# Merced GSP
# Stakeholder Advisory Committee Meeting

**March 20, 2024**

Meeting will begin at 10:00am or a few minutes after – thank you for joining us!

**Merced Irrigation-Urban GSA**
**Merced Subbasin GSA**
**Turner Island Water District GSA-1**

Image courtesy: Veronica Adrover/UC Merced

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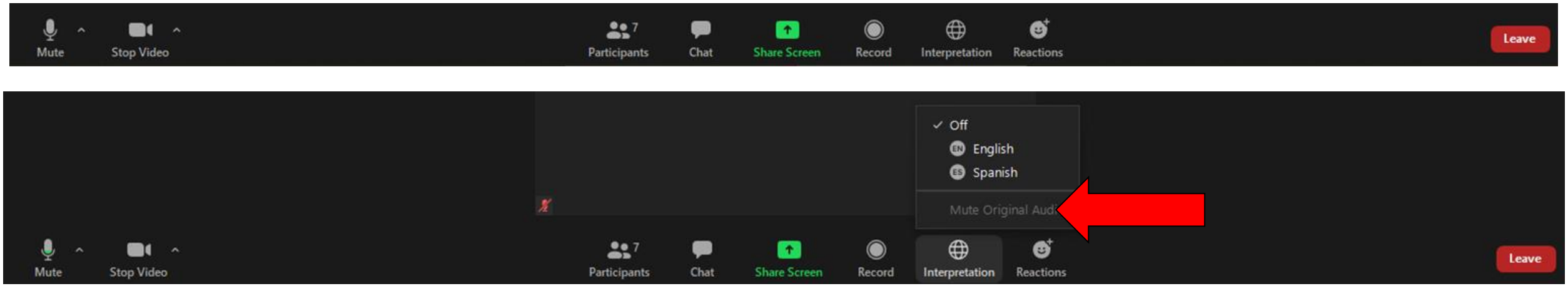
# Welcome, Instructions for Zoom
# Bienvenidos, Instrucciones para Zoom

We have two language audio channels available. English only speakers, please select English.

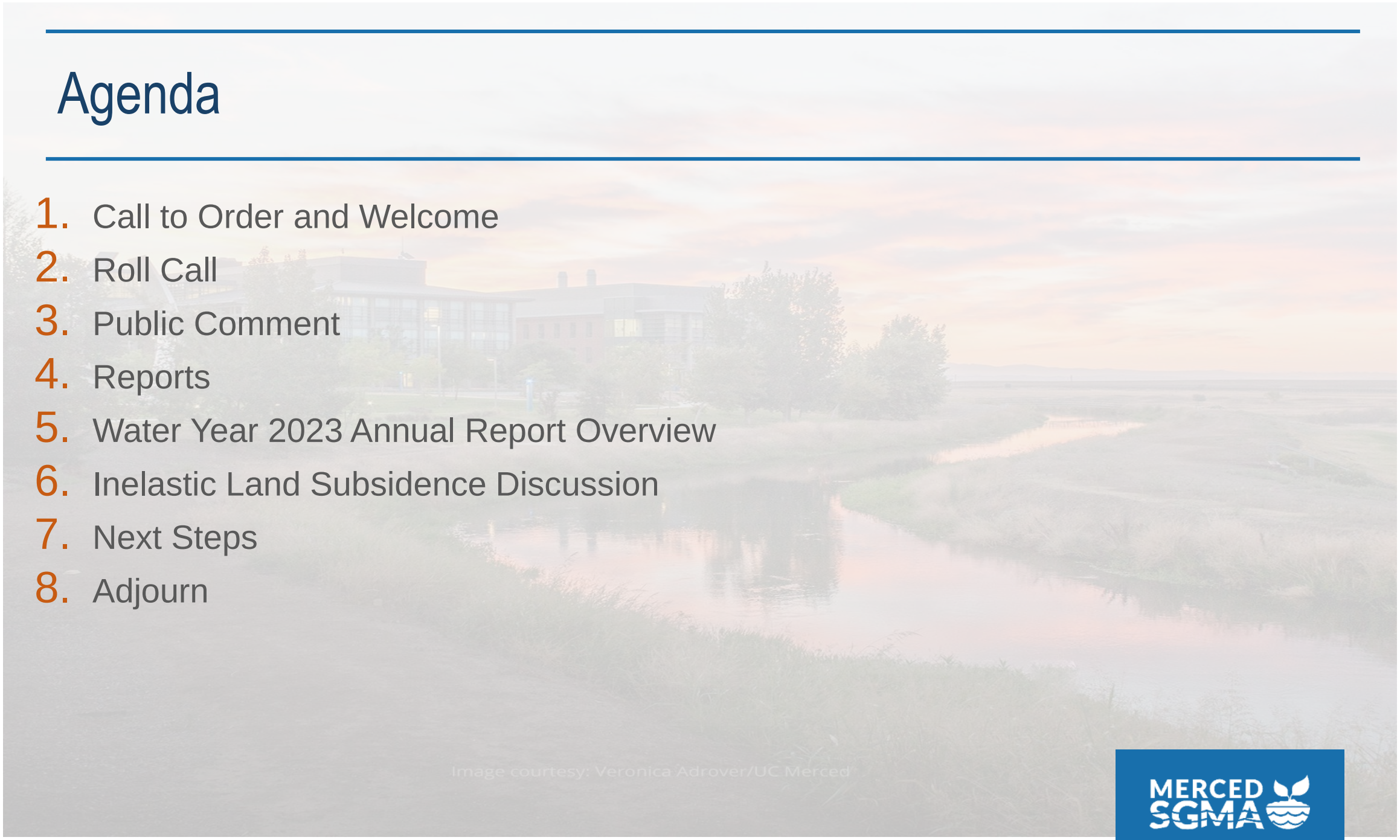
Si solamente habla español, debe seleccionar un canal de idioma




The meeting will have simultaneous interpreting, so you are welcome to comment in your native language.
La junta será interpretada simultáneamente, así que le invitamos a que haga comentarios en su lenguaje nativo.

# Agenda

1. Call to Order and Welcome
2. Roll Call
3. Public Comment
4. Reports
5. Water Year 2023 Annual Report Overview
6. Inelastic Land Subsidence Discussion
7. Next Steps
8. Adjourn



# Stakeholder Advisory Committee Members

| Committee Member | Interest/Affiliation | Alternate | Interest/Affiliation |
|---|---|---|---|
| Adam Malisch | UC Merced | Phillip Woods | UC Merced |
| Arlan Thomas | MIDAC member | Ben Migliazzo | Live Oak Farms |
| Bill Eisenstein | River Partners | | |
| Bob Kelley | Stevinson Representative | Blake Nervino | Stevinson/Merquin |
| Breanne Vandenberg | MCFB | | |
| Caitie Diemel | ESJWQC | | |
| Craig Arnold | Arnold Farms | | |
| Daniel Melendrez | City of Merced | | |
| Danielle Serrano | Serrano Farms - Le Grand | | |
| David Belt | Foster Farms | | |
| Eddie Rojas | E&J Gallo Winery | | |
| Emma Reyes | Martin Reyes Farm/Land Leveling | | |
| Jean Okuye | E Merced RCD | | |
| Joe Sansoni | Sansoni Farms/MCFB | | |
| Joe Scoto | Scoto Brothers/McSwain School Dist. | | |
| Lisa Baker | Clayton Water District | Scott Menefee | Clayton Water District |
| Lisa Kayser-Grant | Sierra Club | | |
| Maxwell Norton | Unincorporated area | | |
| Nav Athwal | TriNut Farms | | |
| Simon Vander Woude | Sandy Mush MWC | | |
| Susan Walsh | City of Merced | Bill Spriggs | Resident City of Merced |
| Thomas Dinwoodie | Master Gardener/McSwain | | |
| Trevor Hutton | Valley Land Alliance | | |
| Wes Myers | Merced Grassland Coalition | Lou Myers | Benjamin Land LP |
| Zachary Hamman | Cal Am Water | | |

# Questions/Comments from Public:

For remote attendees, If you would like to make a comment, please type the comment in the chat or raise your hand to request to be taken off mute

Image courtesy: Veronica Adrover/UC Merced

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# Reports

Image courtesy: Veronica Adrover/UC Merced

# GSA Reports

- Updates from each GSA on activities within their own jurisdiction:
  - Merced Subbasin GSA
  - Merced Irrigation-Urban GSA
  - Turner Island Water District GSA #1

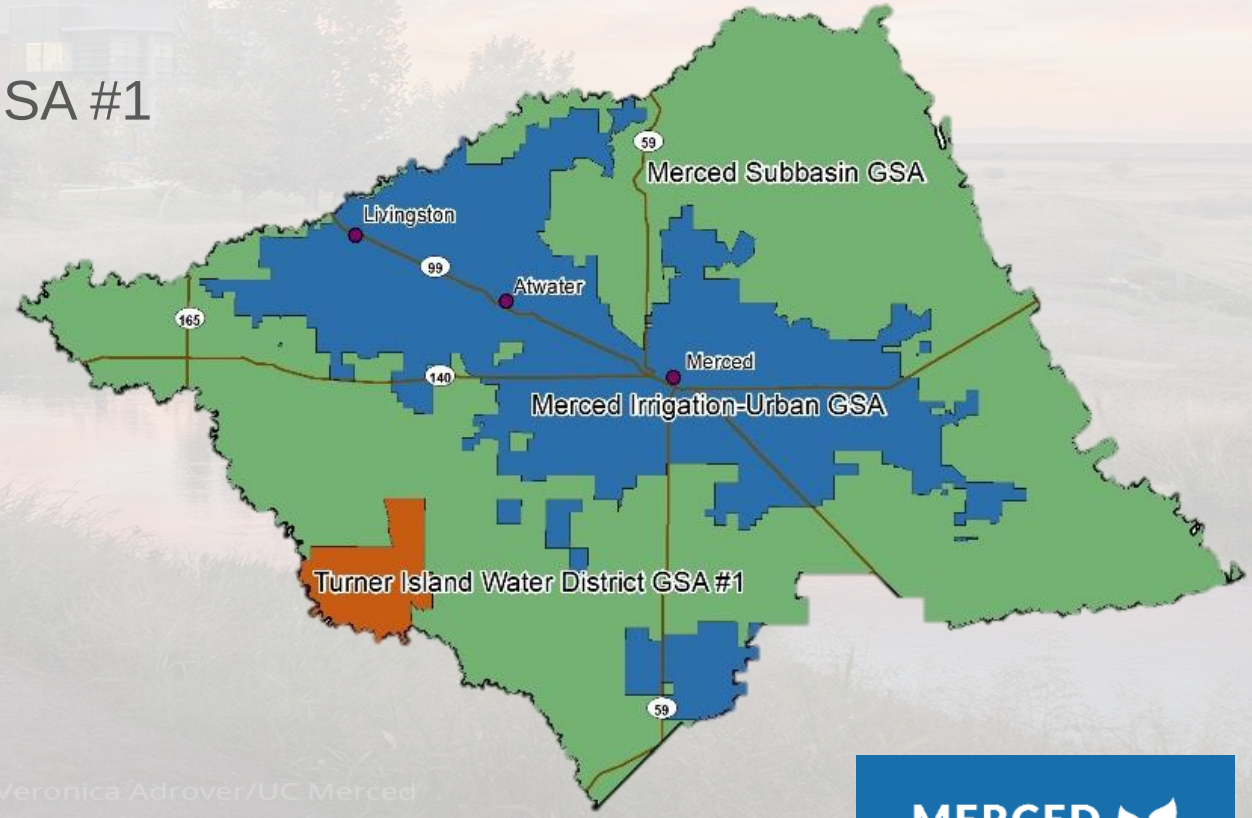


Image courtesy: Veronica Adrover/UC Merced

# Other Reports

- Groundwater Export Policy
- Potential Creation of New GSA
- CIMIS Station Report
- Filling Data Gaps/Monitoring Wells

- Questions & Discussion

Image courtesy: Veronica Adrover/UC Merced

# Groundwater Export Policy - Report

Image courtesy: Veronica Adrover/UC Merced

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# Groundwater Export Policy - Background

- Merced County Board of Supervisors adopted Groundwater Ordinance Export Policy in 2015. Generally, does not allow groundwater to leave originating groundwater basin. Included exemptions to allow groundwater export under specific conditions.
- Merced County Board of Supervisors considered amending existing Groundwater Ordinance – Export Policy to add exemption allowing groundwater export in late 2023/early 2024.
- Largely placed responsibility for approving groundwater export activities on the GSAs directly impacted by the proposed export activity.
- Amendment postponed for 1 year, or until all GSPs in Merced County approved, whichever comes first.

Image courtesy: Veronica Adrover/UC Merced

# Groundwater Export Policy – Next Steps

- Merced GSAs should collectively agree on protocol and safeguards for Merced Groundwater Subbasin prior to reconsideration of amendment to Groundwater Export Policy by Merced County Board of Supervisors.
  - Protection of local groundwater supplies
  - Groundwater Sustainability Plan compliance/success
  - Monitoring and enforcement
  - Other (TBD)
- Consider executing agreement to memorialize

Image courtesy: Veronica Adrover/UC Merced

# CIMIS Station Report

Image courtesy: Veronica Adrover/UC Merced

# CIMIS Background

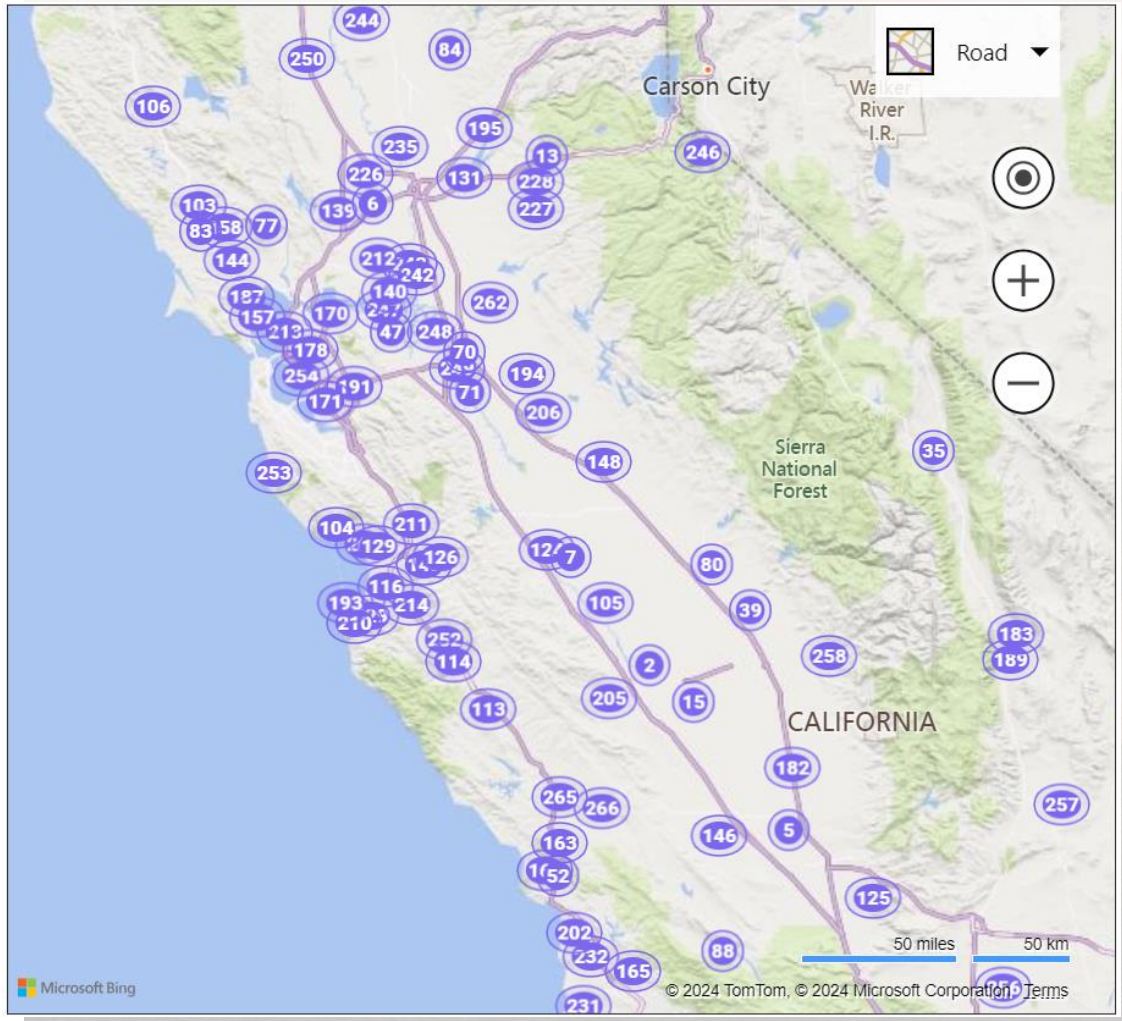
- California Irrigation Management Information System (CIMIS) is a California DWR program that manages a network of over 145 automated weather stations in California.
- Developed in 1982 by DWR and UC Davis to assist irrigators in managing their water resources more efficiently.
- Automatically collects, processes, and analyzes, and publishes data over the internet.


Image courtesy: Veronica Adrover/UC Merced

# General Siting Requirements

- 8 square
- Irrigated pasture/grass used to establish baseline for Reference Evapotranspiration
- Additional setback requirements from bodies of water, trees, windbreaks, houses, etc.

# Active CIMIS Stations





CIMIS Station 148 Only active site in Merced County…

# Merced CIMIS Station #148

- CIMIS Station #148 operated for approx. 25 years by Merced Irrigation District and California Department of Water Resources.
- Located on private property historically used as pasture.
- Recent changes in land use have impacted the performance of the station—most recently, Merced Irrigation District staff were notified that corn will be planted in 2024.
- As a result of land use change, anticipate decommissioning site in the coming months.


# Filling Data Gaps/Monitoring Wells

Image courtesy: Veronica Adrover/UC Merced

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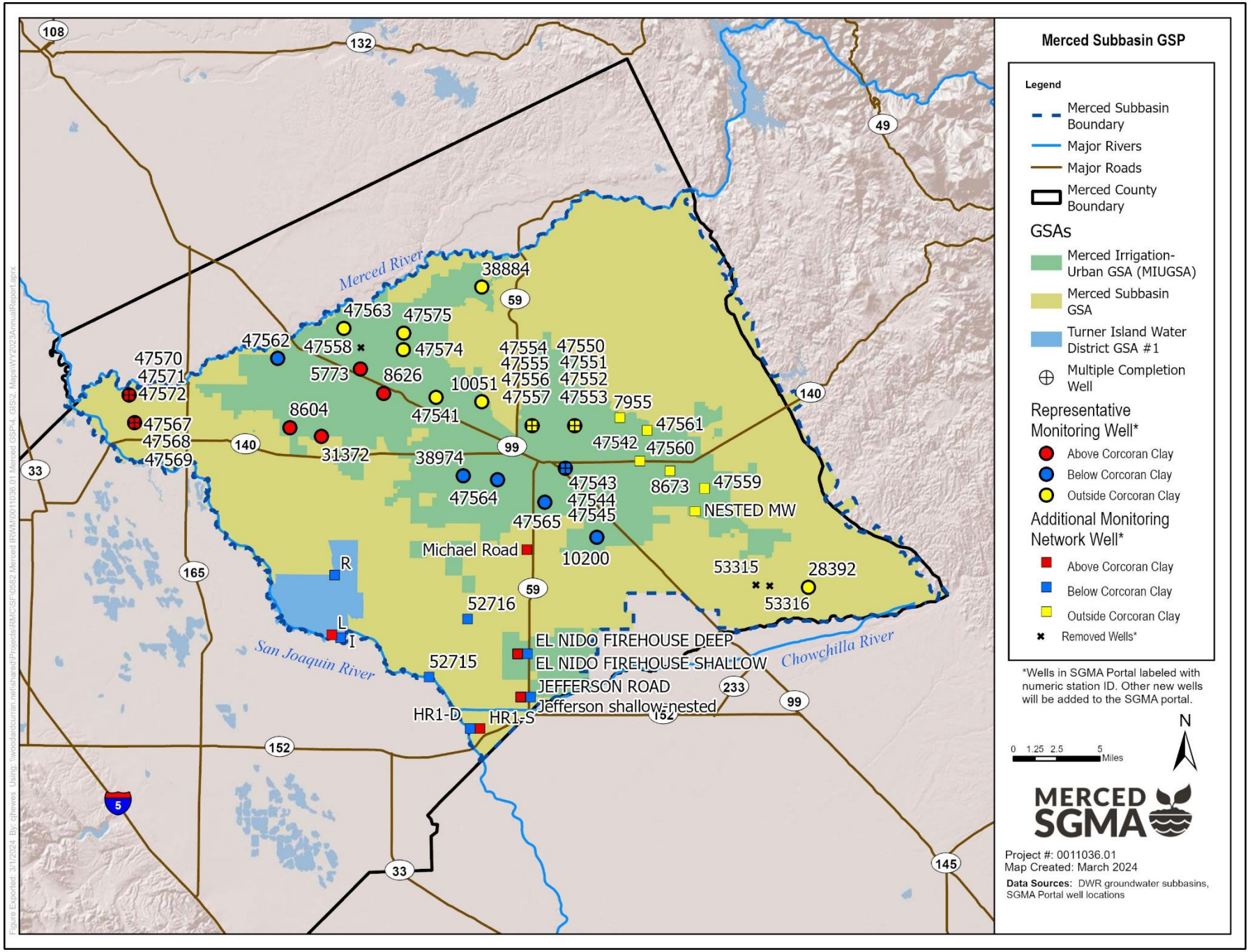
Merced Subbasin GSP
Legend
Merced Subbasin Boundary
Major Rivers
Major Roads
Merced County Boundary
GSAs
Merced Irrigation-Urban GSA (MIUGSA)
Merced Subbasin GSA
Turner Island Water District GSA #1
Multiple Completion Well
Representative Monitoring Well*
Above Corcoran Clay
Below Corcoran Clay
Outside Corcoran Clay
Additional Monitoring Network Well*
Above Corcoran Clay
Below Corcoran Clay
Outside Corcoran Clay
Removed Wells*
*Wells in SGMA Portal labeled with numeric station ID. Other new wells will be added to the SGMA portal.
0 1.25 2.5 5 Miles
N
MERCED SGMA
Project #: 0011036.01
Map Created: March 2024
Data Sources: DWR groundwater subbasins, SGMA Portal well locations
Merced River
San Joaquin River
Chowchilla River
38884
47563
47575
47562
47558
47574
47554
47550
47555
47551
47570
47571
47572
5773
8626
10051
47556
47552
47557
47553
7955
8604
47541
47561
47567
47568
47569
31372
38974
47542
47560
47543
8673
47559
47564
47544
47545
NESTED MW
47565
10200
Michael Road
R
53315
28392
53316
52716
L
I
EL NIDO FIREHOUSE DEEP
EL NIDO FIREHOUSE SHALLOW
52715
JEFFERSON ROAD
Jefferson shallow-nested
HR1-D
HR1-S
108
132
49
140
99
33
165
59
233
152
5
145

# Other Reports

- Groundwater Export Policy
- Potential Creation of New GSA
- CIMIS Station Report
- Filling Data Gaps/Monitoring Wells
- Well Consistency Determination for Wells at Multiple GSAs

Image courtesy: Veronica Adrover/UC Merced

# Water Year 2023 Annual Report Overview

Image courtesy: Veronica Adrover/UC Merced

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# The WY2023 GSP Annual Report was recently drafted and is under review by GSA staff

- Required report on basin conditions and plan implementation, by April 1
- Includes:
  - **Basin Conditions**
    - Model update
    - Pumping and surface water diversions
    - Levels, storage, quality, subsidence
  - **Implementation Status**
    - Projects & Management Actions
    - Grant funding
    - Other support activities

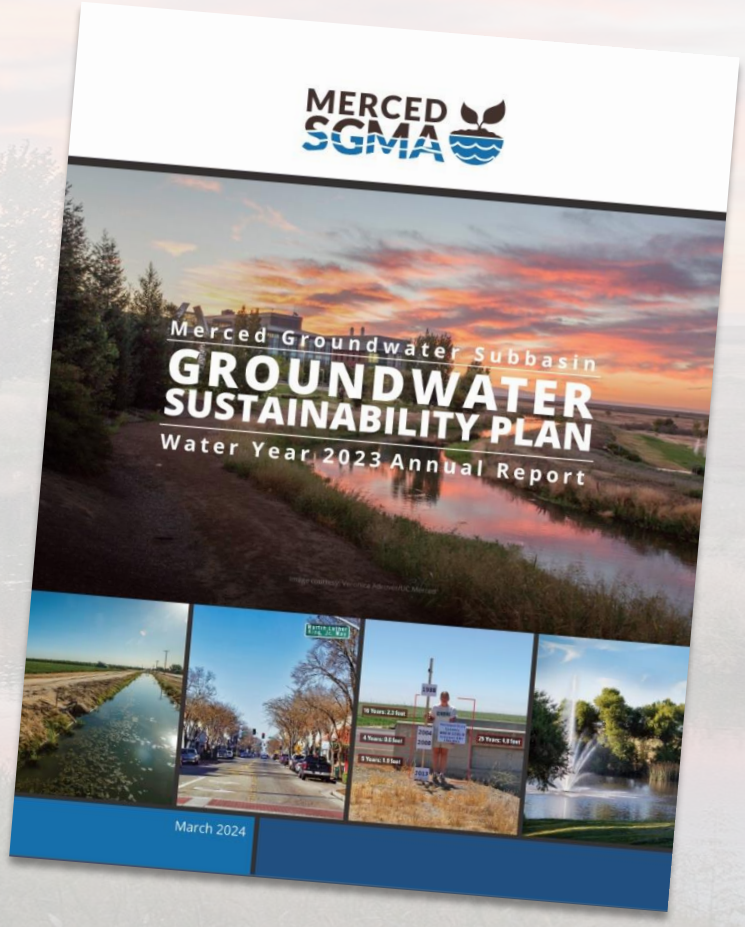



Image courtesy: Veronica Adrover/UC Merced

# Sustainable Management Criteria Status

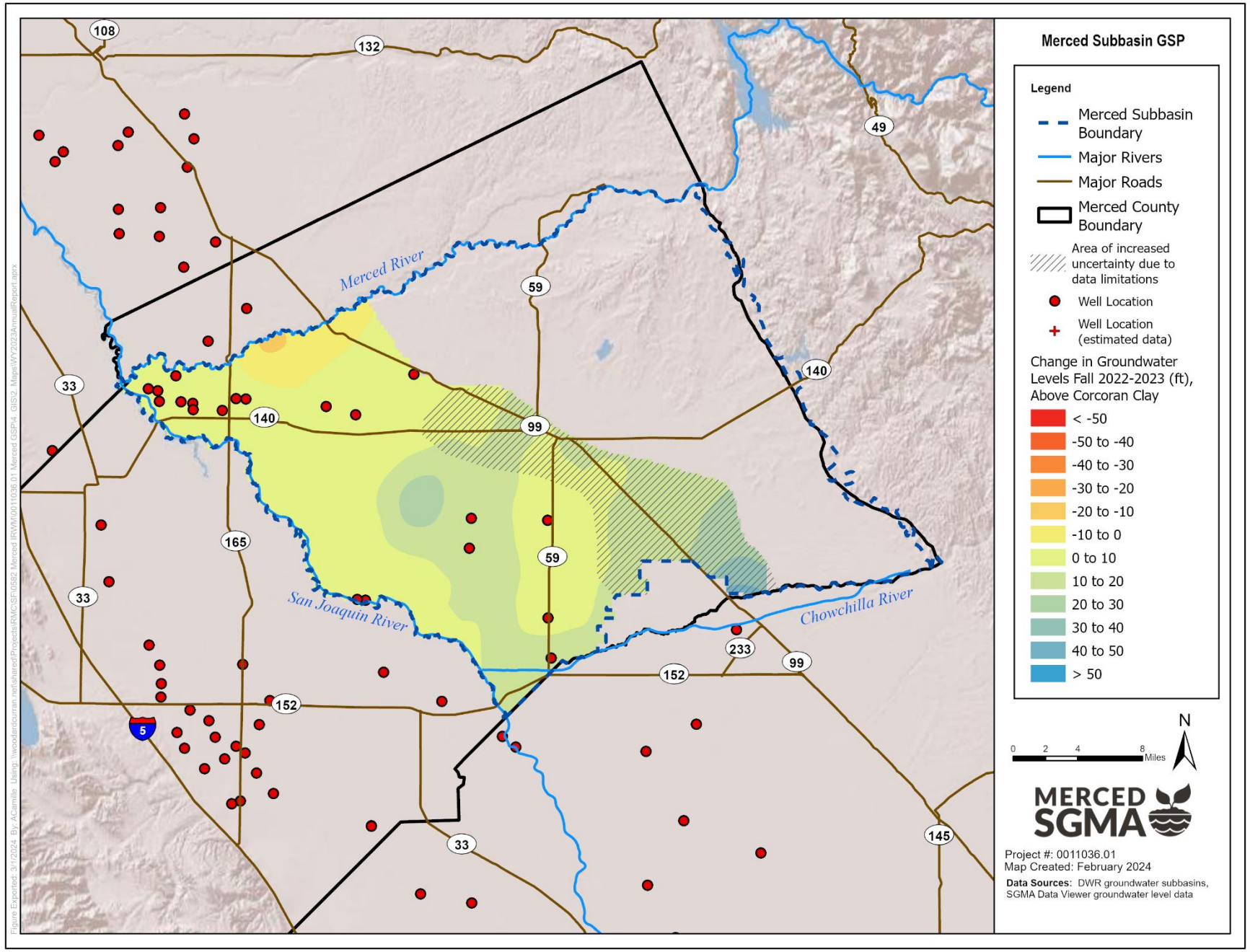
| Sustainability Indicator | Minimum Threshold (MT) | Interim Milestone (IM) | Measurable Objective (MO) | Undesirable Result | WY 2023 Annual Report Status |
|---|---|---|---|---|---|
| Groundwater Levels | Fall 2015 groundwater elevation | Based on range of projected values that account for hydrologic uncertainty | November or October 2011 groundwater elevation (measured, or estimation if historical record not available) | Greater than 25% of representative wells fall below MT in 2 consecutive years | 12/19 wells (63%) fell below MT. 18/19 wells fell below MO. 18/19 are above 2025 IM. 2 wells not measured. |
| Groundwater Storage | Not applicable - not present and not likely to occur in the Subbasin due to the significant volumes of freshwater in storage | | | | |
| Seawater Intrusion | Not applicable - not present and not likely to occur due to the distance between the Subbasin and the Pacific Ocean (and Sacramento-San Joaquin Delta) | | | | |
| Degraded Water Quality | 1,000 mg/L TDS | 1,000 mg/L TDS | 500 mg/L TDS | At least 25% representative wells exceed MT for 2 consecutive years | No wells exceeded MT. 3 wells exceeded MO. |
| Land Subsidence | 0 ft/year, subject to uncertainty of +/-0.16 ft/year | 2025: -0.75 ft/year<br>2030: -0.5 ft/year<br>2035: -0.25 ft/year | 0 ft/year | Exceedance of MT at 3 or more representative sites for 2 consecutive years | All sites showed positive elevation change. |
| Depletions of Interconnected Surface Waters | Groundwater levels used as a proxy for this sustainability indicator | | | | |

2nd year with new thresholds where >25% are below MT.
All but one well still above 2025 IM.

10 wells (out of 23 representative wells) sampled in WY 2023.

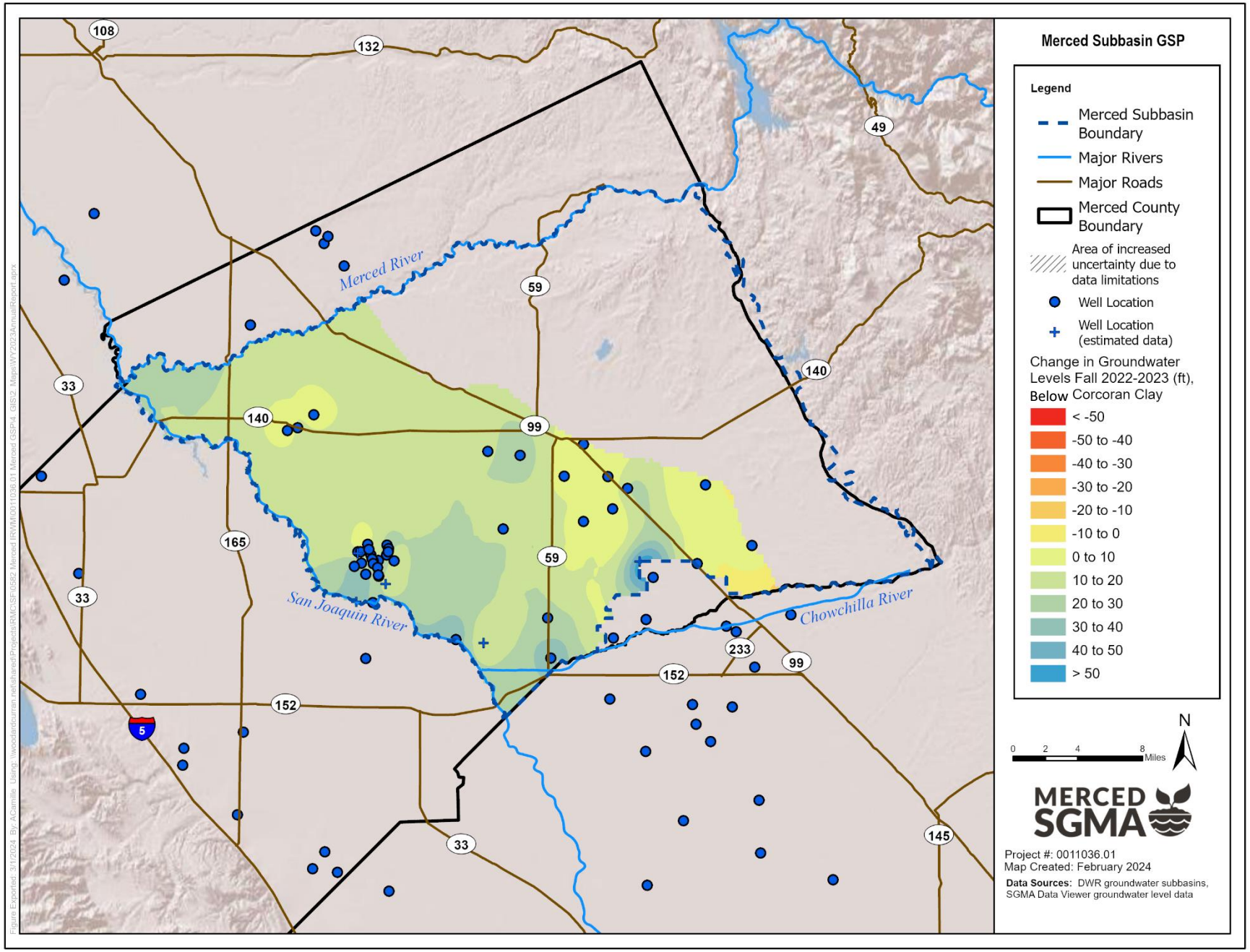
# Change in Groundwater Levels

# Above Corcoran Clay



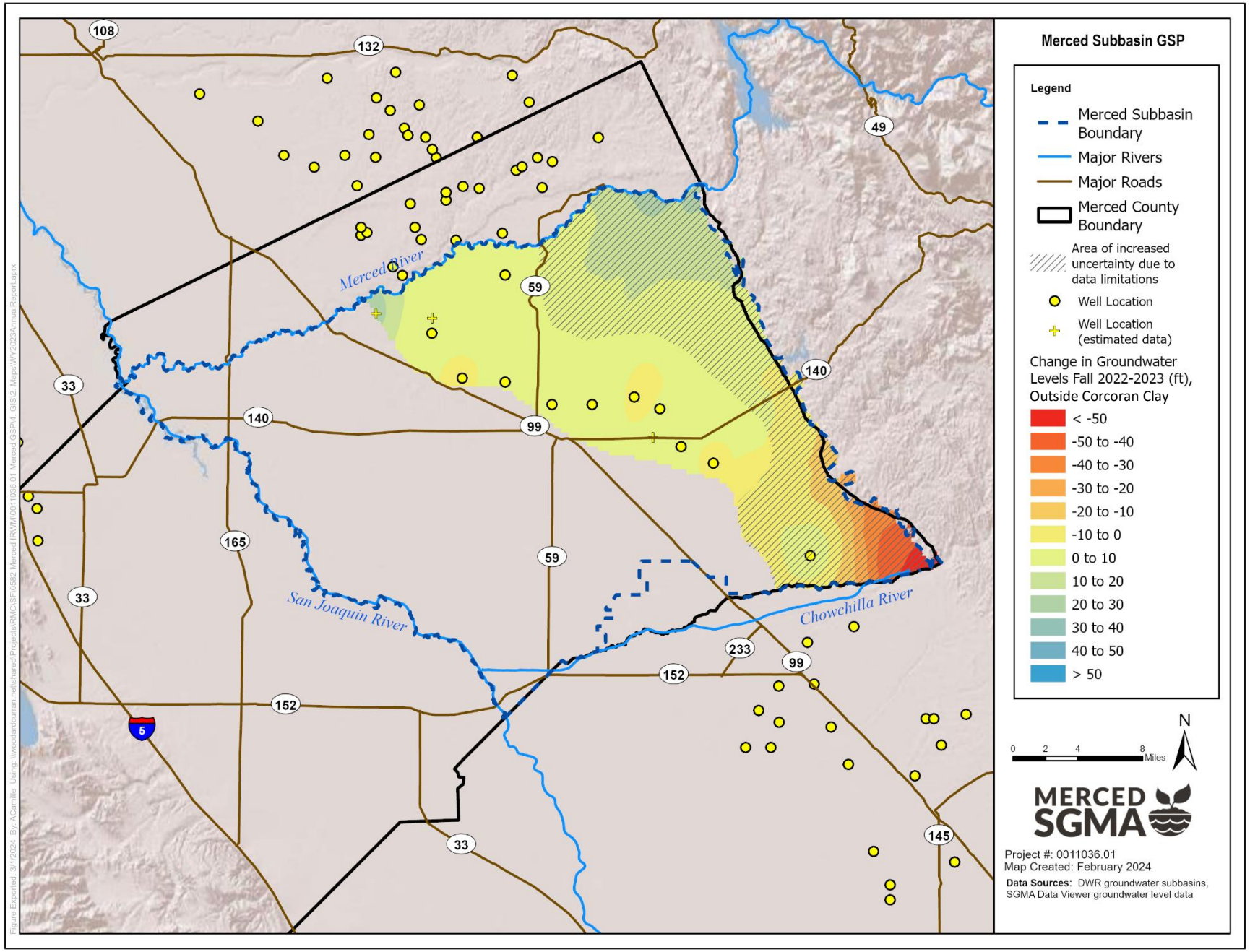
# Change in Groundwater Levels

# Below Corcoran Clay



# Change in Groundwater Levels

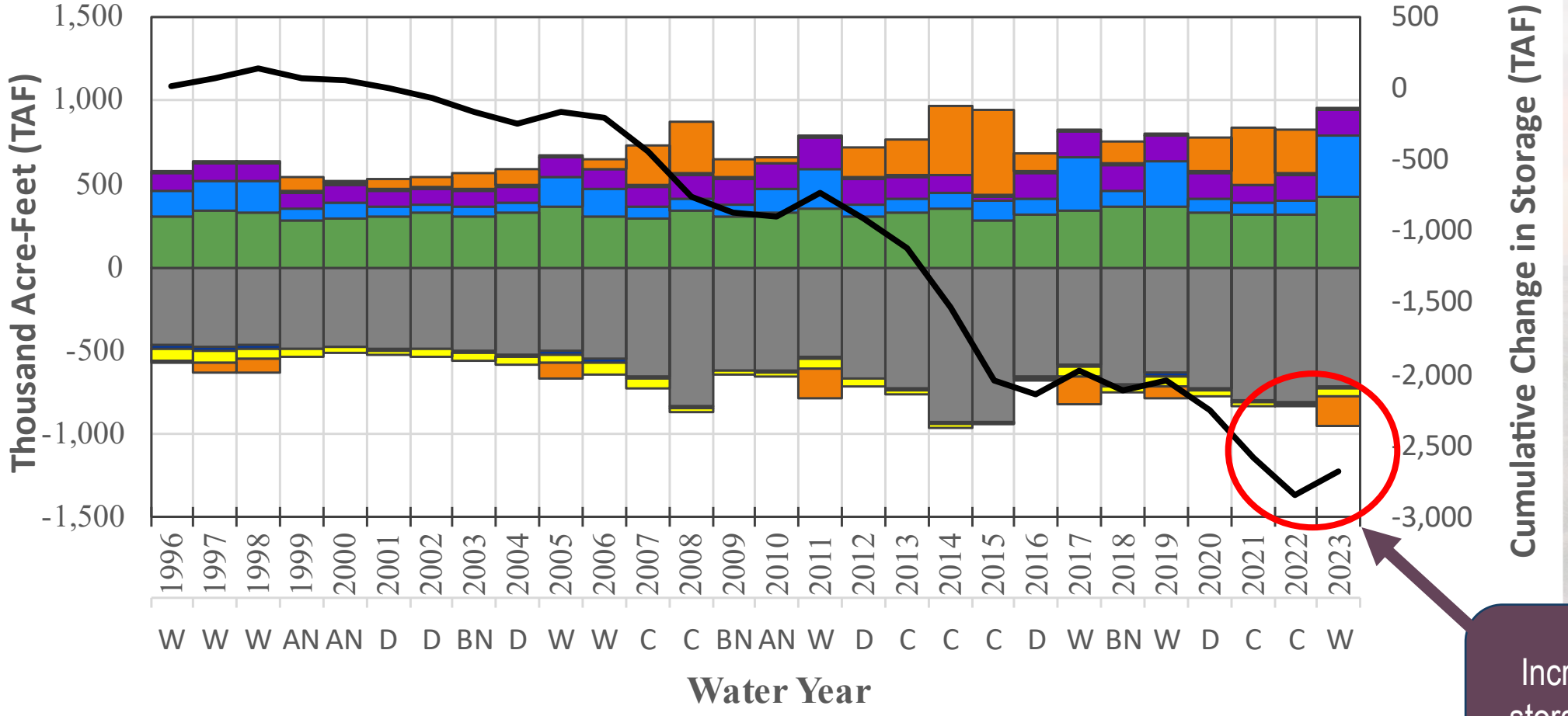
# Outside Corcoran Clay



# Change in Storage

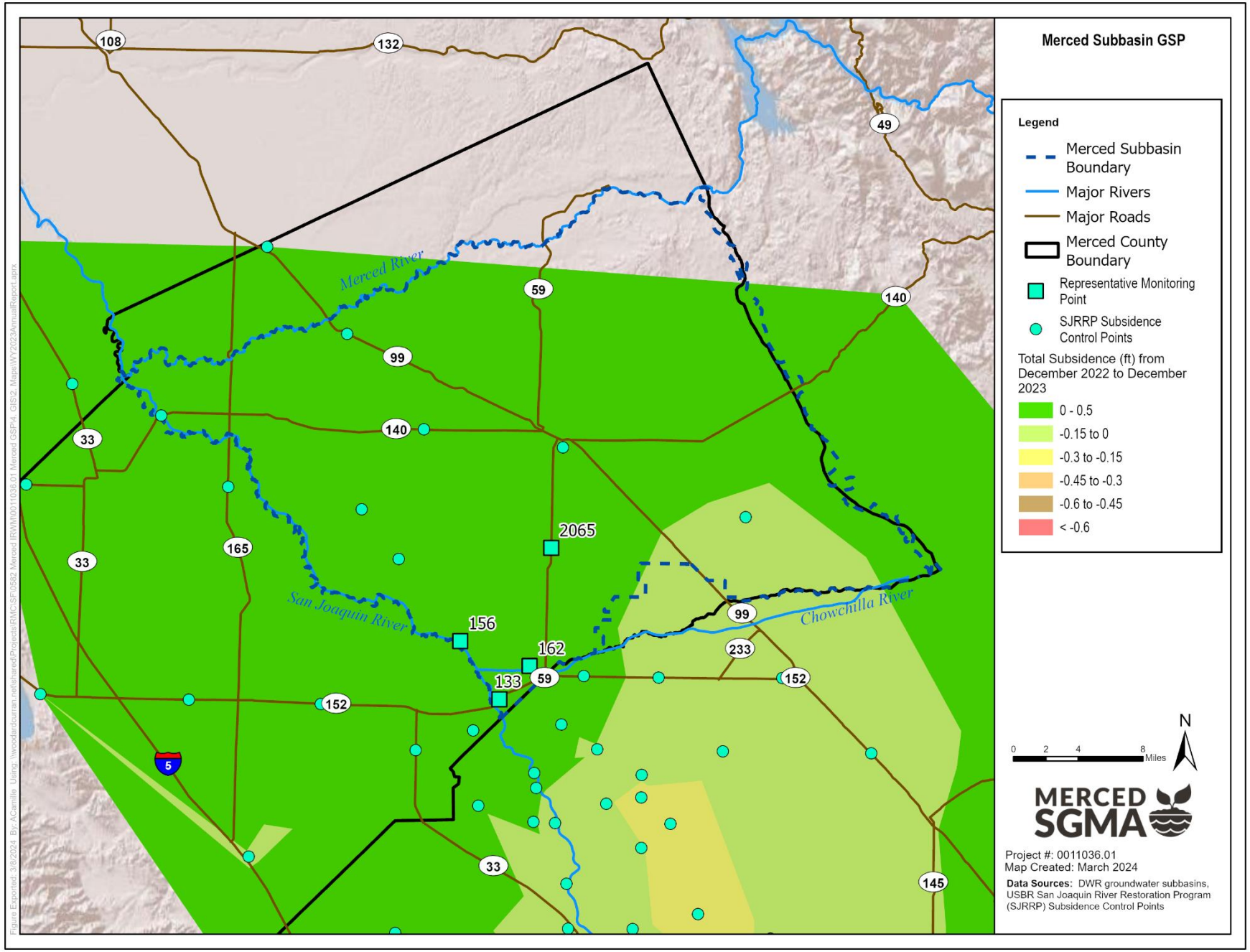
Water Entering Subbasin

Water Leaving Subbasin




Increase in storage after wet winter

# Subsidence Dec 2022 – Dec 2023



# Inelastic Land Subsidence Discussion

Image courtesy: Veronica Adrover/UC Merced

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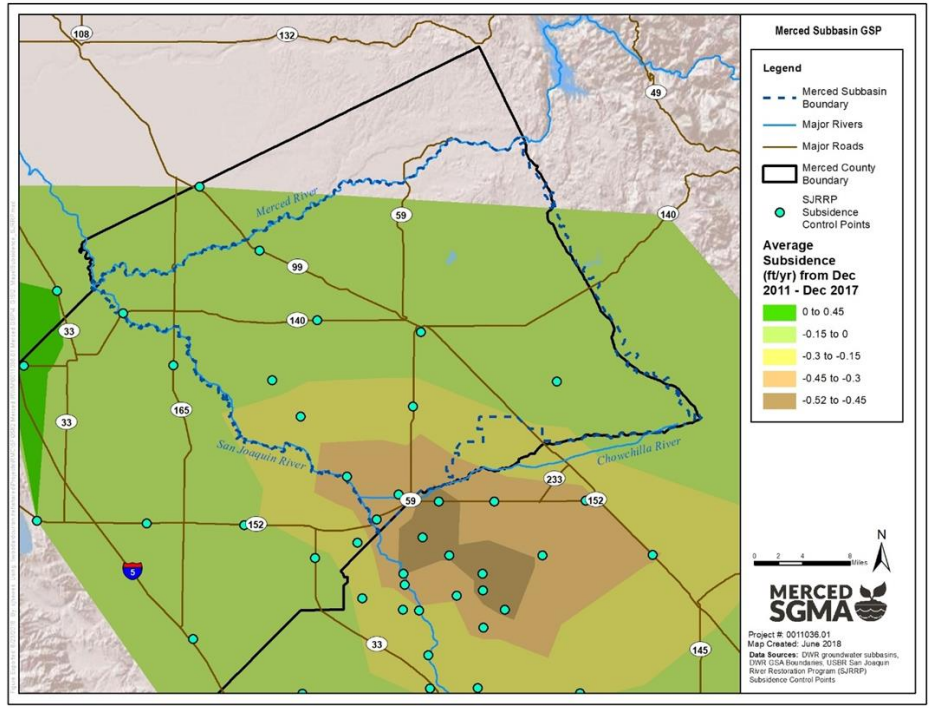
# Land Subsidence Conditions

- Subsidence has been observed in the southwestern portion of the Subbasin near the San Joaquin River
- Subsidence averaged 0.45 feet annually (December 2011 – December 2017), with the greatest rates observed during periods of drought
- MORE RECENT SUBSIDENCE
  - Dec 2017 – Dec 2022: -0.28 ft/year
  - Dec 2021 – Dec 2022: -0.42 ft
  - Dec 2022 – Dec 2023: +0.30 ft
- No undesirable results have been reported; however, impacts have been observed along the Eastside Bypass and within El Nido



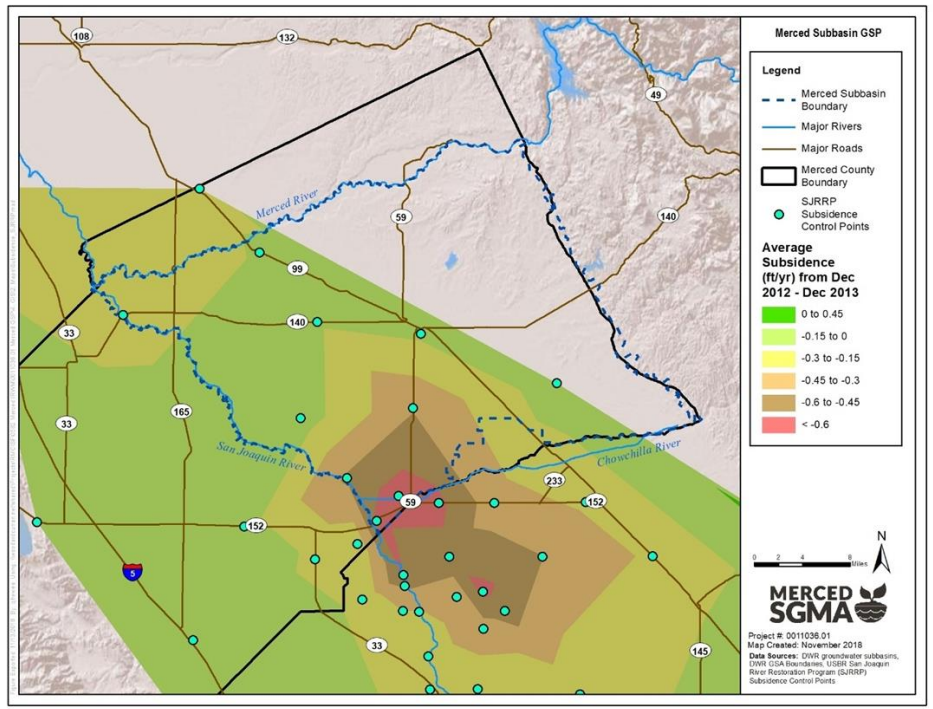
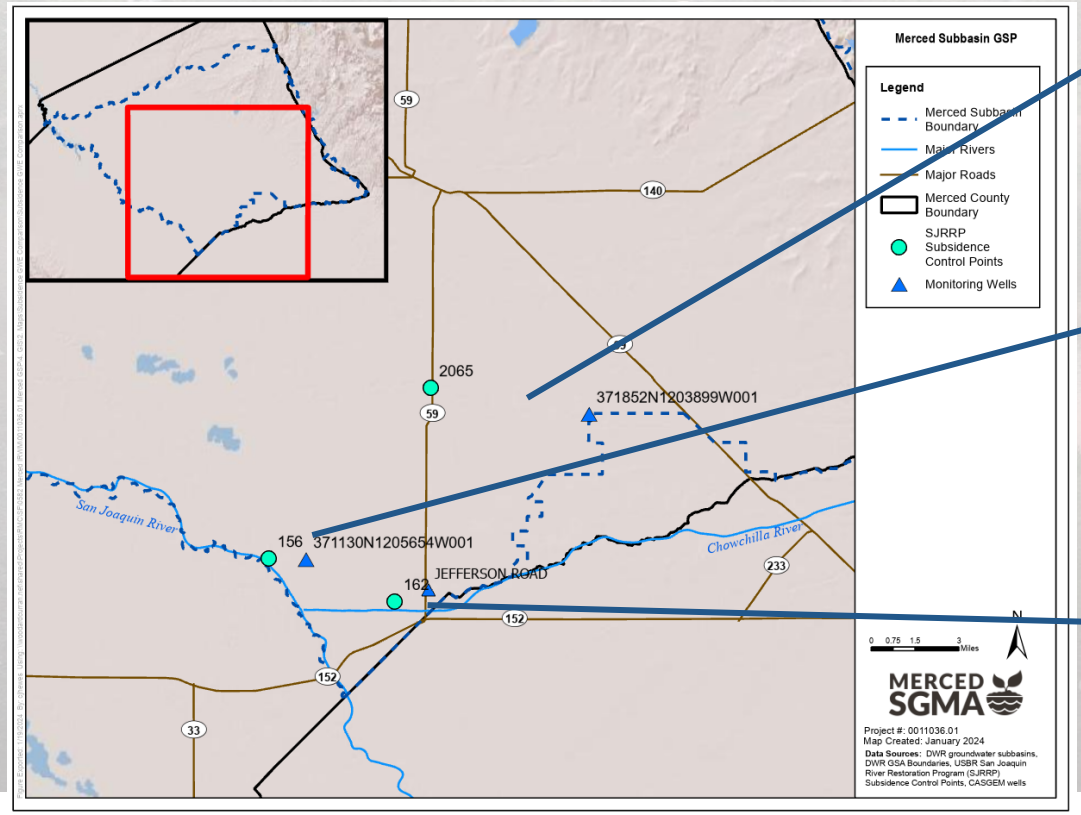




Image courtesy: Veronica Adrover/UC Merced

# Land Subsidence Conditions (cont.)

- Mixed relationship between groundwater levels and subsidence
- Groundwater level rise is expected to minimize subsidence, however it is not anticipated to fully prevent subsidence

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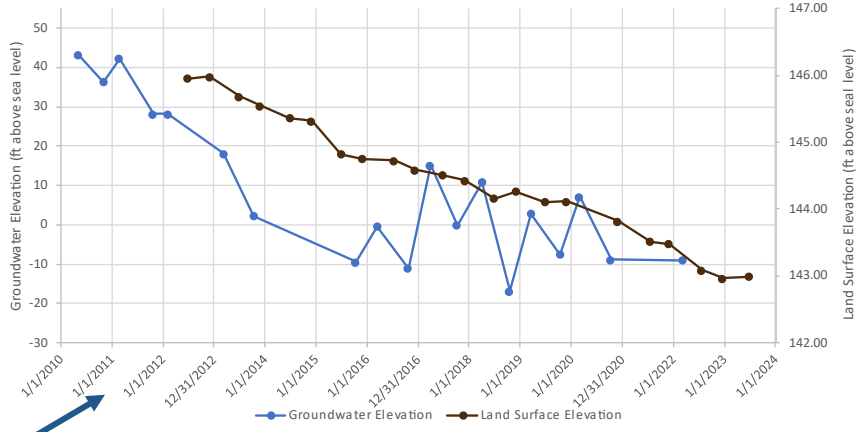
PT: 2065; GPS Stn: W938 RESET

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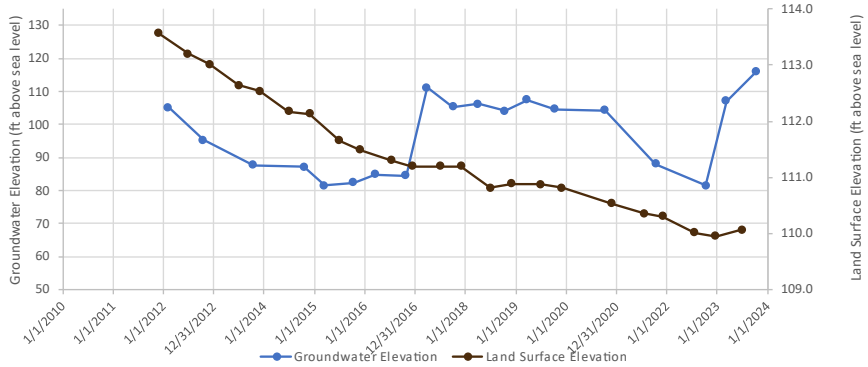
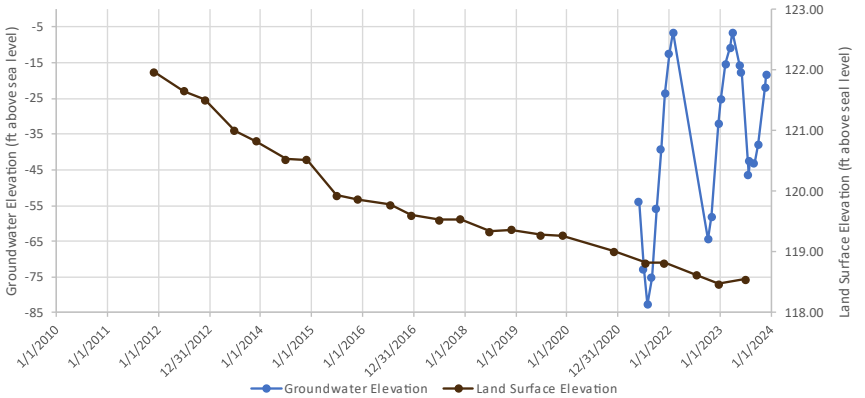
PT: 156; GPS Stn: W990 CADWR




STN ID: JEFFERSON ROAD
PT: 162; GPS Stn: RBF 1057



# Subbasin Land Subsidence Conditions – Sustainable Management Criteria

- Undesirable Result Definition: S*ignificant and unreasonable reduction in the viability of the use of infrastructure over the planning and implementation horizon of this GSP. Land subsidence that substantially interferes with surface land uses causes damage to public and private infrastructure (e.g., roads and highways, flood control, canals, pipelines, utilities, public buildings, residential and commercial structures).*
- Minimum threshold: *0 ft/yr (uncertainty measurement of ±0.16 ft/yr would be compliant)*
- Measurable Objective: *0 ft/yr*
- Interim Milestones:
  - *2025: 0.75 ft/yr*
  - *2030: 0.5 ft/yr*
  - *2035: 0.25 ft/yr*

Image courtesy: Veronica Adrover/UC Merced

# DWR Evaluation of Approved GSP - Recommended Corrective Actions

- (3a) The GSAs should identify the **total cumulative subsidence tolerable by critical infrastructure**. The Plan should also include additional details describing measures that **consider and disclose the current and potentially lasting impacts of subsidence** on land uses and groundwater beneficial uses and users.
- (3b) The GSAs should **revise its application of the level of uncertainty** as it relates to subsidence measurements according to standard professional practices. Establishment of sustainable management criteria should not allow for subsidence in perpetuity.

Image courtesy: Veronica Adrover/UC Merced

# Considerations for SMC Modifications

- GSP was approved.
- Recommended Corrective Actions are important; however, we feel the approach in the GSP satisfies SGMA requirements and revisions to the Amended GSP are expected to be relatively minor
- Build upon previous work where possible.  Avoid dramatic changes in approach unless warranted to allow focus on implementation rather than planning
- Chose simplicity where possible, complexity when necessary
- Push back where appropriate, based on local planning needs and SGMA regulations

Image courtesy: Veronica Adrover/UC Merced

# Considerations for Merced – Recommended Corrective Action 3a

The GSAs should identify the **total cumulative subsidence tolerable by critical infrastructure**.

- *Reiterate previous outreach to Reclamation. Reach out to Reclamation and other flood managers and transportation managers for comment.*

The Plan should also include additional details describing measures that consider and disclose the current and potentially lasting impacts of subsidence on land uses and groundwater beneficial uses and users.

Image courtesy: Veronica Adrover/UC Merced

# Considerations for Merced – Recommended Corrective Action 3a

The GSAs should identify the **total cumulative subsidence tolerable by critical infrastructure**.

- *Reiterate previous outreach to Reclamation. Reach out to Reclamation and other flood managers and transportation managers for comment.*

The Plan should also include additional details describing measures that consider and disclose the current and potentially lasting impacts of subsidence on land uses and groundwater beneficial uses and users.

- *Include additional information on the observed impacts of subsidence on the Eastside Bypass (and El Nido, if information is available). Discuss potential future subsidence impacts.*
- *Provide further discussion on how groundwater level SMC will reduce long-term subsidence.*

Image courtesy: Veronica Adrover/UC Merced

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# Considerations for Merced – Recommended Corrective Action 3b

The GSAs should **revise its application of the level of uncertainty** as it relates to subsidence measurements according to standard professional practices. Establishment of sustainable management criteria should not allow for subsidence in perpetuity.

- *Provide additional information on the Plan's rationale for establishing the measurement uncertainty as 0.16 ft/yr*
- *Include examples in amended Plan demonstrating how the uncertainty is incorporated into the minimum threshold*

Image courtesy: Veronica Adrover/UC Merced

# Next Steps

Image courtesy: Veronica Adrover/UC Merced

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# What's coming up next?

- Adjourn to next meeting, proposed May 22, 2024 at 10am
- Anticipated topics:
  - Updates to basin conditions, including, as appropriate, incorporation of:
    - Airborne Electromagnetic (AEM) data
    - recently collected groundwater level data
    - recently performed groundwater quality sampling
    - consideration of refinement of the characterization of depletions of interconnected surface water.
  - Continued discussion on Sustainable Management Criteria (SMCs).
- Public Workshop being planned for April/May.

Image courtesy: Veronica Adrover/UC Merced

# What's coming up next – Modeling preview

- Merced WRM is a key component of the GSP process
  - Assists in quantifying water budget components
  - Assists in identifying needs and potential benefits from PMAs
- Being updated as part of the periodic evaluation
  - Incorporate newer data, additional functionality, and newer understanding of the basin
  - Incorporate more recent hydrology
  - Recalibrate
- Includes a scenario to simulate current and planned PMAs
- Some output values may change somewhat
- Overall need and management approach is not expected to change – Management is ultimately to the Sustainability Indicators

Image courtesy: Veronica Adrover/UC Merced

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# Merced GSP
# Stakeholder Advisory Committee Meeting

**March 20, 2024**

**Merced Irrigation-Urban GSA**
**Merced Subbasin GSA**
**Turner Island Water District GSA-1**

Image courtesy: Veronica Adrover/UC Merced

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