



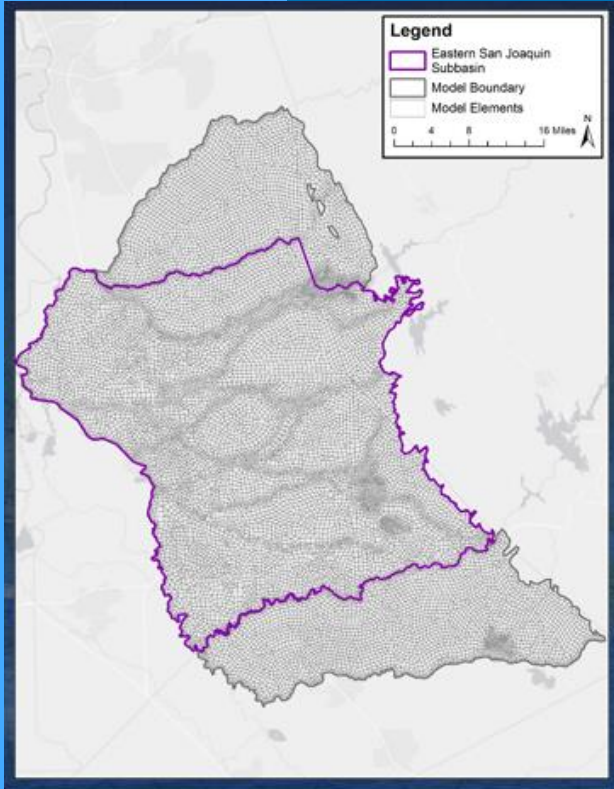
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GROUNDWATER AUTHORITY**

**ESJ Public Meeting – Technology
August 29, 2018**



Model Background

Water Resources Model

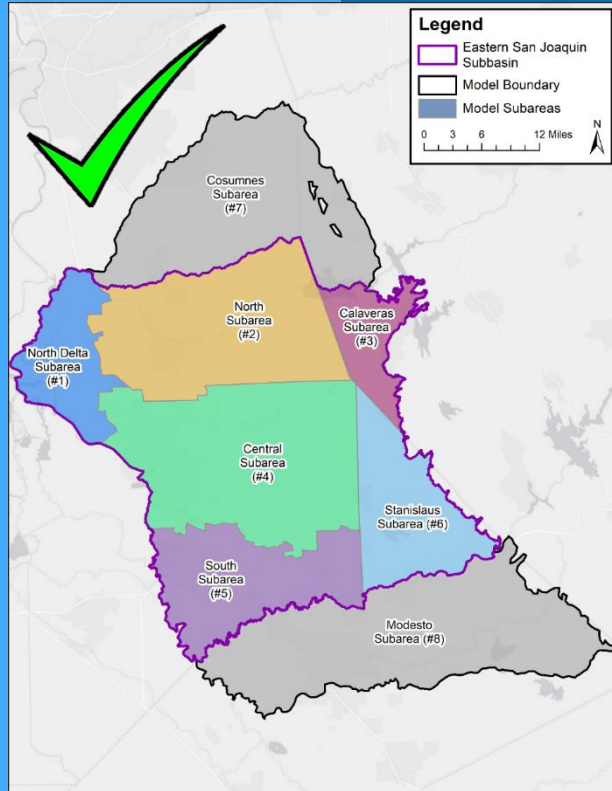


Over the past decades, agencies in the Eastern San Joaquin Subbasin have worked together to build, calibrate, validate, and refine an integrated surface- and groundwater model that serves as a robust and defensible analytical tool to support GSP development.

ESJWRM

Eastern San Joaquin Water Resources Model

The Model Was Approved for Use by the Groundwater Authority Board of Directors



During the May 9, 2018 Groundwater Authority Board meeting, the Board voted to approve the use of the model in the GSP development process.

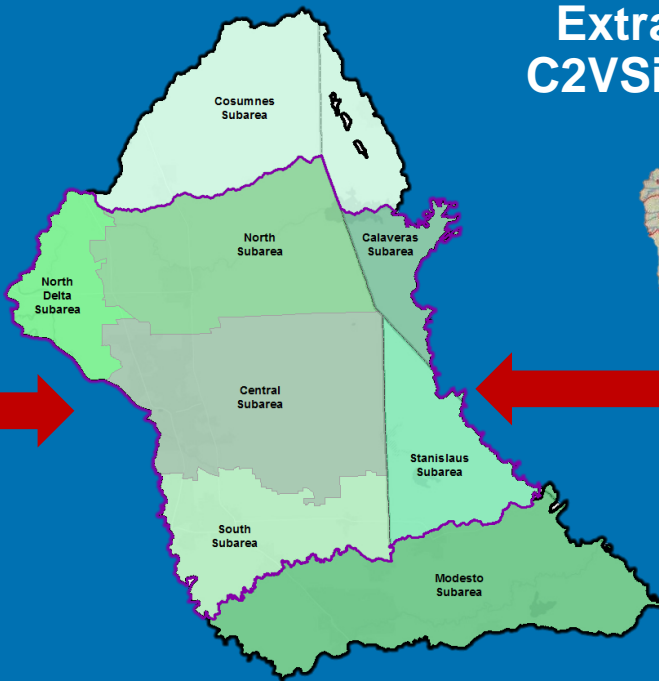
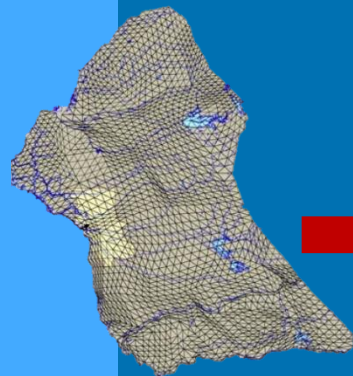
The Model will be used to develop the Water Budget and evaluate Projects and Management Actions.

The Model was Developed Based on an Existing DWR Modeling Platform and Local/Statewide Datasets



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Migration of Existing
DYNFLOW (local ESJ
Subbasin model) Data

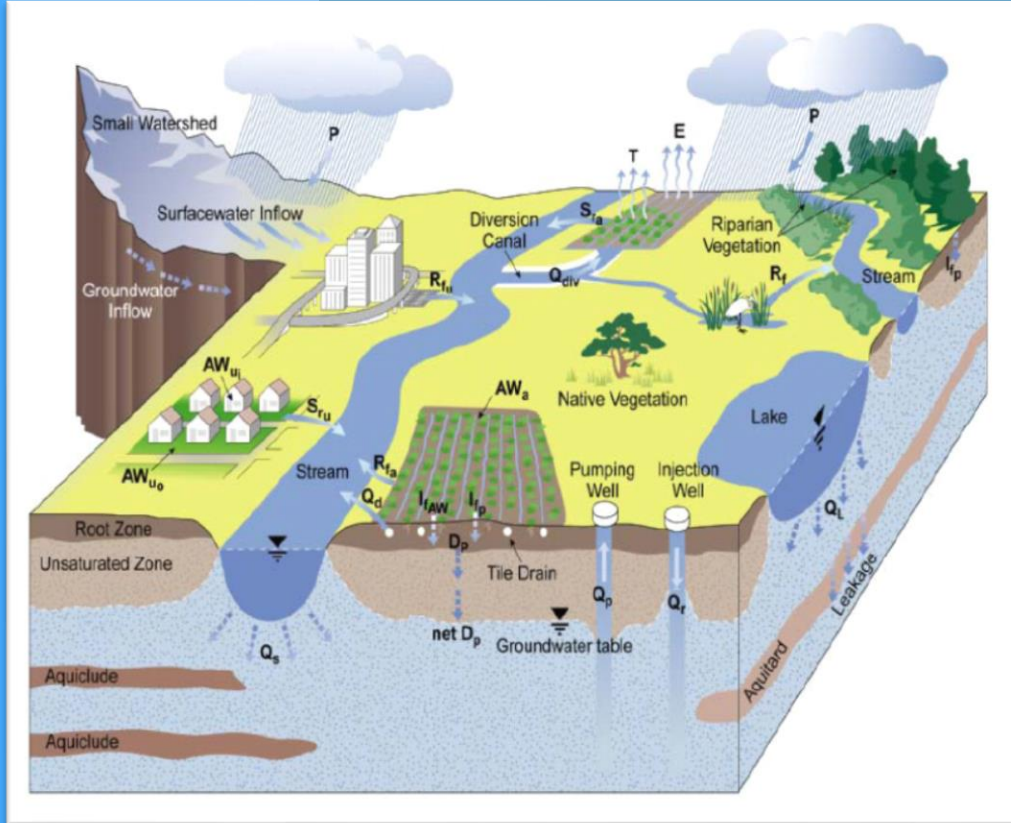


Extract Information from
C2VSim-FG (state model of
Central Valley)



ESJWRM

The Model Captures the Interplay Between Integrated Hydrologic Processes



Land Surface Processes

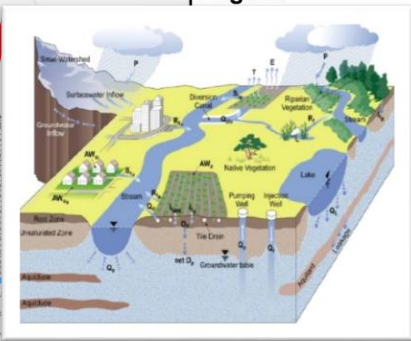
Groundwater Flow

Streamflow

Physical Systems Integration

Water Budgets

Legend



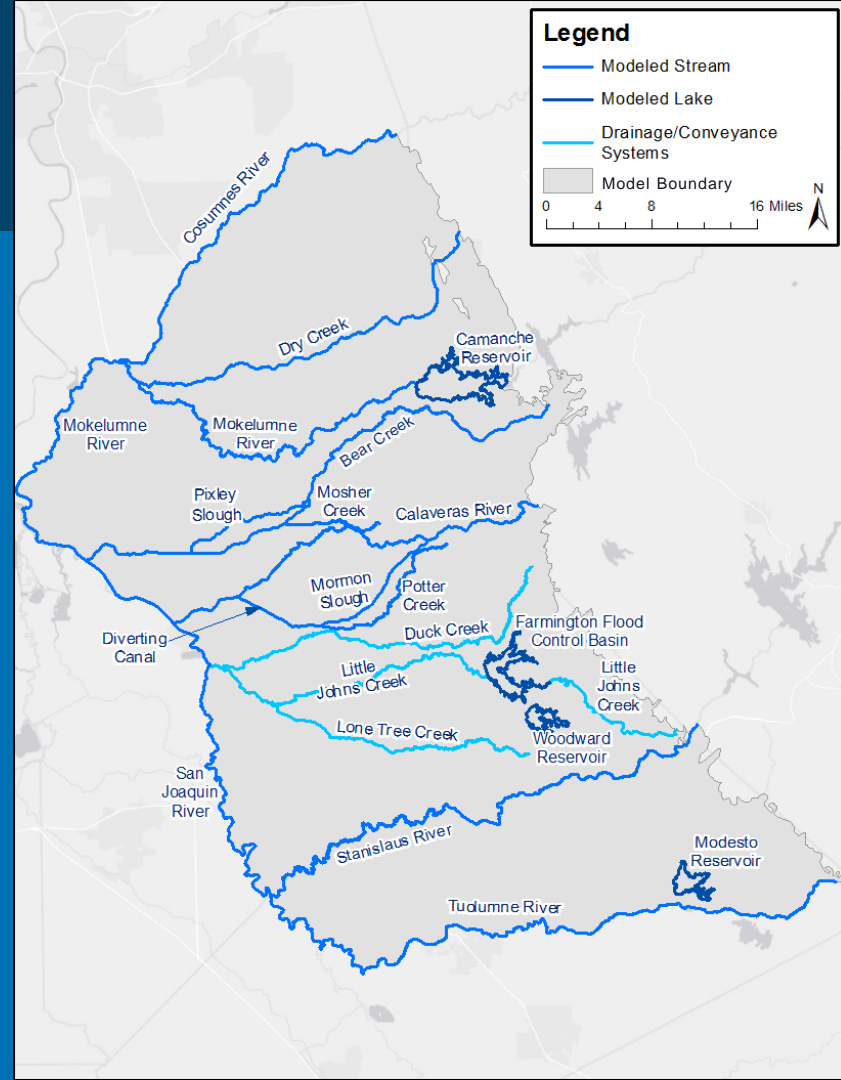
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Hydrologic and Hydrogeologic Computations are Performed at Model Grid Elements and Nodes

- Model Grid
 - 16,054 elements
 - Average Area: 76.5 acres
 - 15,302 nodes
 - Node Spacing:
 - Across Model Area: 0.37 mile
 - Along the Rivers/Water Courses: 0.28 miles

The Model Simulates Major Surface Water Features

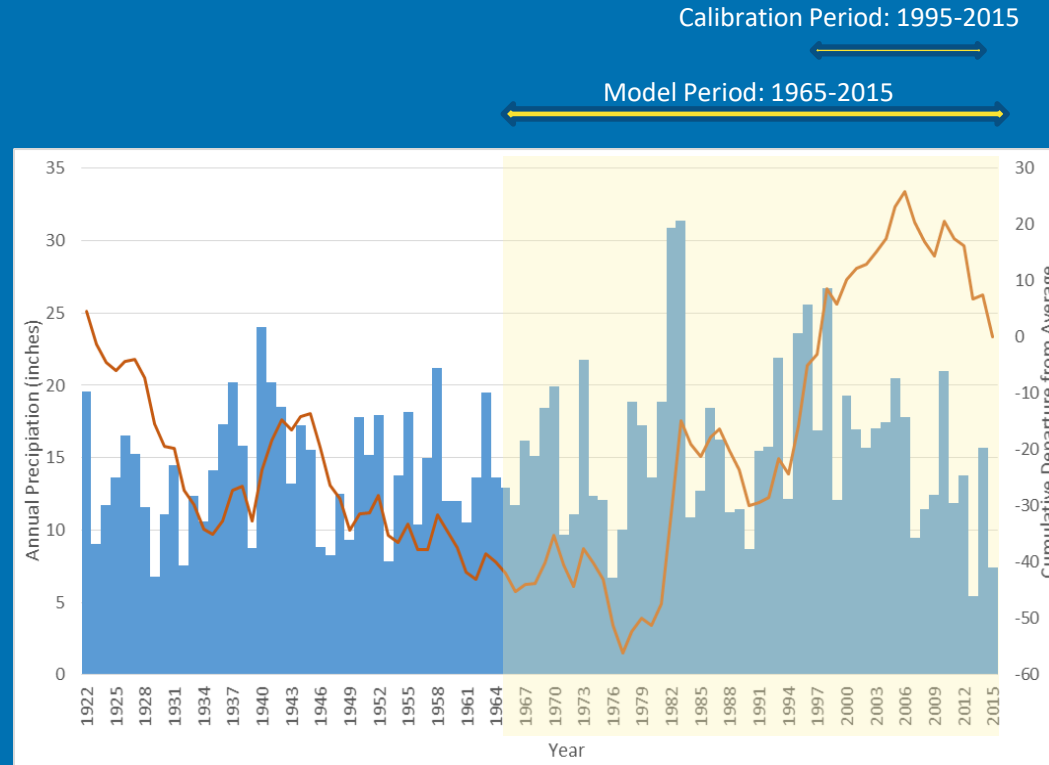
Streamflow and surface water diversions are simulated, as well as groundwater-surface water interactions



The Model was Built Using Data Going Back to 1922

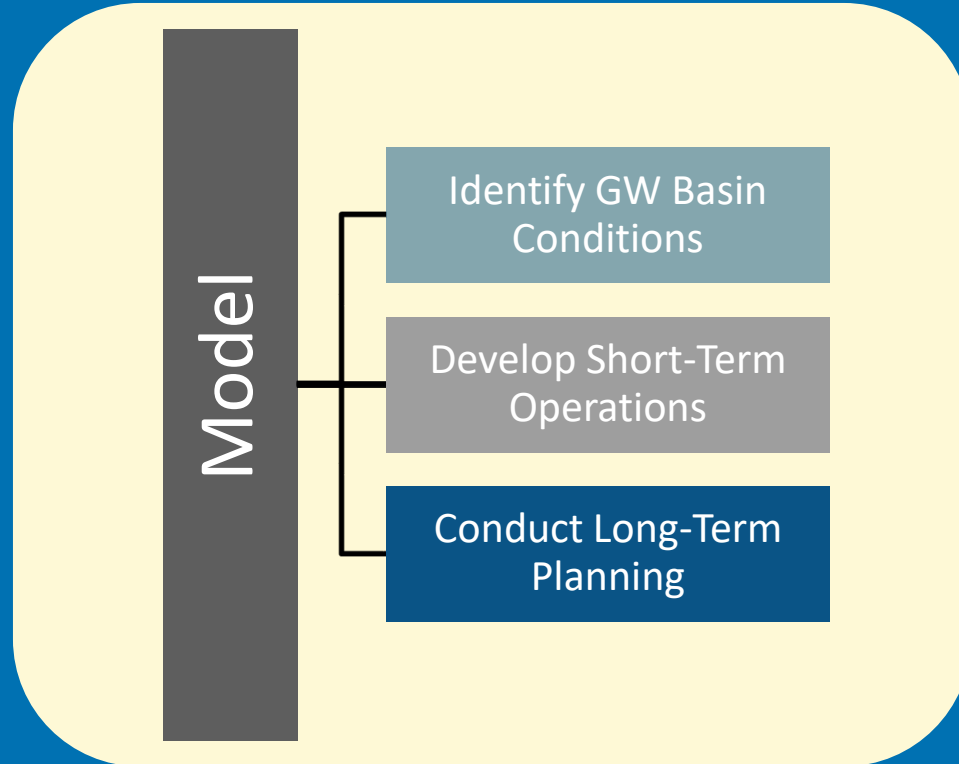


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*Source: PRISM (Parameter elevation Regression on Independent Slopes Model)

How Will the Model be Used?



What Questions Can the Model Answer?

The model will help answer some of the big SGMA questions.

How long will it take to achieve sustainability?

What are our thresholds for sustainability?

What are the economic implications of sustainability?

What is the current status of the groundwater basin?

How is sustainability measured?



Data Management System (DMS)

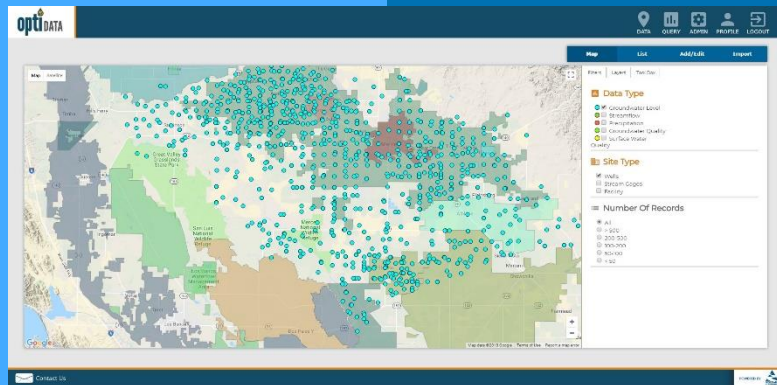
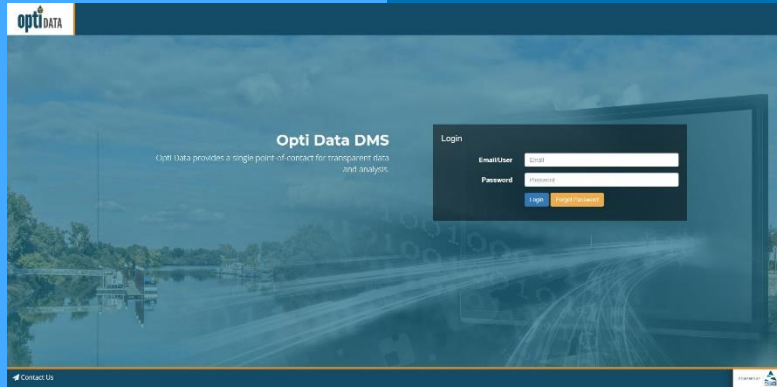
What is the Data Management System (DMS)?



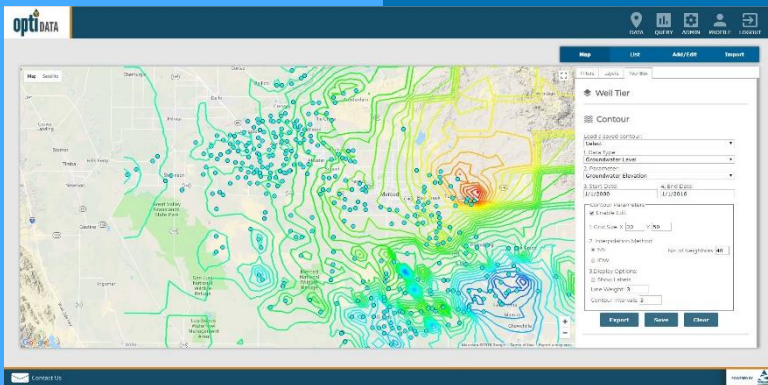
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A Flexible, One-Stop Shop for Managing Groundwater Data

- Allows for transparent and efficient data entry and visualization
- Allows for coordination and sharing of data
- Allows for automated reporting
- Will support sustainable groundwater management monitoring and give ESJ the ability to track undesirable results



DMS Features

A screenshot of the 'Data Entry' web interface. The page has a dark blue header with the 'optiDATA' logo and navigation icons for 'DATA', 'QUERY', 'REPORT', 'PROFILE', and 'LOGOUT'. Below the header, there are tabs for 'Map', 'List', 'Add/Edit', and 'Import'. The main content area is titled 'Data Entry' and includes a 'Select Site' section with a search bar and a 'Site Name' field. Below this is a table for adding data for the 'San Joaquin River by Fremont Ford Bridge' site. The table has columns for 'Data Type', 'Parameter', 'Date', 'Measurement', 'UNIT', 'Quality Flag', and 'Data Collector'. There are 'Add Site' and 'Save' buttons.

- Web-based, GIS-enabled
- Easy-to-Use
- Flexible Data Structure to Store and Manage Different Datasets
- User and Agency Security/Permissions
- Data Entry and Validation
- Visualization and Analysis
- Query and Reporting
- Framework to Link to other Data Management Systems and Modeling Results
- Viewing capabilities for publicly available information

How Will the DMS be Used?



Query Tool

Select saved query: [dropdown]

Or, query data by:

Field	Operator	Value
Groundwater Level	>	SHOWHOLE Elevation

Select date range:

Start date: [input] End date: [input]

[RUN] [SAVE] [CLEAR]

User Profile

Select Entity: [dropdown]

Name	Email	Action
Jane Wilson	jwilson@easternsjgwa.com	[edit] [delete]
Michael Bell	mbell@easternsjgwa.com	[edit] [delete]
Henry Rodriguez	hriguez@gmail.com	[edit] [delete]

[Add New User]

[SAVE]

Data Access

Groundwater Level: [dropdown]
Streamflow: [dropdown]
Precipitation: [dropdown]

- The DMS will create a centralized and integrated repository for multiple data sources managed by stakeholders
- Data sharing portal to enable utilization of the same data and tools for visualization and analysis
- Interface with model results to support groundwater modeling and analysis
- Generate reports for management and other agencies (DWR, etc.)
- Track sustainability criteria and management objectives

How the DMS Will Evolve



- Collect and input additional data – member agency and other stakeholder data sets, GIS, etc.
- Onboard stakeholders for local control and efficient data management
- Integrate model viewing capabilities and model results to support water budget development
- Implement reporting capabilities compatible with DWR SGMA portals



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