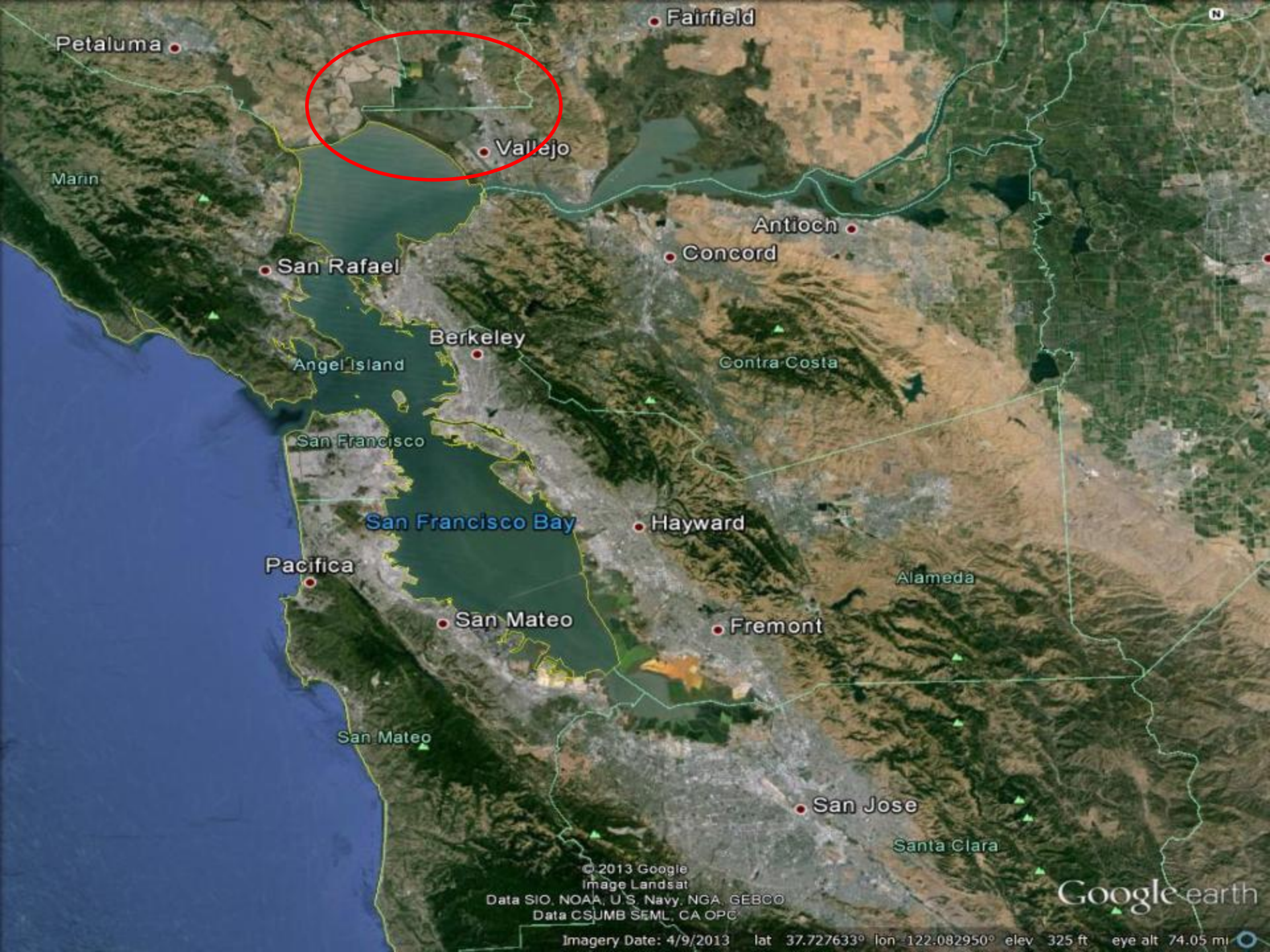




**NAPA MARSHES RESTORATION**  
**Coastal Ecosystem Restoration Through**  
**Collaborative Partnerships**

**National Conference on Ecosystem Restoration**  
**July 29-August 2, 2013**

Jeff McCreary  
Director of Conservation Programs  
Western Region  
Ducks Unlimited



Petaluma

Fairfield

Vallejo

Antioch

Concord

San Rafael

Berkeley

Contra-Costa

Angel Island

San Francisco

San Francisco Bay

Hayward

Alameda

Pacifica

San Mateo

Fremont

San Mateo

San Jose

Santa Clara

© 2013 Google  
Image Landsat  
Data SIO, NOAA, U.S. Navy, NGA, GEBCO  
Data CSUMB SEML, CA OPC

Google earth

Imagery Date: 4/9/2013 lat 37.727633° lon -122.082950° elev 325 ft eye alt 74.05 mi





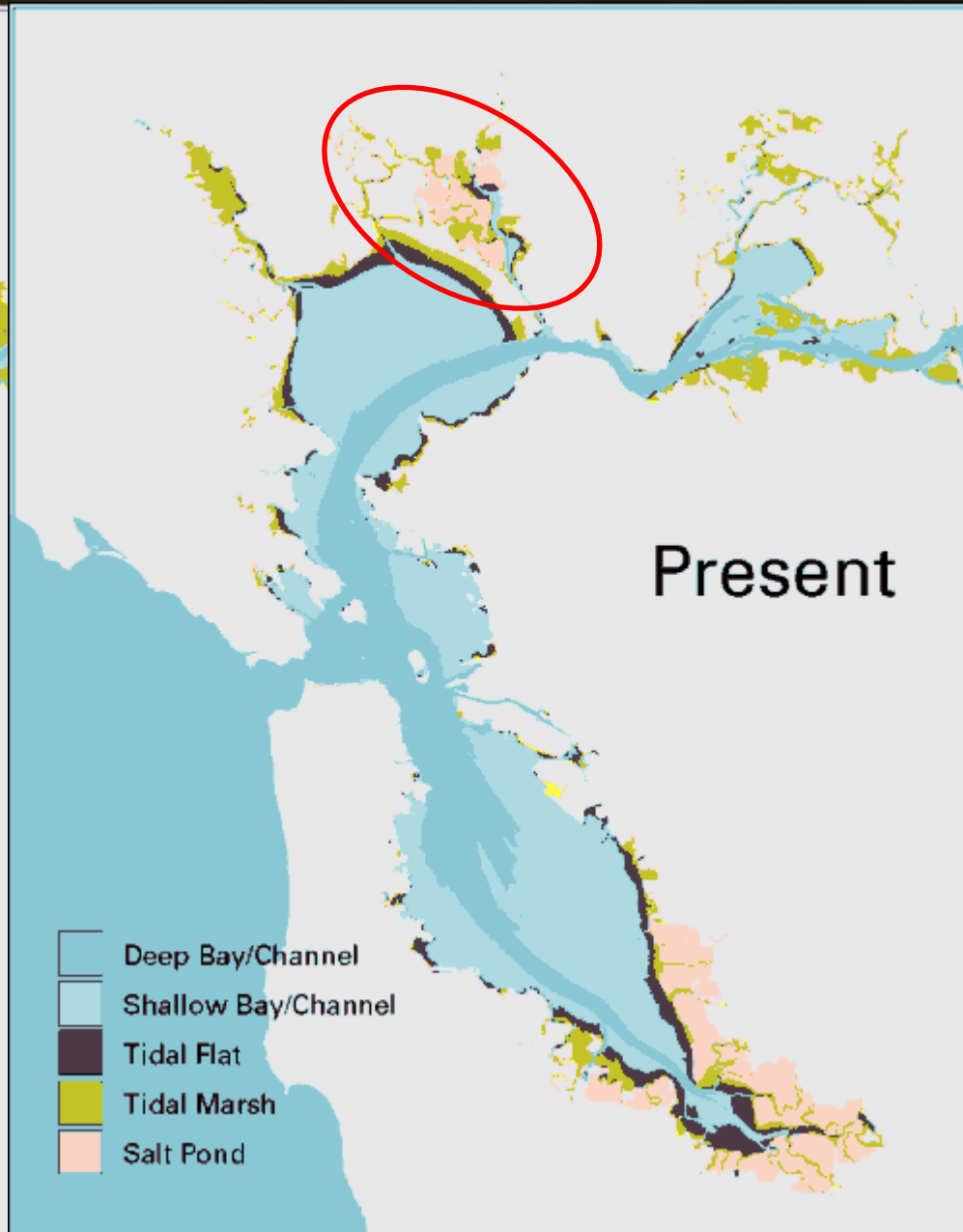
# Ecological Importance of SF Bay

- The nation's second largest estuary
- Most important wintering ground in the Pacific Flyway for Scaup and Canvasbacks
- 50% of Pacific Flyway diving ducks winter here
- Ramsar designation
- Multiple endangered species (fish, birds, mammals)
- San Pablo Bay – Global IBA
- Catadramous fish and other marine resource nursery areas





# The Leader in Wetlands Conservation





## Ducks Unlimited

“Ducks Unlimited conserves, restores, and manages wetlands and associated habitats for North America's waterfowl. These habitats also benefit other wildlife and people.”

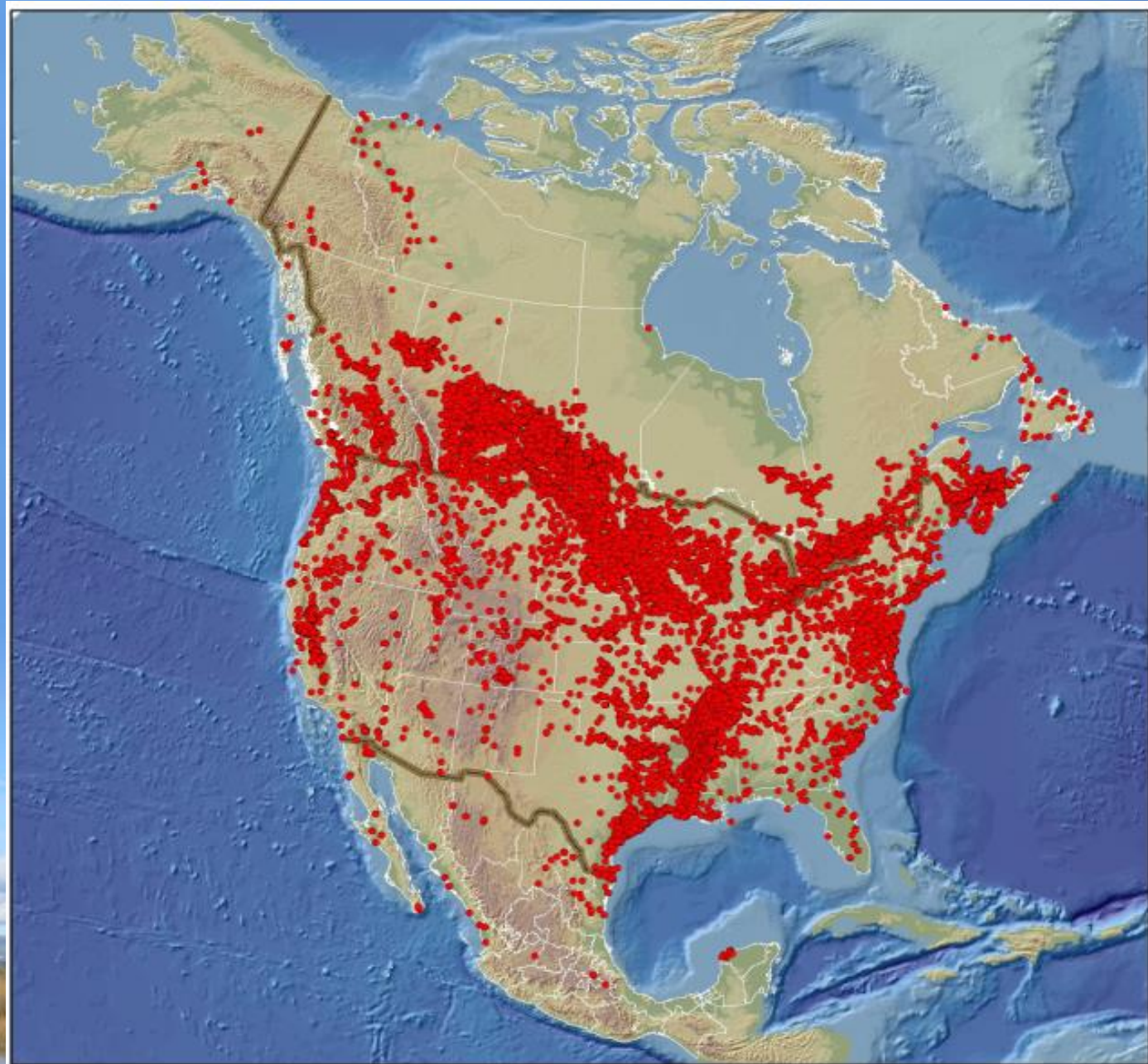
Ducks Unlimited is a volunteer-based, 501(c)3 non-profit organization dedicated to the on-the-ground conservation of North America's waterfowl and their habitats.







# DU Projects in North America














## Ducks Unlimited Conservation Staff

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### Biologists

-  Habitat and wildlife expertise
-  Project planning
-  Environmental compliance
-  Project management

### Licensed Professional Engineers

-  Topographic surveying
-  Concept planning and feasibility studies
-  Project management
-  Engineering design
-  Construction inspection and management

### GIS Modelers – Spatial Analysts

-  GIS based habitat mapping
-  GIS database and model development





# Why DU in the Napa Marshes?

-  Experts in planning, financing & implementing large-scale and tidal wetland restoration projects
-  SF Bay-Delta ecosystem is a top priority in the Pacific Flyway
-  Collaborative and balanced approach for successfully implementing wetland conservation throughout North America





# San Pablo Bay Projects

- complete
- ongoing
- future

0 1 2 Miles



San Pablo Bay

Vallejo

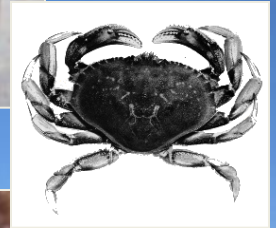




# Napa Marshes Project

✿ Restore and enhance wetland habitats in the Napa River - Sonoma Crk floodplain/estuary:

- ✿ Tidally influenced habitats
- ✿ Managed ponds in interior areas with water depths and salinities to maximize habitat for multiple migratory bird species
- ✿ Some semblance of historic types and abundance







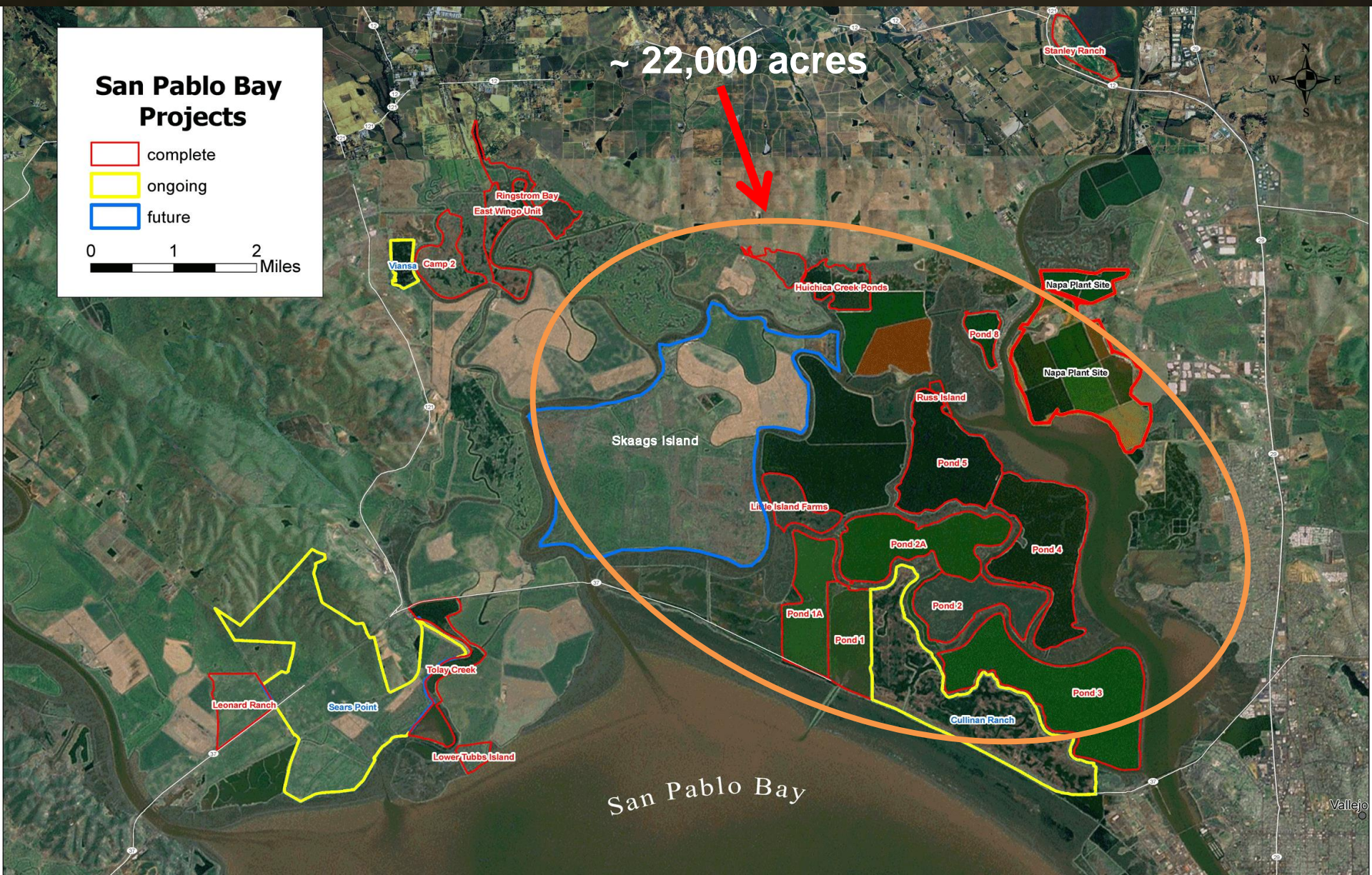








# The Leader in Wetlands Conservation







# The Leader in Wetlands Conservation



**Castro  
Cove  
Trustee  
Council**







## So What?

SP Baylands restoration costs = \$60M so far (not incl acq. Costs)

Latest SF Commercial Fisheries - \$12M/yr

Latest SF Sport Fisheries - \$65-98M/yr

Waterfowl Hunting - \$6M/yr

Other Recreation (birding, etc) - \$???

Quality of the Bay Area Lifestyle – Priceless

Many important lessons learned for future projects in the  
South San Francisco Bay

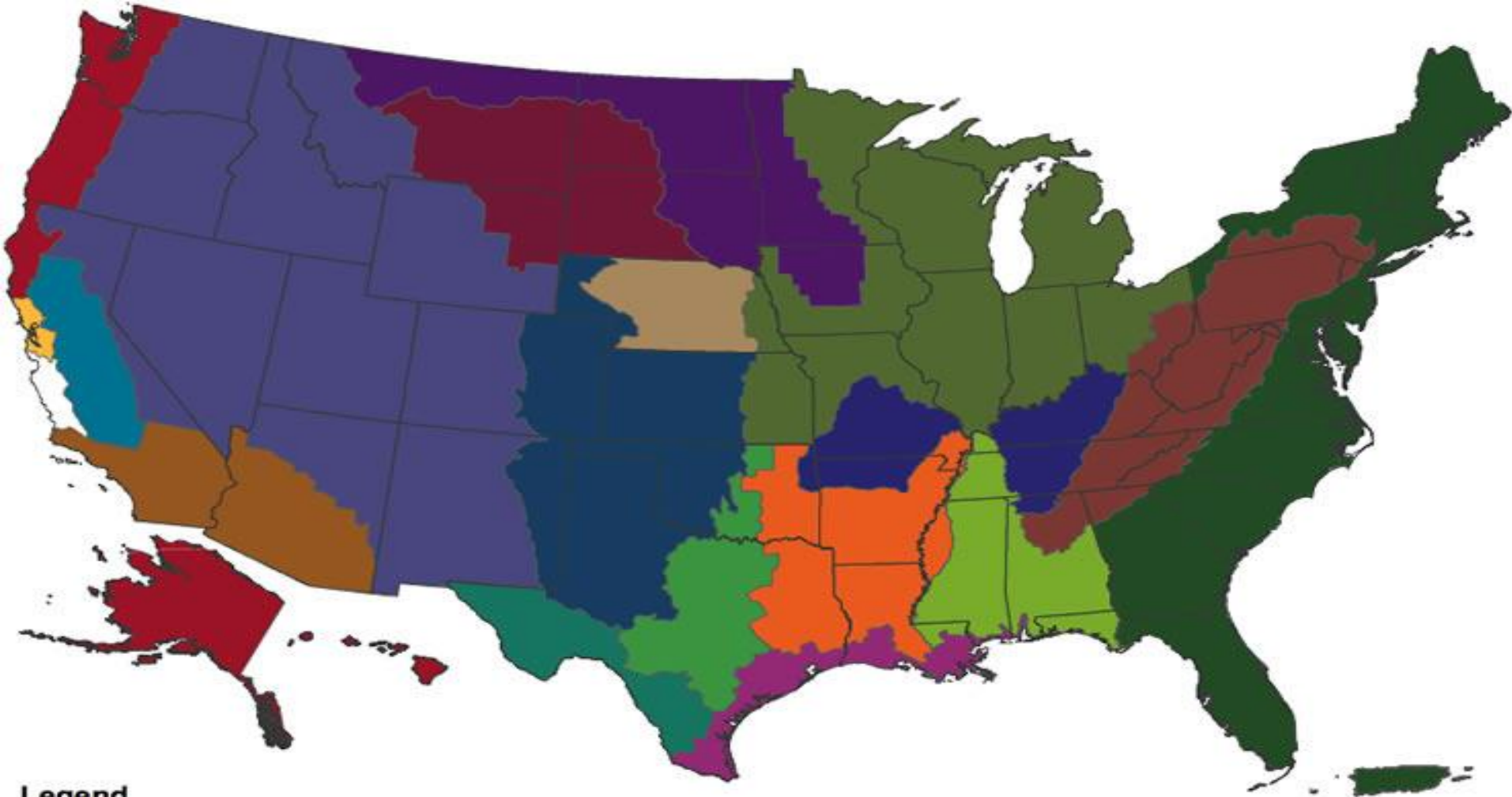


# CHALLENGES AND LESSONS LEARNED

- ✦ Turbidity monitoring data not meaningful in shallow waters
- ✦ Access quite problematic
- ✦ Post construction monitoring must be realistic and purposeful  
**How to overcome challenges with such large undertakings and effectively restore at the ecosystem scale?**
- ✦ Construction equipment accessibility – tides, bathymetry
- ✦ T&E issues can dictate schedule and drive up costs
- ✦ Regulated as any other land development project - site visits with regulators are immensely valuable
- ✦ Construction techniques/approach must be flexible and will vary by site
- ✦ Funding is through multiple entities making project mgmt/admin/coordination extremely challenging

Joint Ventures





**Legend**

- Appalachian Mountains
- Atlantic Coast
- Central Hardwoods
- Central Valley
- East Gulf Coastal Plain
- Gulf Coast
- Intermountain West
- Lower Mississippi Valley
- Northern Great Plains

- Oaks and Prairies
- Pacific Coast
- Playa Lakes
- Prairie Pothole
- Rainwater Basin
- Rio Grande
- San Francisco Bay
- Sonoran
- Upper Mississippi River/Great Lakes Region

# Habitat Joint Ventures in the United States





# San Francisco Bay Joint Venture

- ❦ The basis of collaborative bird conservation partnerships in the San Francisco Bay region
- ❦ Federal, state, local and private entities
- ❦ Implementation oriented with a foundation in the San Francisco Bay Area Wetlands Ecosystem Goals Project
- ❦ Coordinate partners for restoration project planning, funding, and implementation to benefit the entire SF Bay Ecosystem
- ❦ To date there are 20,000+ wetland and assoc. acres restored or underway with double that planned



**QUESTIONS?**

