



SAN FRANCISCO  
ESTUARY INVASIVE  
SPARTINA PROJECT

Preserving native wetlands




# Patch-level Treatment Monitoring an End-Game Strategy

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ISP Monitoring Program Manager



# Outline

- Brief History of the Invasive *Spartina* Project
- Past Monitoring & Control Strategies
-  • Patch-Level Treatment Monitoring Strategy
- Pros & Cons of Adopting This Strategy



# What is invasive *Spartina*?

*Spartina* is a cordgrass that grows in salt marshes, mudflats and brackish channels

Four introduced species of *Spartina* invading San Francisco Bay



***Spartina alterniflora*  
and hybrids**



***Spartina densiflora***



***Spartina anglica***



***Spartina patens***



One native species (*Spartina foliosa*) occurs in San Francisco Bay marshes

Occupies specific niches in the marsh, balanced with the other important parts of the ecosystem (unvegetated mudflats, healthy channels, pickleweed mid-marsh, etc.)



# ***Why is non-native Cordgrass a Problem ?***

Degrades endangered species habitat

Hybridizes with native Pacific cordgrass

Fills in restoration sites

Degrades flood control capacity





# The Invasive *Spartina* Project

- Created in 2000 by the Coastal Conservancy and the USFWS
- Coordinate Estuary-wide *Spartina* monitoring and control efforts
- Long term goal: eradicate invasive *Spartina* from the San Francisco Estuary



# Monitoring Program

- **Annual Inventory**
- **New Features** (pt, ln, poly, grid) **Yearly**
- **New Overlay Old Features**
- **Mapping Grade GPS** (ArcPad)



# The Past

- Extended tidal range
- Longer, wider leaves
- Longer, fatter inflorescences
- Taller







Invasive *Spartina alterniflora* x  
*foliosa* hybrid

Native *Spartina*  
*foliosa*



# Control Program





## Net cover of Invasive *Spartina* 2004-2010


2004: 691 - 789 acres  
2005: 721 - 824 acres  
2006: 589 acres  
2007: 215 acres  
2008: 296 acres  
2009: 161 acres  
2010: 67 acres (to date)

- 
- *S. alterniflora*/hybrid  
• Possible *S. alterniflora*/hybrid  
• *S. densiflora*  
• *S. patens*  
Inventory Boundary (50,000 acres)
- The map shows the Chesapeake Bay and surrounding areas. The net cover of invasive *Spartina* is indicated by colored dots: red for *S. alterniflora*/hybrid, orange for possible *S. alterniflora*/hybrid, purple for *S. densiflora*, and green for *S. patens*. A green line outlines the inventory boundary, which covers 50,000 acres. A bar chart in the center of the map shows the net cover of *Spartina* from 2004 to 2010, with the following data:
- | Year | Net cover (acres) |
|------|-------------------|
| 2004 | 691 - 789         |
| 2005 | 721 - 824         |
| 2006 | 589               |
| 2007 | 215               |
| 2008 | 296               |
| 2009 | 161               |
| 2010 | 67 (to date)      |







A photograph of a field with tall, dry, brownish grass. In the background, there is a body of water, possibly a pond or a marsh, with some green vegetation along the edge. The sky is not visible.

Not so easy  
anymore, huh?



# The Present

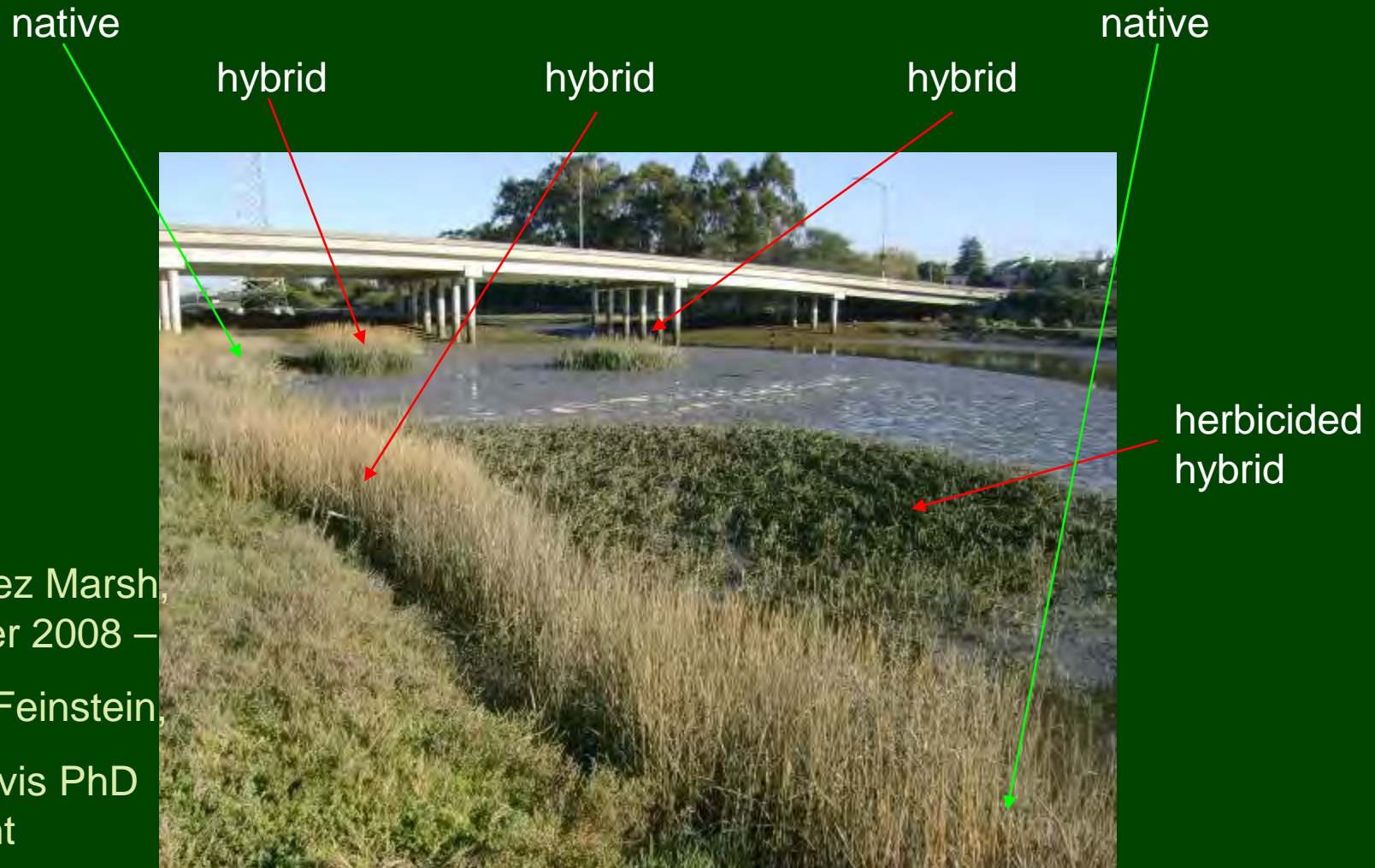
- All obvious plants sprayed 2+ years
- Regrowth stunted by herbicide
- Regrowth may not flower

Is this  
hybrid  
regrowth,  
or native?



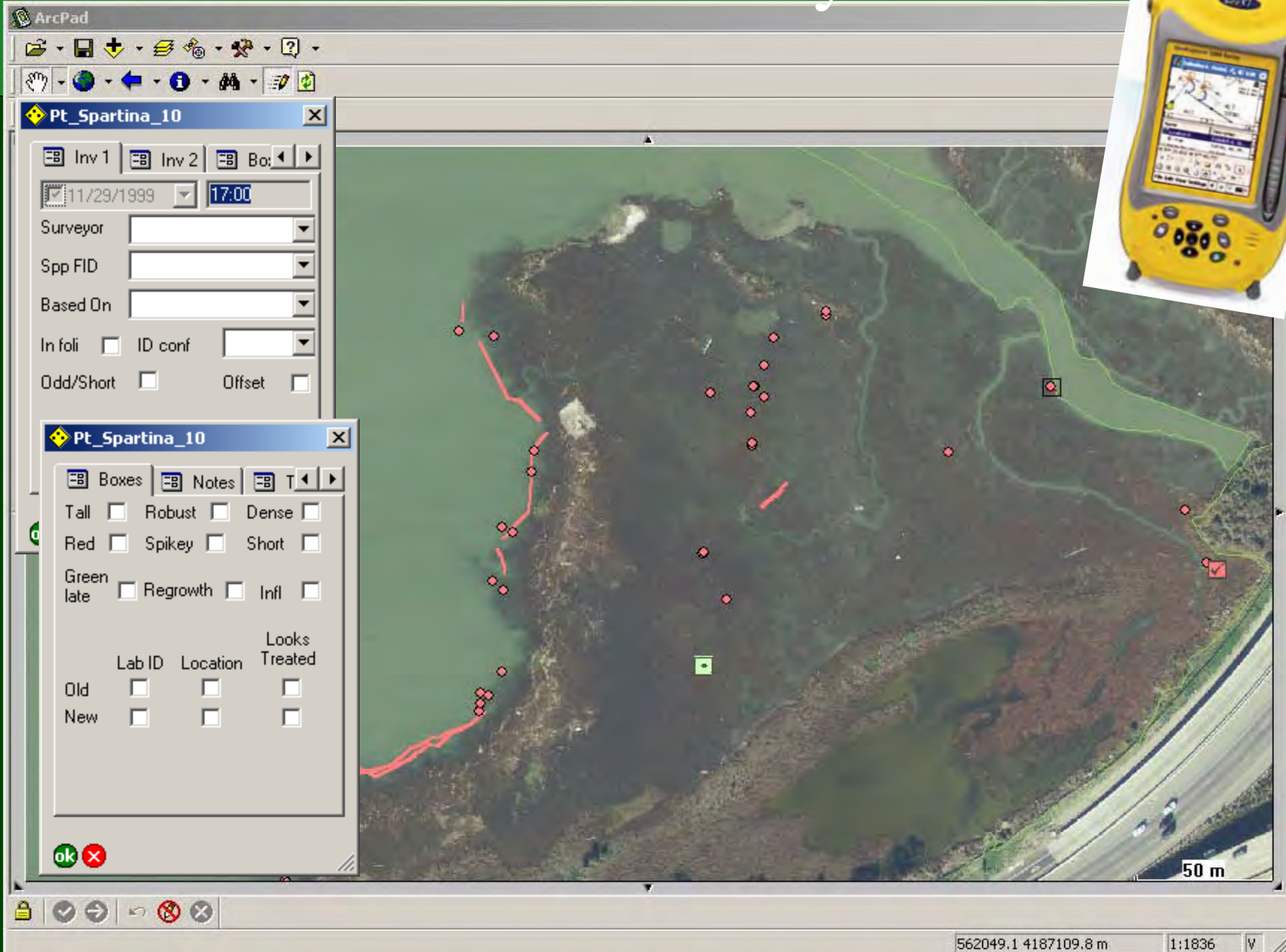


# Backcrossing and Introgression



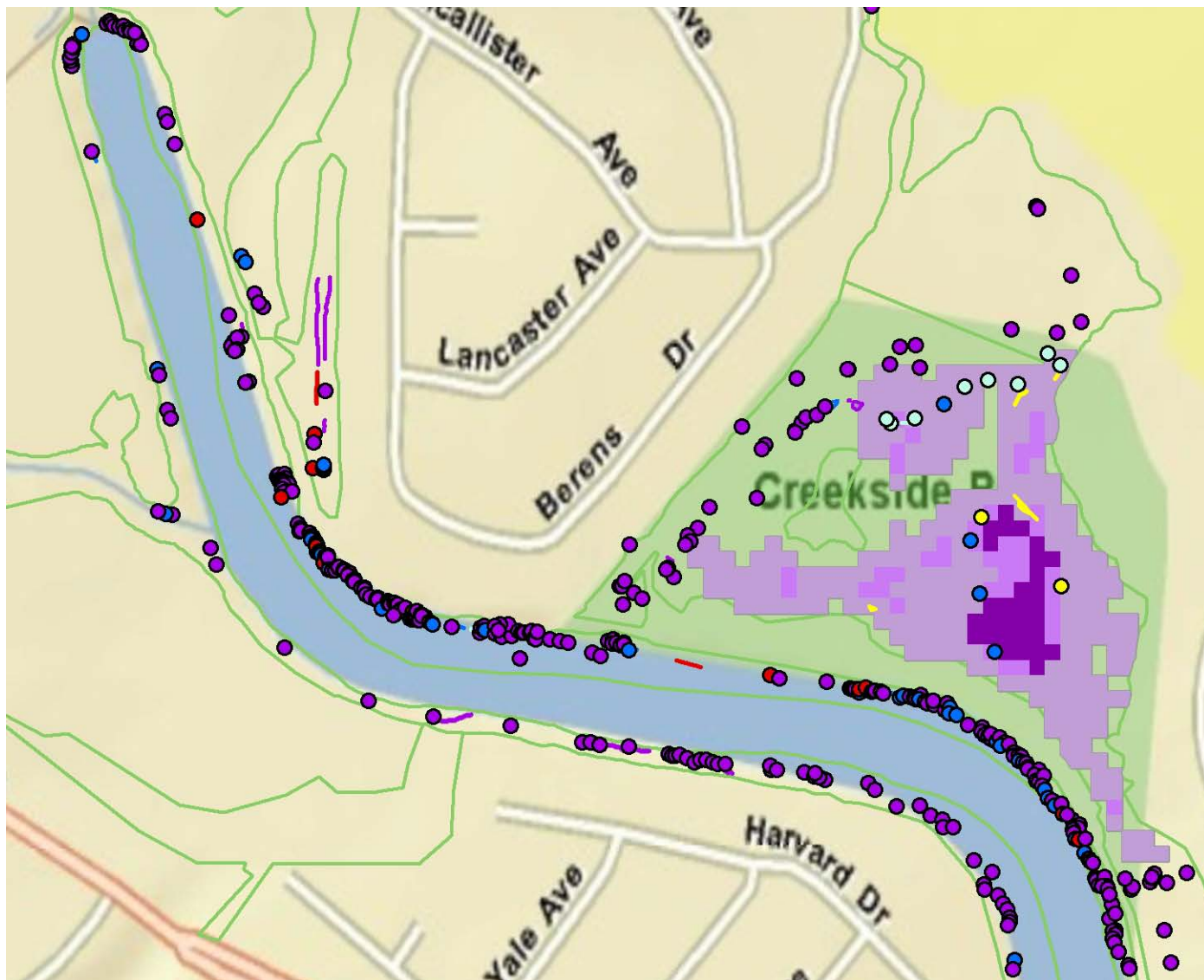
Sanchez Marsh,  
October 2008 –  
Laura Feinstein,  
UC Davis PhD  
Student

# ArcPad Custom Inventory Forms

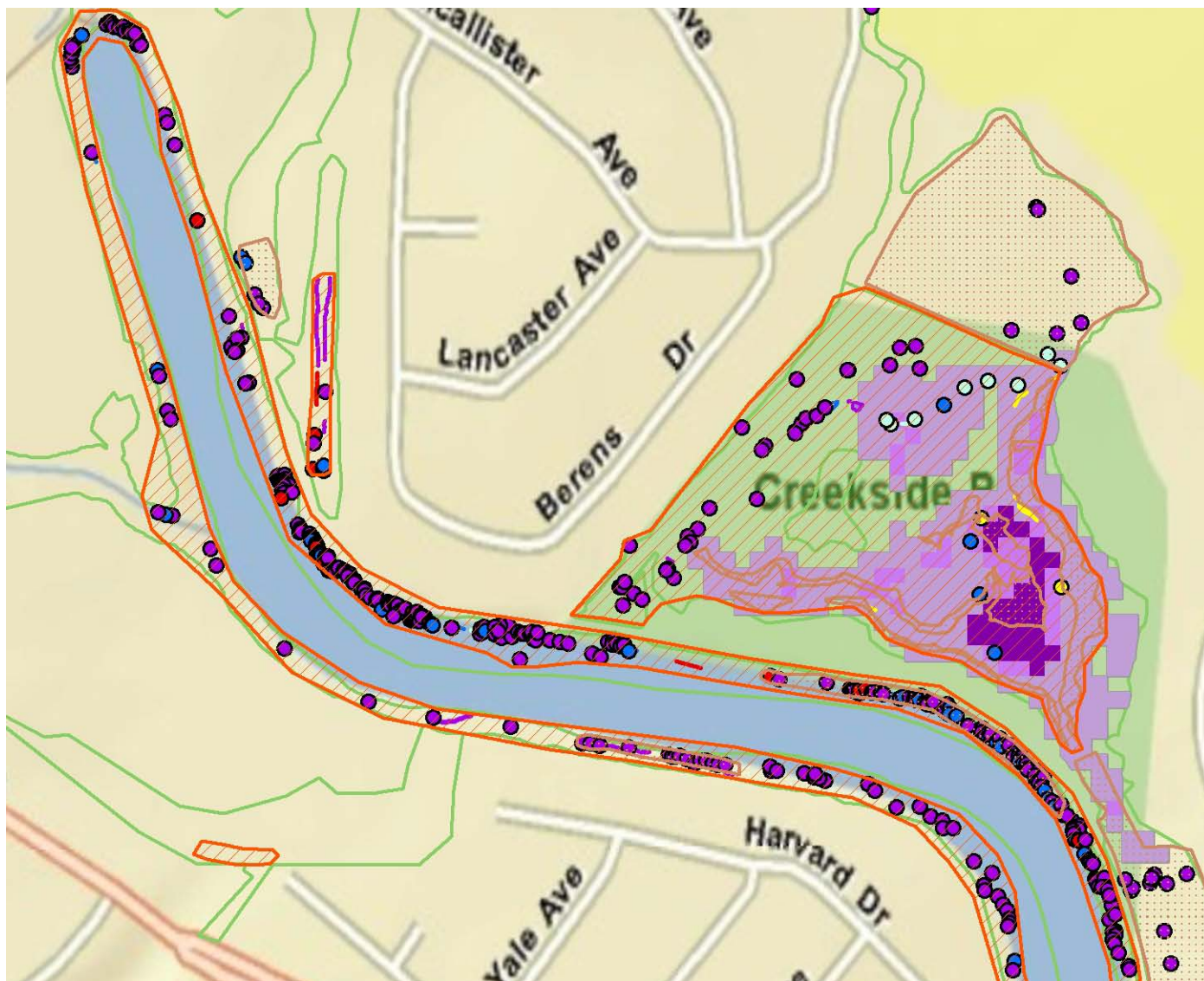












# The Future

- Use GPS to guide treatment
- Record patch-level treatment effort

Spray  
this one!













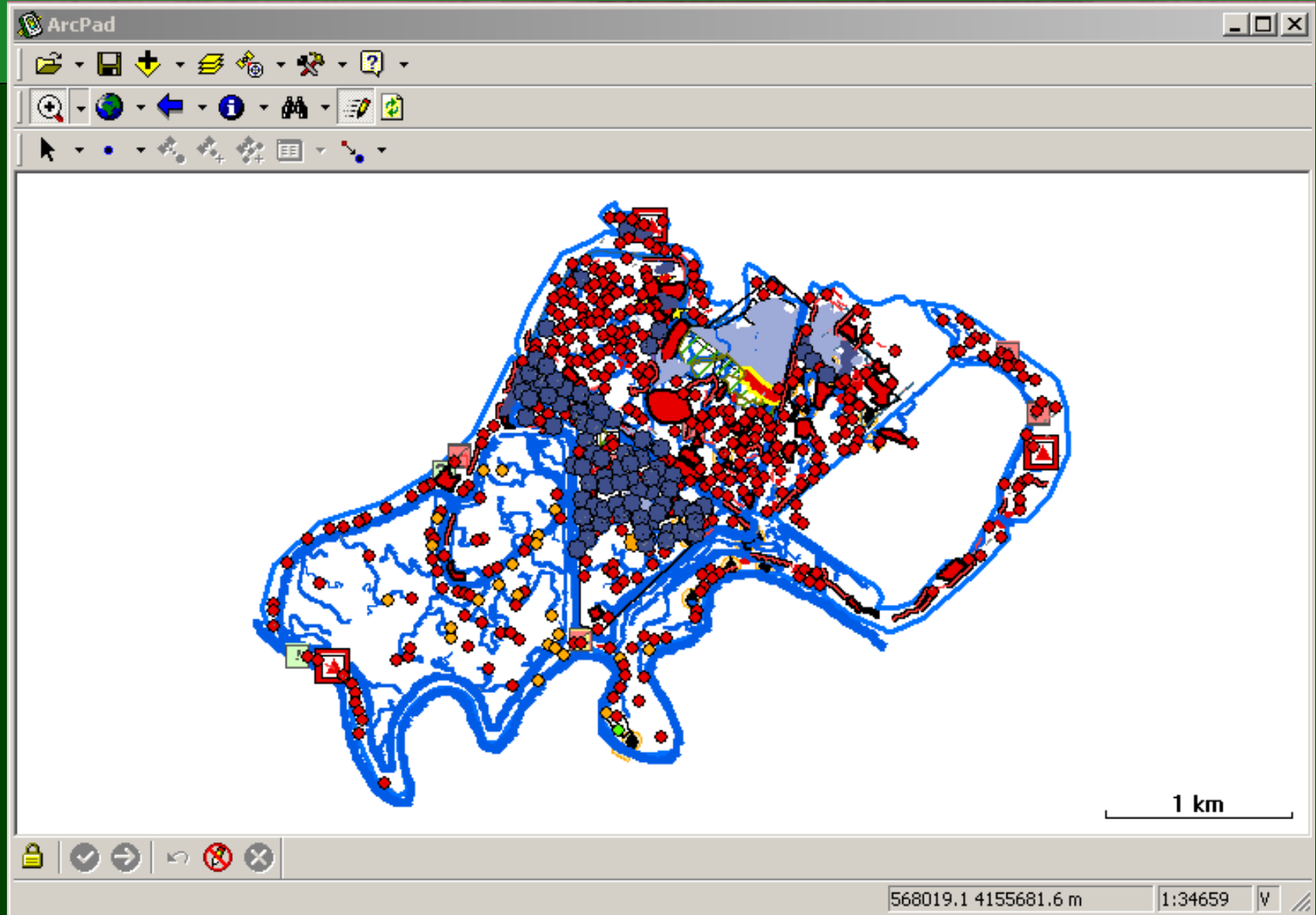


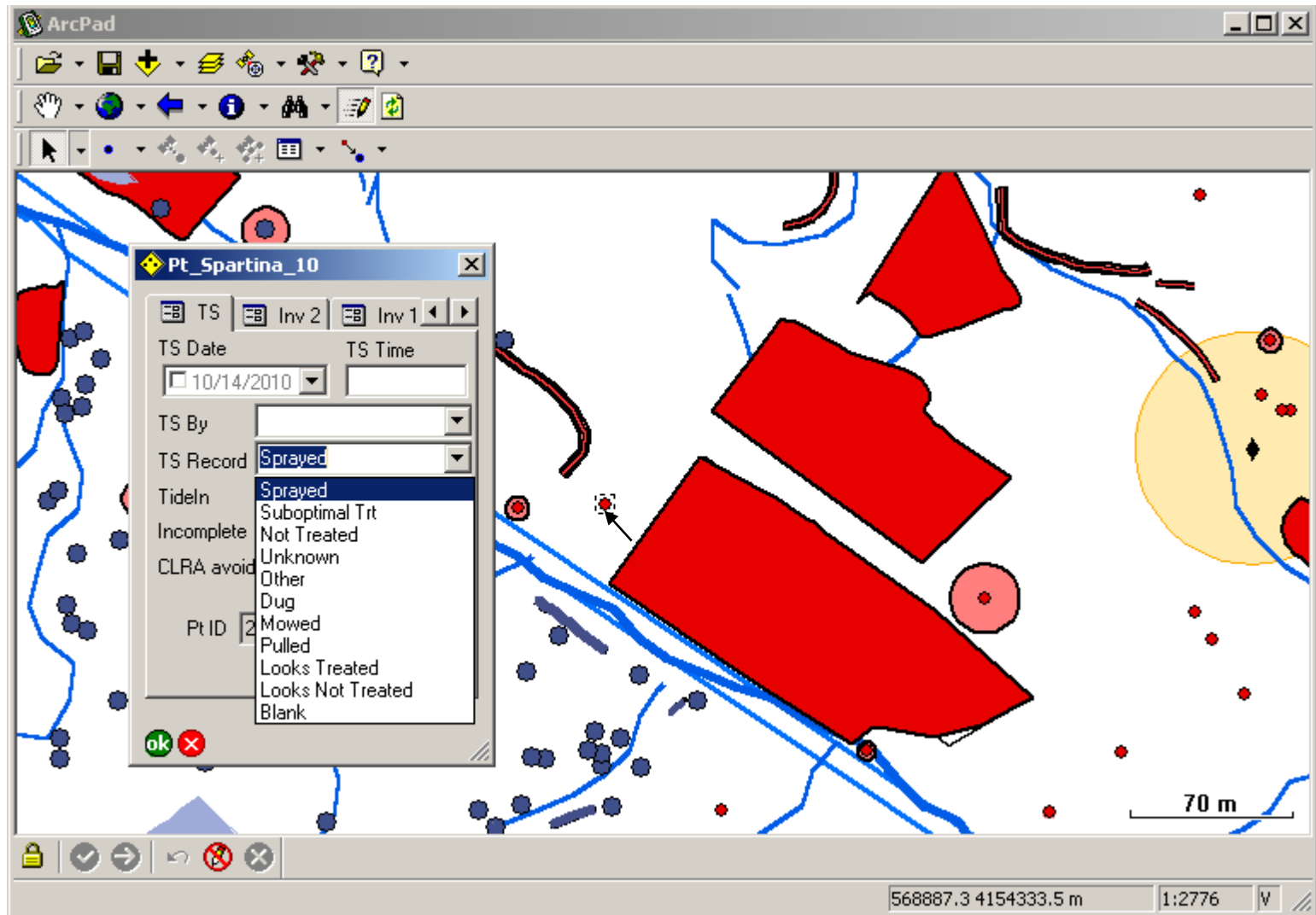




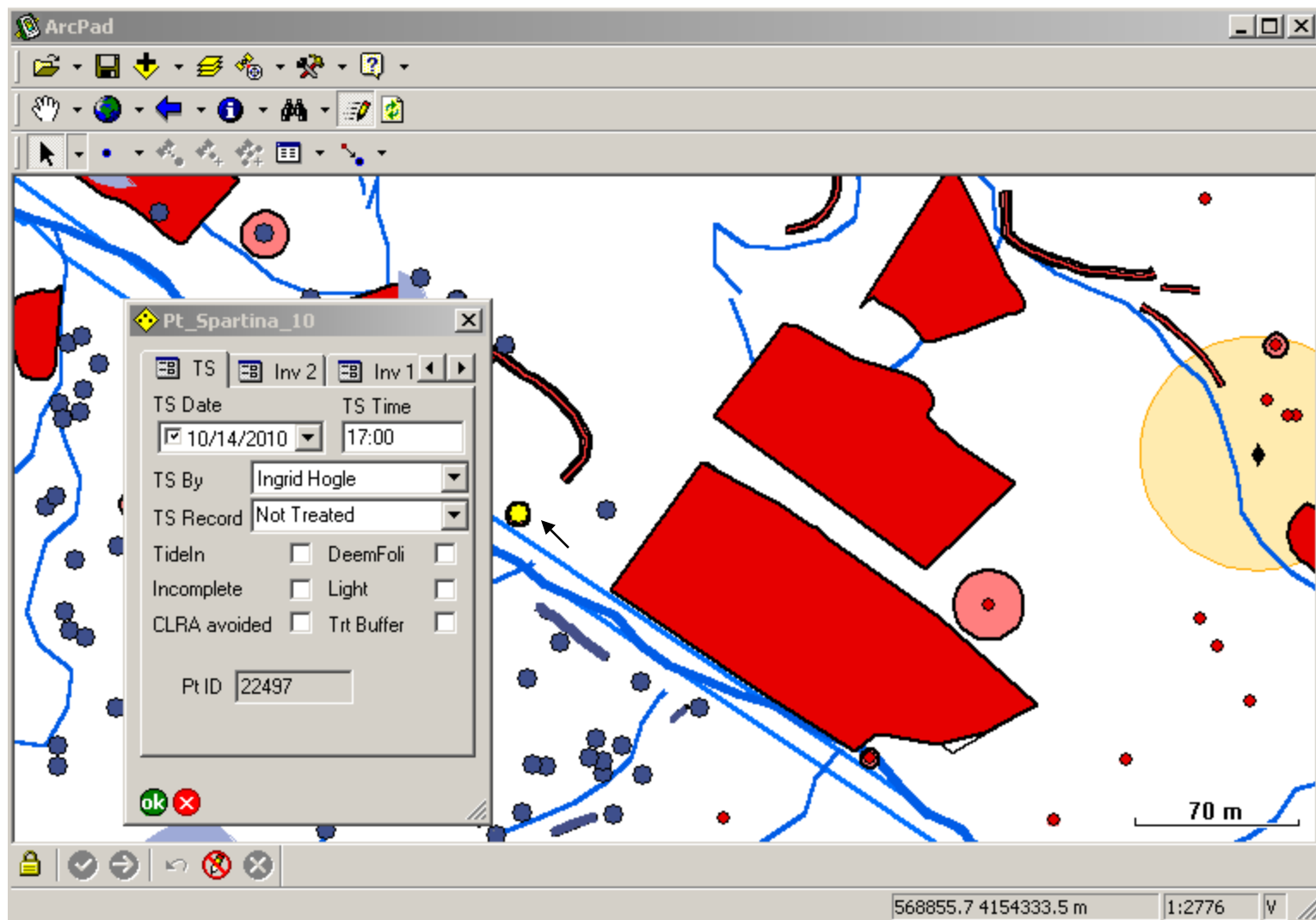


# ArcPad Custom Treatment Survey Forms













# TS survey work

Where to  
next,  
ma'am?



# Pros

- Easier for Treatment Crews 😊



# Pros

- Easier for Treatment Crews 😊
- Accountability of Treatment Crews

# Pros

- Easier for Treatment Crews 😊
- Accountability of Treatment Crews
- Better Monitoring Information
  - More Patches Mapped
  - Past Treatment Info Informs ID & conf
  - Track What Works



# Cons

- TIME
- MONEY

# Cons

- More Staff Required
- Increased Geodatabase Complexity



## THANK YOU

**Project Director** – *Peggy Olofson*

**Project Manager** – *Maxene Spellman*

**Field Operations Managers** – *Erik Grijalva & Drew Kerr*

**Assistant Monitoring Program Manager** - *Tripp McCandlish*

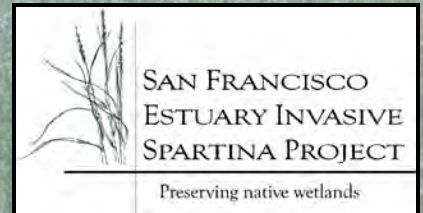
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Jeff Lewis, Toby Rohmer*

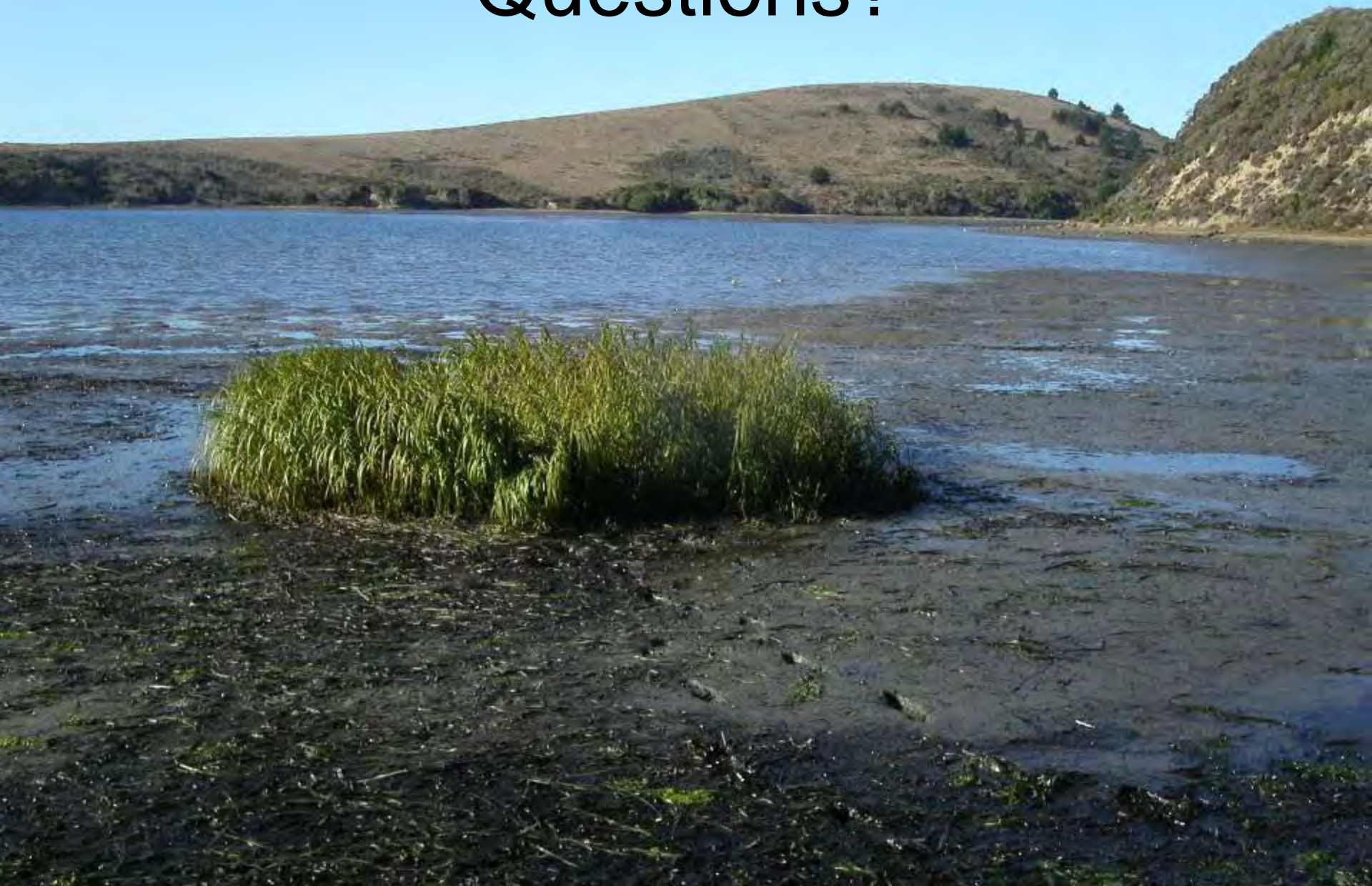
**Interns** – *Gwen Conahan, Denis Coghlan, Wiley Archibald, Annette Russell*

**Funders** – *California State Coastal Conservancy, CALFED, ARRA*





# Questions?





# Questions?

