

# EKI TECHNICAL PRESENTATION #20

WHITE WOLF GSA BOARD OF DIRECTORS

6 SEPTEMBER 2022

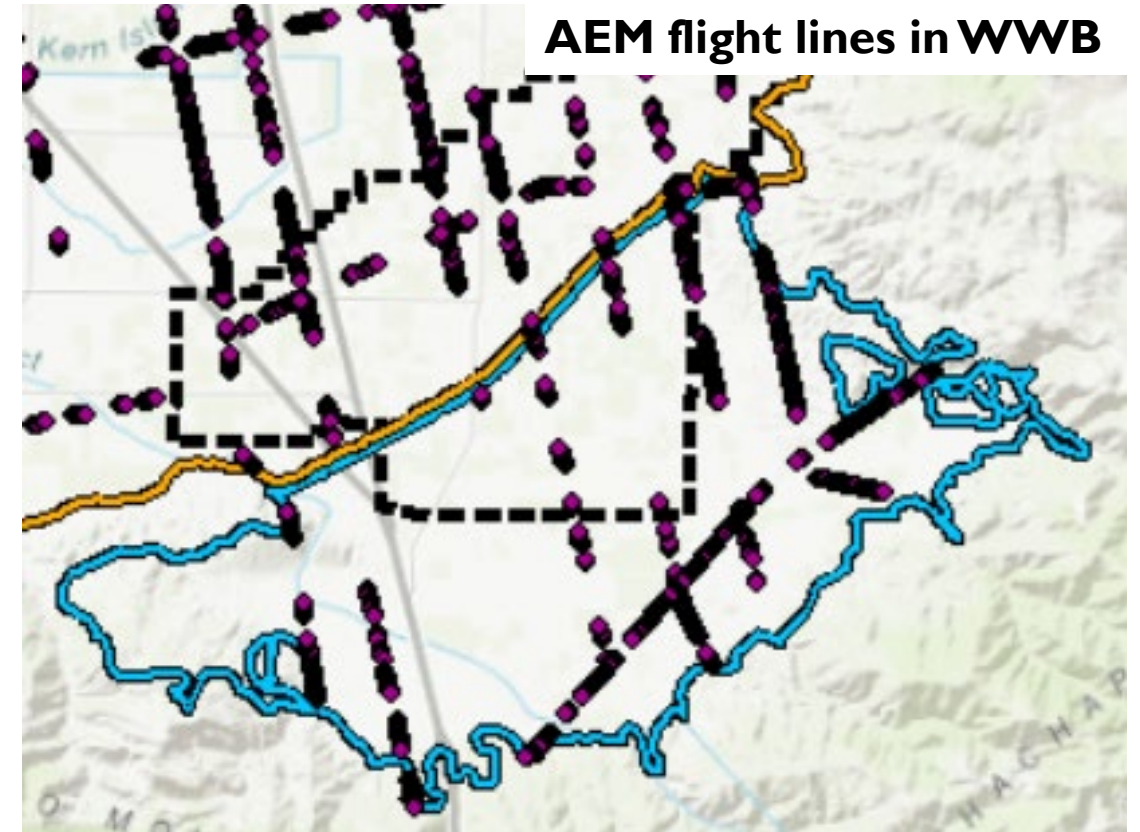
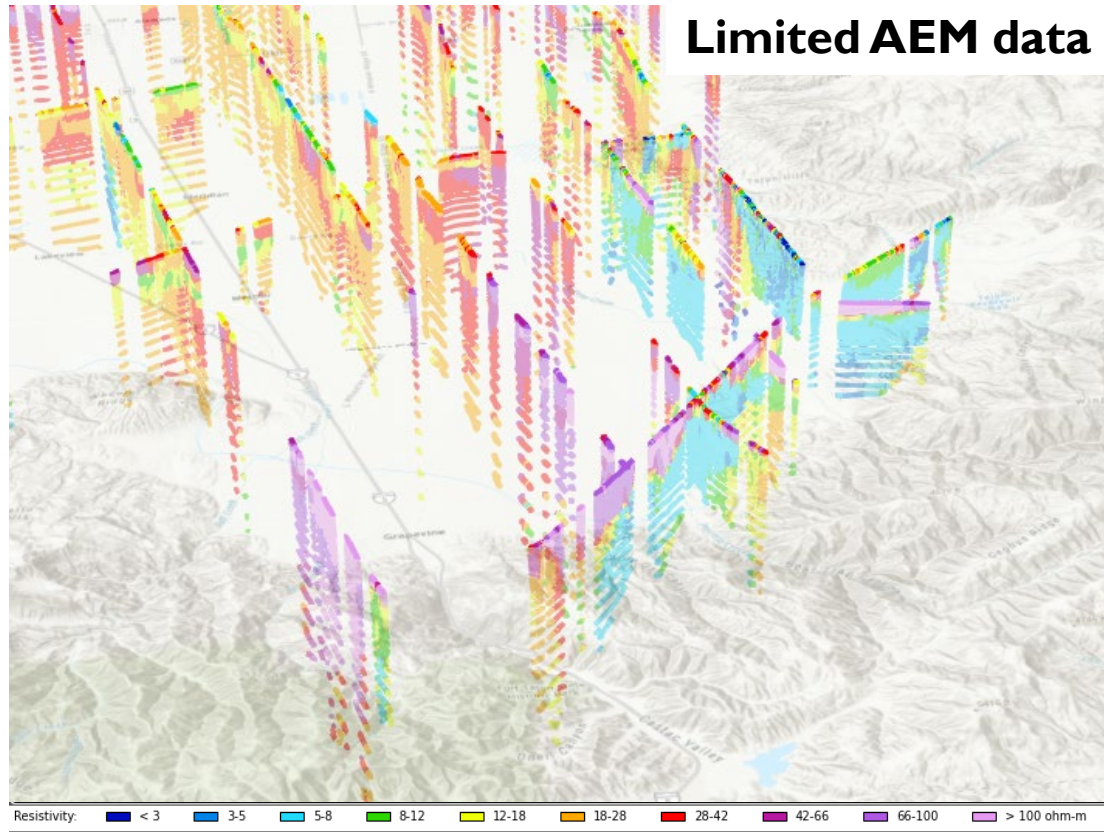


# OUTLINE

- Updates on Groundwater Sustainability Plan (GSP) Implementation
  - DWR Airborne Electromagnetic (AEM) Survey
  - Initiation of Action Plan for Minimum Threshold (MT) Exceedances
- Executive Order N-7-22 Action 9a: Well Permit Consistency Determinations
- SGMA Implementation Round 2 Grant Solicitation Update

## 8a. UPDATES ON GSP IMPLEMENTATION

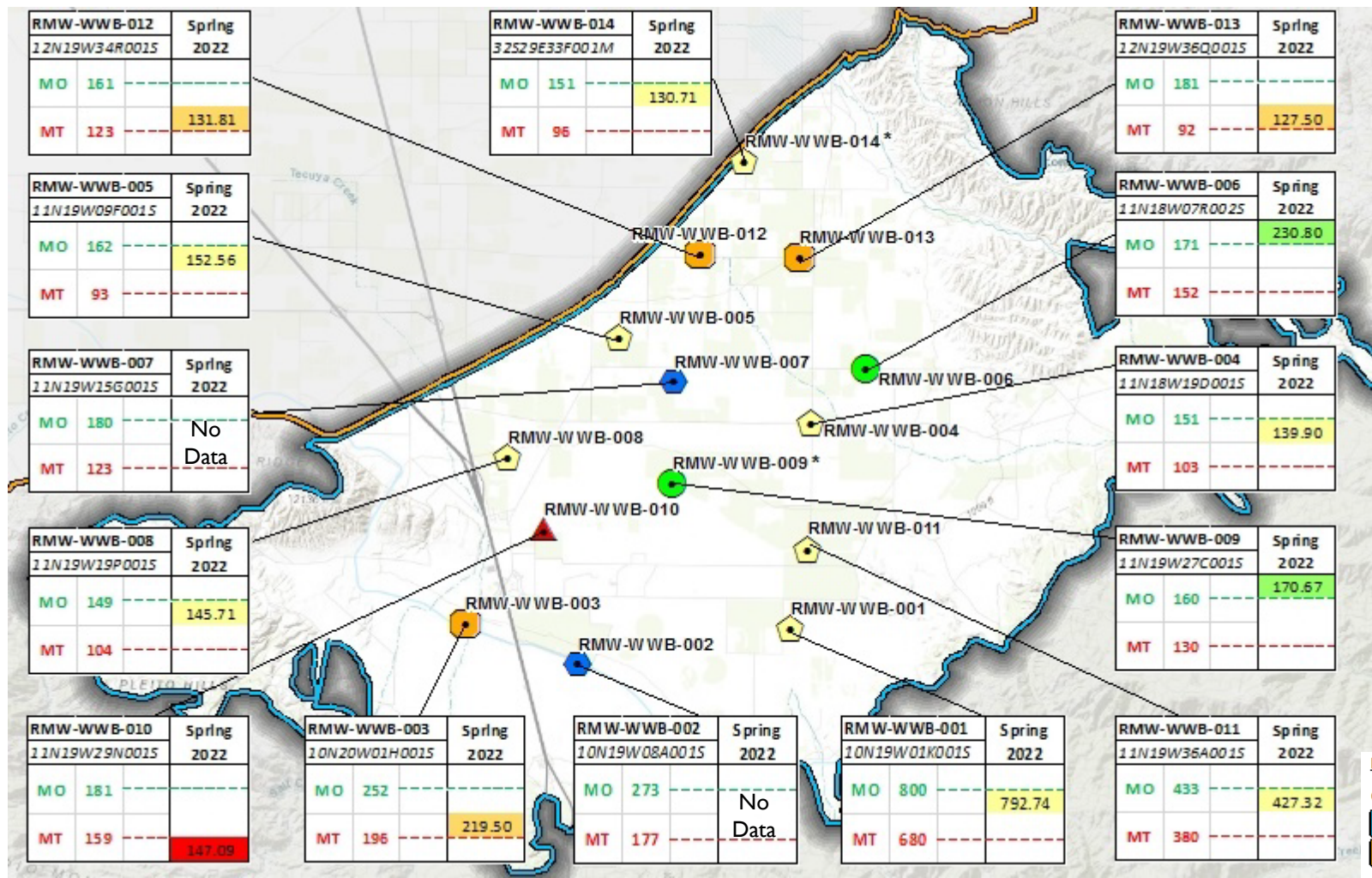
# DWR RELEASED LIMITED AEM DATA



- Limited inverted AEM resistivity data (electrical resistivity values versus depth) released on 8 August
- AEM data interpretations, supporting data (digitized lithology and geophysical logs), and Data Reports are expected by the end of 2022



# SPRING 2022 WATER LEVEL COMPARISON TO SMCs



- RMW-WWB-010: Spring 2022 measurement exceeds MT
- RMW-WWB-012: interim measurement collected in June 2022 exceeds MT

**Legend**

**Groundwater Subbasin**

- White Wolf (DWR 5-022.18)
- Kern County (DWR 5-022.14)

**Water Level Status**

- Water Level Above MO (2 or 43%)
- Water Level Between MO and MT but closer to MO (6 or 43%)
- Water Level Between MO and MT but closer to MT (3 or 22%)
- Water Level below MT (1 or 7%)
- No Water Level Measurement (2 or 14%)

# CRITERIA TO DEFINE UNDESIRABLE RESULTS (URs)

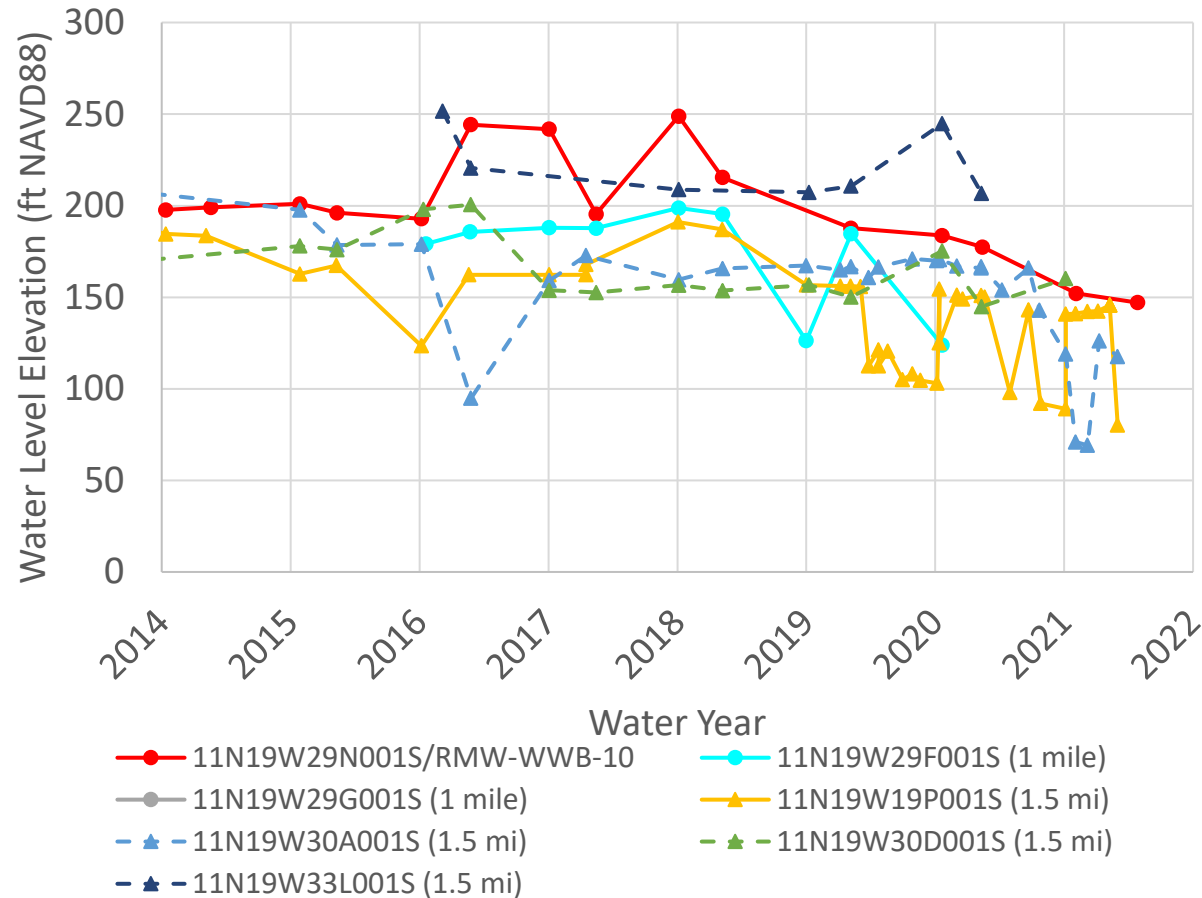
- URs for Chronic Lowering of Groundwater Levels would be experienced in the Basin if and when groundwater levels in the Principal Aquifer decline below the established MTs in 40% or more of the Representative Monitoring Wells for water levels (RMW-WLs) [6 RMW-WLs] over four consecutive seasonal measurements (i.e., measurements spanning a total of two years, including two seasonal high groundwater level periods and two seasonal low groundwater level periods)

# ACTION PLAN RELATED TO MT EXCEEDANCES

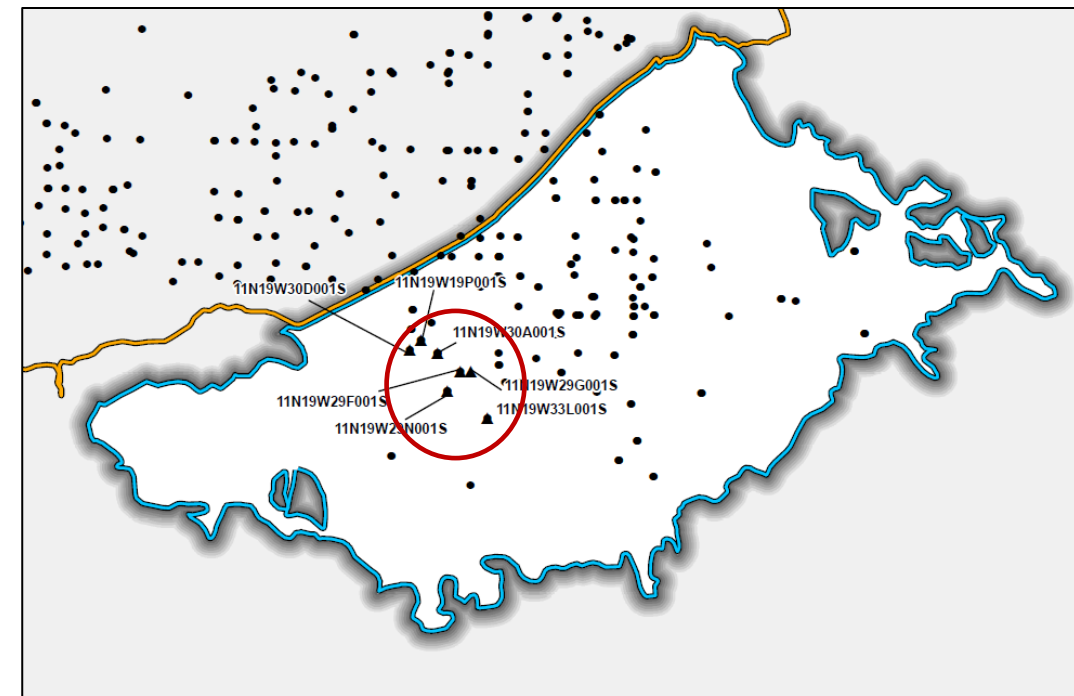
1. Identify Exceedance and Investigate the RMS Area:
  - Are water levels declining in nearby wells? If so, how large of an area is affected?
  - Has a new well been installed nearby or localized groundwater extraction increased?
  - Is the problem related to area-wide drought conditions?
  - Has local demand increased?
2. Evaluate Outside Contributing Factors:
  - Determine cause of declining water level (e.g., natural, operations with GSA member district service area, operations in adjacent Kern County Subbasin)
3. Consider the Need for Increased or Expanded Monitoring:
  - Determine any necessary monitoring revisions, including increased monitoring, expanding monitoring area, adding/reassigning Representative Monitoring Wells, and/or other actions
4. Consider Initiating P/MAs
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6. Consider Enforcement Action



# NEARBY WATER LEVEL DECLINES



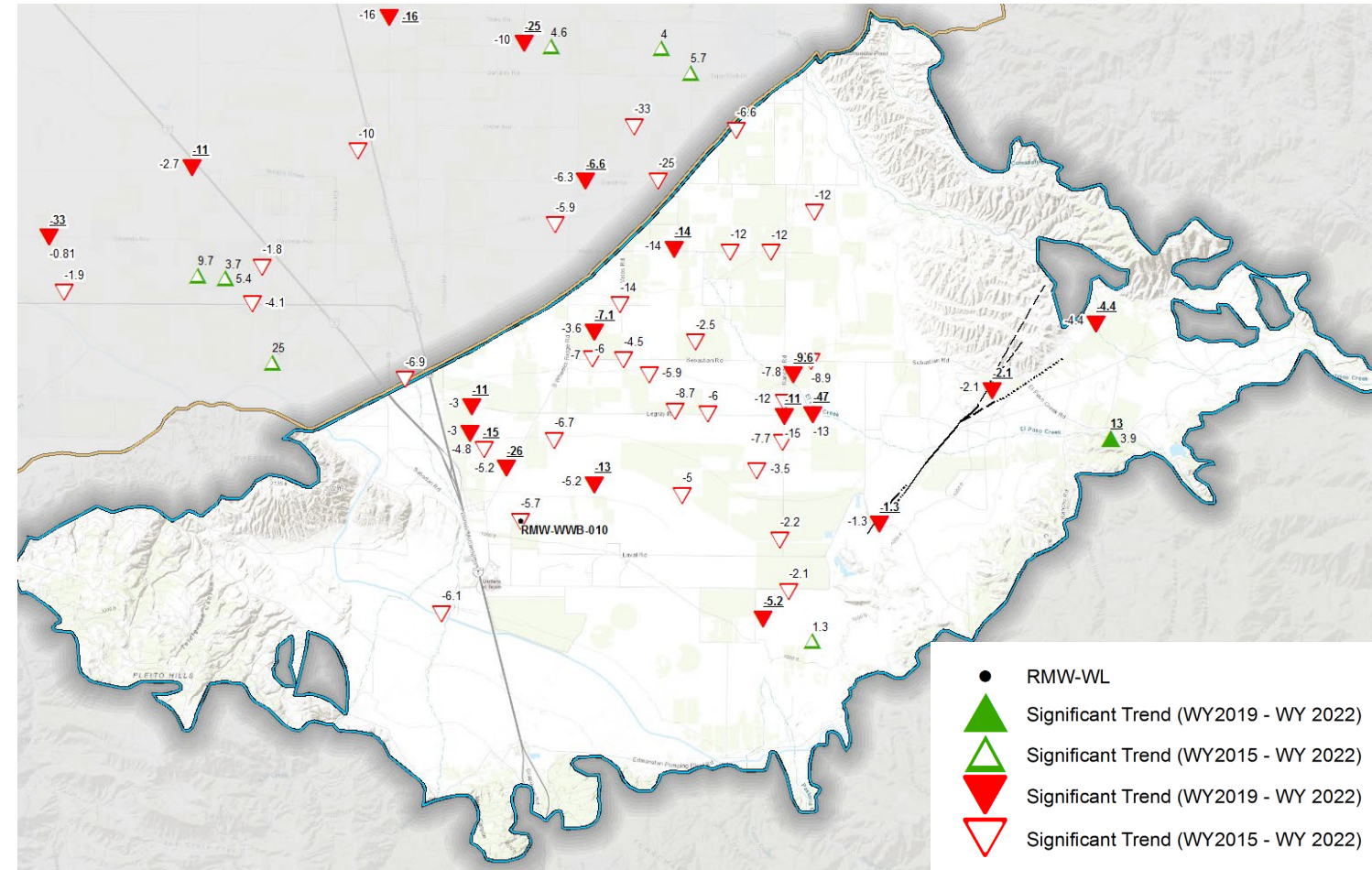
- Examined water levels from wells within a 1.5-mile radius of RMW-WWB-10
- Most wells show declining water levels





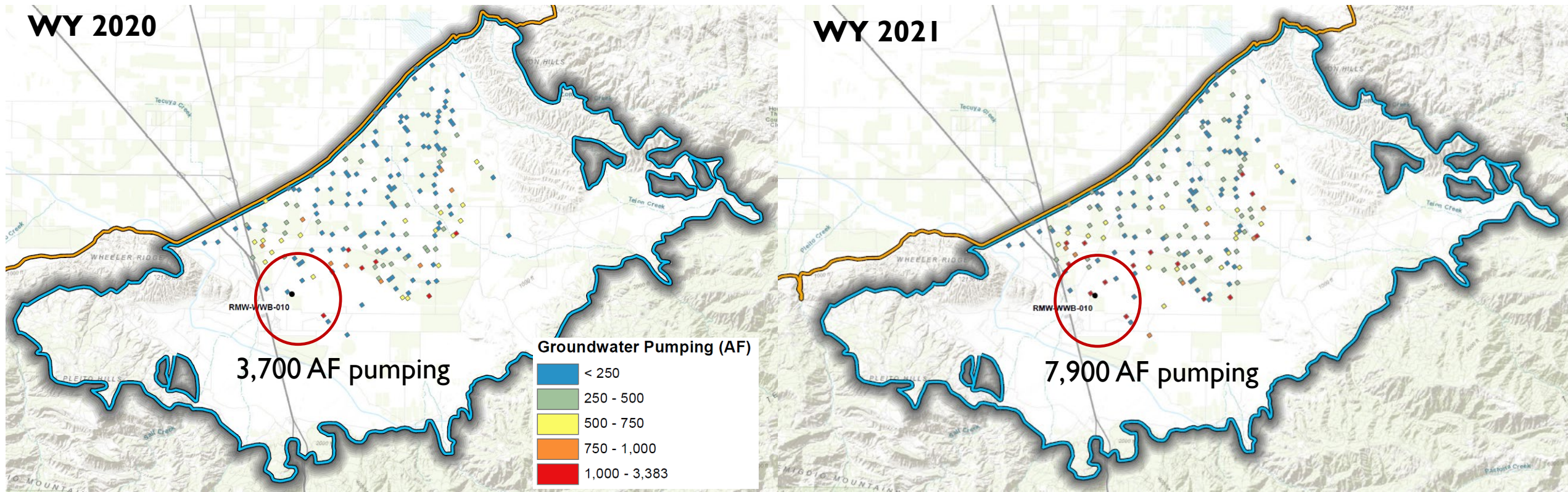
# WHITE WOLF SUBBASIN (WWB)-WIDE WATER LEVEL DECLINES

- Mapped wells with more than 4 water level measurements that have significant trends between WY 2015-2022 and WY 2019-2022
- Almost all WWB wells show downward trends ranging from 2 to 47 ft/yr





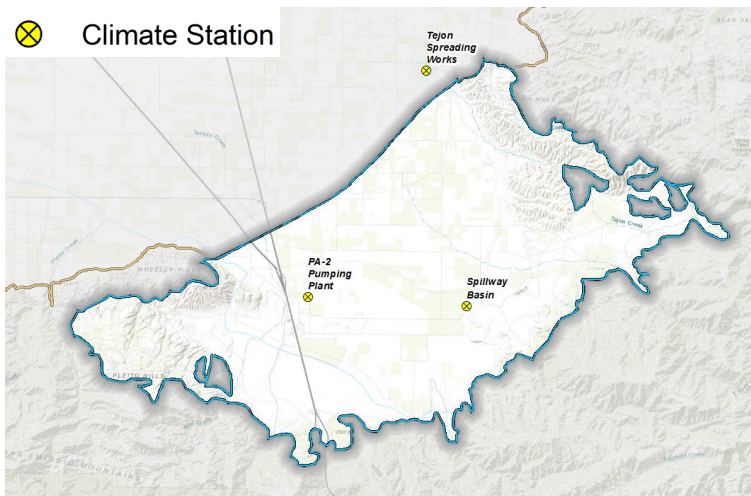
# NEARBY ESTIMATED GROUNDWATER PUMPING



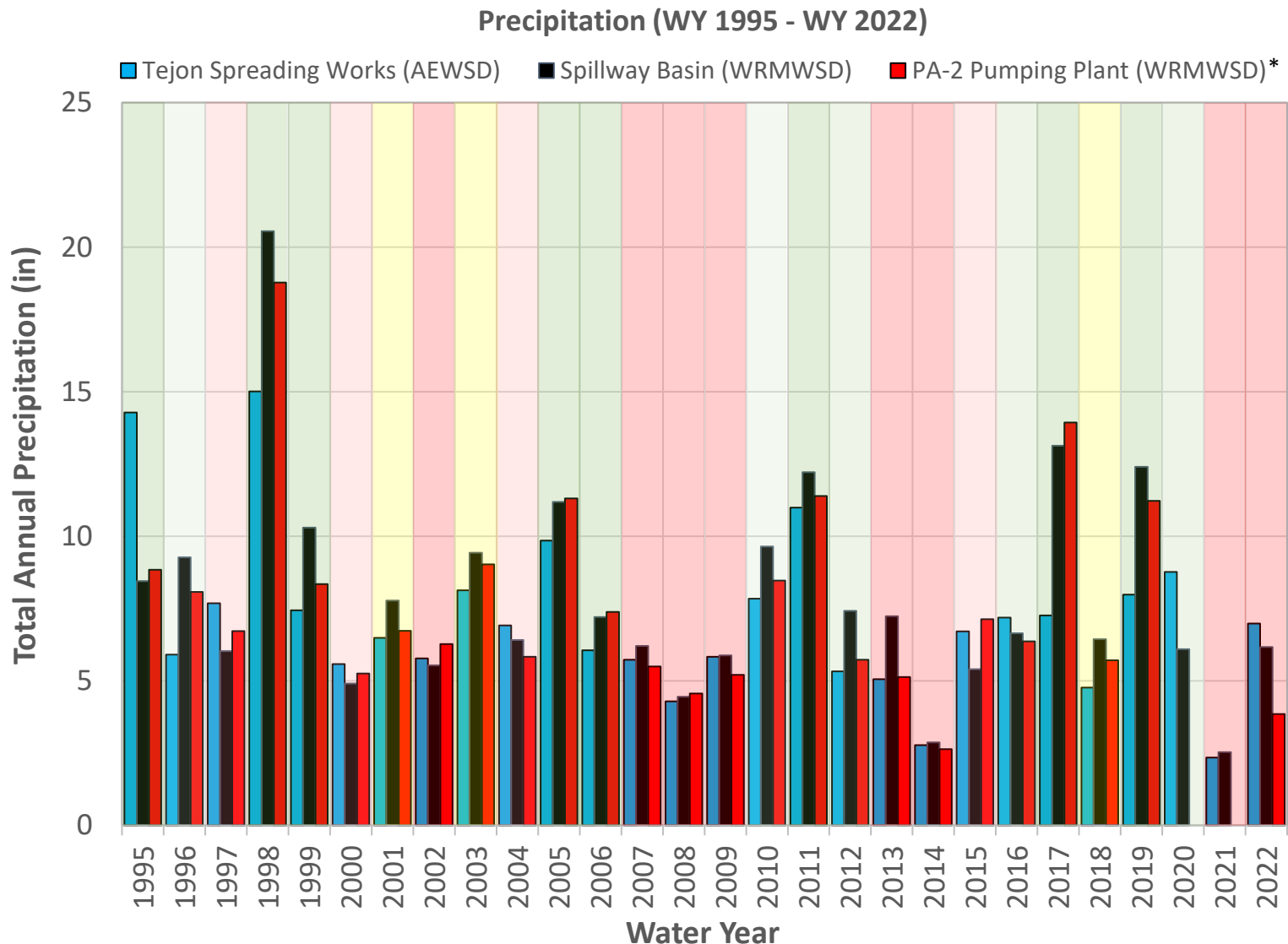
- Estimated WY 2021 pumping increased by 4,200 AF compared to WY 2020 in vicinity of RMW-WWB-010

WY	SWP Allocation	CVP Allocation
2020	20%	65%
2021	5%	40%

# AREA-WIDE DROUGHT CONDITIONS

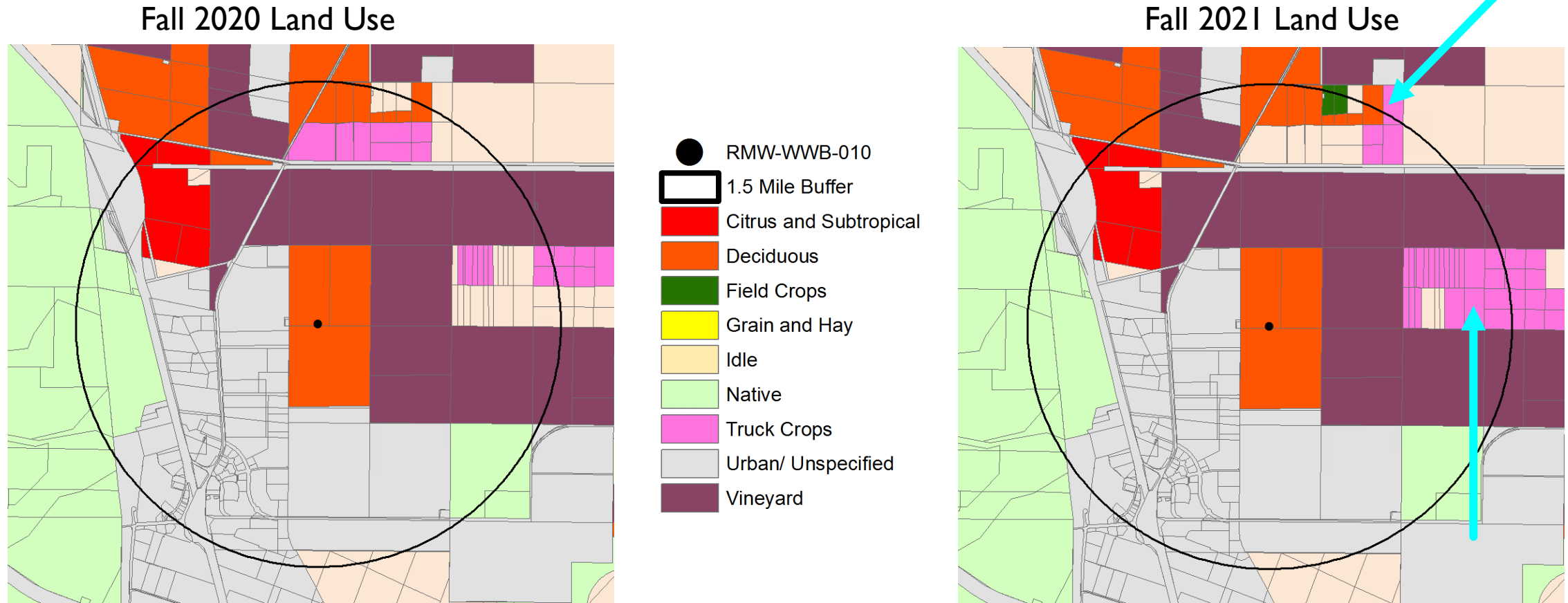


- Water Year 2021 was the start of another drought, with back-to-back critically dry years



\*PA-2 precipitation data missing November 2019 through March 2021

# LOCAL DEMAND – LAND USE IN VICINITY



- Localized increase in truck crops between Fall 2020 and Fall 2021



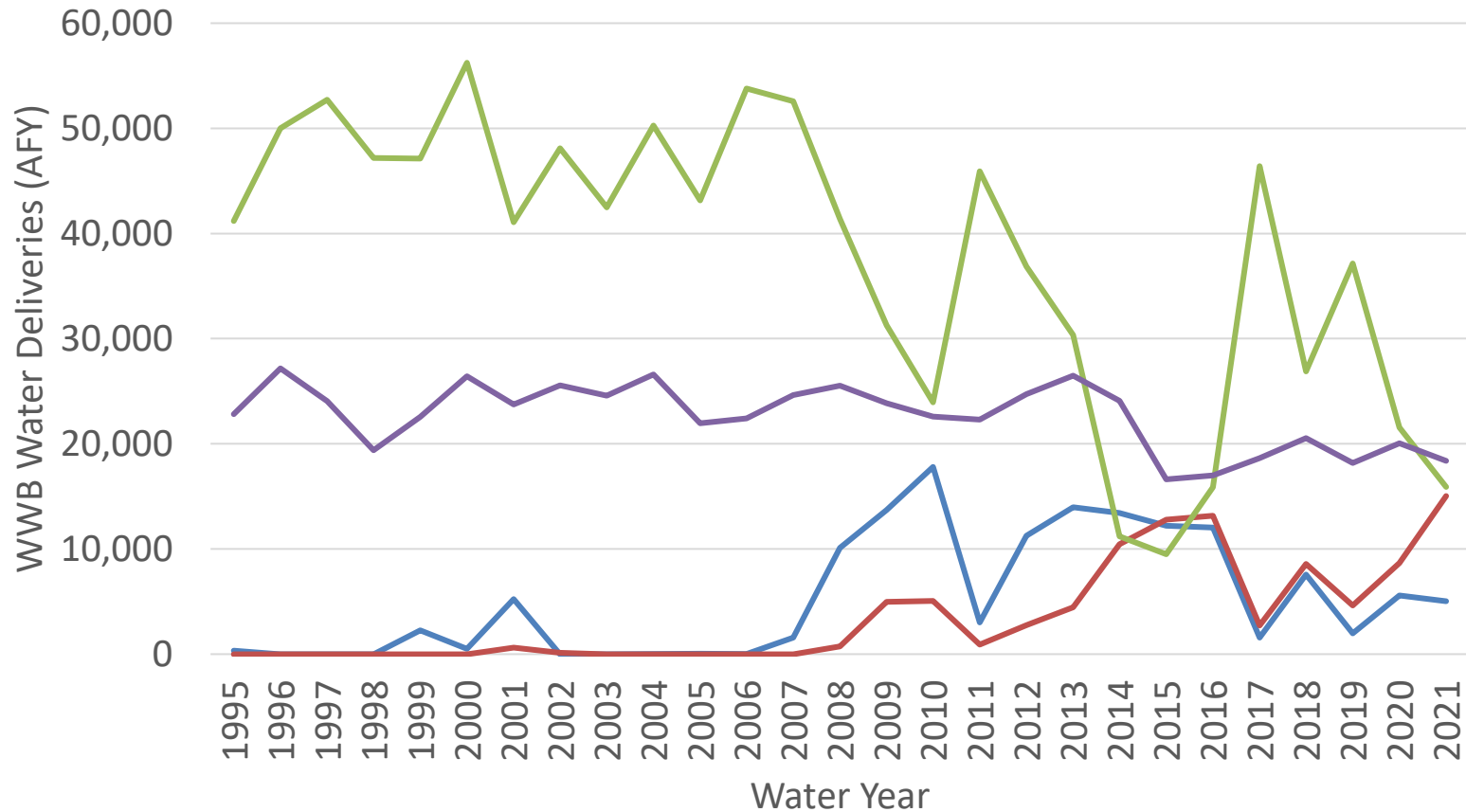
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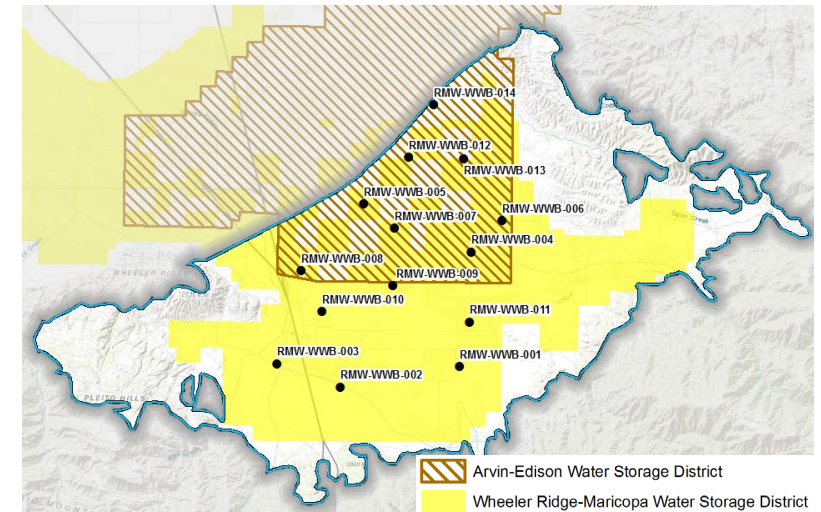
# WWB DISTRICT OPERATIONS



— WRMWSD Wells      — Private Pump-In  
— WRMWSD Surface Water      — AEWSD Surface Water

Note: WRMWSD surface water deliveries calculated as total deliveries minus pumping from WRMWSD wells and private pump-in program wells

- Decline in WRMWSD WWB surface water deliveries
- WY 2021 Private Pump-In to WRMWSD nearly doubled compared to WY 2020



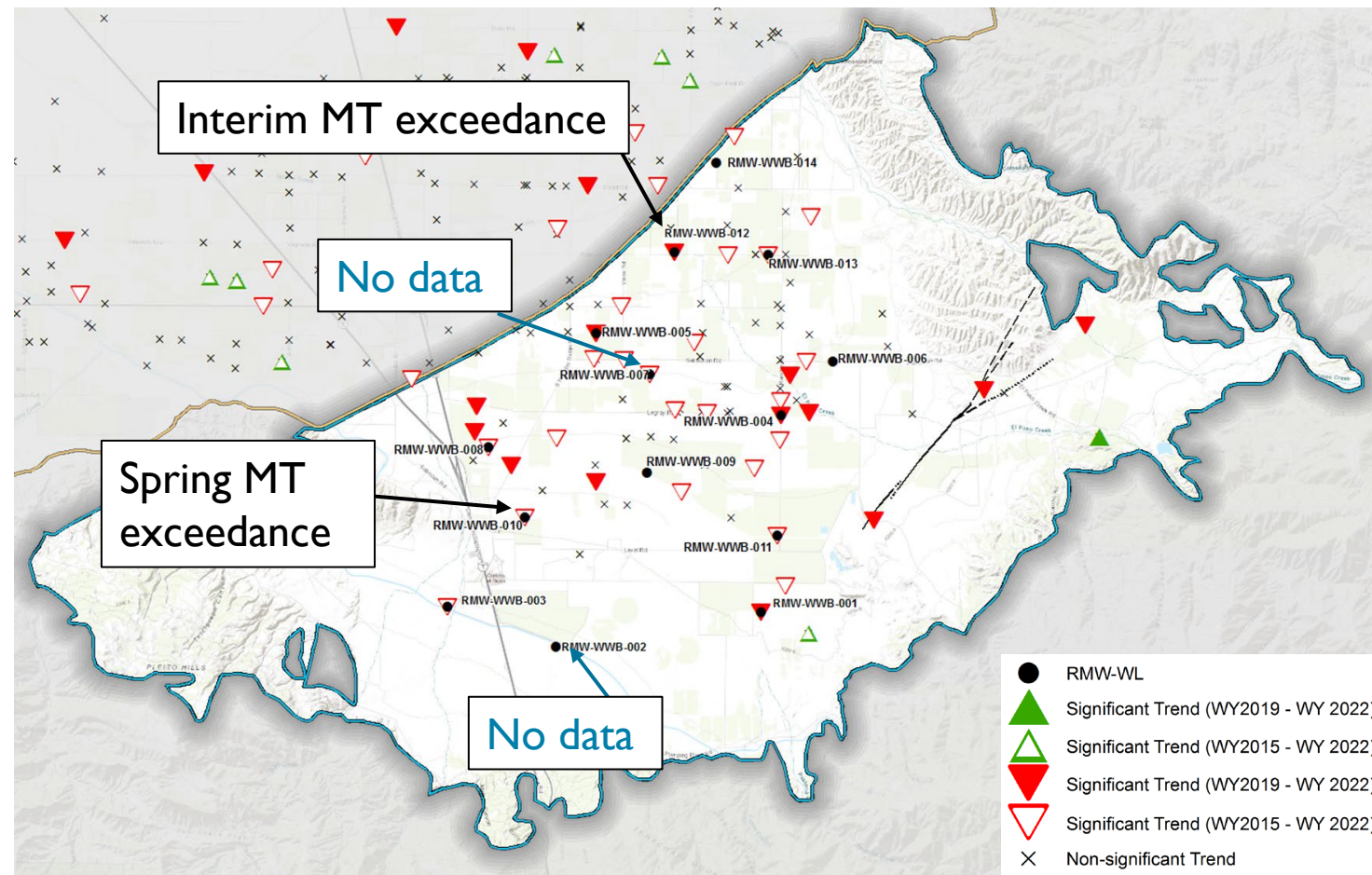
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# WATER LEVEL REPRESENTATIVE MONITORING NETWORK

- Proactively increase water level monitoring in RMW-WL network from semi-annual to monthly
- Addressing access issues for RMW-WWVB-002 and locating a potential replacement well for RMW-WWVB-007



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## 8b. EXECUTIVE ORDER N-7-22 ACTION 9A: WELL PERMIT CONSISTENCY DETERMINATIONS



# WELL CONSISTENCY DETERMINATIONS

- The WWGSA has been tasked by Kern County to certify two criteria for new well permits in response to Executive Order N-7-22 Action 9a:
  - 1) The proposed well is not inconsistent with the GSA’s adopted, or in progress, GSP.
  - 2) The proposed well does not interfere with the GSA’s SGMA authorities, including the Agency’s addressing of undesirable results and the likelihood of achieving the sustainability goal.

Groundwater Sustainability Agency Verification Form

Owner Information	Well Information
Name:	A.P.N.:
Address:	Latitude:
City:	Longitude:
Zip:	Township
Phone:	Range
Email:	Section

Type of Well:  Irrigation  Industrial

Groundwater Sustainability Agency: \_\_\_\_\_

- The proposed well is not inconsistent with the Groundwater Sustainability Agency’s adopted, or in progress, Groundwater Sustainability Plan; and,
- The proposed well does not interfere with the Groundwater Sustainability Agency’s SGMA authorities, including the Agency’s addressing of undesirable results and the likelihood of achieving the sustainability goal.

I hereby certify that the GSA has reviewed the above conditions for the subject property for compliance with Executive Order N-7-22 and have marked each box for compliance as applicable.

_____	_____
Groundwater Sustainability Agency Signature	Date
_____	_____
Printed Name	Title

# WELL CONSISTENCY BACKGROUND

- The White Wolf GSA adopted the following Sustainability Goal for the Basin: *Cooperatively continue to maintain an economically-viable groundwater resource within the White Wolf Subbasin that supports the current and future beneficial uses and users of groundwater by utilizing the area’s groundwater resources within the local sustainable yield and avoiding undesirable results (URs)*
- The White Wolf GSP does not specify a limit to the number of production wells in the Basin, nor does it currently contain any specific restrictions on pumping.
- URs would be experienced in the Basin if and when groundwater levels in the Principal Aquifer decline below the established MTs in 40% or more of the RMW-WLs over four consecutive seasonal measurements



# PENDING WELL PERMIT APPLICATIONS

- Total of 4 well permit applications:
  - 1 backup well
  - 3 new wells with goal to **permanently replace surface water**

Current Water Source	Acres	Crop	Projected New Groundwater Use (AFY)
SW	200	Almonds	600
SW	618	Almonds	1,545
25% SW, 75% GW	625	Grapes	1,562
SW (existing well inoperable)	663	Grapes	1,658

**Total: 5,365**

# WELL CONSISTENCY ANALYSIS

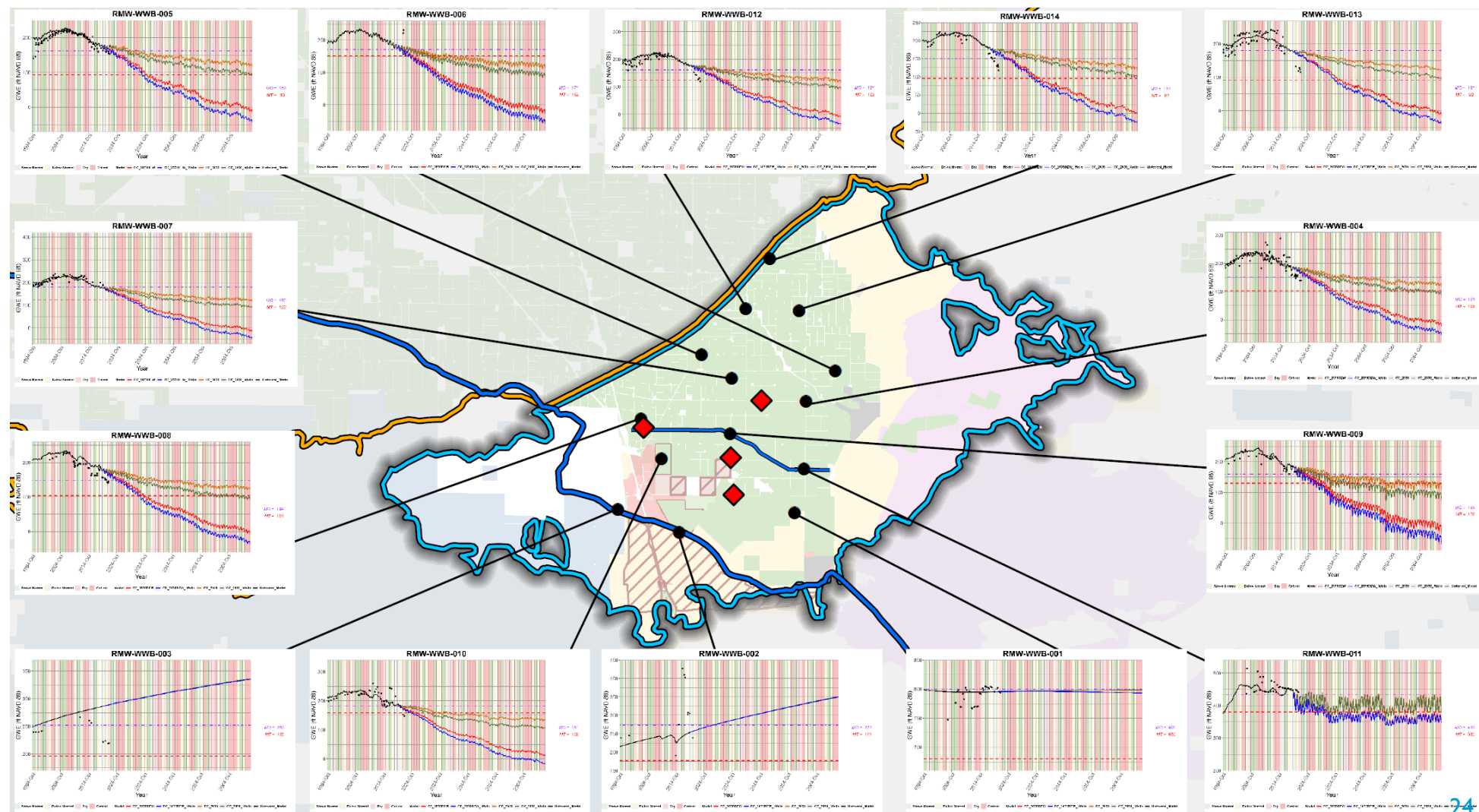
***“The proposed well does not interfere with the GSA’s SGMA authorities, including the Agency’s addressing of undesirable results and the likelihood of achieving the sustainability goal”.***

- Added all 4 proposed wells to the White Wolf Groundwater Flow Model Projected 2030 and 2070 Dry with Extreme Warming (“DEW”) Climate Change Scenarios assuming maximum pumping every year
- Examined the cumulative effects of the proposed wells on the projected water budget and groundwater levels at the RMW-WL locations and compared to established MTs



# PROJECTED IMPACTS WITH NEW WELLS

- Average annual pumping exceeds the WWB sustainable yield
- Storage deficit (overdraft) increases by at least 3,500 AFY
- Drawdown of up to 37 ft at RMWs
- Increase in projected MT exceedances
- UR projected to occur within 10 years



# WELL ANALYSIS CONCLUSIONS

- Conditions in the WWB have changed rapidly in recent years
- Water levels in some areas are approaching levels not seen since pre-surface water deliveries
- The well permit analysis indicates that new wells and the projected increases in groundwater production will accelerate recently-observed impacts
- These proposed wells will create additional water level declines, increase the number of MT exceedances, and add to the current deficit (overdraft)
- These and other new wells that increase pumping will make it increasingly difficult for the GSA to avoid URs
- Any new/increased groundwater demand will require the implementation of additional or accelerated Projects and/or Management Actions (P/MAs) to offset impacts
- **This analysis does not address water rights issues**

# FUTURE WELL CONSISTENCY DETERMINATIONS

- Should applicants pay the WWGSA for the well consistency determination?
  - Estimate each additional well review and TM will cost approximately \$2,000 based on EKI 2022 schedule of charges
  - Multiple entities have set up cost recovery structures to support well consistency determination
- Does the WWGSA want to consider policies that would both allow for new wells and/or limit groundwater extractions to within the sustainable yield?

# 8c. SGMA IMPLEMENTATION ROUND 2 GRANT SOLICITATION UPDATE

# SGMA IMPLEMENTATION ROUND 2 GRANT APPLICATION CONSIDERATIONS

- Grant solicitation expected to open in October, pending budget bill release (expected within the next week)
- DWR is looking for clear linkages between individual Projects included within the grant application:
  - Each Project will be scored individually, and then averaged together for the overall application score
  - If one Project is weak, it jeopardizes the entire solicitation from being awarded
  - Projects included in the application must be well justified, including why Project(s) were chosen over all others identified in the GSP
- Application can request between \$1 to \$20 million
  - Local cost share is not required, but 5% cost share of total project cost will score higher



# "MOST SUITABLE" LANDS FOR RECHARGE

- Based on soil properties and geology most areas of the WWB are suitable for recharge
- Land use and depth to groundwater considerations narrow the “most suitable” lands for recharge
  - As water levels decline, surface recharge mechanisms become less effective

