United Water
CONSERVATION DISTRICT

AGENDA
WATER RESOURCES COMMITTEE
Thursday, July 8, 2021, at 9 a.m.
UNITED WATER CONSERVATION DISTRICT
Boardroom, 1701 N. Lombard Street, Oxnard CA 93030

Meeting attendees should be aware that the meetings of the Committee are, as required by law, open to the public and the District has very limited powers to regulate who attends Committee meetings. Therefore, attendees must exercise their own judgement with respect to protecting themselves from exposure to COVID-19, as the District cannot ensure that all attendees at public meetings will be free from COVID-19.

OPEN SESSION:

1. **Public Comment**
   The public may address the Water Resources Committee on any matter on the agenda or within the jurisdiction of the Committee. All comments are subject to a five-minute time limit.

2. **Approval of Minutes - Motion**
   The Committee will review and consider approving the minutes from the Water Resources Committee meeting of June 1, 2021.

3. **UPDATE: Proposed Water-Supply Projects' Impact on Water Yield and Sustainability**
   (60 minutes: Mauricio E. Guardado, Jr.; Dr. Bram Sercu and Mr. John Lindquist).

FUTURE AGENDA ITEMS

ADJOURNMENT

Directors:	**Staff:**	
Edwin T. McFadden III, Chair	Mauricio E. Guardado, Jr.	Dr. Maryam Bral
Lynn E. Maulhardt	Dan Detmer	Eric Elliott
Daniel C. Naumann	Dr. Zachary Hanson	Kathleen Kuepper
	John Lindquist	Murray McEachron
	Dr. Bram Sercu	Dr. Jason Sun

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Approved: _____ _____
Mauricio E. Guardado, General Manager Dr. Maryam Bral, Chief Engineer

Posted: (date) July 2, 2021 **(time) 8:45 a.m.** **(attest)** *Eva Ibarra*
At: UWCD Headquarters, 1701 N. Lombard Street, Oxnard, CA 93030

Posted: (date) July 2, 2021 **(time) 9:00 a.m.** **(attest)** *Eva Ibarra*
At: www.unitedwater.org

MINUTES
WATER RESOURCES COMMITTEE
Tuesday, June 1, 2021, at 9 a.m.
UNITED WATER CONSERVATION DISTRICT
Boardroom, 1701 N. Lombard Street, Oxnard CA 93030

Committee Members Present:
Chair Edwin McFadden – Chair
Director Maulhardt - Director
Director Naumann – Director (arrived 9:16 am)

Staff Present:
Mauricio E, Guardado, General Manager
Dr. Maryam Bral, Chief Engineer
Dan Detmer, Supervising Hydrogeologist
Anthony Emmert, Assistant General Manager
Dr. Zachary Hanson, Hydrogeologist
Eva Ibarra, Administrative Assistant
Kathleen Kuepper, Hydrogeologist
John Lindquist, Senior Hydrogeologist
Murray McEachron, Principal Hydrologist
Josh Perez, HR Manager
Zachary Plummer, IT Administrator
Dr. Bram Sercu, Senior Hydrologist
Kris Sofley, Executive Assistant to GM Mauricio Guardado/Clerk of the Board
Dr. Jason Sun, Senior Hydrogeologist/Modeler

Public Present: (via WebEx)
Arne Anselm, Ventura County Public Works Agency
Burt Handy
Curtis Hopkins, Hopkins Groundwater Consultants, Inc.
Tony Morgan, DBS&A
Monica Noeng, Ventura Water

OPEN SESSION: 9:00am

Committee Members roll call
Chair McFadden and Director Maulhardt were in attendance in the Boardroom. Director Naumann arrived at the meeting 16 minutes later.

1. Public Comment

Chair McFadden asked if there were any public comments for the Water Resources Committee; none were offered.

2. Approval of Minutes - Motion

Motion to approve the April 12, 2021, Water Resources Committee meeting minutes, Director Maulhardt; Second, Director McFadden. Roll call vote: two ayes (McFadden and Maulhardt); none opposed; one absent (Naumann), motion carries 2/0/1.

3. Initial Modeling Results for the Suite of Proposed Water-Supply Projects Recommended by OPV Stakeholder Projects Committee

Dr. Bram Sercu gave a presentation detailing the development of a new surface water distribution model with daily time steps and explained how this model has been used to model the distribution of water from various existing and proposed water supply projects to offset groundwater extraction in the Oxnard and Pleasant Valley basins (see slides). Director Maulhardt asked Dr. Sercu how the FCGMA Operations Committee and full Board received the report when presented. Dr. Sercu replied that the report was well received by both, and that both groups were very pleased to see United's progress and encouraging results. He continued, stating that for some projects, such as Brackish Water, there are still more discussion and decisions to come, but they did show progress, and generally were well received. General Manager Mauricio Guardado reiterated how the presentation was well received and the groups were very pleased with the amount of progress and mentioned that the FCGMA board told United staff they would be invited back for more progress reports in the future.

Mr. John Lindquist took over the second part of the presentation, showing particle tracks generated by United's groundwater flow model to approximate the movement of saline water in coastal areas with the sustainability projects coming on over time, and continued water use at present levels (see slides). Director Maulhardt asked Mr. Lindquist about the timeline for the seawater movement from the green line to the red line as shown on the chart in the presentation. Mr. Lindquist replied that the timeline shown reflects the changes within a 50-year span, consistent with the GSP for the Oxnard basin.

Director Maulhardt, Director Naumann, Mr. Guardado, Mr. Detmer and Mr. Lindquist all continued the discussion regarding the scenarios represented in the presentation and what was presented to the FCGMA Board and Operations Committee.

Director Naumann asked if the Anacapa project was on the Fox Canyon Groundwater Management Agency target list for review. Mr. Lindquist said Dan Detmer or Kathleen Kuepper would most likely have more information on the subject, as they conducted the feasibility study.

4. Recent Progress on Feasibility Demonstrations for Coastal Brackish Water Project

Dr. Maryam Bral presented on recent coordination activities with the Navy in support of developing the Coastal Brackish Water Project (see slides).

Mr. Guardado asked Dr. Bral if she felt Nathan Jacobsen (U.S. Navy) was essential in moving things forward with progress reports and getting the necessary high-level support for the project. Dr. Bral said absolutely.

Director Maulhardt asked if the Navy is wanting to expedite the project in a faster timeline than previously planned. Dr. Bral stated there are certain elements in the project that pertain to the Navy, which is why the Navy is expediting those elements. Mr. Guardado said the Navy wants to work in parallel fashion with United, rather than waiting for each task to be completed in a linear fashion.

Dr. Jason Sun took over the second apart of the presentation, detailing conversion of United's 2018 coastal plain groundwater model to MODFLOW USG, including updated geologic mapping, refinement of the model grid in the project area, and work completed to date to recalibrate the model following conversion to the new version (see slides).

5. Update on Reports Documenting Expansion and Application of United's Regional Groundwater Flow Model.

Dr. Hanson presented his update, reporting that staff was finalizing the report detailing expansion of the groundwater flow model up the Santa Clara River Valley (see slides).

6. <u>Resolution 2021-05</u> Adopting the 2020 Urban Water Management Plan and the Water Shortage Contingency Plan for the Oxnard Hueneme Pipeline.

Dr. Hanson asked the Board to consider recommending approval of Resolution 2021-05 to the full Board. All Committee members agreed to recommend approval of the Resolution to the full Board.

7. Water Resources Department Update

Mr. Detmer updated the Committee with a presentation on the Water Resources Department activities over the previous month (see slides).

8. Groundwater Sustainability Agencies Update

Mr. Detmer provided a verbal update to the Committee regarding the activities of the various GSAs within United's service area, and activities related to Santa Paula basin management.

FUTURE AGENDA ITEMS

None were mentioned.

ADJOURNMENT

Chair McFadden adjourned the meeting at 11:03 am.

I certify that the above is a true and correct copy of the Minutes of the UWCD Water Resources Committee Meeting of June 1, 2021.

_____

Chair Edwin McFadden

Summary of Initial Surface Water Modeling Results of New Projects, Oxnard and PV Basins

Bram Sercu, PhD

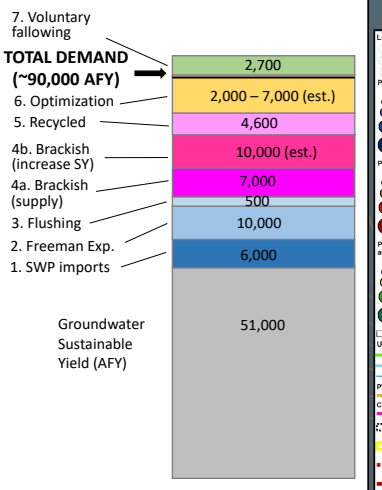
FCGMA Board of Directors Meeting

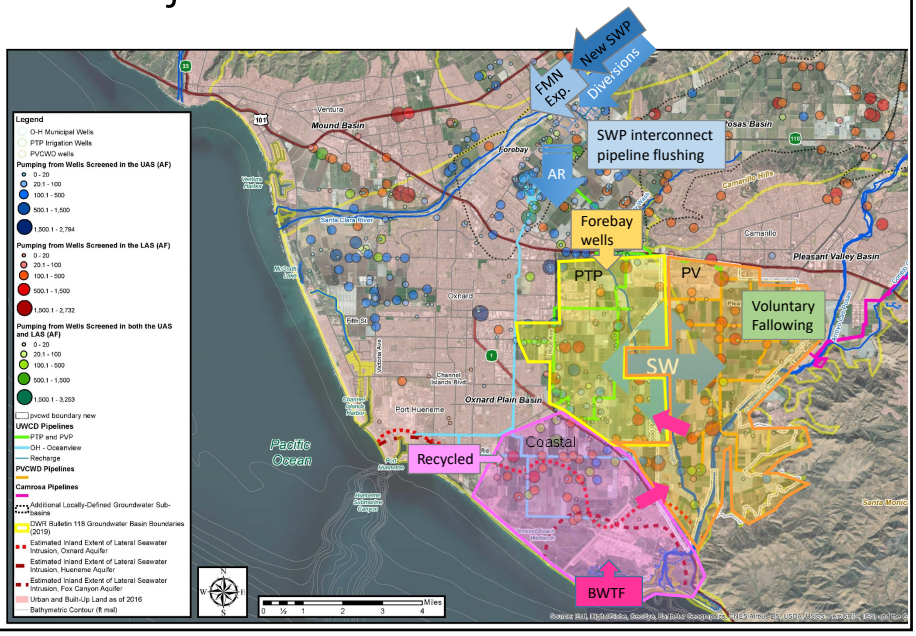
May 26, 2021

United Water CONSERVATION DISTRICT

1

Modeling New Projects and Sustainable Yield





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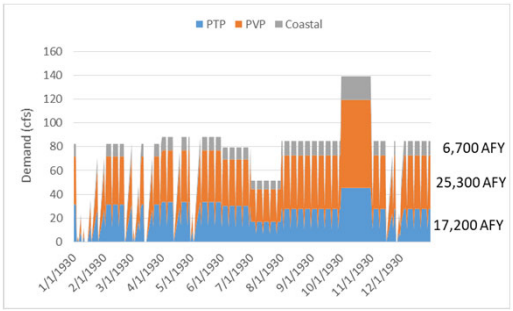
Project Implementation Assumptions

- Bypass flows as proposed in UWCD MS-HCP
- Water Demand
  - 2015-17 average, variable daily
  - Entire PTP/PV/Coastal area access to pipeline deliveries
- Brackish, recycled water
  - Constant supply (~ 16 cfs)
  - 24-hr demand (0-17 cfs coastal zone)
  - High water quality reduces demand



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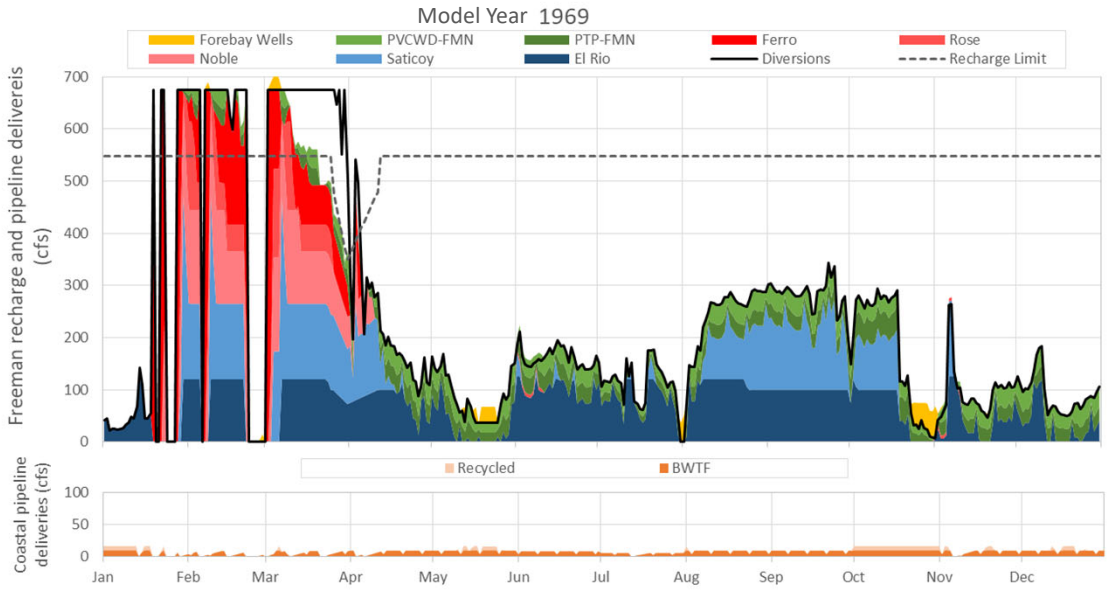
Surface Water Distribution Model – Wet Year



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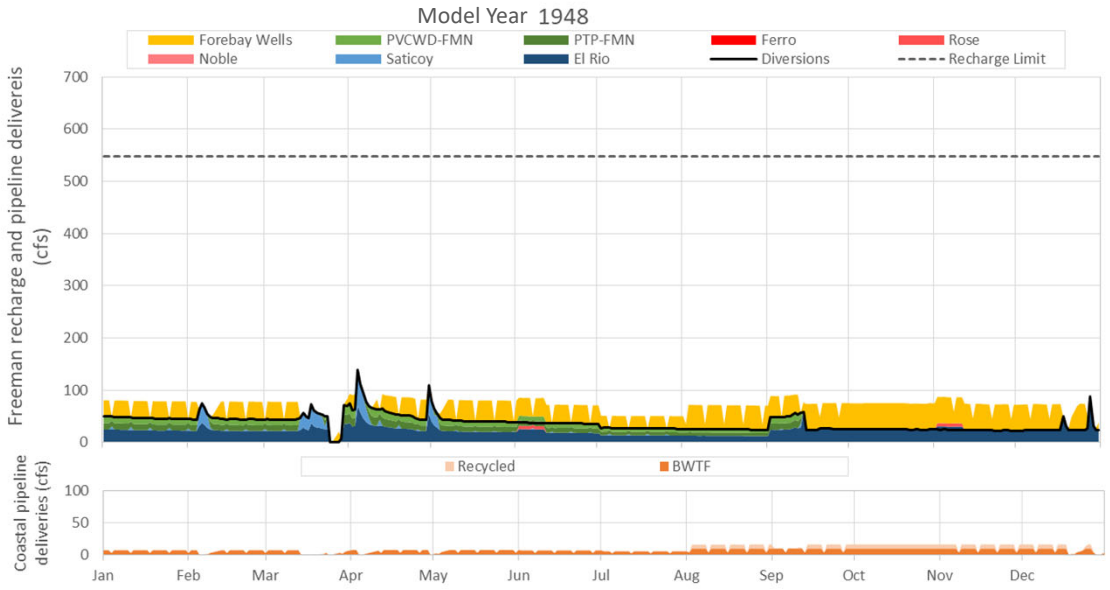
Surface Water Distribution Model – Dry Year



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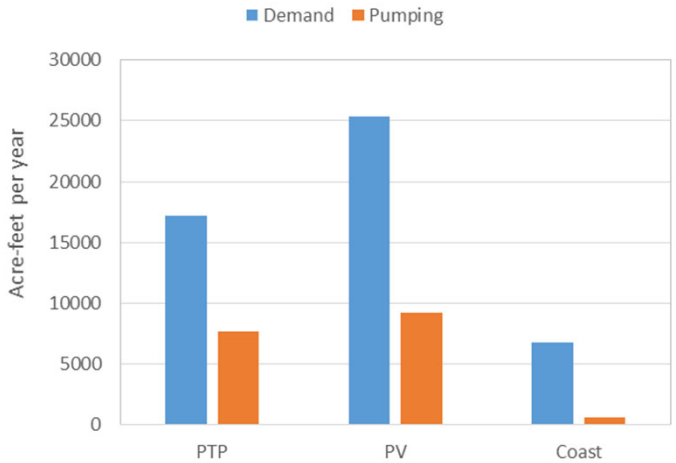
Outcome 1: New projects achieve significant pumping reductions

- Most of demands met by pipeline deliveries
- Pumping Coastal area almost eliminated
- Pumping used in groundwater model to assess seawater intrusion
- If additional pumping reductions required → further optimization



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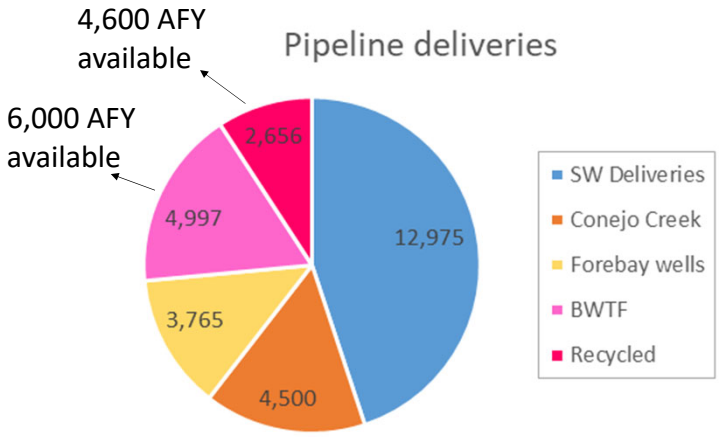
Outcome 2: Implementation of brackish/recycled water projects should be further optimized

- Inefficient delivery of available brackish/recycled water
- Further optimization needed to ensure water supply is fully used



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Initial Modeling Results for the Suite of Proposed Water-Supply Projects Recommended by OPV Stakeholder Projects Committee

Water Resources Committee Meeting

June 1, 2021

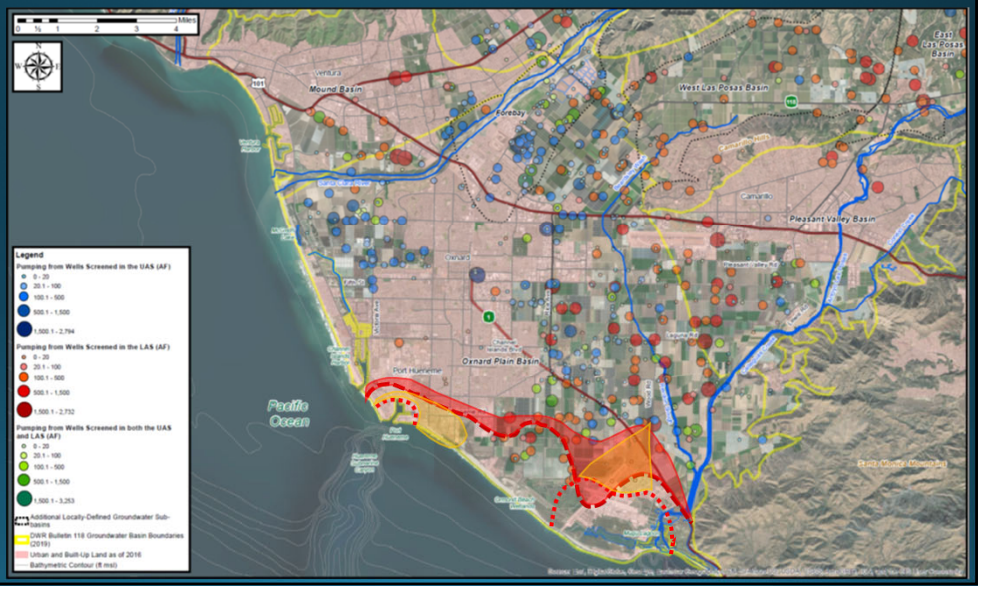
United Water CONSERVATION DISTRICT

1

1

The Primary Driver for Reducing Pumping or Enhancing Yield in Oxnard and Pleasant Valley Basins is Seawater Intrusion

Estimated 2016 seawater intrusion fronts in Upper Aquifer System (UAS) and Lower Aquifer System (LAS), and forecasted future seawater intrusion through 2070 if current trends continue.



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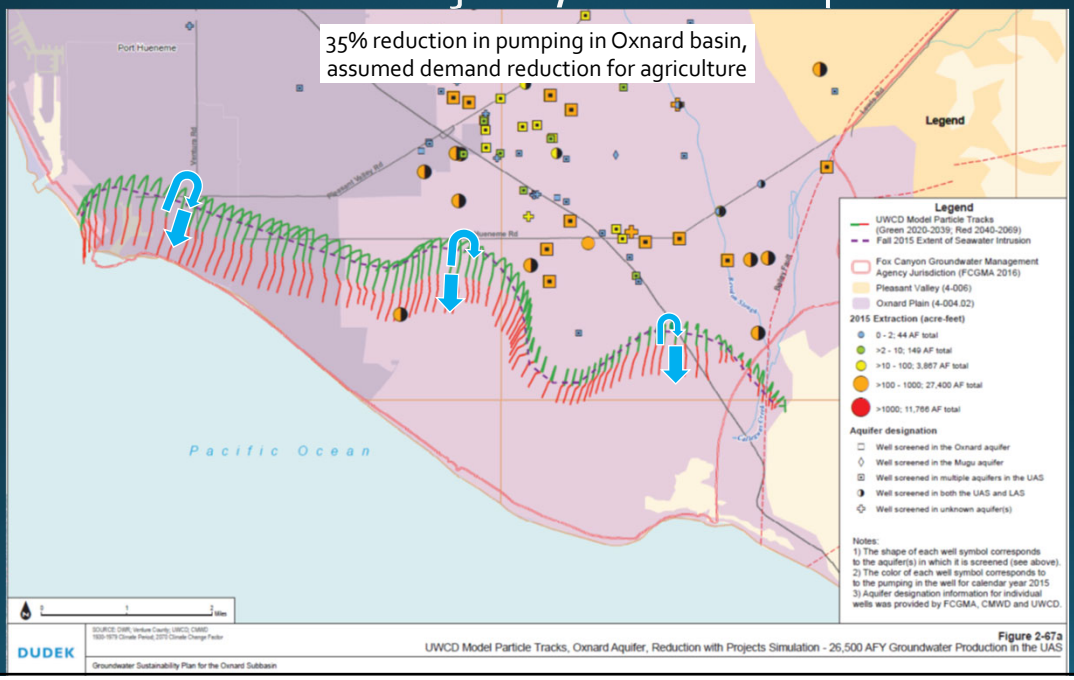
GSP "Reduction with Projects," Oxnard Aquifer



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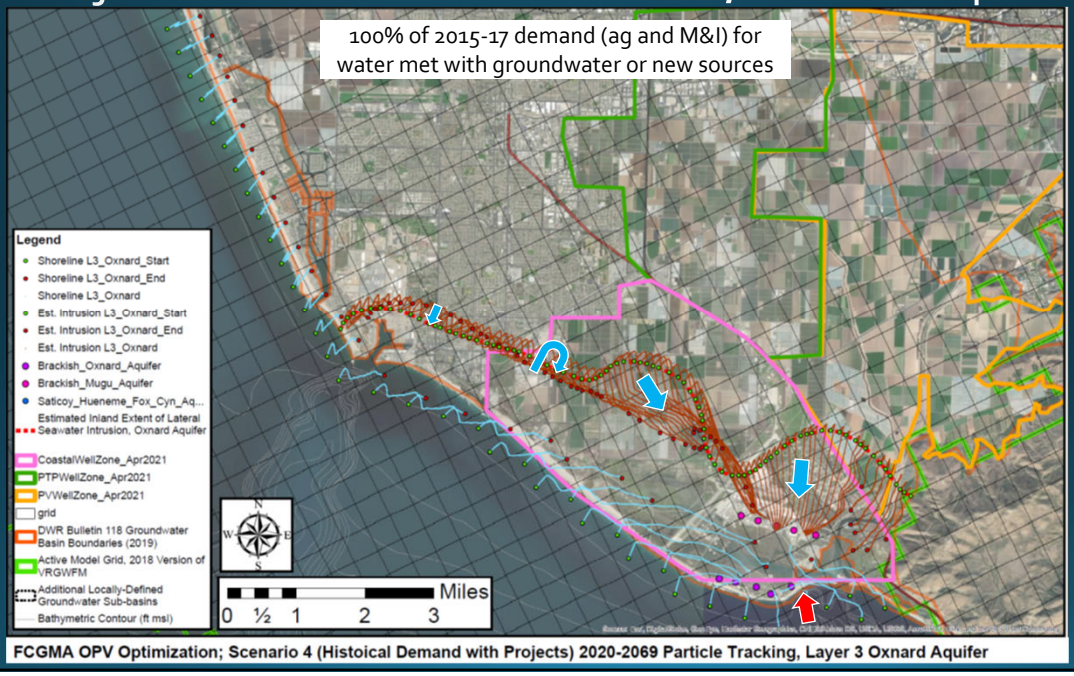
New Projects with Historical Demand, Oxnard Aquifer



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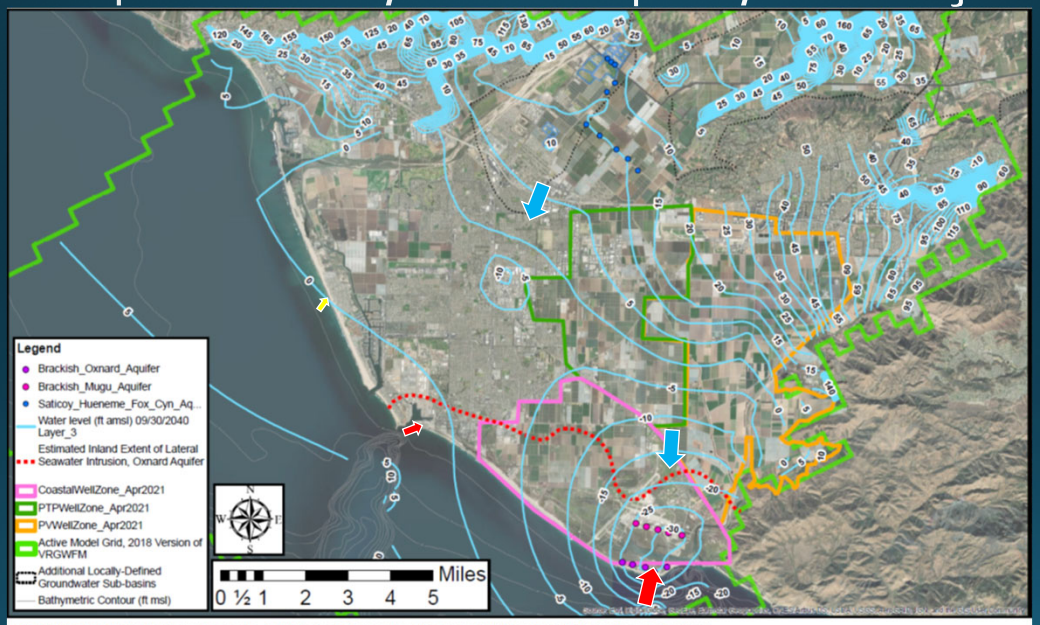
2040 GW Elevs., Oxnard Aquifer, New Projects

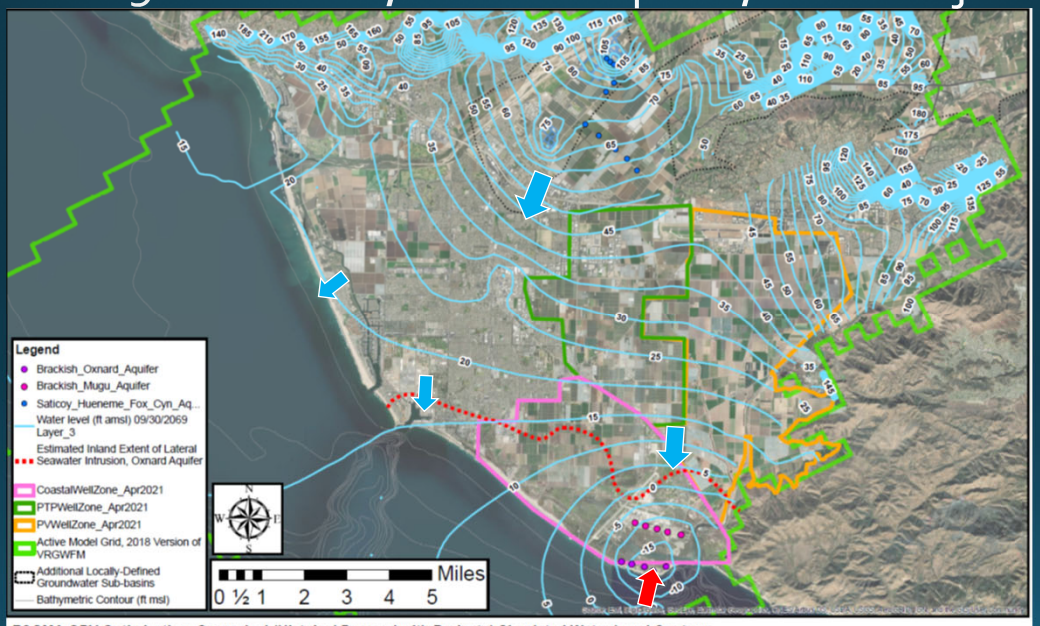


FCGMA OPV Optimization; Scenario 4 (Histoical Demand with Projects) Simulated Water Level Contour
09/30/2040 (Representative of typical dry conditions, and end of GSP implementation period)
Layer 3 Oxnard Aquifer

5

5

2069 GW Elevs., Oxnard Aquifer, New Projects



FCGMA OPV Optimization; Scenario 4 (Histoical Demand with Projects) Simulated Water Level Contour
09/30/2069 (Rrepresentative of typical wet conditions, and near end of GSP sustaining period)
Layer 3 Oxnard Aquifer

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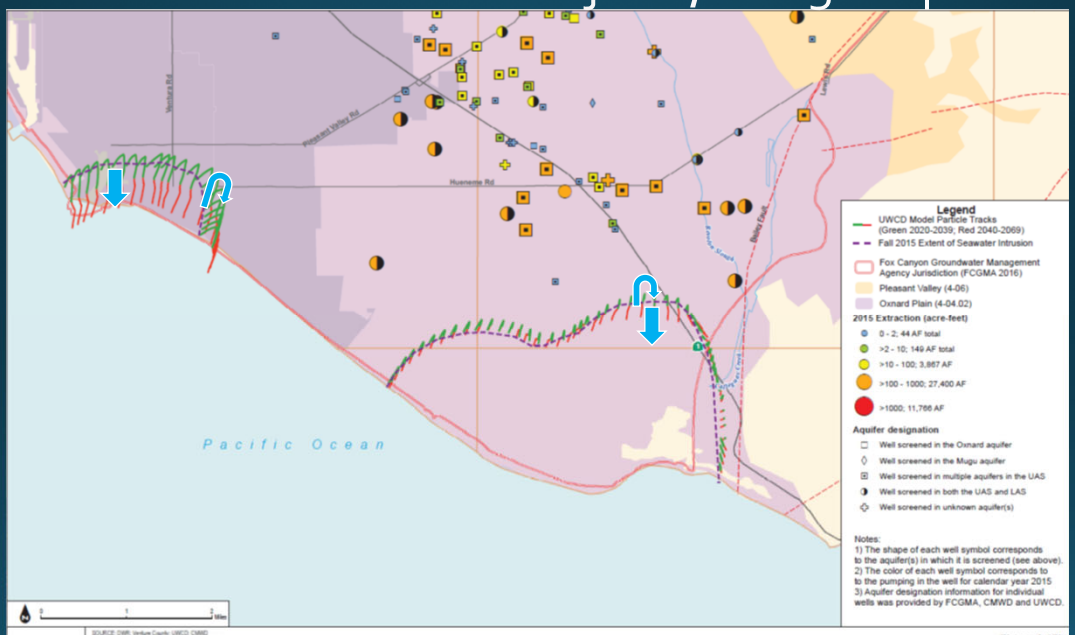
GSP "Reduction with Projects," Mugu Aquifer



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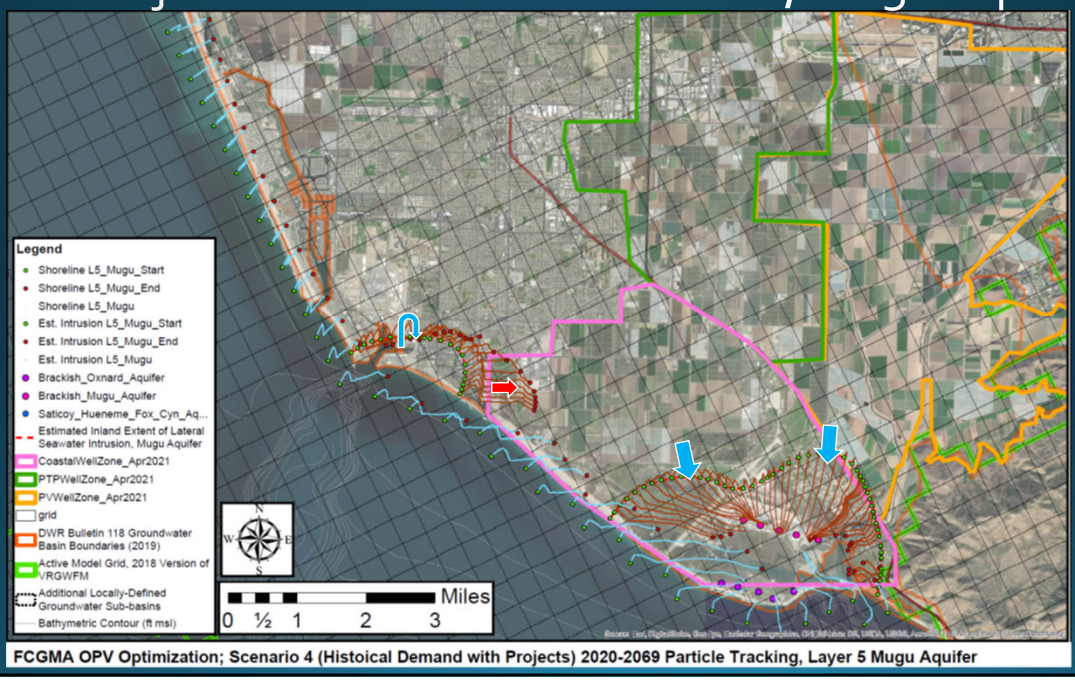
New Projects with Historical Demand, Mugu Aquifer



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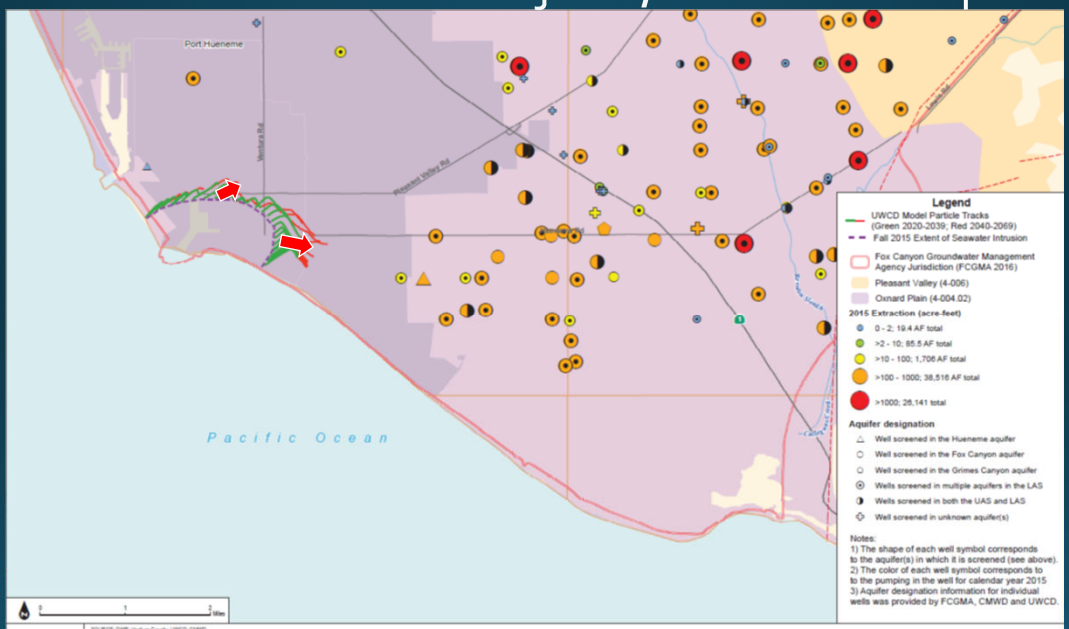
GSP "Reduction with Projects," Hueneme Aquifer



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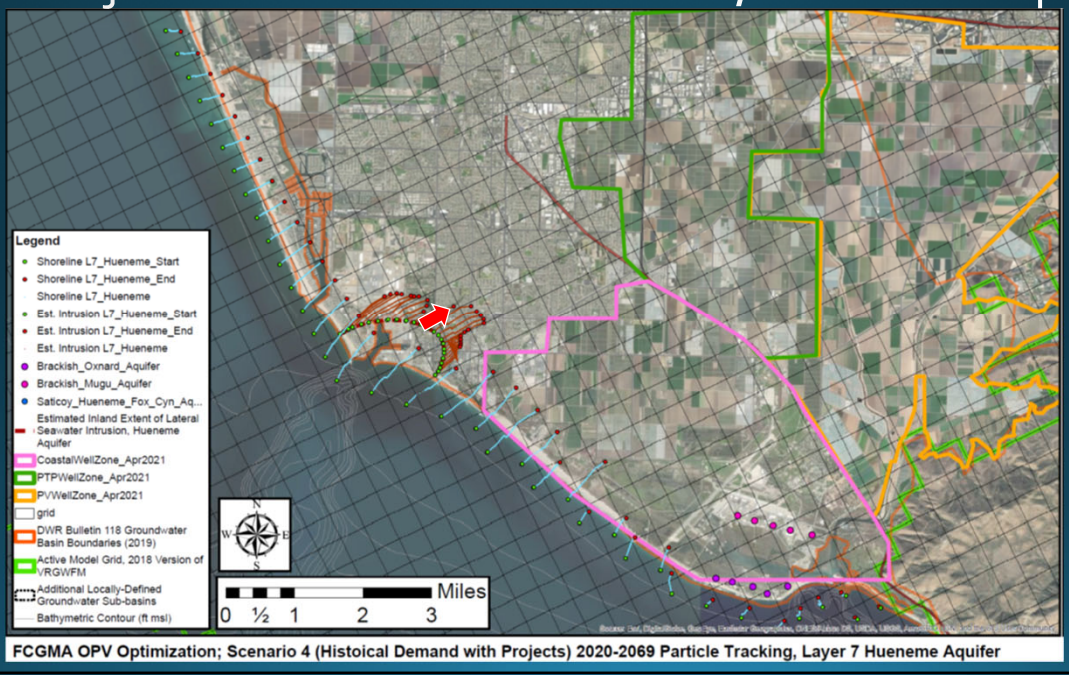
New Projects with Historical Demand, Hueneme Aquifer



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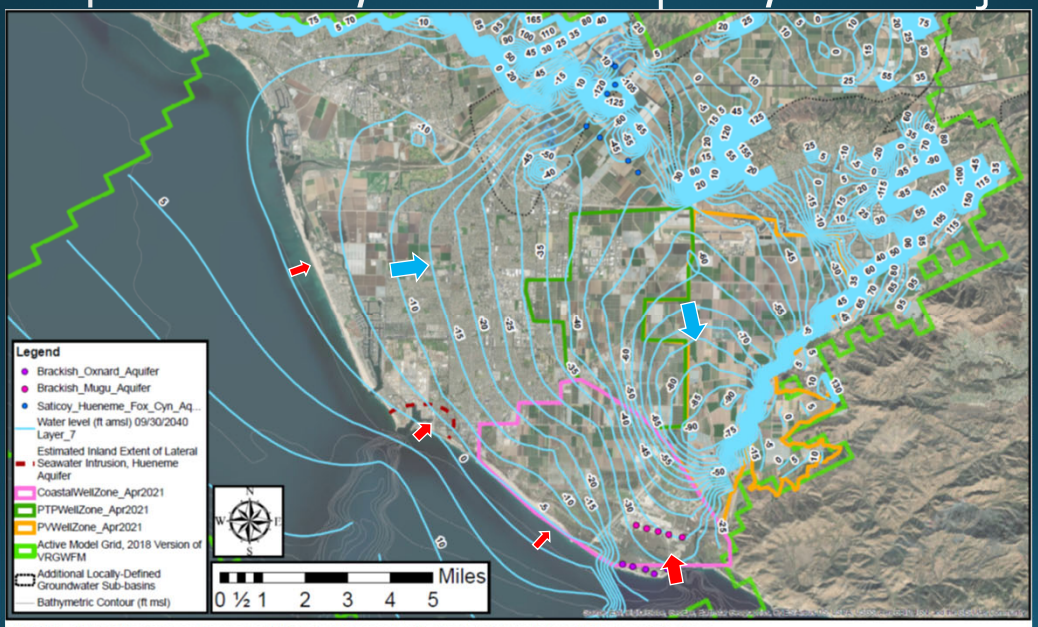
2040 GW Elevs., Hueneme Aquifer, New Projects



FCGMA OPV Optimization; Scenario 4 (Histoical Demand with Projects) Simulated Water Level Contour
09/30/2040 (Representative of typical dry conditions, and end of GSP implementation period)
Layer 7 Hueneme Aquifer

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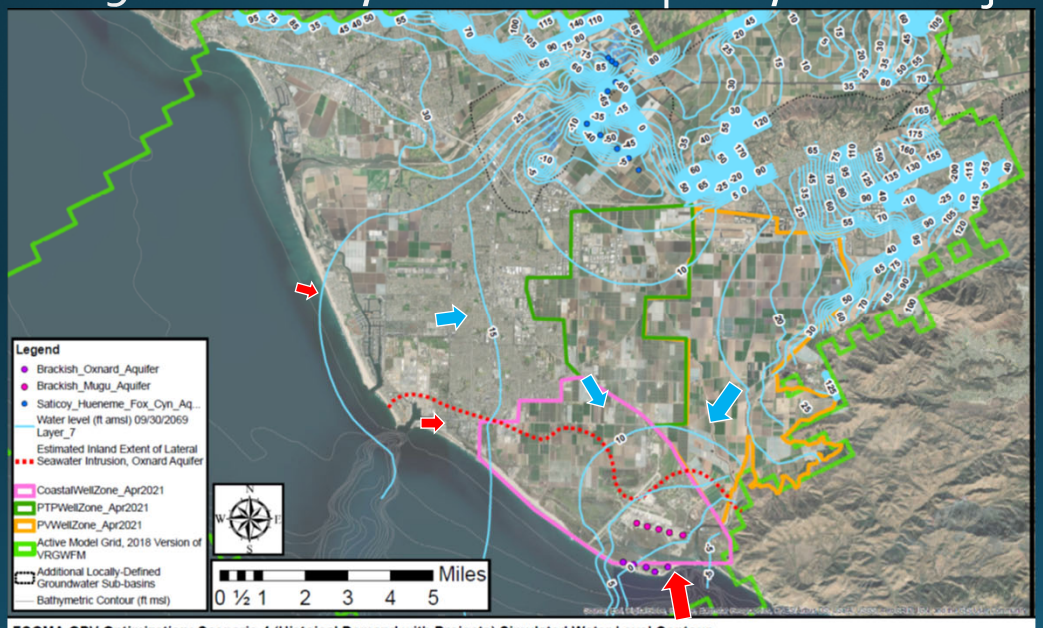
2069 GW Elevs., Hueneme Aquifer, New Projects



FCGMA OPV Optimization; Scenario 4 (Histoical Demand with Projects) Simulated Water Level Contour
09/30/2069 (Rrepresentative of typical wet conditions, and near end of GSP sustaining period)
Layer 7 Hueneme Aquifer

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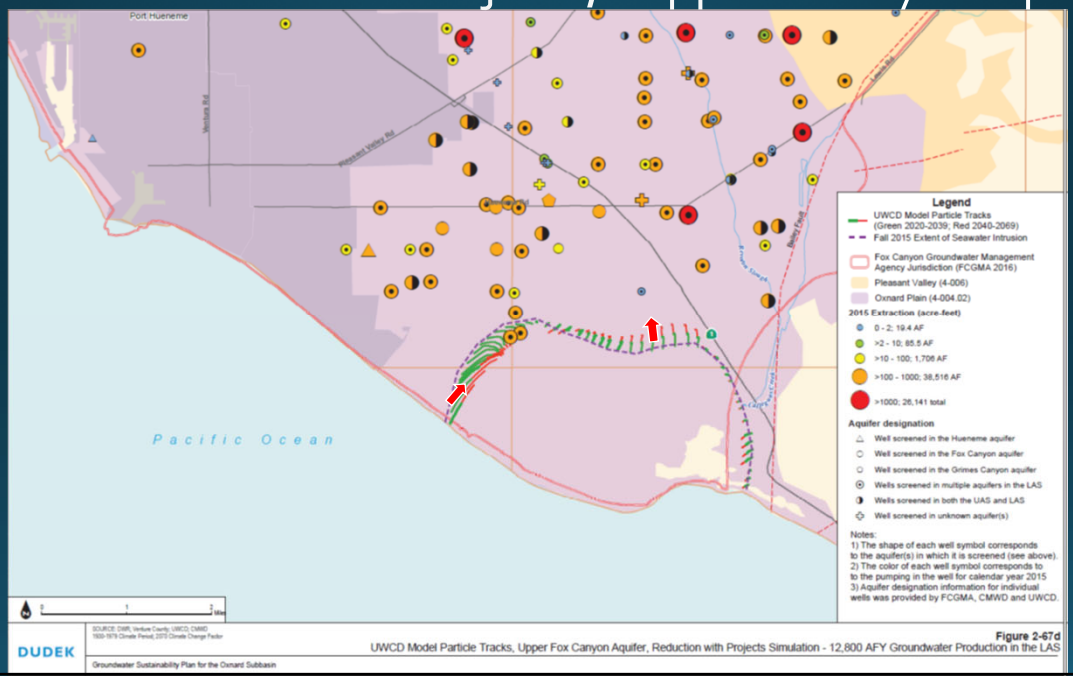
GSP "Reduction with Projects," Upper Fox Cyn. Aquifer



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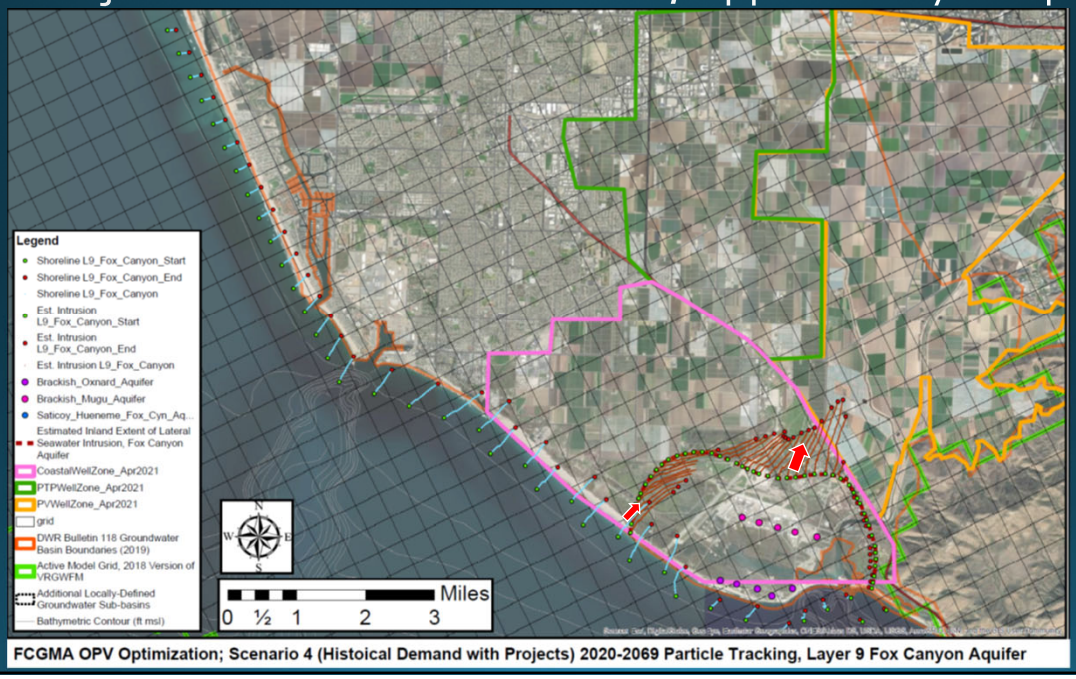
New Projects with Historical Demand, Upper Fox Cyn. Aquifer



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Summary

- New projects ***mostly*** prevent seawater intrusion while meeting historical water demands, ***but***:
  - Some continuing seawater intrusion in Lower Aquifer System (LAS) at Port Hueneme and Point Mugu
- Some inefficiencies are apparent under current project configuration
  - Especially recycled water

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15

Potential Modifications to Project Scenarios

- Adjust projects to stop seawater intrusion in LAS at Port Hueneme and Point Mugu
  - Expand brackish water extraction and treatment?
  - Expand "no pumping" zone in southern Oxnard and PV basins?
- **This scenario was just the first iteration!**
  - It's **mostly** effective at achieving sustainability goals
  - It also meets 100% of current demand

16

16

Other Potential Future Projects that Could be Modeled at a Later Date

Project	Quantity (AFY)	Notes
Conejo Creek Storage (2030)	2,500?	Being developed by Camrosa MWD
M&I water market/alternative sources	???	Being developed by Curtis Hopkins
AWPF expansion for other uses	4,500?	Oxnard suggested they may have more AWPF water available in future

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Planned Process (review)

1: Project Identification
- Sept-Nov 2020

2: Preliminary Analysis
- Nov 2020-Feb 2021

3: Preliminary Cost-Benefit Analysis
- Jan-Apr 2021

4: Vetting and Implementation Planning
- Mar-Sep 2021

18

18

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United Water CONSERVATION DISTRICT

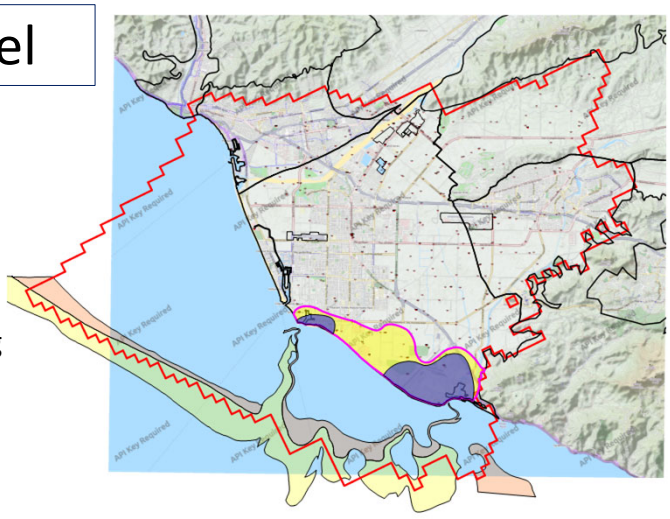
Regional Flow Model Conversion to Density-Dependent Transport Model

Senior Groundwater Modeler
Jason Sun, PhD, PE
June 1, 2021

1

Salinity Transport Model

- This salinity transport model can simulate the brackish water study and beyond including regional seawater intrusion
- Transport model capable of simulating salinity, chloride, TDS,…other chemicals



This transport model will be the 2nd critical tool for Ventura County in addition to the GW model completed in 2020

2

2

Density-Dependent Transport Model

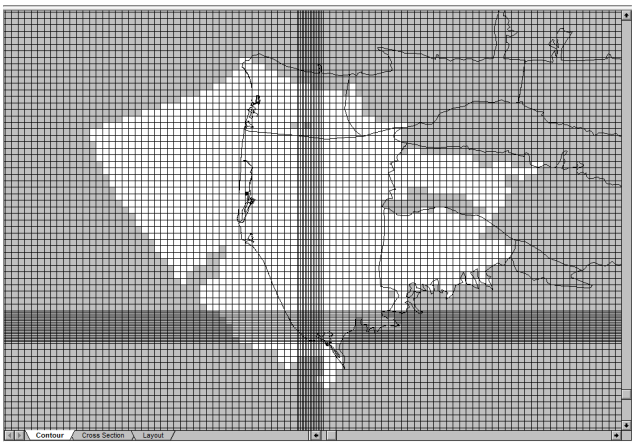
- UWCD Model uses MODFLOW-NWT recently updated in 2020 (released in 2011)
- UWCD Model will be converted into the density-dependent transport model
- SEAWAT (released in 1998) was proposed
- MODFLOW-USG (released in 2013) will be used

Model	SEAWAT	MODFLOW-USG
Latest Update	2012	Current
Technical Support	Little to none	Available
Compatibility with flow model	Backward	Full
Model Refinement	Rigid	Flexible
Water level variation (wet/dry cells)	Poor	Good

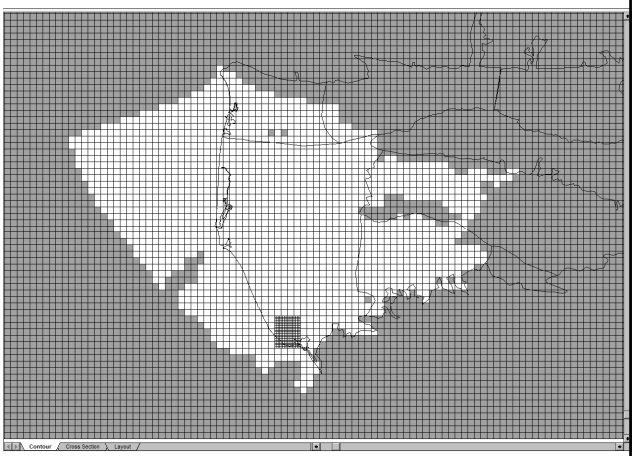
3

Numerical Model Refinement

SEAWAT



MODFLOW-USG



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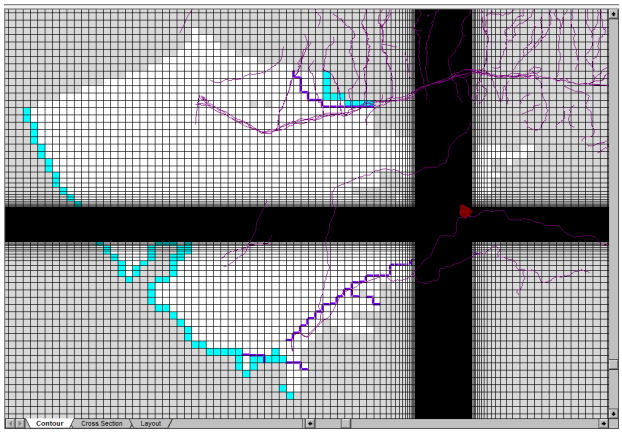
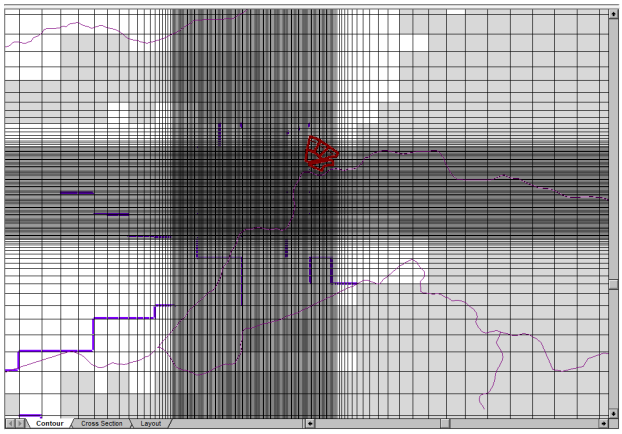
Model Refinement for Calleguas MWD



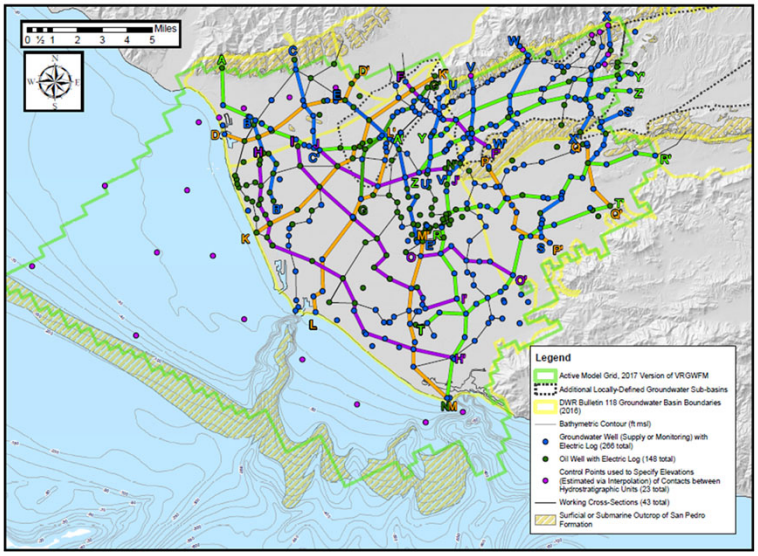


The simulation run time increases from 20 minutes to 14 hours

5

Regional Basin Conceptual Model

- Previous regional-scale mapping of aquifers
- Hydrostratigraphy interpreted from borehole geophysical logs and lithologic logs
- Fewer data sources near Laguna Point



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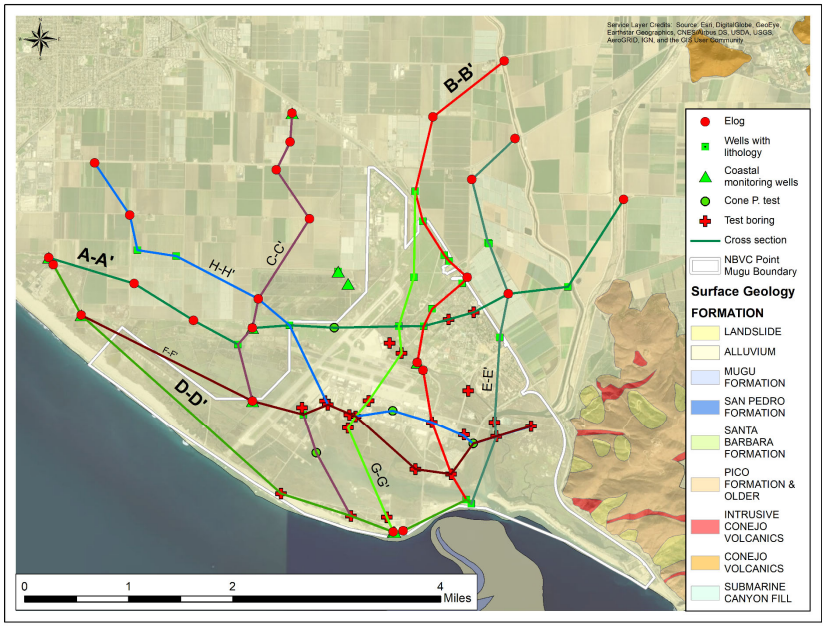
New Mugu Area Cross-Sections



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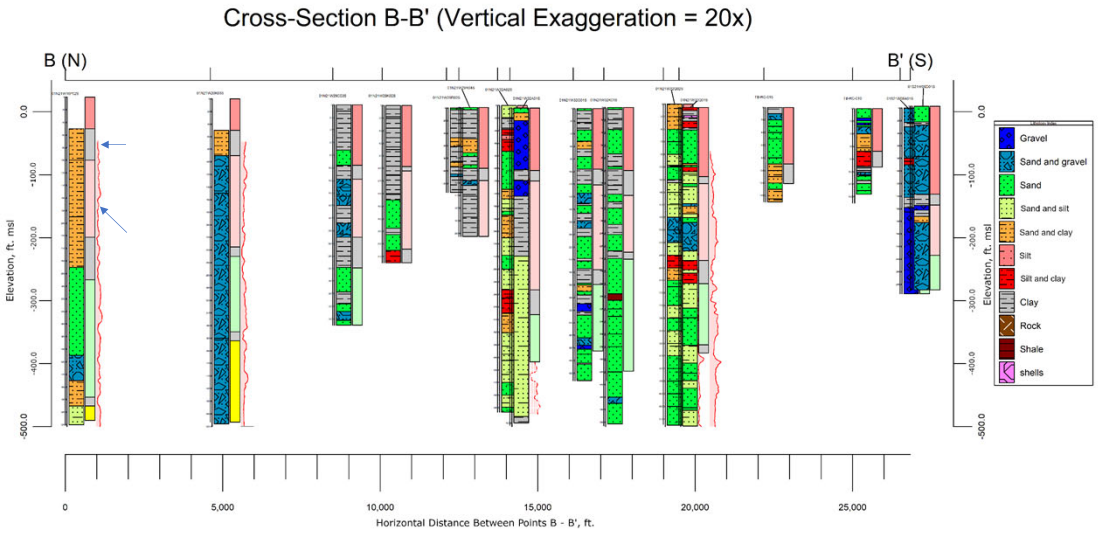

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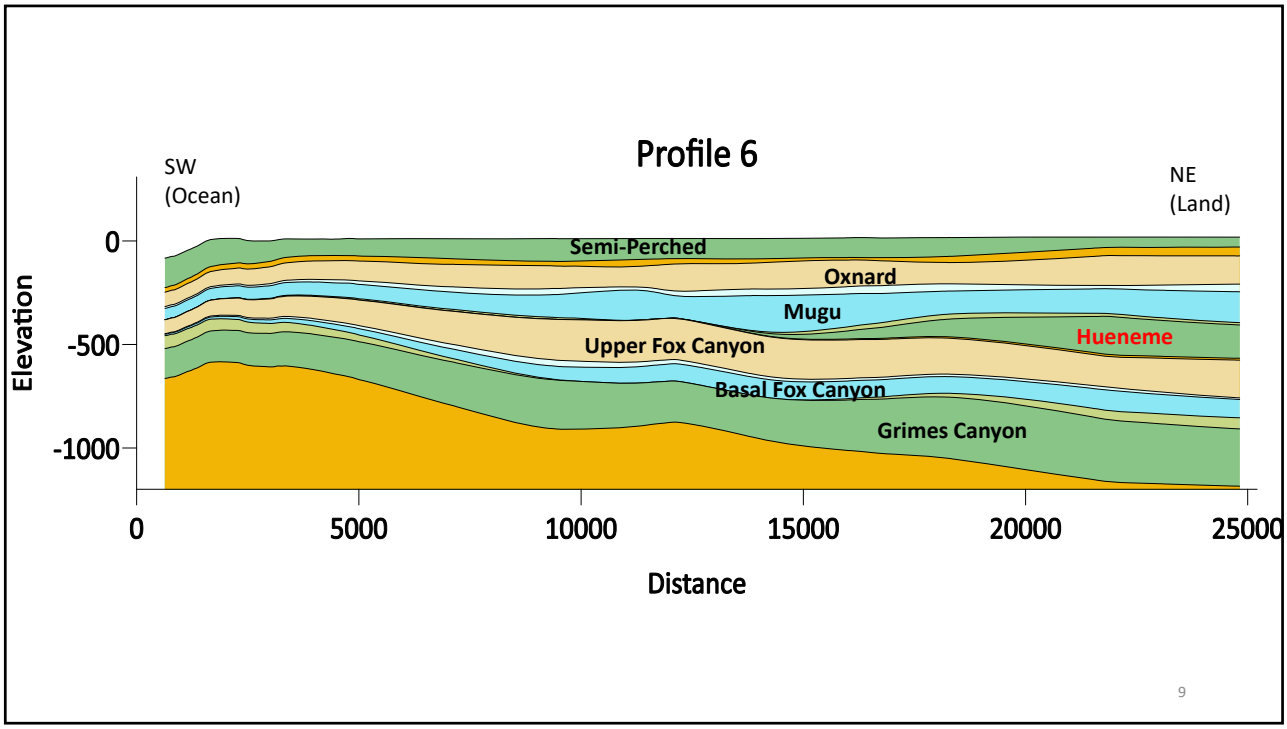

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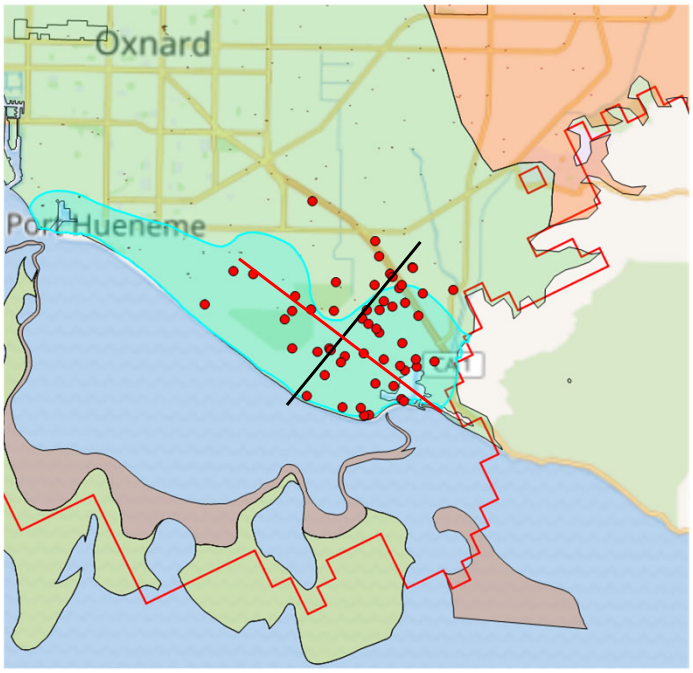
Data Collection at Point Mugu

Red dots:
32 well logs 23 test boring data



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Numerical Model Conversion

UWCD 2018 Model
MODFLOW-NWT

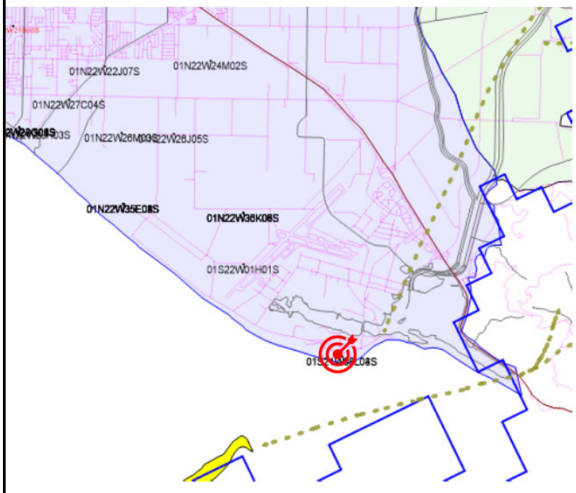
Convert model input files

Incorporate layer refinement

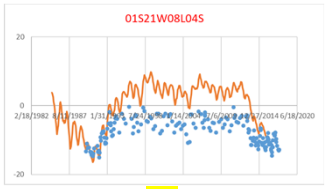
Check and re-calibrate model

MODFLOW-USG

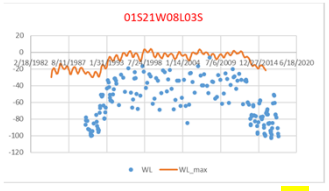
11



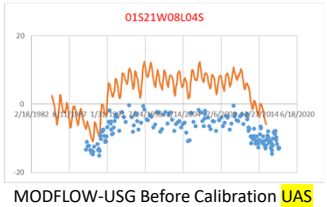
MODFLOW-NWT LAS



MODFLOW-NWT UAS

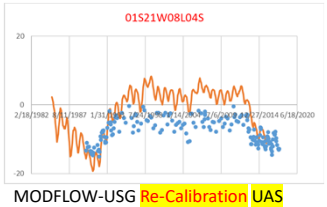


MODFLOW-USG Before Calibration LAS



MODFLOW-USG Before Calibration UAS

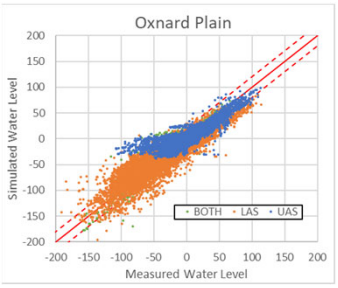
MODFLOW-USG Re-Calibration LAS



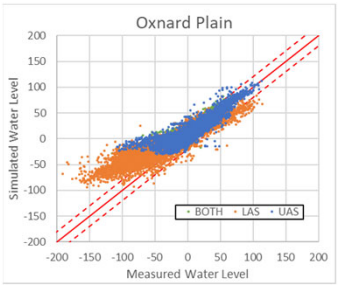
MODFLOW-USG Re-Calibration UAS

12

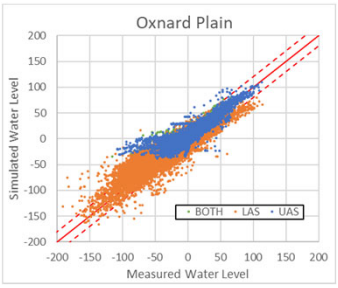
Groundwater Model Re-Calibration



MODFLOW-NWT



MODFLOW-USG
Before Calibration



MODFLOW-USG
Re-Calibration

13

Numerical Model Conversion

UWCD 2018 Model
MODFLOW-NWT

Convert model input files

Incorporate layer refinement

Check and re-calibrate model

MODFLOW-USG

Calibrate transport model

Simulate seawater intrusion

Refine model grid if necessary

14

UWCD Groundwater Models

Models	2018 Model	2020 Model	MODFLOW USG
Area	Coastal Plain Basins	Coastal Plain and SCR river basins	Coastal Plain Basins
Simulation Period	1985 - 2015	1985 - 2019	1985 - 2015
Time Step	Monthly	Daily	Monthly / Daily
Applications	Groundwater Flow	Groundwater Flow and SCR stream	Flow, Transport, Density Dependent

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Questions/Comments

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United Water CONSERVATION DISTRICT

Update on Reports Documenting Expansion and Application of United's Regional Groundwater Flow Model (Information)

Water Resources Committee Meeting
June 1, 2021

Zachary Hanson, PhD

1

2018 Coastal Model

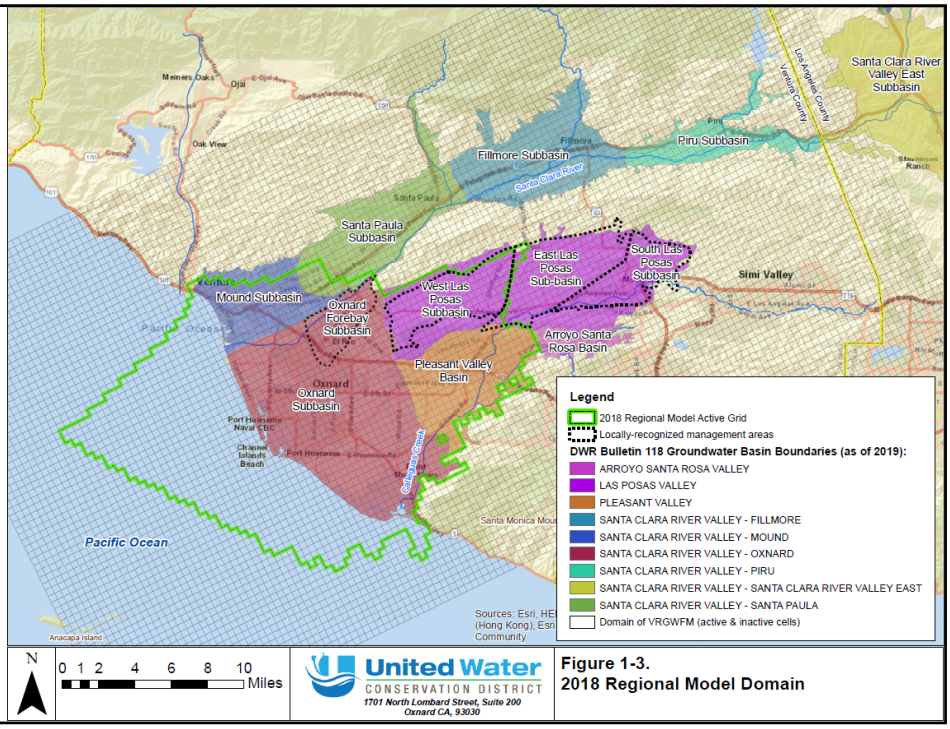


Figure 1-3.
2018 Regional Model Domain

2

2020 Regional Model

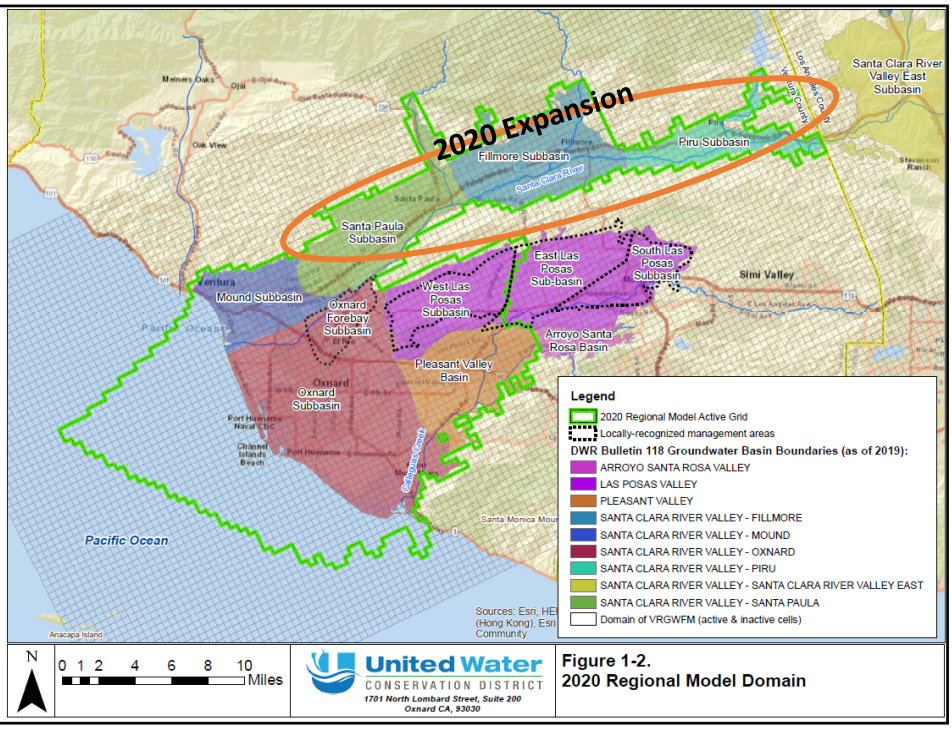


Figure 1-2.
2020 Regional Model Domain

3

2020 Regional Model Documentation Status

2020 Expansion /Update

Models	2018 Model	2020 Model
Area	Coastal Plain Basins	Coastal Plain and SCR river basins
Simulation Period	1985 - 2015	1985 - 2019
Time Step	Monthly	Daily
Applications	Groundwater Flow	Groundwater Flow and SCR stream

- **Model Expansion/Calibration (Open File Report)**
  - 1985-2015
  - Final document finalizing
- **Model Update/Verification (Open File Report)**
  - 2016-2019
  - Final document in progress
- **Future Modeling (Technical Memo)**
  - 2020-2096
  - Final document complete

4

Documentation Methodology

- **Model Expansion/Calibration (Open File Report)**
  - 1985-2015
  - Final document finalizing

  → **Expert Panel Review** → **Revisions** → **Finalize**
- **Model Update/Verification (Open File Report)**
  - 2016-2019
  - Final document in progress

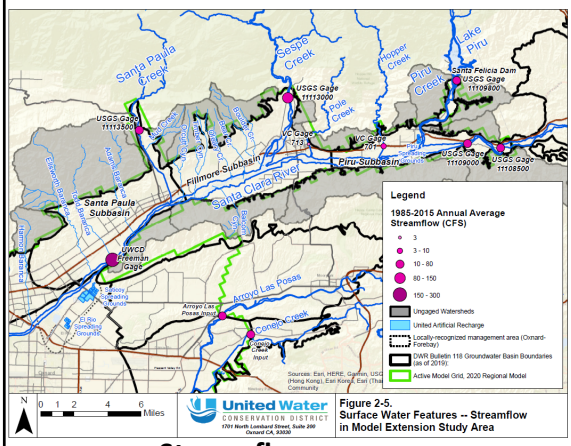
  → **Expert Panel Review** → **Revisions** → **Finalize**
- **Future Modeling (Technical Memo)**
  - 2020-2096
  - Final document complete

  → **Internal Review** → **Revisions** → **Finalize**

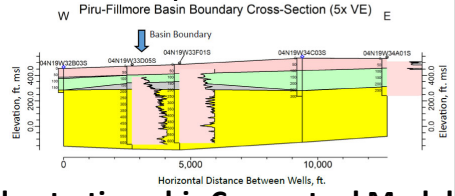
5

2020 Regional Model Expansion

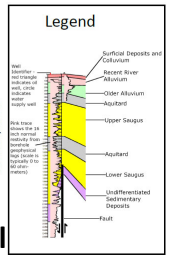
- **Examples of Major datasets described in report include:**



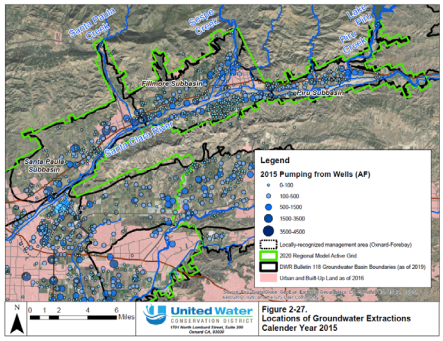
Streamflow



Hydrostratigraphic Conceptual Model



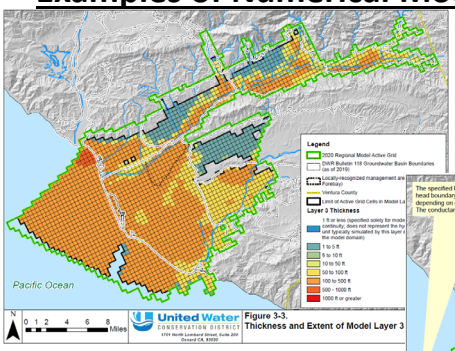
Groundwater Extractions



6

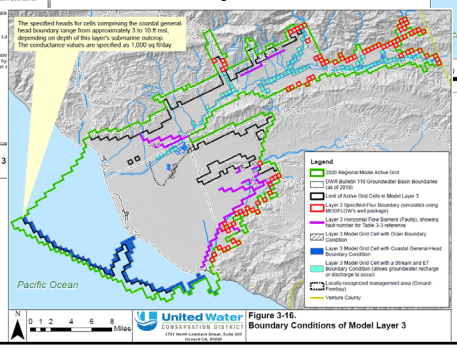
2020 Regional Model Expansion

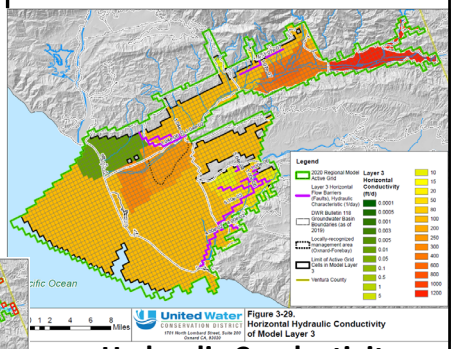
- **Examples of Numerical Model Detailed:**



Model Layer Thickness/Extent

Boundary Conditions



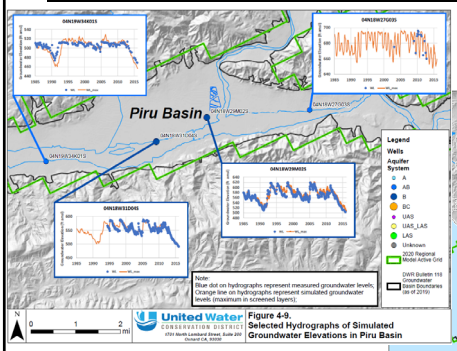


Hydraulic Conductivity

7

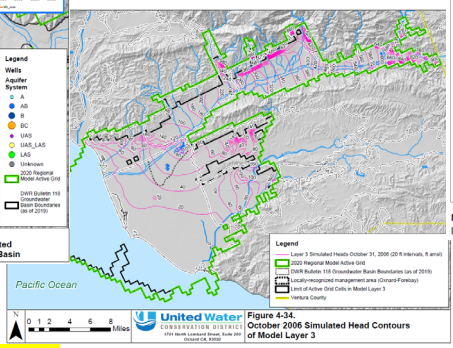
2020 Regional Model Expansion

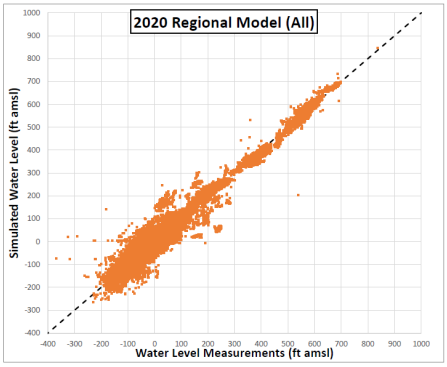
- **Examples of Results Detailed:**



Simulated Water Levels

Simulated Head Contours





Note: Dashed black line represents a 1 : 1 relationship between measured and simulated groundwater levels.

Water Level Scatter Plots

- All data points (shown here)
- By groundwater basin
- By aquifer system

Other Notable results:

Water Budget tables

Parameter sensitivity analysis

8

2020 Regional Model Documentation Status, moving forward…

2020 Expansion/Update

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Thank you

Questions/Comments

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Plan Adoption

United Board of Directors Meeting
June 09, 2021

Update of Oxnard Hueneme Pipeline
Urban Water Management Plan
and
Water Shortage Contingency Plan

Item 6

Water Resources Committee Meeting

June 01, 2021

6/1/2021

1

2020 Urban Water Management Plan Schedule

March 12, 19 & April 28/29 2021	April 12 2021	May 6 2021	May 12 2021	June 1 2021	June 9 2021	July 1 2021
Draft UWMP & WSCP posted on District's Website Notice of Availability for Public Comment Notice of Public Hearing in the VC Star	Highlights of Draft UWMP & Draft WSCP Presented to WR Committee	Presentation of Motion Item 3.1 *Public Hearing* to E&O Committee	Public Hearing for UWMP & WSCP	Presentation of Item 6 *Plan Adoption* to WR Committee	Board to Adopt Final UWMP & WSCP	Submit to DWR Final UWMP & WSCP

2

United Water
CONSERVATION DISTRICT

Information Item 7:

Water Resources Department Updates

June 1, 2021

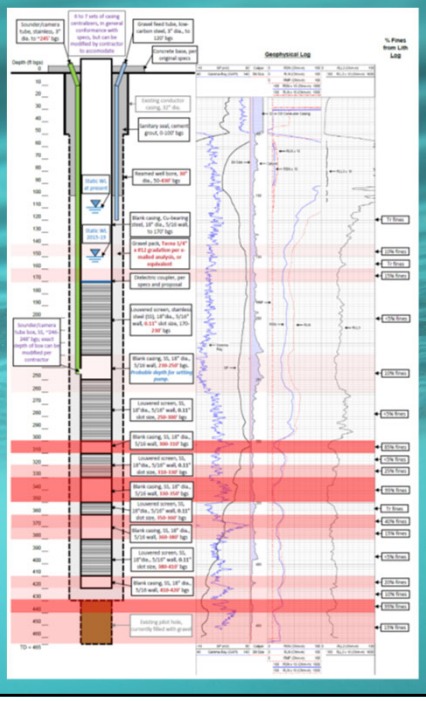
1

Major Departmental Activities

- Model documentation nearly complete
- Brackish-Water model refinements are under way:
  - Converting to unstructured grid and adding solute transport function
  - Conducted TAC meeting #2 for Prop 1 Grant (5/19/21)
  - Meeting with Navy leadership (5/26/21)
- Model application:
  - Hydrologists developed daily surface water routing tool for project coordination
  - Continue optimizing potential water-supply projects
- Ongoing monitoring activities, data management, public interaction

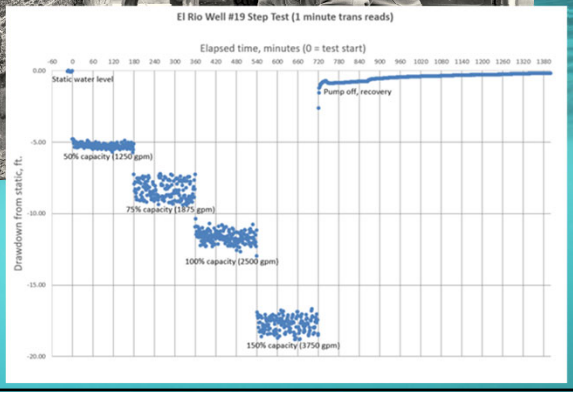
2

New El Rio Well #19 Location and Design



3

New El Rio Well #19 Development and Pumping Tests



4

QUESTIONS?

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