MERCED IRRIGATION-URBAN GSA

Merced Irrigation-Urban Groundwater Sustainability Agency

BOARD OF DIRECTORS MEETING

AGENDA
January 8, 2025
9:00 AM

Merced Irrigation District
Franklin Yard Facility
3321 North Franklin Road
Merced, CA 95348

A. CALL TO ORDER

B. PLEDGE OF ALLEGIANCE

C. ROLL CALL

D. CONSIDER CORRECTIONS OR ADDITIONS TO THE AGENDA

The Board will consider corrections or additions to the agenda of items requiring immediate action that have come to the attention of the Board after posting of the agenda.

E. OPPORTUNITY FOR PUBLIC COMMENT (5 MINUTES PER SPEAKER)

Interested persons in the audience are welcome to introduce any topic within MIUGSA's jurisdiction. Matters presented under this heading may be discussed but no action will be taken by the Board at this meeting.

F. CONSENT CALENDAR

All matters listed on the Consent Calendar are considered routine by the Board and will be adopted by one action of the Board unless any Board Member has any questions or wishes to make a statement or discuss an item. In that event, the Chair of the Board will remove that item from the Consent Calendar and place it for separate consideration.

G. PUBLIC HEARING

The Board will hear public comments regarding proposed revisions to the Merced Groundwater Subbasin Groundwater Sustainability Plan, as well as a Periodic Evaluation of the Groundwater Sustainability Plan.

1. Open the public hearing and receive testimony.
2. Close the public hearing.

H. ACTIONS/DISCUSSION ITEMS

1. Resolution 2025-01

The Board will review and consider taking action to adopt a revised Merced Groundwater Subbasin Groundwater Sustainability Plan together with a Periodic Evaluation of the Groundwater Sustainability Plan; authorize submittal of the revised Groundwater Sustainability Plan and Periodic Evaluation to the California Department of Water Resources; and authorize other actions relating thereto.

I. REPORTS

1. The Board will receive a report regarding progress of invoices sent to water accounts supplied by groundwater

J. CLOSED SESSION

None.

K. ADJOURN

Any material that are public records that relate to an agenda item and that are distributed to representative parties of MIUGSA less than 72 hours prior to the meeting shall be available for public inspection at the offices of the Merced Irrigation District, 744 West 20th Street, Merced, CA 95340 during normal business hours. In addition, any materials presented during open session are available for public inspection at the same address.

Posted: January 3, 2025

MEETING OF THE BOARD MEMBERS OF THE MERCED IRRIGATION-URBAN GROUNDWATER SUSTAINABILITY AGENCY

DATE: January 8, 2025

SUBJECT:
The Board will review and consider taking action to adopt a revised Merced Groundwater Subbasin Groundwater Sustainability Plan; authorize submittal of the revised GSP and a Periodic Evaluation to the California Department of Water Resources; and authorize other actions relating thereto.

RECOMMENDED ACTION:
Staff recommends the Board take action to adopt the revised Merced Groundwater Subbasin Groundwater Sustainability Plan (GSP), authorize submittal of the revised GSP and Periodic Evaluation of the GSP to the California Department of Water Resources (DWR), and authorize other actions that may be needed associated with the proposed action, as presented.

BACKGROUND:
Background of SGMA and the Merced Subbasin GSP

In 2014, the Sustainable Groundwater Management Act (SGMA) was signed into law. SGMA went into effect on January 1, 2015. SGMA generally requires the sustainable management of groundwater basins in California through the local management of groundwater resources. SGMA provides local groundwater sustainability agencies (GSAs) with the authority needed to work towards and enforce those goals, over time.

In 2017, the Merced Irrigation-Urban GSA (MIUGSA) was formed for the purpose of ensuring local control of groundwater resources within its jurisdictional boundaries. Subsequently, on September 5, 2017, MIUGSA executed a memorandum of understanding (MOU) between the 3 GSAs whom coordinated with each other to develop a single GSP to manage the Merced Subbasin. The GSAs and member agencies with authority to manage the Merced Subbasin are:

1. MIUGSA
   MID, City of Merced, City of Atwater, City of Livingston, Winton Water and Sanitary District, Planada Community Services District, Le Grand Community Services District
2. Merced Subbasin GSA (MSGSA)
   Merced County (White Areas), Le Grand Athlone Water District, Plainsburg Irrigation District, Stevinson Water District
3. Turner Island Water District GSA

Rather than each GSA developing and implementing its own GSP, the 3 GSAs collaborated on the creation of one GSP for the entire Merced Subbasin. The GSP sets minimum thresholds and measurable objectives for sustainability indicators in avoiding undesirable results identified in SGMA.

In early 2018, the 3 GSAs formed a Coordinating Committee of senior staff and governing board members to coordinate day-to-day planning activities and public outreach. The three GSAs also approved the

formation of a Stakeholder Advisory Committee of community representatives to provide input. Through the GSP development, numerous stakeholder and public meetings were held to provide information, report progress, and gather feedback.

The initial GSP was finalized and certified on November 12, 2019, posted on the www.mercedsgma.org website, and was adopted by the GSAs in December 2019.

On January 27, 2022, DWR provided a determination that the GSP was incomplete, and also provided comments identifying certain potential deficiencies. DWR's determination triggered a 180-day deadline for the GSAs to address the identified deficiencies in a revised GSP.

The GSAs, the Coordination Committee and the Stakeholder Advisory Committee each and respectively met on multiple occasions to discuss revisions to the GSP. Generally on each of those occasions, the boards, committee members and public were apprised of the progress of the development of the draft revised GSP. The revised GSP was adopted by the 3 GSAs and timely submitted to DWR in July 2022.

In August 2023, DWR approved the revised GSP. In the approval letter, DWR encouraged the 3 GSAs to consider and incorporate resulting changes of nine (9) recommended corrective actions identified for the future.

Current Activity and Proposed Action

SGMA requires GSAs to evaluate their GSP at least every five (5) years. Whenever the GSP is amended, a written assessment should also be provided to DWR, i.e., a Periodic Evaluation. Periodic Evaluations assess the effectiveness of the GSP in achieving sustainability goals. They evaluate and report on the progress of the GSP, and is required to be prepared and submitted to DWR at least once every five (5) years after the GSP's adoption. The first Periodic Evaluation of the GSP needs to occur no later than January 28, 2025.

For the last several months, staff and consultants for the 3 GSAs have been in the process of preparing an update to the GSP, and also the Periodic Evaluation. The GSAs, the Coordination Committee and the Stakeholder Advisory Committee have each respectively met on multiple occasions to discuss updates to the GSP. The MIUGSA Board has met and discussed development of the updated GSP at no less than 4 different Board meetings since August 2023, in addition to discussions held in other various public forums.

All 3 GSAs are seeking adoption of the updated GSP in early January. The revised GSP and Periodic Evaluation presented to this Board is identical to that being provided to the boards for the other GSAs. The information contained in this background report and resolution is substantially similar to the information provided to the other GSAs. By adopting and submitting the revised GSP and Periodic Evaluation, MIUGSA will fulfill a compliance requirement in accordance with SGMA.

On or before January 28, 2025, all 3 GSAs will adopt the GSP. The GSP and Periodic Evaluation will then be submitted officially by MIUGSA, the plan manager on behalf of the 3 GSAs and the entire Merced Subbasin, to DWR for review and approval.

The Executive Summary of the revised GSP and Periodic Evaluation have been attached to this background report for the Board's review. Staff will present more detailed information and a summary presentation at the Board's meeting, and will be available to answer any questions.

ALTERNATIVES/PROS CONS OF RECOMMENDED ACTION:

PROS:

- Adoption complies with SGMA requirements to timely submit a revised GSP and Periodic Evaluation to the DWR for Merced Subbasin.
- Supports local control over groundwater resources and avoids intervention of the State Water Resources Control Board in management of groundwater supplies in the Merced Subbasin.
- Adoption signifies major milestone supporting sustainable groundwater management in the Merced Subbasin.

CONS:

- If not adopted, could trigger intervention and possible groundwater resource management by the State Water Resources Control Board.
- If not adopted, deprives the region from MIUGSA member agencies' effective input with more than 100 years in water management experience.

FISCAL IMPACT:

Development of the revised GSP and Periodic Evaluation was funded through MIUGSA's Annual Budget. Costs associated with the implementation of the updated GSP are not expected to change MIUGSA's projected operating costs.

MERCED IRRIGATION-URBAN
GROUNDWATER SUSTAINABILITY AGENCY
RESOLUTION NO. 2025-01

RESOLUTION AUTHORIZING ADOPTION OF REVISED GROUNDWATER SUSTAINABILITY PLAN FOR THE MERCED GROUNDWATER BASIN, AND AUTHORIZING OTHER ACTIONS RELATING THERETO

WHEREAS, on September 16, 2014 then-Governor Jerry Brown signed into law Senate Bills 1168 and 1319, and Assembly Bill 1739, known collectively as the Sustainable Groundwater Management Act (SGMA); and

WHEREAS, SGMA generally requires sustainable management of groundwater basins within California through the development of groundwater sustainability plans (GSPs), which can be a single plan developed by one or more Groundwater Sustainability Agency (GSA), or multiple coordinated plans within the basin or subbasin; and

WHEREAS, SGMA allows for local control of groundwater resources by authorizing the creation of GSAs that govern implementation and enforcement of SGMA within their respective areas; and

WHEREAS, the California Department of Water Resources (DWR) has approved the creation of 3 GSAs to govern the Merced Groundwater Subbasin, namely: Merced Irrigation-Urban GSA (MIUGSA), the Merced Subbasin Groundwater Sustainability Agency (MSGSA), and the Turner Island Water District Groundwater Sustainability Agency (TIWD GSA-1), collectively referred to herein as the 'Merced Subbasin GSAs'; and

WHEREAS, MIUGSA, as well as the remaining Merced Subbasin GSAs overlying the Merced Subbasin has the authority to draft, adopt, and implement a GSP (Wat. Code, § 10725 *et seq*.); and

WHEREAS, the Merced Subbasin GSAs have elected to develop and implement a single GSP covering the entire basin (Wat. Code, §10725 *et seq*.); and

WHEREAS, the Merced Subbasin GSAs submitted a Notification of Intent to DWR to jointly develop a GSP for the Merced Groundwater Subbasin on January 4, 2018 in accordance with California Water Code §10727.8 and California Code of Regulations, Title 23, Section 353.6; and

WHEREAS, the Merced GSAs collectively submitted a GSP to DWR in January 2020, and MIUGSA has been actively and in good faith implementing the plan since that date; and

WHEREAS, on January 27, 2022, DWR provided a determination that the Merced GSP was incomplete, and provided a comment letter identifying certain deficiencies; and

WHEREAS, the DWR determination initiated a 180 day period for the Merced Subbasin GSAs to address the identified deficiencies and submit a revised GSP to DWR for review and approval; and

WHEREAS, the Merced Subbasin GSAs addressed DWRs comments and identified deficiencies through revisions in the revised Merced Groundwater Subbasin GSP dated July 2022; and

WHEREAS, the revised Merced Groundwater Subbasin GSP dated July 2022 was approved by DWR in August 2023 and said approval included recommended corrective actions to be considered for inclusion in future GSP updates; and

WHEREAS, GSPs are generally required to be reviewed and updated every five (5) years, and in anticipation of the first required review and revision of the GSP for the Merced Subbasin, staff for the Merced Subbasin GSAs have collectively and cooperatively engaged to prepare appropriate updates and revisions, which take into account and incorporate DWR's recommended corrective actions; and

WHEREAS, in addition to a revised draft GSP, staff and consultants for the Merced Subbasin GSAs have also prepared a related Periodic Evaluation of the GSP, which serves to assess the effectiveness of the GSP in achieving sustainability goals. Said Periodic Evaluation evaluates and reports on the progress of the GSP, and is required to be prepared and submitted to DWR at least once every five (5) years after the GSP's adoption; and

WHEREAS, the public review process for development of the revised GSP and Periodic Evaluation has been robust, which includes among other things, detailed discussions of the proposed updates at no less than four (4) meetings of the Board of Directors for MIUGSA (the Board). This is in addition to several meetings and discussions by the Boards of Directors for the other Merced Subbasin GSAs, the Coordination Committee and Stakeholder Guidance Committee; and

WHEREAS, prior to the Board's action to adopt the revised GSP, a public hearing was appropriately and timely noticed and held, during which public comments were received on the GSP and related Periodic Evaluation, and all comments have been considered by the Board; and

WHEREAS, the Board has had the opportunity to review the final draft revised Merced Groundwater Subbasin GSP, the Periodic Evaluation, and after thorough review the Board believes it is in the best interest of MIUGSA to adopt the updated GSP as presented, and authorize submittal of said GSP and Periodic Evaluation to DWR.

NOW, THEREFORE, BE IT RESOLVED that:

1. The recitals set forth hereinabove are true and correct and are incorporated herein.

2. The Board hereby adopts the updated Merced Groundwater Subbasin GSP in the substantial form presented.

3. The Board authorizes staff, its consultants and the Plan Manager to execute such documents and to take such other actions as may be reasonably necessary to submit the Merced Groundwater Subbasin GSP and Periodic Evaluation to DWR by January 28, 2025.

BE IT FURTHER RESOLVED THAT, the Chair, staff, counsel or either of their designees as may be appropriate given the applicable circumstances, is authorized to execute such other documents that may be necessary or appropriate, and is authorized to take such other actions as may be necessary or appropriate to carry out the intent of this Resolution, said execution to provide conclusive evidence of the Board's approval.

PASSED AND ADOPTED by the Board Members of the Merced Irrigation-Urban Groundwater Sustainability Agency this 8th day January 2025, by the following vote:

Ayes:	Members:
Noes:	Members:
Abstain:	Members:
Absent:	Members:

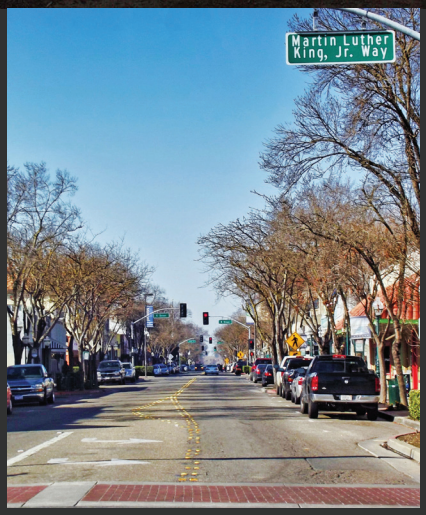
_____	_____
Hicham Eltal	Ken Elwin
Chair	Vice Chair
Merced Irrigation District	City of Merced

MERCED SGMA

Merced Groundwater Subbasin

GROUNDWATER SUSTAINABILITY PLAN

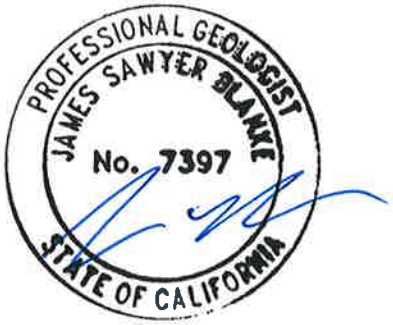
Image courtesy: Veronica Adrover/UC Merced



January 2025

Woodard & Curran

MERCED GROUNDWATER SUBBASIN GROUNDWATER SUSTAINABILITY PLAN 2025



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January 2025

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ACRONYMS AND ABBREVIATIONS

Acronym	Definition
µg/L	micrograms per liter
AB	Assembly Bill
AF	acre-feet
AFY	acre-feet per year
As	Arsenic
ASO	Airborne Snow Observatory
AWMP	Agricultural Water Management Plan
bgs	below ground surface
BMP	Best Management Practices
CALSIMETAW	California Simulation of Evapotranspiration of Applied Water
CASGEM	California Statewide Groundwater Elevation Monitoring Program
CCR	California Code of Regulations
CDEC	California Data Exchange Center
CDFW	California Department of Fish and Wildlife
CDL	Cropland Data Layer
CDP	Census Designated Place
CDPH	California Department of Public Health
CDPR	California Department of Pesticide Regulation
CEDEN	California Environmental Data Exchange Network
CEQA	California Environmental Quality Act
cfs	cubic feet per second
CGPF	CalSim II Generated Perturbation Factors
CGPS	continuous global positioning system
CGS	California Geological Survey
Cl	chloride
CPT	cone penetration test
Cr^6	Hexavalent Chromium
CSD	Community Services District
CVDRMP	Central Valley Dairy Representative Monitoring Program
CVGM	Central Valley Groundwater Monitoring Collaborative
CVHM	Central Valley Hydrologic Model
CV-SALTS	Central Valley Salinity Alternatives for Long-Term Sustainability
CWC	California Water Code
CWD	Chowchilla Water District

CWSRF	Clean Water State Revolving Fund
DAC	disadvantaged community
DBCP	dibromochloropropane
DDW	Division of Drinking Water
DHS	Department of Health Services
DLR	Detection Limit for Purposes of Reporting
DMS	Data Management System
DPR	Department of Pesticide Regulation
DTSC	Department of Toxic Substances Control
DWR	Department of Water Resources
DWSRF	Drinking Water State Revolving Fund
EC	electrical conductivity
EDB	ethylene dibromide
EPA	Environmental Protection Agency
ESJWQC	East San Joaquin Water Quality Coalition
ET / ETo	evapotranspiration / reference evapotranspiration
EWMP	Efficient Water Management Practices
F	Fahrenheit
Fe	iron
FEIS	Final Environmental Impact Statement
FERC	Federal Energy Regulatory Commission
Flood-MAR	Flood-Managed Aquifer Recharge
ft	feet
GAMA	Groundwater Ambient Monitoring and Assessment
GAR	Groundwater Quality Assessment Report
GCM	global climate model
GDE	Groundwater Dependent Ecosystem
GICIMA	Groundwater Elevation Monitoring Groundwater Information Center Interactive Mapping Application
GIS	Geographic Information System
GPCD	gallons per capita per day
gpm	gallons per minute
GPS	global positioning system
GQTM	Groundwater Quality Trend Monitoring
GSA	Groundwater Sustainability Agency
GSAs	MIUGSA, MSGSA, and TIWD GSA-1
GSP	Groundwater Sustainability Plan

HCM	Hydrogeologic Conceptual Model
HEC-HMS	Hydrologic Modeling System
HEC-RAS	Hydrologic Engineering Center River Analysis System
HUC	Hydrologic Unit Code
HVA	high vulnerability area
IDC	IWFM Demand Calculator
ILRP	Irrigated Lands Regulatory Program
IM	interim milestone
IRWM	Integrated Regional Water Management
IRWMP	Integrated Regional Water Management Plan
IWFM	Integrated Water Flow Model
JPA	Joint Powers Authority
LGAWD	Le Grand Athlone Water District
LIDAR	Light Detection and Ranging
LOCA	local analogs method
LTMWC	Lone Tree Mutual Water Company
LUST	Leaking Underground Storage Tank
MAF	million acre-feet
MAGPI	Merced Area Groundwater Pool Interests
MCL	Maximum Contaminant Level
MCWD	Merquin County Water District
MercedWRM	Merced Water Resources Model
METRIC	Mapping Evapotranspiration at High Resolution and Internalized Calibration
mg/L	milligrams per liter
MID	Merced Irrigation District
MIDH20	Merced Irrigation District Hydrologic and Hydraulic Optimization
MIRWMA	Merced Integrated Regional Water Management Authority
MIUGSA	Merced Irrigation-Urban Groundwater Sustainability
Mn	manganese
MO	measurable objective
MOA	memorandum of agreement
MOI	memorandum of intent
MOU	Memorandum of Understanding
MSGSA	Merced Subbasin Groundwater Sustainability Agency
MSL	Mean Sea Level
MT	minimum threshold

MTBE	Methyl tert-Butyl Ether
N	nitrogen
NCCAG	Natural Communities Commonly Associated with Groundwater
NEPA	National Environmental Policy Act
NO_3	nitrate
NTU	Nephelometric Turbidity Unit
NWIS	National Water Information System
NWR	National Wildlife Refuge
OWTS	onsite wastewater treatment systems
PBO	Plate Boundary Observatory
PCBs	polychlorinated biphenyls
PCE	Tetrachloroethylene or perchloroethylene
pCi/L	picoCuries per liter of air
PFOA	perfluorooctantoic acid
PFOS	perfluorooctanesulfonic acid
PMAs	projects and management actions
PRISM	Precipitation-Elevation Regressions on Independent Slopes Model
PRMS	Precipitation Runoff Model System
PWS	Public Water System
RCP	representative climate pathway
RTS	real time simulation model
RWQCB	Regional Water Quality Control Board
SB	Senate Bill
SCRO	DWR's South Central Region Office
SDAC	Severely Disadvantaged Community
SED	Substitute Environmental Document
SGMA	Sustainable Groundwater Management Act
SJRRP	San Joaquin River Restoration Program
SMCL	secondary maximum contaminant level
SMMWC	Sandy Mush Mutual Water Company
SNMP	Salt and Nutrient Management Plan
SOI	Sphere of Influence
SSURGO	Soil Survey Geographic Database
Subbasin	Merced Subbasin
SWD	Stevinson Water District
SWRCB	State Water Resources Control Board
TCA	1,1,1-trichloroethane

TCE	trichloroethylene
TCP	1,2,3-trichloropropane
TDS	total dissolved solids
TFP	Tolladay, Fremming & Parson
TIWD	Turner Island Water District
TIWD GSA-1	Turner Island Water District Groundwater Sustainability Agency #1
TM	Technical Memorandum
TNC	The Nature Conservancy
TON	Threshold Odor Number
UCM or UC Merced	University of California Merced
umhos/cm	micromhos per centimeter
USACE	United States Army Corps of Engineers
USBR	United States Bureau of Reclamation
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
USFWS	United States Fish & Wildlife Service
USGS	United States Geological Survey
UWMP	Urban Water Management Plan
VIC	Variable Infiltration Capacity
VOC	volatile organic compound
WDL	Water Data Library
WDR	waste discharge requirements
WEAP	Water Evaluation and Planning System
WRIMS	Water Resource Integrated Modeling System (formerly CalSim II)
WY	Water Year

EXECUTIVE SUMMARY

ES-1. INTRODUCTION AND PLAN AREA

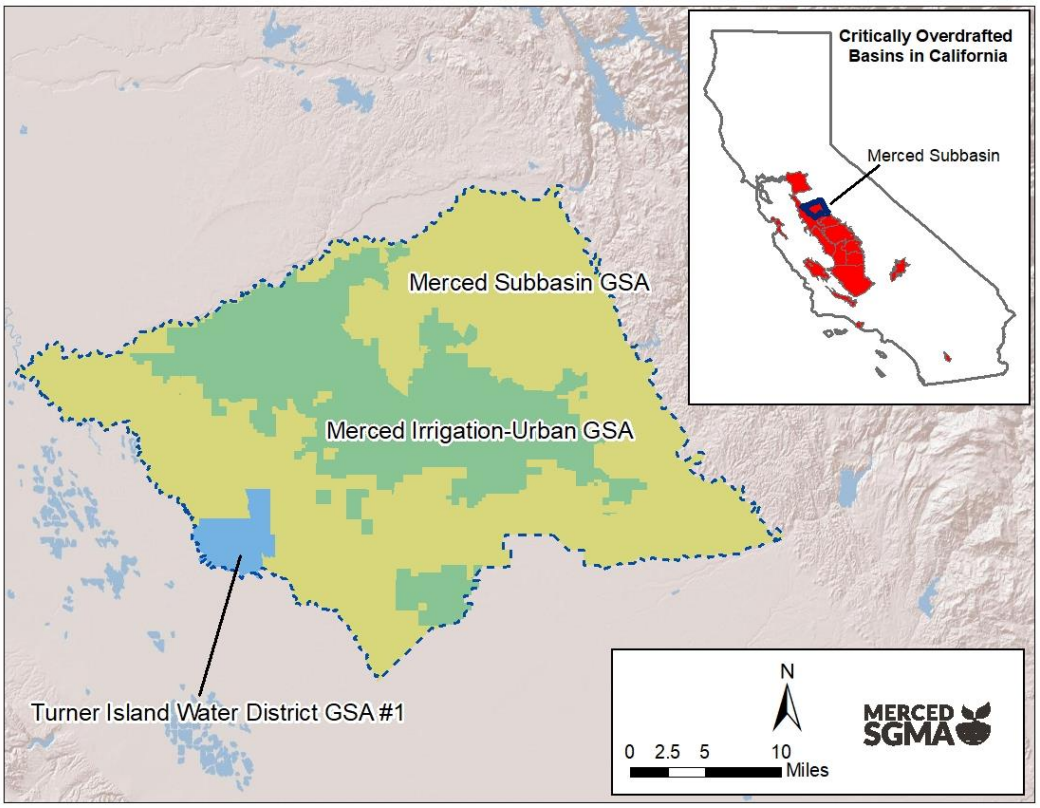
The Sustainable Groundwater Management Act (SGMA), passed in 2014, requires the formation of local Groundwater Sustainability Agencies (GSAs) to oversee the development and implementation of Groundwater Sustainability Plans (GSPs), with the ultimate goal of achieving sustainable management of California's groundwater basins. The purpose of this Groundwater Sustainability Plan is to bring the Merced Groundwater Basin (Merced Subbasin or Subbasin), a critically overdrafted basin located within the San Joaquin Valley (see Figure ES-1), into sustainable groundwater management by 2040. The Subbasin is heavily reliant on groundwater, and users recognize the Subbasin has been in overdraft for a long period of time.

The County of Merced and water purveyors and cities within the Merced Subbasin formed three GSAs in accordance with SGMA: Merced Irrigation-Urban Groundwater Sustainability Agency (MIUGSA), Merced Subbasin Groundwater Sustainability Agency (MSGSA), and Turner Island Water District Groundwater Sustainability Agency #1 (TIWD GSA-1) (see Figure ES-1-1), collectively referred to as "GSAs". The GSAs coordinated efforts to develop this GSP for the Subbasin. The GSAs have adopted the following sustainability goal for the Merced Subbasin:

> **Achieve sustainable groundwater management on a long-term average basis by increasing recharge and/or reducing groundwater pumping, while avoiding undesirable results.**

This goal will be achieved by allocating a portion of the estimated Subbasin sustainable yield to each of the GSAs, implementing demand management and allocation programs within each GSA, and coordinating the implementation of programs and projects to increase both direct and in-lieu groundwater recharge, which will in turn increase the groundwater and / or surface water available in the Subbasin.

Figure ES-1-1: Merced Subbasin Location Map and GSAs



Development and implementation of the GSP are guided by a Coordination Committee composed of members appointed by the GSA Boards to provide recommendations on technical and substantive basin-wide issues. The Coordination Committee and GSA Boards are also informed by a Stakeholder Advisory Committee, which consists of a broad group of groundwater beneficial users (also appointed by the GSA Boards) to review groundwater conditions, management issues and needs, and projects and management actions to improve sustainability in the basin. Extensive outreach has also been conducted to seek input from additional beneficial users of groundwater through multiple venues including public workshops held in locations specifically selected to provide access to disadvantaged communities. Figure ES-1-2 illustrates the relationship among the groups described above.

Figure ES-1-2: Diagram of Levels of Engagement and

This 2025 GSP Update includes revisions to the July 2022 GSP in response to changes in Subbasin conditions, Subbasin management, and to the Statement of Findings issued by the California

Department of Water Resources (DWR) on August 4, 2023 (DWR, 2023). A redlined version of the GSP that highlights the edits can be found on MercedSGMA.org.

ES-2. BASIN SETTING

Hydrogeologic Conceptual Model

The Merced Subbasin contains three principal aquifers that are defined by their relationship to the Corcoran Clay aquitard, a laterally-extensive silt and clay layer that underlies approximately the western half of the Subbasin and acts as a significant confining layer.

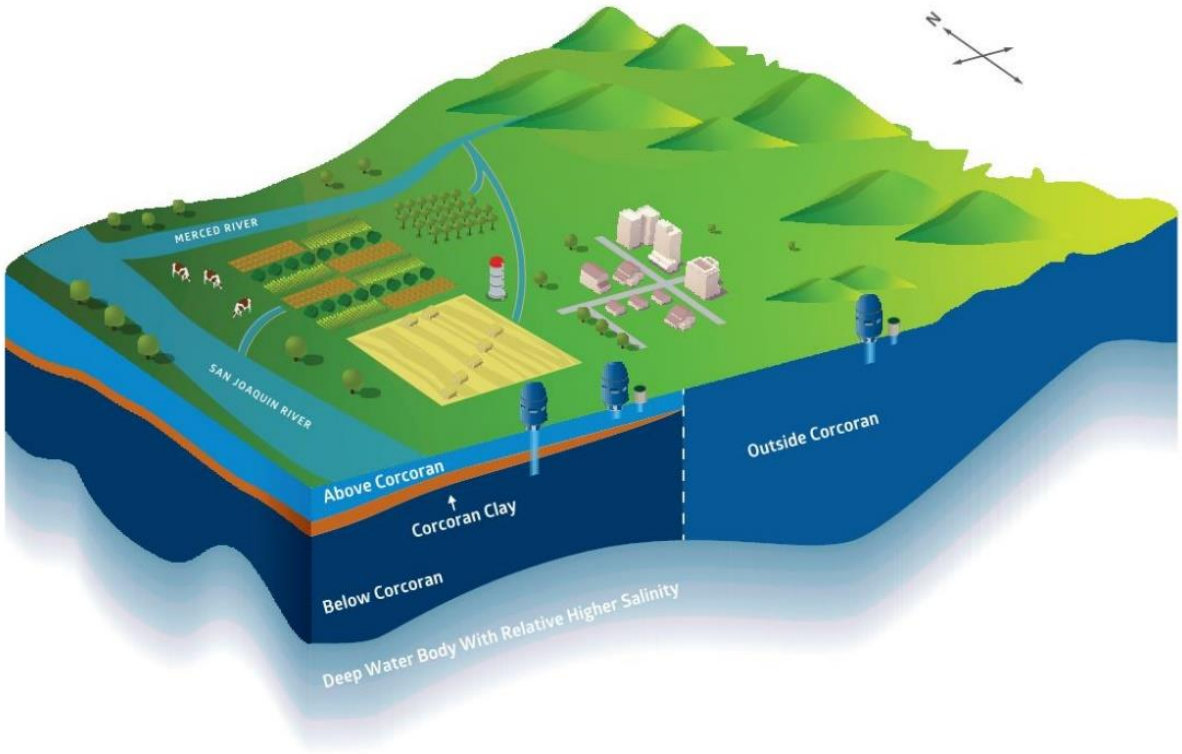
The **Above Corcoran Principal Aquifer** includes all aquifer units that exist above the Corcoran Clay Aquitard and generally contains moderate to large hydraulic conductivities and yields for domestic and irrigation uses.

The **Below Corcoran Principal Aquifer** includes all aquifer units that exist below the Corcoran Clay Aquitard and contains hydraulic conductivities and yields ranging from small to large for irrigation as well as some domestic and municipal uses.

The **Outside Corcoran Principal Aquifer** includes all aquifers that exist outside of the eastern lateral extent of the Corcoran Clay. The Outside Corcoran Principal Aquifer is connected laterally with the Above Corcoran Principal Aquifer at shallower depths and the Below Corcoran Principal Aquifer at deeper depths. Major uses of water in the Outside Corcoran Principal Aquifer include irrigation, domestic, and municipal uses.

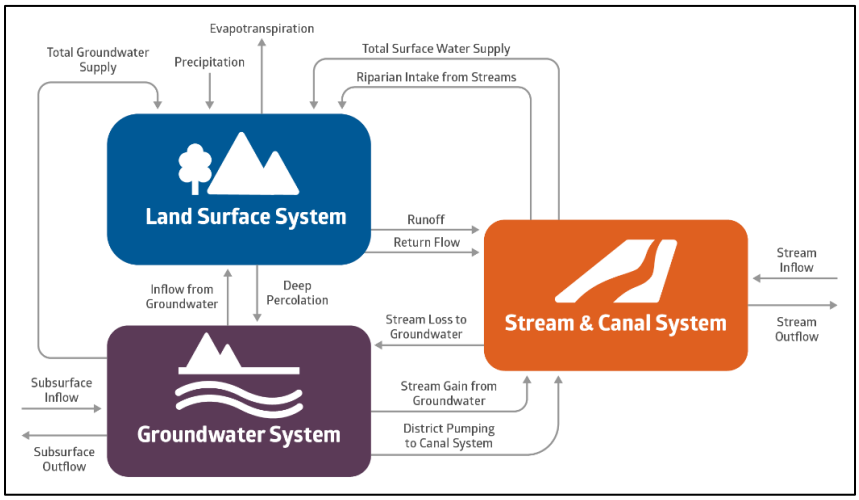
The Principal Aquifers are underlain by a deep aquifer with higher salinity relative to the principal aquifers. See Figure ES-1-3 for a 3D illustration demonstrating the relationship between the principal aquifers, deeper higher-salinity water body, and the Corcoran Clay aquitard.

Figure ES-1-3: 3D Illustration of Merced Subbasin Principal Aquifers and Aquitard



Water Budget Information

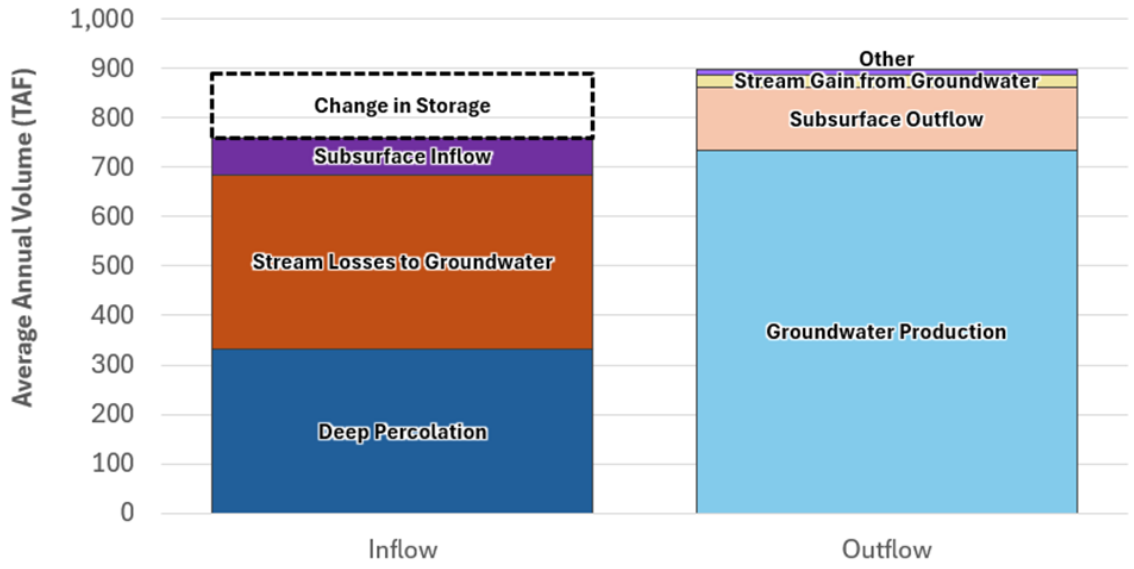
Figure ES-1-4: Generalized Water Budget Diagram



Water budgets provide quantitative accounting of water entering and leaving the Merced Subbasin and can be used to help estimate the extent of overdraft occurring now and in the future. Consistent with SGMA requirements, water budgets for historical, current, projected, and sustainable conditions were developed for the Merced Subbasin. An additional projected conditions scenario that includes existing and planned projects and management actions was also developed. Within each of these conditions, water budgets were developed for the groundwater system, the land surface system, and the stream and canal system. These water budgets were developed using the Merced Water Resources Model

(MercedWRM), a fully integrated surface and groundwater flow model developed and calibrated specifically for the Subbasin. See Figure ES-1-4 for a conceptual diagram of the inputs and outputs quantified by the model. The historical conditions water budget (see Figure ES-1-5) shows an annual average rate of overdraft ("Change in Storage") of 129,000 acre-feet per year (AFY) over water years 2006 through 2022. In this Figure, the "Change in Storage" represents the average annual decline in storage resulting from the Subbasin outflows, principally groundwater pumping.

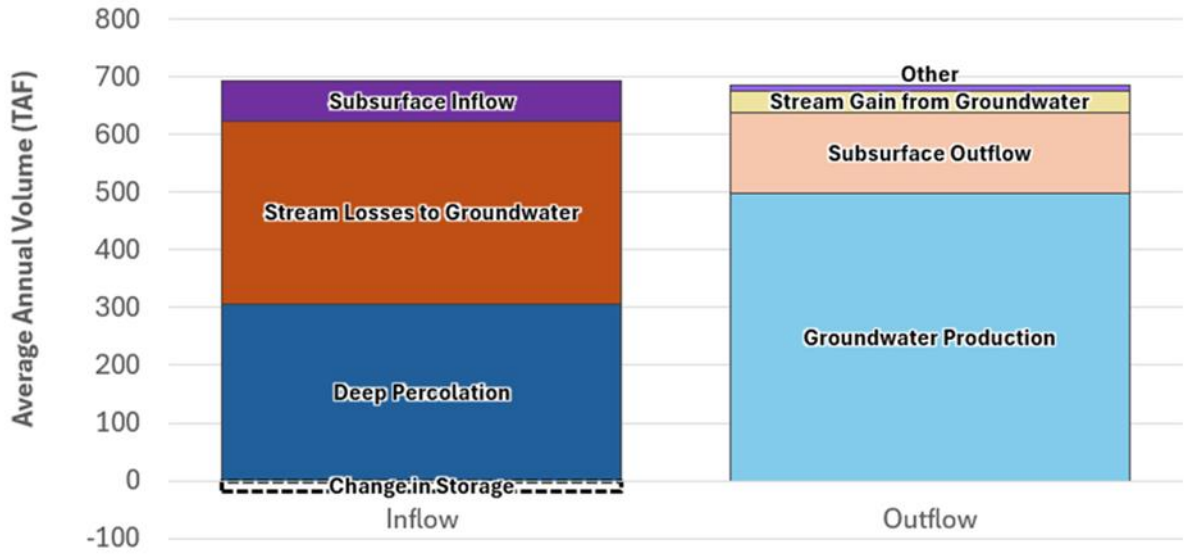
Figure ES-1-5: Historical Conditions Water Budget (2006-2022)



SGMA defines sustainable yield as "the maximum quantity of water, calculated over a base period representative of long-term conditions in the basin and including any temporary surplus, that can be withdrawn annually from a groundwater supply without causing an undesirable result" (California Water Code §10721(w)).

For the Merced Subbasin, sustainable yield was estimated by modifying conditions in the groundwater model to balance out the change in stored water over time and avoid undesirable results. In order to achieve a net-zero change in groundwater storage over a long--term average condition and avoid undesirable results, current agricultural and urban groundwater demand in the Merced Subbasin would need to be reduced by approximately 8 percent beyond the modeled implementation of completed and proposed supply-side or recharge projects and demand reduction programs. Figure ES-1-6 illustrates the Subbasin water budget under long term sustainable conditions. It is noted that the sustainable yield estimate is heavily dependent on the management of neighboring subbasins and on the nature of future hydrology. The difference in pumping between modeled projects/management actions and the sustainable yield scenario is considered within the margin of error of the model estimate and the GSAs intend to adaptively implement projects and management actions during GSP implementation to ultimately achieve sustainability through avoidance of undesirable results.

Figure ES-1-6: Groundwater Water Budget under Sustainable Groundwater Management Conditions Long-Term (50-Year) Average Annual



ES-3. SUSTAINABLE MANAGEMENT CRITERIA

SGMA requires consideration of six sustainability indicators. For each indicator, the GSP must define undesirable results for the basin ("significant and unreasonable" negative impacts) and determine if they could occur. For the indicators with the potential for undesirable results, the GSP must establish sustainable management criteria that are intended to prevent undesirable results from occurring and establish a monitoring network.

Sustainable management criteria were developed to be protective of beneficial uses in the Merced Subbasin and to support the Subbasin's sustainability goal. Demonstration by 2040 of meeting the sustainability management criteria and an absence of undesirable results will support a determination that the basin is operating within its sustainable yield, and thus that the sustainability goal has been achieved.

A summary of the sustainable management criteria for the Merced Subbasin is shown in Table ES-1-1.

Table ES-1-1: Summary of Sustainable Management Criteria

Sustainability Indicator	Minimum Threshold (MT)	Interim Milestone (IM)	Measurable Objective (MO)	Undesirable Result
Groundwater Levels	Fall 2015 groundwater elevation	Based on range of projected values that account for hydrologic uncertainty, more details in Section 3.3.3.	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
Groundwater Storage	Groundwater levels used as a proxy for this sustainability indicator			
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
Land Subsidence	0 ft/year, subject to uncertainty of +/-0.16 ft/year	2025: -0.75 ft/year 2030: -0.5 ft/year 2035: -0.25 ft/year	0 ft/year	Exceedance of MT at 3 or more representative sites for 2 consecutive years
Depletions of Interconnected Surface Waters	Groundwater levels used as a proxy for this sustainability indicator			

Sustainable management criteria were established to be protective of Subbasin beneficial uses as described below.

Minimum thresholds for **chronic declining groundwater levels** were developed based on the fall 2015 elevation recorded at each representative monitoring well. This threshold keeps groundwater levels generally above levels that have been experienced in the past. In this way, impacts to shallow well users and other beneficial users of groundwater will generally not exceed what has historically been experienced in the Subbasin. Sustainable management criteria for declining groundwater levels were evaluated against the depths of the shallowest domestic and public water supply wells in Merced County's well permitting database. Groundwater levels are also being used as a proxy indicator for reduction of groundwater storage and depletions of interconnected surface waters.

Significant and unreasonable **reduction of groundwater storage** are not likely to occur in the Subbasin, since historical reductions have been insignificant relative to the total volume of

freshwater water storage in the Subbasin. However, based on a recommendation from DWR, the Subbasin has decided to manage this sustainability indicator using groundwater levels as a proxy.

Degraded water quality is unique among the six sustainability indicators because it is already the subject of extensive federal, state, and local regulations carried out by numerous entities, and SGMA does not directly address the role of GSAs relative to these other entities (Moran & Belin, 2019). SGMA does not specify water quality constituents that must have minimum thresholds. Groundwater management (e.g., via controls on pumping and/or recharge) is the mechanism available to GSAs to implement SGMA. Establishing minimum thresholds for constituents that cannot be managed by increasing or decreasing pumping was deemed inappropriate by the GSAs and basin stakeholders. The major water quality issue being addressed by sustainable groundwater management is the migration of relatively higher salinity water into the freshwater principal aquifers. The nexus between water quality and water supply management exists for the pumping-induced movement of low-quality water from the west and northwest to the east. Other water quality concerns are being addressed through various water quality programs and agencies that have the authority and responsibility to address them.

While **land subsidence** has been recognized by the GSAs as an area of concern within the Merced Subbasin, it is not considered to have caused a significant and unreasonable reduction in the viability of the use of infrastructure. However, it is noted that subsidence has caused a reduction in freeboard of the Middle Eastside Bypass over the last 50 years and has caused problems in neighboring subbasins, highlighting the need for ongoing monitoring and management in the Merced Subbasin and surrounding subbasins. Sustainable management criteria were established based on the long-term avoidance of land subsidence, set with the recognition that the interconnectedness of the Merced Subbasin with surrounding subbasins makes meeting the sustainability management criteria dependent on the successful management of all nearby subbasins. The criteria are also set to be consistent with the sustainable management criteria for groundwater levels which seek to keep levels above 2015 conditions. A management action has also been developed to avoid declines in storage below historical levels, further reducing the risk of subsidence.

Depletions of interconnected surface waters will be managed using groundwater levels as a proxy due to the challenges inability to directly measure streamflow depletions and because of the significant correlation between groundwater levels and depletions.

ES-4. MONITORING NETWORKS

Consistent with SGMA requirements, the GSAs have established monitoring networks for each sustainability indicator to monitor trends in the Subbasin and evaluate GSP implementation against sustainable management criteria. The groundwater level monitoring network consists of wells originally evaluated for the California Statewide Groundwater Elevation Monitoring (CASGEM) Program that were selected to provide representative conditions for groundwater levels across the Subbasin. The groundwater quality monitoring network includes a combination

of wells in the Subbasin that are part of the East San Joaquin Water Quality Coalition Groundwater Quality Trend Monitoring Program as well as public water system wells that report data to the Division of Drinking Water. The subsidence monitoring network relies on control points monitored by the United States Bureau of Reclamation as part of the San Joaquin River Restoration Program. While the monitoring networks reflect a robust history of monitoring Subbasin conditions and numerous data gaps have been filled in the initial GSP was developed, additional data gaps still exist and plans to continue filling these data gaps for each sustainability indicator are described in this GSP.

ES-5. DATA MANAGEMENT SYSTEM

The Merced Subbasin Data Management System (DMS) was developed to serve as a data sharing portal to enable utilization of the same data and tools for visualization and analysis to support sustainable groundwater management and transparent reporting of data and results. Monitoring data can be manually input by users or batch uploaded via template and includes groundwater level, groundwater quality, streamflow, and subsidence data. All monitoring locations can be viewed spatially (map or list format) and data records per site can be viewed temporally (chart or list format). Ad-hoc queries and standard reports greatly assist in answering questions about basin characterization, providing input for decision-making, and developing reports to meet annual report submittal requirements.

ES-6. PROJECTS AND MANAGEMENT ACTIONS TO ACHIEVE SUSTAINABILITY GOAL

SGMA requires that GSPs describe the projects and management actions to be implemented as part of bringing the Subbasin into sustainability. The primary means for achieving sustainability in the Subbasin will be reduction in groundwater pumping achieved through implementation of management actions within each GSA's jurisdiction to allocate or otherwise manage the sustainable yield of the basin.

Since the initial GSP development, several projects have been fully implemented and numerous new projects have been identified and fully or partially funded. Projects and management actions typically either increase surface water supplies to augment the sustainable groundwater yield or increase groundwater recharge, which will in turn increase the amount of groundwater that may be sustainably used; or reduce groundwater demands.

ES-7. PLAN IMPLEMENTATION

Implementation of the GSP will be a substantial undertaking that will include implementation of the projects and management actions as well as GSAs administration, public outreach, implementation of the monitoring programs and filling data gaps, development of annual reports, and development of a 5-year periodic evaluation report. The GSAs have developed an implementation schedule (see Table ES-1-2) and estimated costs for all activities, as well as potential funding mechanism options. Implementation of the GSP is projected to be $1.6M per year. Costs for projects and management actions are estimated to be an additional $72.0M in total, with costs for individual projects or management actions ranging between $26,000 to $31M in total.

Table ES-1-2: GSP Implementation Schedule (2025-2040)

2025	2030	2035	2040
Preparation for Allocations and Low Capital Outlay Projects	**Prepare for Sustainability**	**Implement Sustainable Operations**	
• GSAs conduct 5-year evaluation/update • Monitoring and reporting continue, filling additional data gaps as necessary	• GSAs conduct 5-year evaluation/update • Monitoring and reporting continue	• GSAs conduct 5-year evaluation/update • Monitoring and reporting continue	
• Continued coordination on allocation program • As-needed demand reduction to reach Sustainable Yield allocation • Implement Metering program	• As-needed demand reduction to reach Sustainable Yield allocation	• Full implementation demand reduction as needed to reach Sustainable Yield allocation by 2040	
• Planning/ Design/ Construction for small to medium sized projects	• Planning/ Design/ Construction for larger projects begins	• Project implementation completed	
• Outreach regarding GSP and allocations continues	• Outreach continues	• Outreach continues	

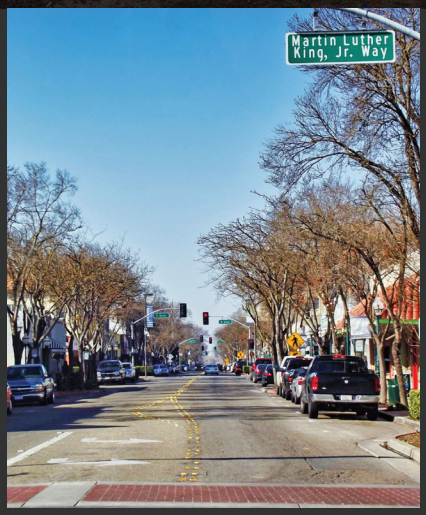
MERCED SGMA

Merced Groundwater Subbasin

GROUNDWATER SUSTAINABILITY PLAN

2025 Periodic Evaluation

Image courtesy: Veronica Adrover/UC Merced



January 2025

MERCED GROUNDWATER SUBBASIN GROUNDWATER SUSTAINABILITY PLAN PERIODIC EVALUATION 2025

January 2025

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ACRONYMS AND ABBREVIATIONS

Acronym	Definition
µg/L	micrograms per liter
AEM	airborne electromagnetic
AF	acre-feet
AFY	acre-feet per year
bgs	below ground surface
BHMWC	Buchanan Hollow Mutual Water Company
CCR	California Code of Regulations
CDEC	California Data Exchange Center
cfs	cubic feet per second
CIMIS	California Irrigation Management Information System
CWC	California Water Code
CWD	Chowchilla Water District
DAC	disadvantaged community
DBCP	dibromochloropropane
DDW	Division of Drinking Water
DWR	Department of Water Resources
EC	electrical conductivity
EDB	ethylene dibromide

EPA	Environmental Protection Agency
ESJWQC	East San Joaquin Water Quality Coalition
Flood-MAR	Flood-Managed Aquifer Recharge
ft	feet
GAMA	Groundwater Ambient Monitoring and Assessment
GDE	Groundwater Dependent Ecosystem
GPS	global positioning system
GQTM	Groundwater Quality Trend Monitoring
GQTMP	Groundwater Quality Trend Monitoring Program
GSA	Groundwater Sustainability Agency
GSAs	MIUGSA, MSGSA, and TIWD GSA-1
GSP	Groundwater Sustainability Plan
GW	groundwater
HCM	Hydrogeologic Conceptual Model
IRWM	Integrated Regional Water Management
LGAWD	Le Grand-Athlone Water District
LiDAR	Light Detection and Ranging
LPMWC	La Paloma Mutual Water Company
MCL	Maximum Contaminant Level
MCWD	Merquin County Water District
MercedWRM	Merced Water Resources Model
mg/L	milligrams per liter
MID	Merced Irrigation District
MIUGSA	Merced Irrigation-Urban Groundwater Sustainability Agency
MSGSA	Merced Subbasin Groundwater Sustainability Agency
MSL	mean sea level
MTBE	methyl tert-butyl ether
NO_3	nitrate
OSWCR	Online System for Well Completion Reports
PCE	perchloroethylene
PLSS	Public Land Survey System
PMA	projects and management actions
PRISM	Parameter-Elevation Regressions on Independent Slopes Model
PWS	public water system
SDAC	severely disadvantaged community
SGM	Sustainable Groundwater Management
SGMA	Sustainable Groundwater Management Act
SJRRP	San Joaquin River Restoration Program
SMCL	secondary maximum contaminant level
Subbasin	Merced Subbasin
SWRCB	State Water Resources Control Board
TAF	thousand acre-feet
TCA	Trichloroacetic acid
TCE	trichloroethylene
TCP	1,2,3-trichloropropane
TDS	total dissolved solids

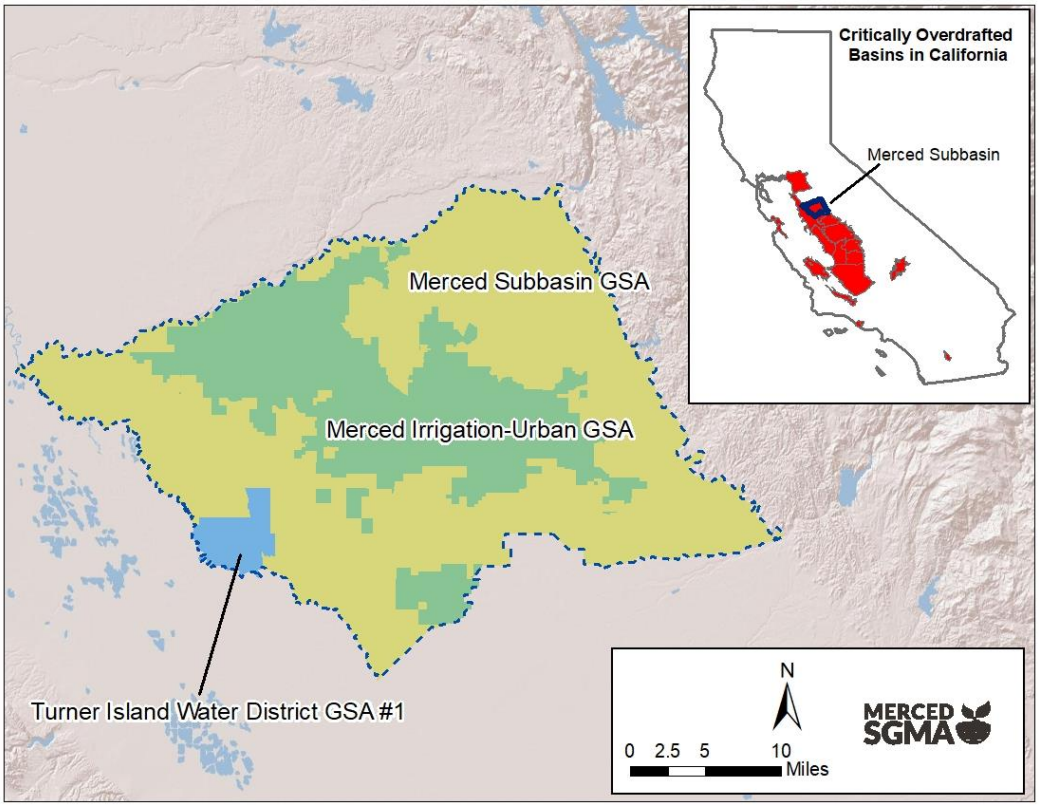
TIWD	Turner Island Water District
TIWD GSA-1	Turner Island Water District Groundwater Sustainability Agency #1
TUP	Temporary Use Permit
UC Merced	University of California, Merced
USACE	United States Army Corps of Engineers
USBR	United States Bureau of Reclamation
USDA	United States Department of Agriculture
USGS	United States Geological Survey
WY	water year

EXECUTIVE SUMMARY

The Sustainable Groundwater Management Act (SGMA), passed in 2014, requires the formation of local Groundwater Sustainability Agencies (GSAs) to oversee the development and implementation of Groundwater Sustainability Plans (GSPs), with the goal of achieving sustainable management of California's groundwater basins. Additionally, SGMA requires GSPs to be evaluated in the form of Periodic Evaluations every five years and whenever a GSP is amended. The purpose of this Periodic Evaluation is to provide an update to the Department of Water Resources, interested parties, and the public on the progress the GSAs have made on implementing the Merced Groundwater Subbasin GSP.

The County of Merced and water districts and cities within the Merced Subbasin formed three GSAs in accordance with SGMA: Merced Irrigation-Urban Groundwater Sustainability Agency (MIUGSA), Merced Subbasin Groundwater Sustainability Agency (MSGSA), and Turner Island Water District Groundwater Sustainability Agency #1 (TIWD GSA 1), collectively referred to as the "GSAs" (see **Figure ES-1**). The GSAs most recently revised and submitted the GSP to the California Department of Water Resources (DWR) in July 2022 (referred to as the 2022 GSP), which was approved in 2023. The GSAs coordinated efforts to develop this Periodic Evaluation for the Subbasin.

Figure ES-1: Merced Subbasin Location Map and GSAs



This Periodic Evaluation assesses the implementation period between the water years (WYs) 2020 through 2024 (referred to throughout this document as "evaluation period") and is accompanied by the Amended Merced Groundwater Subbasin Groundwater Sustainability Plan 2025 (referred to as the 2025 GSP), which was amended and adopted by all three GSAs in January 2025.

New Information Collected

During the evaluation cycle, significant new information warranted changes to numerous sections of the GSP. For instance, in 2023, DWR published results of the airborne electromagnetic (AEM) survey conducted in the Merced Subbasin which also provided a description of the well data collected along the planned flight lines. Together, the AEM and additional well data were used to refine the Hydrogeologic Conceptual Model and update the Basin Setting.

The Merced Water Resources Model (MercedWRM) is updated on an annual basis with the latest data available to evaluate recent groundwater conditions within the Subbasin. Updated components of the MercedWRM include surface water diversions and deliveries, groundwater extraction volumes, population changes, land use changes, precipitation data, streamflow data, groundwater elevations, Merced Irrigation District (MID) canal recharge from monthly diversions, and inter-basin flow estimates. In addition, significant updates and refinements were made to the MercedWRM during the preparation of the 2025 GSP.

Groundwater Conditions Relative to Sustainable Management Criteria

The sustainability goal for the Merced Subbasin is to:

> *Achieve sustainable groundwater management on a long-term average basis by increasing recharge and / or reducing groundwater pumping, while avoiding undesirable results.*

The sustainability goal is supported by the locally defined minimum thresholds that prevent undesirable results. Achievement of the goal is demonstrated by the avoidance of undesirable results.

Groundwater Levels

The 2022 GSP defines undesirable results as "when November groundwater levels at greater than 25 percent of representative monitoring wells (at least 8 of 29) fall below their minimum thresholds for two consecutive years" (MIUGSA, MSGSA, & TIWD GSA-1, 2022). Fourteen representative monitoring wells exceeded their respective minimum thresholds during the evaluation cycle, reflecting both drought hydrology and the need for the implementation of PMAs under development by the GSAs. However, time is required to develop, fund, and implement PMAs to achieve sustainability. As expected in the original 2020 GSP, groundwater levels have continued to decline since the adoption of that Plan, which is accounted for through planned Interim Milestones while PMAs are being developed and implemented.

Reduction of Groundwater Storage

In the 2022 GSP, the reduction of groundwater storage sustainability indicator was not considered applicable to the Subbasin, and sustainable management criteria were not established. However, DWR recommended that due to the critically overdrafted status of the Subbasin and the continued decline in groundwater levels, the reduction of groundwater storage should be included as an applicable indicator and that sustainable management criteria should be established. While the GSAs have documented that undesirable results for reductions of groundwater in storage have not occurred and are not expected to occur in the Subbasin due to the volume of available groundwater in storage, the GSAs have elected to define sustainable management criteria for this indicator via groundwater levels as a proxy.

Degraded Water Quality

In the 2022 GSP, the GSAs established a minimum threshold of 1,000 mg/L of Total Dissolved Solids (TDS) for the degraded water quality sustainability indicator. The measurable objective and all interim milestones were set at 500 mg/L TDS. Undesirable results are defined in the GSP as "during GSP implementation when at least 25% of representative monitoring wells (6 of 22 sites) exceed the minimum threshold for degraded water quality for two consecutive years" (MIUGSA, MSGSA, & TIWD GSA-1, 2022). During the evaluation cycle, TDS concentrations observed in the Subbasin's monitoring network did not exceed the minimum threshold. Additionally, sixteen monitoring locations consistently achieved the measurable objective.

DWR recommended that the 2025 GSP include additional justification and explanation for how water quality constituents, such as arsenic and nitrate, will be managed and monitored, and how impacts to beneficial uses and users will be addressed should there be degradation of water quality during plan implementation when lower groundwater elevations are expected. Results from analysis show that no significant trend exists between groundwater elevation changes and changes in concentrations of nitrate, arsenic, or other common constituents within the Subbasin.

Inelastic Land Subsidence

In the 2022 GSP, the GSAs established a minimum threshold of 0 ft/year (subject to uncertainty of ±0.16 ft/year) at four representative monitoring stations. The measurable objective is also 0 ft/year, with interim milestones of -0.75 ft/year (2025), -0.50 ft/year (2030), and -0.25 ft/year (2035) of subsidence. The GSP identifies undesirable results for subsidence as "exceedances of minimum threshold rates of land subsidence at three or more monitoring sites out of four for two consecutive years" (MIUGSA, MSGSA, & TIWD GSA-1, 2022). While subsidence has typically been observed at the representative monitoring sites from 2019 to 2023, the rates of subsidence have consistently been less than the 2025 IM of -0.75 ft/yr, with the most recent rate of subsidence demonstrating an increase in land surface elevation (positive value).

Depletion of Interconnected Surface Waters

In the 2022 GSP, undesirable results for depletions of interconnected surface water include depletions that result in reductions in flow or levels of major rivers and streams that are hydrologically connected to the Subbasin such that the reduced surface water flow or levels have a significant and unreasonable adverse impact on beneficial uses of the surface waters. The chronic lowering of groundwater levels sustainability indicator was established as a proxy for depletions of interconnected surface water. Thus, an undesirable result would occur for both sustainability indicators when November groundwater levels at 25% or more representative monitoring wells exceed their respective minimum thresholds for two consecutive years. Because groundwater levels are used as a proxy for interconnected surface water, minimum thresholds, measurable objectives, and interim milestones are equivalent between both sustainability indicators at their respective locations.

Recommended Corrective Actions

DWR provided nine recommended corrective actions in the *GSP Assessment Staff Report, San Joaquin Valley – Merced Subbasin (No. 5-022.04)* dated August 4, 2023 (DWR, 2023), attached as **Appendix A**. These recommended corrective actions are summarized below in **Table ES-1**. Progress on responding to each recommendation is detailed within the Periodic Evaluation.

Table ES-1: Recommended Corrective Action Summary

Recommended Corrective Action #	Recommended Corrective Action Summary
1a	The GSAs should initiate the Domestic Well Mitigation Program prior to impacts being observed in domestic wells given that groundwater level interim milestones are below minimum thresholds and historical lows. The program should be monitored by the GSAs and the funding mechanism should be assessed should mitigation exceed the proposed budget.
1b	The GSAs are aware that the lowering of groundwater levels can cause degradation of groundwater water. DWR staff recommend the GSAs describe how potential impacts to degradation of groundwater quality will be managed, including how coordination with groundwater users, including water, environmental, and irrigation users will be conducted and how such coordination will be utilized to address groundwater quality degradation, should it occur during Plan implementation. The GSAs should describe how potential impacts to degradation of groundwater quality will be managed, including how coordination with groundwater users, including water, environmental, and irrigation users will be conducted and how such coordination will be utilized to address groundwater quality degradation.
2	The GSP should include additional assessments on the impacts to beneficial uses and users from continued overdraft anticipated from the potential short-term decline of groundwater levels related to 2025 and 2030 interim milestones.
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.
4	DWR recommends the GSAs further investigate the 56 wells which are said to be drilled below the bottom of the basin and confirm to what extent they are active. If these wells are active, then the GSAs should determine their groundwater extractions and account for that activity in the Plan.

Recommended Corrective Action #	Recommended Corrective Action Summary
5	DWR recommends Sustainable Management Criteria for reduction of groundwater storage should be established by the periodic evaluation.
6a	The GSAs should evaluate how water quality constituents of concern other than TDS will be managed and monitored and how impacts to beneficial uses and users will be addressed. Consider developing sustainable management criteria for these constituents.
6b	The GSAs should provide additional details supporting the selection of TDS criteria and justify why TDS concentrations exceed the secondary maximum contaminant level.
7a	The GSAs should establish sustainable management criteria for depletions of interconnected surface water while incorporating the location, quantity, and timing of depletions. Consider utilizing the interconnected surface water guidance when issued by the DWR.
7b	The GSAs should continue to fill data gaps, collected additional monitoring data, and implement the current strategy to manage interconnected surface water depletions and define segments of interconnectivity and timing.
7c	Prioritize collaboration and coordination with local, state, and federal regulatory agencies and interested parties to understand impacts to beneficial uses and users that may be impacted by interconnected surface water depletions.
8	The GSAs should prioritize filling data gaps in the groundwater level monitoring network and describe how filling these data gaps will assist in the successful implementation of the Above Corcoran Sustainable Management Criteria Adjustment Consideration Management Action.
9	The GSAs should provide a robust discussion explaining how the implementation of the projects and management actions will restore groundwater levels up to the measurable objective by 2040 and how certain management actions will avoid impacts to the sustainability indicators.

Projects and Management Actions

Since adoption of the 2022 GSP, nine projects have been completed and are actively implemented in the Subbasin. Most of these projects were feasibility studies, incorporation of new data sources into the MercedWRM, and local policy changes. As a result, quantified benefits were not able to be determined for all projects. However, these projects have allowed the GSAs to better understand groundwater conditions in the Subbasin and informed future implementation of planned projects. The GSAs have also included nineteen additional projects, identified as part of developing applications for funding by the Sustainable Groundwater Management grant program. While several projects are currently in the conceptual phase, seven are nearing implementation and have estimated groundwater benefits. Following implementation, these projects are anticipated to provide approximately 34,000 AFY of groundwater benefits in the form of direct recharge, in-lieu recharge, and demand reductions. The GSAs intend to track project benefits through the chronic lowering of groundwater levels monitoring network and through project-specific monitoring activities. A list of completed and active projects is listed below in **Table ES-2**.

Table ES-2: Projects Lists

Completed Projects	Active Projects
El Nido Conveyance System Improvements Project	Amsterdam Water District Surface Water Conveyance and Recharge Project
Planada Groundwater Recharge Basin Pilot Project	Crocker Control Structure Rehabilitation
Meadowbrook Water System Intertie Feasibility Study	G Ranch and La Paloma Mutual Water Company Groundwater Recharge, Habitat Enhancement, and Floodplain Expansion Projects
Merced Groundwater Subbasin LiDAR	LeGrand-Athlone Water District Intertie and Recharge Project (Phase 1 & 2)
Merced Irrigation District to Lone Tree Mutual Water Company Conveyance Canal	Turner Island Water District Water Conservation
Merced Subbasin GSP Development Project for Addressing Critical Data Gaps	Vander Dussen Subsidence Priority Area Flood-MAR Project
Mini-Big Conveyance Project Feasibility Study	Vander Woude Storage Reservoir
Streamlining Permitting for Replacing Sub-Corcoran Wells	
Study for Potential Water System Intertie Facilities from MID to LeGrand-Athlone Water District (LGAWD) and Chowchilla Water District (CWD)	

Four management actions were presented in the 2022 GSP, and progress has been made in developing them during the evaluation cycle. The 2025 GSP adds the Merced Irrigation-Urban GSA Groundwater Allocation management action. The management actions in development within the Subbasin are listed below:

- Integrated Groundwater Allocation Framework
- Merced Subbasin GSA Groundwater Demand Reduction
- Merced Irrigation-Urban GSA Groundwater Allocation
- Domestic Well Mitigation Program
- Above Corcoran Sustainable Management Criteria Adjustment Consideration

Monitoring Networks

The 2022 GSP established monitoring networks for groundwater levels, degraded water quality, inelastic land subsidence, and depletions of interconnected surface waters. Since the 2022 GSP was published, reduction of groundwater in storage was incorporated as a sustainability indicator and, as a result, sustainable management criteria and a monitoring network were established, per DWR's recommendation. The 2025 GSP uses the monitoring network established for groundwater levels as a proxy for the reduction of groundwater in storage and depletions of interconnected surface waters.

A high-level summary of monitoring network changes is provided below, with more details in the main body of the Periodic Evaluation:

- Groundwater Levels - nineteen monitoring wells added, eight of which include sustainable management criteria.
- Groundwater Quality – The structure of the monitoring network remains the same, utilizing wells from the Eastern San Joaquin Water Quality Coalition (ESJWQC) Groundwater Quality Trend Monitoring (GQTM) program, as well as wells sourced from Public Water System (PWS) reporting to the Division of Drinking Water (DDW). During the evaluation cycle, some PWS wells were removed from the monitoring network as a result of being destroyed or discontinued from their respective monitoring program. Other wells were added as a result of being added to the ESJWQC GQTM or starting to report data to DDW.
- Land Subsidence – remains unchanged from the 2022 GSP.
- Groundwater Storage and Interconnected Surface Waters – mirrors changes to groundwater levels.

Data gaps were identified in the 2022 GSP for all applicable sustainability indicators. A Data Gaps Plan was prepared by the GSAs and adopted in 2021 (Woodard & Curran, 2021). The Data Gaps Plan identified data gaps presented in the Subbasin's monitoring network, prioritized the addressing data gaps for certain sustainability indicators, and planned implementing activities to fill data gaps. Overall, data gaps have been partially addressed for the groundwater level (and by proxy, groundwater storage and interconnected surface waters) and water quality monitoring networks.

Outreach and Engagement

During GSP development, the GSAs used multiple channels of outreach to communicate SGMA-related information, provide opportunities for engagement, and solicit public input. This included encouraging public participation at public meetings, providing access to GSP information online, and continuing to coordinate with entities conducting outreach to DAC communities within the Subbasin. As outreach and engagement activities are crucial in the development of the Periodic Evaluation and GSP, the GSAs regularly presented components of these documents during public meetings to gain input from stakeholders and distributed emails as key deliverables were finalized, when opportunities were either available for stakeholder input, or when items of interest to the stakeholder group arose. Topics of discussion included but were not limited to: establishment and refinement of sustainable management criteria; modeling efforts used to develop water budgets; changes to basin setting based on new information; and progress updates on PMAs. These meetings allowed the public, local stakeholders, and regulatory agencies to provide input on the GSAs' approach to developing the GSP and Periodic Evaluation.