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Groundwater Model Peer Review Overview

Santa Clarita Valley Groundwater Sustainability Agency

July 12, 2021

Elements of a peer review

- What is a peer review?
  - An independent evaluation of work products by an individual(s) with similar competencies as producers of the work products
  - Involves soliciting feedback regarding decisions on input data and assumptions, methodology, and resulting work products

- Why conduct a peer review?
  - To improve work products by getting “fresh” perspectives from qualified individuals not involved with producing the work products
  - To independently assess the validity and intended uses of the work products

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SCV Water tasks associated with DWR grant

- On behalf of **SCV-GSA**, arrange for expert peer review of critical model components.
- Review model calibration & refinement.
- Review model's quantification of **GW-SW** exchange.
- Review model suitability for informing minimum thresholds and measurable objectives.
- Hold up to three meetings amongst the peer review work group.
- Make incremental model improvements as reasonably can be made within the **GSP** development timeframe.
- Develop report describing key work, findings, & appropriateness of model for its intended use.

SCV WATER

CALIFORNIA DEPARTMENT OF
WATER RESOURCES

Acronyms
SCV = Santa Clarita Valley
GSA = Groundwater Sustainability Agency
GSP = Groundwater Sustainability Plan
GW = groundwater
SW = surface water

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Expert Review Panel (ERP) members

Dr. Jason Sun/United Water Conservation District
- Downstream basin reviewer

Mr. Jim Rumbaugh/Environmental Simulations Inc
- Independent reviewer

Mr. Nate Brown/Jacobs Engineering Group
- Independent reviewer
- Tasked by SCV Water to lead ERP review process
- Received notice to proceed on September 29, 2020

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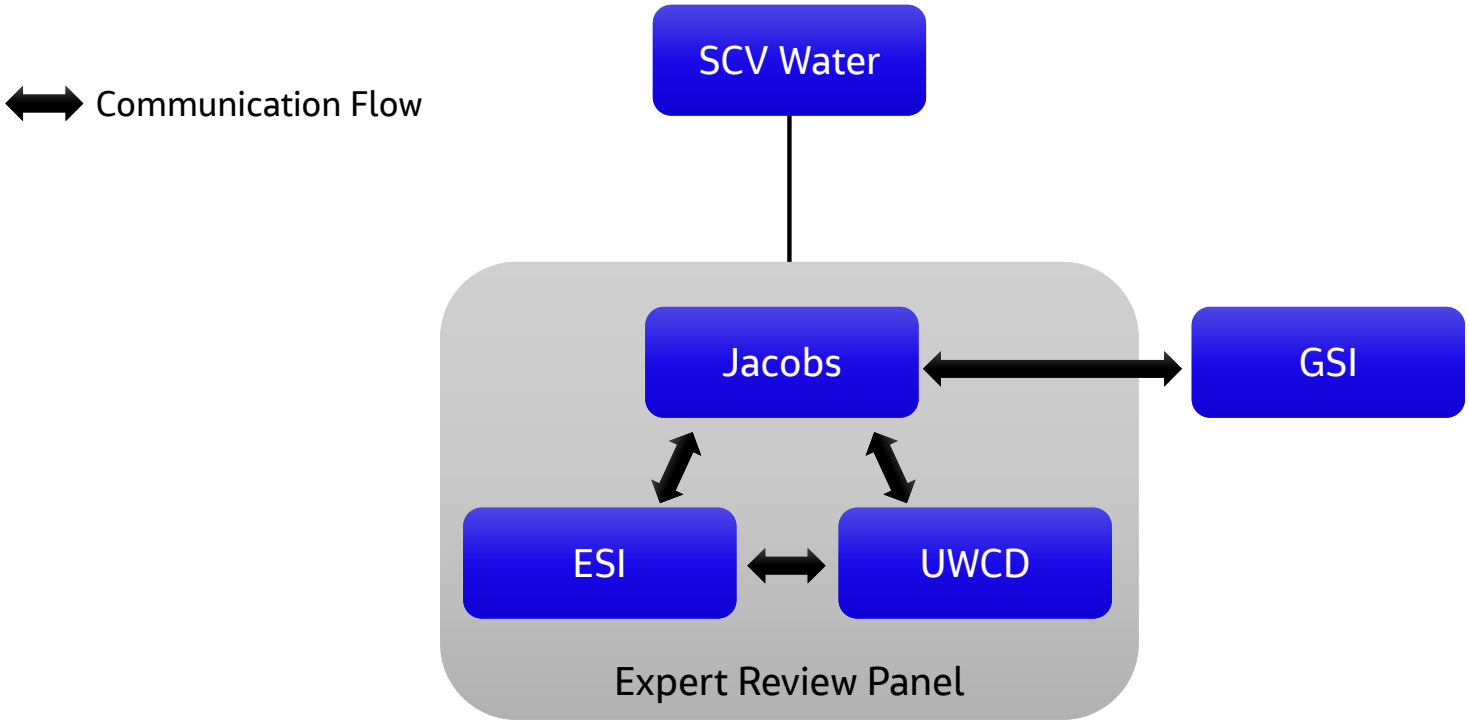
Organization and communication chart



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Overview of GW flow modeling software

- MODFLOW-USG code
  - Free and in public domain
  - Flexible in grid design
  - Benchmarked, verified, and subjected to scientific review
  - Well documented and in wide use
  - Good technical support
  - https://www.usgs.gov/software/modflow-usg-unstructured-grid-version-modflow-simulating-groundwater-flow-and-tightly

- Groundwater Vistas graphical user interface
  - Commercially available for purchase
  - Well documented and in wide use
  - Good technical support
  - https://groundwatermodels.com/ESI_Software.php

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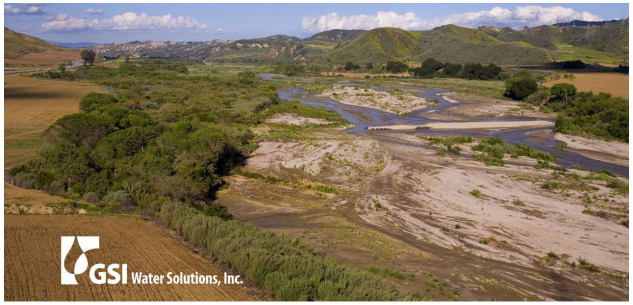
Documents reviewed



DRAFT

Santa Clarita Valley Water Agency

Development of a Numerical Groundwater Flow Model for the Santa Clara River Valley East Groundwater Subbasin

Santa Clarita, California

July 2020 (modified September 22, 2020)

SCV WATER

Prepared by:
GSI Water Solutions, Inc.
55 SW Yamhill St., Suite 300, Portland, OR, 97204

DRAFT

Santa Clarita Valley Water Agency

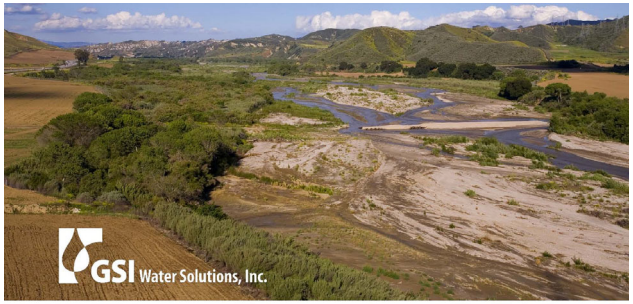
Water Budget Development for the Santa Clara River Valley East Groundwater Subbasin

Santa Clarita, California

October 2020

SCV WATER

Prepared by:
GSI Water Solutions, Inc.
418 Chapala Street, Suite H, Santa Barbara, CA 93101



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Santa Clarita Valley Groundwater Sustainability Agency

Santa Clara River Valley East Groundwater Basin Groundwater Sustainability Plan

Section 8: Sustainable Management Criteria

February 10, 2021

SCV GSA

Prepared by:
GSI Water Solutions, Inc.
418 Chapala Street, Suite H, Santa Barbara, CA 93101

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Overview of review process

Review Document(s)

- Three reports

Host Meetings to Discuss ERP Comments

- Discuss preliminary ERP comments & suggested revisions
- Discuss potential model modifications & whether they should be addressed now or later during GSP implementation

Submit Written Comments

- Written comments were provided to SCV Water and GSI
- Written responses were provided by GSI with an indication of how the comment would be addressed

Prepare Summary Report

- Describe key work, findings, and appropriateness of model for its intended use

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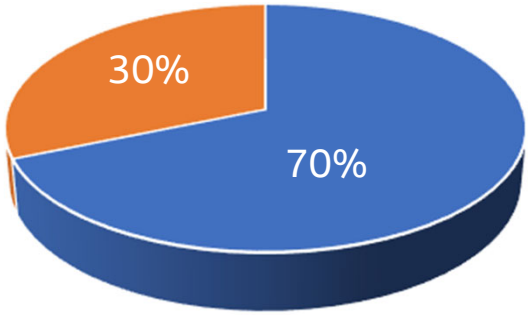
Nature of the ERP comments

- ~70% of ERP comments focused on needing additional information on the model and clarification on report content
- Remaining comments focused on actions that could be considered to improve model defensibility & reporting for SGMA compliance



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Example comments & responses from each report

Summary of ERP Comment	Summary of GSI Response
• Model underestimates vertical hydraulic gradients at Saugus well locations shown on Figure 4-11a. Do you see this as a serious limitation for supporting GSP development? • It would be good to check whether there are significant vertical head differences in other areas.	• Figure 4-11a shows well MP-1, where the vertical gradients are reasonably well simulated, but we agree vertical gradients are not as well matched in the other three wells. We do not see this as a limitation. Primary purpose of Figures 4-11a and 4-11b is to evaluate whether the model simulates trends in water levels over time. • Both figures show a good match to the temporal trends. We will review the text to make sure we discuss these points.
• How reliable will imported sources of water be in the future? There is no discussion of uncertainty associated with imported water and I think this will be very important to characterize as part of the GSP.	• SCV Water (2021) prepared a draft Reliability Report update that demonstrated the ability of imported supplies to meet supplemental water demands within its service area. – Demonstrated full reliability under 2020 UWMP assumptions – Concluded that even with a significant reduction in SWP reliability, the Agency could meet full demands without exceeding the GW operating plan • 2020 UWMP indicates demands with active conservation could be fully met as long as remaining supply capacities in Saugus Formation and water banks are fully developed.
• Alluvial monitoring well AL-12A was "dry" between 2013 and 2019. Measured groundwater elevation data shown in Appendix C for this well during this time period is not representative of groundwater level fluctuations in the Alluvial Aquifer. • Recommend identifying a different alluvial monitoring well as a representative well for monitoring purposes.	• Agree. We had already decided to drop this well from the representative monitoring network for other reasons. • There are no other nearby alluvial monitoring wells in this part of the basin.

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Status of groundwater peer review and conclusion

- Completed summary report in July 2021
  - Summary report describes key work, findings, & suitability of model for its intended use
  - Final Report completed this week
- GSI incorporated ERP comments into three reviewed documents for the Draft GSP
- Numerical GW model is an appropriate tool to support SCV-GSA
  - Being used to develop water budgets for historical, current, and future conditions
  - Being used to guide decisions regarding Sustainable Management Criteria in GSP
  - Product of 20+ years of development and use in the SCV

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Thank you.

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