Sacramento Area
# Integrated Water Resources Information System

A Comprehensive Database System for IRWM in the Sacramento Region

The Integrated Regional Water Management (IRWM) program is a key initiative of the State of California. It is a planning process that brings together and prioritizes water projects in the region to ensure sustainable water uses and reliable water supplies with a view towards improved quality of life, healthy ecosystems, and strong economic development.

The Sacramento Region is a key participant in this statewide initiative and is in the midst of implementing its IRWM Plan (IRWMP). As part of this planning process, there are ongoing efforts within the region to improve data and analytical tools needed to evaluate and implement the IRWMP.

Sacramento Area Integrated Water Resources Information System (SacIWRIS) is a comprehensive database system that stores water resources and hydrogeologic data for all the water purveyors in the Region in a relational database system. It stores land use, water use, water supply, groundwater level, groundwater production, surface water diversion, groundwater quality, well logs, groundwater lithologic data, and model results. SacIWRIS provides powerful data visualization and geoprocessing tools to authorized users for data entry, management, analysis, and reporting. In addition, SacIWRIS is linked to the statewide IWRIS [www.iwris.ca.gov], operated and maintained by the California Department of Water Resources (DWR); this linkage allows the SacIWRIS administrator to publish selected data and GIS layers into the statewide IWRIS for viewing by the general public. The statewide IWRIS is a GIS based internet application that provides access to a host of database systems, such as the California Water Data Library (WDL), California Data Exchange Center (CDEC), United States Geologic Survey (USGS) Streamflow Data, California Groundwater Management Plan (GWMP) Database.
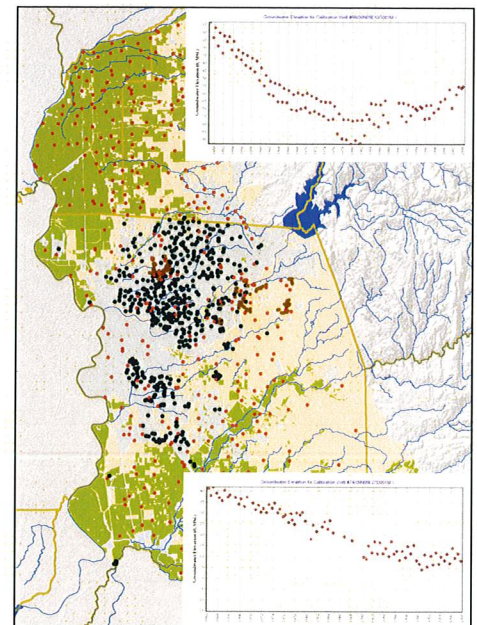
The SacIWRIS provides a one-stop shop for data in the Sacramento Region and can be linked with the Sacramento Area Integrated Water Resources Model (SacIWRM). The results of SacIWRM scenarios can be viewed in SacIWRIS database environment.

Disparate Data Needs Integration
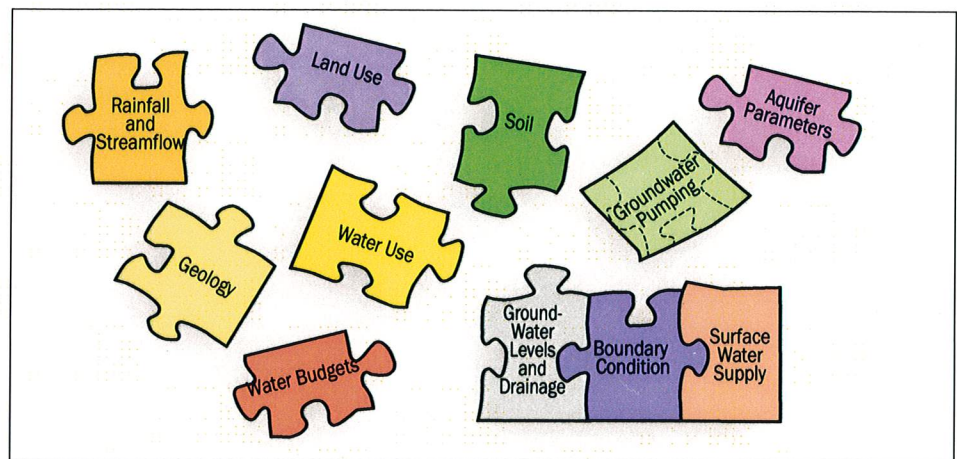
SacIWRIS is a comprehensive water resources database system

- "One-stop shop" for regional data stored in a single database system
- Data access from anywhere anytime
- Full administrative control by the Regional partners
- Automated submission of local data to state agencies as required by law/contract
- Access to state and federal databases through statewide IWRIS
- Increased efficiency in data analysis
- Integration of multi-disciplinary data
- Support IRWM plan development and evaluation
- Flexible and expandable

*Land Use, Production Wells and Monitoring Wells*

SacIWRIS Architecture

SacIWRIS is developed to meet the emerging needs of local data management and reporting to state agencies. It is built upon a state-of-the-art system architecture that combines the power of GIS with web technology. The complexity of the database architecture is hidden from the users to ensure ease of use, one of the primary strengths of SacIWRIS. The single database is hosted on a server. At the desktop level an administrative user can conduct data administration functions (i.e., user management, data entry, data validation, publish to IWRIS) using a web browser. Additionally at the desktop level, a power user can conduct geoprocessing (e.g., contouring, polygon analysis of Basin Management Objectives) as well as data analysis (e.g. time series graphs, comparative analysis, criteria based data queries). At the internet level, the general public can view the GIS layers as well as the time series data using published data in the statewide IWRIS, while a manager can review limited access technical results with the same easy-to-use IWRIS interface.
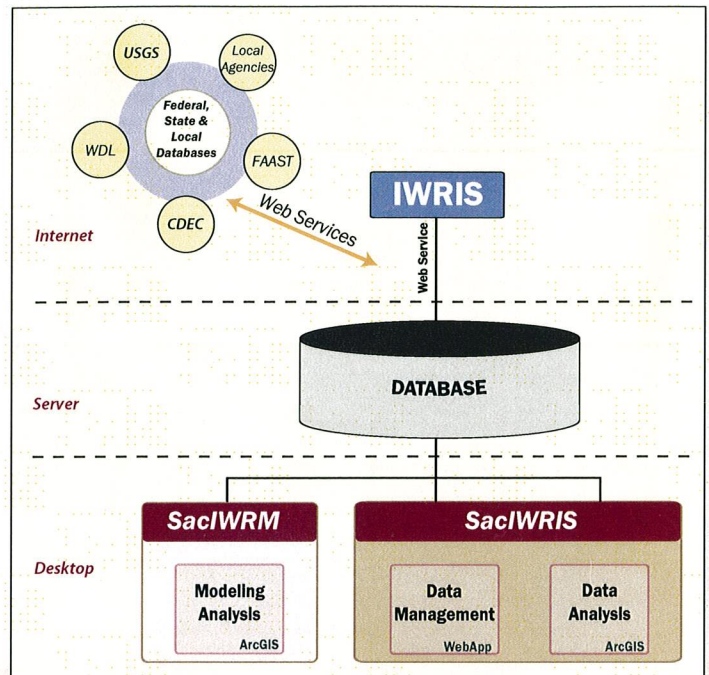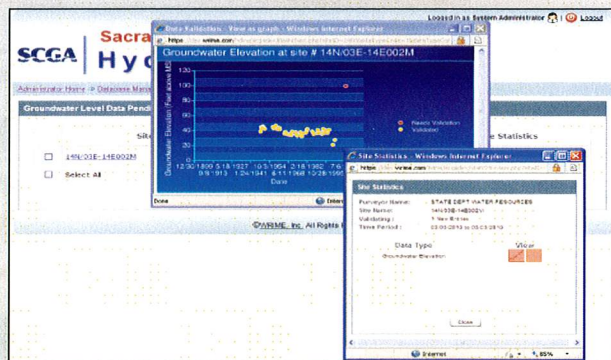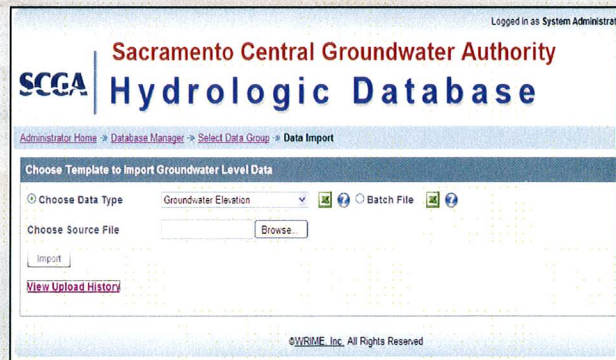

SacIWRIS Architecture
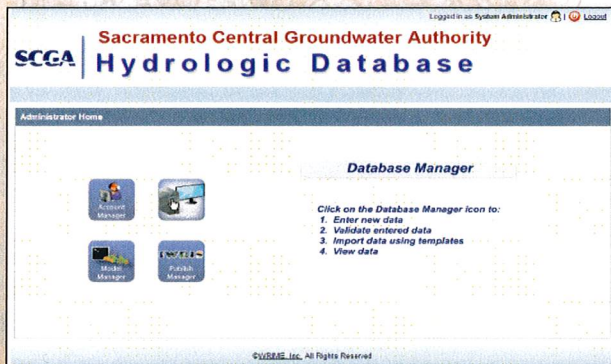
Home Page
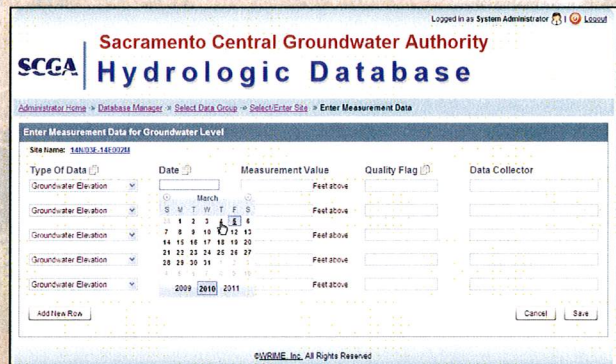
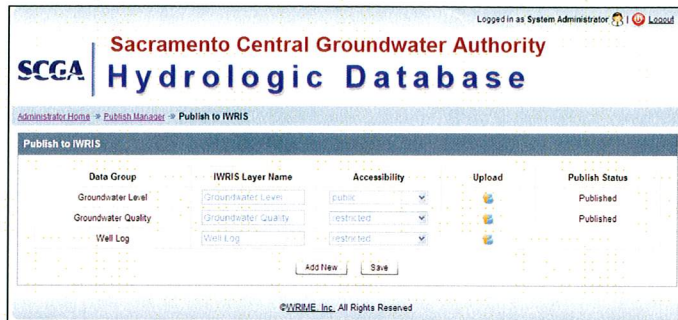*Data Entry*

Data Validation

Data Import

Statewide IWRIS

Statewide IWRIS is a GIS application developed by WRIME for DWR. It allows a user to interact with maps over the internet, query local and remote databases, visualize and retrieve data, customize the user interface by loading/deleting GIS layers, synthesize data across multiple databases, and access web pages through a map-based interface. Its primary benefit comes from the rapid access to available data through the use of an information catalog and from the ability to integrate multiple sources of data.

"We are what we repeatedly do. Excellence, then, is not an act, but a habit." - Aristotle
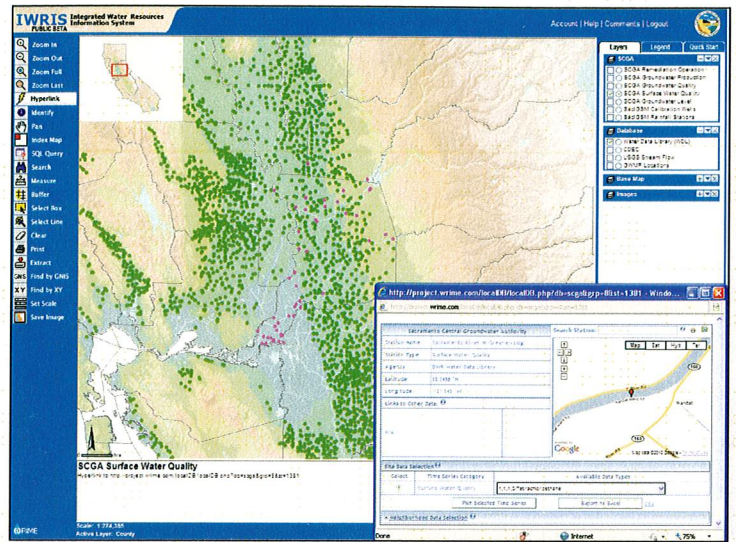
Publish to Statewide IWRIS

Statewide IWRIS is designed to allow a Regional partner agency of DWR to submit its data and GIS layers to IWRIS making it accessible to either all IWRIS users (i.e., general public) or selected users as designated by the SacIWRIS administrator. SacIWRIS contains a Publish IWRIS module to manage the submission of data layers and user access.

Statewide IWRIS

**Publish to IWRIS**

SacIWRIS Features

- **Account Manager:** User account management, user privilege settings

- **Database Manager:** data entry, geographic search of sites using Google Maps, bulk data import using data templates, data validation using statistics and graphical tools

- **Model Manager:** model data import, model scenario management, model data visualization

- **Publish Manager:** publish data and GIS layers to statewide IWRIS, user access control, communication with statewide IWRIS system administrator

- **Geoprocessing Toolbox:** Contouring, Polygon Analysis, Time Series Graphs, BMO Analysis, and other GIS Analysis

Groundwater Contours

SacIWRIS allows a user to develop water level contours as well as water quality contours using a custom developed ArcIWRIS tool that is an add-on to the ESRI® ArcGIS™ environment. Contours can be developed for any user-selected time period.
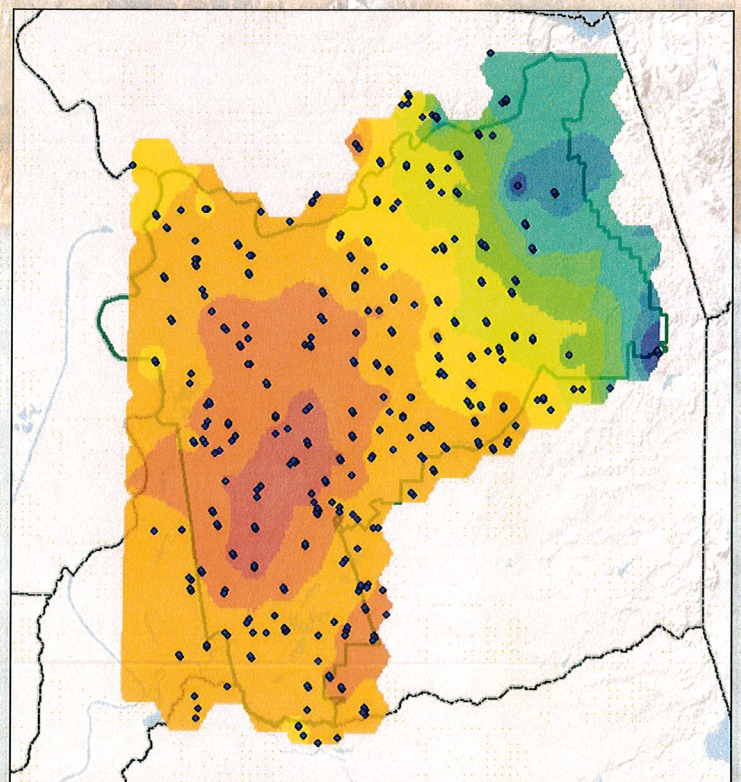

Groundwater Level Contour

SacIWRIS Custom Tools

SacIWRIS includes custom add-on tools for ESRI's ArcGIS environment. Two such tools are: (1) Polygon Analysis Tool; and (2) Time Series Graph Tool. These tools allow the user to conduct the following analyses:

- Overlay the Groundwater Management Plan polygon layer on any groundwater level or groundwater quality data

- Compute data statistics by polygons

- Color code the polygon based on the average data value of a polygon

- Graph the average polygon value against a Basin Management Objective (BMO) for a polygon

- Compare the time series data of selected wells
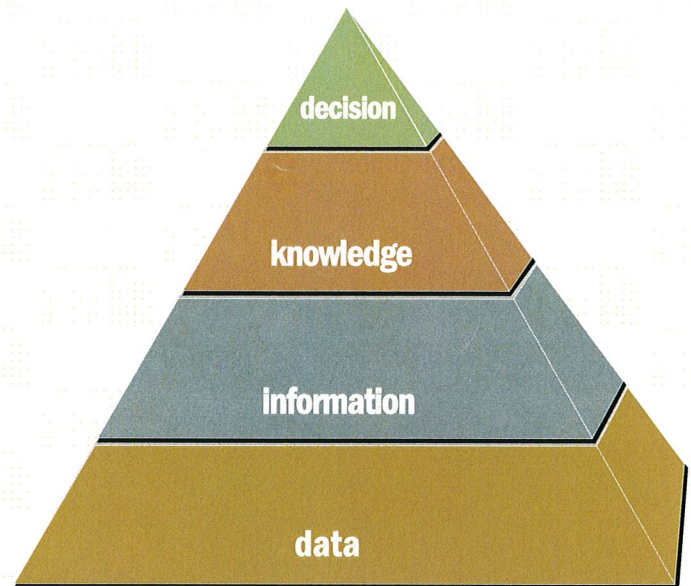
From Data to Meaning
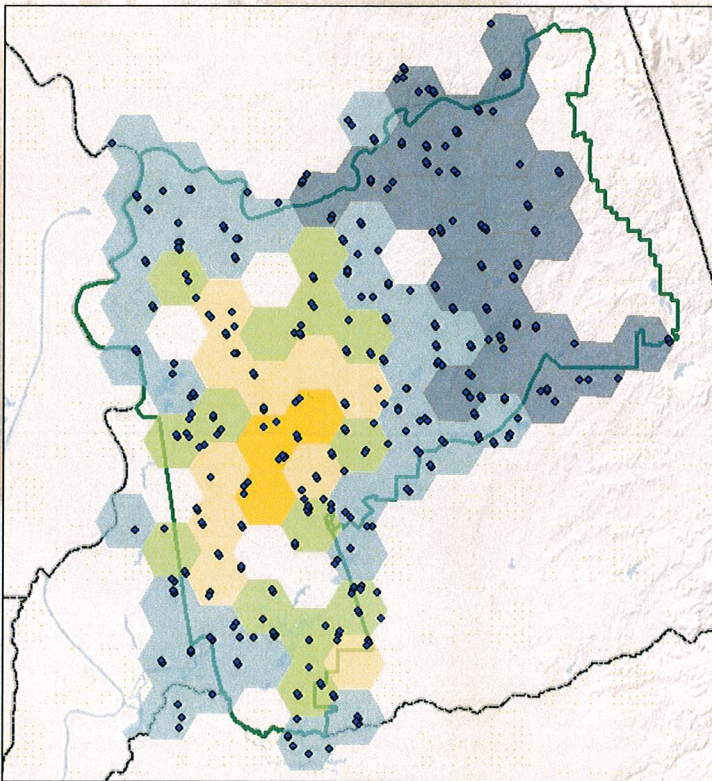
Polygon Analysis

SBx7 6 Groundwater Monitoring

The Senate Bill SBx7 6 requires that local agencies monitor the elevation of their groundwater basins to help better manage the resource during both normal water years and drought conditions beginning January 1, 2012. SacIWRIS will facilitate compliance with this bill through its "Publish to Statewide IWRIS" module.
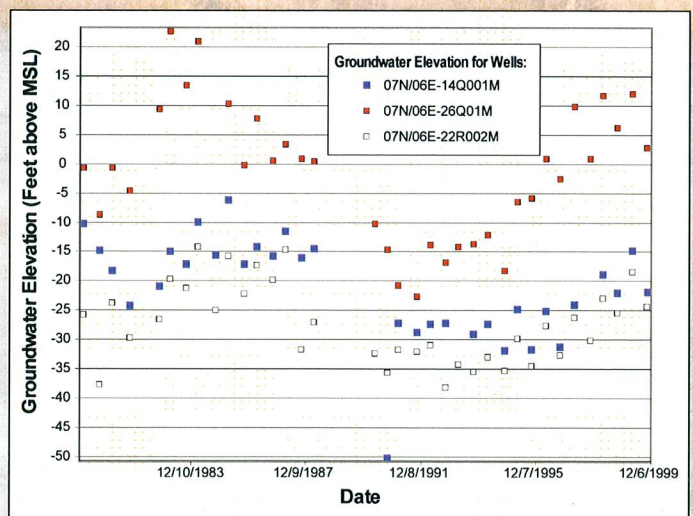
Groundwater Elevation Graph for Multiple Wells

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