

AGENDA
WATER RESOURCES COMMITTEE
Tuesday, January 31, 2023, at 9:00 a.m.
UNITED WATER CONSERVATION DISTRICT
Boardroom, 1701 N. Lombard Street, Oxnard, CA 93030

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 November 1, 2022.

3. Hydrologic Conditions Update for the Santa Clara River Watershed, January 2023 (35 minutes: Mr. McEachron)

Staff will deliver a presentation detailing observed precipitation and stream flow conditions within the watershed of the Santa Clara River following the significant storms of January 2023, including an update on surface water storage in Lake Piru, conditions at the Freeman Diversion, and measured changes in groundwater elevations in certain key wells.

4. Development of Groundwater Flow and Solute Transport Modeling of the Semi-perched Aquifer, Southern Oxnard Basin (35 minutes: Dr. Sun)

Staff will provide details of work performed to develop the Perched Aquifer Model (PAM) for the Southern Oxnard basin, including model construction and calibration. The presentation will summarize progress to date, including simulation of the inland extent of the natural saltwater density wedge, and ways to represent aquifer flow and water quality conditions both historically and with the future operation of the EBB Water Project.

5. Water Resources Department and GSA Activities Update (10 minutes, Mr. Detmer)

Staff will provide an update to the Committee on recent Water Resources Department activities and provide an update on GSA activities and schedules for the Fillmore and Piru Basins, Mound Basin and Fox Canyon Groundwater Management Agency (Oxnard, Pleasant Valley, and Las Posas Valley basins).

FUTURE AGENDA ITEMS

ADJOURNMENT

**Directors:**

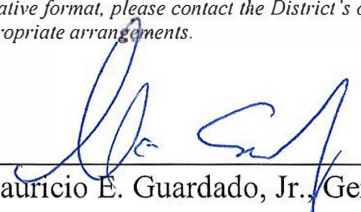

Daniel C. Naumann, Chair
Lynn E. Maulhardt
Gordon Kimball

Staff:

Mauricio E. Guardado, Jr.	Dr. Maryam Bral
Dan Detmer	Eric Elliott
Dr. Zachary Hanson	Kathleen Kuepper
John Lindquist	Murray McEachron
Dr. Bram Sercu	Dr. Jason Sun

The Americans with Disabilities Act provides that no qualified individual with a disability shall be excluded from participating in, or denied the benefits of, the District's services, programs or activities because of any disability. If you need special assistance to participate in this meeting, or if you require agenda material in an alternative format, please contact the District's offices at (805) 525-4431. Notification of at least 48 hours prior to the meeting will enable the District to make appropriate arrangements.

Approved:


Mauricio E. Guardado, Jr., General Manager
Dr. Maryam Bral, Chief Engineer

Posted: (date) January 27, 2023

(time) 4:00 p.m.

(attest) Eva Ibarra

At: UWCD Headquarters, 1701 N. Lombard Street, Oxnard, CA 93030

Posted: (date) January 27, 2023

(time) 4:15 p.m.

(attest) Eva Ibarra

At: www.unitedwater.com



Board of Directors
Bruce E. Dandy, President
Sheldon G. Berger, Vice President
Lynn E. Maulhardt, Secretary/Treasurer
Mohammed A. Hasan
Gordon Kimball
Michael W. Mobley
Daniel C. Naumann

General Manager
Mauricio E. Guardado, Jr.

Legal Counsel
David D. Boyer

MINUTES
WATER RESOURCES COMMITTEE
Tuesday, November 1, 2022, at 9:00 a.m.
UNITED WATER CONSERVATION DISTRICT
Boardroom, 1701 N. Lombard Street, Oxnard CA 93030

Committee Members Present:

Daniel Naumann, chair
Gordon Kimball, director
Lynn Maulhardt, director

Staff Present:

Mauricio Guardado, general manager
Anthony Emmert, assistant general manager
Dr. Maryam Bral, chief engineer
Dan Detmer, water resources manager
Eric Elliott, associate hydrogeologist
Dr. Zachary Hanson, hydrogeologist
John Lindquist, supervising hydrogeologist
Murray McEachron, principal hydrologist
Josh Perez, chief human resource officer
Zachary Plummer, technology systems manager
Dr. Bram Sercu, senior hydrologist
Daryl Smith, controller
Kris Sofley, executive assistant/clerk of the Board
Clayton Strahan, chief park ranger
Dr. Jason Sun, principal hydrogeologist/modeler
Brian Zahn, chief financial officer

Public Present:

Joseph Marcinko, assistant public works director, City of Oxnard
Jennifer Tribo, management analyst II, Ventura Water
Sam Collie

OPEN SESSION: 9:05 a.m.

Chair Naumann called the meeting to order at 9:05a.m. All Committee members were in attendance.

1. Public Comment

Chair Naumann asked if there were any public comments. None were offered.

2. Approval of Minutes - Motion



Motion to approve the Minutes from the Water Resources Committee meeting of September 6, 2022, Director Maulhardt; second, Director Kimball. Voice vote: three ayes (Kimball, Maulhardt, Naumann). Motion carries unanimously 3/0.

3. Modeling of Projects for OPV Basins Sustainability, Part 1—Modeling Approach and Forecasted Water Supplies (see attached slides)

Dr. Bram Sercu delivered a presentation to the Committee describing the water supply projects proposed by United and other OPV basin stakeholders. He also summarized the general iterative modeling approach, as well as forecasted changes in water deliveries and pumping for the Oxnard and Pleasant Valley basins.

Director Maulhardt interrupted Dr. Sercu's presentation to correct the impression that the sustainable yield was set at 50,000 AFY as far back as 2000 (as suggested by the graphic Dr. Sercu presented), stating that at one time, the sustainable yield was believed to be 120,000 AFY, but through advances in technology, modeling and studies, it has been determined that USGS model was wrong and the sustainable yield was lowered to 100,000 AFY. As UWCD ramped up its Groundwater Department, using the "best science" to advance its modeling efforts, it later supported the GSP analysis that estimated sustainable yield to be 50,600 AFY. He suggested that the graph be revised to show the historical estimates of sustainable yields over time, and attribute pumping reductions to improved irrigation efficiency, new projects and land use transitions from agriculture to M&I. Mr. Guardado concurred and suggested the creation of additional lines in the graph to show earlier assumptions. Director Maulhardt suggested presenting the information in 5-year increments to demonstrate that, in 1985 for example, FCGMA was tackling this issue and felt it was important to show that the issue has been dealt with consistently and as science and technology improves, so too does the data. Mr. John Lindquist came forward and stated that an Open File Report on the evolution of safe yield was about to be released and it includes safe yield figures back to the 1950s. Mr. Guardado suggested staff create a visual of what is represented in the document. Mr. Lindquist added that the term "sustainable yield" wasn't defined until 2014 in the Sustainable Groundwater Management Act, even though there has been a similar understanding of the term since the 1950s.

There was then a discussion over the use of the term "hybrid scenario," which Dr. Sercu explained was the term agreed to by the members of the FCGMA Operations committee, which represents a mix of projects designed to optimize basin yield, including the extraction barrier project United is developing. The presentation also examined the impact of increased water deliveries as pumping is reduced in coastal areas with the implementation of projects, and that with the hybrid project scenario (select projects and extraction barrier) water deliveries and basin yield goes up.

Before beginning his presentation, Mr. John Lindquist asked if the Committee would like him to defer his presentation to another meeting, as he knew it would take at least 30 minutes to get through all of the slides and he didn't want to presume the Committee had the additional time that would be required. Chair Naumann suggested that Mr. Lindquist hold his presentation until after the Installation of New Monitoring Wells in the Fillmore Basin presentation by Mr. Eric Elliott and Mr. Dan Detmer's Water Resources Department and GSA Activities Update.



5. Installation of New Monitoring Wells in the Fillmore Basin (see attached slides)

Eric Elliott presented a progress report to the Committee related to the construction of three shallow monitoring wells near the Fillmore Fish Hatchery, and a deep nested monitoring well near the downstream end of the Fillmore basin, as funded by a DWR grant through the Fillmore and Piru Basins GSA. Mr. Elliott also explained that this was the first time staff had worked with “sonic drilling” methods and explained the benefits of the technology, which includes rapid drilling, less waste disposal and continuous core samples.

Director Kimball expressed the appreciation of the Fillmore and Piru Basins GSA Board for United’s support, and he is glad that they were able to help contribute more knowledge regarding sonic drilling practices.

6. Water Resources Department and GSA Activities Update

Mr. Dan Detmer provide an oral update to the Committee on recent Water Resources Department activities and updates on GSA activities and schedules for the Fillmore and Piru Basins, Mound Basin and Fox Canyon Groundwater Management Agency (Oxnard, Pleasant Valley and Las Posas Valley basins) as contained the staff report for this item.

4. Modeling of Projects for OPV Basins Sustainability, Part 2—Effects on Groundwater Conditions (see attached slides)

Mr. John Lindquist provided the second half of the OPV Basins modeling of projects for sustainability, summarizing groundwater elevations and flow paths forecasted to result from implementation of the new water supply projects proposed by United and other OPV basin stakeholders. Mr. Lindquist asserted that, based on the modeling conducted of the new “hybrid” projects (as defined by the FCGMA Operations Committee), the District’s Extraction Barrier and Brackish (EBB) Water Treatment project plus the other new projects will promote sustainable basin conditions without the need to reduce agricultural and M&I pumping from current levels. Mr. Lindquist said that project effectiveness in the mitigation of seawater intrusion is equal to or better than “reductions with projects” scenario as referenced in the GSPs for the OPV basins, and also result in improved groundwater quality.

Director Maulhardt expressed that the slides (slide 15 specifically) should include references to continued monitoring and management adjustments to meet basin goals, and should also include costs. Director Maulhardt said that that both Bram and John’s presentations are beneficial to all constituents and demonstrate the District’s expertise in groundwater modeling and show exactly what the department is capable of doing. He called the whole process and presentation “evolutionary.” Director Maulhardt continued, stating that FCGMA has always made decisions based on the best information available at that time. He said that this is an evolutionary process and as the District learns more, it needs to adjust, especially in the next five years, to look at potential modifications. Director Maulhardt also stressed that this has to be a collaborative process and added that this is exactly the type of information that participants at the Water Sustainability Summit are looking for and that the process demonstrates that the District is answering concerns of any naysayers.

Director Maulhardt said these presentations need to go to the full Board and suggested Mr. Lindquist start with the “punchline,” cut out the middle slides, and present slide 29, which



he called both significant and powerful. Director Maulhardt stated that these presentations visually answer the concerns of naysayers, are driven by stakeholder input, rely on proven technology, the EBB Water project is a solution to the problem and is in the perfect location with the perfect partner, and the money and costs will have to be managed.

Director Kimball added that these projects mean no cutbacks and that is a game changer. He also stated that the better staff is at getting this information out to the public, the more it becomes a viable solution for all.

FUTURE AGENDA ITEMS

Chair Naumann asked if the Committee members had any future agenda items for consideration. None were offered. Director Maulhardt stated that he would like to take this opportunity to tell staff what a great job they have done and continue to do, and asked if the comments offered by him and other Committee members were helpful. Staff agreed that the comments were helpful.

ADJOURNMENT 11:05a.m.

Chair Naumann adjourned the meeting at 11:05a.m.

I certify that the above is a true and correct copy of the Minutes of the Water Resources Committee Meeting of November 1, 2022.

ATTEST:

Daniel Naumann, Chair

3. MODELING OF PROJECTS FOR OPV BASINS SUSTAINABILITY—PART 1, MODELING APPROACH AND FORECASTED WATER SUPPLIES

Prepared by Bram Sercu, PhD/Senior Hydrologist

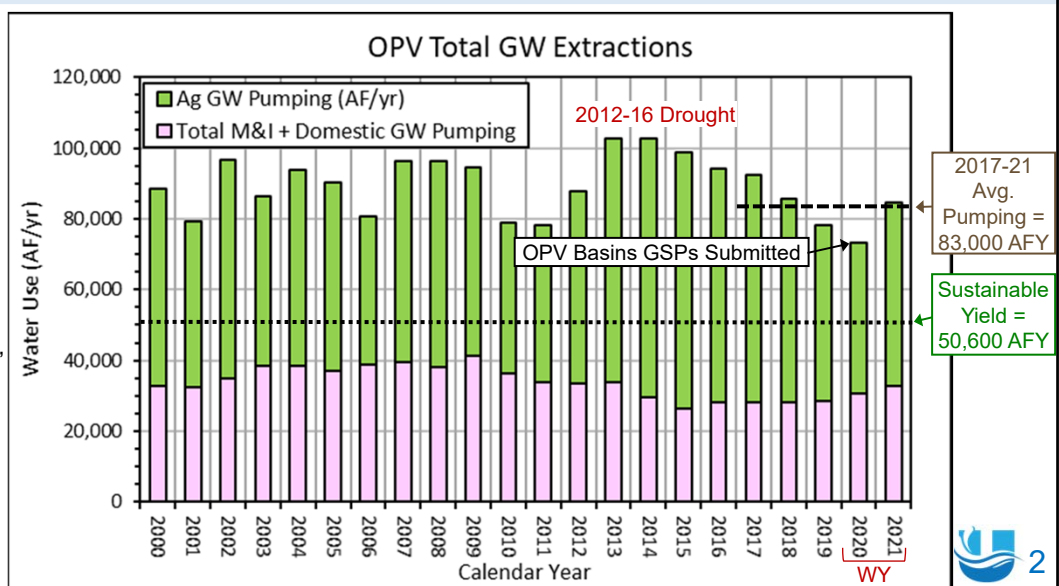
Water Resources Committee Meeting
November 1, 2022



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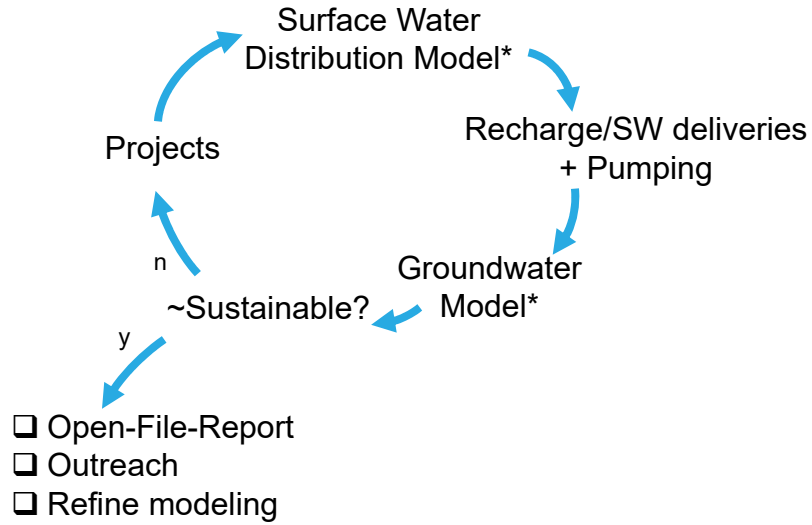
A QUICK HISTORY OF HOW WE GOT TO TODAY

1. Groundwater users unhappy with prospect of major pumping reductions
2. In 2020 FCGMA convened an ad hoc Stakeholder Projects Comm.
3. Committee proposed a "Hybrid Scenario" of projects for United to model
4. Iterative modeling effort + input from others led to three alternatives



2

HYBRID SCENARIO MODELING APPROACH

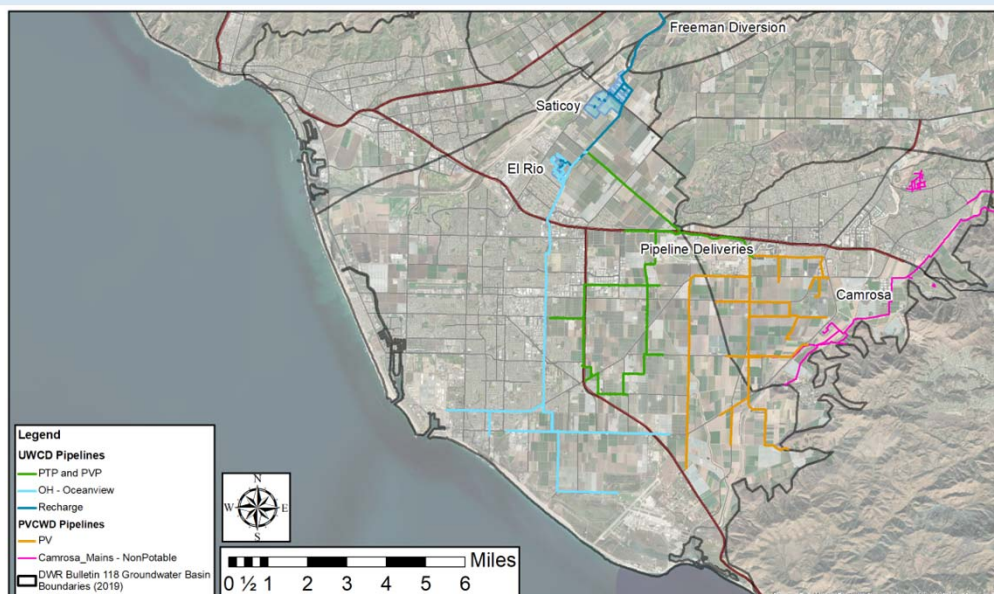


*50-yr modeled forecast (2020-2069)



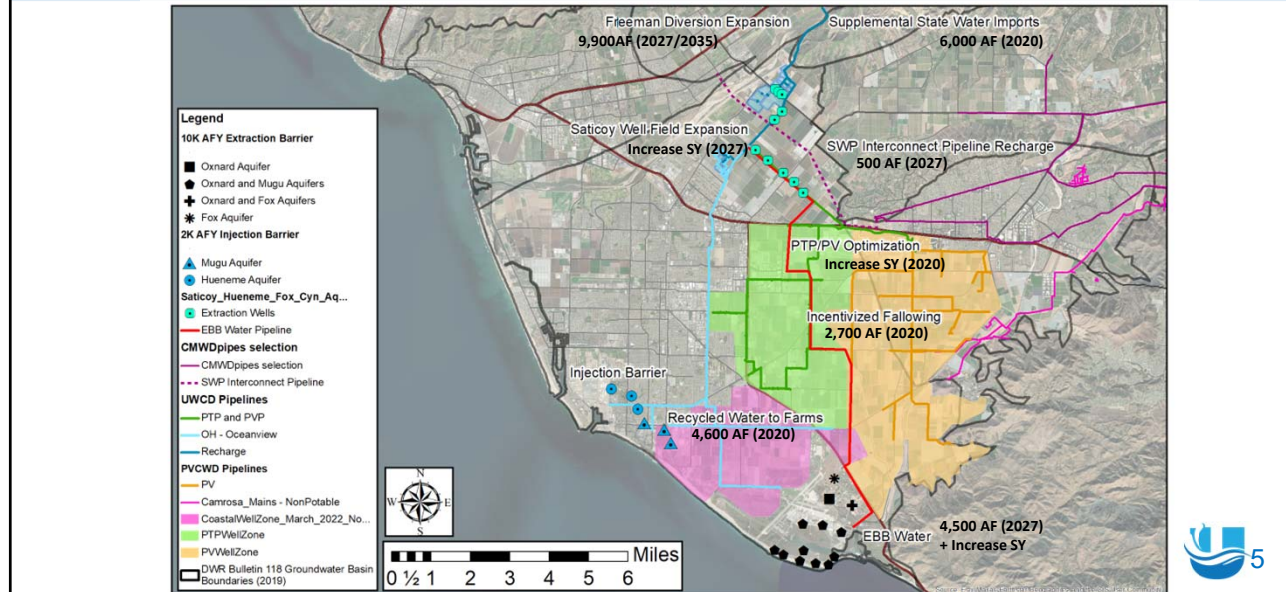
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HYBRID SCENARIO PROJECTS: CURRENT FACILITIES



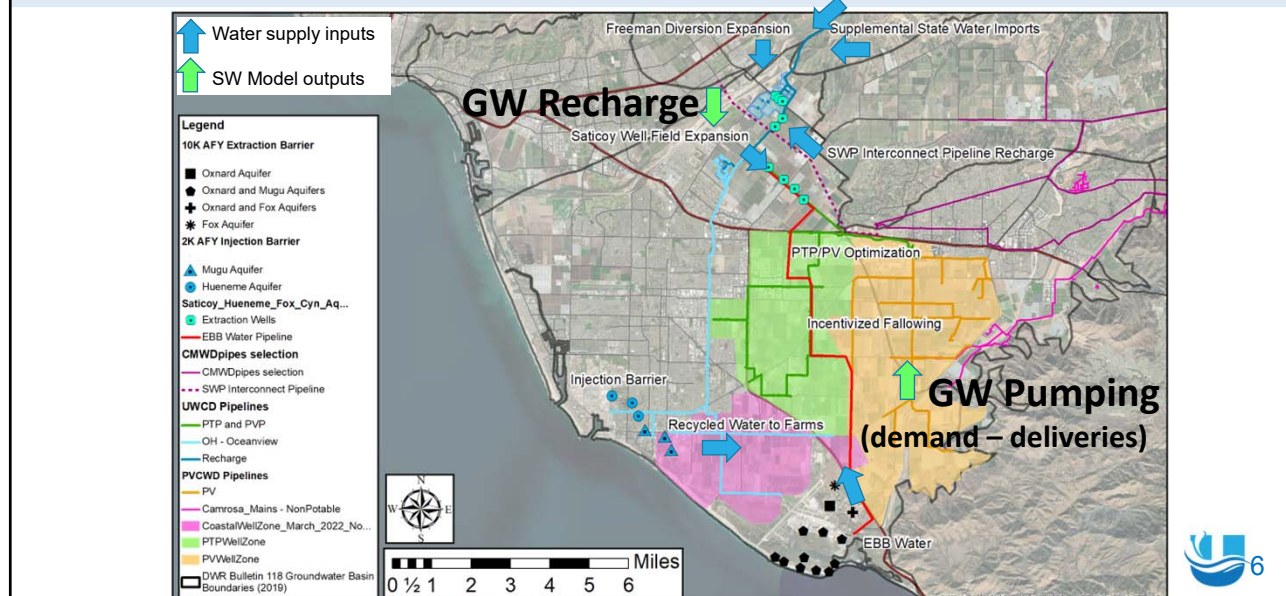
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HYBRID SCENARIO PROJECTS: EXTRACTION BARRIER + INCREASE SUPPLIES



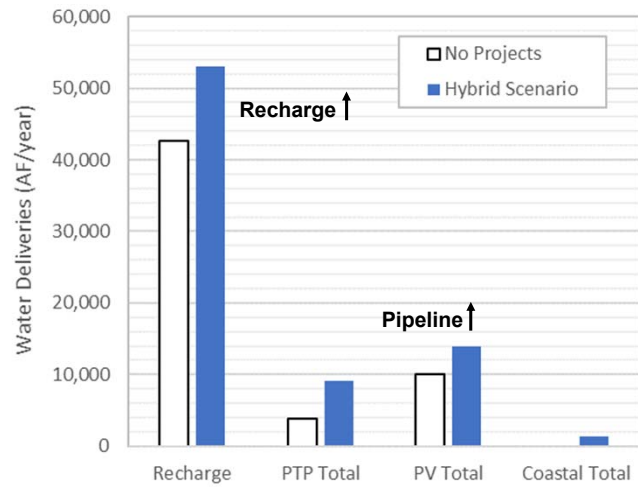
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HYBRID SCENARIO PROJECTS: SURFACE WATER DISTRIBUTION MODELING (DAILY MODEL)



6

HYBRID SCENARIO PROJECTS INCREASE WATER DELIVERIES*



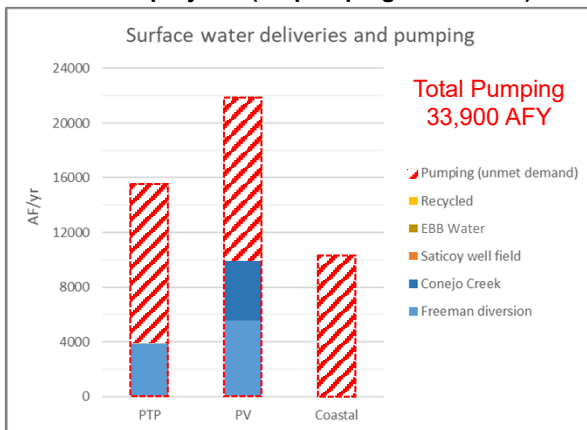
*50-yr modeled forecast (2020-2069)



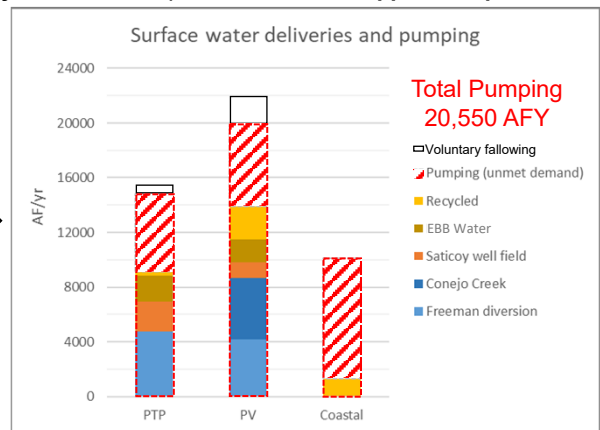
7

HYBRID SCENARIO PROJECTS REDUCE PUMPING NEAR COAST BY 39%

Without projects (no pumping reductions)



Hybrid Scenario (SW barrier, new supplies & optimization)



8

Questions?



4. MODELING OF PROJECTS FOR OPV BASINS SUSTAINABILITY—PART 2, EFFECTS ON GROUNDWATER CONDITIONS

Prepared by: Dr. Zachary Hanson, Hydrogeologist
John Lindquist/Supervising Hydrogeologist
Water Resources Committee Meeting
November 1, 2022



1

THE BOTTOM LINE

Modeling results show that the EBB Water extraction barrier
+ new and expanded water-supplies proposed by stakeholders
= Sustainable yield (*without reducing current Ag and M&I pumping*)

- **Effective mitigation of nearly all seawater intrusion in our aquifers**
 - *Equal to or better than mitigation provided by “Reduction with Projects” scenario in the GSPs for the OPV Basins*
- **EBB Water and other projects provide improved groundwater quality**

2

COMPARISON OF HYBRID SCENARIO TO GSP “REDUCTION WITH PROJECTS” SCENARIO

Issue	Hybrid Scenario	GSP “Reduction with Projects” Scenario
Change in water supply compared to current use	0 AFY	-27,000 AFY
Net change in area of seawater intrusion: Oxnard Aquifer	-3,600 acres	-3,800 acres
Mugu Aquifer	-300 to -800 acres	+100 acres
Hueneme Aquifer	+100 to +200 acres	+100 acres
Fox Canyon Aquifer	-100 acres	+400 acres
Grimes Canyon Aquifer	-100 acres	Not applicable
High-quality treated water to NBVC-Pt Mugu and Forebay?	Yes	No



3

HYBRID SCENARIO WITHOUT INJECTION: OXNARD AQUIFER SEAWATER PARTICLE TRACKS



Pros:

- No reduction in total supply (compared to 2017-21 averages) except incentivized fallowing
- Provides new high-quality, sources of water (some are “drought-proof”)
- Over 50 years, pulls seawater intrusion in Oxnard Aquifer back south 0.5 to 1.5 miles
- No discharge from UAS to Pacific Ocean southeast from Channel Islands Harbor

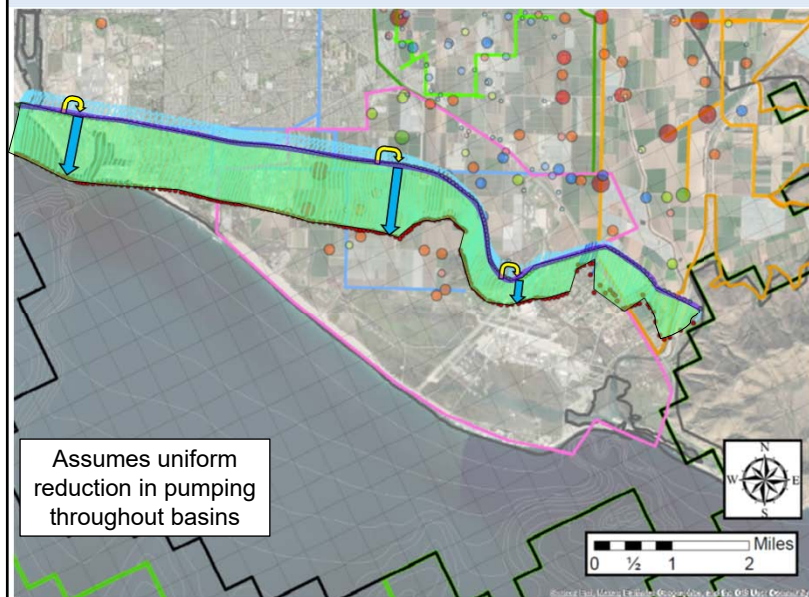
Cons:

- None



4

GSP "REDUCTION WITH PROJECTS" SCENARIO: OXNARD AQUIFER SEAWATER PARTICLE TRACKS



Pros:

- Over 50 years, seawater intrusion front in Oxnard Aquifer migrates south 0.5 to 0.8 miles

Cons:

- ~27,000 AFY less local water supplies available to Ag + M&I
- 3,300 AFY discharge from Upper Aquifer System (UAS) to Pacific Ocean
- 1,500 AFY seawater intrusion continues in Lower Aquifer System (LAS)
- Elimination of seawater intrusion in LAS requires further cutbacks, more discharge to Pacific Ocean



5

HYBRID SCENARIO WITHOUT INJECTION: MUGU AQUIFER SEAWATER PARTICLE TRACKS



Pros:

- Injection wells and feed-water pipeline not required at NBVC Point Mugu

Cons:

- Two areas of seawater-intrusion front expansion



6

GSP "REDUCTION WITH PROJECTS" SCENARIO: MUGU AQUIFER SEAWATER PARTICLE TRACKS



Pros:

- Eastward expansion of seawater intrusion front east of Port Hueneme smaller than Hybrid Scenario without Injection

Cons:

- Minor seawater expansion still occurs all around NBVC Point Mugu, but no supply wells impacted



7

HYBRID SCENARIO WITH INJECTION: MUGU AQUIFER SEAWATER PARTICLE TRACKS



Pros:

- Significant removal of seawater-intruded area near Port Hueneme

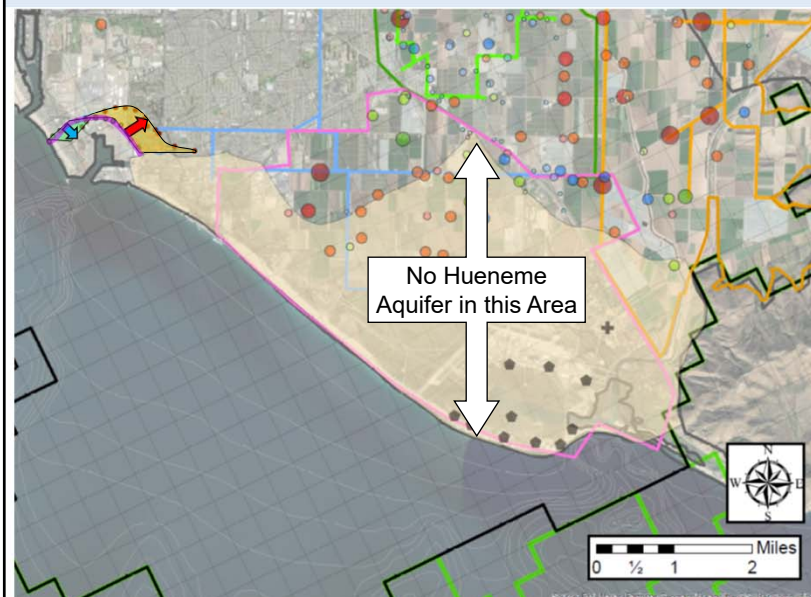
Cons:

- Minor expansion of seawater intrusion in three areas



8

HYBRID SCENARIO WITHOUT INJECTION: HUENEME AQUIFER SEAWATER PARTICLE TRACKS



Pros:

- Injection wells and feed-water pipeline not required at NBVC Point Mugu
- Retreat of seawater intrusion in small area northwest of Port Hueneme

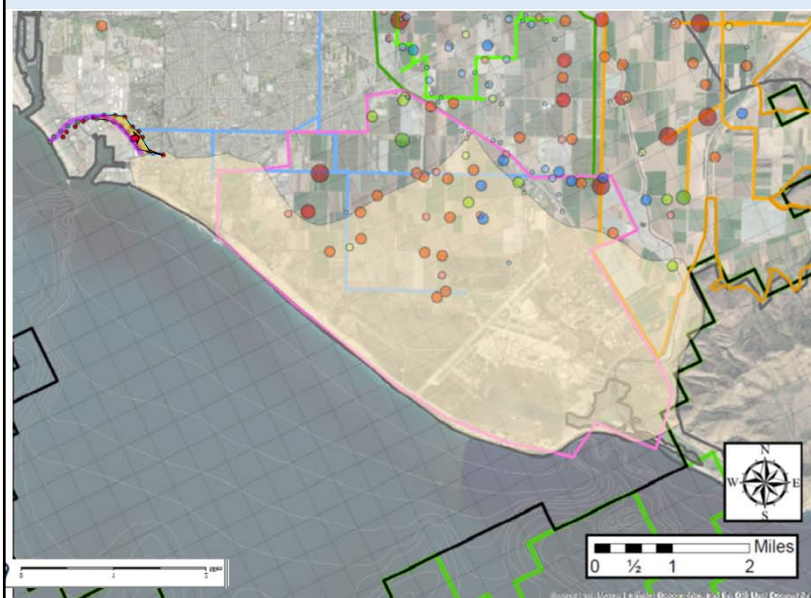
Cons:

- Modest area of seawater intrusion northeast of Port Hueneme



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GSP "REDUCTION WITH PROJECTS" SCENARIO: HUENEME AQUIFER SEAWATER PARTICLE TRACKS



Pros:

- None

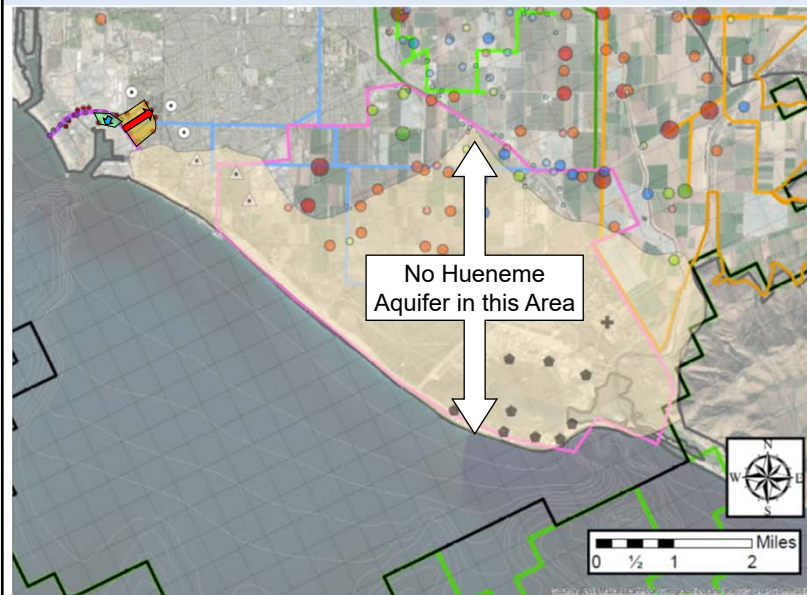
Cons:

- Minor expansion northeast of Port Hueneme



10

HYBRID SCENARIO WITH INJECTION: HUENEME AQUIFER SEAWATER PARTICLE TRACKS



Pros:

- Retreat of seawater intrusion in small area north of Port Hueneme

Cons:

- Minor expansion of seawater intrusion still occurs northeast of Port Hueneme



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HYBRID SCENARIO WITHOUT INJECTION: FOX CANYON. AQUIFER SEAWATER PARTICLE TRACKS



Pros:

- Some mitigation of seawater in east and northwest

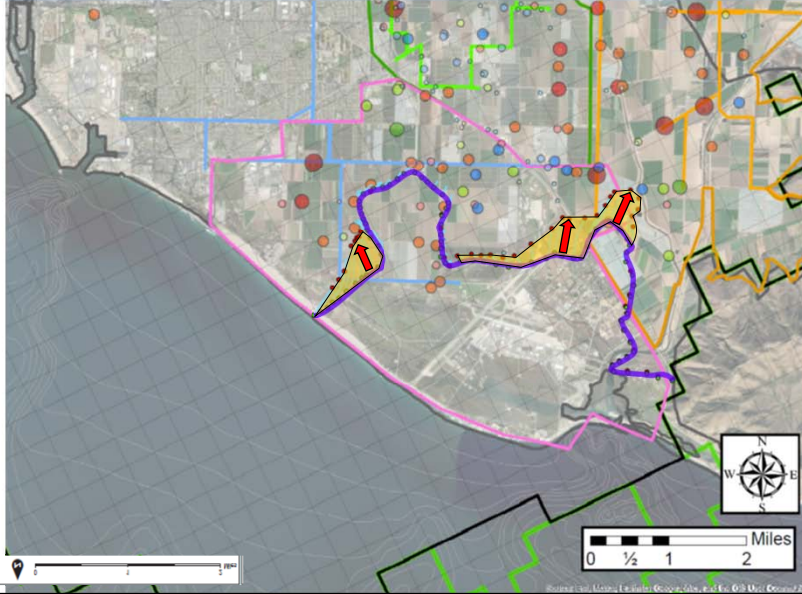
Cons:

- Minor excursion of seawater intrusion to west



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GSP "REDUCTION WITH PROJECTS" SCENARIO: FOX CANYON AQUIFER SEAWATER PARTICLE TRACKS



Pros:

- None

Cons:

- Northward and westward expansion of seawater intrusion front



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HYBRID SCENARIO WITHOUT INJECTION: GRIMES CYN. AQ. SEAWATER PARTICLE TRACKS



Pros:

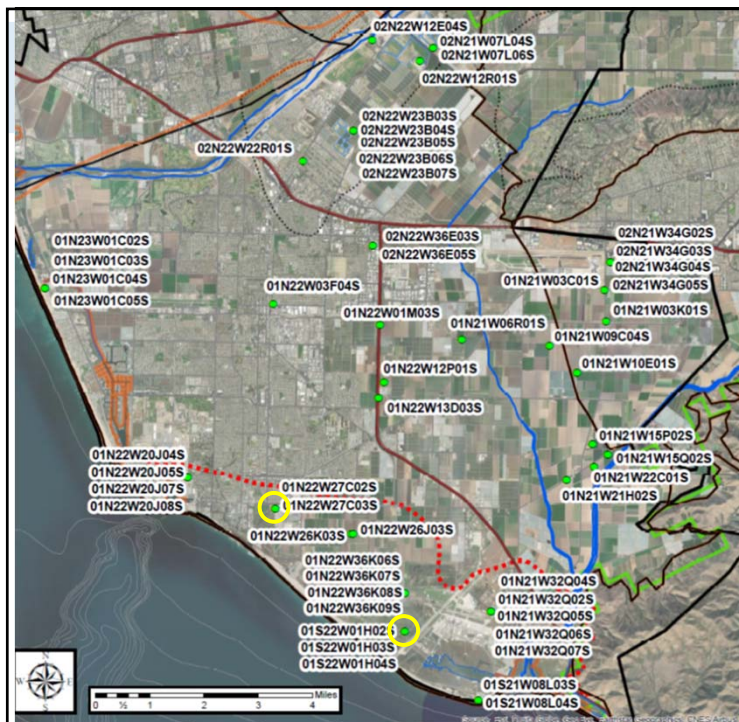
- Some mitigation of seawater in north and southeast

Cons:

- Minor expansion of seawater intrusion in northeast (but no wells impacted)



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LOCATION OF WELLS WITH PROJECTED HYDROGRAPHS



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EXAMPLE HYDROGRAPH, OXNARD AQUIFER

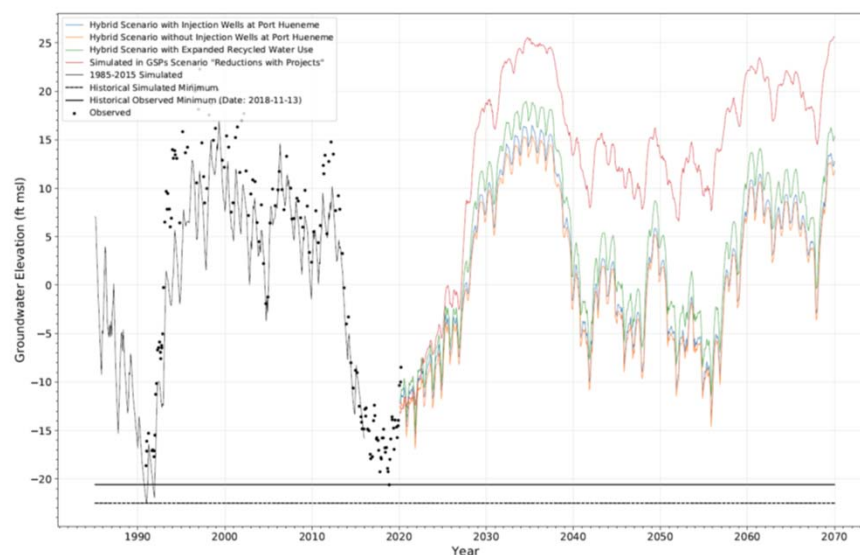


Figure B-5. Modeled and Measured Groundwater Elevations at Well 01N22W27C03S, Screened in Oxnard Aquifer



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EXAMPLE HYDROGRAPH, FOX CANYON AQUIFER

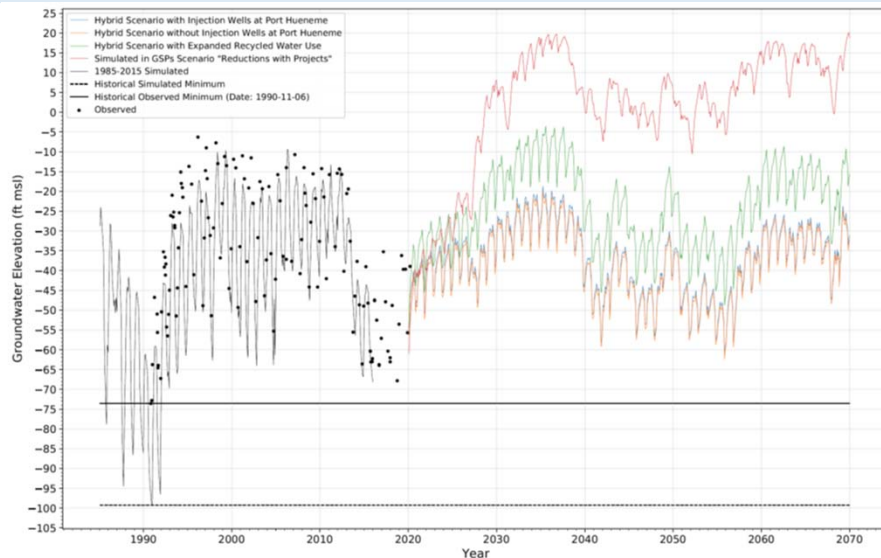


Figure B-42. Modeled and Measured Groundwater Elevations at Well 01S22W01H025, Screened in Upper Fox Canyon Aquifer



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The Evolution of Seawater Intrusion Barriers in California

Monterey County (proposed)

- 22 brackish extraction wells
- 8.5 miles
- Treated brackish water to be produced for recharge or use

Alameda County (Newark Aquifer Reclamation Program)

- ~10 brackish extraction wells
- ~3 miles
- **+11,000 AFY** treated brackish water produced for M&I use

Los Angeles County

- 290 injection wells
- 17.2 miles
- **-30,000 AFY**

Orange County

- 108 injection wells
- 2.5 miles
- **-30,000 AFY**

Brackish extraction now proposed in LA and Orange Co.

18

18

CONCLUSIONS

1. The “Hybrid Scenario” and its variations achieve equal or better mitigation of seawater intrusion than the GSP “Reduction with Projects Scenario”
 - Some improvements possible in all scenarios, including GSP scenarios
 - *But are they really needed?*
 - Optimizing pumping depths and locations is not very impactful when a seawater intrusion barrier is in place (maybe we can save \$60 million?)
2. The Hybrid Scenario does not require large reductions in Ag and M&I water supply
 - However, it requires long-term commitment to both expanding water supplies and mitigating seawater intrusion (*even after this drought ends*)



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RECOMMENDATIONS

1. Ask stakeholders for their input, concerns, questions:
 - Are small advances of the seawater intrusion front in some areas “significant and unreasonable” in context of overall success in mitigating past intrusion?
 - Is recycled water for Ag use going to be available over the long term?
2. Further investigation:
 - Better refine benefits of some optimization components vs. costs
 - Conduct detailed transport modeling of preferred scenarios
 - *Provides more details regarding future salinity changes in groundwater over time*



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NEXT STEPS

1. Keep moving forward on design of EBB Water
2. Keep moving forward on expanding other water supply sources
3. Keep updating and refining cost estimates
4. Plan stakeholder meetings
5. Plan additional modeling—transport and subsidence
6. Plan for 5-year update of GSPs, with Hybrid Scenario
 - ***Rampdown not needed***



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QUESTIONS?



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Supporting Slides

(for responding to potential questions)



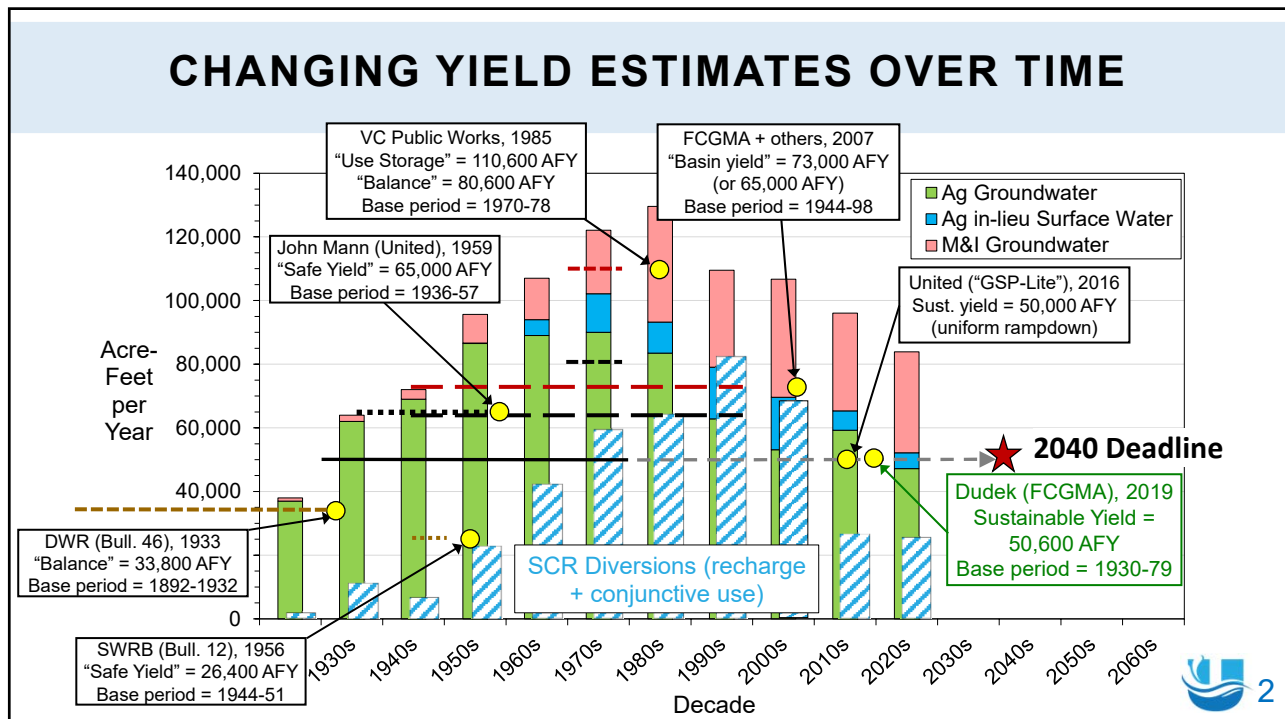
4.6 MODELING OF PROJECTS FOR OPV BASINS SUSTAINABILITY

Prepared by Bram Sercu, PhD/Senior Hydrologist
John Lindquist, Supervising Hydrogeologist
Zachary Hanson, PhD/Hydrogeologist

Board of Directors Meeting
November 9, 2022



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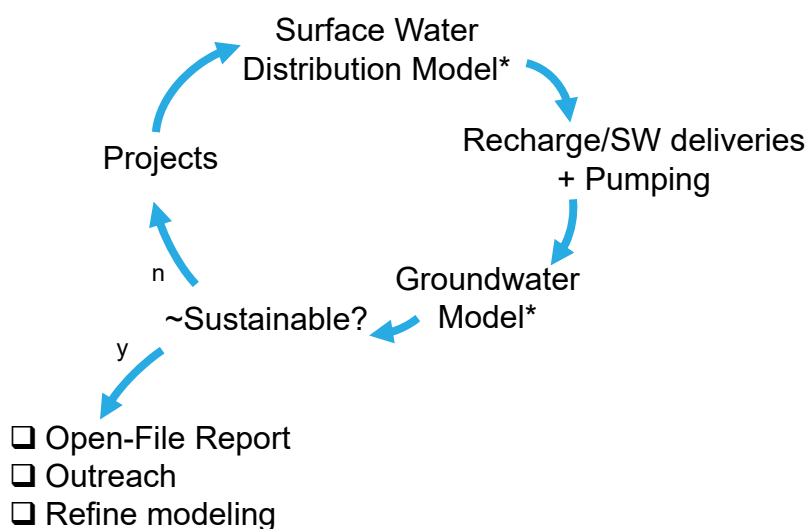
STAKEHOLDER PROCESS FOR DEVELOPING A PREFERRED FUTURE PROJECT SCENARIO

1. Major pumping reductions contemplated in Oxnard and Pleasant Valley basin GSPs
 - Many stakeholders were concerned
2. In 2020 FCGMA convened an *ad hoc* Stakeholder Projects Committee
3. Committee recommended a “Hybrid Scenario”—combining optimization efforts and a seawater-intrusion barrier—for United to model
 - Referred to herein as “**Stakeholder Scenario**”
4. United was asked to model potential effects of this scenario
5. United shared preliminary results with stakeholders at several meetings in 2021
6. United made some updates and adjustments, prepared report in 2022
 - Now available on United’s website



3

STAKEHOLDER SCENARIO MODELING APPROACH

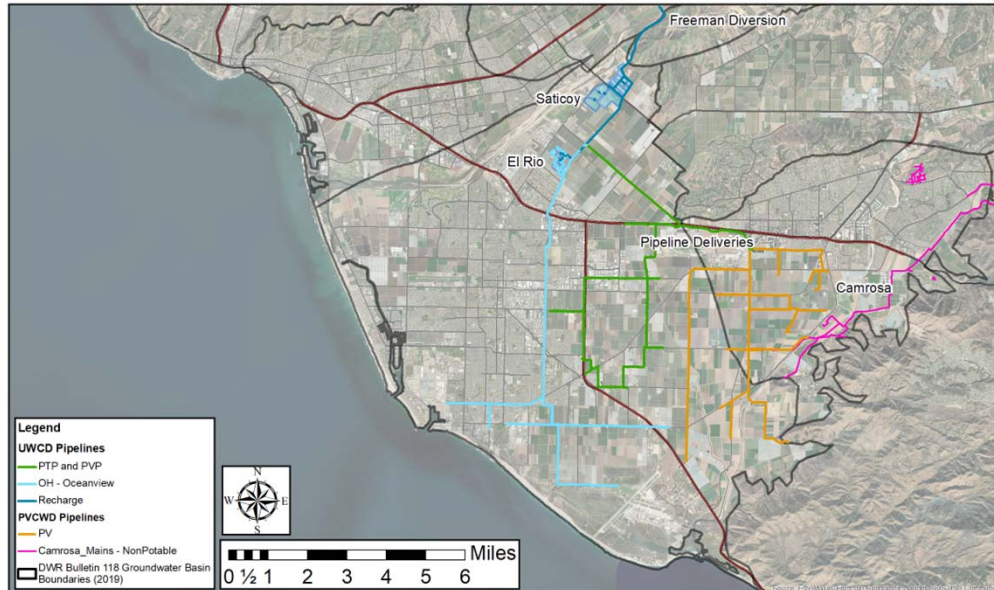


*50-yr modeled forecast (2020-2069)



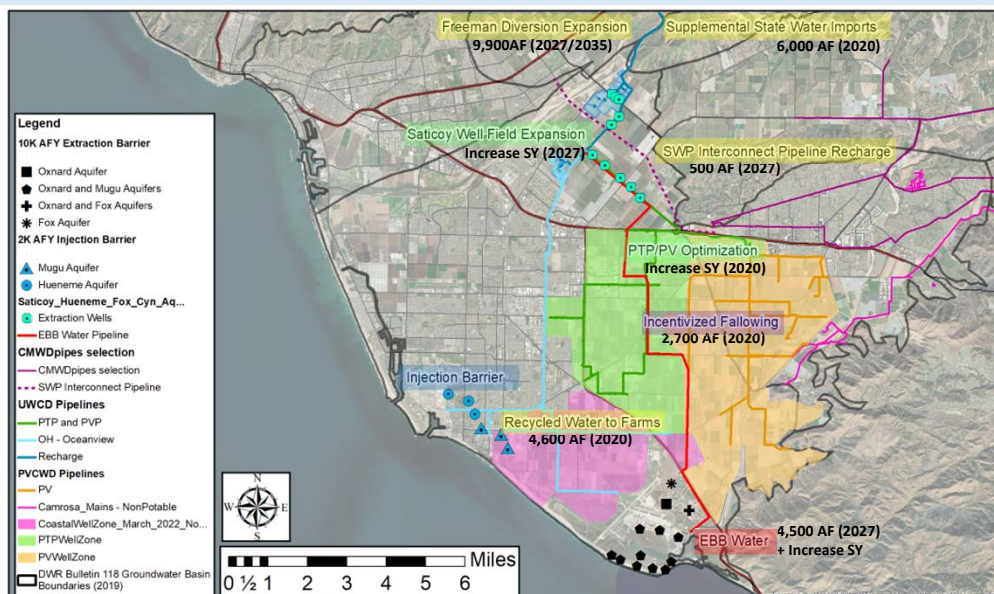
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STAKEHOLDER SCENARIO PROJECTS: CURRENT FACILITIES



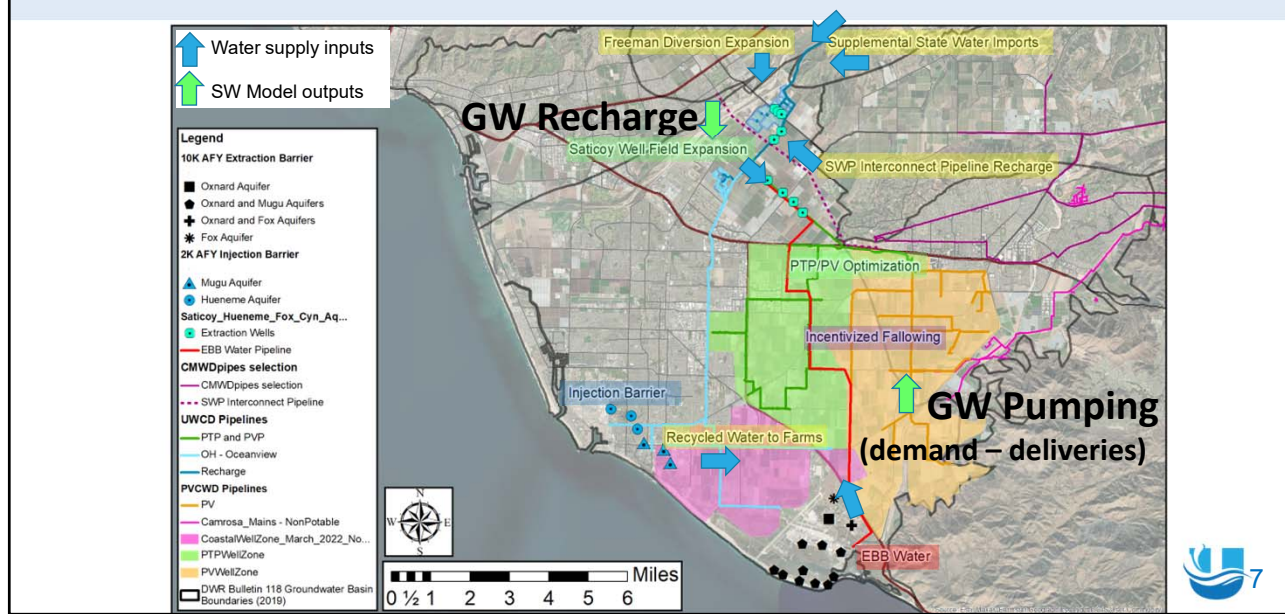
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STAKEHOLDER SCENARIO PROJECTS: EXTRACTION BARRIER + INCREASE SUPPLIES



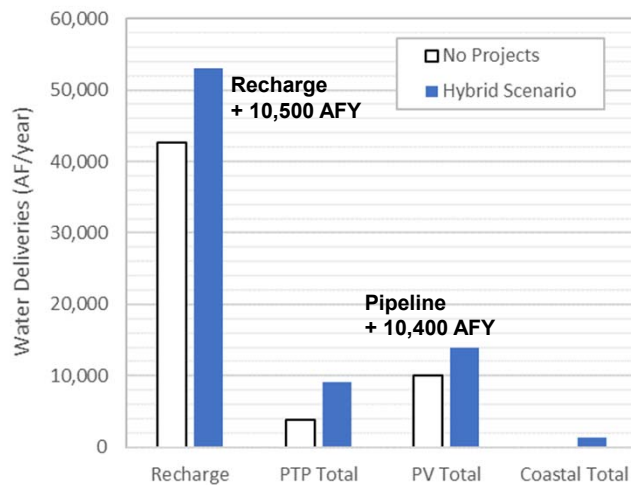
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STAKEHOLDER SCENARIO PROJECTS: SURFACE WATER DISTRIBUTION MODELING (DAILY MODEL)



7

STAKEHOLDER SCENARIO PROJECTS INCREASE WATER DELIVERIES*

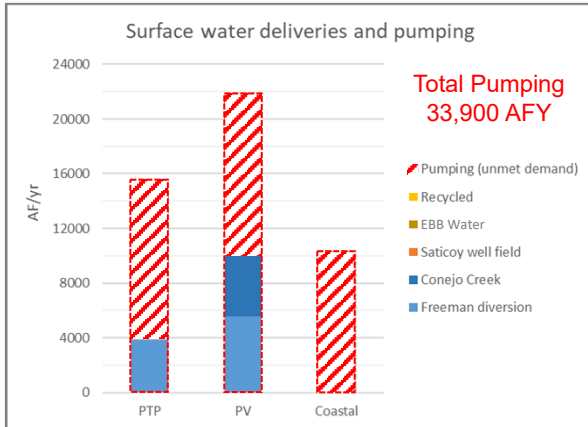


*50-yr modeled forecast (2020-2069)

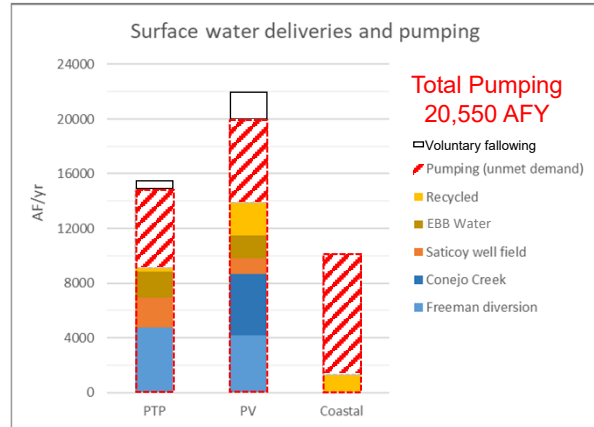
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STAKEHOLDER SCENARIO PROJECTS REDUCE PUMPING NEAR COAST BY 39%

Without projects (no pumping reductions)



Stakeholder Scenario (SW barrier, new supplies & optimization)



9

THE BOTTOM LINE

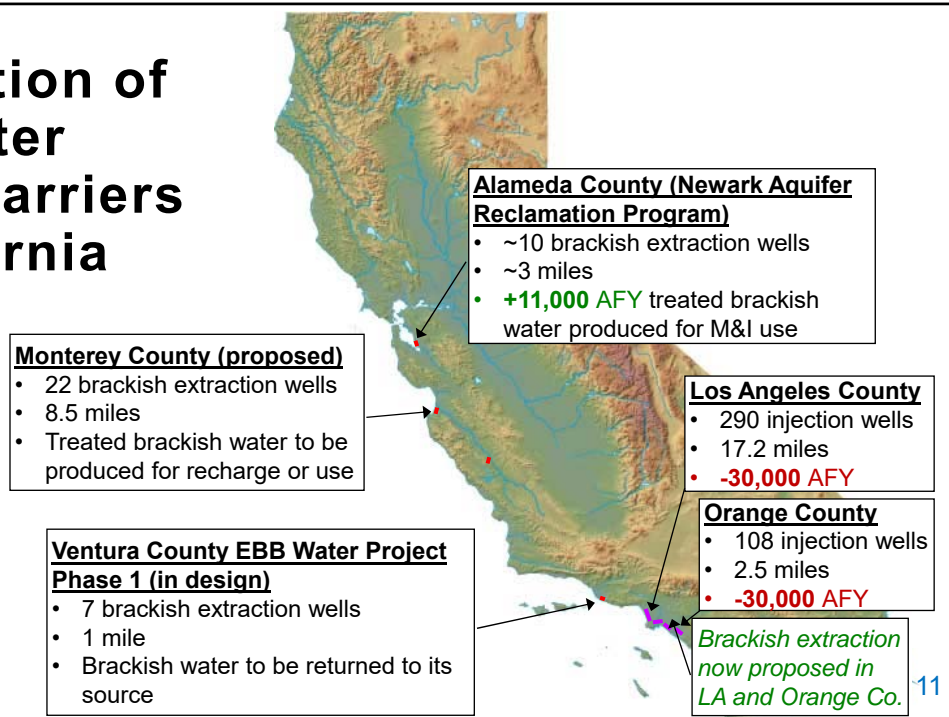
Modeling results show that the EBB Water extraction barrier
+ new and expanded water-supplies proposed by stakeholders
 = Sustainable yield (*without reducing current Ag and M&I pumping*)

- **Effective mitigation of nearly all seawater intrusion in our aquifers**
 - *Equal to or better than mitigation provided by "Reduction with Projects" scenario in the GSPs for the OPV Basins*
- **EBB Water and other projects provide improved groundwater quality**



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The Evolution of Seawater Intrusion Barriers in California



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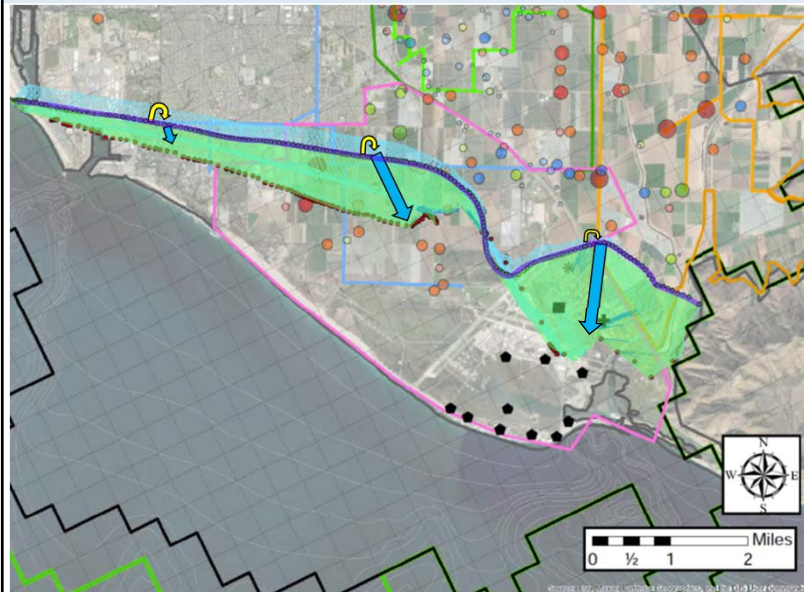
COMPARISON OF STAKEHOLDER SCENARIO TO GSP “REDUCTION WITH PROJECTS” SCENARIO

Issue	Stakeholder Scenario	GSP “Reduction with Projects” Scenario
Change in water supply compared to current use	No change	-27,000 AFY
Net change in area of seawater intrusion: Oxnard Aquifer	-3,600 acres	-3,800 acres
Mugu Aquifer	-300 to -800 acres	+100 acres
Hueneme Aquifer	+100 to +200 acres	+100 acres
Fox Canyon Aquifer	-100 acres	+400 acres
Grimes Canyon Aquifer	-100 acres	Not applicable
High-quality treated water to NBVC-Pt Mugu and Forebay?	Yes	No



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STAKEHOLDER SCENARIO WITHOUT INJECTION: OXNARD AQUIFER SEAWATER PARTICLE TRACKS



Benefits:

- No reduction in total supply (compared to 2017-21 averages) except incentivized fallowing
- Provides new high-quality, sources of water (some are “drought-proof”)
- Over 50 years, pulls seawater intrusion in Oxnard Aquifer back south 0.5 to 1.5 miles
- No discharge from UAS to Pacific Ocean southeast from Channel Islands Harbor

Challenges:

- Somewhat higher costs for water



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GSP “REDUCTION WITH PROJECTS” SCENARIO: OXNARD AQUIFER SEAWATER PARTICLE TRACKS



Benefits:

- Over 50 years, seawater intrusion front in Oxnard Aquifer migrates south 0.5 to 0.8 miles

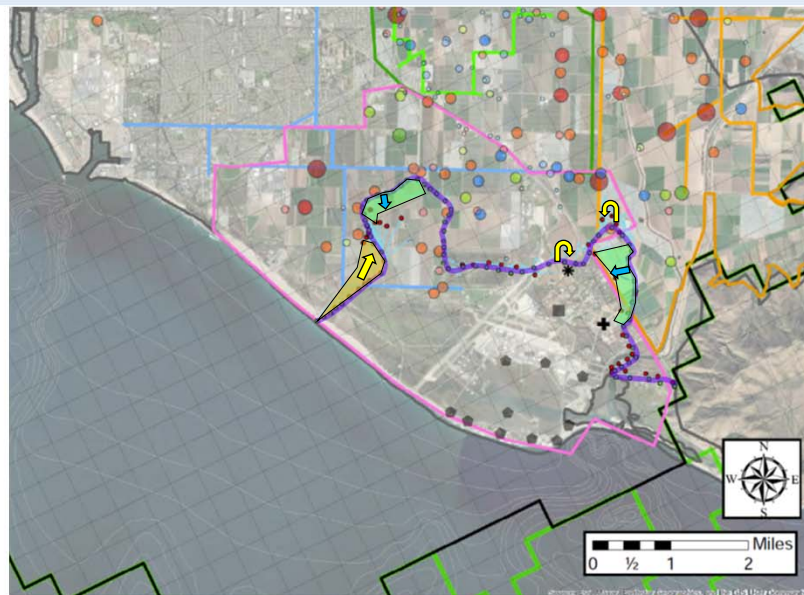
Challenges:

- ~27,000 AFY less local water supplies available to Ag + M&I
- 3,300 AFY discharge from Upper Aquifer System (UAS) to Pacific Ocean
- 1,500 AFY seawater intrusion continues in Lower Aquifer System (LAS)
 - Elimination of seawater intrusion in LAS requires further cutbacks, more discharge to Pacific Ocean



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STAKEHOLDER SCENARIO WITHOUT INJECTION: FOX CANYON AQUIFER SEAWATER PARTICLE TRACKS



Benefits:

- Reversal of seawater in east and northwest

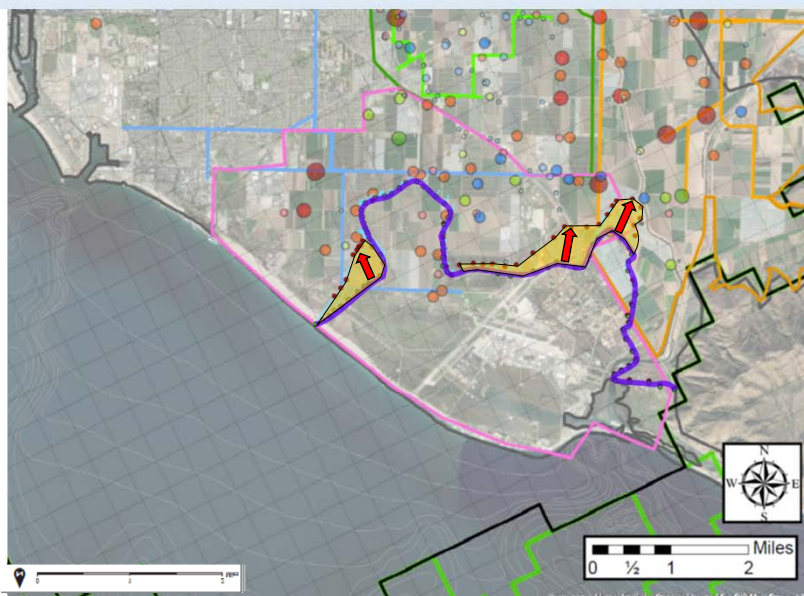
Challenges:

- Minor excursion of seawater intrusion to west



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GSP “REDUCTION WITH PROJECTS” SCENARIO: FOX CANYON AQUIFER SEAWATER PARTICLE TRACKS



Benefits:

- None

Challenges:

- Northward and westward expansion of seawater intrusion front



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CONCLUSIONS

1. The “Stakeholder Scenario” and its variations achieve equal or better mitigation of seawater intrusion than the GSP “Reduction with Projects Scenario”
 - Some improvements possible in all scenarios, including GSP scenario
 - *But are they really needed?*
 - Optimizing pumping depths and locations is not very impactful when a seawater intrusion barrier is in place (maybe we can save \$60 million?)
2. The Stakeholder Scenario does not require large reductions in Ag and M&I water supply
 - However, it requires long-term commitment to both expanding water supplies and mitigating seawater intrusion (*even after this drought ends*)



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RECOMMENDATIONS

1. Ask stakeholders for their input, concerns, questions:
 - Are small advances of the seawater intrusion front in some areas “significant and unreasonable” in context of overall success in mitigating past intrusion?
 - Is recycled water for Ag use going to be available over the long term?
2. Further investigation:
 - Better refine benefits of some optimization components vs. costs
 - Conduct detailed transport modeling of preferred scenarios
 - *Provides more details regarding future salinity changes in groundwater over time*



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NEXT STEPS

1. Keep moving forward on design of EBB Water
2. Keep moving forward on expanding other water supply sources
3. Keep updating and refining cost estimates
4. Plan stakeholder meetings
5. Plan additional modeling—transport and subsidence
6. Plan for 5-year update of GSPs, based on Stakeholder Scenario
 - ***Hard to envision why a rampdown would be needed***



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Questions?

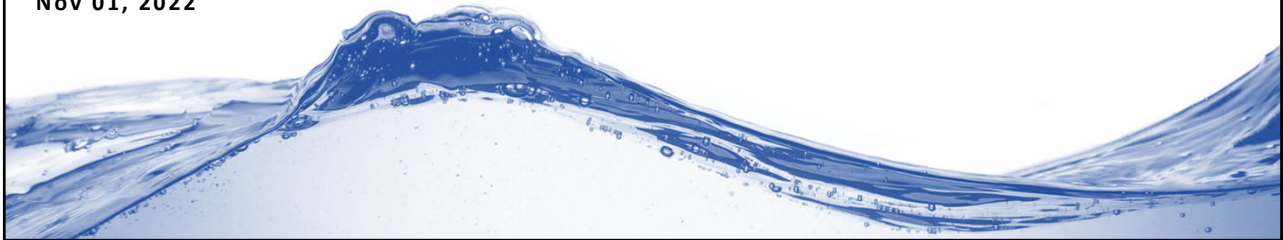


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INSTALLATION OF NEW MONITORING WELLS IN THE FILLMORE BASIN

Eric Elliott, Associate Hydrogeologist
Water Resources Committee Meeting
Nov 01, 2022



PROJECT BACKGROUND

- ✓ FPBGSA adopted final GSP late 2021
- ✓ Data gap analysis completed
- ✓ Key recommendations: monitoring in GDE areas and Santa Paula/Fillmore basin boundary

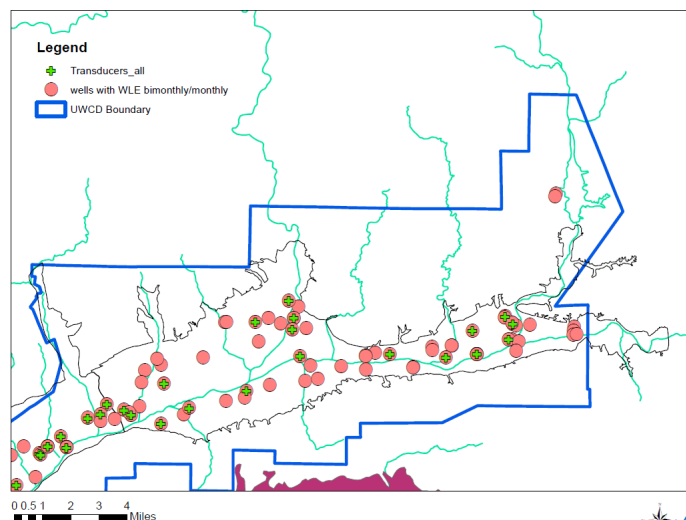
FILLMORE BASIN AQUIFER SYSTEM

Aquifer System	Hydrostratigraphic Unit	Model Layer
A	Surficial Deposits and Colluvium	1
	Aquitard	2
	Recent younger Alluvium	3
B	Aquitard	4
	Older Alluvium	5
	Aquitard	6
	Upper Saugus/San Pedro	7
C	Aquitard	8
	Lower Saugus/San Pedro	9
	Undifferentiated Sedimentary Deposits	10

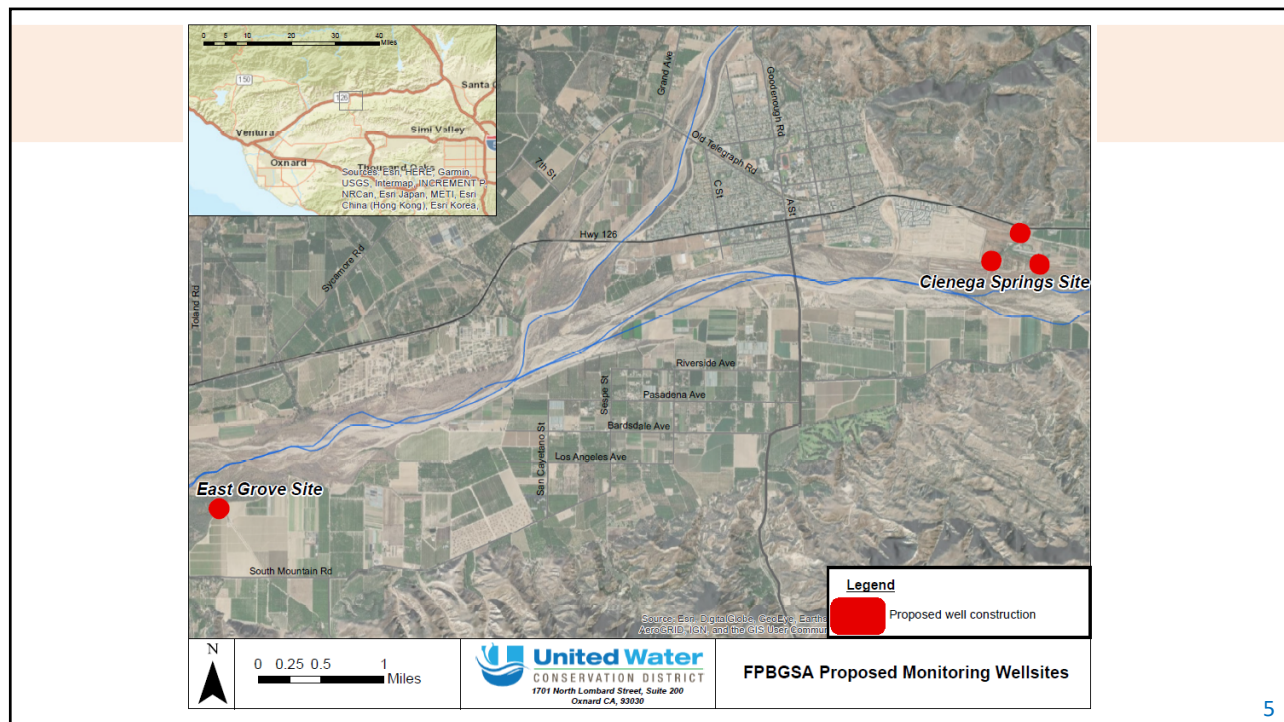
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FILLMORE & PIRU BASINS MONITORING

- ✓ UWCD and VCWPD monitor a robust network, but few wells screened in the shallow A zone
- ✓ Identified existing wells in shallow zone, reduce drilling cost



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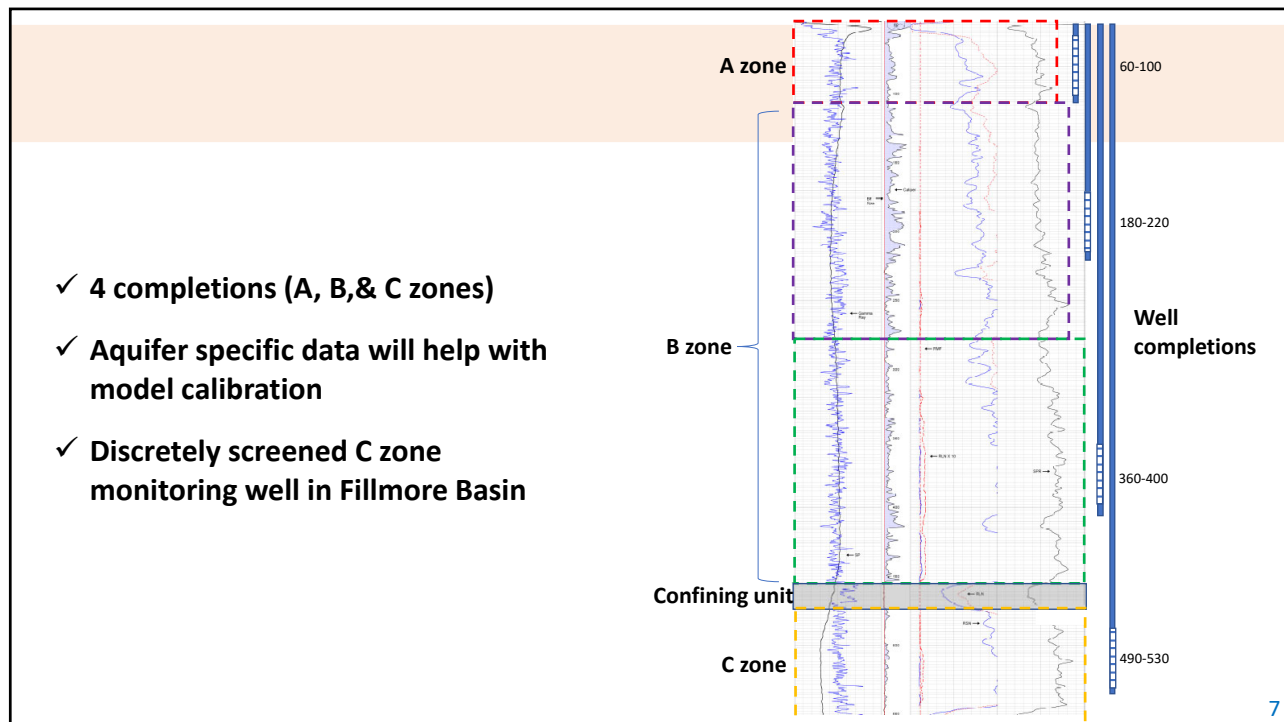


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- ✓ Identified potential locations and cooperative private landowner
- ✓ Granted easement for ongoing monitoring
- ✓ Contracted with BC2 Environmental for mud-rotary drilling of exploratory borehole (800 ft. bgs) and 4-well completion



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PROGRESS TO DATE



SONIC DRILLING FOR FUTURE PROJECTS

- ✓ Less waste disposal
- ✓ Continuous core samples for identifying confining unit separating the Semi-perched and Oxnard Aquifers
- ✓ “Telescoping” borehole casing allows for sealing between aquifers, reducing potential for opening pathways of communication between aquifers
- ✓ May be preferred drilling method for EBB Project monitoring wells



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QUESTIONS?



11/01/2022

Water Resources Committee - New Monitoring Well
Installations

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Board of Directors
Bruce E. Dandy, President
Sheldon G. Berger, Vice President
Lynn E. Maulhardt, Secretary/Treasurer
Mohammed A. Hasan
Gordon Kimball
Michael W. Mobley
Daniel C. Naumann

General Manager
Mauricio E. Guardado, Jr.

Legal Counsel
David D. Boyer

ATTENDANCE LIST

MEETING DATE: Wednesday, November 1, 2022 9:00a.m.

MEETING: UWCD Water Resources Committee Meeting

The signing or registering of your name on this sign-up form is not required but is voluntary. All persons may attend the meetings of the Board of Directors of United Water Conservation District without signing or registering their names on this form.

Name (Please Print)

Representing

Jennifer Triba

Ventura Water



Staff Report

To: Water Resources Committee

Through: Mauricio E. Guardado, Jr., General Manager

From: Maryam Bral, Chief Engineer
Dan Detmer, Water Resources Manager

Date: January 23, 2023 (January 31, 2023, meeting)

Agenda Item: 5. Monthly Water Resources Department Report and update on Activities of local Groundwater Sustainability Agencies (GSAs)
Information Item

Staff Recommendation:

The Committee will receive a summary report on various Water Resources Department activities for the month of January 2023, including a summary of the monthly activities of the three local Groundwater Sustainability Agencies (Fox Canyon Groundwater Management Agency, Fillmore and Piru Basins GSA, and Mound Basin GSA), for which District board members serve as member directors, and the Santa Paula basin (adjudicated) Technical Advisory Committee, for which District staff serve as members. Staff may also report on state-wide issues related to the implementation of the Sustainable Groundwater Management Act (SGMA) of 2014.

Discussion:

Staff Activities

In addition to the Department's routine, ongoing groundwater monitoring and reporting programs and its support of Groundwater Sustainability Agencies (summarized below), notable efforts and activities conducted by staff during the past month included the following:

- United's hydrologists are actively monitoring gaging locations to assess flow conditions along the Santa Clara River and major tributaries, and to update rating curves in response to changing channel conditions and morphology.
 - United's hydrologists are assisting other District staff with operational decisions at Freeman Diversion in order to manage problems with sediment accumulation near the intake structure, maximize diversions, and comply with regulative requirements to provide opportunity for fish migration and passage.
 - United's hydrologists are assisting other District staff to assess and comply with *O. mykiss* migration release requirements at Santa Felicia Dam.
-

Agenda Item: 5. Monthly Water Resources Department Report and update on Activities of local Groundwater Sustainability Agencies (GSAs) Information Item

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- Groundwater Modeling:
 - Staff continue to develop a break-out Perched Aquifer Model (PAM) for groundwater flow in the unconfined Semi-perched aquifer in the EBB Water Treatment Project study area. The break-out model will allow higher resolution (both horizontally and vertically) forecasting of groundwater flow in the study area. The model will allow simulation of solute transport in the unconfined perched aquifer, including the inland extent of the natural seawater density wedge at the base of the aquifer near the coastline.
 - Staff continued to apply MODFLOW's "Subsidence package" to the District's existing groundwater flow model of the OPV basins to forecast potential occurrence and magnitude of land subsidence during the model calibration period (1985-2019) and under future assumed pumping scenarios and basin conditions.
 - Staff have begun engaging with Larry Walker Associates, the consultant who is developing the updated salt and nutrient management plan (SNMP) for Pleasant Valley basin, in anticipation of conducting limited groundwater modeling in support of SNMP preparation.
- Staff are assisting the Environmental Services and Engineering Departments in evaluating fish passage design modifications under consideration for United's Habitat Conservation Plan (HCP), including assisting with planning of physical modeling efforts at the Bureau of Reclamation's facility in Denver and at the University of Iowa.
- Staff are working with the Environmental Services and Engineering Departments to kick off and schedule work and deliverables with the consultants selected to conduct the environmental permitting and engineering design efforts for Phase 1 of United's EBB Water Treatment Project. Staff participated in a site visit on January 12 with Navy representatives and our consultants.
- Staff continue to design, plan, and develop specifications for EBB Water Treatment Project Phase 1A groundwater monitoring wells, and are managing the SGM Grant activities associated with this project.
- Staff are assisting the Engineering Department in evaluating the feasibility and water resources impacts of releasing water from Lake Piru and operating at lower reservoir levels as an Interim Risk Reduction Measure prior to and during the construction of the new outlet works. During construction, unprecedented low reservoir levels in the range of elevations 940-945 are needed to be able to build the new multi-port slopping intake and a tunnel.
- Staff continue to assist with planning and coordination for the purchase and release of Table A water and supplemental State Water Project (SWP) water acquired from other SWP contractors. Staff are also working to determine what modifications to United's water right permits and licenses might be required to increase the instantaneous diversion rate at Freeman Diversion.
- Staff continue to collaborate with the Engineering Department to develop, design, and implement a portfolio of new or improved water-supply projects within the District's service area. The collaborative effort is currently focused on refining the conceptual design

Agenda Item: 5. Monthly Water Resources Department Report and update on Activities of local Groundwater Sustainability Agencies (GSAs) Information Item

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of water-supply projects and new conveyance systems so that they produce the best value in terms of sustainable yield for the groundwater basins in United's service area.

- Staff continue to support selection of site locations and design specifications for extraction wells to be included as Phase 1 of the EBB Water Treatment Project.
- Staff submitted a proposal for a Prop 1, Round 3 implementation grant to CA Water Board Department of Financial Assistance (DFA) on July 15 for development of Phase 1B of the EBB Water Treatment Project. United proposed the design and construction of extraction wells and control systems, and discharge pipes and related design, permitting, sampling, and reporting to build the initial phase of the EBB Water Treatment Project before additional investments are made for water treatment and distribution. The Phase 1B project grant proposal cost is estimated at \$18.6 million, and the requested funding is \$8.4 million or 46% of the estimated project cost. DFA has informed United staff that award selection has been postponed until January or February 2023.
- Staff are assisting the Finance Department in preparing reports required by the FCGMA for surface water (from the Santa Clara River) use by the PTP and by PVCWD, deliveries of groundwater to the OH pipeline for M&I use, and deliveries of groundwater and surface water to the PTP for agricultural use. These reports cover water years 2021 and 2022. These are new reports required under the FCGMA's OPV allocation ordinance.

Outreach and Educational Activities

- Staff attended an AWA-hosted presentation on "A Wet La Nina, How Unusual?" on January 19.

Fox Canyon Groundwater Management Agency (FCGMA)

Staff continue to monitor and, where appropriate, participate in the FCGMA's groundwater sustainability planning and implementation efforts in the Oxnard, Pleasant Valley, and Las Posas Valley basins. United staff continue to meet periodically with FCGMA staff and other stakeholders to develop analyses of benefits and impacts of water-supply projects and different variations of those projects in support of developing a sustainable, resilient water-supply portfolio for the service areas of both agencies. United staff also attended and, where appropriate, contributed to, FCGMA Board and Committee meetings, as follows:

Board of Directors meetings – The FCGMA Board held a special closed session meeting on January 5. The sole topic of this special meeting was the ongoing litigation in the case "Las Posas Valley Water Rights Coalition v. Fox Canyon Groundwater Management Agency."

The next regular FCGMA Board meeting is scheduled for January 25, at 1:30 pm. The meeting will be held after the submission of this staff report, and therefore a summary will be included in next month's staff report. Notable agenda items include:

- Consider adopting Resolution 2023-01, "proclaiming January 1, 2023, FCGMA's 40th anniversary."
- Receive an update from Agency staff on "preparation of groundwater replenishment fees."

Agenda Item: 5. Monthly Water Resources Department Report and update on Activities of local Groundwater Sustainability Agencies (GSAs) Information Item

Page 4

- Receive an update from Agency staff on the planned February release of the draft GSP for the Arroyo Santa Rosa Valley Basin for public comment.

The next regular FCGMA Board meeting is scheduled for February 22, at 1:30 p.m.

Operations Committee meetings – None were held last month.

Executive Committee meetings – None were held last month.

Fiscal Committee meetings – None were held last month.

OPV Variance Review Committee meeting – None were held last month.

Ad Hoc OPV Projects Committee meetings – None were held last month.

Fillmore and Piru Basins Groundwater Sustainability Agency (FPBGSA)

Staff continue to participate in FPBGSA activities supporting SGMA compliance and GSP preparation for the Fillmore and Piru basins, as follows:

Board of Directors meetings – The FPBGSA held a regular board meeting on January 19. Notable topics included:

- The Board received a presentation from Daniel B. Stephens and Associates (DBS&A) and United staff on the updated Agency groundwater sustainability planning and reporting activities during the last month. DBS&A is currently working on the annual report for water year 2022 and a report evaluating land subsidence in the Fillmore and Piru basins.

The next FPBGSA Board meeting is scheduled for February 16, at 4:00 p.m.

GSP implementation – None this month, following assistance with the grant application for SGM implementation Round 2 funding in December 2022.

Data Resources - A web-based data management and mapping system that includes well construction information and available water level and water quality records for wells within the Piru and Fillmore basins remains available on the agency website, as are numerous technical references relating to the basins and development of the GSPs. Staff recently shared fall water level records with agency consultant DBS&A for formatting and upload to the agency website and to DWR.

Mound Basin Groundwater Sustainability Agency (MBGSA)

Staff continue to participate in MBGSA activities supporting SGMA compliance and GSP implementation for the Mound basin, as follows:

Board of Directors meetings – The MBGSA held a regular board meeting on January 23. Notable topics included:

- The Board deferred voting for a chair, vice chair/secretary and a treasurer to serve during the calendar year 2023 until the next regular meeting of the MBBSA Board. The reason

Agenda Item: 5. Monthly Water Resources Department Report and update on Activities of local Groundwater Sustainability Agencies (GSAs) Information Item

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for this deferral was to allow the next United representative to participate in the voting. United is expected to assign one of its Board members to the MBGSA Board on February 8, 2023.

- The Board received a presentation by Agency Attorney Alex Dominquez to discuss the new teleconference rules under the Ralph M. Brown Act.
- The Board approved the annual update of their Stakeholder Engagement Plan.

The next MBGSA Board meeting is scheduled for February 27, at 3:00 p.m. However, the Board members present stated a preference to cancel that meeting, and hold their next regular Board meeting on March 27 at 3:00 p.m.

GSP implementation – Staff provide the MBGSA’s Executive Director and consultants various groundwater level and quality data periodically, as requested. Staff are also monitoring pressure transducers to monitor groundwater levels at selected wells in support of data collection efforts being conducted in support of the Mound Basin GSP.

Santa Paula Basin Technical Advisory Committee (TAC)

Staff continue to participate in the Santa Paula basin TAC in support of the Santa Paula Basin Judgment and in conformance with SGMA reporting requirements for adjudicated basins, as follows:

- Staff are working with the TAC to finalize the 2021 Annual Report of groundwater conditions within the Santa Paula Basin adjudicated area and submit the report to the court and to DWR.