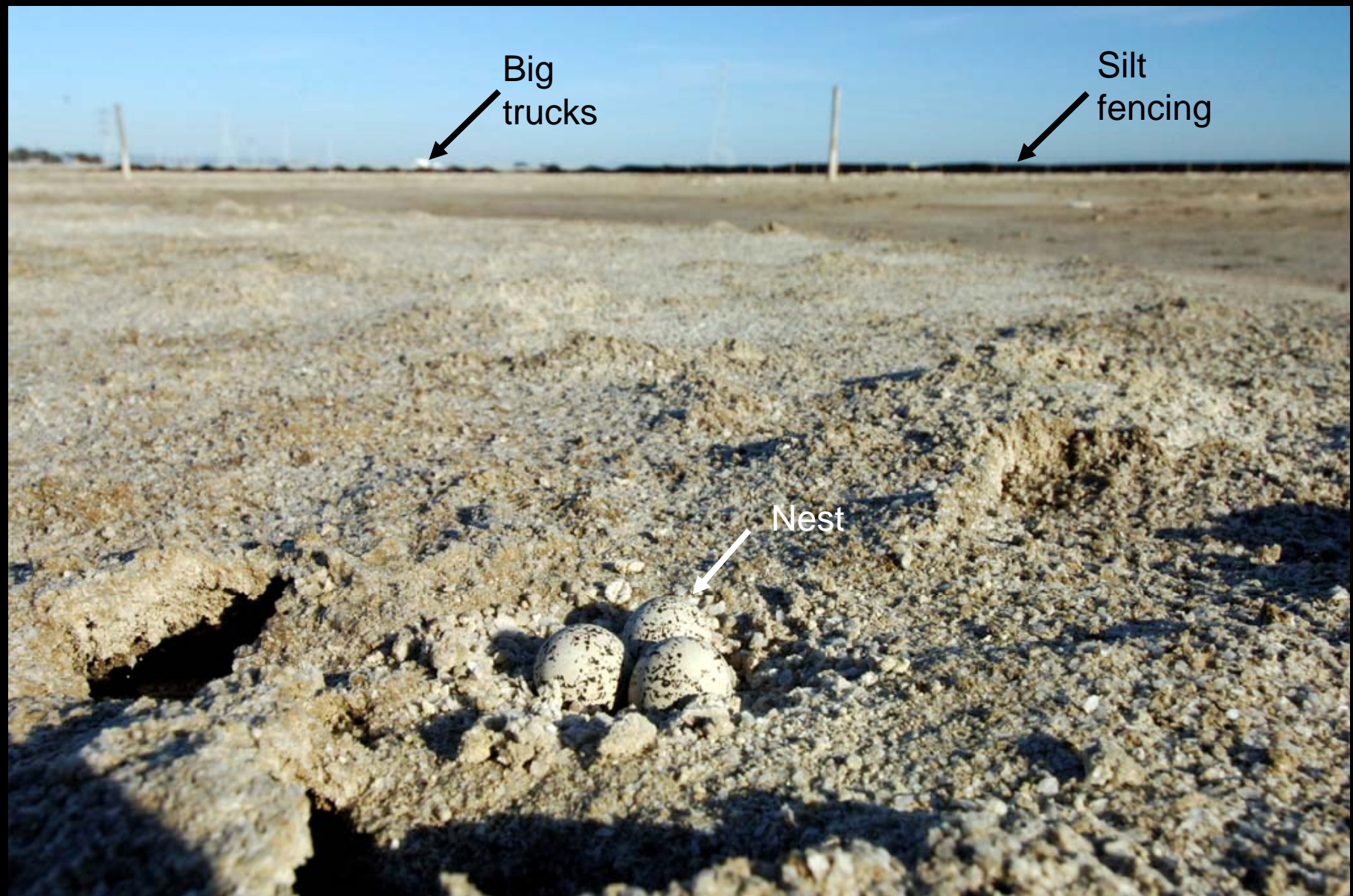
Number of nests on SF2

2007	1
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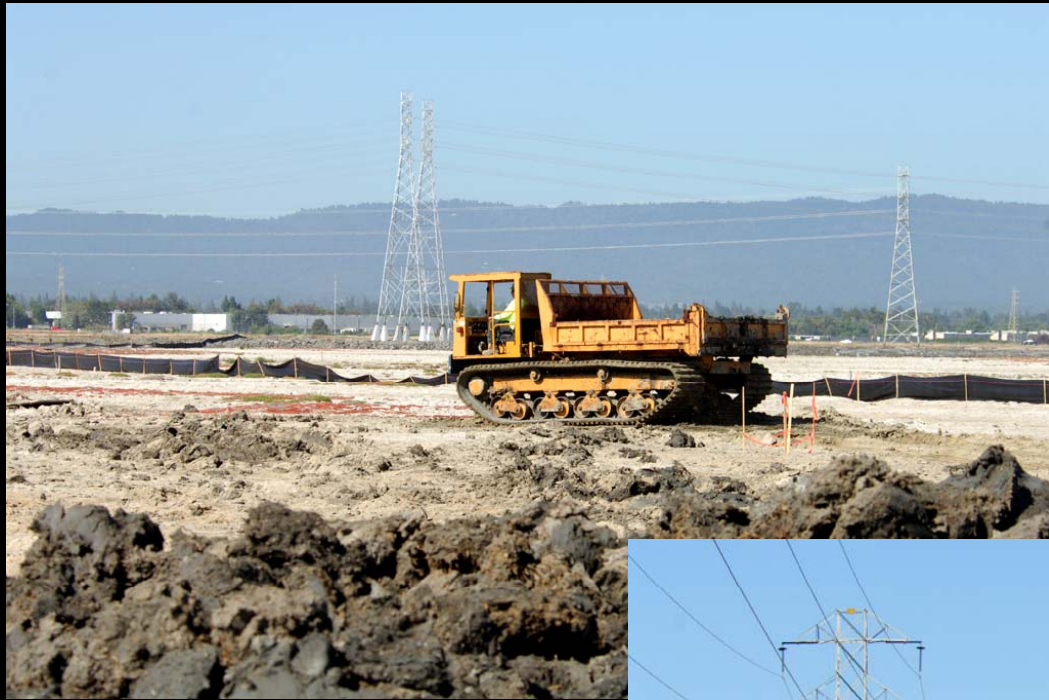
2008	2
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2009	23
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Snowy plover nests on one side of a very long fence, construction on the other side...



Construction activities provided some excellent foraging habitat

Snowy plovers do not always follow the rules





Labor intensive: twice weekly surveys and the supervising of much fence building



Managing for plovers during construction and restoration



2008:
1402 acres of
dry ponds
R1-R4, SF2



2009:
242 acres of
dry pond; SF2

R1-R4 flooded
for invasive
vegetation
management



© 2009 Europa Technologies
Image © 2009 TerraMetrics
© 2009 Tele Atlas
Image U.S. Geological Survey

Google

Jul 2007

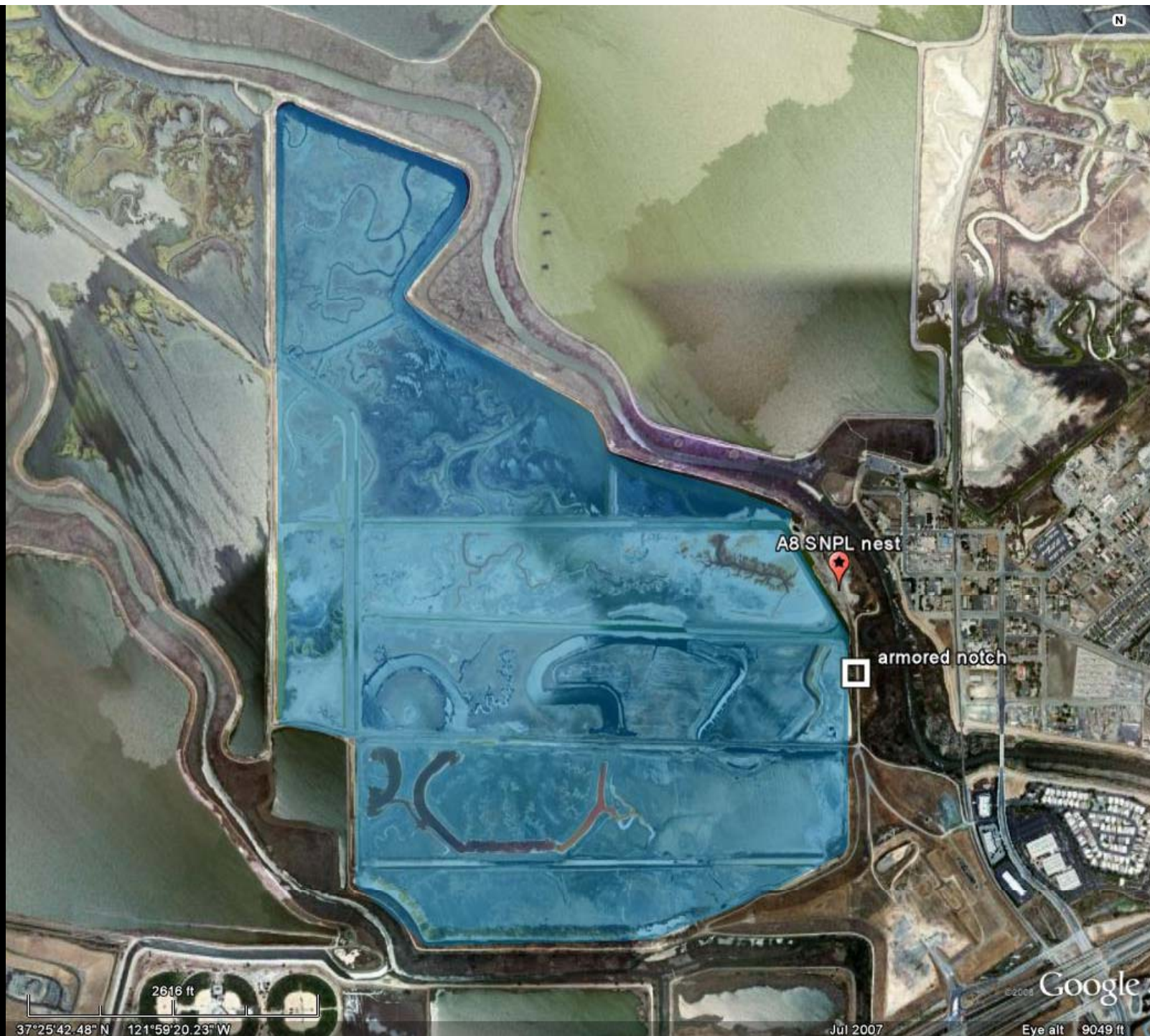
Eye alt 11750 ft

2006-7:
location
of nests
on A8



2009:
A8 flooded

1 nest *on
the road*



Looking forward in 2010

- A8- flooded for construction
 - Trucks on levees will preclude nesting plovers
- A12- draw down for islands
- A11 and A13- new islands
- R ponds- draw down



Photos by:
Caitlin Robinson
Cris Benton
David Cardinal
Gerry Ellis
Judy Irving
Laura Valoppi
Michael Kern
Rod Golden



South San Francisco Bay Shoreline Study

Santa Clara Valley
Water District



US Army Corps
of Engineers
San Francisco District



Coastal
Conservancy

Alviso Ponds & Santa Clara County Interim Feasibility Study

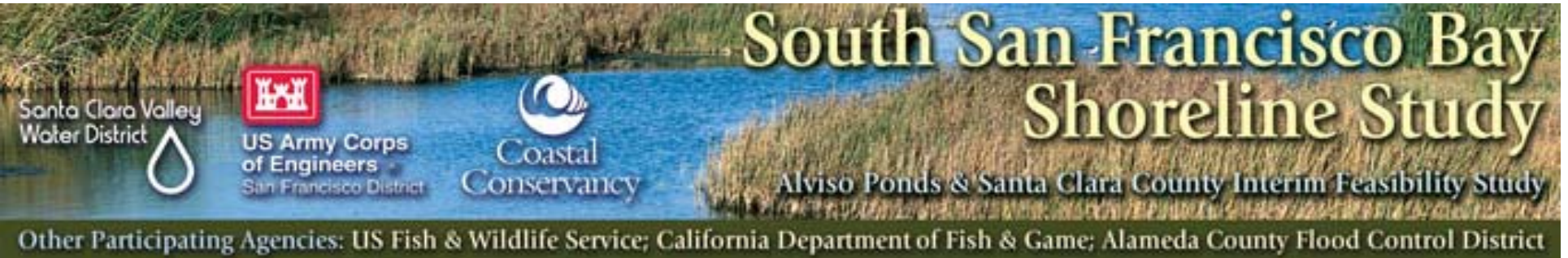
Other Participating Agencies: US Fish & Wildlife Service; California Department of Fish & Game; Alameda County Flood Control District

Shoreline Study Update

Beth Dyer, SCVWD

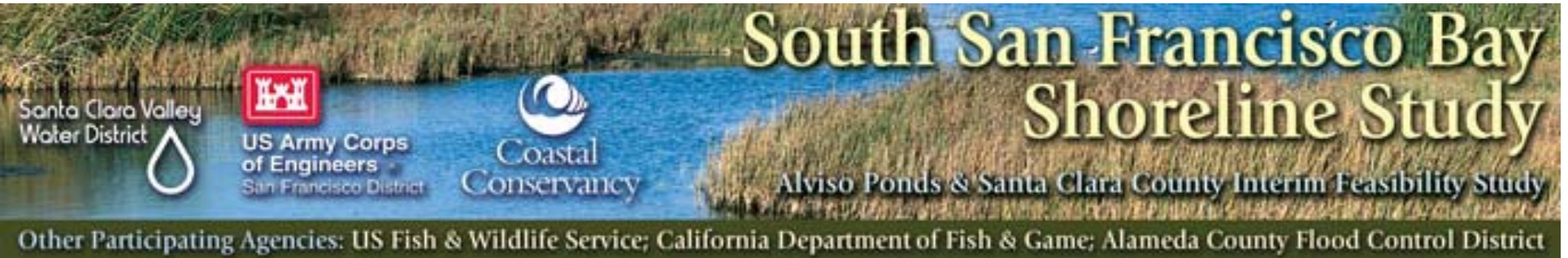
September 16, 2009





Study Schedule

- Floodplain Maps – February 2010
- Feasibility Scoping Meeting – June 2010
- Alternatives Formulation Briefing – Spring 2013
- Final Feasibility Report – Fall 2014
- Chief's Report (to OMB) – Spring 2015



Study Budget for 2009 and 2010

- \$2.8 million received
- For FY10, \$2.8 million requested by SCVWD, SCC
- Appropriations bills for FY10
(House \$2.8 million; Senate \$425,000)

South San Francisco Bay Shoreline Study

Santa Clara Valley
Water District



US Army Corps
of Engineers
San Francisco District



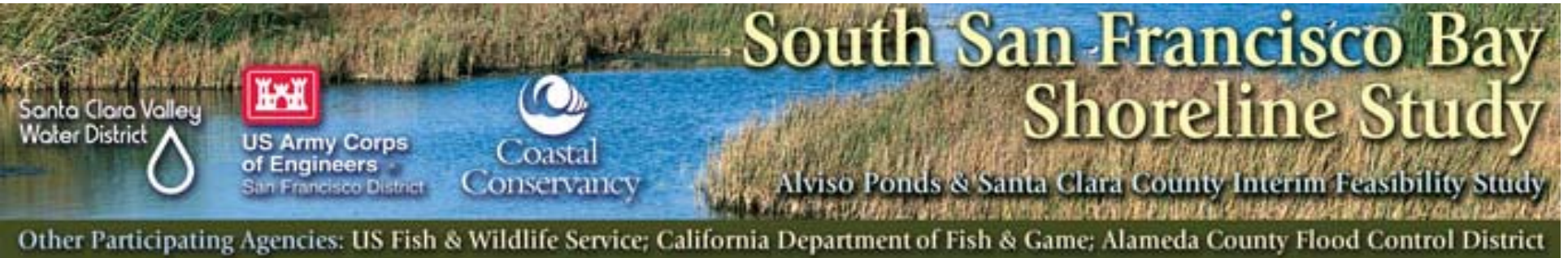
Coastal
Conservancy

Alviso Ponds & Santa Clara County Interim Feasibility Study

Other Participating Agencies: US Fish & Wildlife Service; California Department of Fish & Game; Alameda County Flood Control District

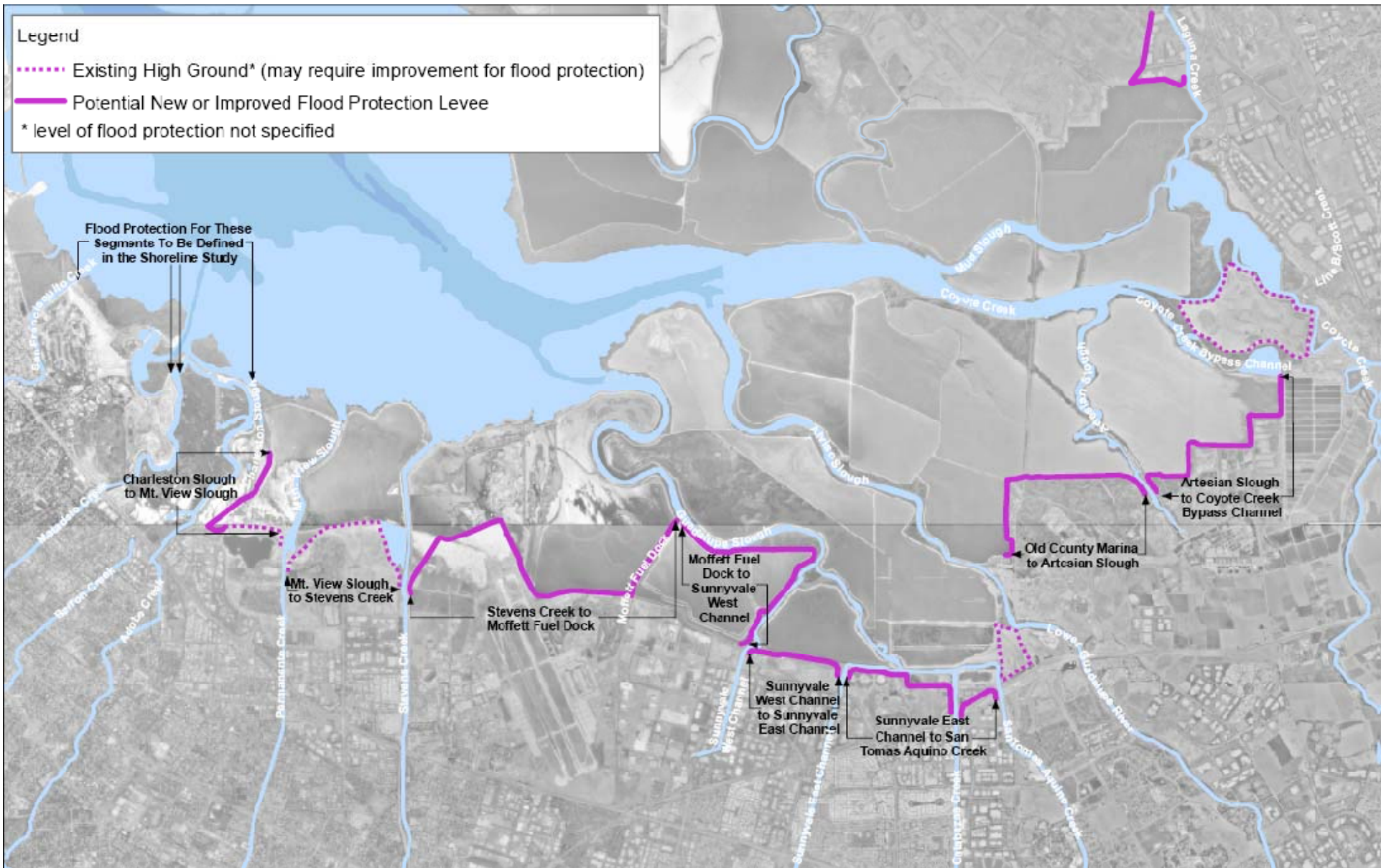
Funding Status

- Up to FY 2009 Corps received less funding than desired
- Project delays



Early Implementation

- Start part of project before study is complete
- Requires non-Federal funding
- Receive credit from Corps for future project costs
- Need enough information from Shoreline Study to start (e.g. floodplain map)



Source: USGS (background image and streams layer)

figure 2-25



0 2,000 4,000 8,000 12,000 16,000 20,000 Feet

South Bay Salt Pond Restoration Project
Potential Shoreline Study Early Implementation Projects

Proj. # 1750

Map by: PWA
 Map date: August 23, 2007

South San Francisco Bay Shoreline Study

Santa Clara Valley
Water District



US Army Corps
of Engineers
San Francisco District



Coastal
Conservancy

Alviso Ponds & Santa Clara County Interim Feasibility Study

Other Participating Agencies: US Fish & Wildlife Service; California Department of Fish & Game; Alameda County Flood Control District

Contact Information

- Beth Dyer, Santa Clara Valley Water District,
bdyer@valleywater.org
- Brenda Buxton, Coastal Conservancy,
bbuxton@scc.ca.gov
- Yvonne LeTellier, US Army Corps of Engineers,
Yvonne.C.LeTellier@usace.army.mil

Upcoming Meetings

- Eden Landing Working Group
Tuesday, October 27, 2009, 1- 4 pm
California State University, East Bay, Hayward
– Review & input on latest public access designs
- Ravenswood Working Group
Saturday, November 14, 2009, 10 am – Noon
– Tour of construction at Pond SF2

Wrap Up



South Bay Salt Pond Restoration Project

Restoring the Wild Heart of the South Bay

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