



SFEI WETLAND SCIENCE PROGRAM

An Integrated Wetlands Assessment Program for the San Francisco Bay Area and California

In conjunction with partners throughout California, the San Francisco Estuary Institute (SFEI) is developing an integrated wetlands assessment program for the Bay Area and all of California that focuses on providing answers to the fundamental questions that are commonly raised by wetland managers: where are the wetlands and how are they doing? The approach consists of *three basic tiers or levels of activity*: **I** wetland inventories; **II** rapid assessments of wetland condition; and **III** intensive monitoring and research of selected wetland sites. The specific activities within each level are described below, and the information generated by the approach is designed to be accessible on Wetland Tracker websites throughout California. Visit www.wrmp.org for the Wetland Tracker and other components described here.



LEVEL I Inventories and landscape profiles are the most basic component of a comprehensive wetlands assessment program, and they are essential for identifying the spatial distribution and abundance of wetland and riparian resources. The State of California is working with regional teams to update the State Wetland Inventory. SFEI leads the Bay Area regional team to provide more specific information on all wetland habitat types and wetland projects. This update comprises the Bay Area component of the California State Wetland Inventory, which (when completed) will include regional and statewide reports on the status and trends in the distribution and abundance of each kind of wetland. The State Inventory will act as a sample frame in probabilistic surveys of ambient wetland condition.



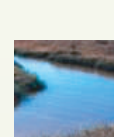
> http://ceres.ca.gov/wetlands/projects/CA_Wetlands_Inventory_Initiative.html



> www.nwi.fws.gov/



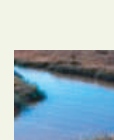
LEVEL II Rapid assessment methods use observations and measurements to evaluate a management endpoint such as wetland function, condition, or beneficial use. The California Rapid Assessment Method (CRAM) is being used to assess wetland project performance and ambient wetland condition based on visible diagnostic indicators of key functions or beneficial uses that vary predictably along gradients of environmental stress. The stressors, such as habitat conversion, biological invasion, hydro-modification, and pollution are anthropogenic causes of changes in wetland function. CRAM is currently in selective use by the State Water Board and National Park Service as final calibration is completed. During calibration, CRAM scores are compared to empirical level 3 data on key functions to ensure that the rapid assessment correlates with data from more detailed studies. Once validated, CRAM can be used where intensive data are lacking. Rapid assessment can thus lessen the cost to monitor wetlands and riparian resources across a region or over time.



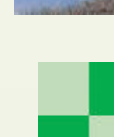
> www.wrmp.org/cram.html



LEVEL III Intensive monitoring and research components of a comprehensive monitoring program are needed to track conditions where rapid assessment methods cannot provide enough detail, to develop new indicators and techniques of data collection and analysis, and to develop methods to manage data and information. Empirical research should yield predictive models of the relationships between stressors, functions, and conditions, as needed to calibrate and validate the inventories and rapid assessments.



> www.wrmp.org/cram.html and click on 'Protocols'



> www.iwrm.org



> www.bml.ucdavis.edu/peer/

Update of National Wetlands Inventory (NWI) for California State Wetland Inventory (CSWI)



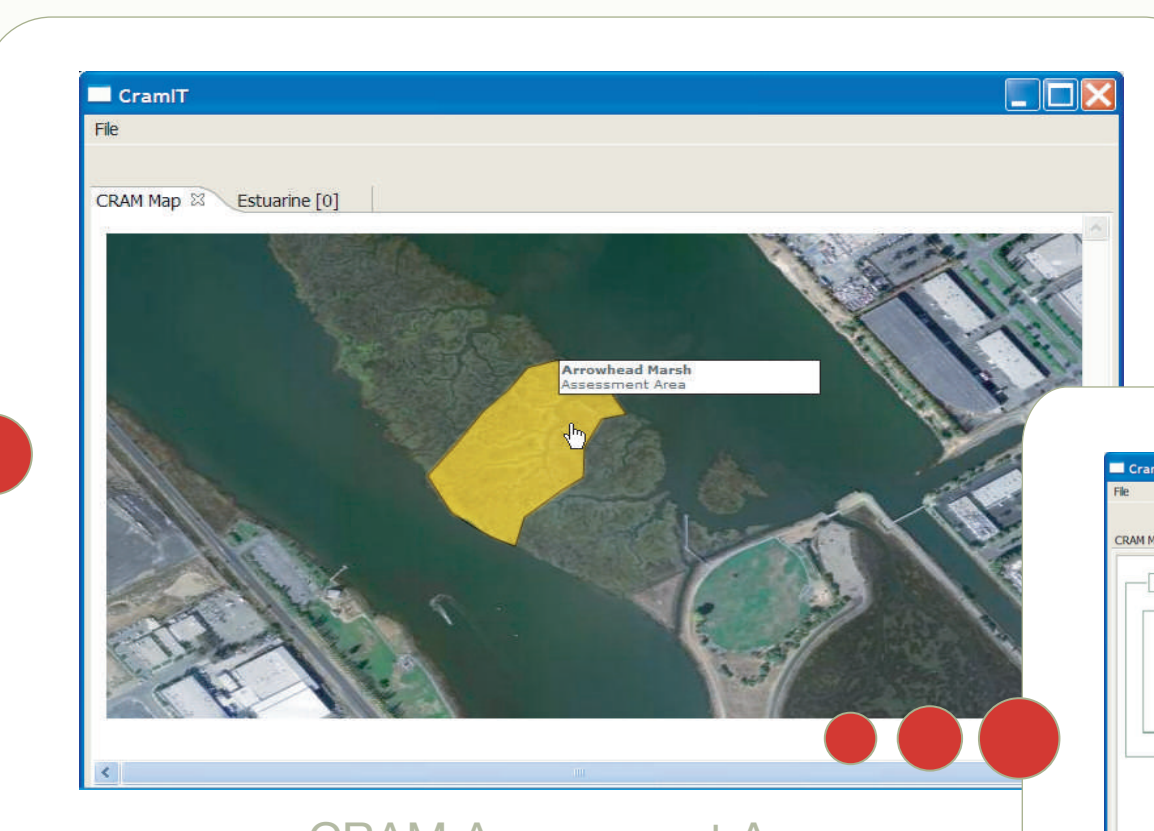
Historical NWI of Bair Island in South Bay



NWI Updated at SFEI of Bair Island in South Bay

The SFEI update of the Bay Area component of the NWI and CSWI provides a much more detailed inventory of local wetlands. More wetland types and smaller wetland patches have been added.

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CRAM Assessment Area

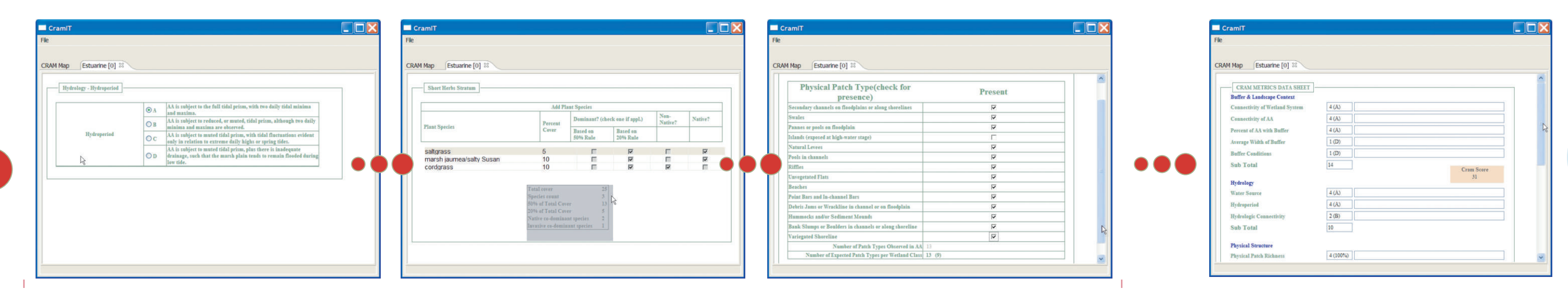
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The California Rapid Assessment Method (CRAM)



CRAM data entry interface

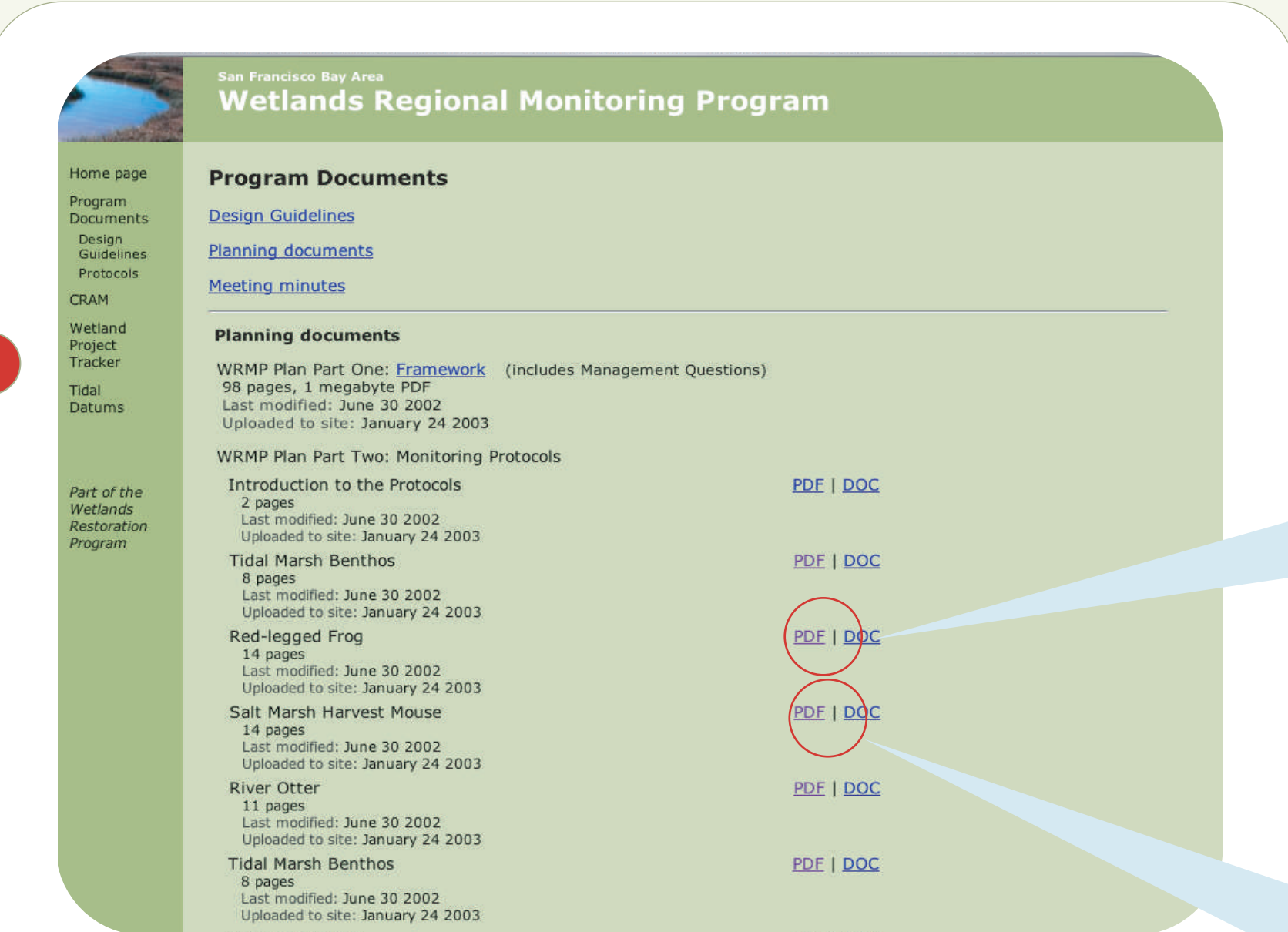
Summary of CRAM scores

All CRAM data are entered by the user in the field using the custom-designed CRAM Information Technology system, which enables the user to store and display aerial imagery of the site to be assessed and nearby surroundings. First, the CRAM user identifies an area to be assessed based on hydrology or other project needs.

Then the user investigates the site in the field, entering data on various metrics that relate to wetland function.

Finally, the individual Metric scores are summed to subtotals or Attribute scores (Buffer and Landscape Context, Hydrology, Physical Structure, and Biotic Structure). The Attribute scores are summed to provide the overall CRAM score for the Assessment Area.

Intensive Monitoring and Research Protocols



Protocols available on Wetlands Regional Monitoring Program (WRMP) website

SFEI has worked with regional teams to develop standard protocols for Level III monitoring of key parameters, including sedimentation, sediment contamination, tidal marsh plant community structure, wetland birds, small mammals, and selected amphibians.

San Francisco Estuary Wetlands Regional Monitoring Program Plan

Data Collection Protocol
SURVEY PROTOCOL FOR THE CALIFORNIA RED-LEGGED FROG (*Rana aurora draytonii*)

Gruschen E. Pughen-Fidler and Mark Jennings
Riparian Resource
Fresno, CA



California red-legged frog

Rana aurora draytonii



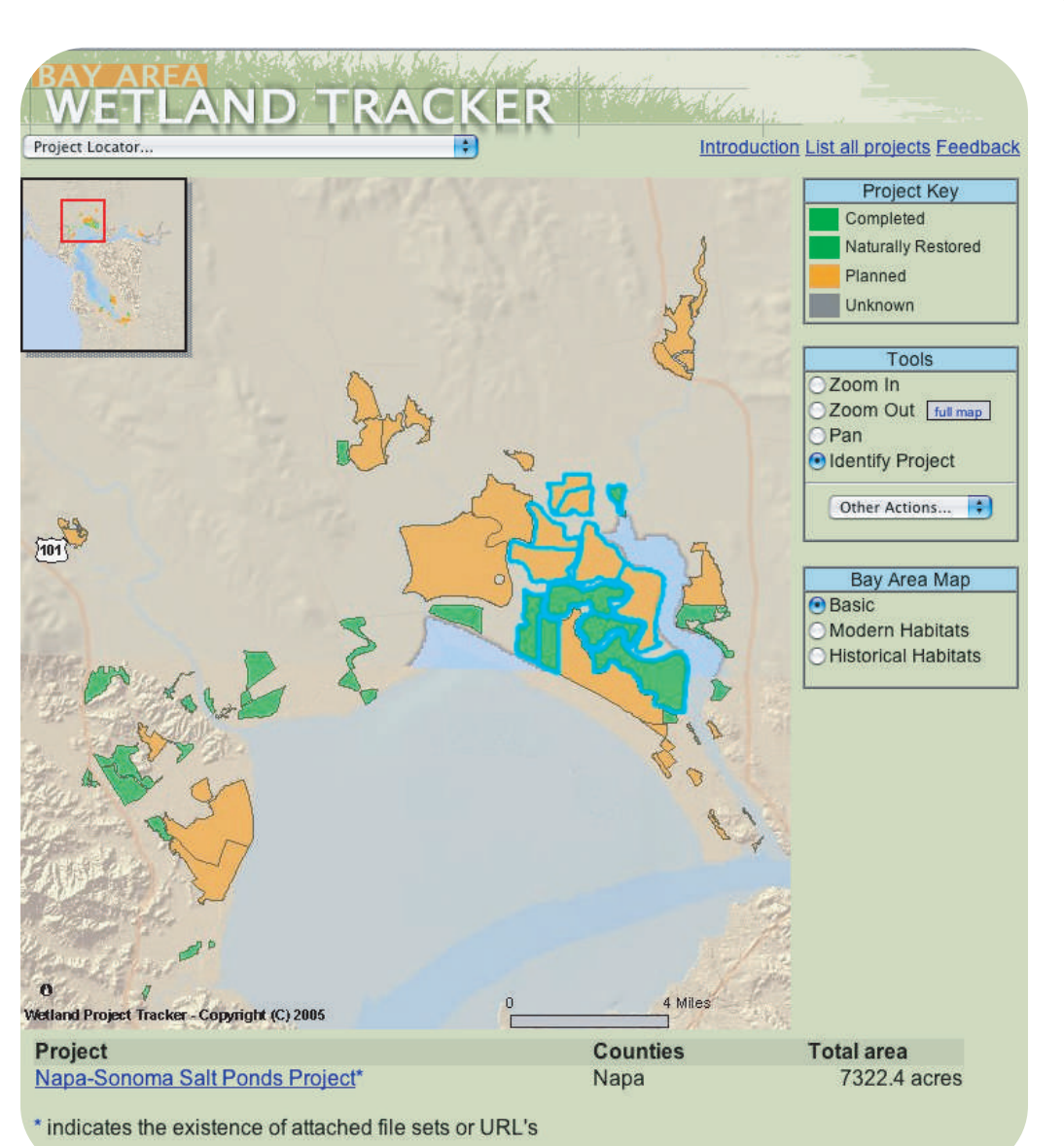
Tracking monitoring data and making it accessible to a wide community

on-line is achieved with the Wetland Tracker. The Bay Area Wetland Tracker is designed to track net changes in the quantity and quality of wetlands. Entirely open source programming is used to provide free public access to information about wetlands and riparian habitats in the region, plus the location, size, sponsors, habitats, contact persons, and status of wetland restoration, mitigation, creation, and enhancement projects. Planned and completed wetland projects are displayed on an interactive regional map. Summary information is displayed alongside the map. More information is found on separate project information sheets. Each project can have files associated with it, such as reports, data, photos, videos, other maps or commentary. Anyone can submit files with their browser and make them available for others to download. The current version of the Wetland Project Tracker uses US Geological Survey topographic maps and the Baylands maps of the Bay Area EcoAtlas as optional base maps. Additional base maps are being developed using the updated State Wetlands Inventory. New Wetland Trackers are being developed for all the Coastal Regional Water Quality Control Boards, and they are linked to state information systems that serve Cal EPA and the State Resources Agency.

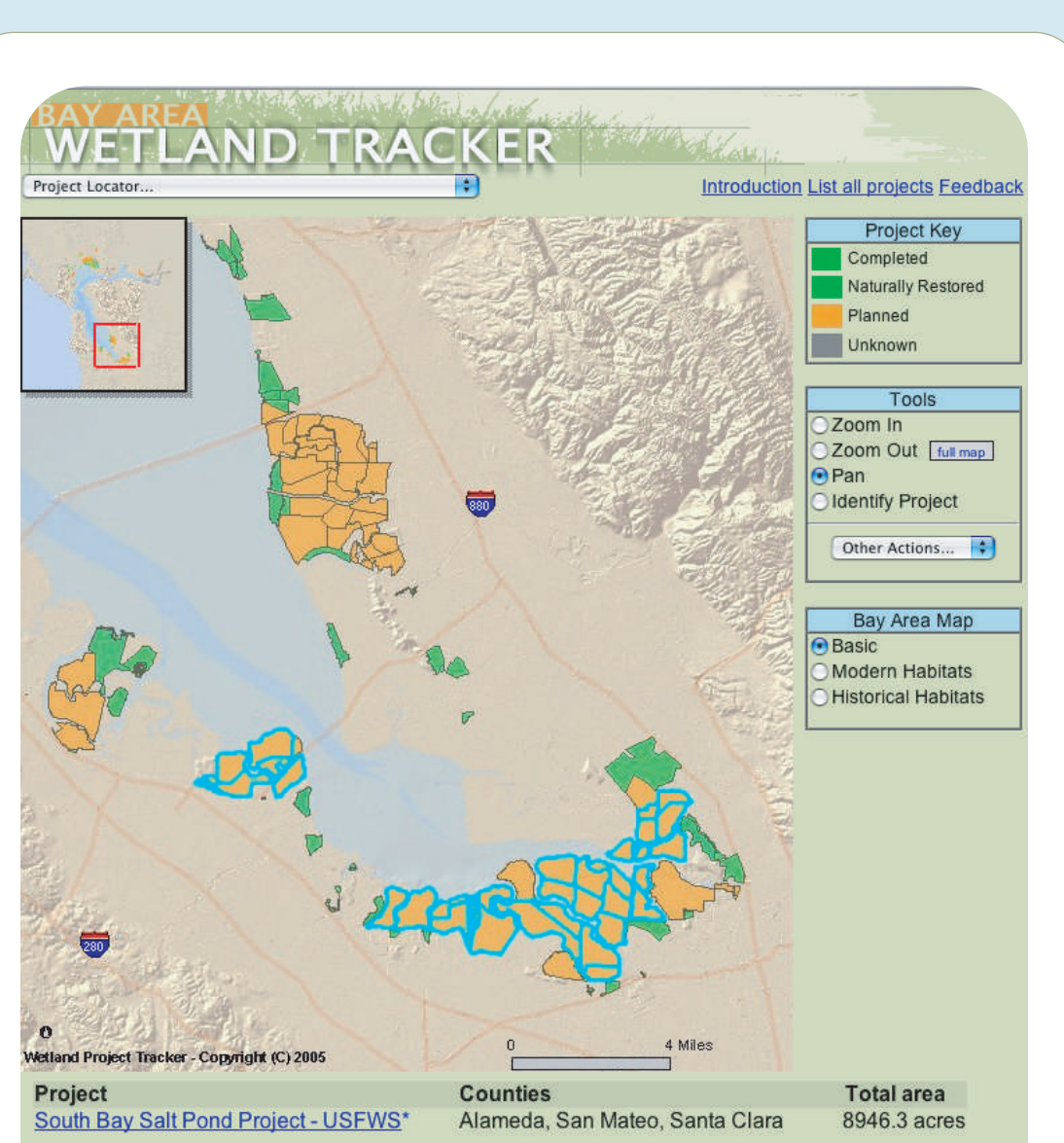


> www.wetlandtracker.org/

Wetland Tracker



North Bay Restoration Projects



South Bay Restoration Projects

Planned and completed wetland projects are displayed on an interactive regional map. Summary information is displayed below the map.



Acknowledgements
Thanks to Linda Wanczyk for designing and producing this poster.



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