



# CONTINUED DISCUSSION SUSTAINABLE MANAGEMENT CRITERIA







JOINT TECHNICAL ADVISORY COMMITTEES (TACs) SPECIAL MEETING  
SEPTEMBER 9, 2020



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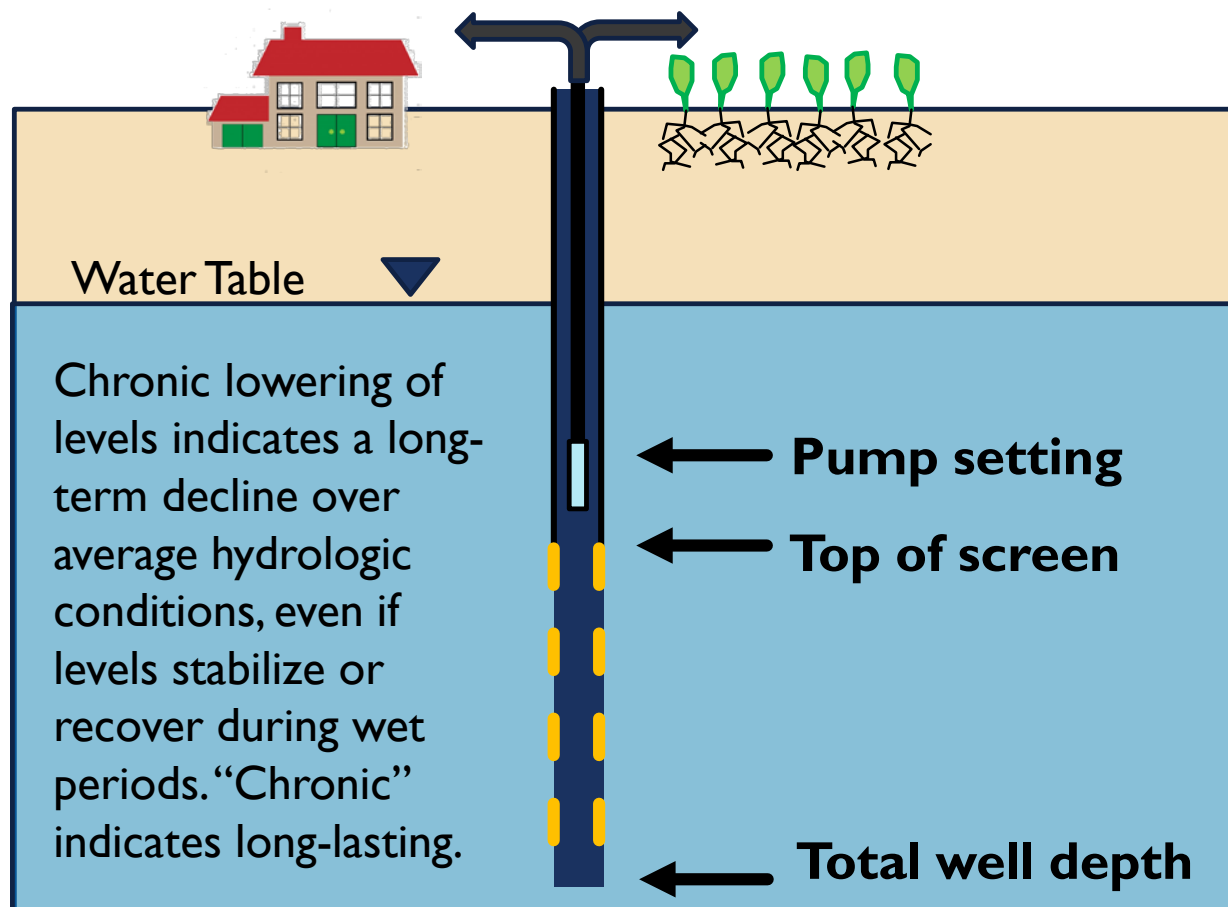
# PRESENTATION OUTLINE



- Agenda Item #6:   
Adverse Impacts to Wells and Potential for Undesirable Results
- Agenda Item #7:       
Undesirable Results Definition and Framework



# CHRONIC LOWERING OF WATER LEVELS



## What we've covered so far:

- Beneficial uses of wells
- Adverse impacts to water supply wells related to historic low water levels
- Potential undesirable results?
- Can these impacts be managed or mitigated?



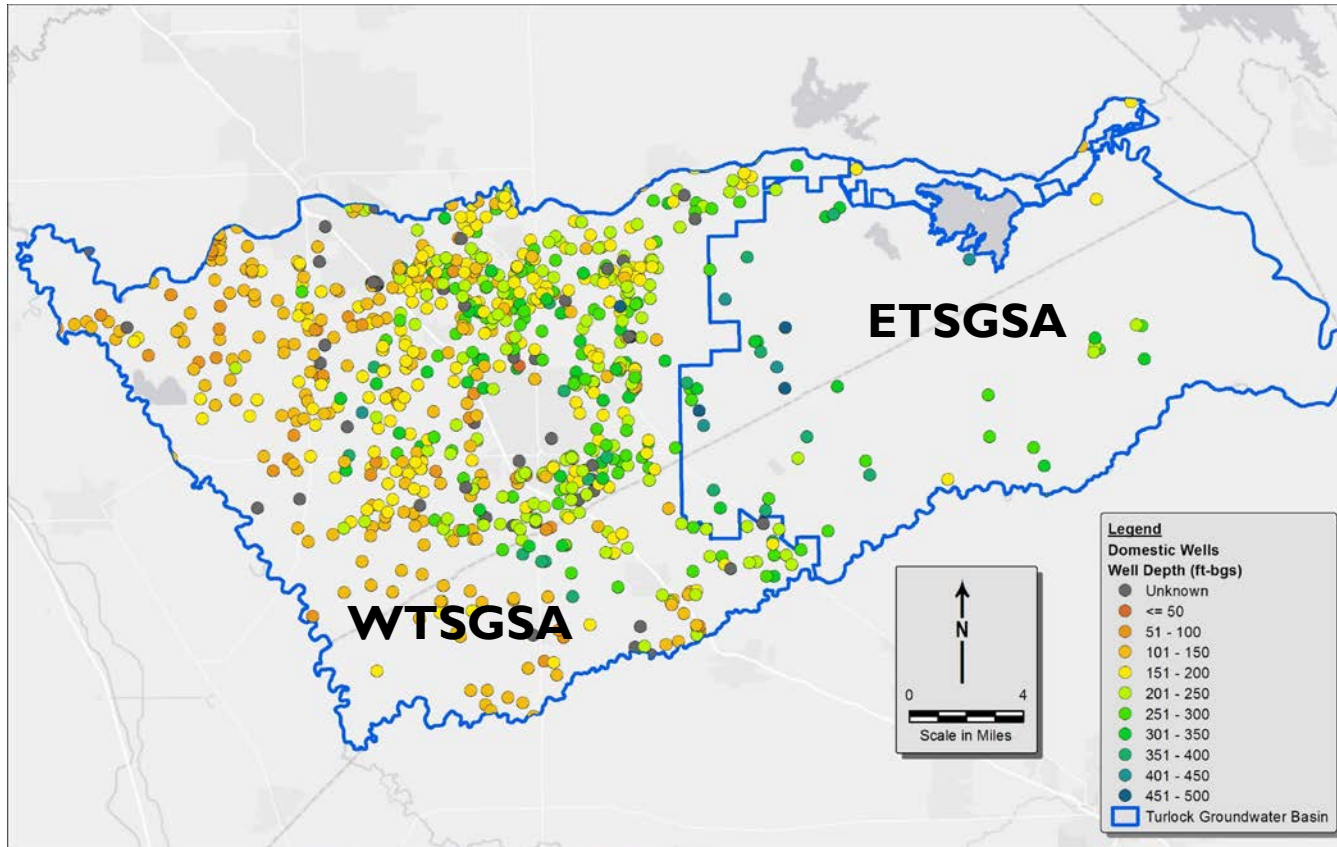
## ADVERSE IMPACTS

# LOW WATER LEVELS DURING THE RECENT DROUGHT

- “Dry” domestic wells (Stanislaus and Merced counties, Delhi)
- Failed shallow, old domestic wells (<100 feet; >50-years old) (Stanislaus and Merced counties)
- Collapsed casing in municipal supply wells (Waterford, Hilmar)
- Loss of capacity in municipal supply wells (wells had to be deepened) (Waterford)
- Dry landscape irrigation wells (City of Turlock)
- Numerous wells previously rented for agriculture supply could not be used (TID)
- Private agricultural well owners pressured to stop pumping by domestic well owners (TID)
- Water quality issues – increasing arsenic, nitrate, and/or TDS (Hilmar, Waterford, Modesto, Ceres, Delhi)
- Aging wells at risk of failure during another similar drought (Hilmar, Waterford)



# DOMESTIC WELL DEPTHS AND LOCATIONS

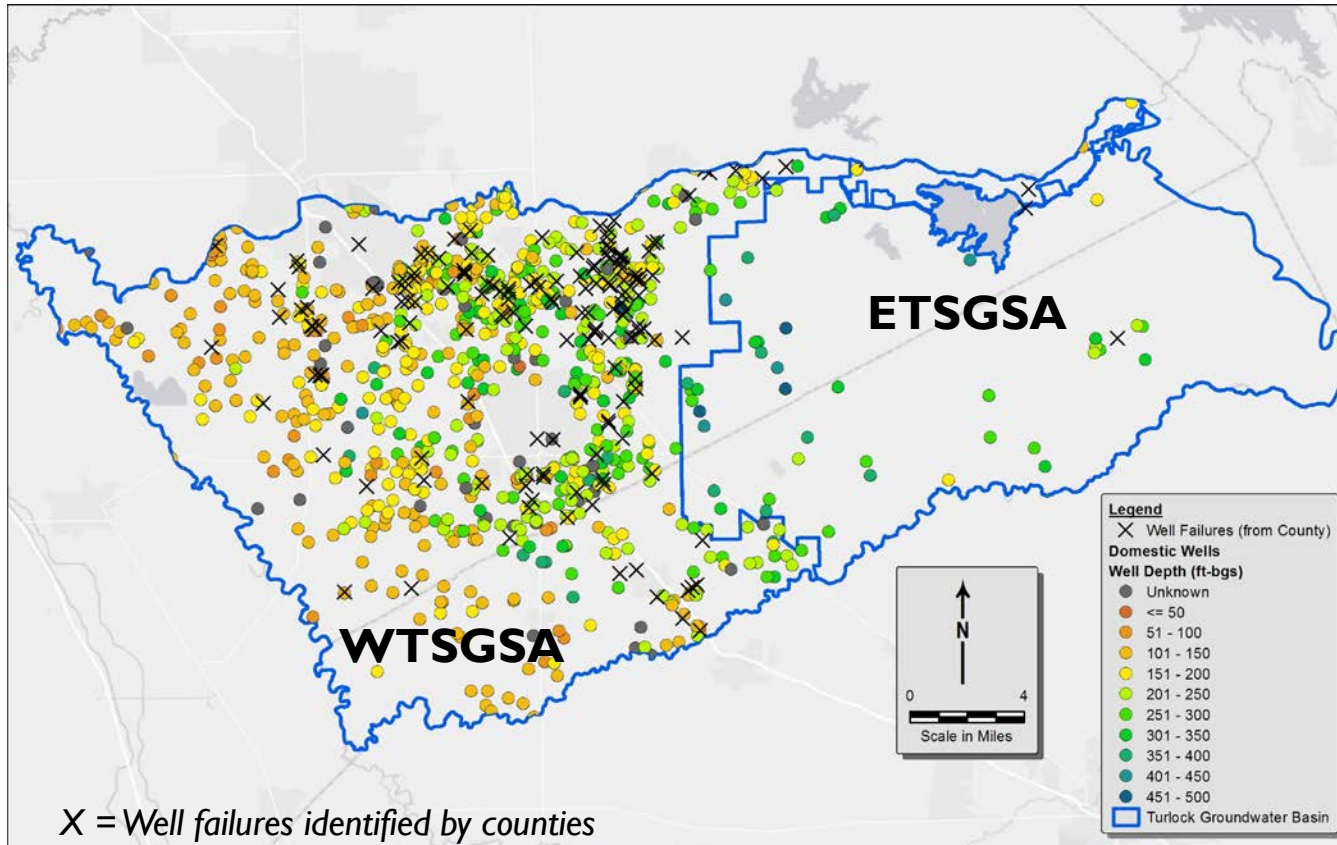


- Domestic well locations by depth
- Shallow wells where water levels are high (western WTSGSA)
- Wells are generally deeper moving east
- Very few shallow domestic wells indicated in the ETSGSA

*Data from DWR Well Completion Report Database:  
Well status is not known.*



# LOCATIONS OF FAILED DOMESTIC WELLS



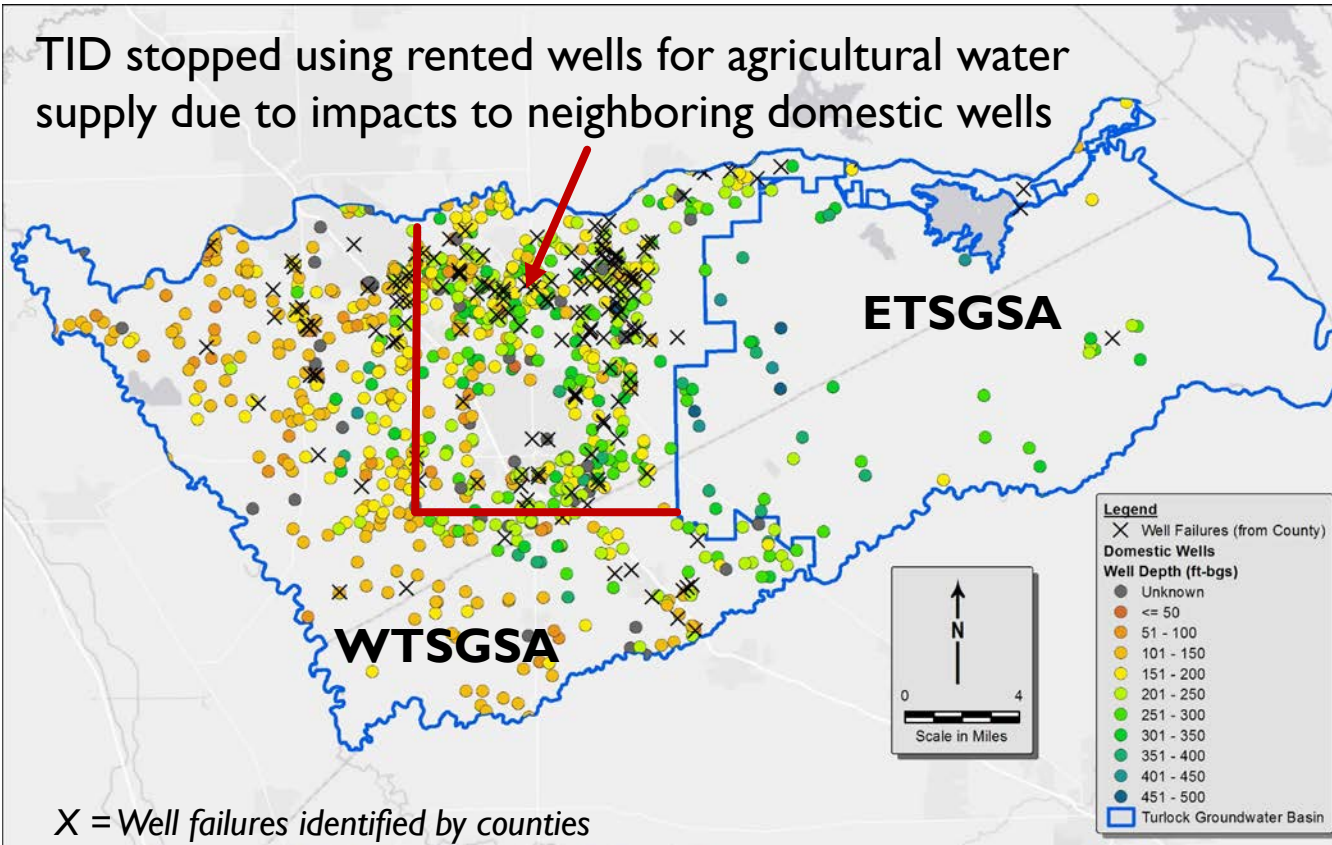
- About 150 domestic well problems as mapped by Stanislaus and Merced counties.
- Most well failures in eastern WTSGSA during recent drought
- Areas of largest water level declines in WTSGSA

Data from DWR Well Completion Report Database:  
Well status is not known.



# LOCATIONS OF FAILED DOMESTIC WELLS

TID stopped using rented wells for agricultural water supply due to impacts to neighboring domestic wells

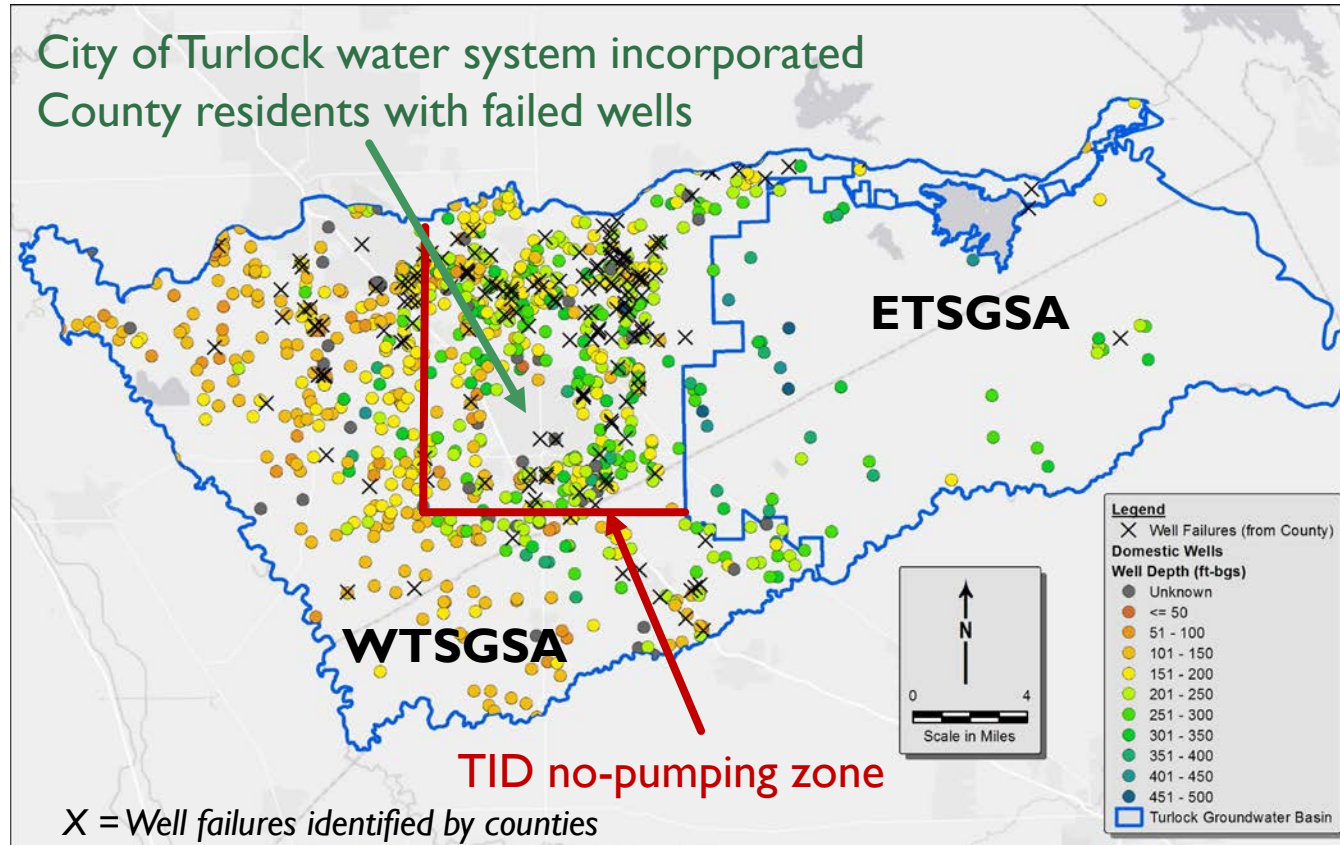


- TID delineated NE service area to curtail rented well pumping where domestic wells were having problems
- TID stopped pumping in rented wells, impacting its ability to deliver agricultural water supply
- Private irrigation well owners also had to turn off pumps in response to impacted domestic wells

Data from DWR Well Completion Report Database:  
Well status is not known.



# MITIGATION OF FAILED DOMESTIC WELLS



- City of Turlock worked with LAFCO for approval to incorporate County residents with failed domestic wells into the city's water system
- 248 New Domestic Well permits filed since 2015 drought (75% in northeast WTSGSA)
- 8 out of 10 failed wells in Delhi were replaced (one additional permit expired)
- Permits may indicate mitigation of most failed wells; avoid significant future declines during the next drought

Data from DWR Well Completion Report Database:  
Well status is not known.





## MANAGEMENT ACTIONS TO MITIGATE WELL PROBLEMS

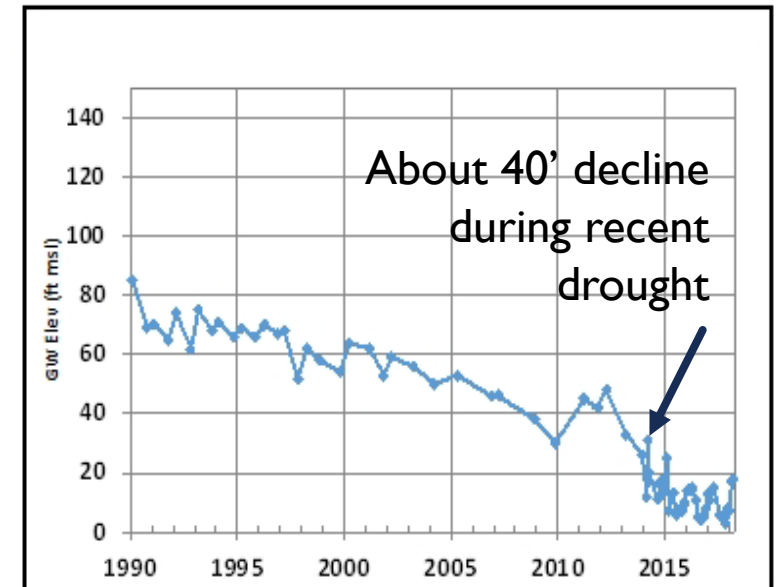
- New/replacement/deepening wells (Turlock, Hilmar, Waterford, domestic wells)
- Trucked water program (Merced County)
- Water tanks (Stanislaus County)
- Financial incentives for deepening (Stanislaus County)
- LAFCO approvals to connect County residents with failed domestic wells to City water and sewer system (City of Turlock)
- Decrease pumping rates (to improve water quality) (Modesto)
- Limited district pumping for agricultural supply (difficult to manage) (TID)



# WHAT WE'VE COVERED SO FAR

## Considerations for Selection of Minimum Thresholds

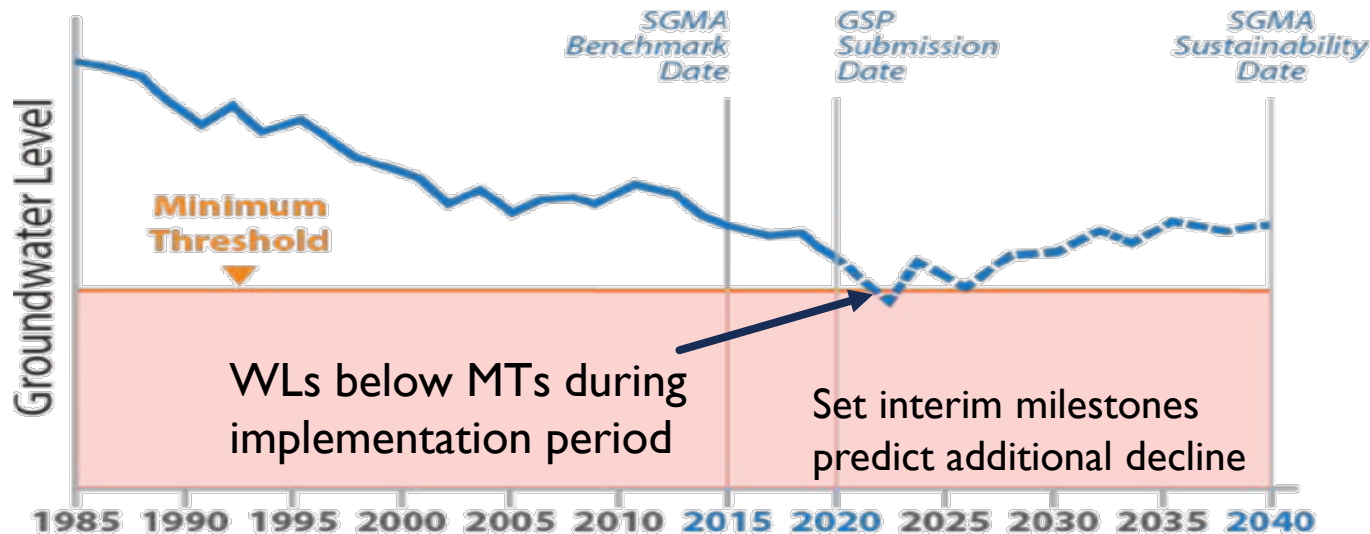
- Balance beneficial uses of wells and declining water levels
  - Protect beneficial uses of water supply wells
  - Allow for lowering water levels during drought conditions
  - Optimize conjunctive use in the Subbasin (Sustainability Goal)
- Manage/mitigate/MTs to avoid problems for water supply wells
  - Domestic well problems
  - Municipal wellfield impacts; aging infrastructure
  - Water quality impacts
  - Avoid dewatering the Corcoran Clay to avoid land subsidence issues





# MINIMUM THRESHOLD CONSIDERATIONS

- About 65,000 AFY (exact amount TBD) will be needed to stabilize water levels (amount to arrest declines; water levels will not recover).
- Additional declines will increase deficits; possible impacts to adjacent subbasins?
- Projected water budgets will target amounts needed to bring the Subbasin into balance.



- SGMA allows 20 years to achieve sustainability.
- Interim milestones allow water levels to exceed MTs during this period.
- MTs should be set sufficiently high to prevent future deficits from increasing substantially.

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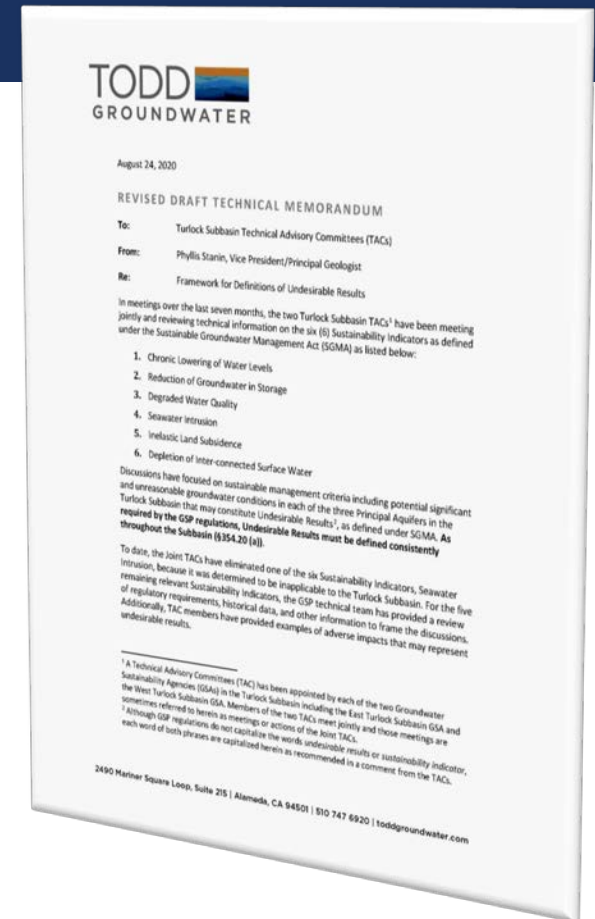
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# DEFINITIONS FRAMEWORK AND FOR UNDESIRABLE RESULTS

- **Undesirable Results are required to be defined consistently for the entire Subbasin**
- Draft Technical Memorandum on Undesirable Results
  - Working Definitions for Undesirable Results
  - Framework for Sustainable Management Criteria
- Revised Technical Memorandum August 2020
- Final TAC Comments (EWD) yesterday; incorporate comments into GSP section on SMC



# WORKING DEFINITIONS

## UNDESIRABLE RESULTS FOR THE TURLOCK SUBBASIN



Significant and unreasonable water level declines such that water supply wells are adversely impacted during multi-year droughts in a manner that cannot be readily managed or mitigated.

URs will be evidenced by an exceedance of minimum thresholds (MTs) (minimum water levels to be determined) in xx% of GSP monitoring wells in # consecutive semiannual monitoring events.



Significant and unreasonable depletions of total groundwater in storage have not occurred; usable storage may be impacted with chronic lowering of water levels. Protect future depletion with WL indicator above.

Use sustainable management criteria from above.



URs would occur when significant and unreasonable impacts to groundwater quality, as identified by the GSAs as a constituent(s) of concern, affect the reasonable and beneficial use of groundwater and has been caused by or exacerbated by GSA projects or management actions.

URs to be determined when the MT for a constituent of concern (the drinking water standard or other water quality objective for that constituent) is exceeded in greater than xx% of the designated monitoring locations for that constituent within the Subbasin in x# consecutive monitoring events. The percentage of wells exceeding the MT will be determined by the baseline (current) water quality data.

# WORKING DEFINITIONS

## UNDESIRABLE RESULTS FOR THE TURLOCK SUBBASIN



Significant and unreasonable inelastic land subsidence that adversely affects land use or reduces the viability of the use of critical infrastructure (critical infrastructure to be determined).

URs will be evidenced by an exceedance of MTs (expressed as groundwater levels at representative monitoring points as based on the elevation of the top of the Corcoran Clay, with a buffer) at x# of land subsidence monitoring locations measured in two consecutive spring monitoring events.



Model surface water depletions associated with management actions and GSP projects and consider impacts to land uses. Water levels can also serve as a proxy. (Consider gauge/stage data instead).

URs will be evidenced by an exceedance of MTs (expressed as groundwater levels at representative monitoring locations) at x# of interconnected surface water monitoring locations (to be determined) measured in two consecutive spring monitoring events.

# NEXT STEPS

- Projected Water Budgets – September/October
- Continue consideration of Preliminary Sustainable Management Criteria
  - Input on UR definitions
  - Input on UR framework
- Projects and Management Actions – Begin in October



# QUESTIONS?



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