California's Surface Water Ambient Monitoring Program

"SWAMP" Update - 2005

CALIFORNIA
Water Boards
STATE WATER RESOURCES CONTROL BOARD
REGIONAL WATER QUALITY CONTROL BOARDS

What if...

- What if, monitoring programs could pursue their own goals and also integrate information from other sources to support their needs?

What if...

- What if, data and information from many sources could be aggregated to improve coverage across jurisdictions?

What if...

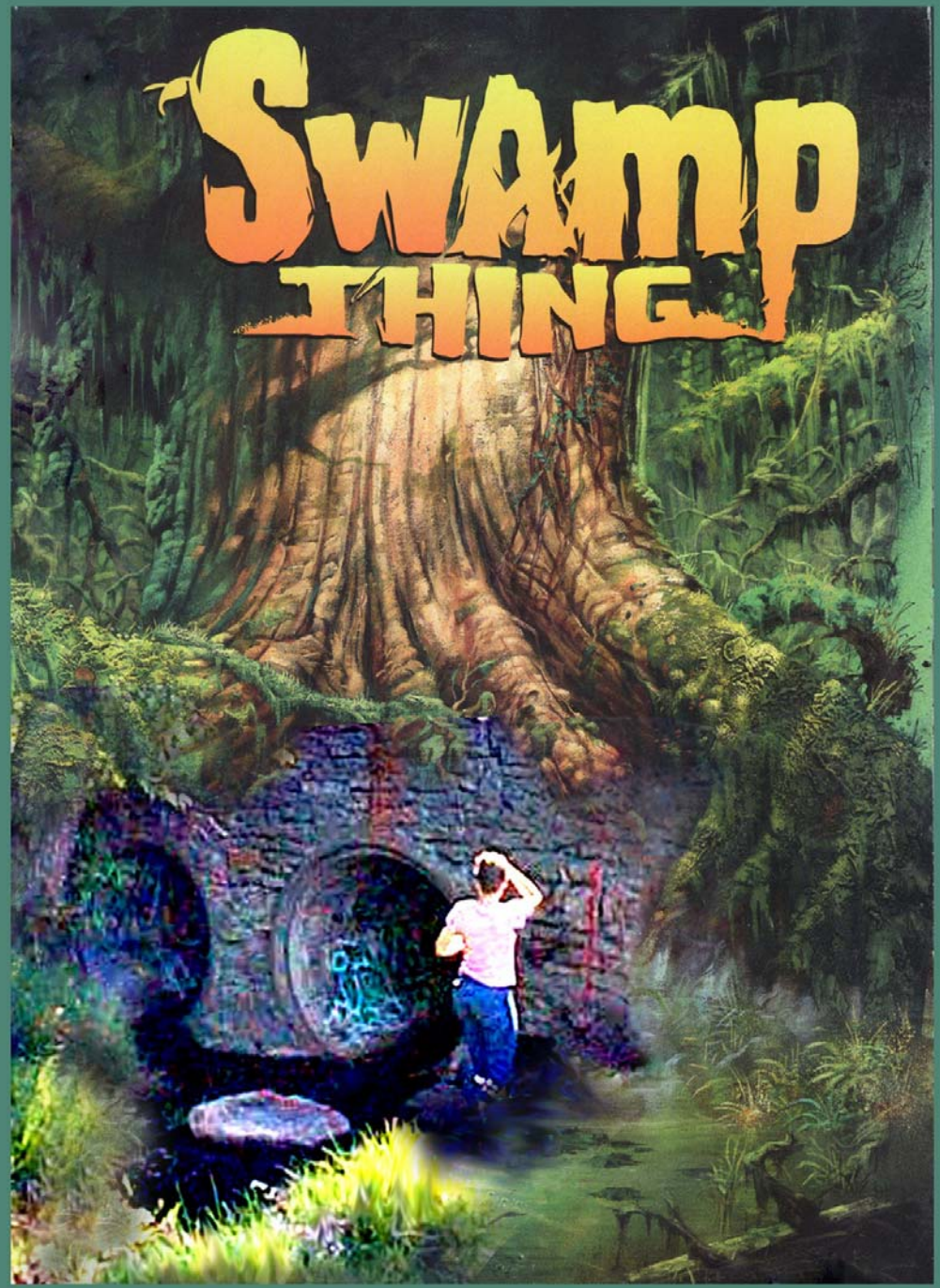
- What if we could design programs and use monitoring information collaboratively to better understand how to protect and manage our waters and watersheds?

What if…

- What if this integration, aggregation, and collaboration enabled us to achieve a better return on public and private investments?

- These “what ifs” can only be realized if we all strive for comparability.

- How?


SWAMP
THING

SWAMP: Required by AB 982 (WC sec.13191)

- Comprehensive state program (surface water)
- Coordinate all Board ambient water quality monitoring Programs/projects
- High Quality Data
- Comparable data
- Accessible

- SWAMP is a state framework to coordinate consistent and scientifically defensible methods and strategies for improving water quality monitoring, assessment, and reporting.
- It will be coordinated with products of the NWQMC and “borrows” liberally from other successful programs.

The Challenge: CA

- 190 hydrologic units (655 hydrologic sub-areas)
- 211,000+ miles rivers and streams
- Over 10,000 lakes (1.6+ million acres)
- Over 1,300,000+ acres of bays and estuaries
- 1,609 miles of coastline

The Regulatory Challenge:

- CWA section 305(b) report
- CWA section 303(d) list, TMDLs
- Porter Cologne, Basin Plans
- Implementation, 319h
- CWA section 106(e)

SWAMP November 2000

- Proposed a cost efficient monitoring program to meet all CWA needs for all water types and pollutant sources
- Requested
  - $59 to $115 million ($3,400,000)
  - 87 to 132 PYs (17 PYs)
  - WDPF surcharge

2003-04 Reality Check

- Existing goals don't match the fiscal reality or current program
- Need realistic short-term objectives (priorities)
- Need longer-term implementation strategy
- Need to pursue collaborative alternatives to data generation

Implementation Strategy

- Monitoring Program Strategy
- Monitoring Objectives
- Monitoring Design
- Core Indicators of Water Quality
- Quality Assurance
- Data Management
- Data Analysis/Assessment (CALM)
- Reporting
- Programmatic Evaluation
- General Support and Infrastructure

Building “Infrastructure”

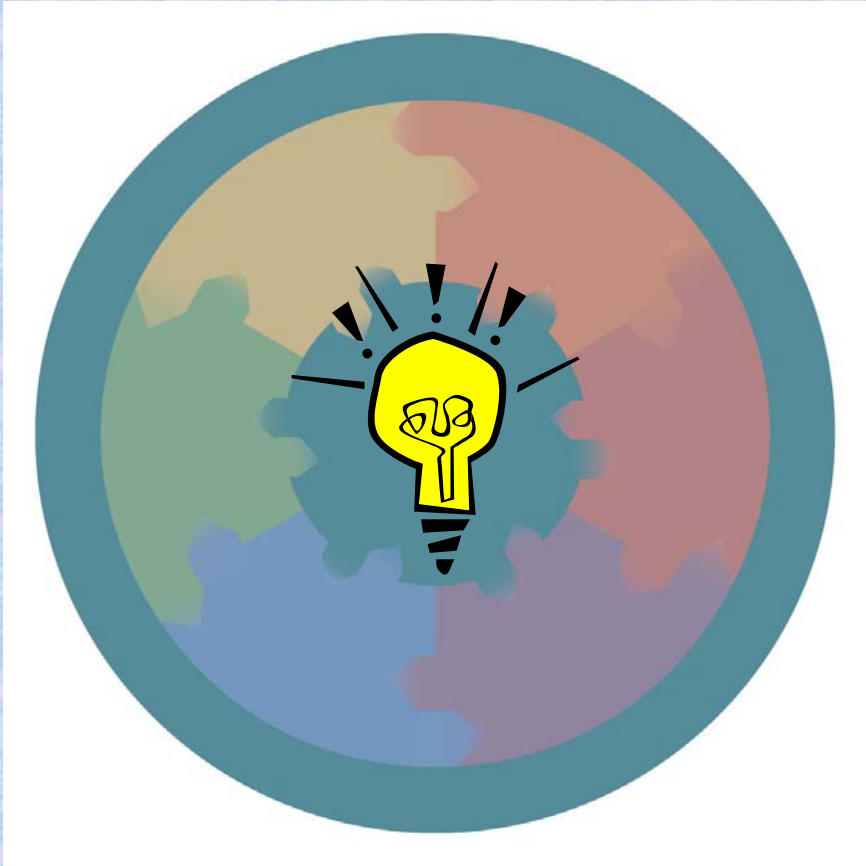
(Or, what to do in a budget crisis)

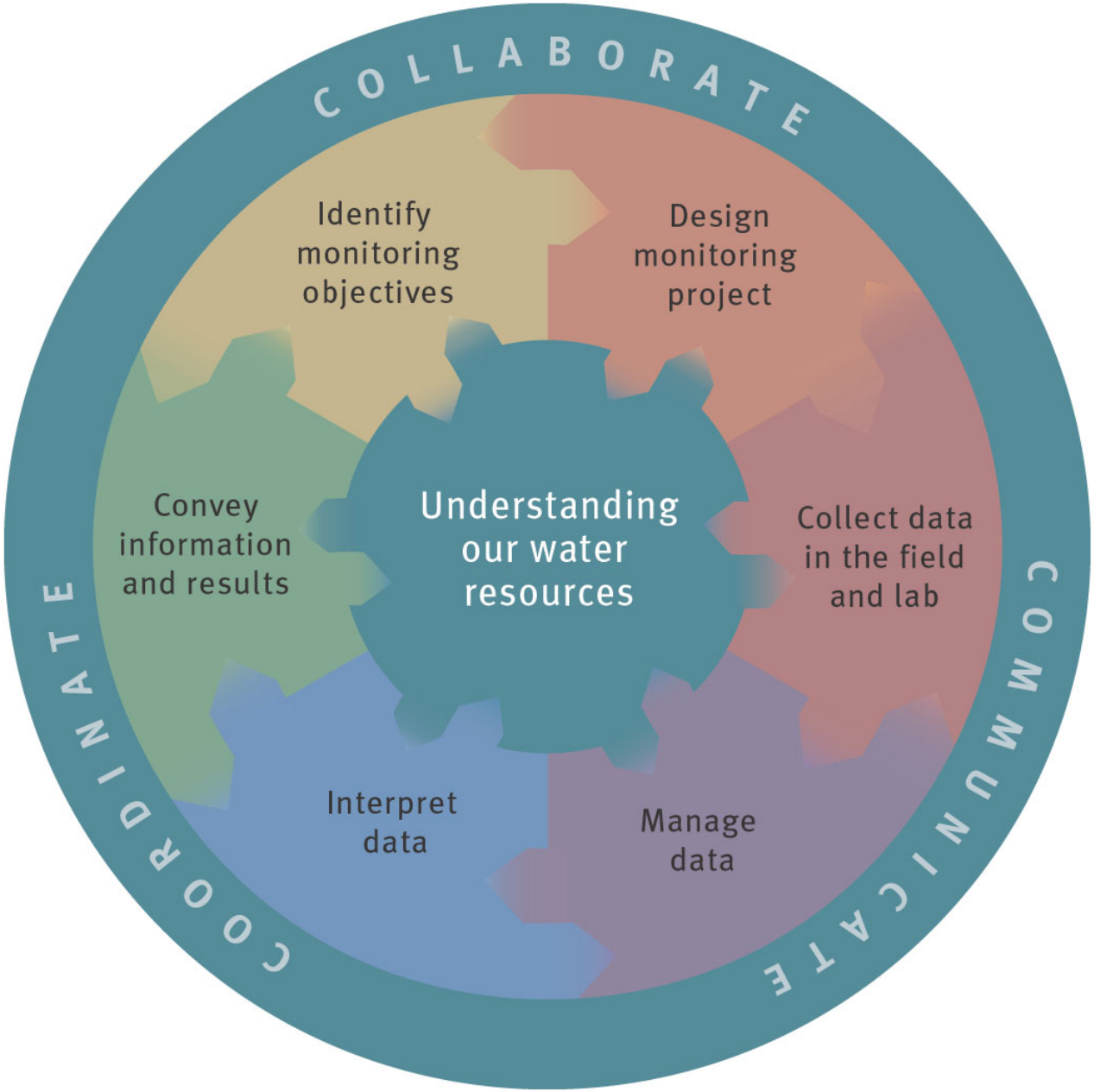
- Monitoring Framework
- Information Exchange Network
- Quality Assurance Program
- Tool Box and Training
- Nested Monitoring Design

What's a Monitoring Framework?

- The process of monitoring and assessment should principally be seen as a *sequence of related activities* that
  - **start with the definition of information needs and**
  - **end with the use of the information product.**

UN/ECE Task Force on Monitoring and Assessment (2000)




COLLABORATE
COMMUNICATE
COORDINATE
Identify monitoring objectives
Design monitoring project
Collect data in the field and lab
Manage data
Interpret data
Convey information and results
Understanding our water resources

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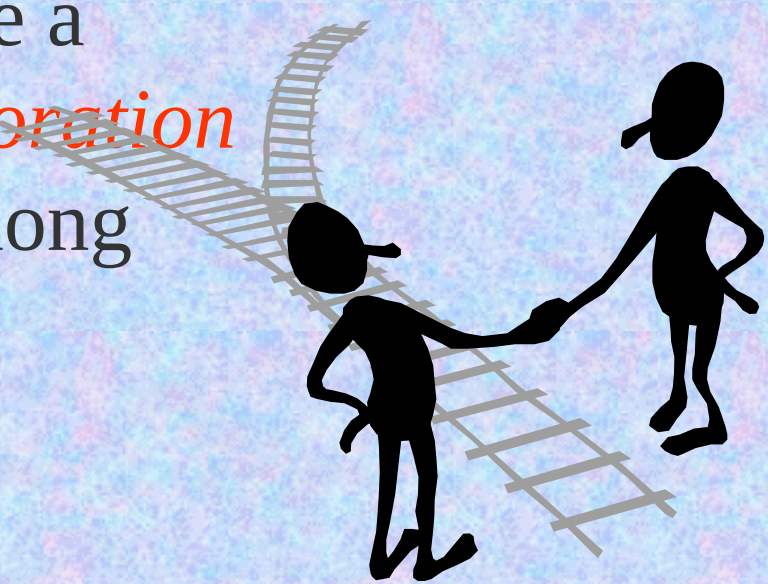
Why Focus on Collaboration & Comparability?

- Critical differences in project design, methods, data analysis, and data management make it difficult for monitoring information to be shared by more potential data users.

Collaboration and Comparability

- Development of a national and state monitoring strategy requires that we create a framework for *collaboration* and *comparability* among programs

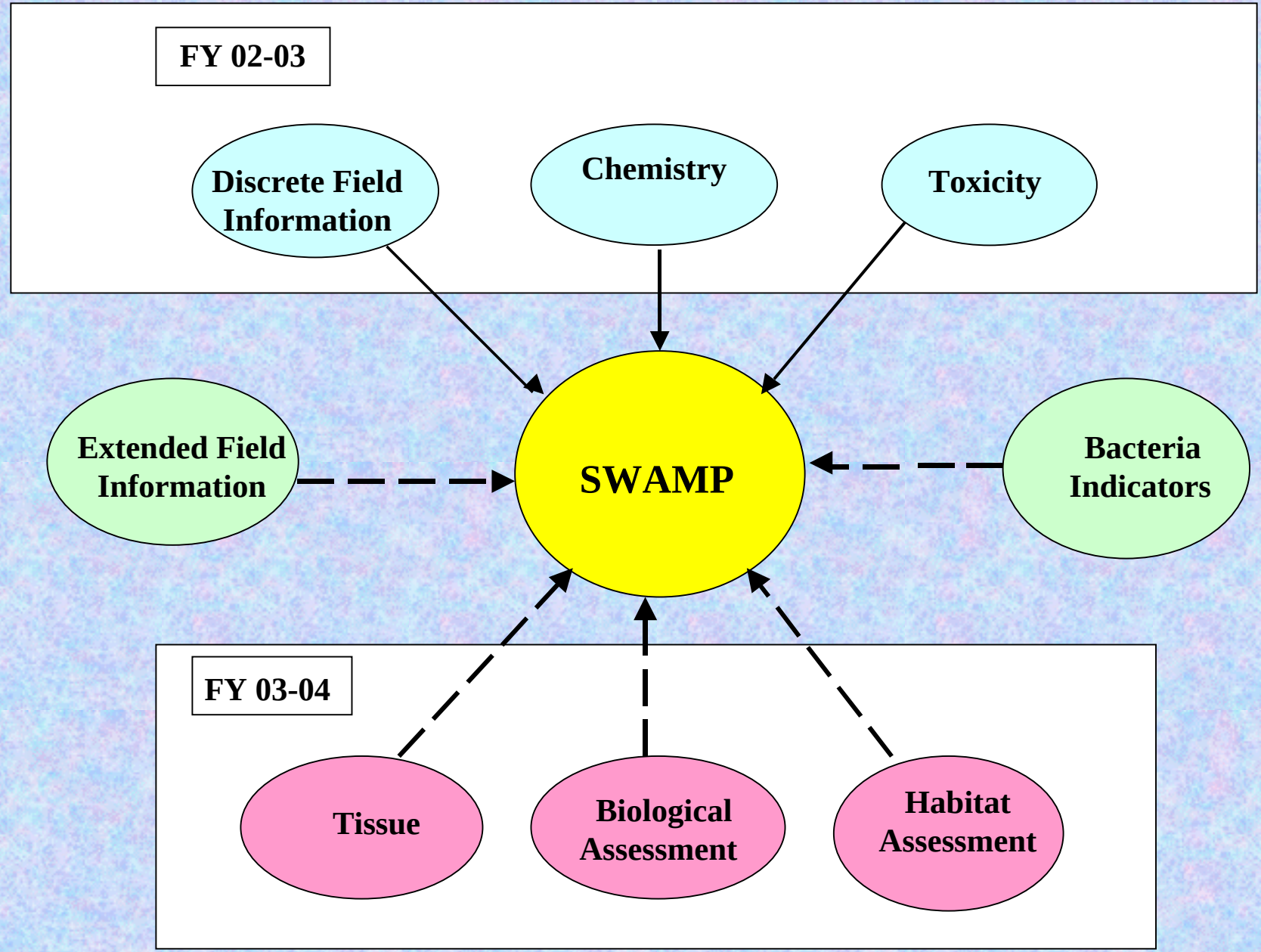


Method Comparability

- Consistent and objective sampling, analysis and assessment methods:
  - Sampling: standard field protocols;
    - Training Module (CD)
  - Analysis: performance based;
  - Assessment: 303(d) Policy

Data Comparability

- Inclusive of all types of water quality monitoring -
  - **chemical, toxicity and field data**
  - **tissue, bacteria indicators, biological, habitat characteristics**
- Training
  - **On-site**
  - **User's guide**


FY 02-03
Discrete Field Information
Chemistry
Toxicity
Extended Field Information
SWAMP
Bacteria Indicators
FY 03-04
Tissue
Biological Assessment
Habitat Assessment

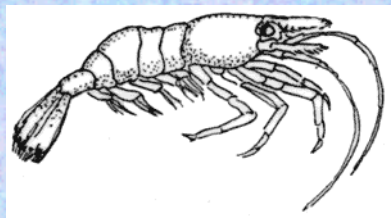
Data Integration & Accessibility

- Integrated data management
- Public Access

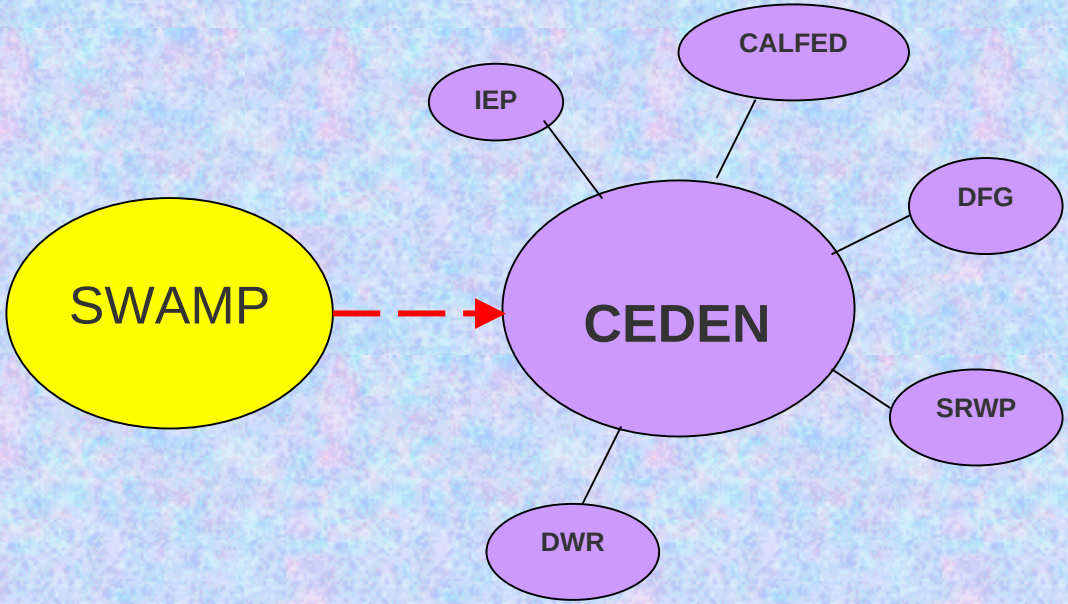
CA Environmental Data Network (CEDEN) - 50 Entities

Background/Distributed Data Management System

Data Types

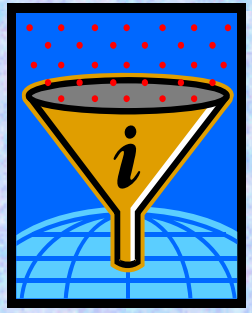


Database Integration



SWAMP = Surface Water Ambient Monitoring Program
BDAT = Bay-Delta and Tributaries Database
IEP = Interagency Ecological Program
DFG = Department of Fish & Game
SRWP = Sacramento River Watershed Program
DWR = Department of Water Resources
CALFED = State and Federal Interagency Group

Cooperative Data Management System



ODBC/FTP Link

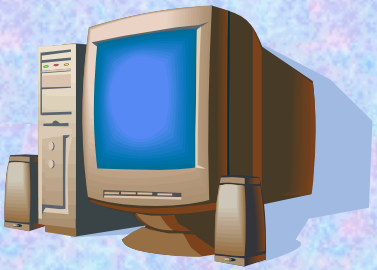
QA/QC

Data Provider
(MS Access Client)

Transaction
Database (TDB)

**Node
Database**

QA/QC



Local Client Databases

Cooperative Data Management System

C
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D
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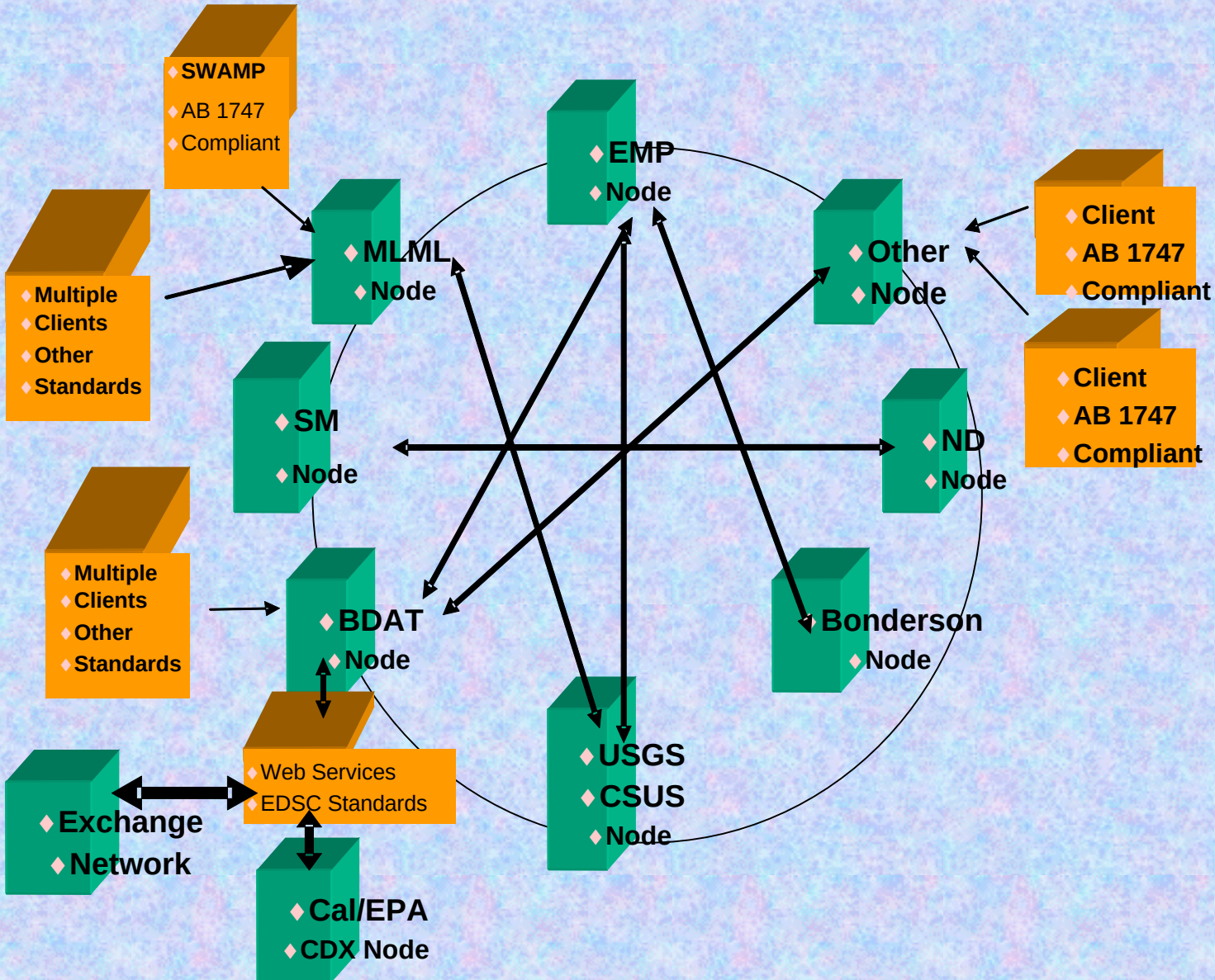
N



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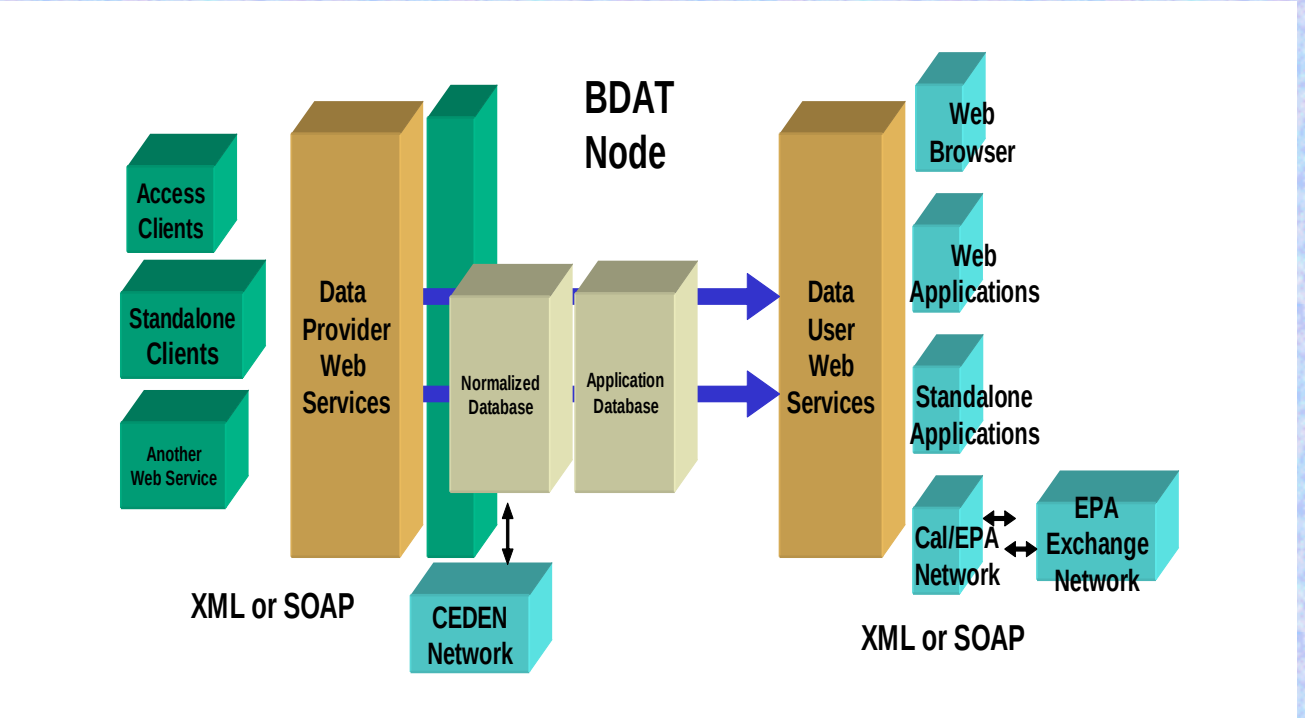
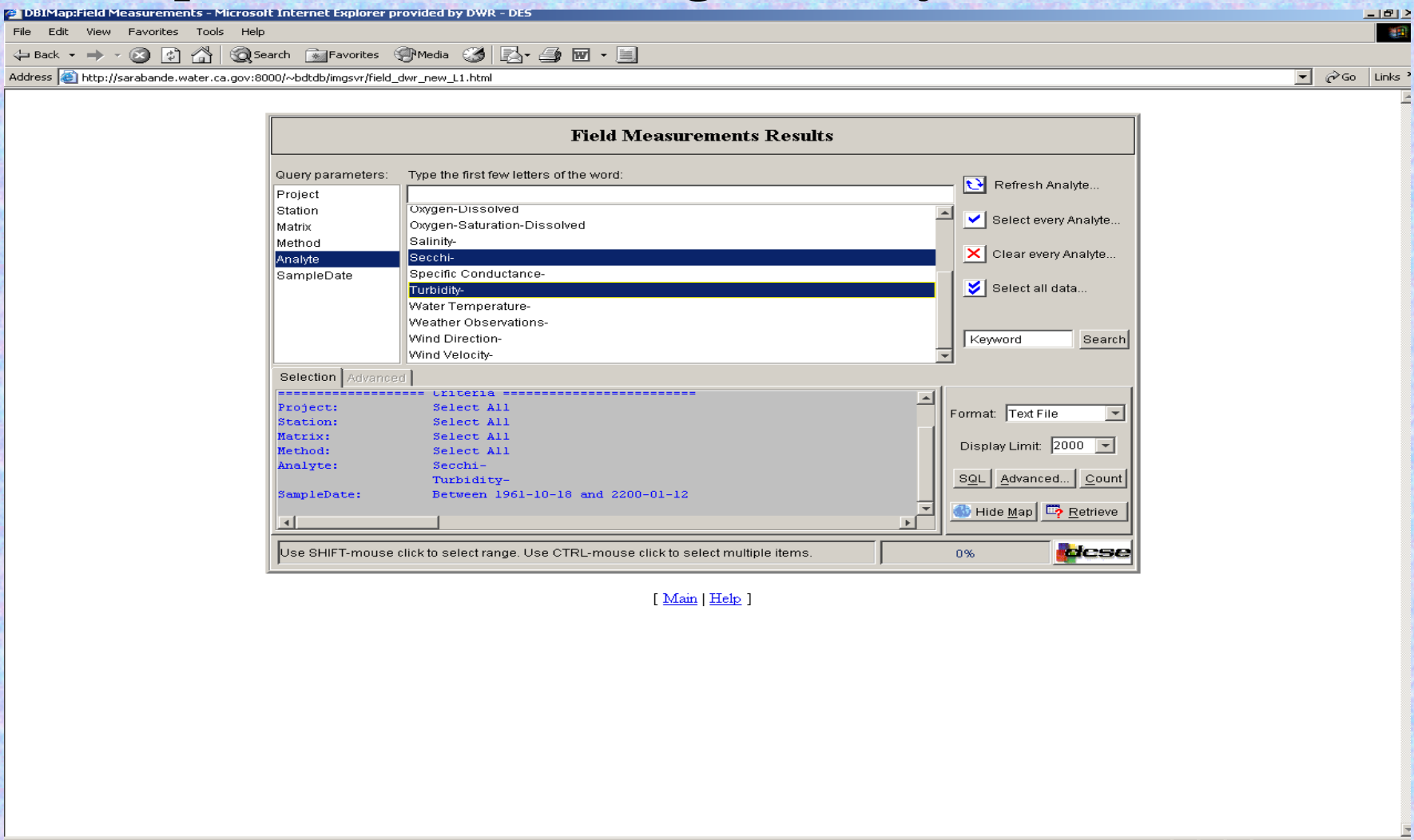
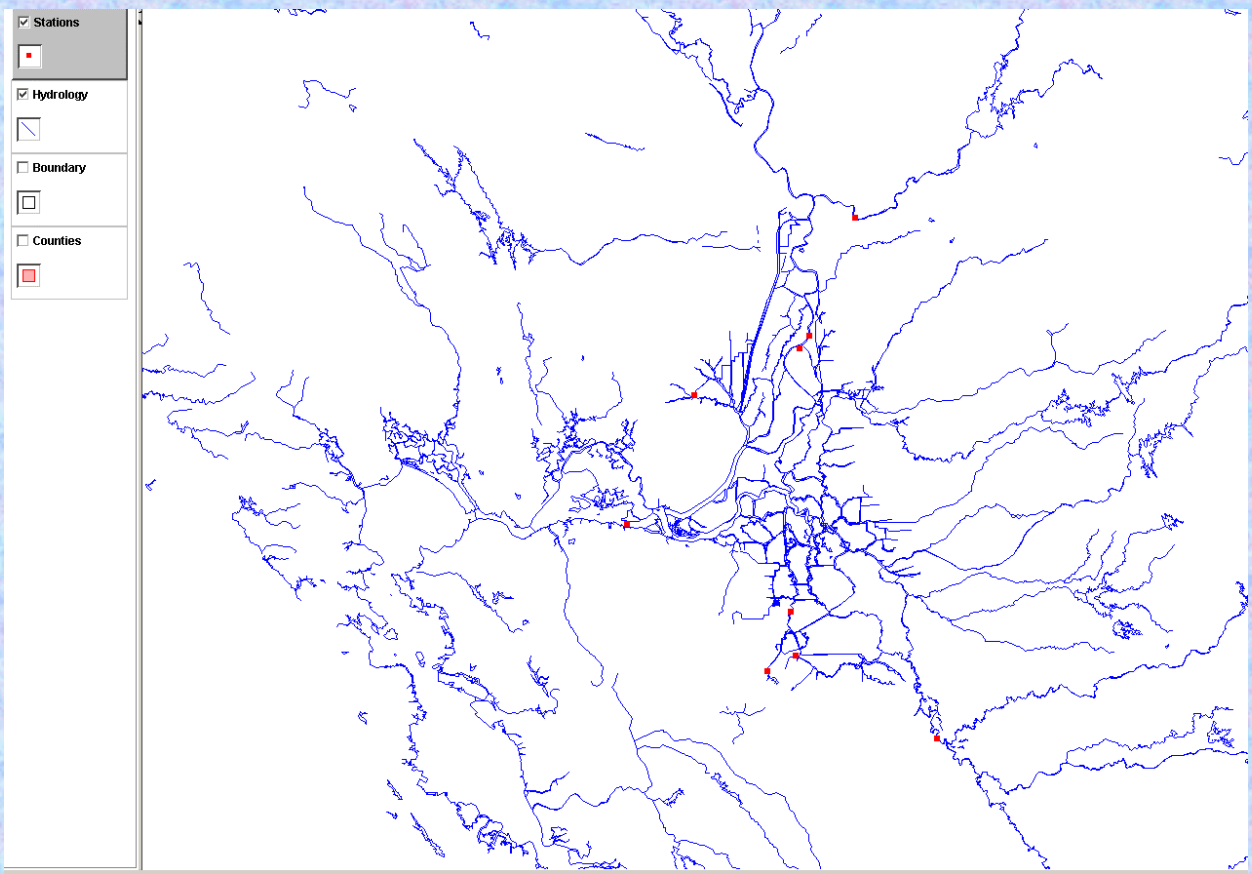


Enterprise Applications

Cooperative Data Management System



Cooperative Data Management System



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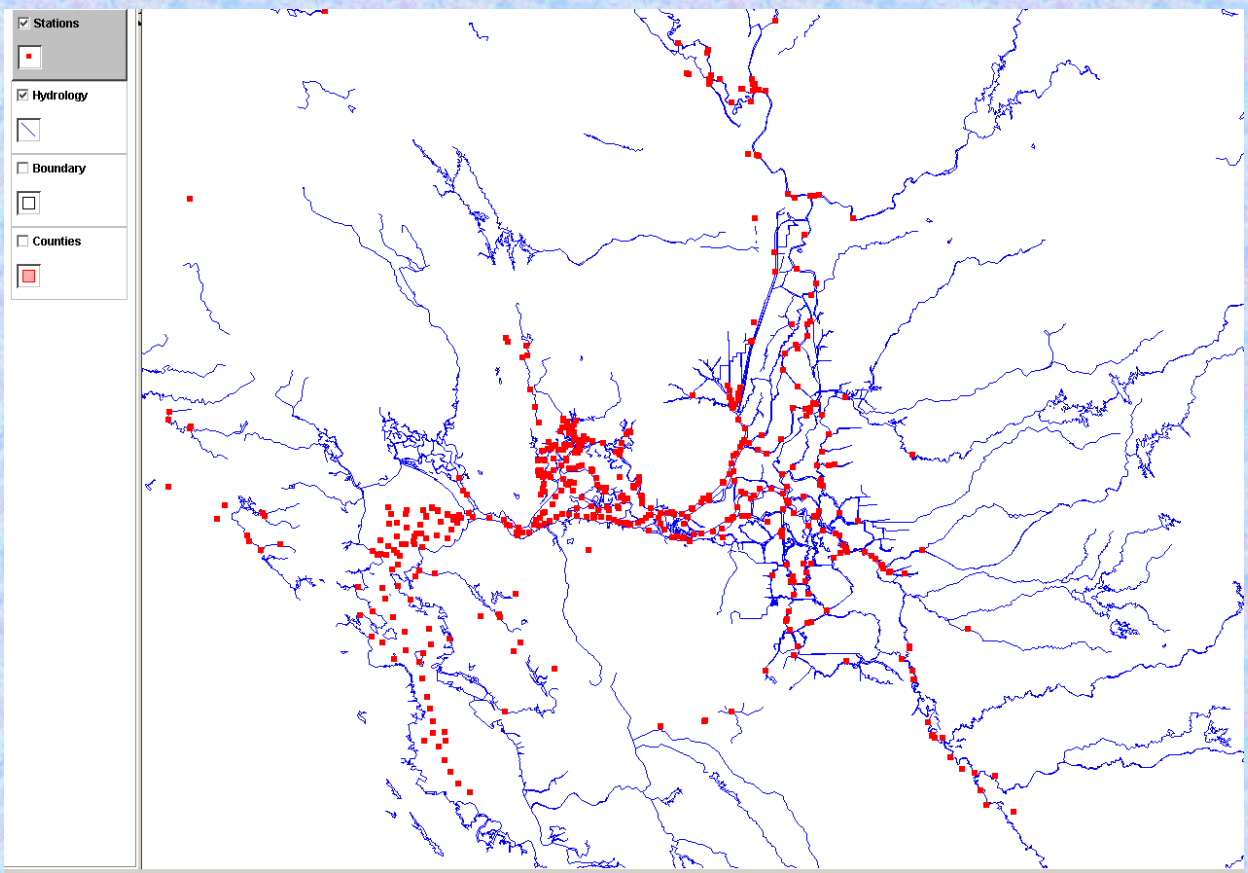

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QA strategy

- QA team
- Consistent data quality assurance:
  - Statewide QMP, 1st Ed.
- QA Tool Box:
  - Training Courses
  - Template, Models, “Boilerplate”
  - Expert System

QA Expert System (Dec. 2005)

- SWAMP Advisor
- Produce a “SWAMP Compatible” QAPP
- Lead users through complex decision making--provides expert advice
- User learns *why* info. is needed
- User learns *how* to implement

Benefits

- Quick
- Consistent
- Excellent Data Quality
- Easy QAPP approval
- Teaching Tool

QAPP Implementation

- Protocols
- Audits (lab, field, regions)
- Intercomparison Exercises
- Performance Evaluation Studies
- QMP revision
- Data Verification/Validation
- Toolbox

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SWAMP Training Tract

-All SWAMP “partners”

-Use of SWAMP “toolbox”

- Introductory Monitoring Design
- Advanced Monitoring Design
- SWAMP Field Methods (CD rom)
- Introductory Quality Assurance
- SWAMP Advisor
- SWAMP Data Management
- SWAMP Collaboration Workshop
- Annual mtg - CA Bioassessment Workgroup
- SWAMP for Ag. Coalitions
- Monitoring Grant Project Effectiveness

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Next 24 Months

- **Continue statewide & regional assessments**
- **Formation of (NPS) Monitoring Council**
- **Intra- & Inter-agency Outreach/Education**
- **Continue Training**
- **Reporting (305b, RB assessments)**
- **Public fact sheets**
- **Complete database development**
- **2nd. Edition QMP**
- **2nd SPARC (external peer review)**

Outstanding Issues - Insufficient Resources

- Increase in SWAMP “partners”
- Consistency/Comparability = Training
- QA Coordination
- Requesting/receiving data
- Resistance to change

Questions?

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