Compliance & Effectiveness Monitoring Framework for Water Quality Control and Habitat Conservation

Assessing the Performance
of Public Policies, Programs, Plans and Projects

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Starting Premise

CWA and ESA (CA and Federal programs) are adopting similar watershed/landscape approaches to protect the same resources

HCP Addendum Federal Register 2000

Guidelines and Principles
to achieve Biological Goals
and Minimize and Mitigate
*Impacts to **Species or Habitat***
*using **Watershed or Landscape Approach***

Section 404(b)(1) Guidelines USACE SPD 2014

Guidelines and Principles
to achieve Biological Goals
and Minimize and Mitigate Impacts
*to **Species or Habitat***
*using **Watershed or Landscape Approach***

Preliminary draft Wetland Area Protection and Dredge and Fill Permitting Policy

*The California Water Boards shall use a **watershed approach** in reviewing compensatory mitigation plans to protect the beneficial uses of state waters*

The “RARE” beneficial use means special status wildlife

Key Logic

The watershed/landscape approach will improve the cumulative effect of restoration/mitigation

Success requires coordination across all projects affecting resource abundance, diversity and condition

Coordination requires a common framework and toolset for consistent compliance and effectiveness monitoring

The Catch Phrase

Protect the abundance, diversity, and condition
of aquatic resources (= CA and federal surface waters)
in a project area (= watershed or other landscape)

Overview of the Framework

WRAMP

Wetland and Riparian Area Monitoring Plan

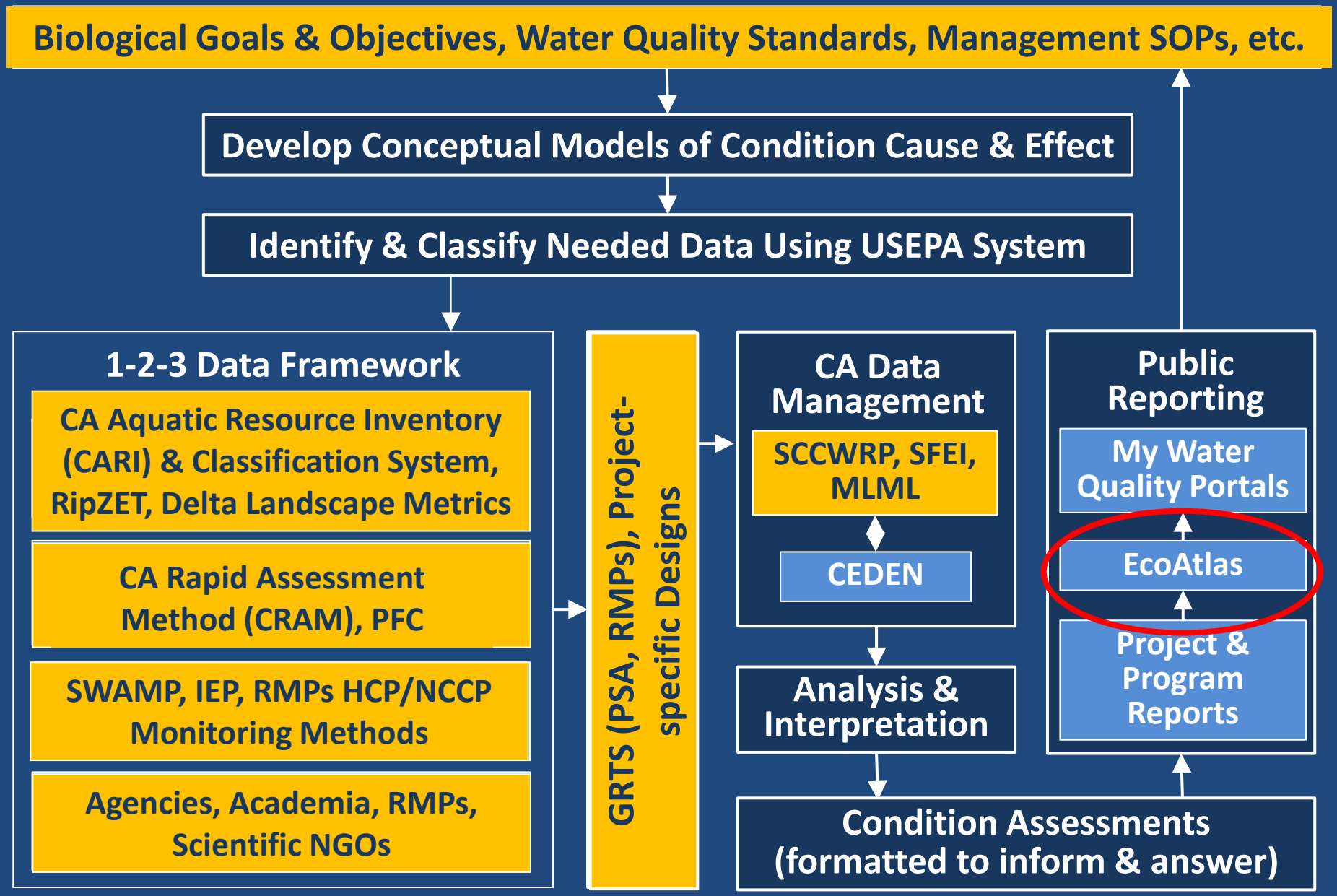
WRAMP is not a program. It's a framework and toolset to be implemented through existing programs

Focused on wetland protection through water quality control programs with prospects to expand to aquatic and terrestrial wildlife and habitats

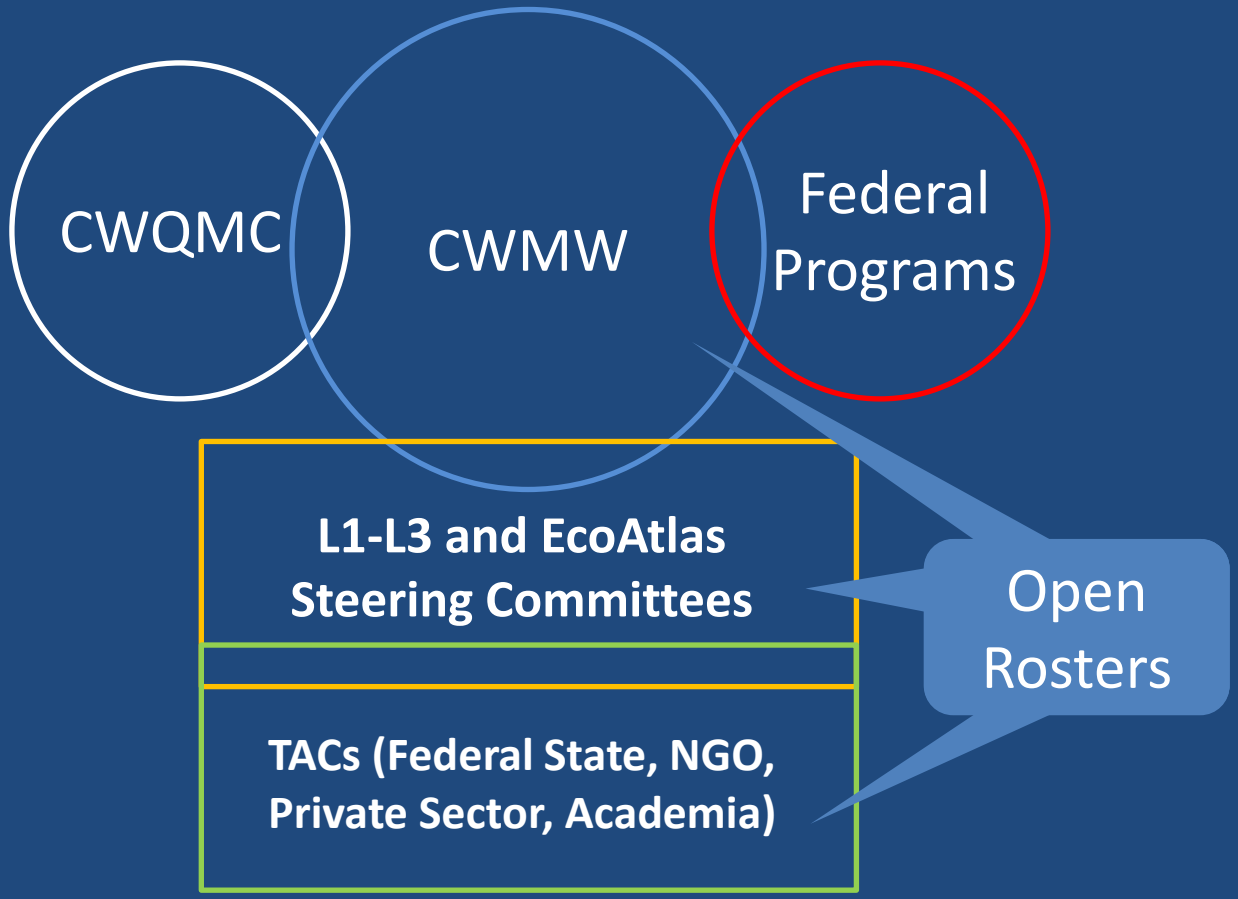
Data access and tools vary in development but progress is being made on many fronts

20+ years of collaborative development

General Framework



Present Governance Structure



Participating CA State Agencies

- Coastal Commission
- Department of Fish and Wildlife
- Department of Parks and Recreation
- CalTrans
- Department of Water Resources
- Resources Agency
- State Lands Commission
- State Coastal Conservancy
- Regional Water Quality Control Boards 1-6, 8, 9
- Delta Conservancy
- State Water Resources Control Board

Participating Federal Agencies

- National Oceanic and Atmospheric Administration, National Marine Fisheries Service
- Natural Resources Conservation Service
- U.S. Army Corps of Engineers
- U.S. Environmental Protection Agency
- U.S. Fish and Wildlife Service

Other Agencies and Entities

- Moss Landing Marine Laboratories
- San Francisco Estuary Institute and Aquatic Science Center
- Southern California Coastal Water Research Project
- Habitat Joint Ventures

New and Emerging Tools

- Help develop and align water quality and habitat objectives for wetlands and riparian areas
- Track and report project compliance and effectiveness based on wetland abundance, diversity, and condition

Overview of Selected Tools

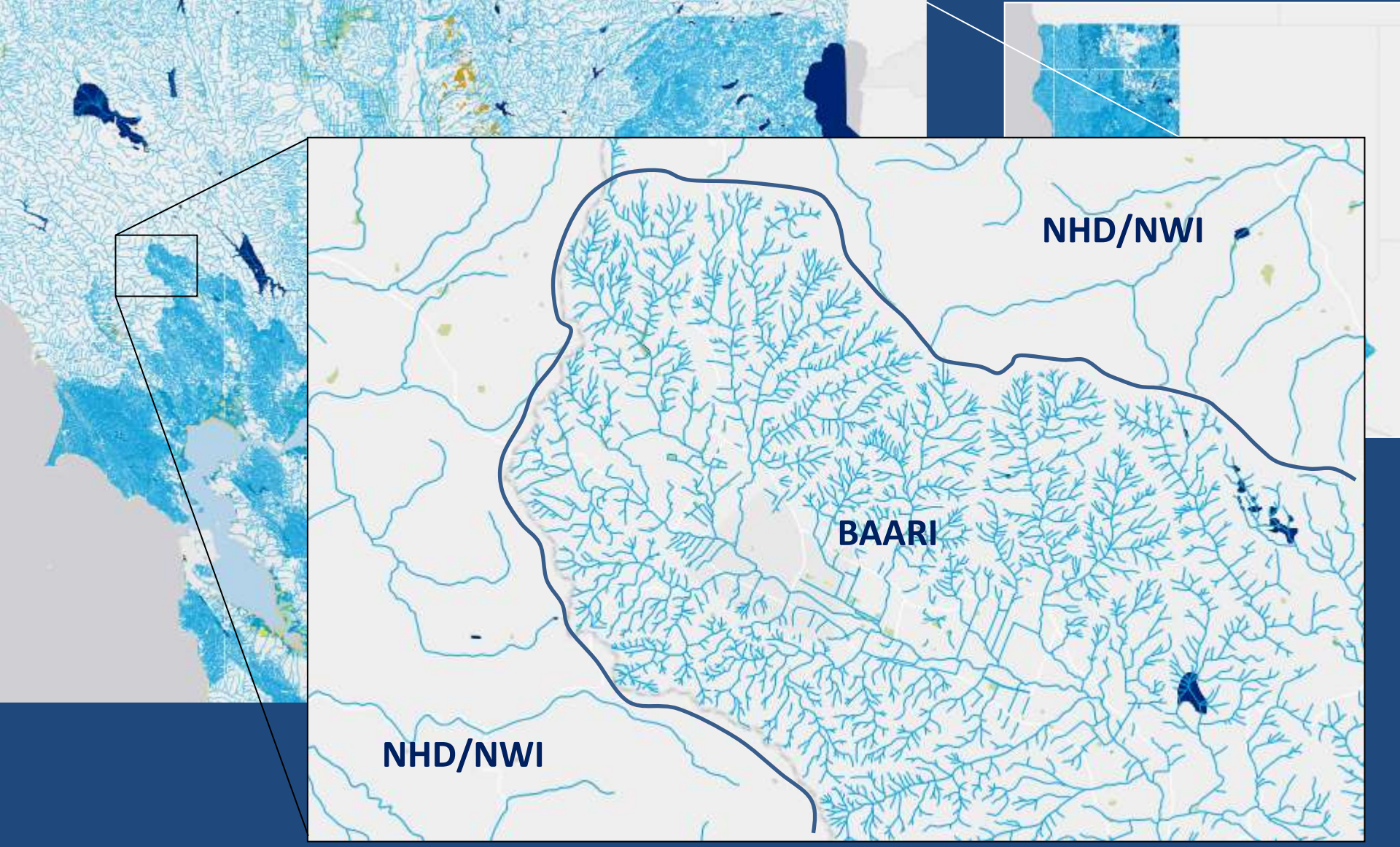
Yep – there's more!

- CARI
- RipZET
- Project Tracker
- CRAM
- Probabilistic Survey Design (GRITS)
- Cumulative Frequency Distribution
- Project Performance Curves
- GreenPlan-IT (LID tools)
- Landscape Profile Tool
- EcoAtlas

CARI
CA Aquatic Resource Inventory

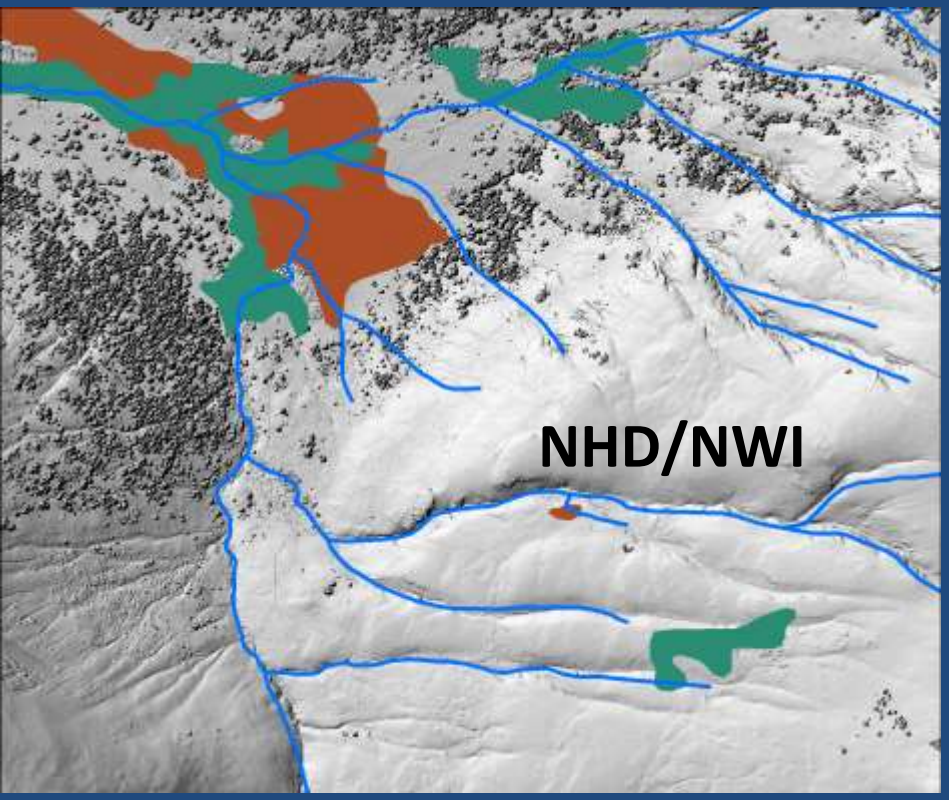
Inventory of Aquatic Resource Abundance and Diversity

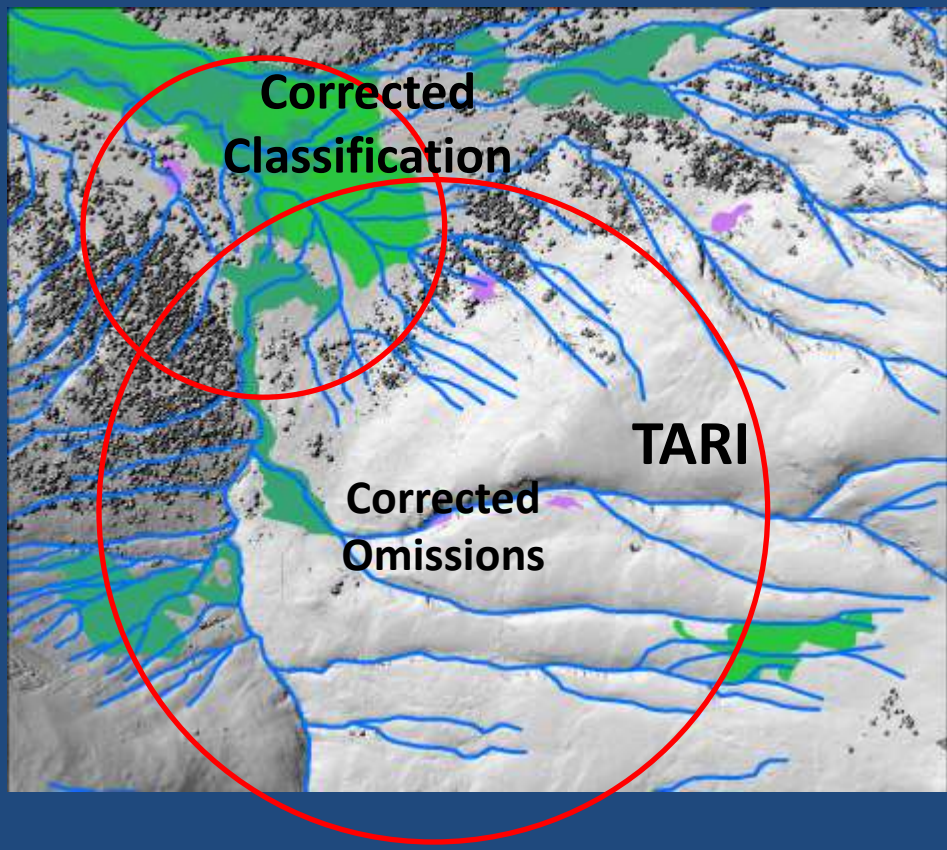
- Statewide map of abundance and diversity of surface waters
- Intensifies NWI and NHD
- Supports statewide status & trends assessment
- Basemap for My Water Quality Portals
- Regional versions possible



CARI methods make a significant difference in measures of aquatic resource abundance and diversity.

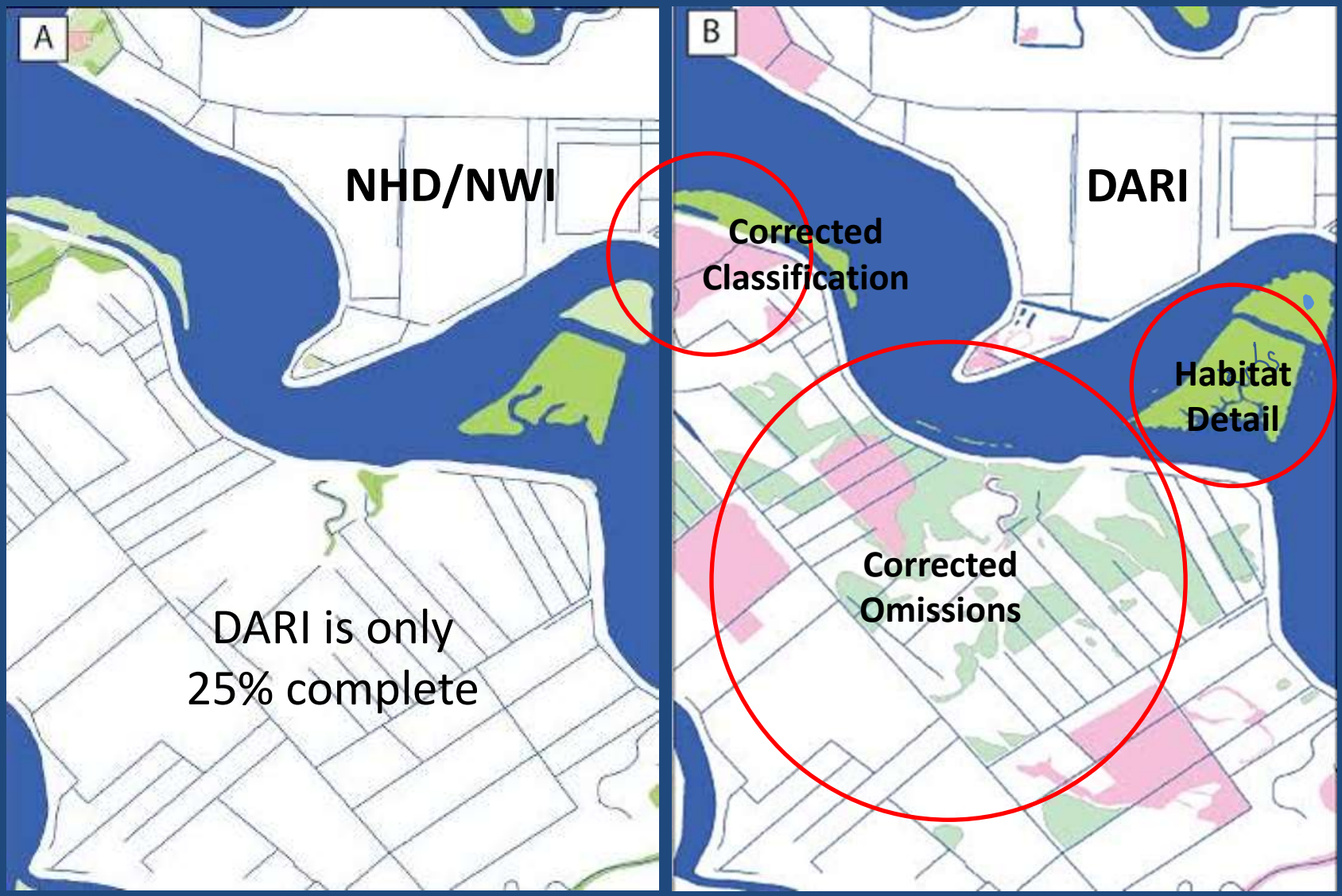
TARI
Tahoe version of CARI





- CARI includes more aquatic resources.
- Can’t protect what we can’t see or don’t know about.

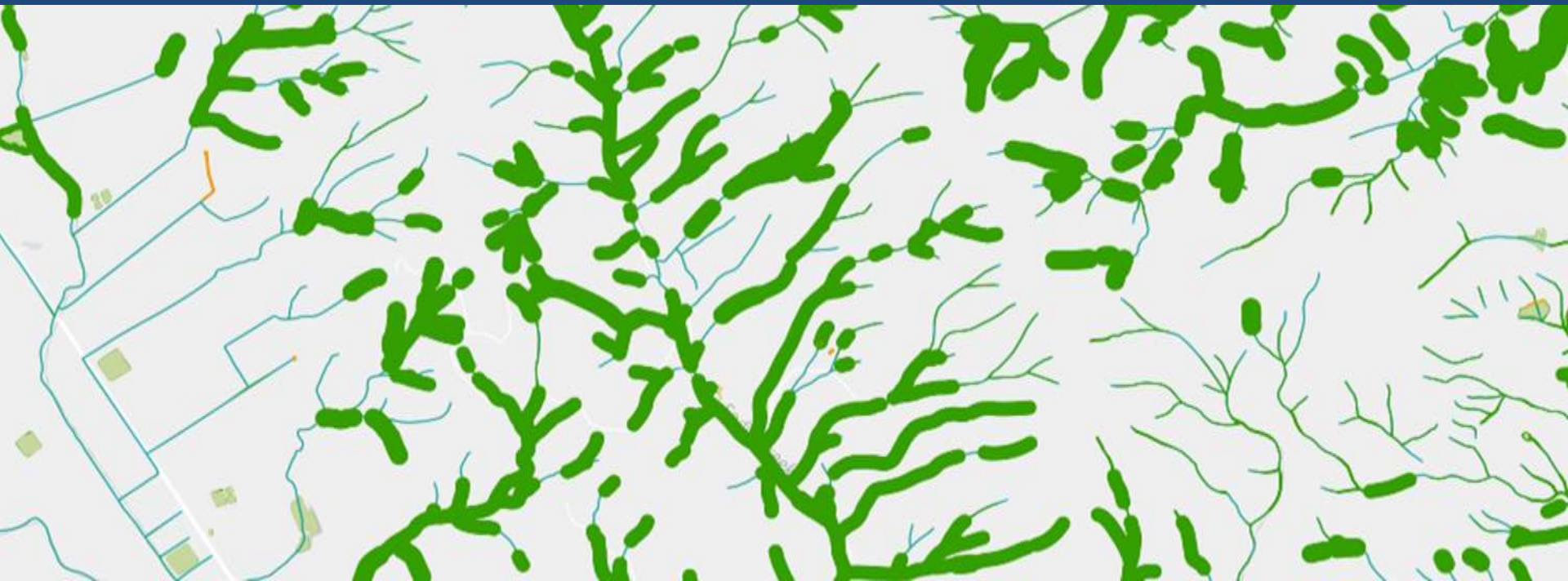
DARI
Delta version of CARI



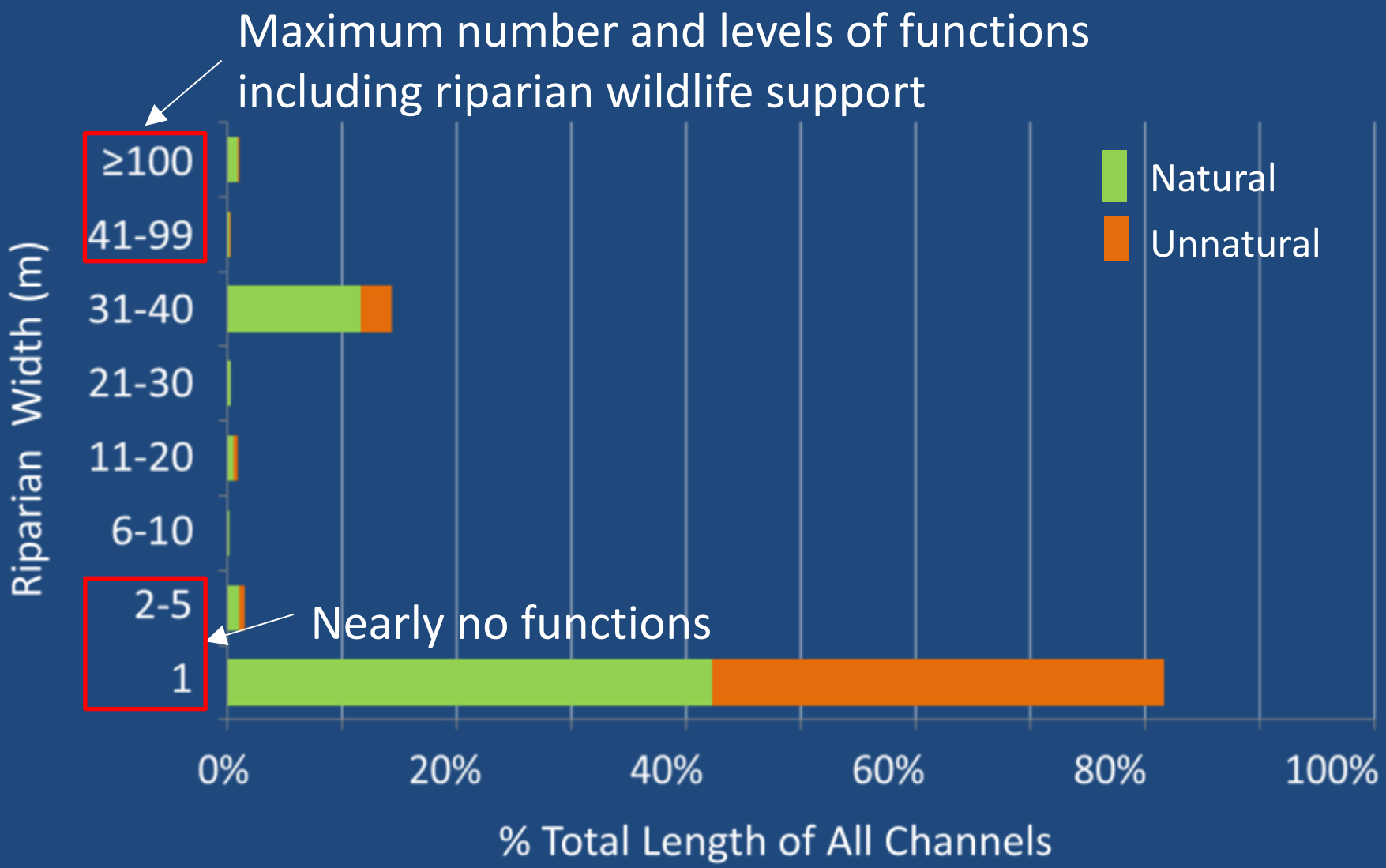
RipZET

Riparian Zone Estimator Tool

- Visualizes the National Research Council's riparian definition
- Width varies with riparian function, topography, vegetation
- Runs on CARI or other maps of surface waters



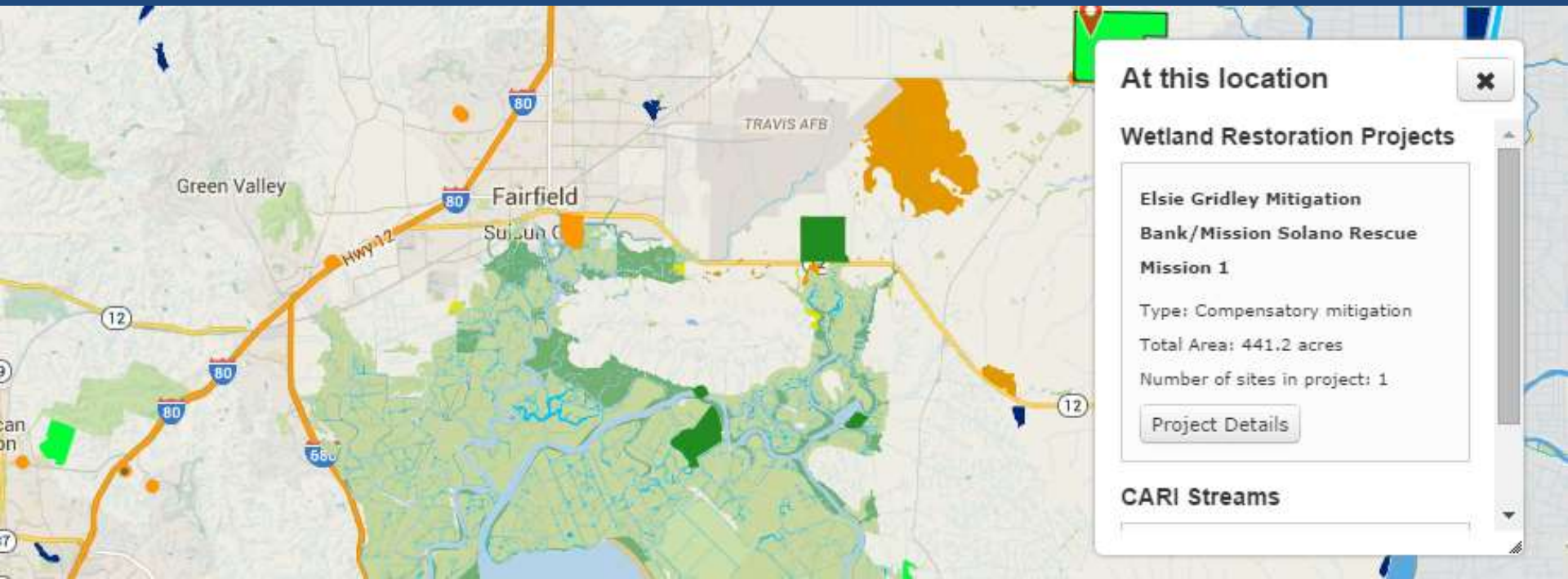
Example RipZET Output



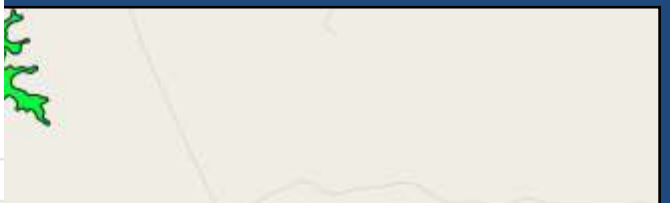
Project Tracker

(Operational in Bay Area with prospects elsewhere)

- Maps of projects provided through permits (pending Online 401)
- Maps of proposed surface waters within projects (CARI)
- Data and information sharing through project maps
- Searchable maps and lists of projects



Montezuma Wetlands Project



Basic Information | Files & Links | Project Map

Status	
Project Type	
Project Area	

Project Identification

ID	Type
02-48-D0005	RWQCB
194050	USACE -
201051	RWQCB

Habitat Plan

Habitat

Upload files or links

Name	File Type
2006/2007 Biological Survey Report	Monitoring Report
Montezuma Biological Survey Rpt 2006-2007.pdf	
2008/2009 Biological Survey Report	Monitoring Report
2008-2009 Biological Survey Rpt 2.pdf	
2010/2011 Biological Survey Report	Monitoring Report
2010-2011 Bio Rpt Appendices A-E.pdf	
2010-2011 Bio Rpt Figures 25-39.pdf	
bio report 2010-2011 Final.pdf	
2010-2011 Bio Rpt Figures 1-24.pdf	
2010-2011 Bio Rpt Tables 1-5.pdf	
2012 Sediment and Water Quality Report Appendices H and I	Monitoring Report

CRAM

California Rapid Assessment Method
For Wetlands, Streams, and Riparian Areas

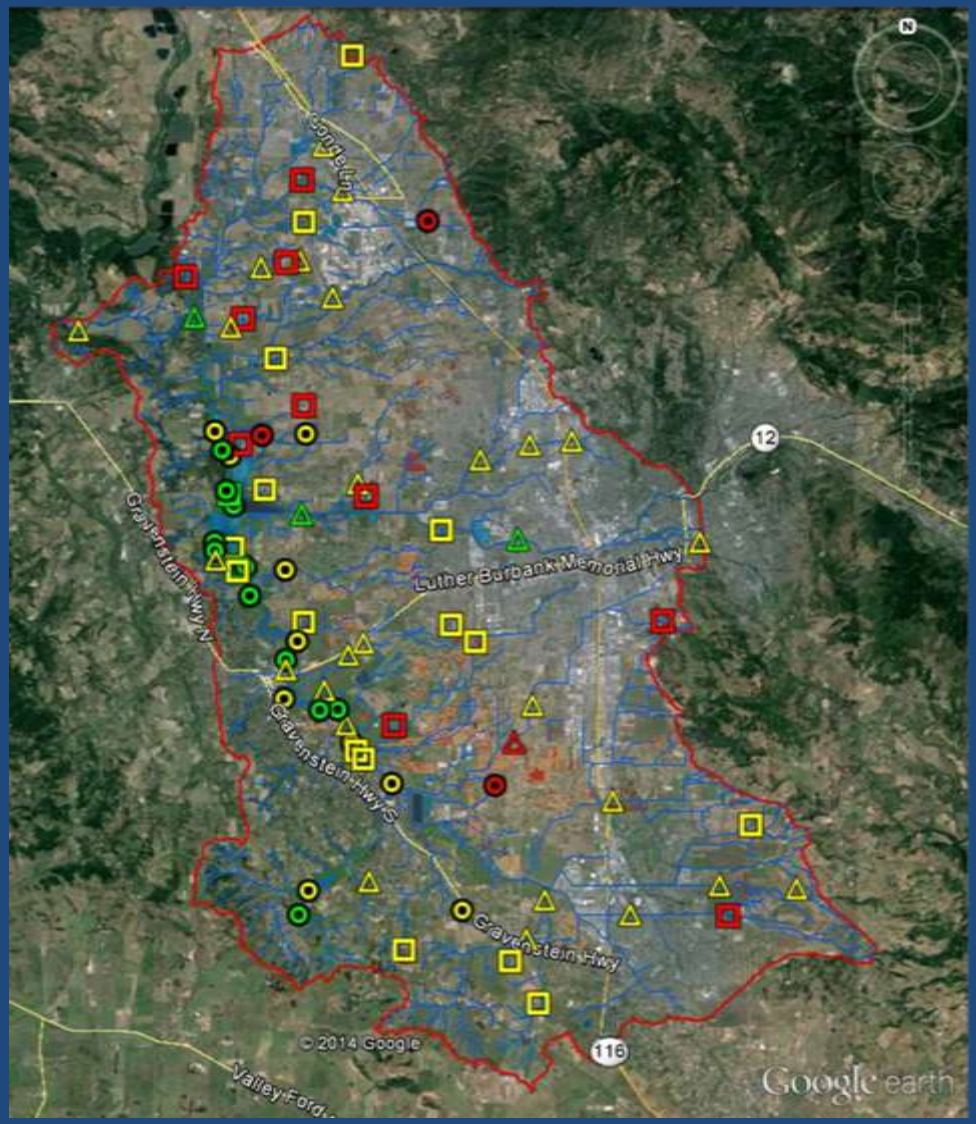
- Standardized measure of wetland condition as capacity to provide high levels of intrinsic functions
- Separate modules for each CARI wetland class
- Comprehensive training program
- Statewide database

- **Probabilistic Survey Design (GRTS)**
- **Cumulative Distribution Function (CDF)**
- **Project Performance Curves (PCs)**

Example based on CRAM

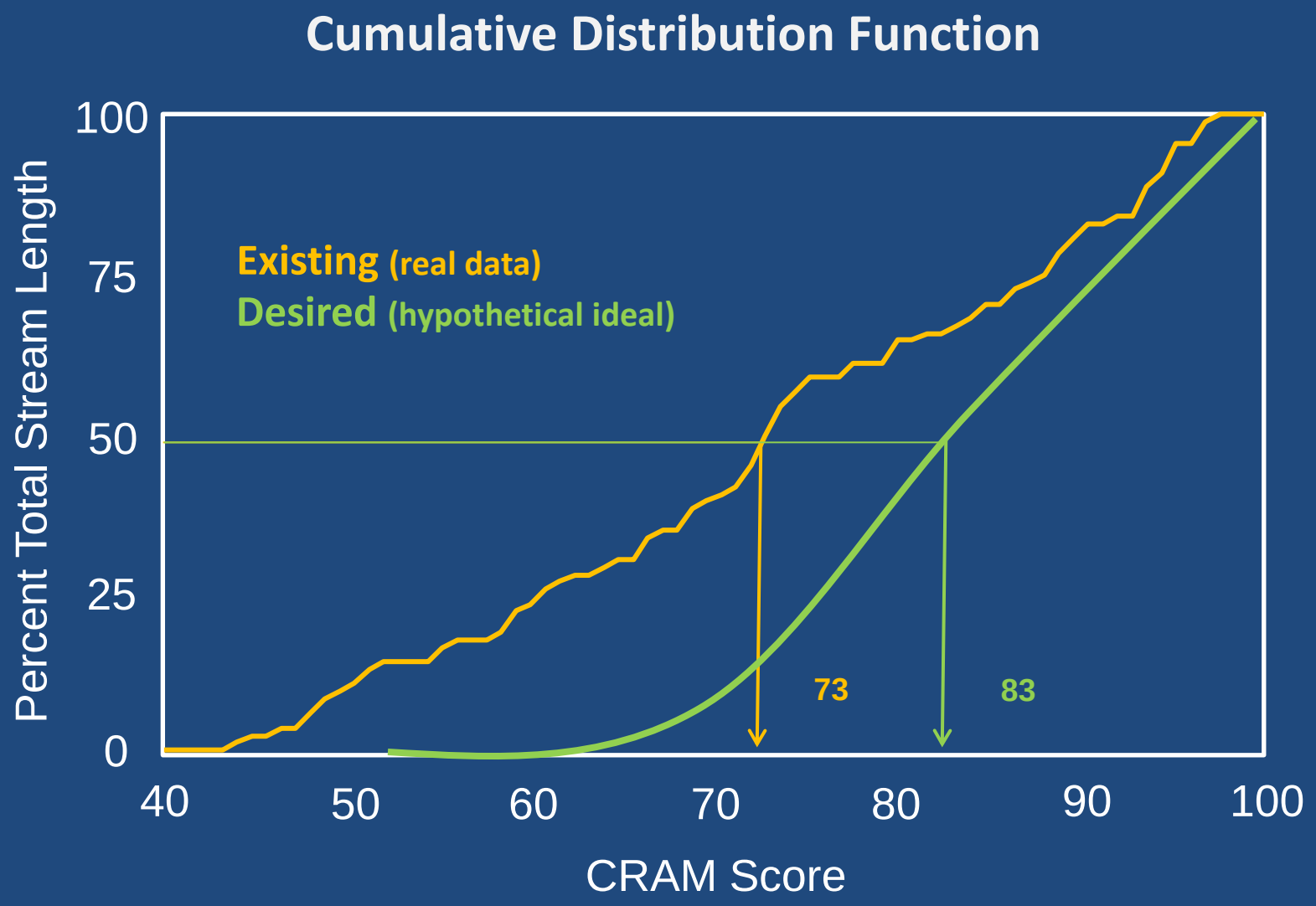
Probabilistic Survey Design

Probabilistic survey of ambient or baseline condition

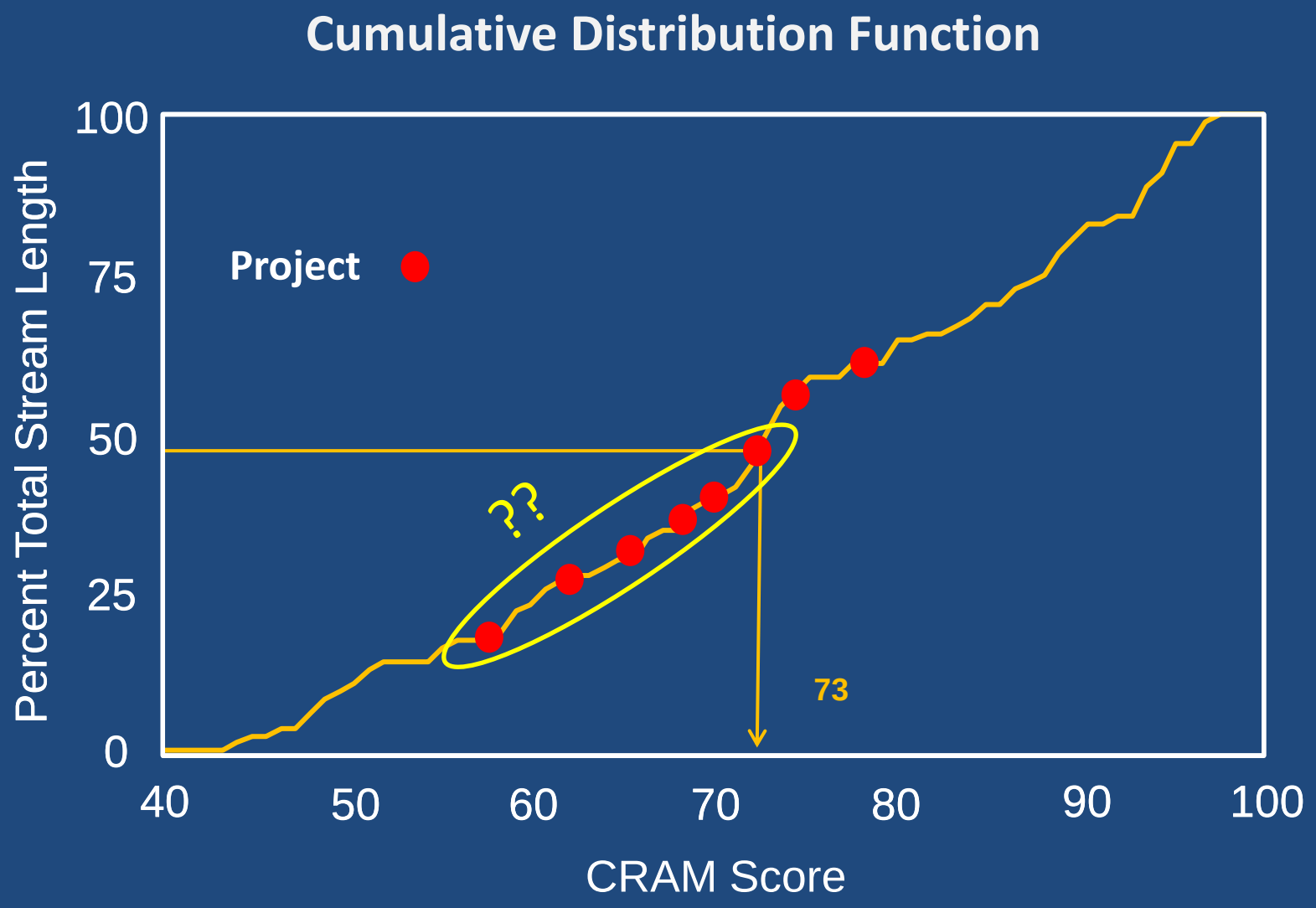


Probabilistic survey of project performance

Example CRAM Ambient Assessment

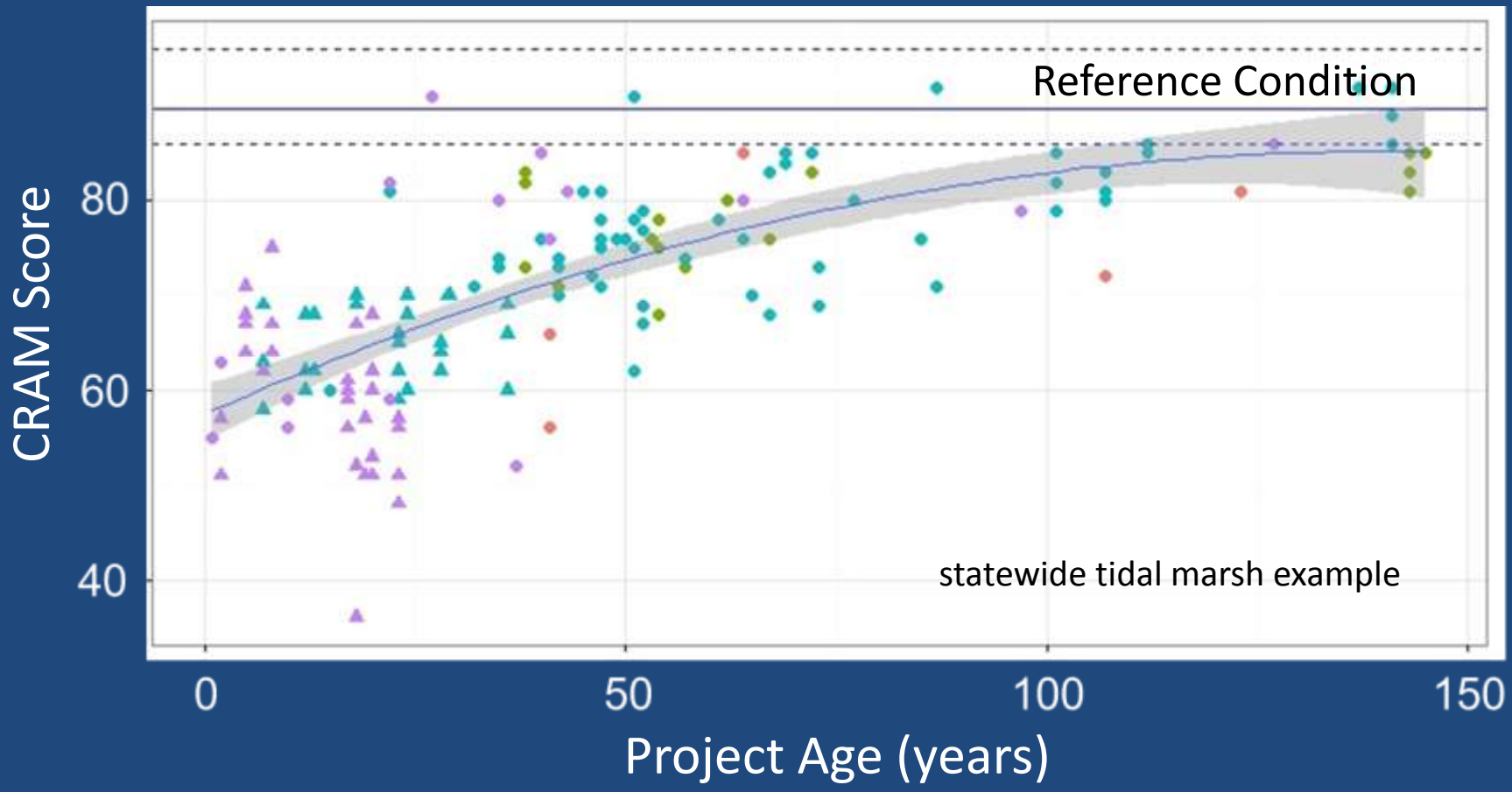


Example CRAM Ambient Assessment

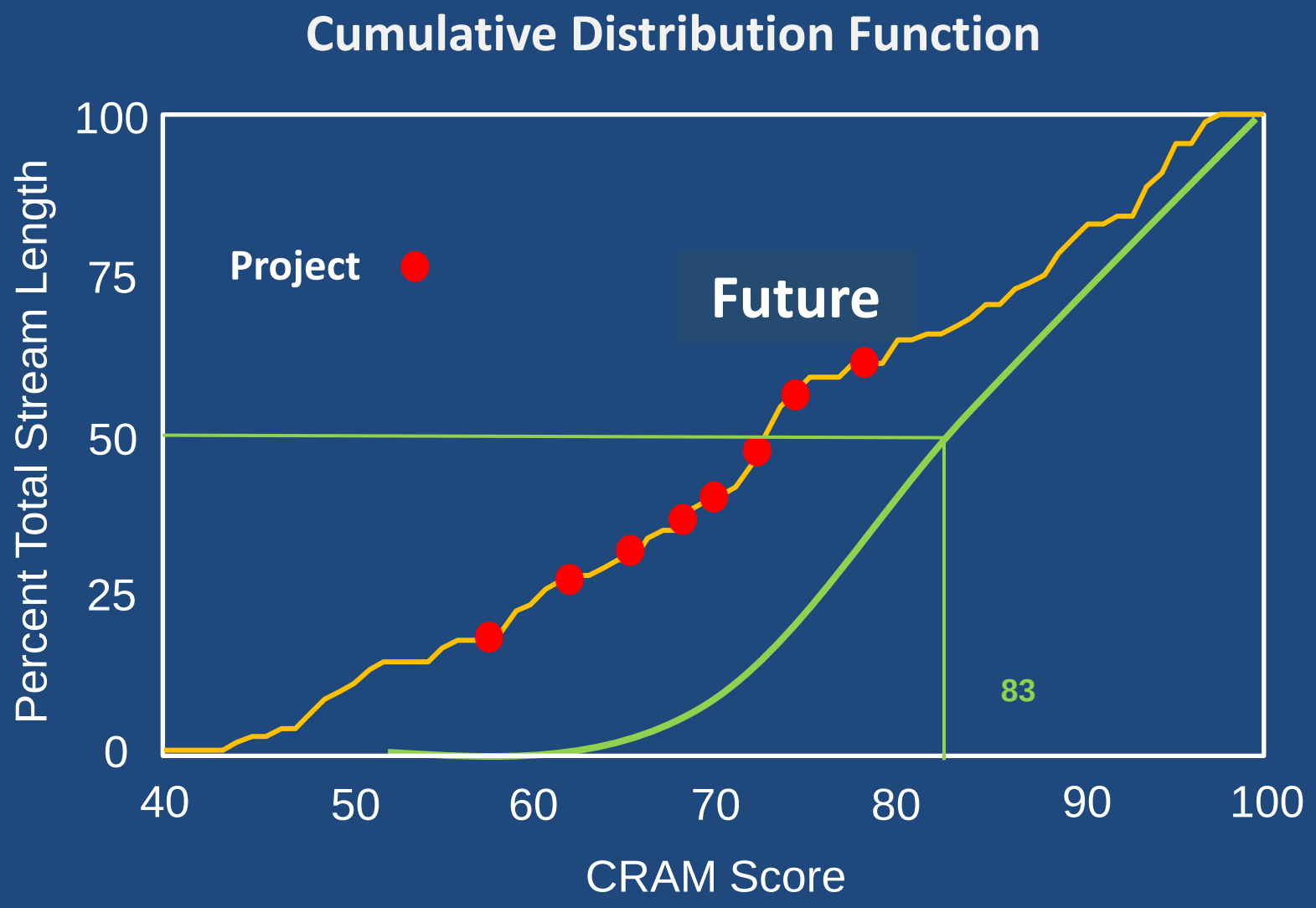


Performance Curve

Forecasting project performance over time



Example CRAM Ambient Assessment

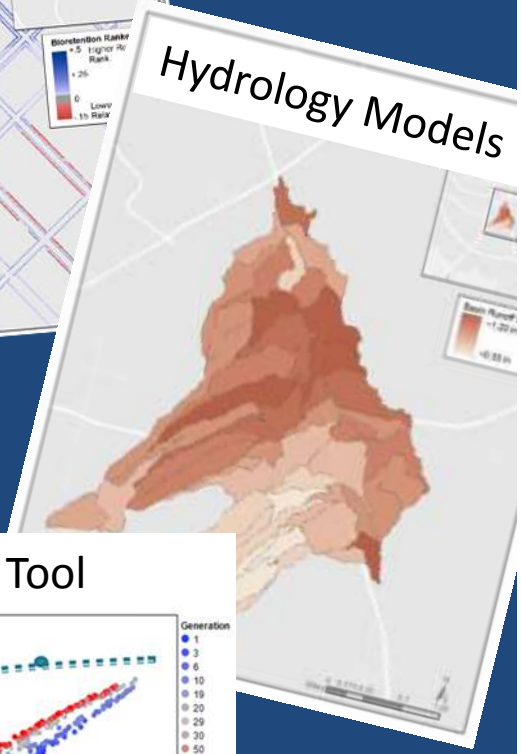


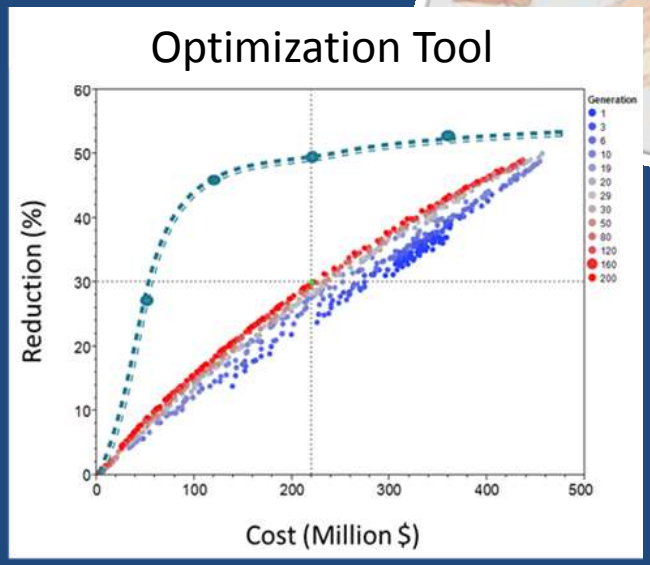
GreenPlan-IT

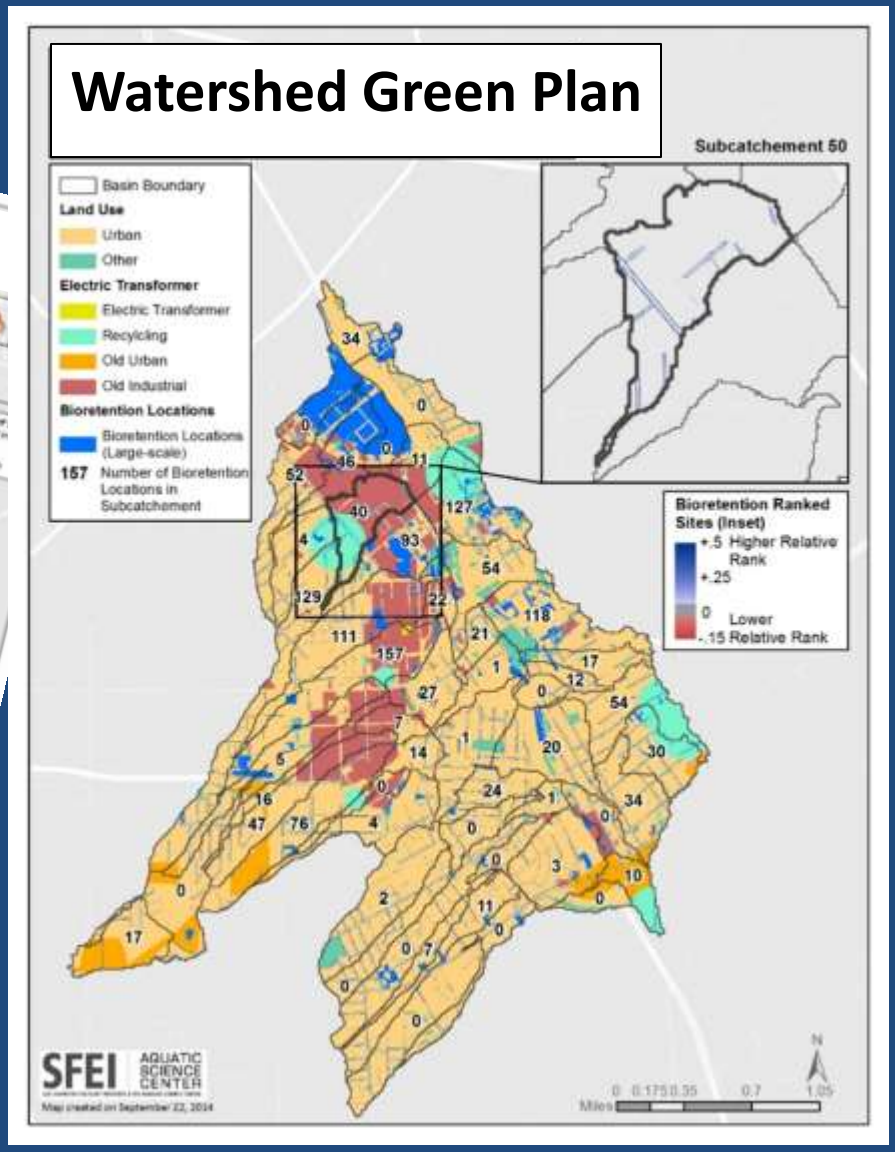
LID Site Suitability Tool, Hydrology Models, Optimization Tool

- Uses local and regional data (transportation, storm water infrastructure , CARI, land use, etc.)
- Generates ranked LID Location Opportunity Map
- Incorporates cost factors, hydrology and pollutant load models
- Generates optimal watershed-based Green Plan

Example GreenPlan-IT Output







Landscape Profile Tool

- Abundance and Diversity of Aquatic Resources and Other Information Summarized for User-defined Watersheds or Other Landscape Areas
- Generates custom maps, graphs and tables as automated PDF that can be downloaded
- Current focus is on 401/WDR but program-specific versions are possible (Stormwater, TMDL, LSA, THP, HCP/NCCP, etc).

Landscape Profiles

Landscape Profile

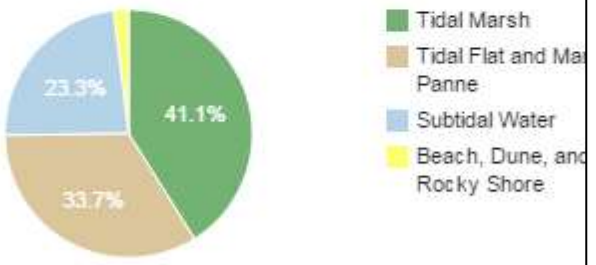
User Defined Region

Print Report

Total Profile Area: 472,774.0 acres or 738.7 miles^2

– Abundance and Diversity of Existing Aquatic Resource
California Aquatic Resource Inventory (CARI)

Marine and Estuarine Resources: 460 acres / 0.7 miles^2



Palustrine Resources: 10,953 acres / 17.1 miles^2

Landscape Profile

– Historical Aquatic Resources

Estuarine and Marine: *No historical estuarine or marine resources found*
Palustrine: *No historical palustrine wetlands or terrestrial features found*

+ Ecological Restoration based on Wetland Projects within Profile – Total Records: (9)

+ Aquatic Resource Condition based on California Rapid Assessment Method for Wetlands (CRAM) within Profile – Total Records: (36)

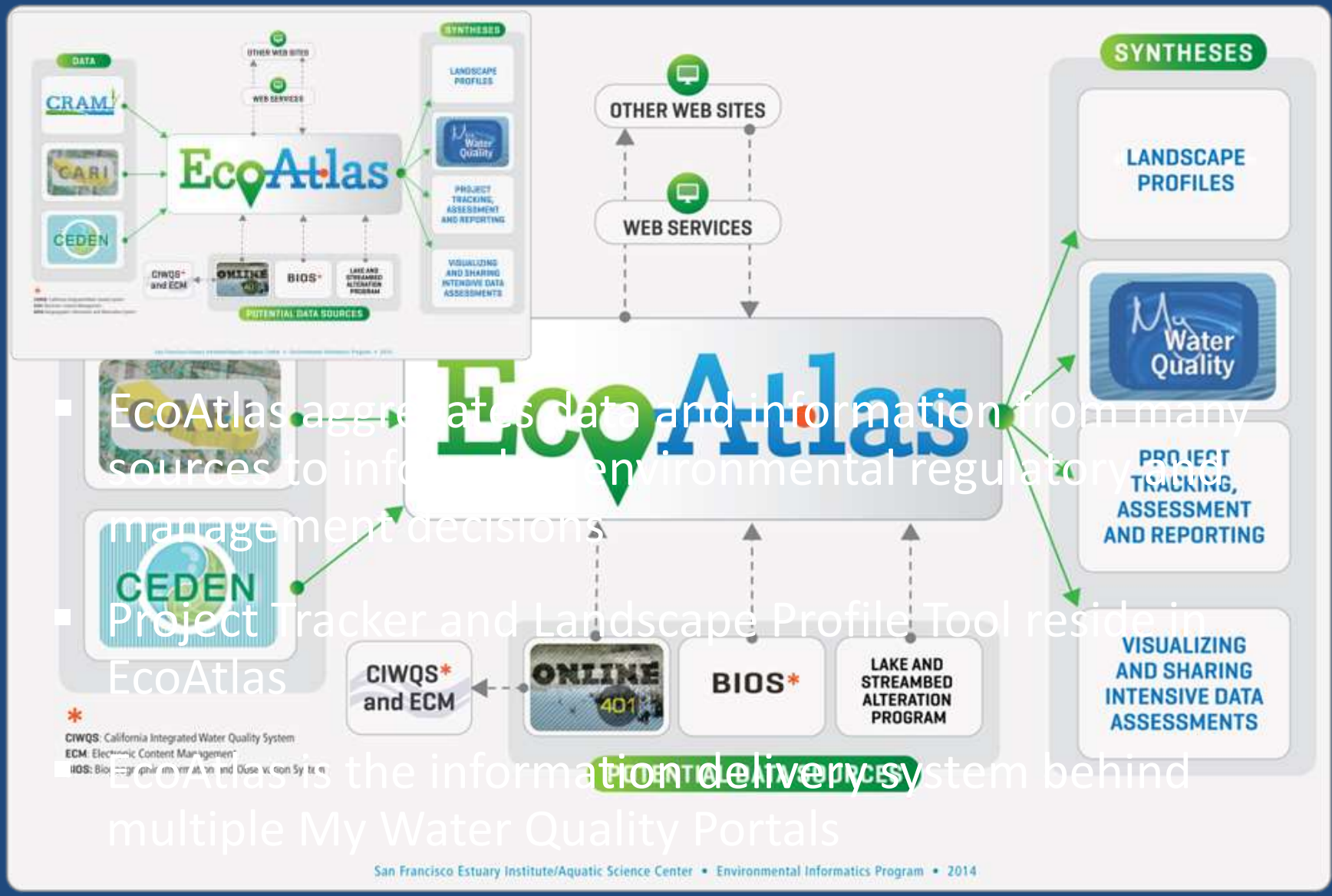
+ Human Population based on 2010 Census

+ Species of Special Status based on CNDDB Species Information

+ Developed Land Cover by NLCD 2011 Category

View data source details

EcoAtlas Information System



- EcoAtlas aggregates data and information from many sources to inform environmental regulatory and management decisions
- Project Tracker and Landscape Profile Tool reside in EcoAtlas
- EcoAtlas is the information delivery system behind multiple My Water Quality Portals

Strategic Goal

- Support *landscape scenario planning* to identify target levels of essential ecosystem services of state and federal inland waters
- Coordinate efforts across public policies, programs and projects to achieve the ideal
- Maximize the efficiency of coordinated efforts to routinely track and report progress


Thank You

Important Tools Not Covered in This Presentation

- “VegCAMP” visualize vegetation communities
- "S&T" (Status and Trends) net change in surface water diversity & extent
- “Watershed Mapper” on-screen & automated watershed delineation
- “RWSM” regional and watershed estimates of pollutant mass loading
- “Landscape Metrics ” (Head-of-Tide, Shoreline Change, Landscape Ecology)
- “CD3” sort and display water quality data
- “SLRV” & “OCOF” estimate and visualize tidal flooding
- “Historical Ecology” understand natural analogues to resilient future ecosystems