

Salinas Valley Basin Groundwater Sustainability Agency  
Board of Directors

Groundwater Model Policy  
Adopted June 9, 2022

I. Purpose of the Groundwater Model Policy

The Salinas Valley Basin Groundwater Sustainability Agency (Agency) Groundwater Model Policy guides the appropriate use, maintenance, storage, and sharing of groundwater models used by the Agency. This policy underscores the Agency's commitment to information transparency while acknowledging the appropriate objectives, uses, and limitations of groundwater models. The Agency will modify this policy as new model needs or concerns arise.

II. Background on the Role of Models for Sustainable Groundwater Management Act Implementation

The following excerpts are provided in the Department of Water Resources "Modeling Best Management Practices for Sustainable Groundwater Management" published in 2016. The sections selected are those most pertinent to providing background on the role of models with regards to Groundwater Sustainability Plans and Sustainable Groundwater Management Act (SGMA) Implementation.

Each GSA is responsible for determining the appropriate modeling method, software, and the level of detail needed to demonstrate that undesirable results can be avoided and the sustainability goal in each basin is likely to be achieved within 20 years of GSP implementation. Applicable SGMA sections regarding modeling include §354.18(e) and §352.4(f)

While models are, by definition, a simplification of a more complex reality, they have proven to be useful tools over several decades for addressing a range of groundwater problems and supporting the decision-making process. Models can be useful tools for estimating the potential hydrologic effects of proposed water management activities.

Modeling to support sustainable groundwater management is an ongoing effort. The initial model developed to support a sustainability assessment must be based on the best available information, the level of expert knowledge about the basin, and the best available science at the time of model development. As new data are collected and an improved understanding of the basin is developed over time, through either additional characterization, monitoring efforts, or both, the predictive accuracy of the model (or models) should be improved through a refinement of the underlying model assumptions (aquifer properties, stratigraphy, boundary conditions, etc.), as well as more robust calibration due to a larger database of calibration targets (groundwater levels, surface water flows, a more robust climatic dataset, etc.). The

model selected as a long-term tool to support management of a groundwater basin should be able to adapt to refined hydrogeologic interpretations and incorporate additional data.

The purposes of modeling in the broader context of SGMA implementation include:

1. Supporting the development of the water budget
2. Assessing the Sustainable Management Criteria (sustainability goal, undesirable results, minimum thresholds, and measurable objectives)
3. Supporting identification and development of potential projects and management actions to address undesirable results that exist or are likely to exist in the future
4. Supporting the refinement of the monitoring network in the basin over time

Models provide insight into the complex system behavior and (when appropriately designed) can assist in developing conceptual understanding. Models provide an important framework that brings together conceptual understanding, data, and science in a hydrologically and geologically consistent manner. In addition, models can estimate and reasonably bound future groundwater conditions, support decision-making about monitoring networks and management actions and allow the exploration of alternative management approaches. However, there should be no expectation that a single 'true' model exists. All models and model results will have some level of uncertainty. Models can provide decision-makers an estimate of the predictive uncertainty that exists in model forecasts. By gaining a sense of the magnitude of the uncertainty in model predictions, decision-makers can better accommodate the reality that all model results are imperfect forecasts and actual basin responses to projects and management actions will vary from those predicted by modeling.

Developing and applying models to aid in determining sustainable groundwater management results in multiple benefits to GSAs and stakeholders. Constructing and calibrating the model improves understanding of the critical processes that influence sustainability indicators within the basin. The application of the model to forecast the influence of projects and management actions on basin conditions provides a framework within which a GSA can screen and select appropriate projects and management actions that lead to the achievement of the sustainability goal for the basin. Additionally, models can play a critical role in simulating the changing climate conditions that may occur during the 50-year planning and implementation horizon required under SGMA. It should be noted that in general, groundwater and surface water models are more effective at comparing the benefits and impacts of various management strategies with respect to one another rather than predicting exact management outcomes. While a model can assist in selecting the best alternative from a variety of options, uncertainty will remain in the forecasted outcome of a particular alternative.

It is each GSA's role to carefully consider if changing basin conditions and proposed projects and management actions have the potential to trigger undesirable results within the basin or in adjacent basins, and whether a model is necessary to demonstrate that the proposed projects and management actions will achieve the sustainability goal. Therefore, the use of models for developing a GSP is highly recommended, but not required.

Since significant professional judgment goes into the development of a model, two models of the same basin – even if they are built with the same model code - are likely to differ in their design and their outcome. Where multiple models exist, differences between model outcomes, after a careful assessment of the differences in model design and assumptions, may provide an important opportunity to further assess uncertainty in predicted outcomes and to further direct future data collection programs. Importantly, multiple models with differing outcomes should not be interpreted a priori as one model being (more) right and others being (more) wrong.

While models are useful and often invaluable tools for understanding a basin and predicting future basin conditions, in most cases, they are not the only available means for demonstrating that a basin has met its sustainability goal. Satisfactorily demonstrating that all undesirable results have been avoided and the sustainability goal has been met will be a function of the data collected and reported during GSP implementation.

### III. Groundwater Models Used by SVBGSA and Covered by this Policy

The Agency has used various mathematical models to develop the Salinas Valley GSPs. The Agency will continue to use those models, as well as other models, during the 50-year planning and implementation period. This policy relates to all mathematical models and analytical tools used by the Agency for GSP development and implementation. The policy covers the broad range of mathematical and analytical tools for estimating historical, current, or future groundwater and surface water conditions. The policy is not intended to cover conceptual models of the Salinas Valley Subbasins.

The Agency has embraced modeling as an important tool in both developing the groundwater sustainability plans and in initiating implementation. Adaptive management will always be a necessary component of program implementation, and sustainability will always be measured by monitoring and reporting of actual groundwater and surface water conditions.

Models currently or historically used by the Agency include the following:

- SVIHM and SVOM
- Marina Coast Water District GSA Model
- North Monterey County Model
- Arroyo Seco Portion of the Salinas Valley FEMFLOW Model
- Seawater Intrusion Model
- Seaside Watermaster Model

It is important to remember that, at the present time, the Agency does not own any of these models, and is using them under permission by those entities that either own or have created them. At some point in the future, the SVIHM and SVOM, created by the United States Geological Society under contract with the County of Monterey and the Monterey County Water Resources Agency, will enter the public domain and be available for public use.

#### IV. Salinas Valley Basin Groundwater Sustainability Agency Groundwater Model Policy

The Salinas Valley Basin Groundwater Sustainability Agency Board of Directors establishes the following Groundwater Model Policy detailing the purpose, role, and use of groundwater models. This policy balances groundwater model utilization for compliance with SGMA, implementation project planning and assessment, and additional Agency Board directives.

Section 1. It is the policy of the Agency to maintain current and publicly accessible groundwater models for developing strategic decisions needed to achieve and maintain sustainability in the groundwater subbasins under the authority of the Agency, and in subbasins with Coordination Agreements with the County of Monterey and the Marina Coast Water District Groundwater Sustainability Agency. Further, the Agency will cooperate with the Arroyo Seco Groundwater Sustainability Agency on model efforts in the Forebay Subbasin.

Section 2. To achieve current and publicly available groundwater models, it is the policy of the Agency to engage in regular model updates, and undertake model runs as directed by the Board of Directors. The Board identifies the following primary reasons for updating Agency groundwater models:

- a. 5-year GSP updates
- b. Project and Management Action assessments
- c. Additional Board directives
- d. Incorporation of additional data
- e. Coordination with partner agencies

Section 3. It is the policy of the Agency that a groundwater model update cash reserve be identified in the budget to ensure timely model updates for all subbasins and maintain compliance with SGMA. The Annual Reports completed in April of each year will be the primary source data for the Board to consider for model updates. The Budget and Finance Committee of the Agency shall recommend such a reserve policy.

Section 4. It is the policy of the Agency to engage regularly with stakeholders in local groundwater planning and implementation. The Agency recognizes the interest of stakeholders in bringing proposed modeling analyses forward to assess various conditions within and between subbasins under the authority of the Agency. It is the policy of Agency to maintain current and updated groundwater models for the Agency in compliance with SGMA. When a model is updated, the updated version will become the accepted current version of the model and will be used for all future analyses. The Board will be informed when new model versions are completed. The Board will affirm the current version of any models used annually by the Agency. It is the policy of the Agency to bring forth requested model analysis to the Board for direction. It is the policy of the Agency to retain the right to reject such requests at the Board or to approve such requests with appropriate cost recovery and approval of a scope of work by the Board. The Agency and staff are not responsible for training or explaining the use of the model to others. Any stakeholder requesting a copy of the current groundwater model will

agree in writing that the Agency accepts no responsibility or liability for how stakeholders may use the model.

Section 5. It is the policy of the Agency to identify and approve technical collaborations with local, state, and federal agencies for groundwater modeling. These opportunities will require Board approval.