
GSP Coordinating Committee

Coordinating Committee Meeting – June 25, 2018

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

Image courtesy: Veronica Adrover/UC Merced



Agenda

1. Call to Order
2. Approval of Minutes for May 29, 2018
3. Stakeholder Committee Update
4. Presentation by Woodard & Curran on GSP Development
 - a) Plan Area and Authority
 - b) Minimum Thresholds
 - c) Current Conditions Baseline
5. Coordination with Neighboring Basins
6. Update DWR's SGMA Technical Support Services
7. Public Comment
8. Next Steps and Adjourn

Image courtesy: Veronica Adrover/UC Merced



Stakeholder Committee Update

Image courtesy: Veronica Adrover/UC Merced



Plan Area and Authority

Image courtesy: Veronica Adrover/UC Merced

Plan Area and Authority

- Plan Area describes:
 - Plan Area definition and setting
 - Existing surface water and groundwater monitoring programs
 - Existing water management programs
 - General Plans in the Plan Area
 - Other water planning efforts in the Plan Area

Image courtesy: Veronica Adrover/UC Merced

Plan Area and Authority

- Authority describes:
 - GSAs and their organization
 - Governance and Management Structure
 - Legal Authority of GSAs

Image courtesy: Veronica Adrover/UC Merced

Plan Area and Authority

- Draft section for review at end of June
- Review and comment by July 23 meeting

Image courtesy: Veronica Adrover/UC Merced



Minimum Thresholds

Image courtesy: Veronica Adrover/UC Merced

Minimum Thresholds Need to be Developed for All Six Sustainability Indicators



Chronic Lowering of Groundwater Levels



Reduction in Groundwater Storage



Seawater Intrusion



Degraded Water Quality



Land Subsidence



Depletion of Interconnected Surface Water

Image courtesy: Veronica Adrover/UC Merced

Minimum Thresholds Should Be Set Where Undesirable Results Would Occur

- Undesirable Results are ***significant and unreasonable*** negative impacts that can occur for each Sustainability Indicator
 - Example: Lowest GW elevations can go at a monitoring point without something significant and unreasonable happening to groundwater
- Used to guide and justify GSP components
 - Monitoring Network
 - Minimum Threshold
 - Projects and Management Actions
- If issues are already occurring, we only need to “go back” to Jan 1, 2015 conditions; if no issues are occurring, can set threshold where they would be anticipated to occur

Image courtesy: Veronica Adrover/UC Merced

Process for Setting Measurable Objectives

Document Potential Undesirable Effects for Each Sust. Ind.

Identify Minimum Thresholds and Monitoring Locations

Develop Measurable Objectives above Each Minimum Threshold

Image courtesy: Veronica Adrover/UC Merced

Minimum Thresholds Need to be Developed for All Six Sustainability Indicators








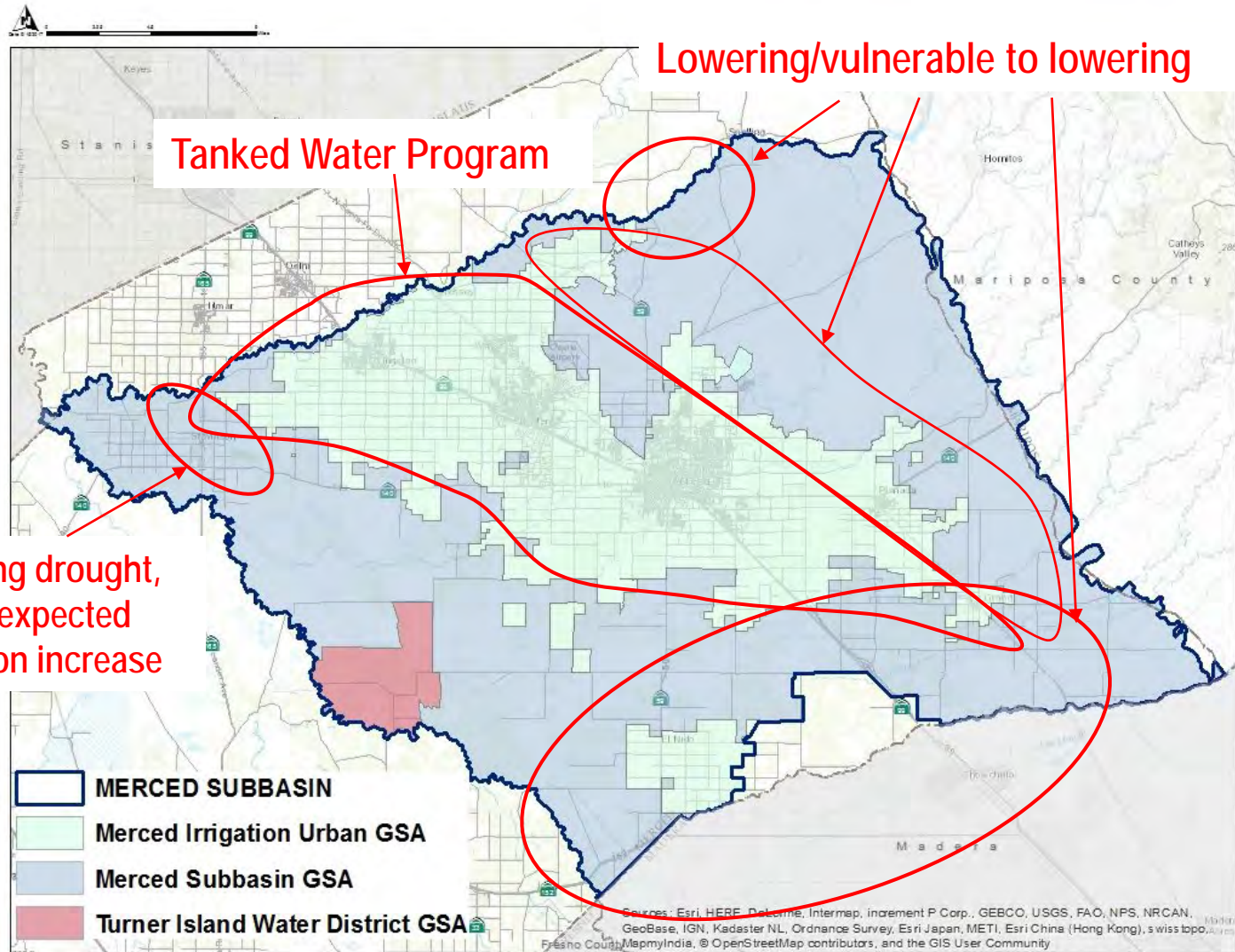
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-  Chronic Lowering of Groundwater Levels
 -  Reduction in Groundwater Storage
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 -  Degraded Water Quality
 -  Land Subsidence
 -  Depletion of Interconnected Surface Water

Image courtesy: Veronica Adrover/UC Merced

1. CC Reported Groundwater Level Concerns



Minimum Thresholds – Regulatory Requirement

- If issues are occurring now, need to set minimum thresholds at Jan 1, 2015 levels (or better)
- If issues are NOT occurring now, need to set minimum thresholds where issues are anticipated to occur (or better)
 - If issues are NOT occurring now, when might they have occurred in the past?

Image courtesy: Veronica Adrover/UC Merced

Minimum Thresholds – Approach Datasets to Identify Minimum Thresholds



- Historical Low Groundwater Elevations
 - Have we seen URs at past low groundwater levels?
 - If no historical indication of URs, then thresholds can be at this level or deeper
 - If indication of URs, thresholds can be set above that historical level or at 1/1/2015 levels
- Domestic well depths
 - Typically the shallowest wells, first impacted from declining groundwater elevations
 - Absent known historical URs, domestic well depth can define the minimum threshold
 - Minimum depth
 - Defined percentile

Image courtesy: Veronica Adrover/UC Merced

Minimum Thresholds – Approach Analysis based on Corcoran Clay



- Thresholds defined for 3 areas, based on Corcoran Clay
 - Outside
 - Above
 - Below
- Analysis performed separately for each

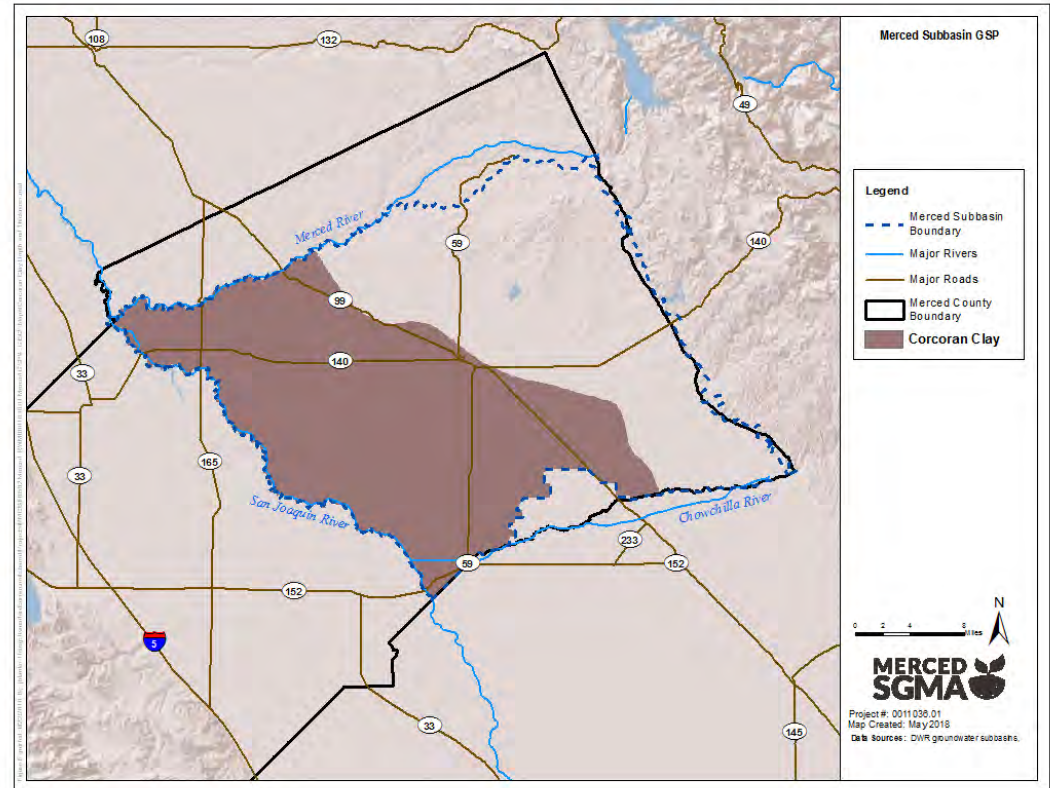
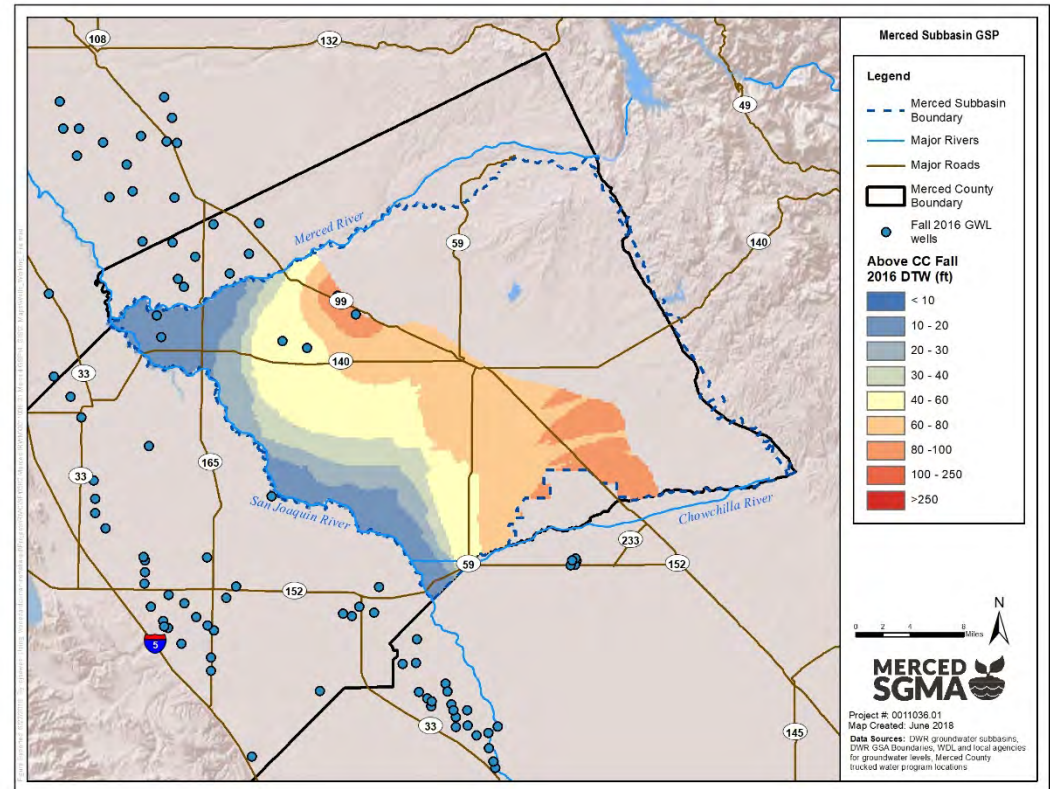


Image courtesy: Veronica Adrover/UC Merced

Minimum Thresholds – Historical Lows



- Historical low groundwater elevations generally reached in fall 2016.

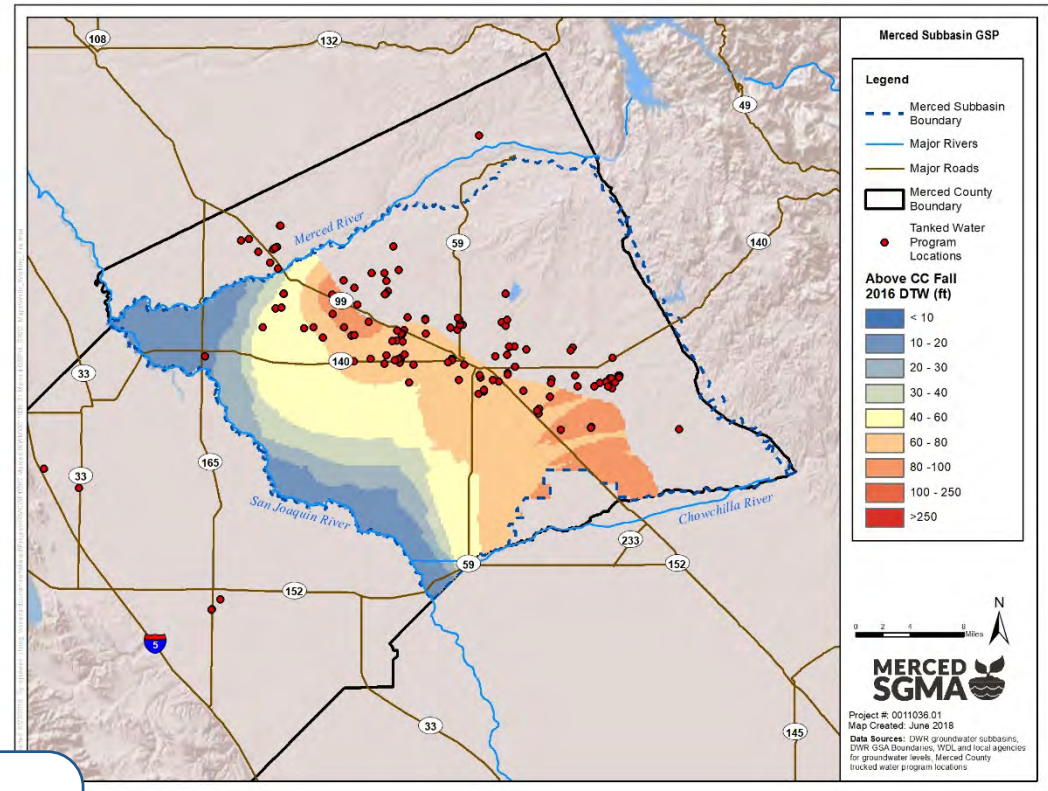


Opportunity for refinement:
Incorporate more wells (e.g., RWQCB)

Minimum Thresholds – Historical Lows



- URs known to have occurred in portions of the basin.



Opportunities for refinement:
Determine depth of wells with issues
Determine timing of issues

Veronica Adrover/UC Merced



Minimum Thresholds – Historical Lows



- Not responsible for pre-2015 impacts.
- Use fall 2014 for thresholds within the tanked water area (closest data point to 1/1/2015 regulatory date)

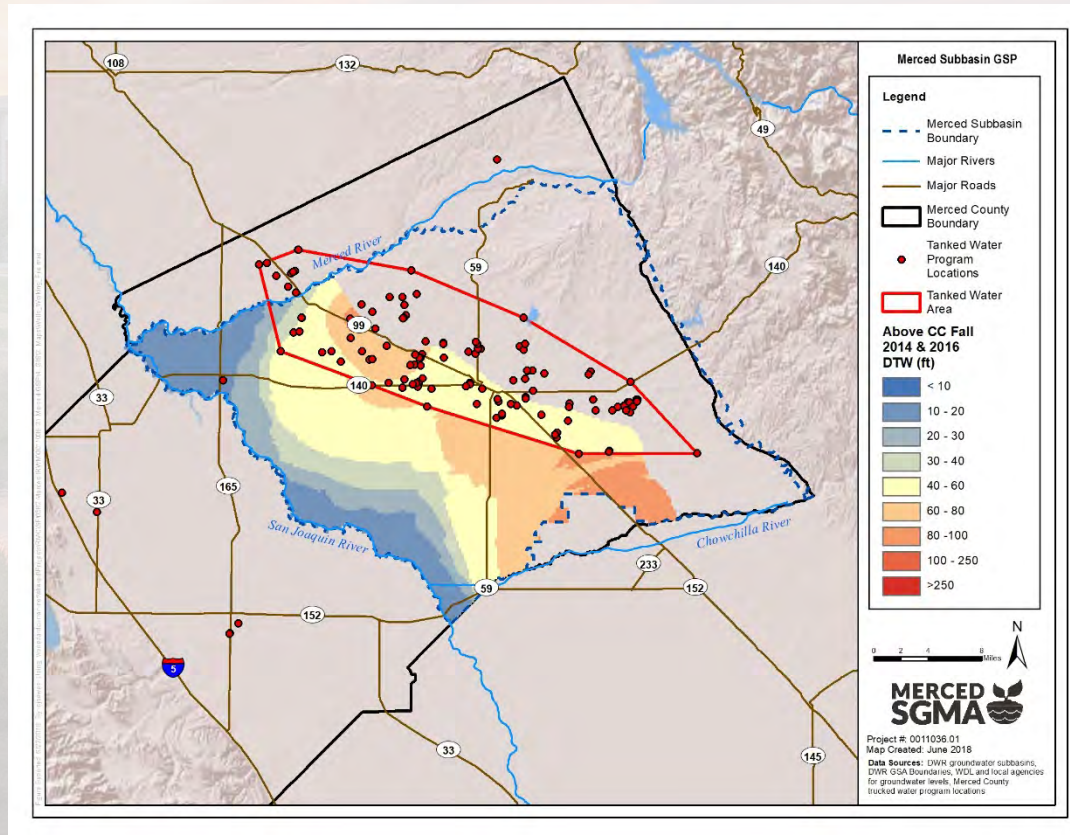


Image courtesy: Veronica Adrover/UC Merced

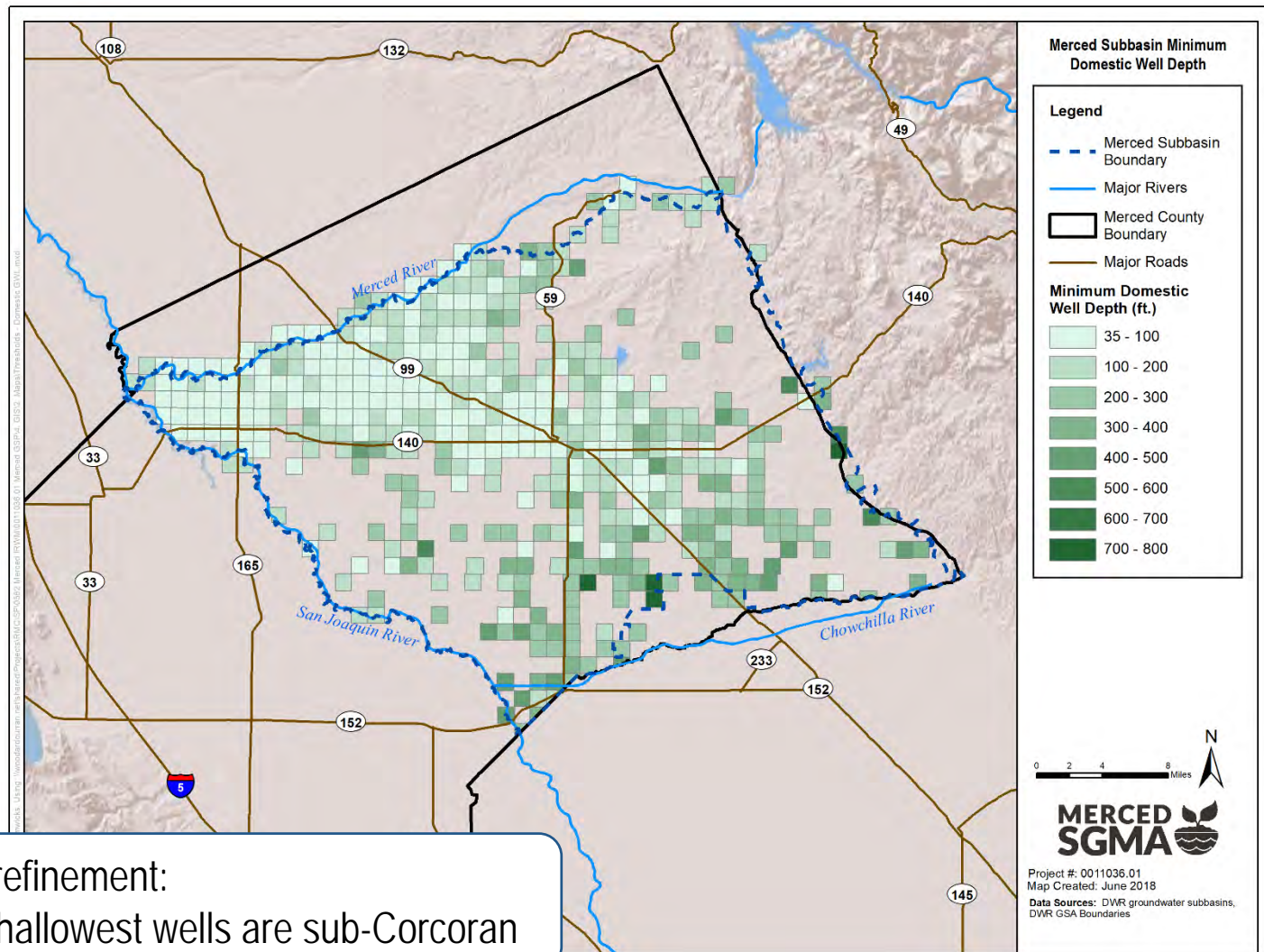
Minimum Thresholds – Domestic Wells



- Primary component of URs is domestic well dewatering
- Data on domestic wells is available from DWR's Online System for Well Completion Reports (OSWCR)

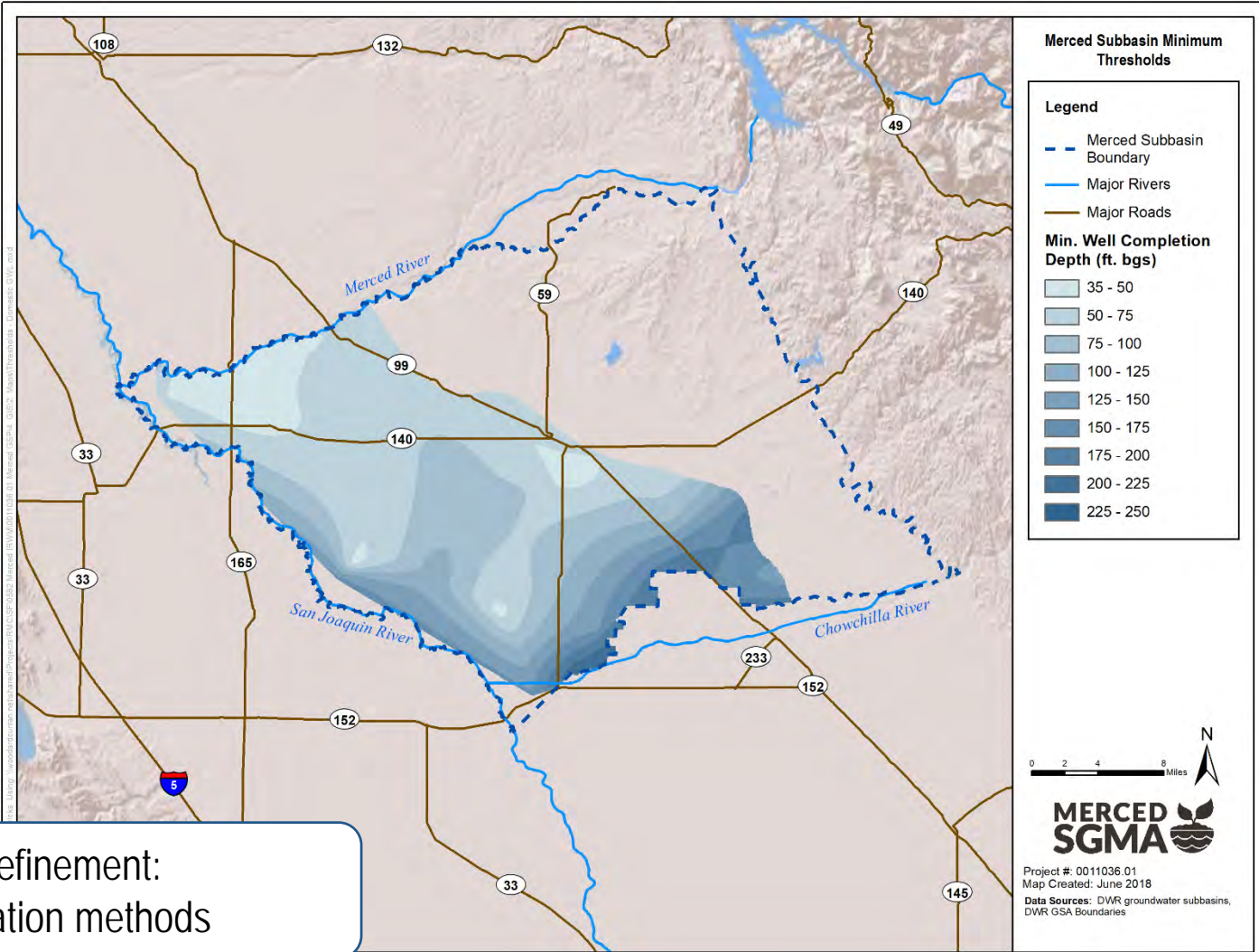
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Minimum Thresholds – Domestic Wells



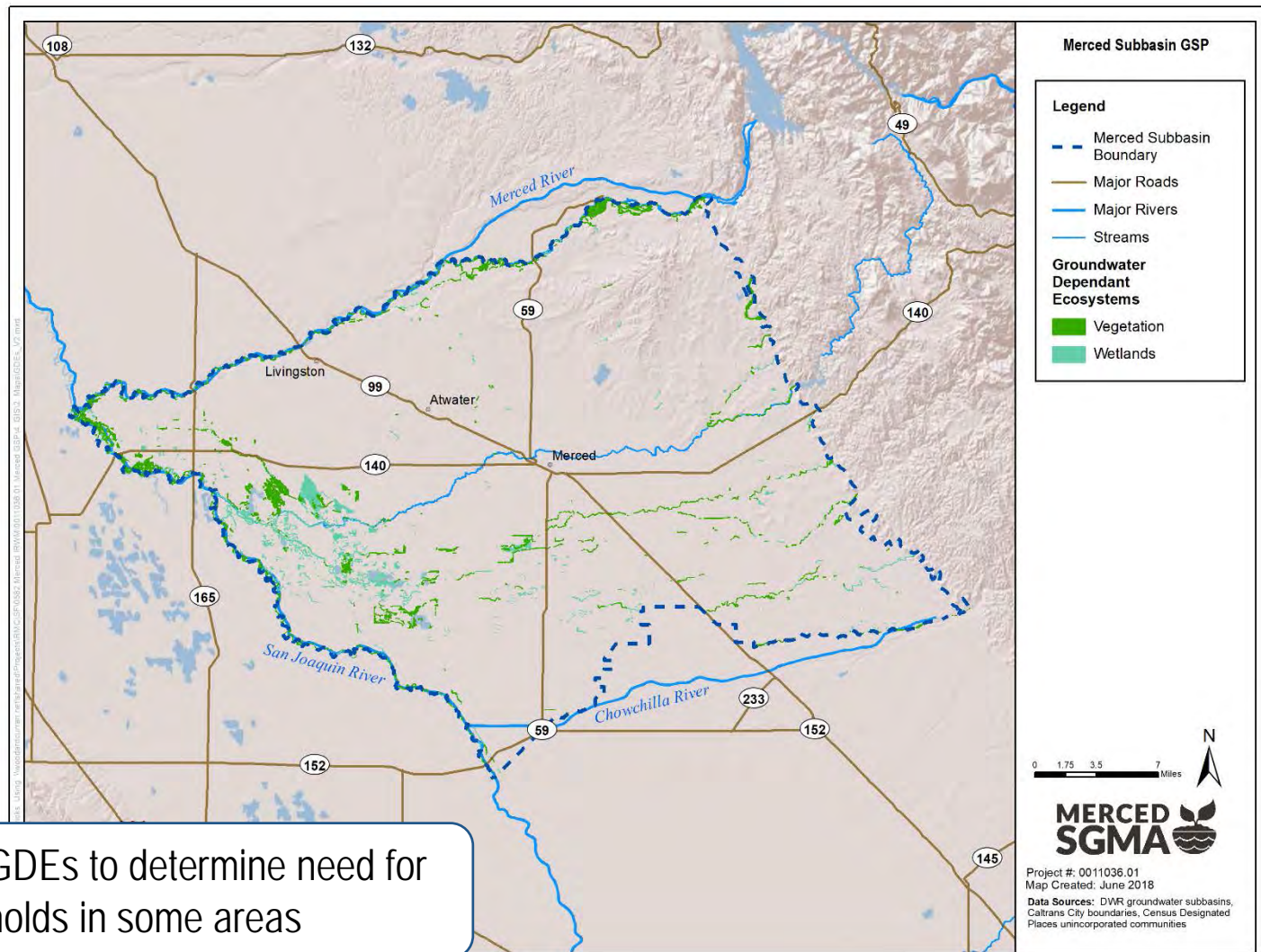
Opportunity for refinement:
Identify where shallowest wells are sub-Corcoran

Minimum Thresholds – Domestic Wells



Opportunity for refinement:
Improve aggregation methods

Minimum Thresholds – Pending: Groundwater Dependent Ecosystems



Need: Analyze GDEs to determine need for shallower thresholds in some areas

Next steps



- Refine datasets
- Combine depth to water analysis with domestic well analysis
- Incorporate GDE information
- Identify monitoring points and translate information to each location
- Meet with each GSA to discuss results

Image courtesy: Veronica Adrover/UC Merced

Minimum Thresholds Need to be Developed for All Six Sustainability Indicators







-  Chronic Lowering of Groundwater Levels
-  Reduction in Groundwater Storage
-  Seawater Intrusion
-  Degraded Water Quality
-  Land Subsidence
-  Depletion of Interconnected Surface Water

Image courtesy: Veronica Adrover/UC Merced

Reduction in Groundwater Storage

This Sustainability Indicator is not a concern for the Subbasin

****This does not mean we do not need to bring the basin into balance, it only means that groundwater-related impacts will be more sensitive to other indicators, such as groundwater elevations.*

Image courtesy: Veronica Adrover/UC Merced

Reduction in Groundwater Storage

- SGMA BMPs provide guidance on this:

“If a GSA believes a sustainability indicator is not applicable for their basin, they must provide evidence that the indicator does not exist and could not occur.” (SGMA BMP 6, Sustainable Management Criteria)

Reduction in Groundwater Storage

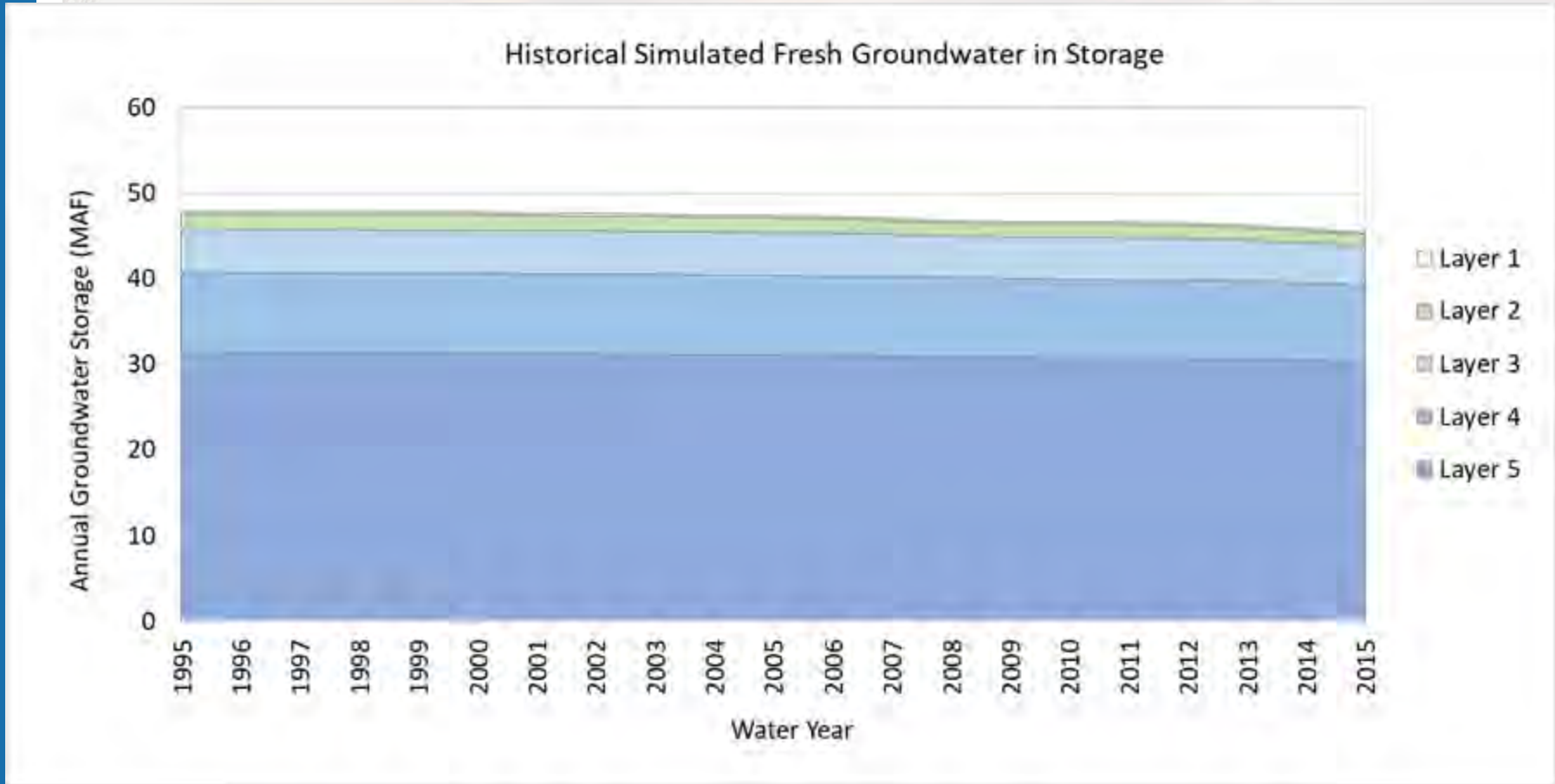


Image courtesy: Veronica Adrover/UC Merced

Minimum Thresholds Need to be Developed for All Six Sustainability Indicators








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-  Chronic Lowering of Groundwater Levels
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Image courtesy: Veronica Adrover/UC Merced

Seawater Intrusion

- Not applicable to this subbasin.

Direct seawater intrusion does not occur in the Subbasin and thresholds do not need to be addressed; salinity will be addressed via the Water Quality Sustainability Indicator

Image courtesy: Veronica Adrover/UC Merced



Current Conditions Baseline

Image courtesy: Veronica Adrover/UC Merced

Water Budget: Defining Time Frames

Historical

Uses historical information for hydrology, precipitation, water year type, water supply and demand, and land use going back a minimum of 10 years.

Covered Last Month

Current Conditions

Holds constant the most recent or "current" data on population, land use, year type, water supply and demand, and hydrologic conditions.

Covered This Month

Future Conditions

Uses the future planning horizon to estimate population growth, land use changes, climate change, etc.

Covered Next Month

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Image courtesy: Veronica Adrover/UC Merced

Current Conditions Baseline – Assumptions (1/2)

- Hydrologic Period: Water Years 1969-2018
- Streamflows
 - Merced River Flow: MercedSIM estimation of releases from New Exchequer
 - Other Tributaries: Historical record when available; Similar year methodology to estimate monthly streamflow
 - San Joaquin River: Assume historical flows and/or CalSim 3 operation of SJR
 - Eastside Bypass: Historical flows or CalSim 3 operations
- Land Use and Cropping Patterns & Urban Water Use
 - 2013 land use and cropping pattern, as well as extent of ag and urban development
 - 2013 population and GPCD
 - Industrial water use included indirectly, as part of reported GPCD
 - Industries relying on GW are currently not identified

Image courtesy: Veronica Adrover/UC Merced

Current Conditions Baseline – Assumptions (2/2)

- Main Canal Diversions: MercedSIM estimation of diversions from Merced River, based on current MID demands
- MID Deliveries
 - 1995-2013: Historical deliveries adjusted by MercedSIM Main Canal diversions
 - 1968-1994 & 2014-2018: Monthly delivery estimated based on WYI for 1995-2013
- TIWD Surface Water Diversions: Based on data by water year type to be provided by TIWD
- Stevinson WD and Merquin CWD Surface Water Diversions: Based on data by water year type to be provided by Stevinson
- Local Water Purveyor Operations: Monthly average using similar year method courtesy: Veronica Adrover/UC Merced

Historical Land & Water Use Budget (WY 1995-2015)

Merced Groundwater Subbasin

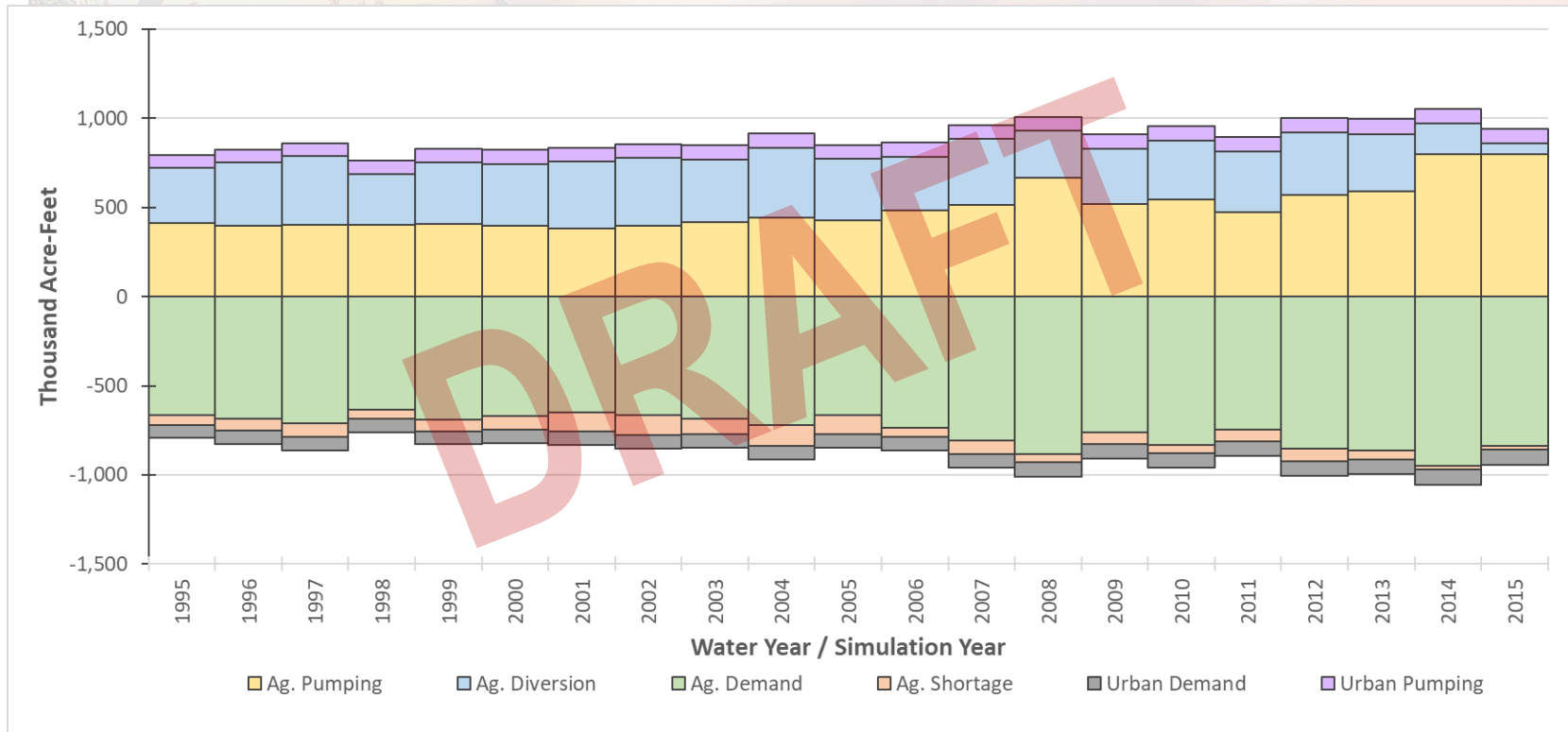


Image courtesy: Veronica Adrover/UC Merced

Historical Groundwater Budget (WY 1995-2015)

Merced Groundwater Subbasin

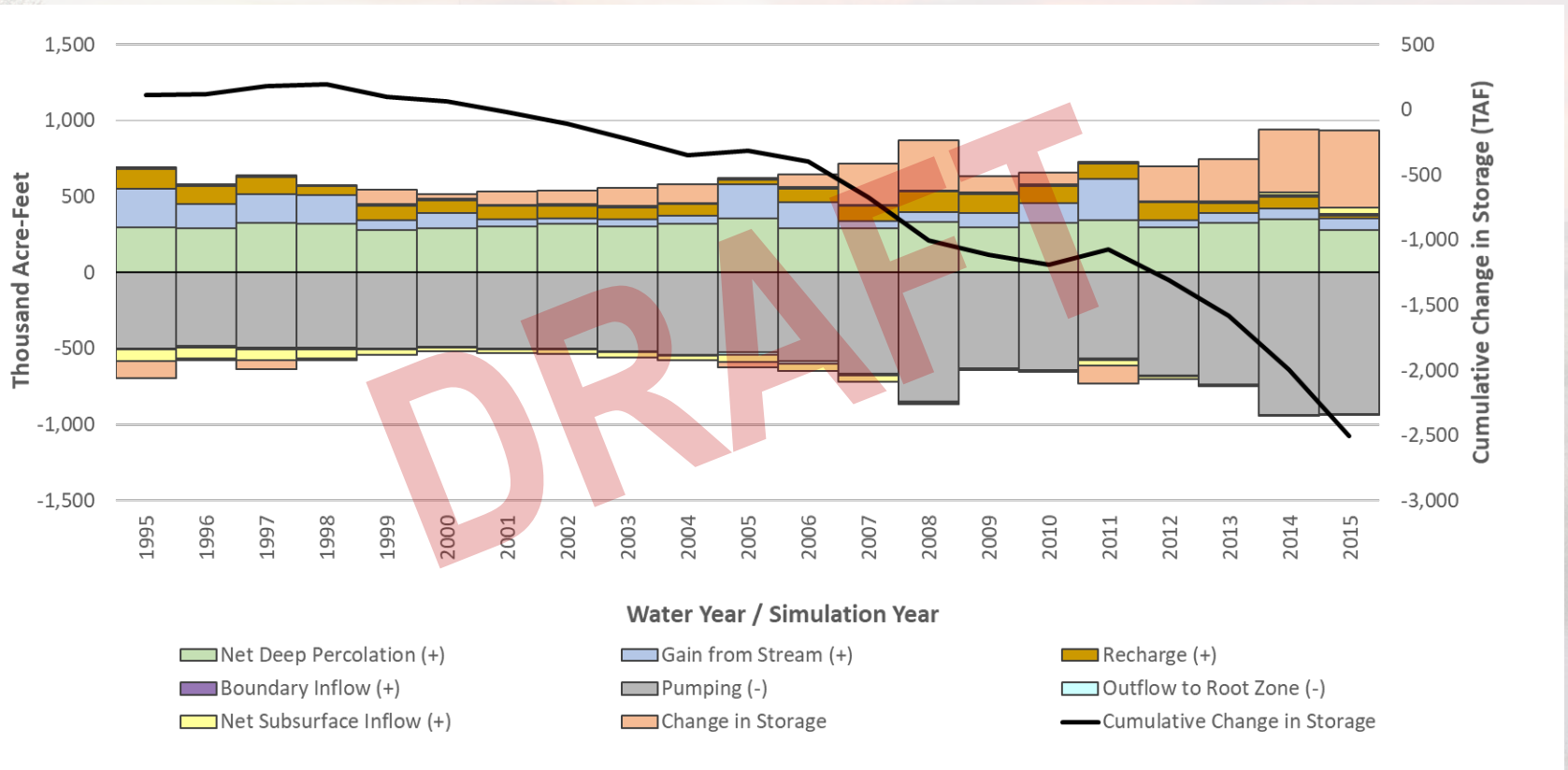


Image courtesy: Veronica Adrover/UC Merced

Historical Groundwater Budget (WY 1995-2015)

Merced Groundwater Subbasin

Merced Groundwater Subbasin Average Annual Estimated Groundwater Budget
(Historical Conditions: 1995-2015)

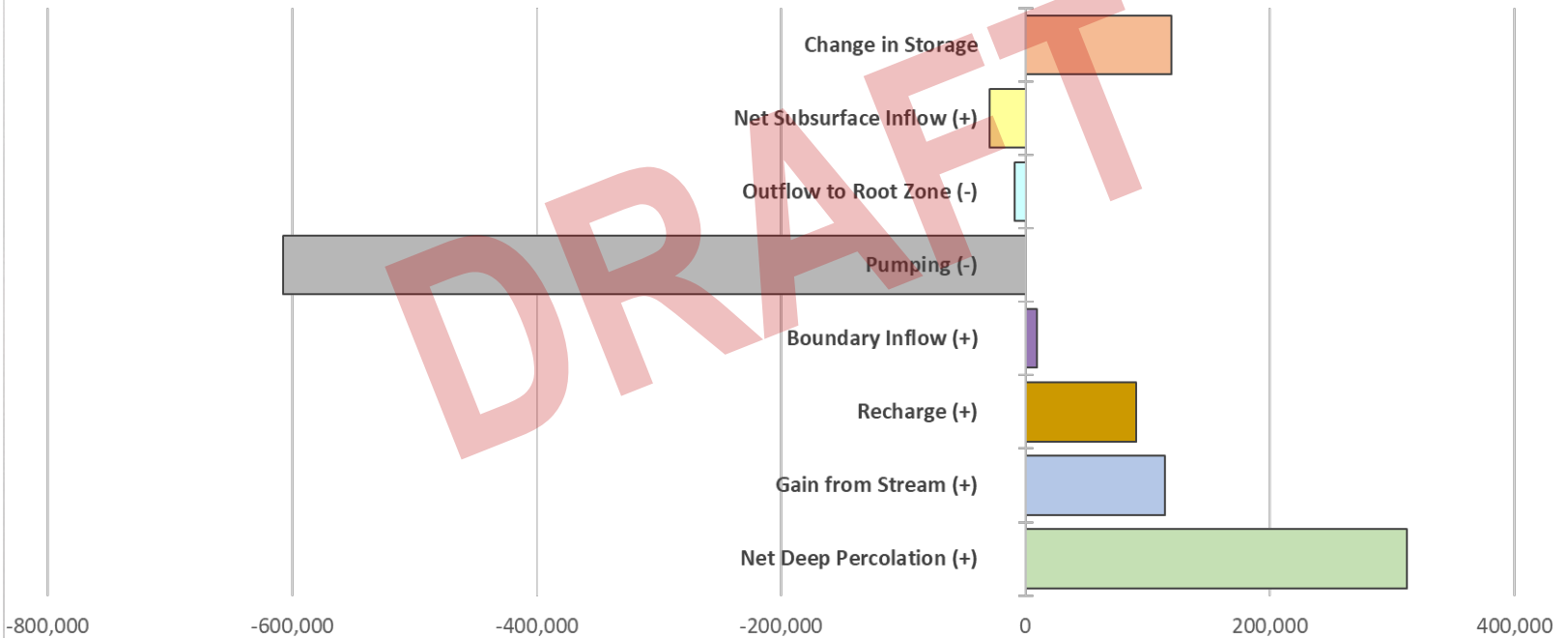


Image courtesy: Veronica Adrover/UC Merced

Current Conditions Baseline - Assumptions

- Hydrologic Period: Water Years 1968-2018 (~50-Year Hydrology)
- River Flows
 - Merced: MercedSIM
 - San Joaquin: CalSim
 - Local Tributaries: Historic Records
- Land Use and Cropping Patterns: 2014 LandIQ
- Urban Water Use: 2013
- Surface Water Deliveries
 - MID
 - SWD
 - TIWD
 - Chowchilla WD

Image courtesy: Veronica Adrover/UC Merced

Merced WR Model Historical Hydrology

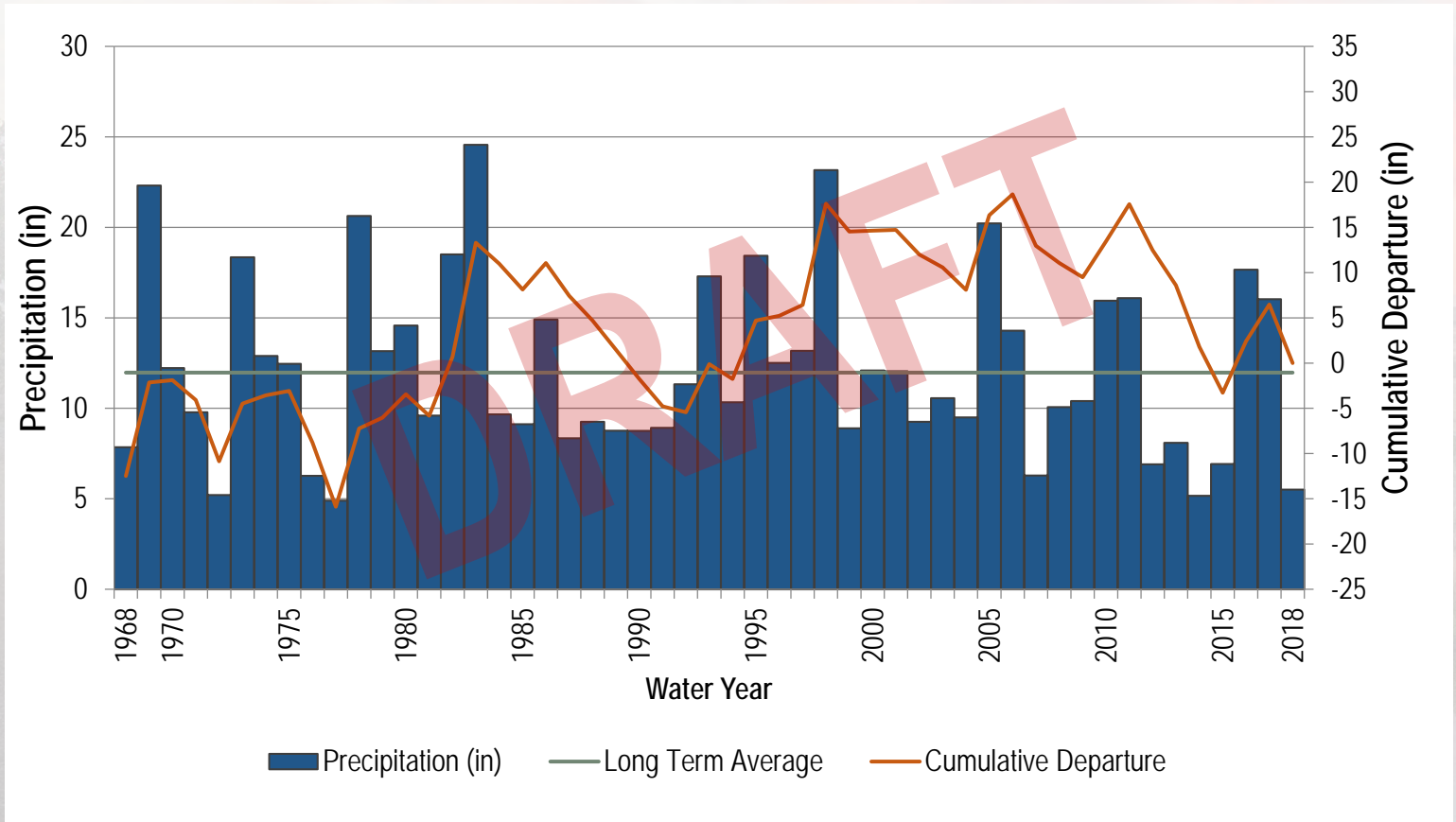


Image courtesy: Veronica Adrover/UC Merced

Merced WR Model Baseline Hydrology

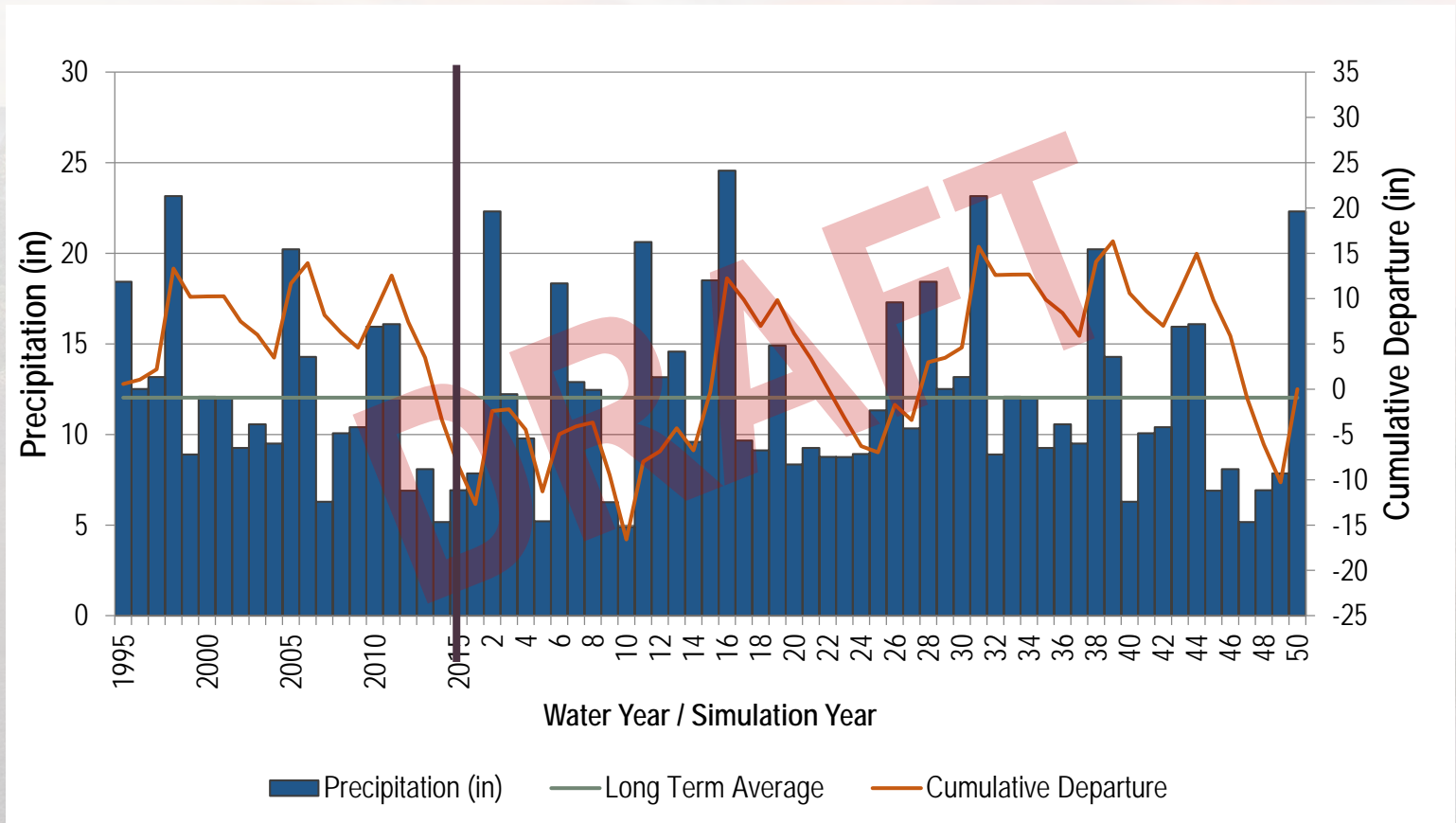


Image courtesy: Veronica Adrover/UC Merced

Current Condition Baseline Land & Water Use Budget

Merced Groundwater Subbasin

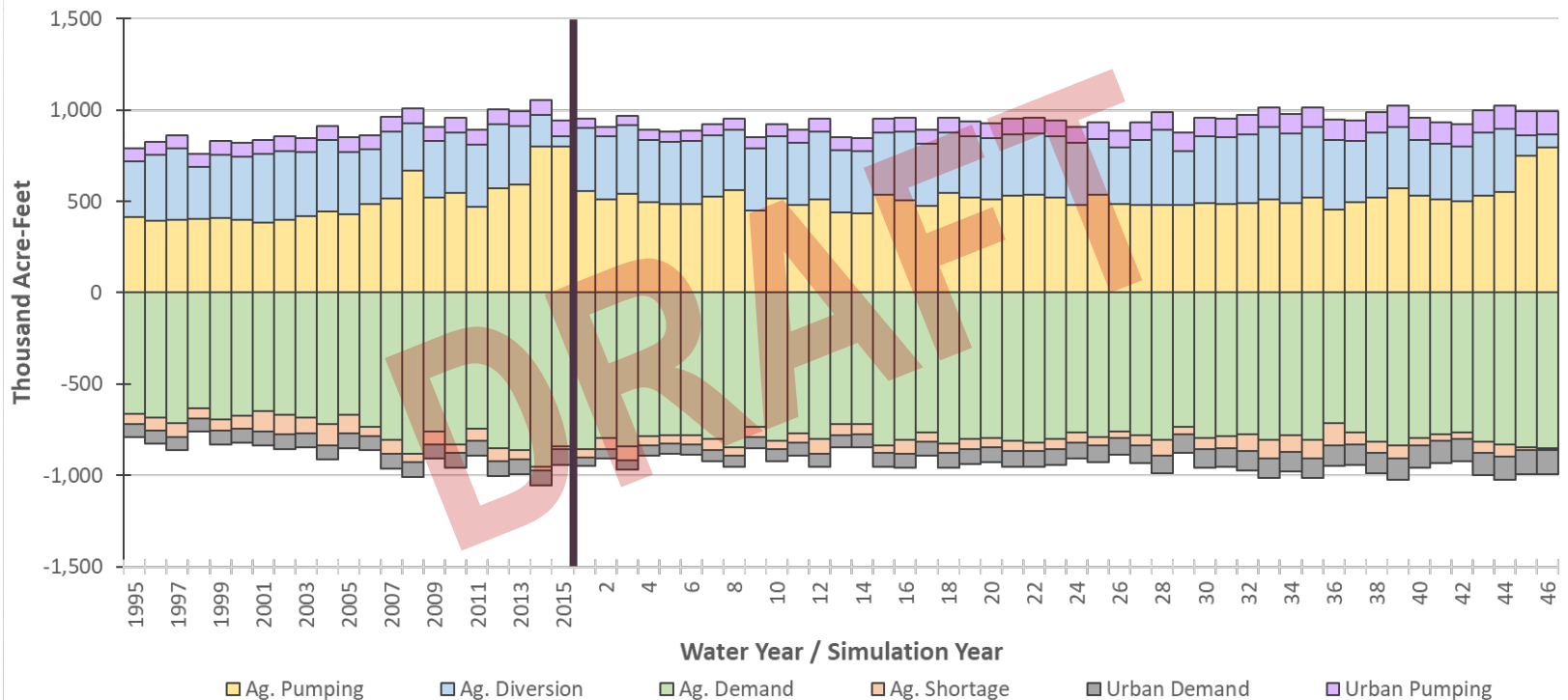


Image courtesy: Veronica Adrover/UC Merced

Current Condition Baseline Groundwater Budget

Merced Groundwater Subbasin

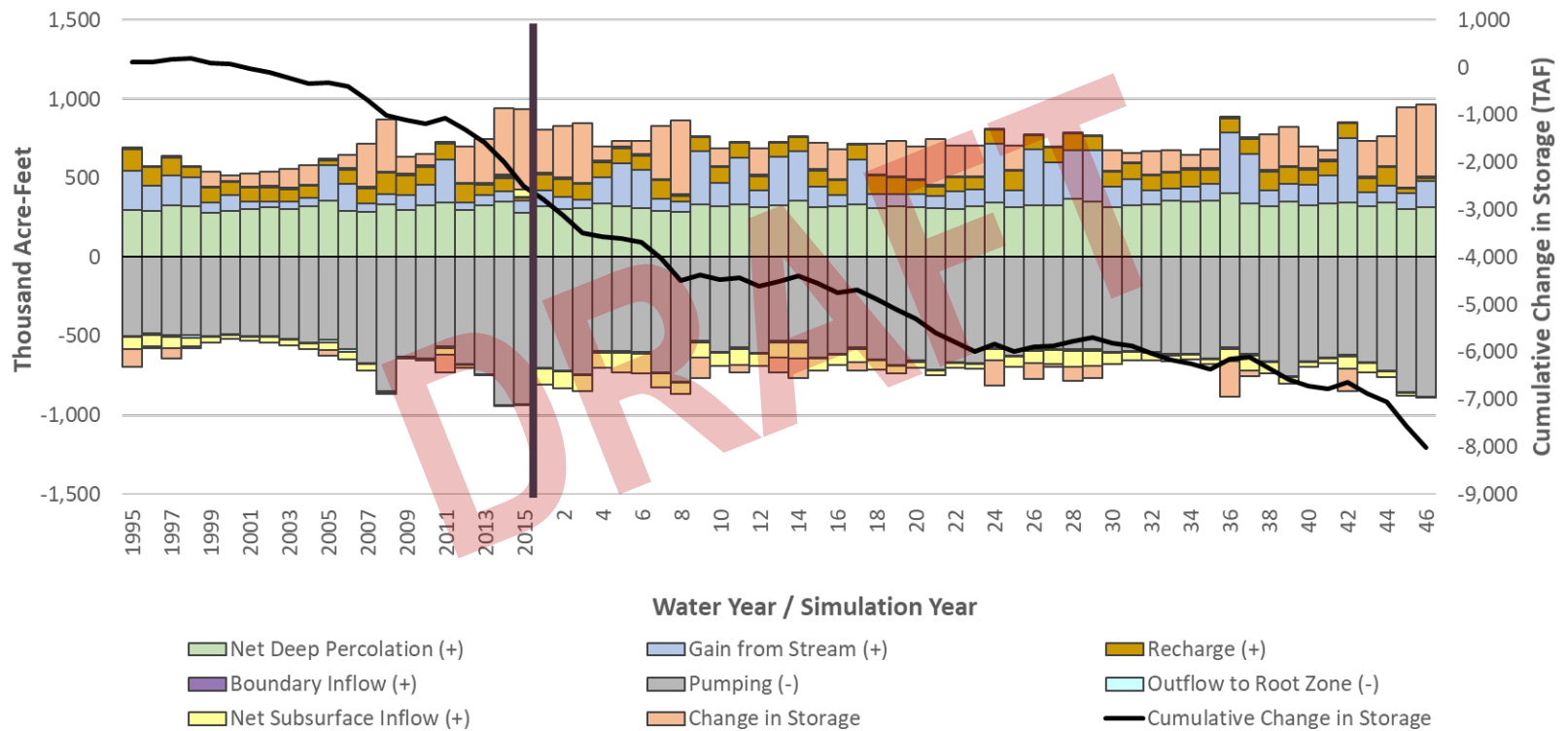


Image courtesy: Veronica Adrover/UC Merced

Current Condition Baseline Groundwater Budget

Merced Groundwater Subbasin

Merced Groundwater Subbasin Average Annual Estimated Groundwater Budget
(46 Year Baseline)

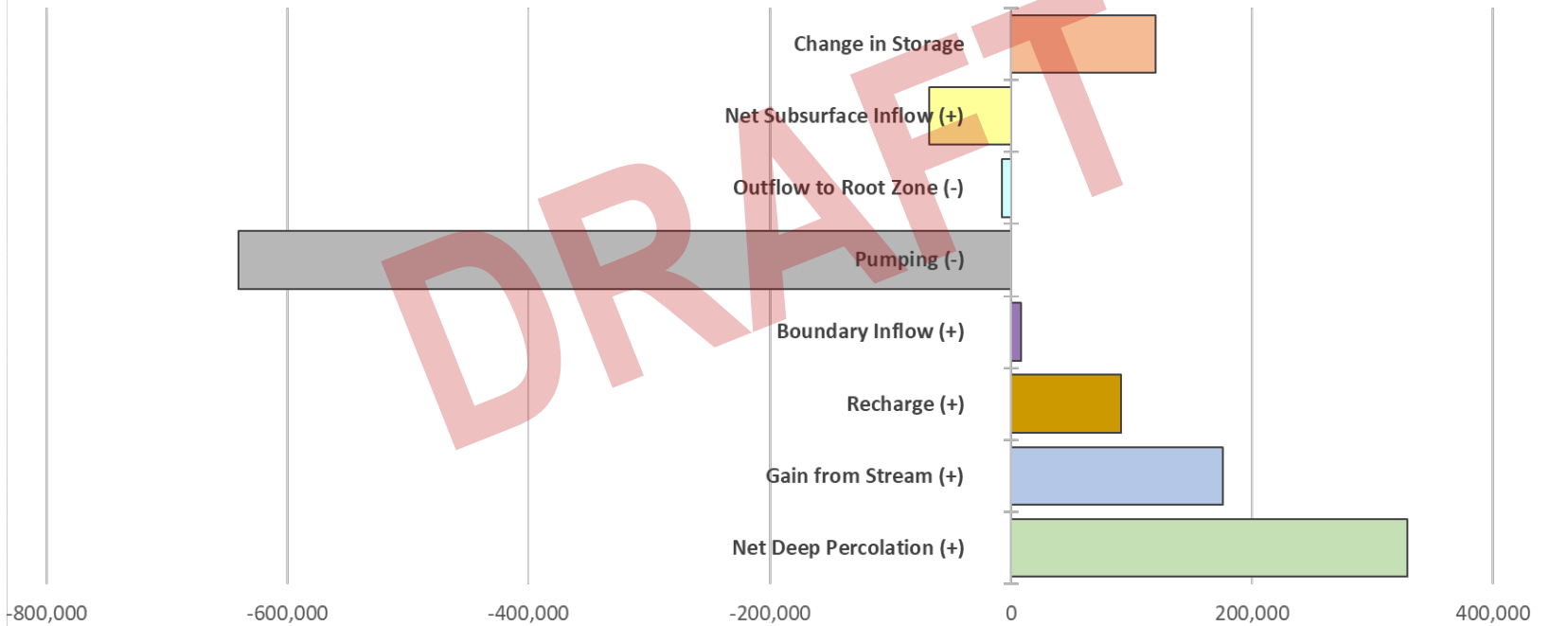


Image courtesy: Veronica Adrover/UC Merced

Future Conditions Baseline

- Hydrologic Period: Water Years 1968-2018 (~50-Year Hydrology)
- River Flows
 - Merced: MercedSIM
 - San Joaquin: CalSim
 - Local Tributaries: Historic Records
- Land Use and Cropping Patterns: 2014 LandIQ + Modified per local anecdotal information
- Urban Water Use: General Plan Buildout Conditions
- Surface Water Deliveries
 - MID- Merced Water Supply Plan + MID's policy of converting GW users to SW
 - SWD
 - TIWD
 - Chowchilla WD

Image courtesy: Veronica Adrover/UC Merced

What's Up Next? Projected Future Baseline

Historical

Uses historical information for hydrology, precipitation, water year type, water supply and demand, and land use going back a minimum of 10 years.

Covered Last Month

Current Conditions

Holds constant the most recent or "current" data on population, land use, year type, water supply and demand, and hydrologic conditions.

Covered This Month

Future Conditions

Uses the future planning horizon to estimate population growth, land use changes, climate change, etc.

Covered Next Month

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Image courtesy: Veronica Adrover/UC Merced

Projected Future Baseline Assumptions (1/3)

- Hydrologic Period: Water Years 1968-2018 (same as current baseline)
- Streamflows
 - Merced River Flow: MercedSIM projected releases from New Exchequer
 - Other Tributaries: Historical record when available; Similar year methodology to estimate monthly streamflow
- Land Use and Cropping Patterns
 - 2013 land use and cropping pattern for current footprint of ag development
 - Estimate future possible footprint of Ag development based on data and information to be provided by Merced County
 - Crop mix in TIWD to be provided by TIWD; expected to have more feed crops relative to the conditions today
 - Crop mix in SWD and MCWD to be provided by SWD
 - Footprint of urban development is SOI

Image courtesy: Veronica Adrover/UC Merced

Projected Future Baseline Assumptions (2/3)

- Urban Water Use
 - Population growth projections based on UWMP
 - 2013 level of GPCD, no additional voluntary conservation measures assumed for the baseline condition
 - Industrial water use is included indirectly, as part of the reported GPCD. Additional possible industries relying on GW need to be identified
- Main Canal Diversions: MercedSIM estimation of diversions from Merced River, based on projected MID demands
 - MID Deliveries: projected deliveries adjusted by projected MercedSIM Main Canal diversions
 - Assume MID continues policy of converting groundwater users to surface water where possible

Image courtesy: Veronica Adrover/UC Merced

Projected Future Baseline Assumptions (3/3)

- TIWD SW Diversions: Based on data by water year type to be provided by TIWD
- SWD and MCWD SW Diversions: Based on data by water year type to be provided by SWD
- Local Water Purveyor Operations: Monthly average using similar year method

Image courtesy: Veronica Adrover/UC Merced

Approach to Projecting Supply and Demand

Step 1

Identify future demands through 2040



Step 2

Identify supply projects with yield and timing



Step 3

Develop supplies and demand from "current" (2015) to 2040

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Image courtesy: Veronica Adrover/UC Merced

Homework / Request

- Review and provide comments on projected water supply and demand information, agricultural land use, industrial users on private wells

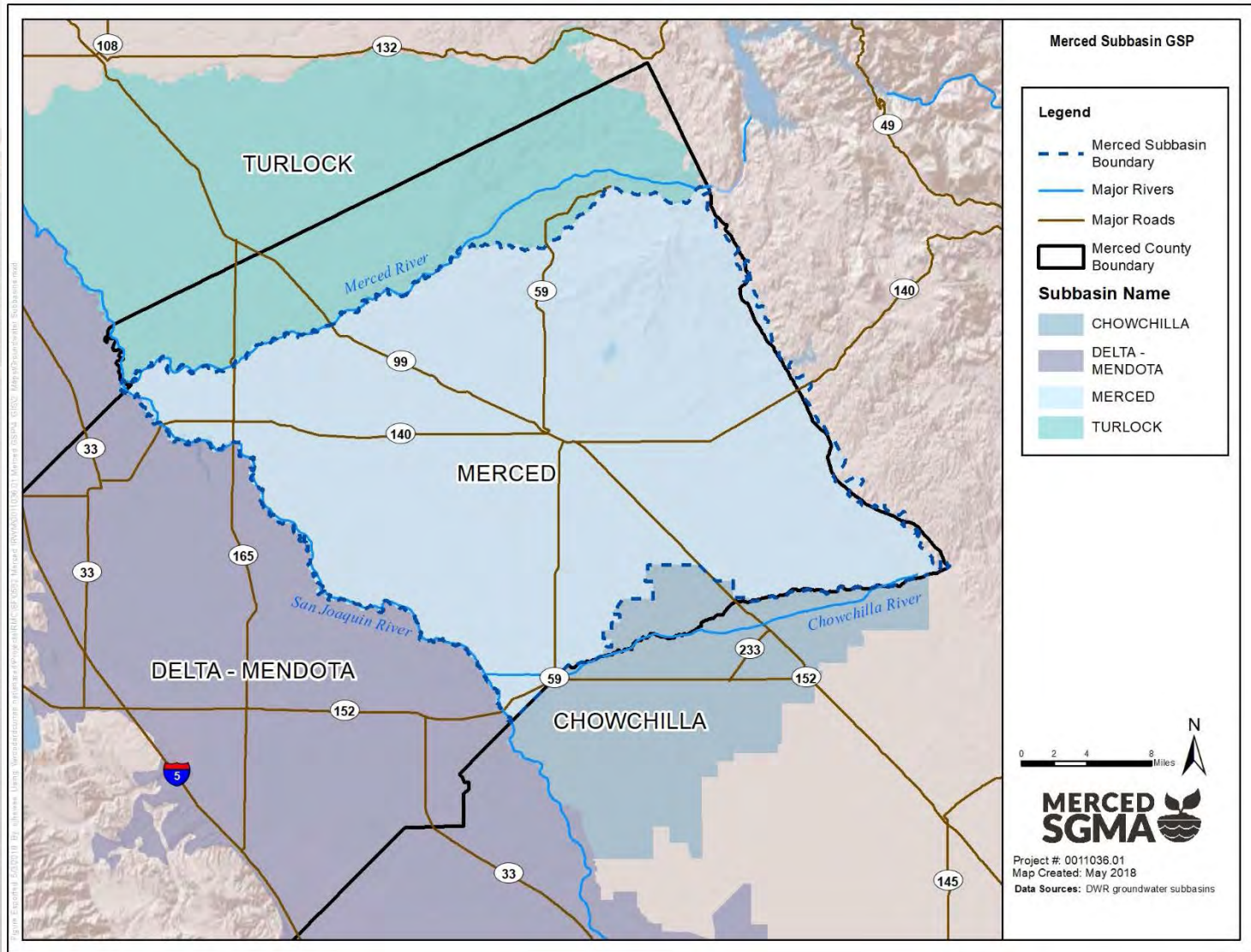
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Coordination With Neighboring Basins Update

Image courtesy: Veronica Adrover/UC Merced

Coordination with Neighboring Basins





DWR Technical Support Services Update

Image courtesy: Veronica Adrover/UC Merced





Questions/Comments from Public

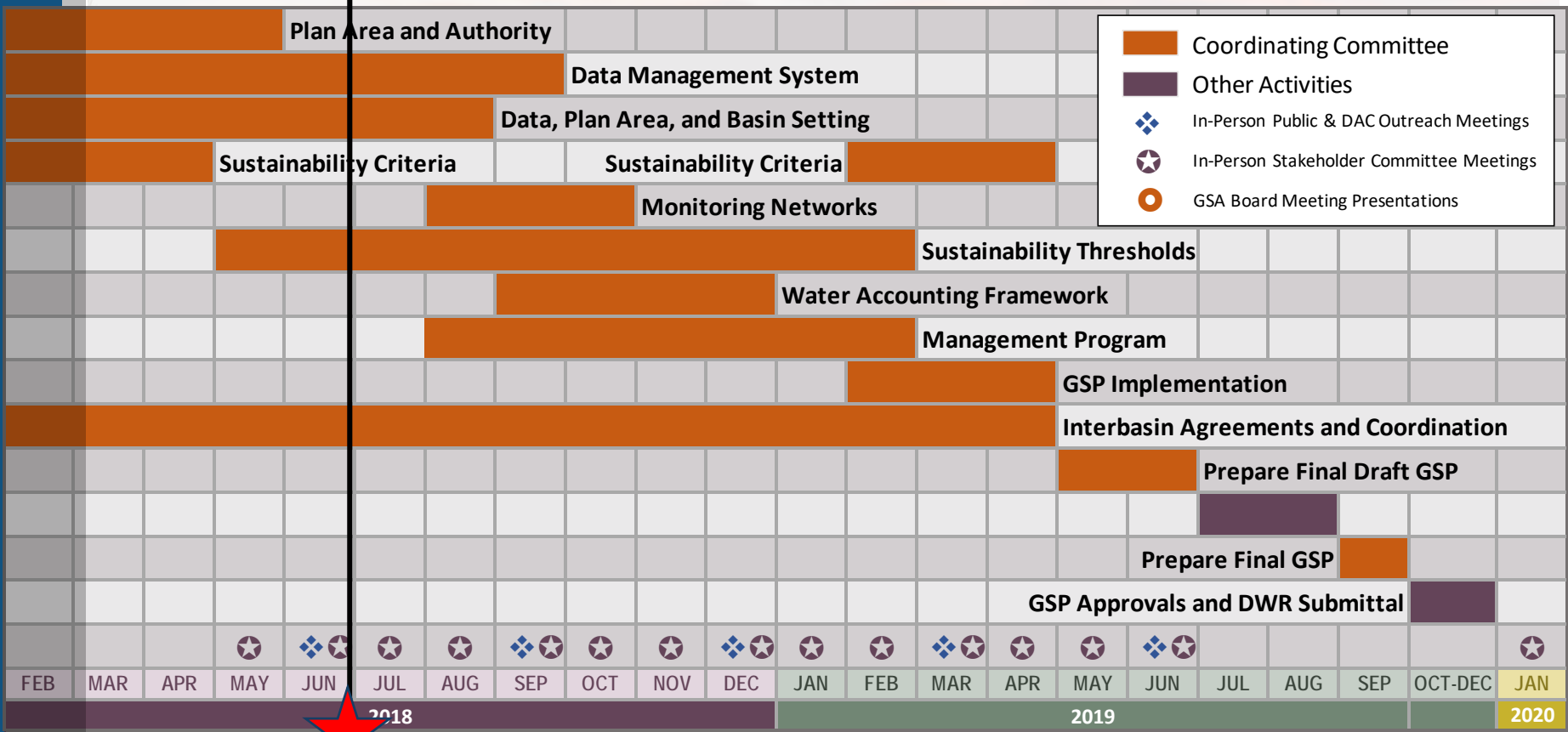
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Next Steps

Image courtesy: Veronica Adrover/UC Merced

GSP Process and Timeline: the "Roadmap"




 **We Are Here**

Image courtesy: Veronica Adrover/UC Merced



Next Steps

- Upcoming review of Plan Area and Basin Conditions in June / July
- Adjourn to next meeting (Monday, July 23, 2018 @ 1:30 PM, location Castle Airport)
- Focus for July meeting
 - Minimum thresholds
 - Projected water budget
 - Data management
- July 23 Joint Meeting with Stakeholder Committee / UC Merced study session @ 11:45 AM

Image courtesy: Veronica Adrover/UC Merced

GSP Coordinating Committee

Coordinating Committee Meeting – June 25, 2018

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Merced Subbasin GSA
Turner Island Water District GSA-1

Image courtesy: Veronica Adrover/UC Merced

