

# California's Surface Water Ambient Monitoring Program **SWAMP QAPP Advisor: A Computer Based Tool for Developing QAPPs**



Dawit Tadesse & Larry Keith

May 2008

National Water Quality Council  
Conference, Atlantic City, NJ



# Topics to be covered

- What is a QAPP?
- What is the SWAMP QAPP Advisor?
- Unique features of the SWAMP QAPP Advisor



# What is a Quality Assurance Project Plan (QAPP)?

it is a planning document for environmental data collection operation.

it documents how Quality Assurance (QA) and Quality Control (QC) activities will be implemented during the life cycle of the project.



# Purpose of a QAPP

- ◆ Provides an overview of the project
- ◆ Describes measurements performance specifications
- ◆ Defines QA/QC activities applied to the project

# QAPP is Detailed

- ◆ Include information for every member of the project staff
  - ◆ Field technicians
  - ◆ Lab staff
  - ◆ Data reviewers
  - ◆ Project coordinators



## Who needs a QAPP ?

- SWAMP funded projects and all of California's legislatively mandated water quality monitoring projects are required to develop a QAPP
- US EPA funded projects require a QAPP



# What is the SWAMP QAPP Advisor?

- It is a computer based tool that helps users produce a QAPP efficiently and accurately.
- This tool is built using Expert Knowledge System



# What is an Expert Knowledge System?

- is an interactive computer program that provides the same answers and advice to questions that a human expert would.
- Advantages Include:
  - Ensures that all necessary questions are addressed and all forms needed are available.
  - Advice and information is available at any time day or night 24 hours a day 7 days a week.
  - Users quickly find specific information and advice for a particular situation without wasting time on extraneous information.
  - Provides consistent advice (unlike humans).





# Importance of the SWAMP Advisor

- All monitoring projects require a QAPP in consistent format and meeting SWAMP protocols & directives.
- Users often unfamiliar with Data Quality Objective (DQO) process and some decisions involving Method Quality Objectives (MQOs), method selection, etc. are complex.
- Electronic QAPP template doesn't guarantee an acceptable QAPP that will meet SWAMP QAPP requirements.
- Rejected QAPPs result in wasted staff time and frustrated applicants.

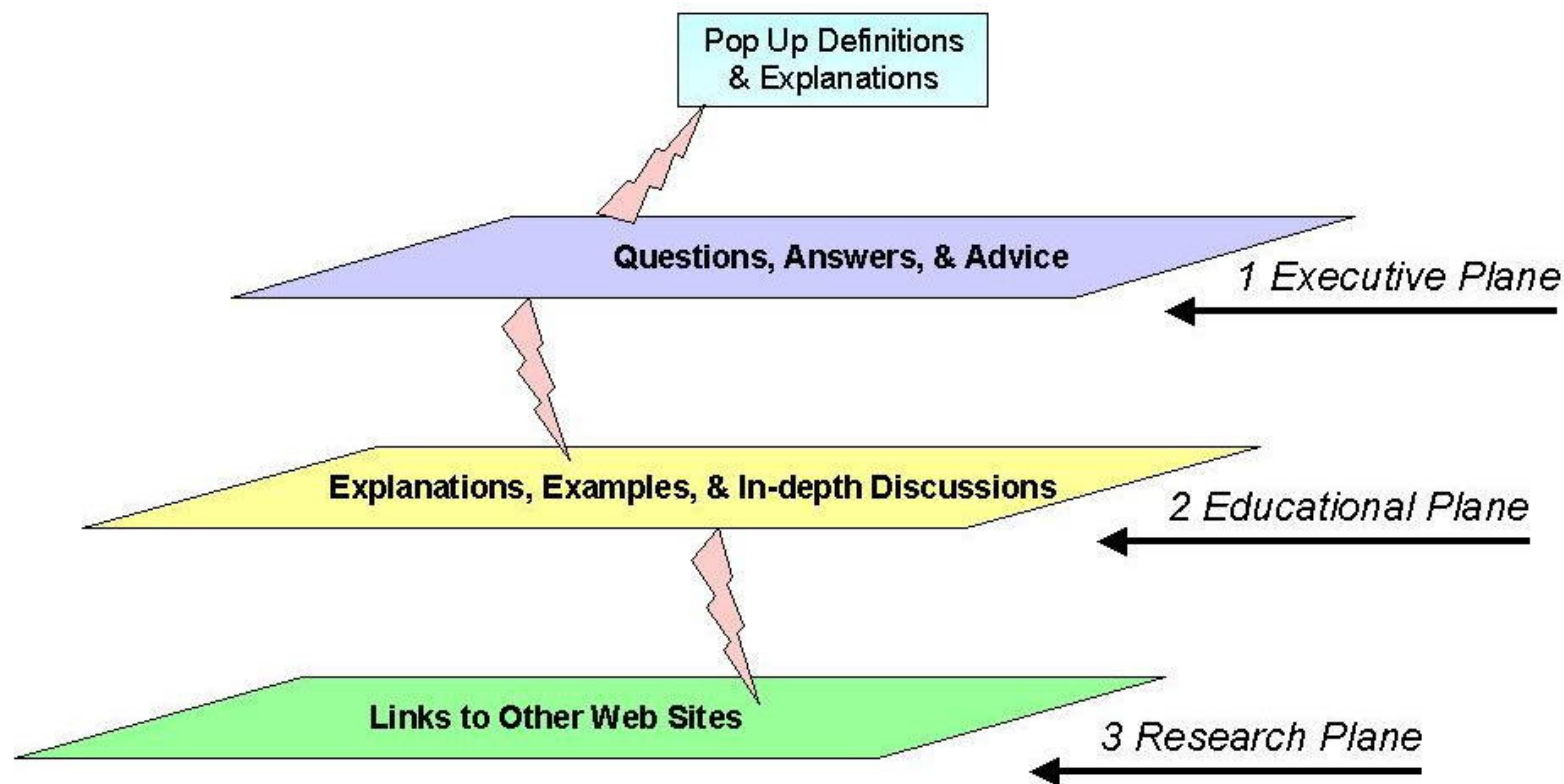


# What the SWAMP QAPP Advisor Does

- Leads users through a complex decision-making process.
- Prepares QAPP components step by step – one for each ‘element’.
- Provides advice as well as information.
- Users write an acceptable QAPP in less time.
- Doesn’t take the place of a human but simply is a tool to help the human be more efficient and not forget things.
- Results in more scientifically rigorous QAPPs.
- Saves SWAMP staff time by eliminating need for revisions.



# Unique Characteristics: (1) 3 Information Planes



# Unique Characteristics: (2) Dual Screens

## Expert System Side

Text with a question at the top.

- Select Answer #1
- Select Answer #2
- Select Answer #3

OK

Back

Restart

Has 3  
Navigation  
Buttons

## Explanation Side

Text with more in-depth explanations, examples, and advice.



[Links](#) to more information.



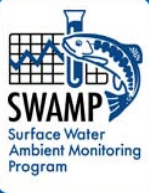
[Links](#) to Advice




[Links](#) to examples to copy and paste.

# Features

## 1st of 4 - Color Coded Title Bars




**SWAMP**  
Surface Water  
Ambient Monitoring  
Program



**SWAMP ADVISOR**

The California Surface Water Ambient Monitoring Program's (SWAMP) expert system for preparing Quality Assurance Project Plans (QAPPs) correctly, consistently, and cost-effectively.



**Group A Elements: Project Management**

**Element 6 - Project/Task Description**

**Section 6.1 - Work Statement and Produced Products**

6.1.6.1 - Water Sampling Techniques. Please select the sampling technique that best describes the basic procedure that you plan to use.

- ☐ Direct filling
- ☐ Grab and transfer
- ☐ Trap and transfer
- ☐ Pumping
- ☐ All of the above
- ☐ Other

OK


Back

Exsys


**6.1.6 - Sampling Techniques**

There are four principle water sampling techniques. Please identify any that will be used. If none of these techniques apply then select "**Other**" in order to describe what sampling technique(s) you plan to use.

Your input to Element 11 in Group B will provide details.

 [Click here](#) for more information on these techniques.

ISBN 1-885844-13-1 Prepared for the California State Water Resources Board by Lawrence H. Keith, Ph. D. [www.instantref.com](http://www.instantref.com)



**SWAMP**  
Surface Water  
Ambient Monitoring  
Program

Done

My Computer

100%

# Features

## 2nd of 4 – Hyperlinks and “Mouseovers”

- Hyperlinks to other files and web sites use standard underlined blue type.
  - Links to more pages with additional information and examples.
  - Adobe PDF files,
  - PowerPoint slide files,
  - Web pages at other web sites
- Hyperlinks that are “mouseover” (cursor hover) links are differentiated by using underlined red type.
  - Include acronym definitions, technical word definitions, and comments.



# Features

## 3rd of 4 – Selected Vocal Explanations

- In few instances Advisor applied verbal explanations
- When need identified, more vocals can be added.
- Reduces some explanations that may require lots of text.

# Features

## 4th of 4 – Information Entry Methods

1. a pre-formatted sentence into which an answer is inserted to make a complete sentence with all necessary information.
2. a pre-formatted sentence into which your typed entry is inserted to make a complete sentence with all necessary information.
3. User-written Sentence - an entry space for you to write a complete sentence to answer a specific question.





# SWAMP Advisor Advantages

1. Advice and information is available for QAPP preparation 24/7.
2. Allows entry to any QAPP Element at any time to facilitate revising draft QAPP reports.
3. Draft reports for each QAPP Element are saved on the user's computer.
4. Allows multiple lines of inquiry (study questions) and helps users to prepare technical descriptions that are specific to each by looping through applicable questions as many times as needed (i.e., once for each study question) in order to gather all necessary information.
5. Eliminates the arduous preparation of performance criteria tables in Elements 7, 11, 12, 13, 14, and 16 by automatically "looking up" *SWAMP Comparable* data based on parameters selected for monitoring and then providing it for all of them at once in a summary report using a "Measurement Core Loop" for each study question.



# SWAMP Advisor Limitations

- Limitations based on your computer
  1. You must have Java installed (most computers come that way and Java is free and easily installed if you don't have it.)
  2. pop-up blockers and some firewalls must be disabled.
- Limitation based on the server
- Limitations based on the SWAMP Advisor
  1. Tables are produced in comma delimited format
  2. Once you exit the SWAMP Advisor, all information that was not saved in draft reports on your computer is lost



**SWAMP QAPP Advisor will be available at:**

**[http://water101.waterboards.ca.gov/swamp/qapp\\_advisor/](http://water101.waterboards.ca.gov/swamp/qapp_advisor/)**

**Contact: [dtadesse@waterboards.ca.gov](mailto:dtadesse@waterboards.ca.gov)**

**Questions?**

