

# GROUNDWATER PLANNING COMMISSION MEETING PIXLEY IRRIGATION DISTRICT

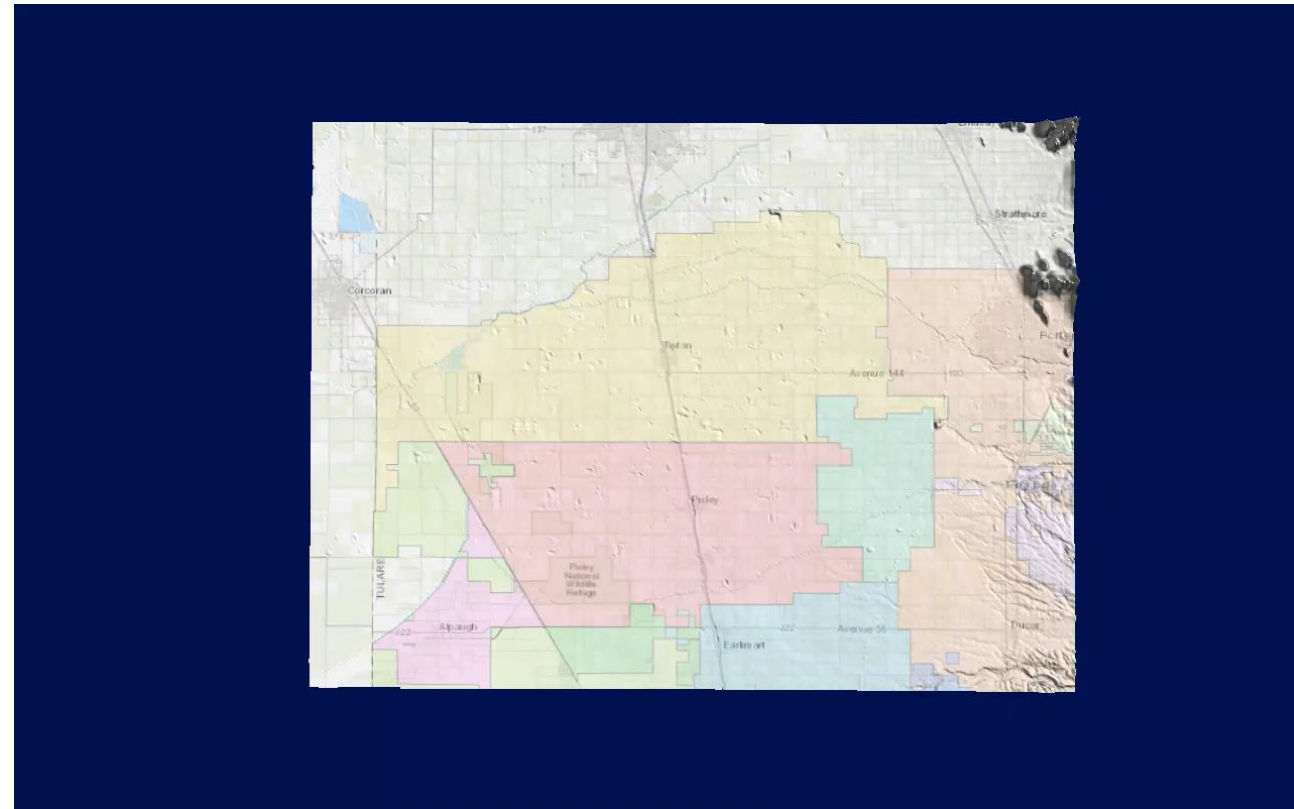
AUGUST 19<sup>TH</sup> 2025

# PRESENTATION OUTLINE

- Summary of EKI work to date
- Summary of current and projected subsidence
- Subsidence Management Plan (SMP) compliance update
- GSP/SGMA compliance update
- Discussion of Landowners' role in managing subsidence

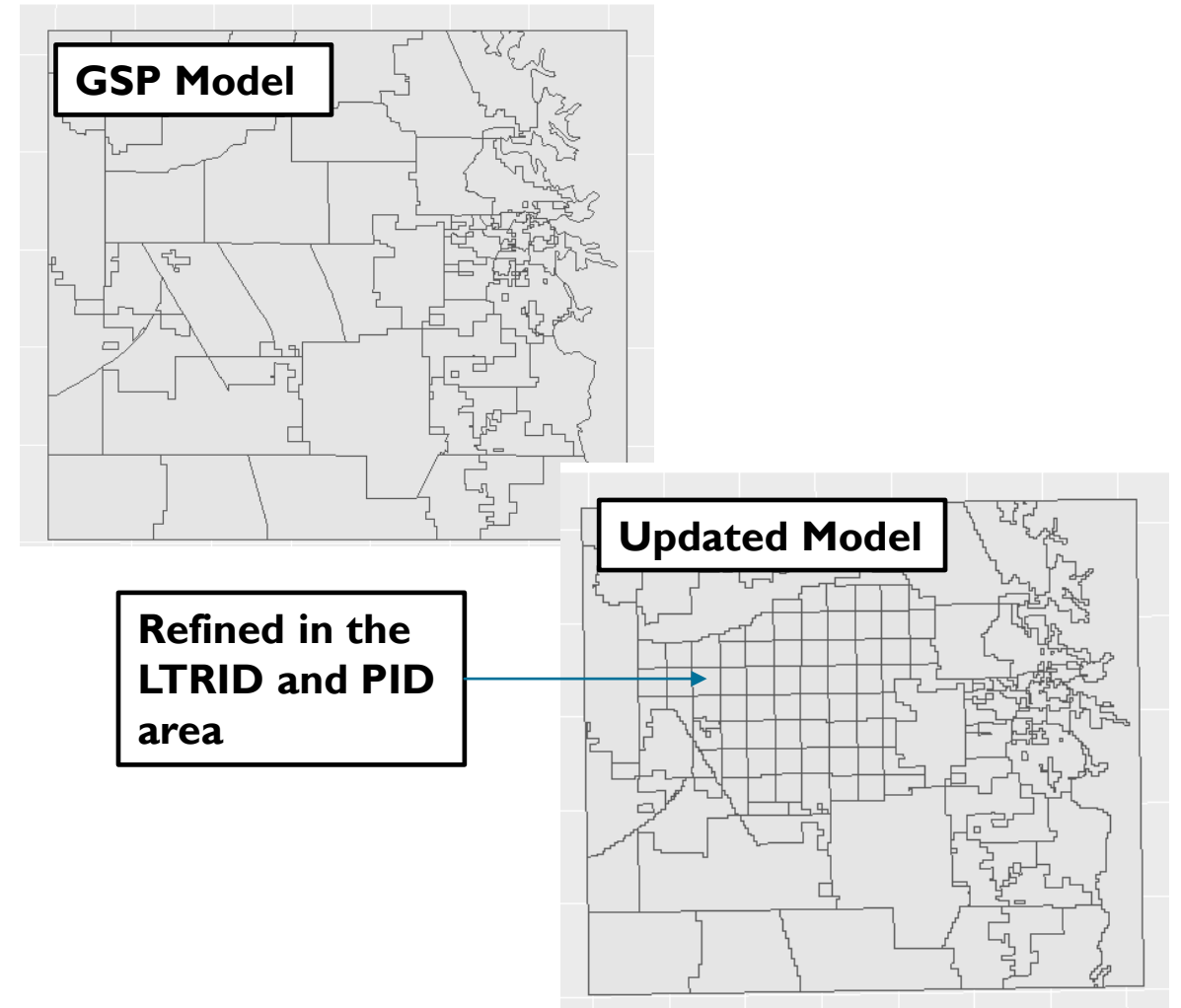
# 3D GEOLOGIC MODEL DEVELOPMENT

- Developed a 3D geological model to support SMP and P/MA implementation
- Includes:
  - 22 AEM surveys – geophysical mapping of subsurface
  - ~1,700 local well registrations
  - ~500 well completion reports
  - ~30 oil and gas e-logs
  - >17,000 texture points from the Central Valley Hydrologic Model (CVHM2)



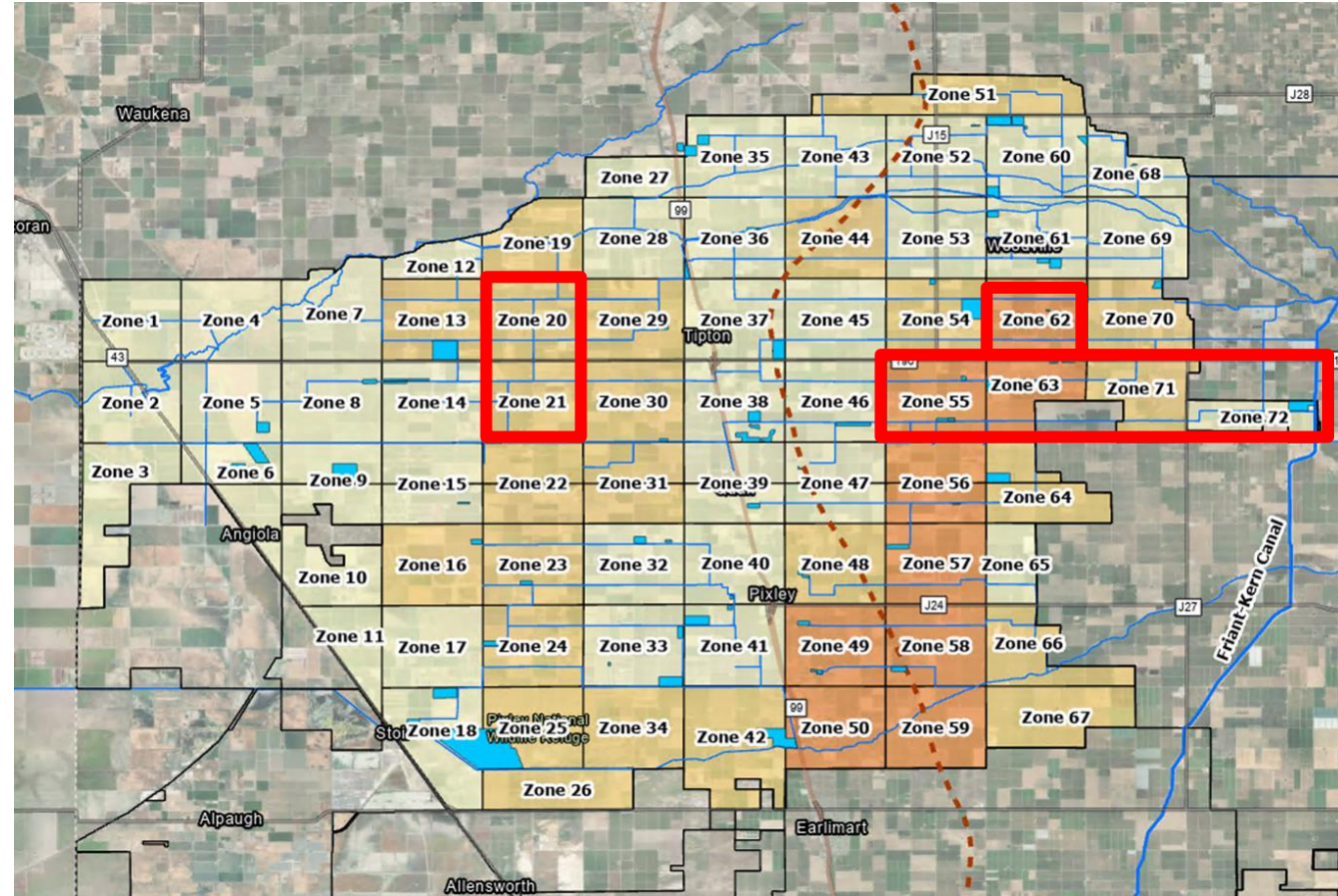
# FLOW MODEL REFINEMENT AND APPLICATION

- EKI modified the TH&Co. model to provide better model resolution in LTRID/PID
  - Projected period converted to monthly instead of annual to 2070 – greater temporal resolution
  - Refined model within LTRID/PID – greater spatial resolution
- Model now has better representation of subsidence and water levels
- Model can now be modified and analyzed on a SMMZ-level



# OTHER ACTIVITIES

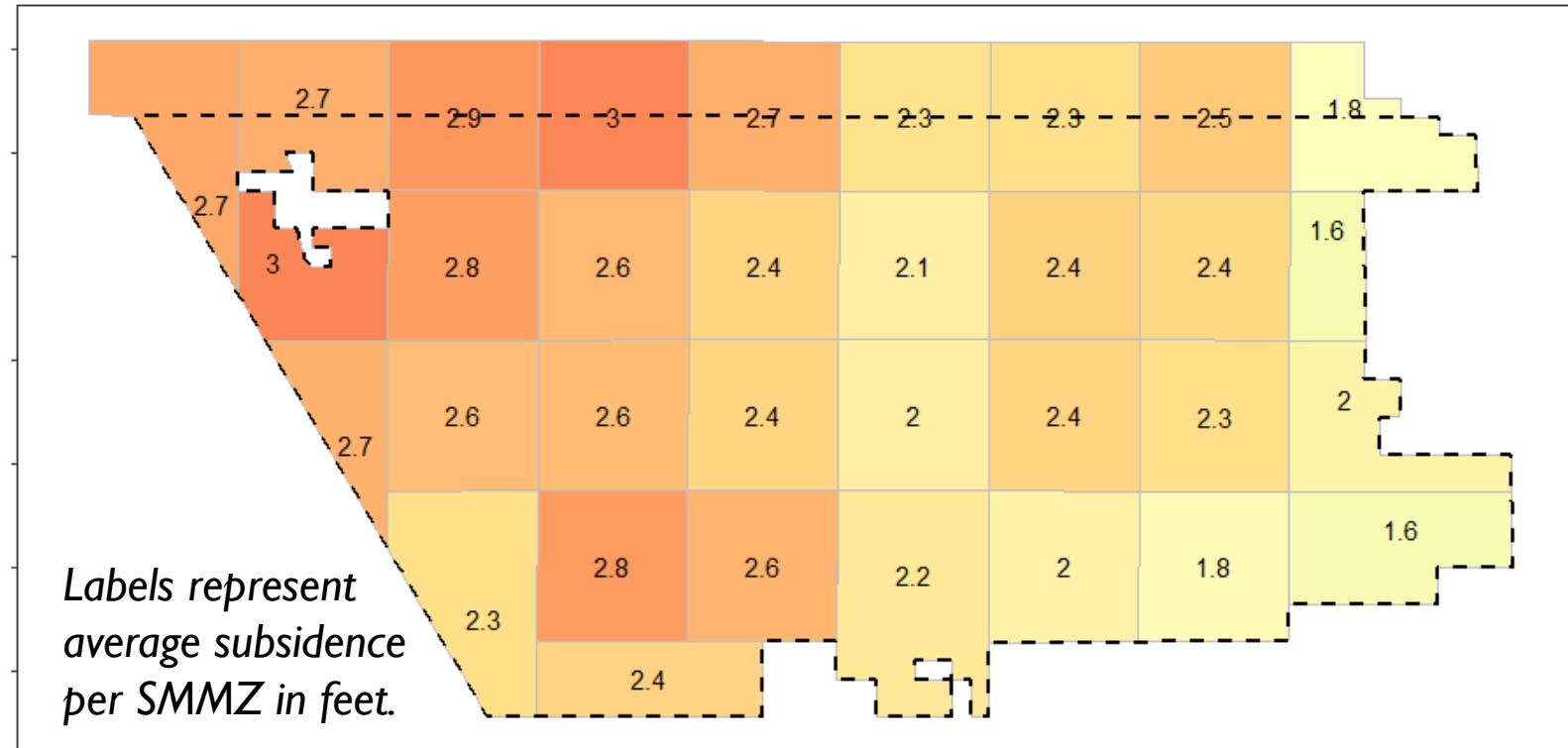
- Coordinating with Provost & Pritchard to begin Aquifer Storage and Recovery (ASR) study
- In early stages of developing a Dashboard to aid the Districts and Landowners in tracking ongoing subsidence conditions and SGMA/SMP compliance
- EKI has represented the Districts in relevant inter- and intra-basin coordination meetings



# SUBSIDENCE AS OF Q1 2025

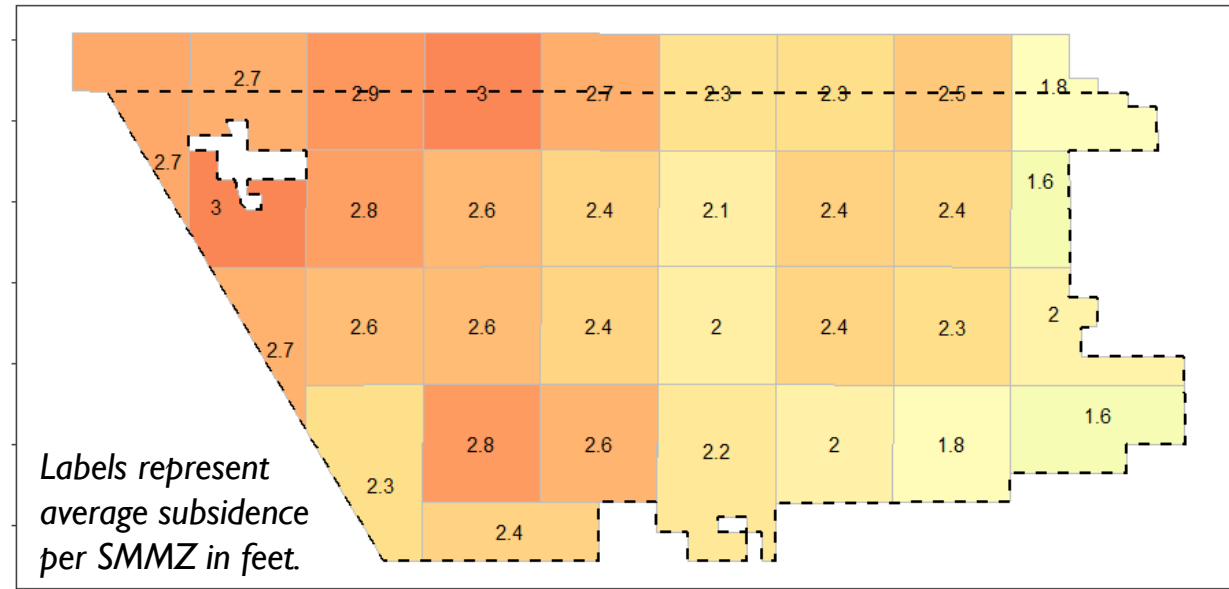
- Minimum thresholds (MTs) are set relative to January 2020 (“Baseline”)
- InSAR data, averaged per SMMZ, shows subsidence has continued in LTRID and PID
- Subsidence magnitude increases east to west

Average Subsidence per SMMZ  
January 2020 - January 2025

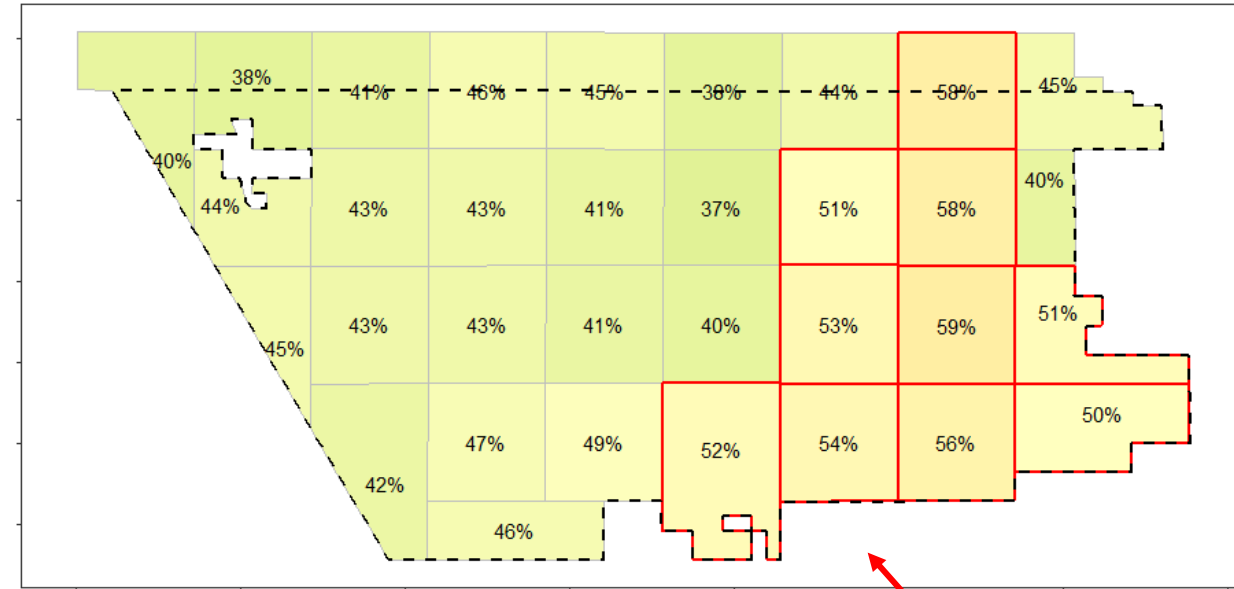


# SUBSIDENCE AS OF Q1 2025 RELATIVE TO MTs

Average Subsidence per SMMZ  
January 2020 - January 2025



Percent of MT Reached - January 2025 relative to January 2020  
2025 Average Subsidence - 01/2020 Subsidence



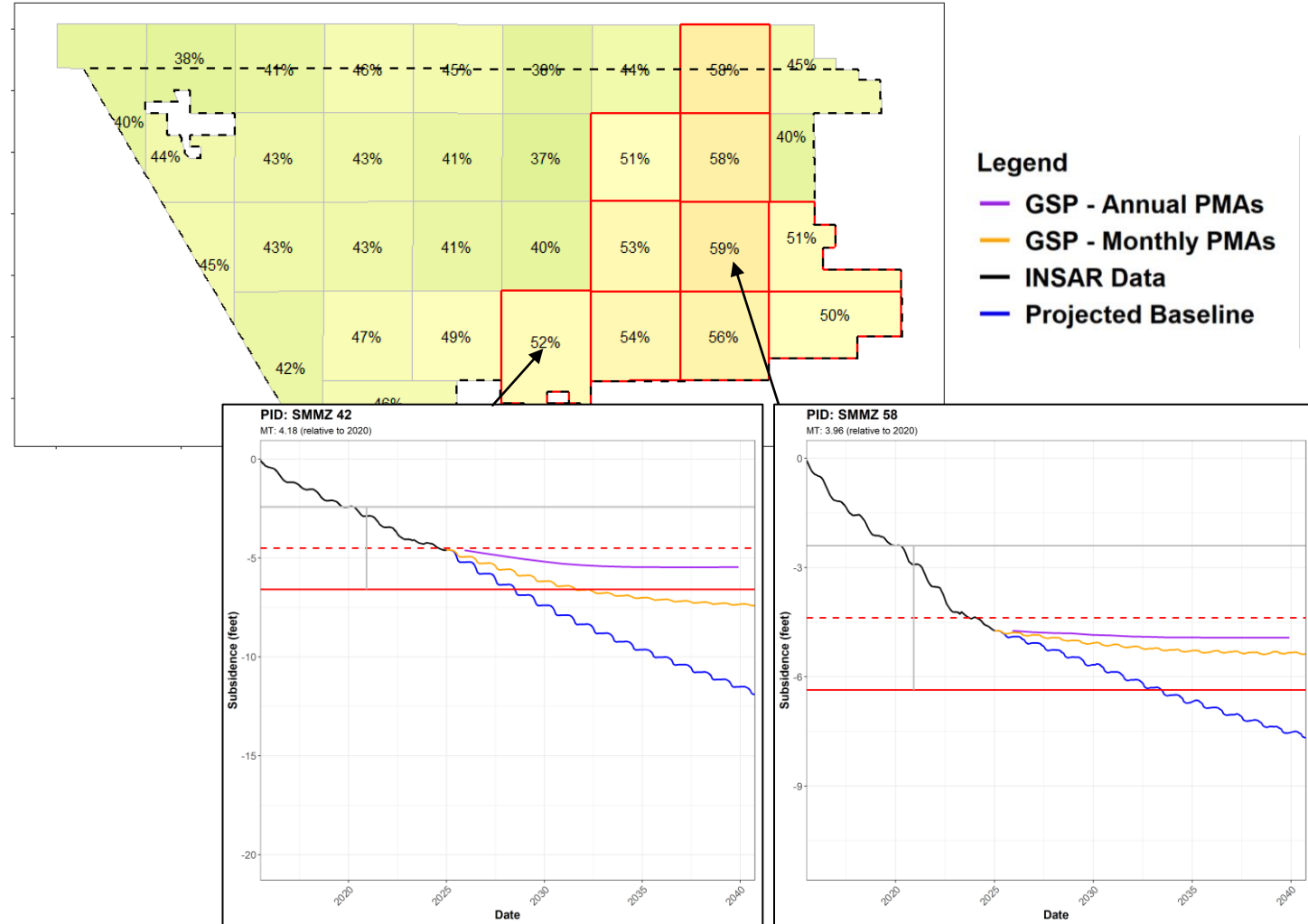
50% Threshold Reached

- **10 SMMZs** in PID have **reached the 50% Threshold**.
- Numerous SMMZs are near 50%.

# MODEL VS. OBSERVED SUBSIDENCE

- **Original GSP Model:** generally overly optimistic relative to the rate of observed subsidence
- **Refined GSP Model:** the Projected Baseline run, which projects business-as-usual after 2025 better represents current trends
- If patterns of groundwater pumping remain similar to recent years, subsidence minimum thresholds in most SMMZs may be reached before the mid-2030s

Percent of MT Reached - January 2025 relative to January 2020  
2025 Average Subsidence - 01/2020 Subsidence



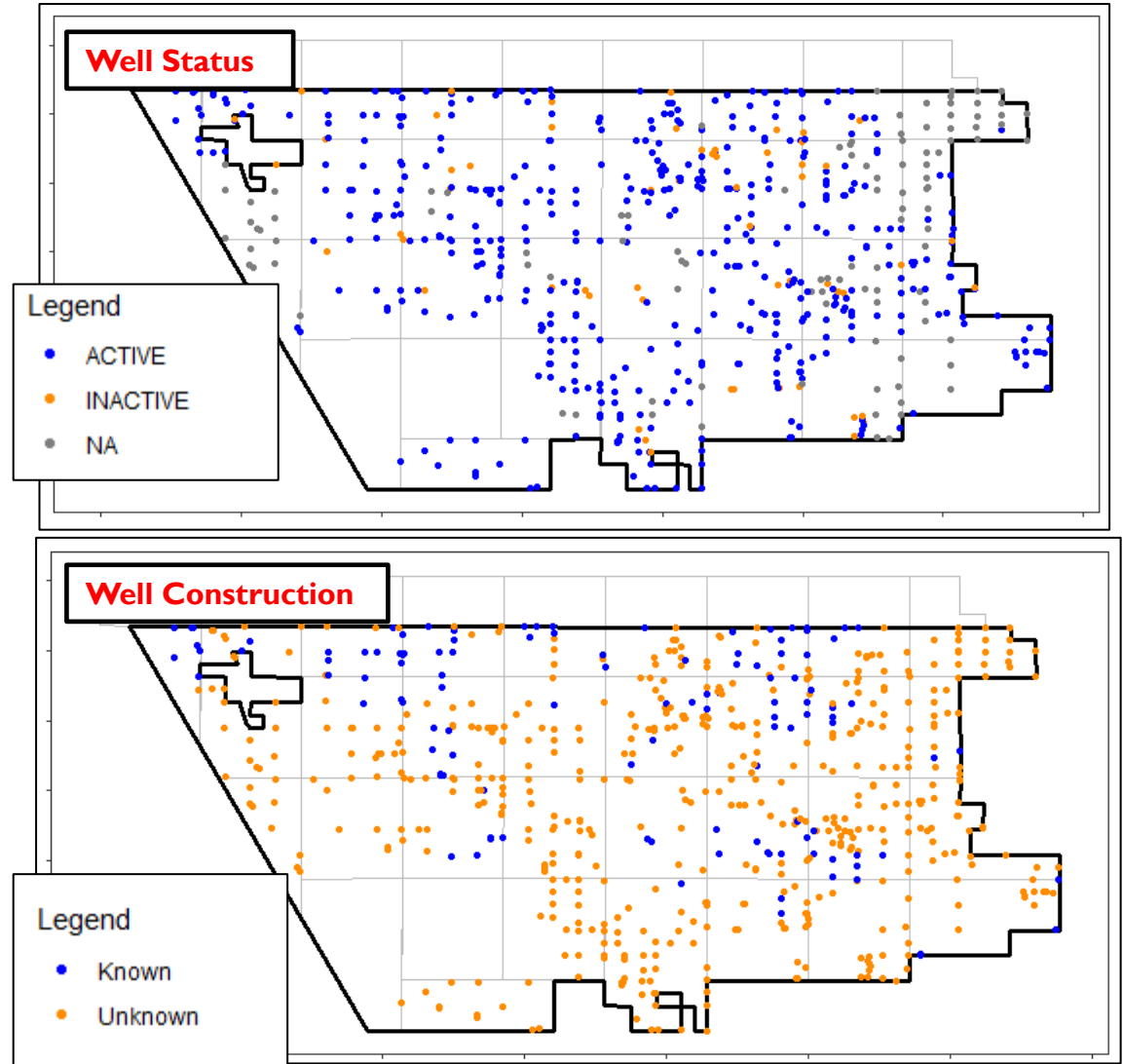
# REVIEW OF KEY SMP COMPONENTS

- LTRID/PID established the Subsidence Management Plan (SMP) in 2024 to “*establish enforceable management actions to address subsidence and avoid violating the MTs*”
- As part of the SMP, the Districts take the following actions:
  - Establish subsidence monitoring and management zones and high-risk zones
  - Implement Early Action Plans for high-risk zones that include:
    - Well registration and metering
    - Specific district actions such as ASR and focusing surface water deliveries
  - Districts may issue Corrective Subsidence Management Orders (CSMOs) that include pumping reductions corresponding to different subsidence thresholds

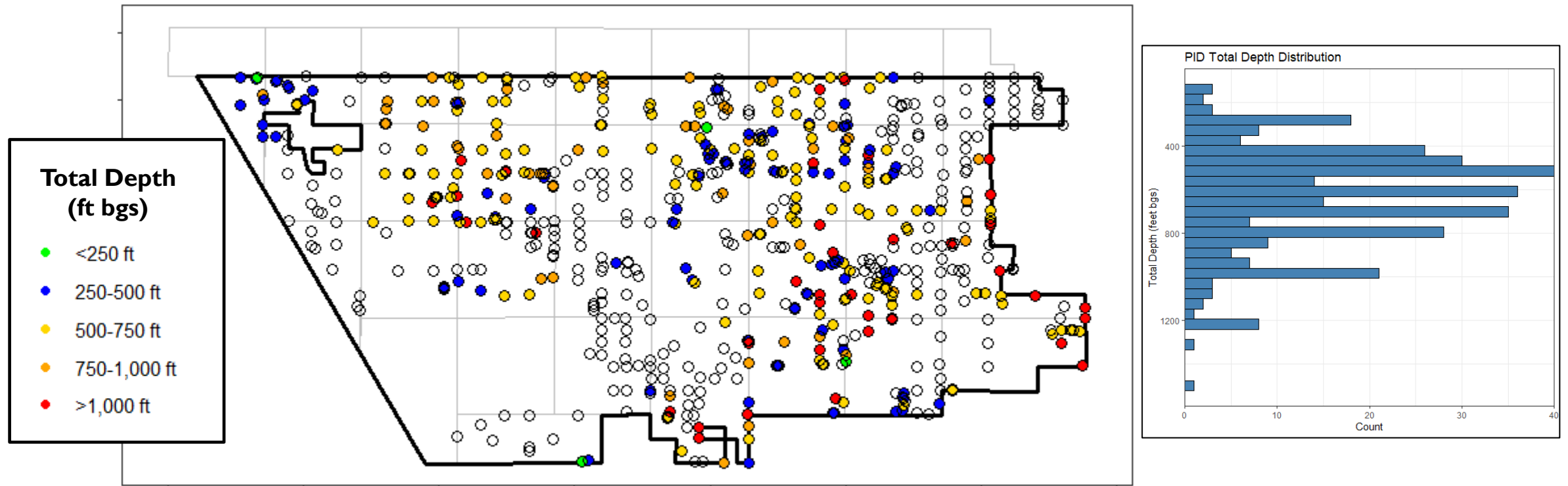
# WELL REGISTRATION STATUS – AUGUST 2025

- In early 2025, LTRID and PID adopted a High-Risk Zone Early Action Plan to address subsidence concerns
- Required well registration throughout the GSAs
  - 630 wells registered so far (~52% compliance)
  - ~25% of wells have construction details

GSA	Total # Wells	Total Active Wells*	Known Perforation	# Unknown
PID	630	464	119	511

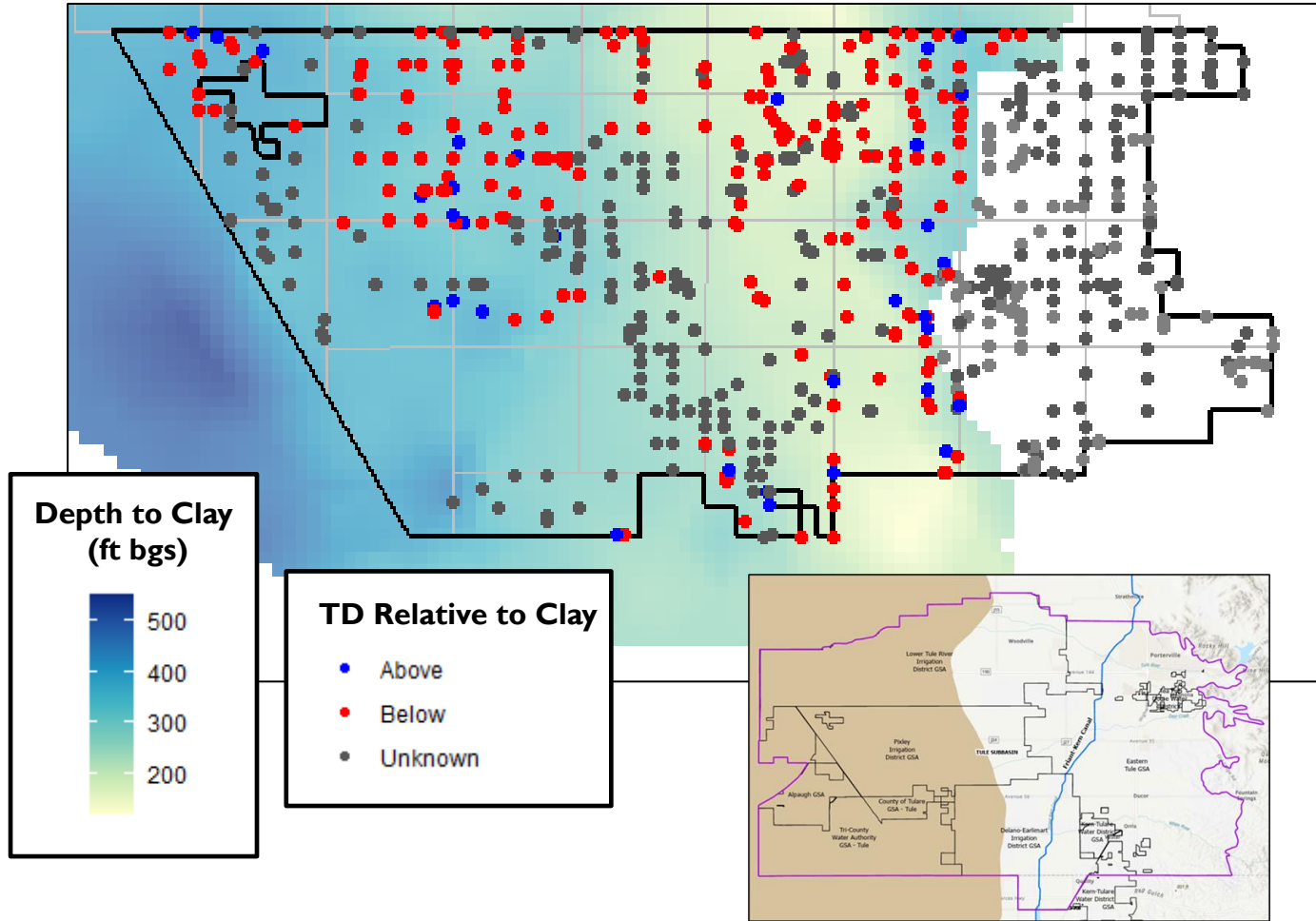


# DISTRIBUTION OF WELL TOTAL DEPTHS



- The majority of wells with known completion depths appear to be completed at depths likely beneath significant clay layers.
- Based on the distribution of well depths, wells without completion data are assumed to be in the Lower Aquifer.

# WELL TOTAL DEPTH RELATIVE TO CLAY LAYERS

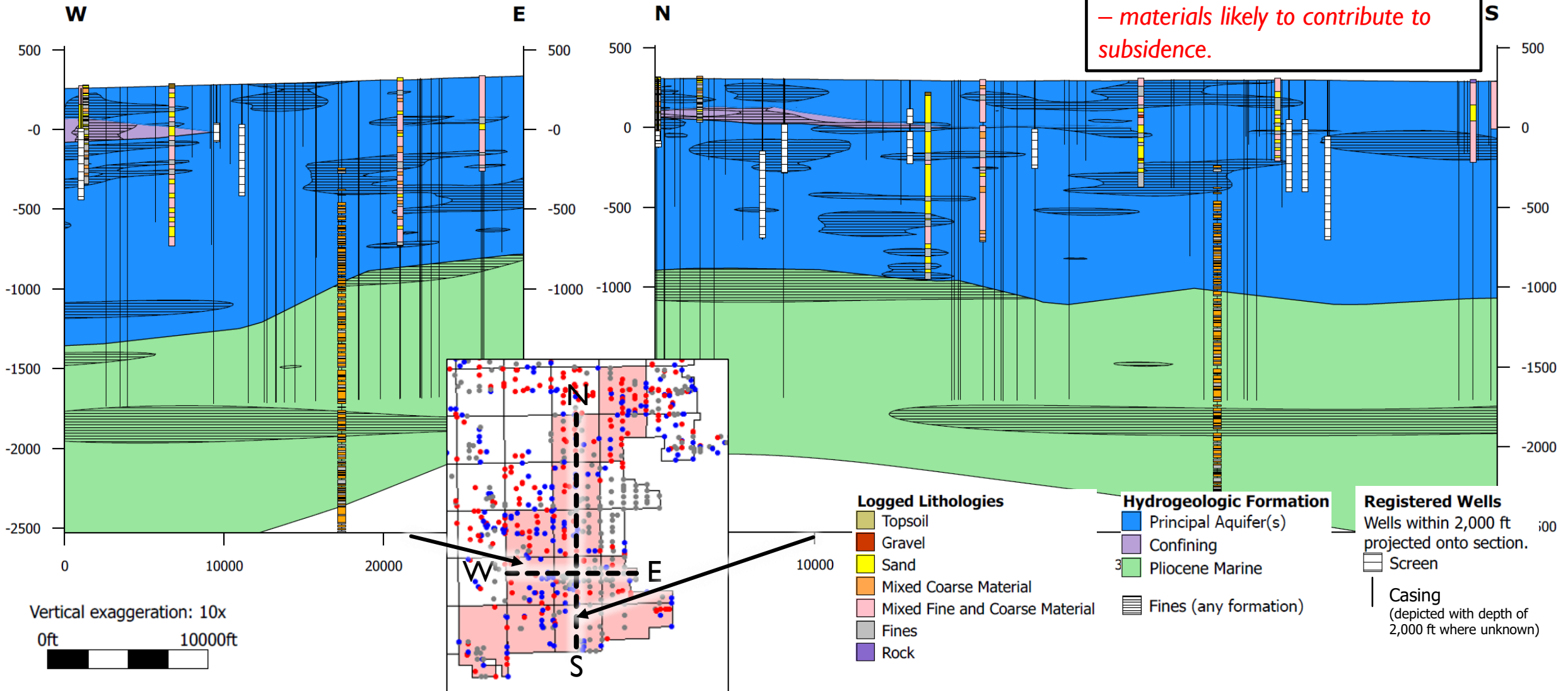


- Compared total depth in well registration data to the bottom of the Upper Aquifer as estimated by 3D Geological Model
- In PID, there are 5-6x as many Lower Aquifer wells compared to Upper Aquifer wells
- **“Combined Aquifer”** to the east of Corcoran clay - clay lenses begin showing up around 200 – 300 ft
  - Currently, Upper vs. Lower designations are not made outside the extent of the Corcoran Clay
  - GSA may set threshold values below which a well is considered “Lower Aquifer” based on SMMZ-specific data regarding presence of clays

GSA	Upper Aquifer	Deep Aquifer	Unknown
PID	35	215	298

# WELLS & CROSS SECTIONS IN SMMZS

**Note:** “Fines” include silts and clays – materials likely to contribute to subsidence.

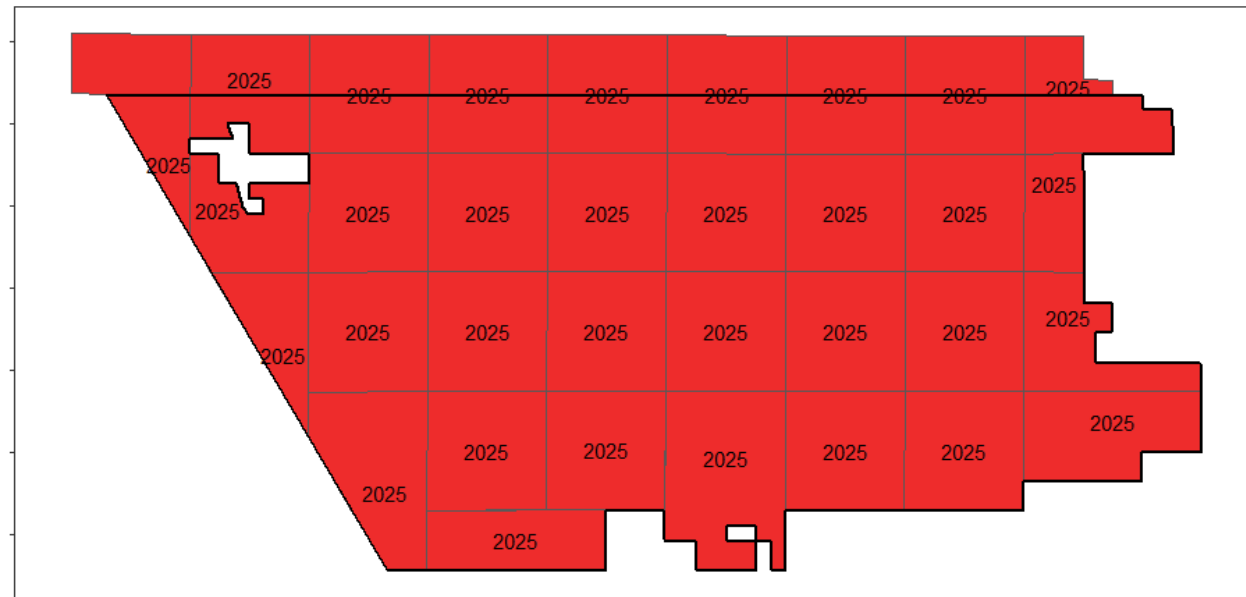


# REQUEST TO LANDOWNERS

- Please submit as much local well and geological information as possible
- Accurate and complete well registration and metering is **critical** to successful SMP implementation
- In the absence of data to demonstrate otherwise, wells are assumed to be completed in the Lower Aquifer and therefore contribute to subsidence

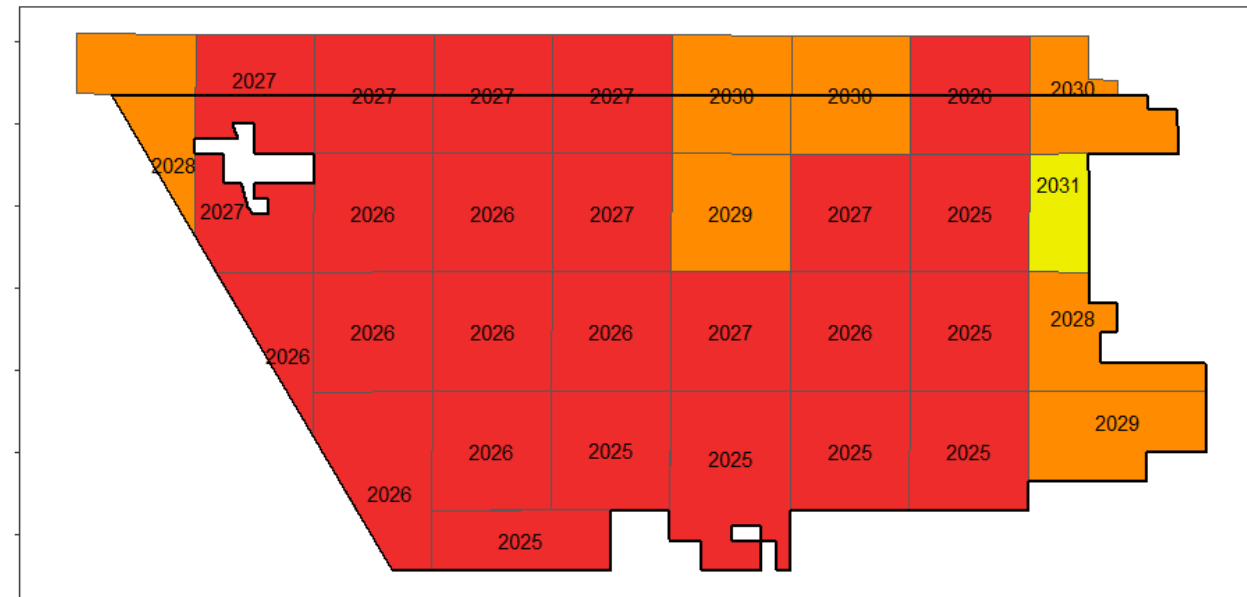
# PROJECTED BASELINE – TIMELINE TO THRESHOLDS

Projected Baseline: Timeline to 50% MT



Most remaining SMMZs are projected to reach 50% MT soon (within a year or two). This is supported by InSAR data that shows SMMZs are currently in the 40-50% range.

Projected Baseline: Timeline to 75% MT



75% MT is expected in most SMMZs within 5 years.

# SUMMARY OF SMP ACTIONS

50% MT

- 1) Groundwater withdrawals to be metered
- 2) No precipitation or transitional pumping credits are allowed for the Lower Aquifer
- 3) No pumping credits can be transferred into affected area
- 4) Surface water must be prioritized
- 5) No new wells are permitted in the Lower Aquifer

75% MT

- 6) No groundwater pumping allowed from Lower Aquifer wells that are shown to be contributing to land subsidence

100% MT

- 7) No groundwater pumping allowed from **any** wells that are shown to be contributing to land subsidence

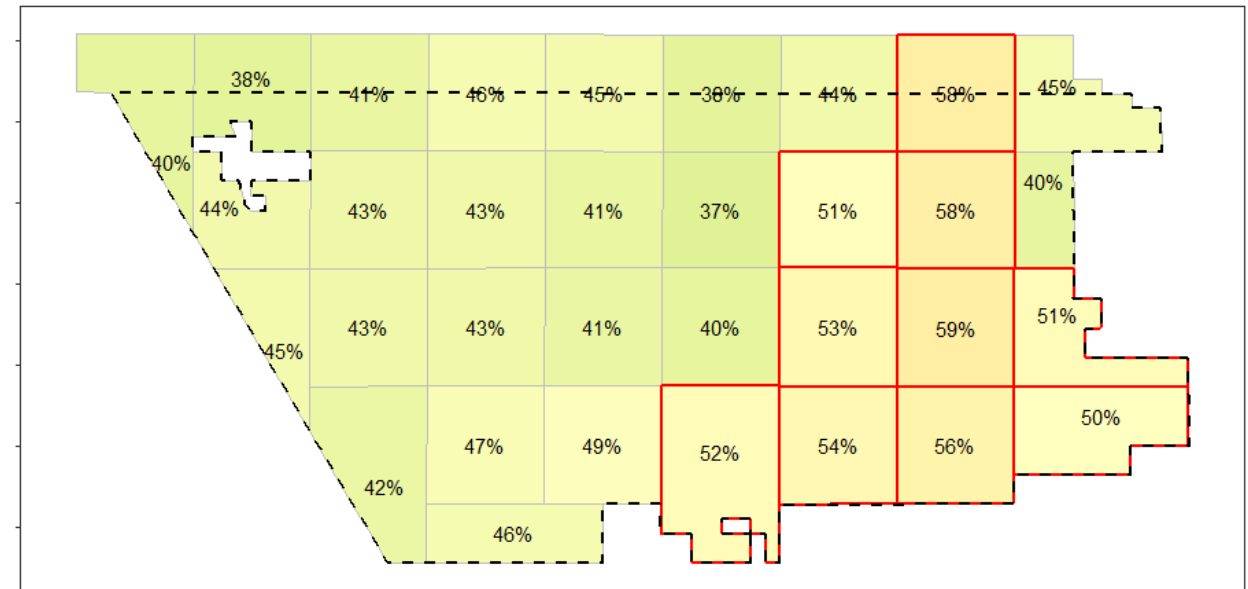
***SMP implementation overrides the District's Allocation Framework.***

***As subsidence progresses, the SMP will aggressively reduce consumptive use above sustainable yield where needed.***

# RECOMMENDED ACTION PER SMP REQUIREMENTS

- In 10 PID SMMZs at 50% MT, SMP policy requires:
  - Groundwater withdrawals to be metered
  - No precipitation or transitional pumping credits are allowed for the Lower Aquifer
  - No pumping credits can be transferred into affected area
  - Surface water must be prioritized
  - No new wells are permitted in the Lower Aquifer
- ***District action is required to be in compliance with SMP***
- ***State Board is interested in seeing proof of action***

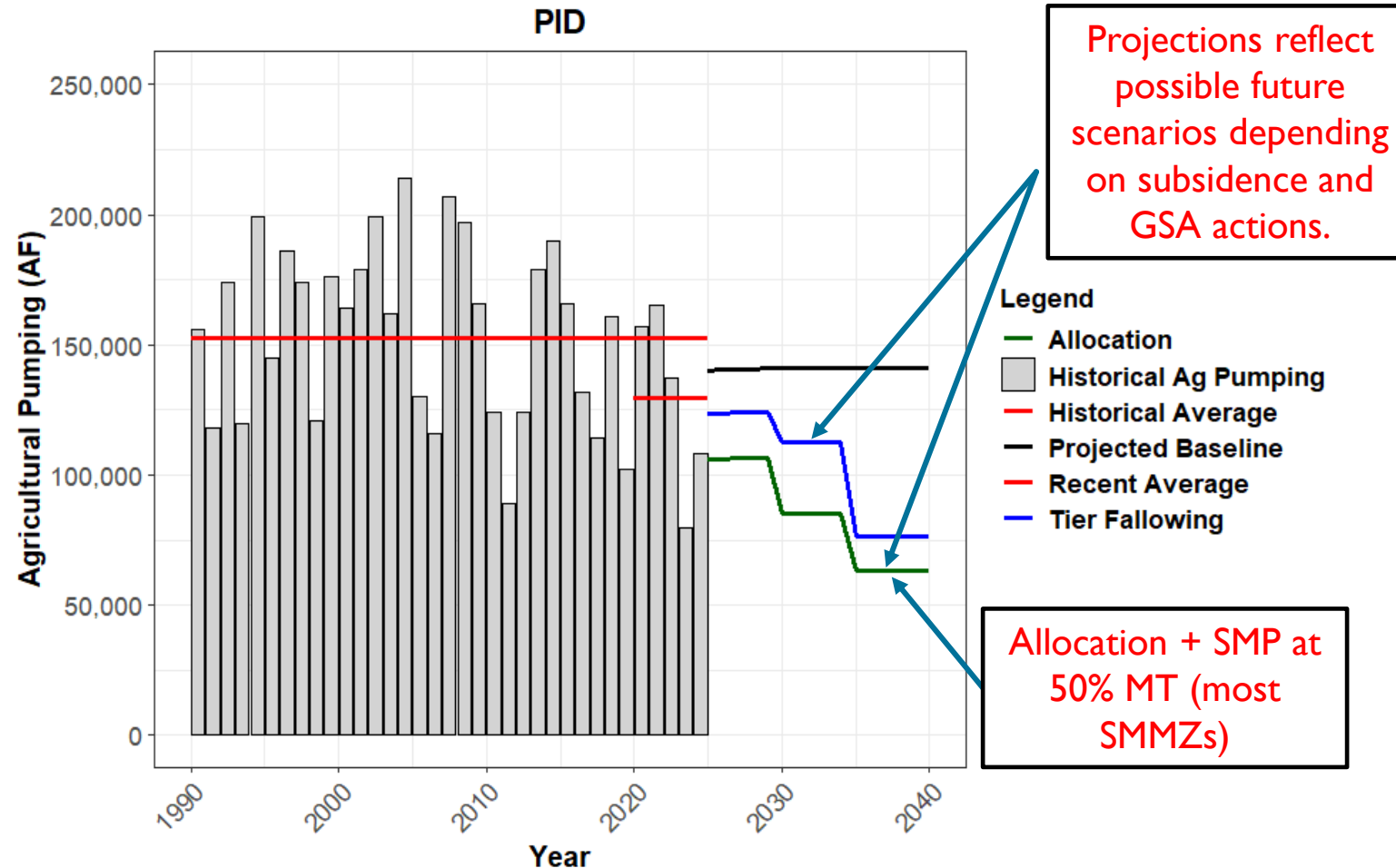
Percent of MT Reached - January 2025 relative to January 2020  
2025 Average Subsidence - 01/2020 Subsidence



# PERFORMANCE RELATIVE TO GSP COMMITMENTS

- GSP Model begins P/MA implementation in 2020 and includes the following
  - Progressive, permanent land following in PID (41% of irrigated land by 2040)
  - Significant demand reduction over SGMA implementation period in LTRID and PID (-5,400 AFY in LTRID and -9,400 AFY in PID) starting in 2020
  - Ongoing demand reduction out to 2040
- While allocations are in place to reduce demand, GSAs have not fully achieved the level of implementation reflected in the GSP Model
  - Per Annual Reports, some reductions in ET and pumping have been observed in LTRID and PID, largely driven by wet WY 2023
  - Some fallowing has occurred in PID (variable based on year, but not 5,000 acres for the entire 5 years)
  - Some land has been retired and converted to recharge basins in LTRID

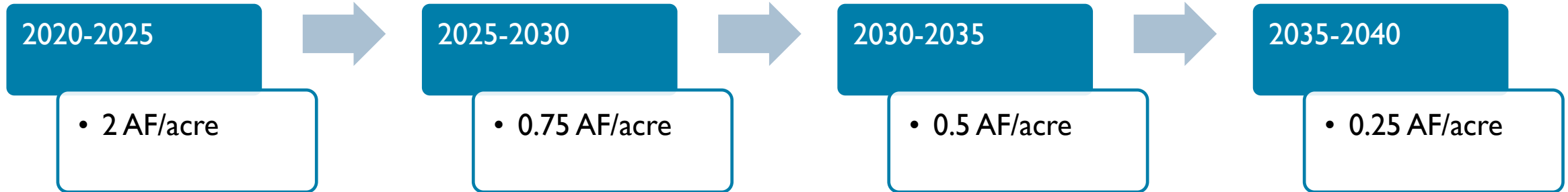
# PLANNED PUMPING REDUCTION SCENARIOS



**SMP implementation + Allocation reflects a ~60% decline in GW Pumping relative to recent averages.**

# IMPACT OF SMP ON ALLOCATIONS

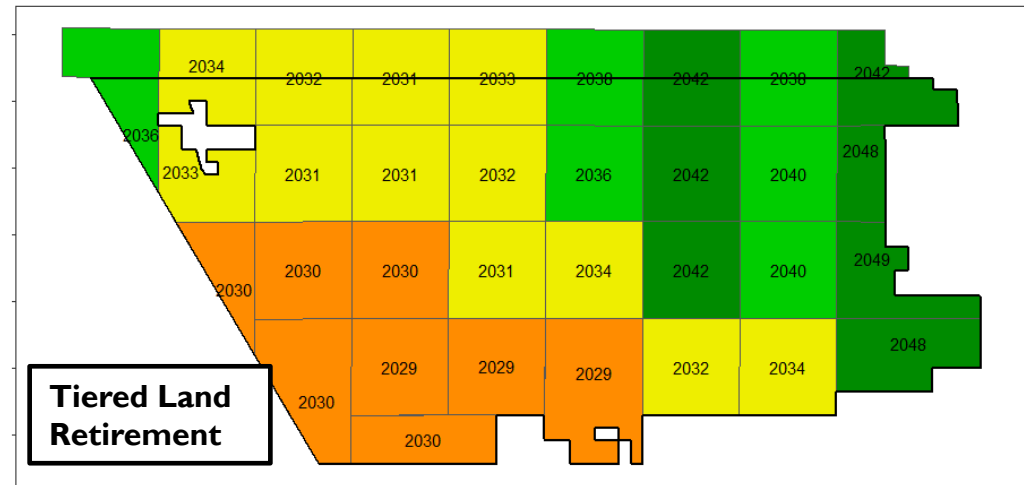
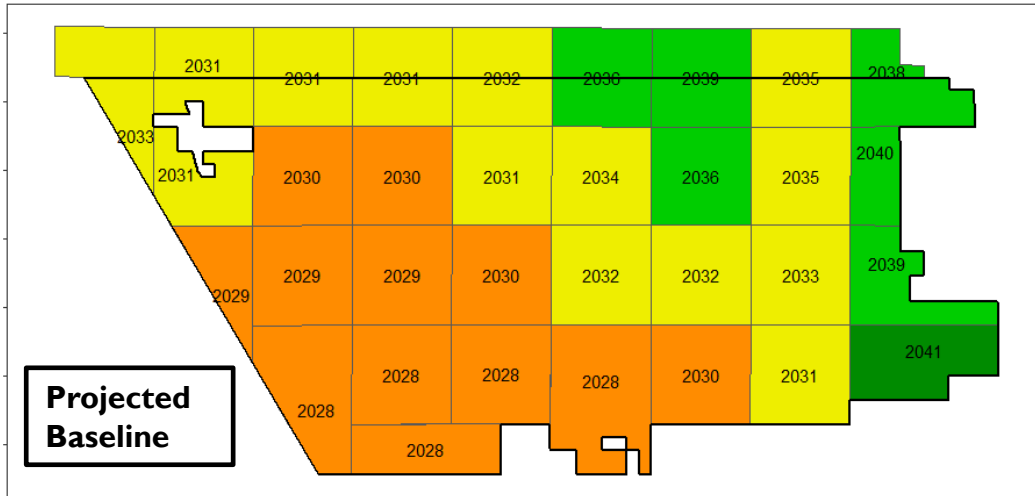
## GSP Transitional Pumping Allocation Schedule



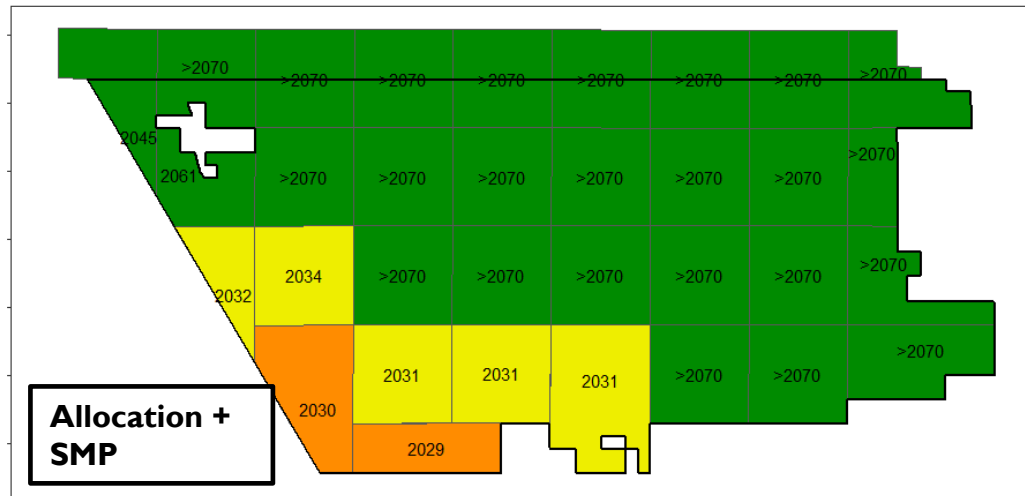
## SMP Allocations Supersede GSP Allocations

Allocation Components	Lower Aquifer Allocation (AF/acre)		
	Subsidence < 50% MT	At 50% MT	At 75% MT
Precipitation Yield	0.71	<del>0.71</del>	<del>0.71</del>
Sustainable Yield	0.15	0.15	<del>0.15</del>
District-Allocated Recharge	0.55	0.55	<del>0.55</del>
Transitional Credit (for 2025)	0.75	<del>0.75</del>	<del>0.75</del>
<b>Total</b>	<b>2.16</b>	<b>0.70</b>	<b>0.00</b>

# SGMA COMPLIANCE



Labels represent the year the MT is reached.



### Timeline to MT

- After 2040
- 2035-2040
- 2030-2035
- 2025-2030
- Imminent

A combination of the SMP and GSA Allocation framework appears likely to avert MTs in most SMMZs.

# SUMMARY

- Per the SMP and GSP, immediate and significant action regarding well registration and pumping reductions is needed to avert MTs and demonstrate action to the State Board

# RECOMMENDED NEXT STEPS – TECHNICAL PATH FORWARD

- Conduct critical head analysis at selected sites to confirm water level MTs
  - DWR has released a Subsidence BMP that heavily utilizes analysis of critical head
  - Several other Basin GSAs also pursuing this approach
- Evaluate District's Allocation policies – revisit calculation of precipitation credits per Staff Report on Tule GSP
- 3D Geologic Model Refinement
  - Incorporate additional data as provided by landowners
  - As model is refined, explore establishing depth thresholds for “Lower” Aquifer pumping outside of the area of the Corcoran Clay
- Aquifer Storage and Recovery
  - EKI is coordinating with P&P. Once P&P has identified a well location, EKI will work with P&P to develop a feasibility study and work plan
- SMP/GSP Compliance Dashboard
- Ongoing Inter/Intra-Basin support

# DISCUSSION