



2025 AGRICULTURAL WATER MANAGEMENT PLAN

Prepared pursuant to Division 6, Part 2.8 of the California Water Code
(Agricultural Water Management Planning Act), including Section 10826.

Wheeler Ridge-Maricopa Water Storage District

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2025 Agricultural Water Management Plan

Prepared pursuant to Division 6, Part 2.8 of the California Water Code
(Agricultural Water Management Planning Act), including Section 10826.

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Prepared for:

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2025 Agricultural Water Management Plan

Wheeler Ridge-Maricopa Water Storage District

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ABBREVIATIONS AND ACRONYMS

2025 Guidebook	2025 Agricultural Water Management Plan Guidebook
2025 Plan	Kern County Subbasin GSP
AB 1668	Assembly Bill 1668
Act	Agricultural Water Management Planning Act
AW	Applied Water
AWMP	Agricultural Water Management Plan
Board	Board of Directors
CCR	California Code of Regulations
CGC	California Government Code
CIMIS	California Irrigation Management Information System
CWC	California Water Code
Delta	Sacramento-San Joaquin River Delta
DWR	Department of Water Resources
ET	Evapotranspiration
ETAW	Evapotranspiration of Applied Water
ETc	Crop Evapotranspiration
EWMP	Efficient Water Management Practices
GDA	Groundwater Dependent Area
GSA	Groundwater Sustainability Agency
GSP	Groundwater Sustainability Plan
ITRC	Irrigation Training and Research Center
KCWA	Kern County Water Agency
Kern Subbasin	Kern County Subbasin
KRWCA	Kern River Watershed Coalition Authority
KWBA	Kern Water Bank Authority
MAR	Managed Aquifer Recharge
mg/L	milligrams per liter
MSL	Mean Sea Level
NMFS	National Marine Fisheries Services
PMA	Project and Management Action
Rules and Regulations	Rules and Regulations for Distribution and Use of Water
SB X7-7	Water Conservation Act of 2009
SCADA	Supervisory Control and Data Acquisition
SGMA	Sustainable Groundwater Management Act
SWP	State Water Project
SWRCB	State Water Resources Control Board
SWSA	Surface Water Surface Area
TDS	Total Dissolved Solids

TWUF	Total Water Use Fraction
USWFS	U.S. Fish and Wildlife Service
WAKC	Water Associated of Kern County
WRM GSA	Wheeler Ridge-Maricopa Groundwater Sustainability Agency
WRMWSD	Wheeler Ridge-Maricopa Water Storage District
WW GSA	White Wolf Groundwater Sustainability Agency

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AWMP COMPLIANCE CHECKLIST

The Wheeler Ridge-Maricopa Water Storage District (WRMWSO or District) has prepared this Agricultural Water Management Plan (AWMP) in general conformance with the framework presented in *A Guidebook to Assist Agricultural Water Suppliers to Prepare a 2025 Agricultural Water Management Plan* (2025 Guidebook), issued by the California Department of Water Resources (DWR) in September 2025. The 2025 Guidebook is intended to assist agricultural water suppliers in preparing AWMPs consistent with the requirements of the Agricultural Water Management Planning Act (California Water Code [CWC] §10800 *et seq.*), including amendments enacted through the Water Conservation Act of 2009 (SB X7-7) and Assembly Bill 1668 (AB 1668, Friedman, Statutes of 2018), as well as applicable agricultural water measurement regulations.

Relevant provisions of the CWC, California Government Code (CGC), and California Code of Regulations (CCR) are identified in checklist below, together with references to the corresponding sections of the 2025 Guidebook and this AWMP, to demonstrate how the statutory requirements are addressed.

WRMWSO 2025 AWMP Checklist
(Modeled after Section 2.0, Table 1 of 2025 Guidebook)

AWMP Location	Guidebook Location	Description	CWC Sections (or as identified)
1	1.4	AWMP Required?	10820, 10608.12
1	1.4	At least 25,000 irrigated acres.	10853
N/A	1.4	10,000 to 25,000 acres and funding provided.	10853
1.3	1.4	April 1, 2021 update.	10820 (a)
1.3.2	1.4 A.2	AWMP submitted to DWR no more than 30 days after adoption, AWMP submitted electronically.	10820(a)(2)(B)
1.3	1.4 B	5-year cycle update.	10820 (a)
N/A	1.4 B	New agricultural water supplier after December 31, 2012 – AWMP prepared and adopted within 1 year.	10820 (b)
N/A	1.6, 5	USBR water management/conservation plan.	10828(a)
N/A	1.6, 5.1	Adopted and submitted to USBR within the previous four years, AND	10828(a)(1)
N/A	1.6, 5.1	The USBR has accepted the water management/conservation plan as adequate.	10828(a)(2)
1.1	1.4 B	UWMP or participation in area wide, regional, watershed, or basin wide water management planning: does the plan meet requirements of SB X7-7 2.8.	10829
1.1	3.1 A	Description of previous water management activities.	10826(d)
1.2.1	3.1 B.1	Was each city or county within which supplier provides water supplies notified that the agricultural water supplier will be preparing or amending a plan?	10821(a)
1.3.1	3.2 B.2	Was the proposed plan available for public inspection prior to plan adoption?	10841

WRMWSO 2025 AWMP Checklist (Continued)

AWMP Location	Guidebook Location	Description	CWC Sections (or as identified)
1.3.3	3.1 B.2	Publicly-owned supplier: Prior to the hearing, was the notice of the time and place of hearing published within the jurisdiction of the publicly owned agricultural water supplier in accordance with [CGC] 6066?	10841
1.3.3	3.1 B.2	14 days notification for public hearing.	CGC 6066
1.3.3	3.1 B.2	Two publications in newspaper within those 14 days.	CGC 6066
1.3.3	3.1 B.2	At least 5 days between publications? (not including publication date).	CGC 6066
N/A	3.1 B.2	Privately-owned supplier: was equivalent notice within its service area and reasonably equivalent opportunity that would otherwise be afforded through a public hearing process provided?	10841
1.3.1	3.1 C.1	After hearing/equivalent notice, was the plan adopted as prepared or as modified during or after the hearing?	10841
1.3.2	3.1 C.2	Was a copy of the AWMP, amendments, or changes, submitted to the entities below, no later than 30 days after the adoption?	10843 (a)
1.2.1	3.1 C.2	The department.	10843(b)(1)
1.2.1	3.1 C.2	Any city, county, or city and county within which the agricultural water supplier provides water supplies.	10843(b)(2)
1.2.1	3.1 C.2	Any groundwater management entity within which jurisdiction the agricultural water supplier extracts or provides water supplies.	10843(b)(3)
1.3.3	3.1 C.3	Adopted AWMP availability.	10844
1.3.3	3.1 C.3	Was the AWMP available for public review on the agricultural water supplier's website within 30 days of adoption?	10844(a)
N/A	3.1 C.3	If no website, was an electronic copy of the AWMP submitted to DWR within 30 days of adoption?	10844(b)
1.4	3.1 D.1	Implement the AWMP in accordance with the schedule set forth in its plan, as determined by the governing body of the agricultural water supplier.	10842
2	3.3	Description of the agricultural water supplier and service area including:	10826(a)
2.1	3.3 A.1	Size of the service area.	10826(a)(1)
2.2	3.3 A.2	Location of the service area and its water management facilities.	10826(a)(2)
2.3	3.3 A.3	Terrain and soils.	10826(a)(3)
2.4	3.3 A.4	Climate.	10826(a)(4)
2.5	3.3 B.1	Operating rules and regulations.	10826(a)(5)

WRMWSO 2025 AWMP Checklist (Continued)

AWMP Location	Guidebook Location	Description	CWC Sections (or as identified)
2.6	3.3 B.2	Water delivery measurements or calculations.	10826(a)(6)
2.7	3.3 B.3	Water rate schedules and billing.	10826(a)(7)
2.8	3.3 B.4	Water shortage allocation policies and detailed drought plan.	10826(a)(8) 10826.2
3	3.4	Water uses within the service area, including all of the following:	10826(b)(5)
3.1	3.4 A	Agricultural.	10826(b)(5)(A)
3.2	3.4 B	Environmental.	10826(b)(5)(B)
3.3	3.4 C	Recreational.	10826(b)(5)(C)
3.4	3.4 D	Municipal and industrial.	10826(b)(5)(D)
3.5	3.4 E	Groundwater recharge, including estimated flows from deep percolation from irrigation and see page.	10826(b)(5)(E)
4.1	3.5 A	Description of the quantity of the agricultural water supplier's water supplies as:	10826(b)
4.1.1	3.5 A.1	Surface water supply.	10826(b)(1)
4.1.2	3.5 A.2	Groundwater supply.	10826(b)(2)
4.1.3	3.5 A.3	Other water supplies, including recycled water.	10826(b)(3)
4.2	3.5 B	Description of the quality of the agricultural water supplier's water supplies as:	10826(b)
4.2.1	3.5 B.1	Surface water supply.	10826(b)(1)
4.2.2	3.5 B.2	Groundwater supply.	10826(b)(2)
4.2.3	3.5 B.3	Other water supplies.	10826(b)(3)
4.2.4	3.5 C	Source water quality monitoring practices.	10826(b)(4)
5	3.6	Annual water budget based on the quantification of all inflow and outflow components for the service area.	10826(c)
6	3.7 C	Identify water management objectives based on water budget to improve water system efficiency.	10826(f)
7		Quantify the efficiency of agricultural water use	10826(h)
8	3.9	Analysis of climate change effect on future water supplies.	10826(d)
9	4	Water use efficiency.	10826(h)
9		Information required pursuant to Section 10608.48.	
9.1	4.1	Implement efficient water management practices (EWMPs).	10608.48(a)
9.1	4.1 A	Implement Critical EWMP: Measure the volume of water delivered to customers with sufficient accuracy to comply with subdivision (a) of Section 531.10 and to implement paragraph (2).	10608.48(b)

WRMWSO 2025 AWMP Checklist (Continued)

AWMP Location	Guidebook Location	Description	CWC Sections (or as identified)
9.1	4.1 A	Implement Critical EWMP: Adopt a pricing structure for water customers based at least in part on quantity delivered.	10608.48(b)
9.1	4.1 B	Implement additional locally cost effective and technically feasible EWMPs.	10608.48(c)
9.3	4.1 C	If applicable, document (in the report) the determination that EWMPs are not locally cost effective or technically feasible.	10608.48(d)
9	4.1 C	Include a report on which EWMPs have been implemented and planned to be implemented.	10608.48(d)
9	4.1 C	Include (in the report) an estimate of the water use efficiency improvements that have occurred since the last report, and an estimate of the water use efficiency improvements estimated to occur five and 10 years in the future.	10608.48(d)
N/A	5	USBR water management/conservation plan may meet requirements for EWMPs.	10608.48(f)
10.1	6 A	Lack of legal access certification (if water measuring not at farm gate or delivery point).	CCR 597.3(b)(2)(A)
10.1	6 B	Lack of technical feasibility (if water measuring not at farm gate or delivery point).	CCR 597.3(b)(1)(B), 597.3(b)(2)(B)
10.1	6 A, 6 B	Delivery apportioning methodology (if water measuring not at farm gate or delivery point).	CCR 597.3.b(2)(C),
10.2	6 C	Description of water measurement Best Professional Practices.	CCR 597.4(e)(2)
10.3	6 D	Conversion to measurement to volume.	CCR 597.4(e)(3)
10.4	6 E	Existing water measurement device corrective action plan? (if applicable, including schedule, budget and finance plan).	CCR 597.4(e)(4)

1 INTRODUCTION AND PURPOSE

This Agricultural Water Management Plan (AWMP) for the Wheeler Ridge-Maricopa Water Storage District (WRMWS D) has been prepared in accordance with the requirements of the Agricultural Water Management Planning Act (Act), including amendments enacted through SB X7-7 and AB 1668, as well as applicable agricultural water measurement regulations codified in CCR Title 23. Agricultural water suppliers subject to the Act are required to prepare and submit an AWMP to DWR every five years.

Under the Act, an agricultural water supplier is defined as a public or private entity that provides water to 10,000 or more irrigated acres, excluding acreage served with recycled water. The WRMWS D is a publicly owned agricultural water supplier formed to provide a reliable water supply to its landowners. The District encompasses approximately 152,000 acres in the southern portion of the San Joaquin Valley in Kern County, of which approximately 77,000 acres are irrigated.

The Act and related regulations are intended to encourage agricultural water suppliers to evaluate existing water management practices, identify opportunities to improve water use efficiency, support accurate measurement and pricing of water, and plan for drought and other water supply constraints. Consistent with these objectives, the AWMP describes the District’s existing water management activities and documents programs and practices that support efficient and sustainable water use.

This AWMP includes a five-year planning horizon (2021 through 2025) and presents an annual water budget, identification of water management objectives, and planning-level quantification of water use and water use efficiency. Together, these elements provide a structured basis for documenting the District’s stewardship of water resources and its ongoing efforts to plan for reliable agricultural water supplies under variable hydrologic conditions.

1.1 Description of Previous Water Management Activities

CWC §10826(e)

Describe previous water management activities.

Consistent with CWC §10826(e), the District has a long history of managing agricultural water supplies to support efficient and reliable water use within its service area. Since its formation in 1959, the District and its growers have implemented improvements in on-farm irrigation practices, District infrastructure, and surface water-groundwater use operations to increase water use efficiency and reliability.

WRMWS D has previously prepared AWMPs consistent with the Act and related DWR guidance, including submittals in 2015 and 2020 – the latter adopted by WRMWS D on 14 July 2021 and submitted to DWR for review. This 2025 AWMP builds upon the prior AWMPs and updates relevant data, programs, and practices to maintain compliance with current statutory and regulatory requirements.

Under the Sustainable Groundwater Management Act (SGMA), the District participates in groundwater management through two Groundwater Sustainability Agencies (GSAs):

- The Wheeler Ridge-Maricopa GSA (WRM GSA) manages the District’s portion of the Kern County Subbasin and is one of 20 GSAs in the Kern County Subbasin (Kern Subbasin, DWR Basin No. 5-022.14). The WRM GSA adopted a management area plan that was included in the Kern Groundwater Authority Groundwater Sustainability Plan (GSP) in 2020, the South of Kern River GSP in 2022, the Kern County Subbasin GSP in 2024, and a revised Kern County Subbasin GSP in August 2025 (referred to herein as the “2025 Plan”). Following a continued probationary hearing on 17 September 2025, the State Water Resources Control Board (SWRCB) determined that the 2025 Plan substantially addressed prior deficiencies and directed staff to return the Kern Subbasin

to DWR oversight upon completion of a consistency review. As of 8 December 2025, the Kern Subbasin has been returned to DWR oversight, and DWR has initiated review of the 2025 Plan.

- The White Wolf GSA (WW GSA) manages the District’s portion of the White Wolf Subbasin (DWR Basin No. 5-022.18) and is the sole GSA within the subbasin. The White Wolf GSP was adopted in 2021 and approved by DWR on 26 October 2023.

Key District water management programs and activities include:

- Preparation and adoption of the 2025 Plan and White Wolf GSP, which establish sustainable management criteria, including minimum thresholds and measurable objectives, and identify Projects and Management Actions (PMAs) necessary to achieve the sustainability goal for each subbasin. The PMAs relevant to WRMWSD’s water management activities for both subbasins are provided in **Appendix A**.
- Delivery of State Water Project (SWP) imported surface water to District lands previously reliant solely on groundwater.
- Participation in groundwater banking and recovery programs (e.g., Mettler Recharge Project, Kern Water Bank, Pioneer Project, Berrenda Mesa Project, and on-farm recharge) to store wet-year water and supplement dry-year supplies.
- Local conjunctive management of surface water and groundwater to optimize supply reliability.
- Metered customer water use and tiered water pricing.
- Support of on-farm irrigation efficiency improvements through the North West Kern Resource Conservation District’s Mobile Laboratory Program.
- Participation in regional water management forums, such as the Kern Integrated Regional Water Management Plan, the Kern River Watershed Coalition Authority (KRWCA), and the Water Association of Kern County (WAKC).
- Requirement for flow meters on private wells pumping into District facilities or reporting water use to the District.
- Groundwater service charge, in which landowners are charged a fee for groundwater pumped.

These programs and activities reflect the District’s ongoing efforts to manage water resources efficiently and sustainably in accordance with statutory and regulatory requirements.

1.2 Coordination Activities

During preparation of this AWMP, the District conducted the coordination activities described in the following subsections per the Guidebook and in accordance with CWC and CGC requirements, as cited.

1.2.1 Notification of AWMP Preparation and Public Participation

CWC §10821(a)

An agricultural water supplier required to prepare a plan pursuant to this part shall notify each city or county within which the supplier provides water supplies that the agricultural water supplier will be preparing the plan or reviewing the plan and considering amendments or changes to the plan. The agricultural water supplier may consult with, and obtain comments from, each city or county that receives notice pursuant to this subdivision.

CWC §10841

Prior to adopting a plan, the agricultural water supplier shall make the proposed plan available for public inspection and shall hold a public hearing on the plan. Prior to the hearing, notice of the time and place of hearing shall be published within the jurisdiction of the publicly owned agricultural water supplier pursuant to Section 6066 of the Government Code.

The District notified the entities listed in **Table 1-1** of its intent to prepare the AWMP in accordance with CWC §10821(a). The draft AWMP was made available for public inspection starting on **DATE**, including on the District’s website¹ consistent with CWC §10821(a). Documentation of the notification of plan preparation and public availability is provided in **Appendix B**.

Table 1-1. Summary of Coordination, Adoption, and Submittal Activities

Potential Interested Parties	Notified of AWMP Preparation	Notified of Public Meetings	Attended Public Meetings	Copy of Adopted AWMP Sent
Local City (s)¹				
Local County(s)				
County of Kern				
Water Management Entities				
Arvin GSA				
Kern County Water Agency				
Kern Non-Districted Land Authority GSA				
West Kern Water District GSA				
Wheeler Ridge-Maricopa GSA				
White Wolf GSA				
Other Entities				
DWR				
Local Newspaper (<i>Bakersfield Californian</i>)				
California State Library				
District Website ²				
Notes:				
¹ There are no incorporated cities or towns within the District boundaries.				
² District’s public website address is https://www.wrmwsd.com .				

¹ District’s public website address is <https://www.wrmwsd.com>.

1.3 AWMP Adoption and Submittal

Pursuant to CWC §10820 *et seq.*, AWMPs are prepared and submitted on a five-year cycle. For the 2025 planning cycle, AWMPs must be adopted by 1 April 2026, and submitted electronically to DWR within 30 days of adoption.

1.3.1 AWMP Adoption

CWC §10841

After the public hearing, the plan shall be adopted as prepared or as modified during or after the hearing.

CWC §10821(b)

Amendments to, or changes in the plan shall be adopted and submitted in the manner set forth in Article 3 (commencing with Section 10840)

The 2025 AWMP was adopted following a public hearing held on 11 March 2026, in accordance with CWC §10841. A copy of the WRMWSD Board of Director's (Board) Resolution of Adoption for this AWMP is included in **Appendix C**.

During the public hearing, District landowners and members of the public were provided an opportunity to provide comments on the AWMP. Following the hearing, the AWMP **was adopted as prepared, or as modified based on comments received**, consistent with statutory requirements.

1.3.2 AWMP Submittal

CWC §10820(a)(2)(A)

An agricultural water supplier shall submit its plan to the department no later than 30 days after adoption of the plan. The plan shall be submitted electronically and shall include any standardized forms, tables, or displays specified by the department.

CWC §10843(a)

An agricultural water supplier shall submit to the entities identified in subdivision (b) a copy of its plan no later than 30 days after review of the plan pursuant to subdivision of Section 10820.

The 2025 AWMP was submitted electronically to DWR within 30 days after adoption, in accordance with CWC §§10820(a)(2)(A) and 10843(a).

1.3.3 AWMP Availability

CGC §6066

Publication of notice pursuant to this section shall be once a week for two successive weeks. Two publications in a newspaper published once a week or oftener, with at least five days intervening between the respective publication dates not counting such publication dates, are sufficient.

The period of notice commences upon the first day of publication and terminates at the end of the fourteenth day, including therein the first day."

CWC §10844(a)

Not later than 30 days after the date of adopting its plan, the agricultural water supplier shall make the plan available for public review on the agricultural water supplier's Internet Web site.

In accordance with CGC §6066 and CWC §10844(a), the 2025 AWMP was made available for public review 14 days prior to a public hearing, with notice published in the *Bakersfield Californian* on **23 February 2026** and **3 March 2026**. Documentation of public noticing is provided in **Appendix B**. The adopted 2025 AWMP is available on the District's website¹, together with prior AWMPs and applicable GSPs.

1.4 AWMP Implementation

CWC §10842

An agricultural water supplier shall implement the plan adopted pursuant to this chapter in accordance with the schedule set forth in its plan, as determined by the governing body of the agricultural water supplier.

The District will implement this plan, adopted pursuant to CWC §10842, in accordance with the implementation schedule set forth herein, as determined by the District's Board. Implementation of requirements under SGMA will also support and, where applicable, fulfill elements of this AWMP and will be coordinated accordingly.

2 DESCRIPTION OF AGRICULTURAL WATER SUPPLIER AND SERVICE AREA

CWC §10826(a)

(a) Describe the agricultural water supplier and the service area, including all of the following:

- (1) Size of the service area
- (2) Location of the service area and its water management facilities
- (3) Terrain and soils
- (4) Climate
- (5) Operating rules and regulations
- (6) Water delivery measurements or calculations
- (7) Water rate schedules and billing
- (8) Water shortage allocation policies

Pursuant to CWC §10826(a), this section describes the agricultural water supplier, including its service area, governance, water supply sources, and related operating practices addressed in this AWMP.

The WRMWSO was formed on 11 August 1959 pursuant to the Water Storage District Law (CWC §39000 *et seq.*), as a public water agency authorized to develop, acquire, and manage water supplies. The District was established to support agricultural water supply reliability, including securing supplemental surface water supplies for its landowners to reduce reliance on groundwater. The District is governed by a nine-member Board of Directors (Board), elected by landowners within the service area.

Since its formation, the District has developed an extensive distribution system and diversified water supply portfolio to serve its agricultural customers. District water supplies are derived from a combination of imported surface water, recovered water from participation in several Kern County groundwater banking and recovery projects,² local groundwater, and other supplemental supplies delivered through District facilities.

The District's primary imported water supply source is the SWP, a statewide system of storage, conveyance, and delivery facilities operated by DWR. The SWP conveys water from the Feather River Watershed captured at Lake Oroville in Northern California, through the Sacramento-San Joaquin River Delta (Delta) and Central Valley, and to service areas throughout California. As described later in this AWMP, WRMWSO receives annual SWP water allocations pursuant to a long-standing contract with the Kern County Water Agency (KCWA), which has been in effect since 14 November 1967.

The WRMWSO overlies portions of two groundwater subbasins – the Kern Subbasin and the White Wolf Subbasin – each managed by a separate GSA under SGMA. Consistent with its SGMA implementation and the adopted GSPs for each subbasin, information in this AWMP is presented, where appropriate, by District total and subbasin to reflect differing hydrologic conditions, management frameworks, and water supply considerations. This approach is intended to maintain consistency with ongoing groundwater management efforts and related planning documents.

² Groundwater banking and recovery projects generally refer to arrangements in which surface water available during wetter periods is intentionally recharged or stored in groundwater basins for later extraction and use during drier periods, subject to applicable agreements, operational constraints, and regulatory requirements.

2.1 Size of the Service Area

The District’s jurisdictional area, or Total Acreage, encompasses approximately 152,000 acres, which is larger than the Gross Acreage at the time of formation due to subsequent landowner transfers, annexations, and other routine operational changes. Within this jurisdiction, approximately 98,000 acres currently utilize water supplies. Of this area, the District provides water supplies to approximately 72,200 acres, referred to as the Surface Water Service Area (SWSA), with the remaining acreage designated as the Groundwater-Dependent Area (GDA), as summarized in **Table 2-1**.

Table 2-1. Water Supplier Size

Service Area	Within Kern Subbasin (acres)	Within White Wolf Subbasin (acres)	District Total (acres)
District Gross Acreage (at Formation ¹)	--	--	134,190
District Total Acreage (Current ²)	94,546	57,549	152,095
Surface Water Service Area ³	50,407	21,750	72,158
Groundwater-Dependent Area ⁴ (approximate)			26,000
Notes:			
¹ Kern County Water Agency Report 1969-1971, by KCWA			
² District Acreage as provided in CROP shapefile by WRMWSD, dated 19 November 2025			
³ Contracted SWSA in 2025 as provided in CROP shapefile by WRMWSD, dated 19 November 2025			
⁴ Per WRMWSD website			

2.1.1 Irrigated Acres

Total irrigated acreage within the District varies by year and is determined based on annual crop surveys conducted by District staff. **Table 2-2A** through **2-2C** summarizes the total irrigated acreage within the District, by groundwater subbasin, for each year 2021 through 2025,³ corresponding to the period following adoption of the prior AWMP update. Irrigated acreage shown in the table is classified as “active cropped” land.

³ For purposes of this AWMP, “year” refers to the Water Year, defined as the period from preceding 1 October through 30 September of the specified year, unless otherwise noted.

Table 2-2A. Kern Subbasin Sub-Total Acreages for Water Years 2021 to 2025

Land Type	2021	2022	2023	2024	2025
Active Cropped (Irrigated) ¹	59,091	57,818	53,014	50,435	45,666
Fallow or Non-Irrigated Cropped ²	20,874	20,098	24,718	26,434	31,191
Other District Lands ³	14,581	16,630	16,814	17,677	17,689
Subbasin Total	94,546	94,546	94,546	94,546	94,546
Notes:					
¹ Active cropped lands include those with crops reported during either the Spring or Fall crop surveys and are therefore considered irrigated acres for the purposes of this AWMP.					
² Fallow or non-irrigated cropped include those identified as fallow during both Spring and Fall crop surveys, or those identified as dry farmed wheat.					
³ Other District lands are non-irrigated and include undeveloped lands, farmsteads, solar fields, and other idle land.					

Table 2-2B. White Wolf Subbasin Sub-Total Acreages for Water Years 2021 to 2025

Land Type	2021	2022	2023	2024	2025
Active Cropped (Irrigated)	23,976	24,164	24,219	23,790	22,195
Fallow or Non-Irrigated Cropped	7,584	7,395	7,320	7,751	8,539
Other District Lands	25,989	25,990	26,010	26,008	26,815
Subbasin Total	57,549	57,549	57,549	57,549	57,549
<i>See notes for Table 2-2A.</i>					

Table 2-2C. District Total Acreages for Water Years 2021 to 2025

Land Type	2021	2022	2023	2024	2025
Active Cropped (Irrigated)	83,067	81,982	77,233	74,225	67,861
Fallow or Non-Irrigated Cropped	28,458	27,493	32,038	34,185	39,730
Other District Lands	40,570	42,620	42,824	43,685	44,504
District Total	152,095	152,095	152,095	152,095	152,095
<i>See notes for Table 2-2A.</i>					

2.1.2 Applicability to AWMP Requirement

Pursuant to the Act, agricultural water suppliers that provide water to 10,000 or more irrigated acres are required to prepare and submit an AWMP. As described in this section, WRMWSO provides water supplies to substantially more than 10,000 irrigated acres within its service area. Accordingly, the District qualifies as an agricultural water supplier subject to the AWMP requirements of the CWC.

2.1.3 Expected Changes to Land Use

The District is predominantly rural, with no incorporated cities or towns within its boundaries. Due to the distance between agricultural lands in the District and nearby urban areas, there has historically been limited pressure to convert agricultural lands to urban uses. Some development has occurred near Interstate 5 in portions of Kern County, resulting in localized conversion of agriculture lands to urban uses. In addition, there has been increased development of solar energy facilities on previously cropped or fallowed lands within the District. While little to no land was dedicated to solar development in 2015, approximately 6,600 acres were in solar use by 2025.

Although some undeveloped or non-irrigated lands within the District could potentially be brought into irrigated production, the District anticipates that future changes are more likely to involve a reduction in irrigated acreage. Factors influencing this trend include reduced reliability of imported SWP supplies, economic considerations such as crop pricing, and sustainable groundwater management requirements under the adopted GSPs for the Kern and White Wolf Subbasins. Expected changes to the service area are summarized in **Table 2-3**.

Table 2-3. Expected Changes to District Service Area

Change to Service Area	Estimated Magnitude of Change ¹	Cause(s) of Change	Estimated Effect on Water Supplier
Reduced Service Area	Minimal	Changes in District Contract Acres	No material impact
Increased Service Area	Minimal	Changes in District Contract Acres	None
Reduction in Irrigated Acreage	Moderate	Potential reductions in available water supply; conversion of agricultural lands to solar uses; increased groundwater pumping costs.	Decrease in total water demand
Increase in Irrigated Acreage	Minimal	Limited water supply availability constraining expansion of irrigated acreage.	None
Notes:			
¹ Estimated magnitudes are qualitative and reflect planning-level expectations.			

2.2 Location of Service Area and its Water Management Facilities

The following section details the location of the District’s service area and its water management facilities.

2.2.1 Location of Service Area

The District is located in southern Kern County within California’s San Joaquin Valley. The District’s service area overlies portions of two groundwater basins: the western portion lies within the Kern Subbasin, while the eastern portion lies within the White Wolf Subbasin. The location of the District and its service area are shown on **Figure 1**, which depicts the District’s boundaries, service area, and underlying groundwater subbasins.

The District’s southern boundary generally coincides with the foothills of the Tehachapi Mountains, and its northern boundary aligns with jurisdictional boundaries shared with adjacent water districts. Neighboring water districts include West Kern Water District, Henry Miller Water District, Buena Vista Water Storage District, Kern Delta Water District, Arvin-Edison Water Storage District, and Tejon-Castac Water District.

The District’s service area includes lands served by District surface water facilities as well as lands that rely on groundwater supplies. The SWSA generally follows the alignment of the California Aqueduct and the District’s 850 Canal, which convey imported SWP supplies to District lands. Areas outside the SWSA are farmed primarily using groundwater and are identified in this AWMP as the GDA. These distinctions are used throughout this AWMP to describe water supplies, demands, and management practices in a manner consistent with adopted GSPs and ongoing groundwater management efforts.

2.2.2 Water Management Facilities

The District owns and operates water management facilities used to convey, distribute, and deliver water supplies within its service area. These facilities support the delivery of imported surface water and the management of groundwater supplies to agricultural lands served by the District. An overview of the District’s water management facilities is shown on **Figure 2**.

District facilities include a system of canals, pipelines, pumping plants, turnouts, and wells used for conveyance and distribution of water supplies. The District’s distribution system consists of approximately 310 miles of pipelines, 137 booster pumps, 14 active wells, and more than seven miles of concrete-lined canals. These facilities are operated to deliver water to agricultural customers throughout the service area.

Depending on annual land use and leasing patterns, the District serves between 100 and 150 customers. A summary of the District’s current irrigation distribution facilities is provided in **Table 2-4**, with additional details provided below.

Table 2-4. Water Conveyance and Delivery System

System Type	Number of Miles ²	Percentage of System
Unlined Canals	None	0%
Lined Canals ¹	7	2.2%
Pipelines	310	97.8%
Drains	None	0%
District Total	317	100%
Notes:		
¹ Specifications No. WRM 620 for constructing 850 Canal, 1971.		
² Based on WRMWSD GIS data dated 19 July 2024.		

2.2.2.1 Surface Water Turnouts

The District receives SWP supplies through 15 turnouts located along Reaches 14, 15 and 16 of the California Aqueduct. Delivered water is then conveyed through District-owned lined canals and pressurized pipelines to farm delivery points (turnouts).

The District operates an automated delivery system consisting of pressurized pipelines serving approximately 796 farm turnouts. System operations are monitored and controlled through the District’s Supervisory Control and Data Acquisition (SCADA) system. Each turnout is equipped with a totalizing and

indicating flow meter. Because SWP water is delivered directly into pressurized pipeline systems, regulating reservoirs are not required for routine system operation.

2.2.2.2 Canals and Spill Basins

The District owns and operates approximately seven miles of concrete-lined canal, including the 850 Canal, and a 12-acre spill basin located at the downstream end of the canal system. The spill basin is intended to capture operational flows when necessary and provide flexibility for system operations.

The District's service area is generally well drained, and irrigation practices within the District primarily rely on high-efficiency irrigation systems, which limits the generation of surface runoff. As a result, the need for surface tailwater recovery infrastructure within the District is limited.

2.3 Terrain and Soils

This section describes the general terrain and soil characteristics within the District that influence agricultural water management and land use.

2.3.1 Terrain

The District is primarily located on the valley floor of the southern San Joaquin Valley, with gently sloping foothills along its southern and eastern boundaries where the valley transitions to the Tehachapi Mountains and Coast Ranges. Ground surface elevations within the District range from approximately 295 feet above mean sea level (msl) near the northwesterly boundary to approximately 1,865 feet msl along its eastern boundary.

Land surface slopes generally decrease from the foothills toward lower elevations along the District's northern boundary, with most grades less than four percent, resulting in predominantly flat terrain suitable for agricultural production. The California Aqueduct traverses the District from west to east, crossing a range of ground surface elevations as it conveys imported surface water supplies through the area.

Higher elevations within the contributing watershed occur south of the District boundary in the San Emigdio Mountains, where elevations exceed 7,000 feet msl.

2.3.2 Soils

Soils within the District vary by location but are generally characteristic of the southern San Joaquin Valley. Valley floor soils are primarily derived from mixed granitic and sedimentary rocks and commonly exhibit saline-alkaline characteristics. Generalized soil texture classifications and soil hydrologic group units within the District are shown in **Figure 3** and **Figure 4**, respectively, based on soil surveys prepared by the U.S. Department of Agriculture Natural Resources Conservation Service. Soils are generally of intermediate texture, with the predominant type being loam and sandy loam. Hydrologic Soil Group identification provides an indication of the relative runoff and infiltration potential of the soils with Hydrologic Soil Group A having the lowest runoff potential and highest infiltration potential and Hydrologic Soil Group D having the highest runoff potential and the lowest infiltration potential. Soils in the Kern Subbasin are predominantly in the B Hydrologic Soil Group in the south and the C Hydrologic Soil Group in the north. Soils in the White Wolf Subbasin are predominantly in the A Hydrologic Soil Group in the central portion of the District, with the B Hydrologic Soil Group being predominant in the west and the Hydrologic Soil Group C being predominant in the east. These Hydrologic Soil Groups indicate moderate infiltration rates across a majority of the District. Overall, soil conditions within the District are suitable for irrigated agriculture and do not impose material constraints on District water delivery or management practices.

2.4 Climate

The District experiences a semi-arid climate typical of the southern San Joaquin Valley, characterized by hot, dry summers, mild winters, and low annual precipitation. The growing season is long, supporting intensive irrigated agriculture. Average annual precipitation is approximately seven inches, with the majority occurring during the winter and early spring months.

Climate conditions relevant to agricultural water demand are summarized using data from the California Irrigation Management Information System (CIMIS) Arvin-Edison Station (Station No. 125). As summarized in **Table 2-5**, mean monthly temperatures range from approximately 38°F in winter months to 98°F during peak summer months, contributing to high seasonal evapotranspiration demand. Detailed CIMIS climate data for the period 2005-2025 are provided in **Table 2-6**.

Table 2-5. Summary of Climate Characteristics (CIMIS Station No. 125)

Climate Characteristic	Value
Average Annual Precipitation	7.20 inches
Minimum Monthly Precipitation (Average July)	0.05 inches
Maximum Monthly Precipitation (Average December)	1.40 inches
Average Minimum Temperature (January)	38.1°F
Average Maximum Temperature (July)	98.3°F

**Table 2-6. Monthly Climate and Reference Evapotranspiration Summary
(CIMIS Station No. 125)**

Month	Average Precipitation (inches)	Average Reference ET (inches ¹)	Average Minimum Temperature (°F)	Average Maximum Temperature (°F)
January	0.91	1.71	38.1	59.7
February	1.00	2.52	40.1	65.0
March	1.31	4.01	44.3	69.1
April	0.71	5.76	48.4	75.3
May	0.45	7.789	55.1	82.9
June	0.07	8.90	62.1	91.7
July	0.05	9.38	67.9	98.3
August	0.14	8.72	65.8	96.7
September	0.07	6.33	60.5	91.1
October	0.41	4.32	50.7	80.2
November	0.67	2.27	41.9	68.0
December	1.40	1.47	36.9	59.6
Wet Season ²	1.06 ⁴	2.40 ⁴	40.3 ⁴	64.3 ⁴
Dry Season ²	0.27 ⁴	7.31 ⁴	58.7 ⁴	88.0 ⁴
Annual	7.20 ³	63.17 ³	51.0 ⁴	78.1 ⁴

Notes:
¹ Obtained from DWR CIMIS Station No. 125 Kern County, California.
² “Wet Season” constitutes months of November through March, “Dry season” covers remaining months (April-October).
³ Total seasonal and annual values.
⁴ Average of seasonal and annual monthly values.

2.5 Operating Rules and Regulations

District operations are guided by the principles of efficient, flexible, and equitable water management to support agricultural water supply reliability and sustainable groundwater management under SGMA. Since its establishment, the District has implemented a range of programs and projects to enhance long-term water supply sustainability within its service area.

The District has adopted Rules and Regulations for Distribution and Use of Water (Rules and Regulations), which govern District operations and the delivery of water supplies. These Rules and Regulations establish procedures for distributing irrigation water in an orderly, efficient, and equitable manner. A copy of the current Rules and Regulations is included as **Appendix D**.

With adoption of the 2025 Plan and White Wolf GSP, the District has begun implementing applicable PMAs identified in those plans. The PMAs are intended to support achievement of sustainable groundwater management by 2040 in the Kern Subbasin and by 2042 in the White Wolf Subbasin, consistent with SGMA requirements.

In addition, the WRM GSA began development of a groundwater allocation policy in March 2024, which may inform future groundwater management in the Kern Subbasin. This policy is currently in draft form

and has not been adopted. A copy of the draft policy is included as **Appendix E** for informational purpose only.

2.6 Water Delivery Measurements or Calculations

All farm turnouts where water is delivered by the District are equipped with flow meters that measure instantaneous flow and record cumulative deliveries using totalizers. District staff regularly read and review meter data to track delivered volumes and identify potential anomalies.

Table 2-7 summarize the District’s water delivery measurement methods, including the types of devices used and their typical levels of measurement accuracy. District policy is to repair or replace meters that are found to be operating outside acceptable performance ranges. To promote consistency in measurement, the District uses meters from a single manufacturer. In addition to District monitoring, landowners may request meter testing if questions arise regarding measured deliveries.

Table 2-7 . Water Delivery Measurement Methods

Measurement Device	Frequency of Measure	Frequency of Calibration	Frequency of Typical Maintenance	Est. Level of Accuracy
Propeller meters with totalizers ¹	Regular (weekly reads)	As needed	As needed	±2 percent
Venturi meters ²	Continuous	As needed	As needed	±2 percent
<p>Notes: ¹ Propeller meters are manufactured by McCrometer (Model MG900). Manufacturer specifications indicate ±2 percent accuracy over the full operating range (approximately 40 to 8,500 gallons per minute, depending on pipe size), with higher accuracy over reduced ranges. ² Venturi Meters are used for deliveries from the California Aqueduct to the District’s conveyance system and are operated and maintained by DWR.</p>				

2.7 Water Rate Schedules and Billing

The District Board establishes water rates on an annual basis. Water rates vary among service areas to reflect differences in energy and pumping costs associated with delivering water to those areas.

The District’s rate structure consists of two primary components: fixed charges and variable charges. Fixed charges are generally based on Contract Acres (acreage enrolled under a Water Service Contract) and are used to recover costs associated with District infrastructure, administration, and personnel. Variable charges are assessed on a per acre-foot basis and reflect the costs of water supply and power associated with water delivery. **Table 2-8** summarizes the basis of the District’s water rate structure.

Under conditions of Contract Water Service, water users pay a Water Availability Charge (fixed) and a Water Use Charge (volumetric) in accordance with their Water Service Contracts. On or before 1 July of each year, the District provides Contract Water Users with a final accounting of water charges for the prior year, reconciling budgeted rates and deliveries with actual values.

On or before 1 December of each year, the District notifies water users in writing of the estimated total water charges for the upcoming year. Estimated charges are paid in eight equal installments, due on the tenth day of February through September, and include charges associated with water allocated for that year.

Table 2-8. 2025 District Water Rate Basis

Type of Billing Rate Basis	Type Used? Yes/No	Approx. % of Water Deliveries ¹	Description
Volume of Water Delivered	Yes	100%	A portion of each water bill is based on volume of water delivered.
Area (acres)	Yes	100%	A portion of each water bill is based on an acreage-based charge.
Land Assessment	Yes	-	Lands benefiting from the District’s facilities that are outside the SWSA pay a fixed per-acre charge, regardless of surface water delivery.
Crop Type	No	-	Not applicable.
<p>Notes: ¹ Percentages reflect planning-level characterization of billing structure and are not intended to represent allocation or prioritization of water deliveries.</p>			

2.8 Water Shortage Allocation Policies and Drought Plan

This section describes the District’s general approach to preparing for drought conditions and managing water supplies and allocations during periods of reduced water availability. Certain actions may require periodic evaluation of hydrologic conditions, operational practices, or governing policies, as well as consideration of long-term capital improvements. As water supply conditions evolve and new information or technologies become available, the District’s drought management approaches may be refined accordingly.

2.8.1 Water Shortage Allocation Policies

The District’s Water Shortage Allocation Policy is set forth in Section 3(l) of the Water Service Contracts and Section 8 (Water Shortages) of the District’s Rules and Regulations (see **Appendix D**). Required drought planning elements are addressed through this policy, in coordination with other planning documents, including the 2025 Plan and White Wolf GSP, which provide the framework for the drought management measures described in the following sections.

2.8.2 Drought Plan

CWC §10826.2

As part of its agricultural water management plan, each agricultural water supplier shall develop a drought plan for periods of limited water supply describing the actions of the agricultural water supplier for drought preparedness and management of water supplies and allocations during drought conditions.

(a) Resilience planning, including all of the following

- (1) Data, indicators, and information needed to determine the water supply availability and levels of drought severity*
- (2) Analyses and identification of potential vulnerability to drought*
- (3) A description of the opportunities and constraints for improving drought resilience planning, including all of the following:*
 - (A) The availability of new technology or information*
 - (B) The ability of the agricultural water supplier to obtain or use additional supplies during drought conditions*
 - (C) A description of other planned actions to improve drought resilience*

(b) Drought response planning, including all of the following

- (1) Policies and a process for declaring a water shortage and for implementing water shortage allocations and related response actions*
- (2) Methods and procedures for the enforcement or appeal of, or exemption from, triggered shortage response actions*
- (3) Methods and procedures for monitoring and evaluation of the effectiveness of the drought plan*
- (4) Communication protocols and procedures to inform and coordinate customers, the public, interested parties, and local, regional, and state government*
- (5) A description of the potential impacts on the revenues, financial condition, and planned expenditures of the agricultural water supplier during drought conditions that reduce water allocations, and proposed measures to overcome those impacts, including reserve-level policies*

Pursuant to CWC §10826.2, this section describes the District's approach to drought preparedness and drought response during periods of limited water supply. The Drought Plan is intended to provide a planning-level framework that supports coordinated implementation of adopted District policies, Water Service Contracts, and applicable GSPs.

Consistent with the 2025 Guidebook, this Drought Plan relies on existing District authorities, contractual provisions, and regional water supply monitoring programs and does not duplicate or supersede those governing documents. This Drought Plan does not establish new operational requirements but rather describes how the District prepares for and responds to drought conditions using these existing authorities and planning documents.

2.8.2.1 Resilience Planning

Data, Indicators, and Information

The District's drought resilience planning relies primarily on external hydrologic data and forecasts that influence water supply availability within its service area. The District's principal source of imported surface water is its allocation of SWP supplies received through KCWA. Hydrologic conditions affecting

the SWP – including precipitation, snowpack, runoff, and reservoir operations – are regularly monitored and forecasted by DWR and used to determine annual SWP allocations to contractors.

The WRMWSD uses these forecasts to assess anticipated surface water availability and to inform planning and operational decision-making. Deliveries from the California Aqueduct into the District’s system are measured and allocated in accordance with adopted District policies and Water Service Contracts.

In addition, the District participates in water purchase, transfer, and groundwater banking programs² that supplement SWP supplies during dry years and allow for storage of surplus water during wetter periods. The District also monitors groundwater elevations and conditions through programs implemented under SGMA, consistent with monitoring requirements and reporting obligations established in the adopted GSPs for the Kern Subbasin and White Wolf Subbasin. Collectively, these data sources inform the District’s understanding of drought conditions and available response options.

Drought Vulnerability

Drought vulnerabilities reflect conditions that may reduce water supplies available to the District or increase the impacts of water shortages on agricultural users. The District’s vulnerability assessment is informed by prior planning efforts, including the adopted GSPs.

Key drought-related vulnerabilities include:

- Reduced availability of imported surface water supplies during dry or critically dry years,
- Declining groundwater levels that may increase pumping costs or affect well performance,
- Impacts to permanent crops from prolonged or multi-year water shortages, and
- Potential land subsidence associated with groundwater level declines that could affect water conveyance infrastructure.

These vulnerabilities form the basis for the District’s drought preparedness and response planning.

Opportunities and Constraints

The District’s ability to improve drought resilience is influenced by both opportunities and constraints. Annual and long-term DWR forecasting of SWP allocations and delivery capacity is a critical input for identifying potential drought conditions and surplus opportunities. Because a substantial portion of the District’s water supply portfolio is dependent on the SWP, variability in SWP availability represents both a constraint during drought and an opportunity to capture surplus supplies during wetter periods.

The District has pursued opportunities to enhance drought resilience through participation in groundwater banking and recovery programs,² water transfers, and other supplemental supply arrangements that allow surplus water to be stored during wet years for later use during dry years. Advances in monitoring, data availability, and operational coordination under SGMA also provide opportunities to improve drought preparedness.

Constraints on drought resilience include hydrologic variability, regulatory requirements, infrastructure limitations, and economic considerations. Planned actions to address these opportunities and constraints are described in the adopted GSPs and associated PMAs, which are implemented independently of this AWMP.

2.8.2.2 Drought Response Planning

Water Shortage Declaration

The District’s policies and procedures for declaring a water shortage and implementing water shortage allocations are established in Section 3(I) of the Water Service Contracts and Section 8 (Water Shortages)

of the District’s Rules and Regulations (see **Appendix D**). These policies govern how available water supplies are allocated among water users when SWP allocations or other supplies are insufficient to meet total contract amounts.

During drought conditions, the District’s response focuses on allocating available surface water supplies, supplemented as appropriate by recovery of previously stored water from groundwater banking programs and operation of District-owned wells, consistent with adopted policies.

Response Actions

When water shortages occur, the District may implement one or more response actions, as summarized in **Table 2-9**. These actions are implemented as needed to manage reduced water availability and are carried out in accordance with existing District policies and contract provisions.

Table 2-9. Drought Response Actions

Response Action	Description of Response Action
Prorated SWP Allocations	Allocation of available District supplies among water users on a prorated basis.
Pumping of District-owned Wells	Use of District-owned wells as part of conjunctive water management.
Demand Management	Operational flexibility provided through pressurized delivery systems to support efficient on-farm water management.
Operational Adjustments	Increased recovery of previously banked water or operational coordination with groundwater supplies.
Alternative Water Supplies	Allocation of supplies obtained through water purchases, transfer, or banking programs.

Enforcement, Appeals, and Exemptions

Procedures related to enforcement, appeals, or exemptions associated with water shortage response actions are addressed through the District’s Rules and Regulations, Water Service Contracts, and applicable GSA authorities. This AWMP does not establish new enforcement mechanisms.

Monitoring and Evaluation

The District monitors drought conditions and response effectiveness through ongoing review of SWP allocation forecasts, delivery data, and groundwater monitoring conducted under SGMA. Information from these sources is used to evaluate water availability and inform future drought preparedness and response planning. This Drought Plan will be reviewed and updated as part of the District’s regular AWMP update cycle.

Communication Protocols

The District communicates drought-related information to landowners and interested parties through direct mail, website postings,¹ and coordination with partner agencies, including KCWA and regional water management

entities. The District also participates in regional coordination efforts to enhance water supply reliability and drought response across the broader service area.

Financial Impacts

Drought conditions that reduce water allocations may affect District revenues, costs, and planned expenditures. The District’s Board annually establishes water allocations and rates based on anticipated

water availability, budget requirements, and adopted policy. Fixed costs associated with District infrastructure and operations are recovered through acreage-based charges, while variable costs reflect water supply and delivery conditions.

The SWP costs include fixed obligations through KCWA that are incurred regardless of annual allocation levels, which can result in higher per-acre-foot costs during dry years. The District seeks to mitigate these impacts through water banking, supply diversification, and rate-setting practices that consider the relative costs of available supplies. Financial management during drought conditions is addressed through existing rate policies and reserve practices and is not governed by this AWMP.

3 DESCRIPTION OF QUANTITY OF WATER USES

CWC §10826(b)(5)

Water uses within the agricultural water supplier's service area, including all of the following:

(A) Agricultural.

(B) Environmental.

(C) Recreational.

(D) Municipal and industrial.

(E) Groundwater recharge, including estimated flows from deep percolation and from irrigation and seepage

Pursuant to CWC §10826, this section describes the quantity of water uses within the District's service area. Total water demand within the District water is generally consistent from year to year and is primarily driven by agricultural water uses. The following subsections summarize the quantities of water used to meet these demands, based on available data and planning-level assumptions.

Consistent with the District's groundwater management framework under SGMA, water use information is presented by groundwater subbasin, where applicable, and summarized at the District-wide level. This approach maintains consistency with the adopted GSPs for the Kern and White Wolf Subbasins and reflects differences in water demands and management considerations across the District's service area.

3.1 Agricultural Water Use

The primary land use within the District's service area is agriculture. Agricultural development expanded significantly during the mid-20th century, reached peak irrigated acreage by the mid-1970s, and since the 1990s has transitioned from predominantly annual field crops to a greater proportion of permanent crops. During the 2021-2025 period³, permanent crops - primarily almonds, citrus, and grapes - accounted for slightly more than 70 percent of the total planted acreage within the District.

This long-term shift toward permanent crops has altered the character of agricultural water demand within the District. Permanent crops generally require a consistent annual water supply to maintain orchard and vineyard viability, and provide limited flexibility for demand reduction during water shortage conditions. As a result, the District's overall agricultural water demand has become comparatively less variable year-to-year, even as the sources of supply may fluctuate.

Accurate estimation of agricultural water use is critical for planning and managing water resources within the District. Because growers rely on a combination of surface water deliveries at farm turnouts and groundwater pumping, agricultural water use is estimated using crop evapotranspiration (ETc) as a planning-level indicator of consumptive use. ETc represents the quantity of water required to meet crop water demand through the combined processes of soil evaporation and plant transpiration under standard growing conditions.

For the purposes of this AWMP, the District relies on satellite-based ETc datasets obtained as part of the GSP preparation and SGMA annual reporting for the Kern and White Wolf Subbasins. For 2021, ETc estimates were derived from Irrigation Training and Research Center (ITRC) METRIC raster datasets. Beginning in 2022, ETc data were obtained from LandIQ. Monthly ETc values for irrigated parcels⁴ were

⁴ Irrigated parcels are identified as those tabulated in Table 2-2 based on the District's CROP survey. In some instances, the District's land use classification does not match that reported by LandIQ.

multiplied by parcel acreage and summed over the Water Year to estimate total annual agricultural water use. Estimated annual ETc for 2021 through 2025 is summarized in **Table 3-1** by groundwater subbasin.

Consistent with the 2025 Guidebook, this AWMP does not provide crop-by-crop ET calculations. Instead, agricultural water use is presented in aggregate using accepted remote-sensing methods that provide a consistent and defensible estimate of consumptive use across the District while avoiding unnecessary detail.

The District’s service area includes an overlap with AEWS, which appears as a checkerboard pattern in **Figure 1**. Approximately 1,800 acres within the District are also located within the AEWS surface water service area. This AWMP does not account for AEWS surface water deliveries to these overlap lands. Agricultural water requirements are estimated for all WRMWS acreage; however, only the WRMWS water deliveries are tabulated and reported in this AWMP.

Table 3-1. Estimated District Agricultural Water Uses for Water Years 2021 to 2025 by Subbasin

Subbasin	Estimated Agricultural Uses by Year (AF)				
	2021	2022	2023	2024	2025
Kern County Subbasin	155,064	158,832	146,987	144,508	124,419
White Wolf Subbasin	56,563	66,012	66,947	66,604	58,868
District Total	211,627	224,844	213,934	211,112	183,287

Abbreviations:
 AF = acre-feet
 ETc = crop evapotranspiration

Notes:
 1. ETc is estimated using ITRC-METRIC datasets for October 2020 to December 2021 and Land IQ for January 2022 to September 2025. Monthly ETc rasters are averaged over each irrigated parcel, summed over the Water Year, and converted to a volume based on parcel area.

3.2 Environmental Water Use

The District does not supply water for environmental purposes within its service area, as noted in **Table 3-2**.

The District participates as a member of the Kern Water Banking Authority, which provides incidental regional environmental benefits associated with managed groundwater recharge and storage activities, including benefits to upland terrestrial habitat and waterfowl. Water associated with these activities is not delivered by the District for environmental uses within its service area and is therefore not considered an environmental water use under this AWMP.

Table 3-2. District Environmental Water Uses for Water Years 2021 to 2025 by Subbasin

Subbasin	Environmental Uses by Year (AF)				
	2021	2022	2023	2024	2025
Kern County Subbasin	0	0	0	0	0
White Wolf Subbasin	0	0	0	0	0
District Total	0	0	0	0	0
<p>Abbreviations: AF = acre-feet</p> <p>Notes: ¹ The District does not supply water to environmental uses.</p>					

3.3 Recreational Water Use

The District does not supply water to recreational uses within its service area, as noted in **Table 3-3**.

Table 3-3. District Recreational Water Uses for Water Years 2021 to 2025 by Subbasin

Subbasin	Recreational Uses by Year (AF)				
	2021	2022	2023	2024	2025
Kern County Subbasin	0	0	0	0	0
White Wolf Subbasin	0	0	0	0	0
District Total	0	0	0	0	0
<p>Abbreviations: AF = acre-feet</p> <p>Notes: ¹ The District does not supply water to recreational uses.</p>					

3.4 Municipal and Industrial Water Use

The District does not provide municipal (domestic) water service. The District does deliver raw (non-potable) water for limited industrial water uses within its service area, including deliveries to facilities such as the Pastoria Energy Facility.

A portion of the District’s jurisdictional area overlaps with TCWD, which provides water service – primarily for industrial uses - to the Tejon Ranch Commerce Center along the Interstate 5 corridor. The District does not supply water to TCWD, which operates independently using its own surface water supplies and groundwater banking facilities.

All District deliveries for industrial uses are metered. Annual volumes of municipal and industrial deliveries are summarized in **Table 3-4**.

Table 3-4. District M&I Water Uses for Water Years 2021 to 2025 by Subbasin

Subbasin	M&I Uses per Year (AF)				
	2021	2022	2023	2024	2025
Kern County Subbasin	3	92	105	106	23
White Wolf Subbasin	3,251	2,526	3,046	3,162	2,955
District Total	3,254	2,618	3,151	3,268	2,978
<p>Abbreviations: AF = acre-feet M&I = municipal and industrial</p> <p>Notes: ¹ Specific industrial entity receiving water supplies are documented in the District’s annual surface water deliveries to land reports. Industrial water uses associated with the Tejon Ranch Commerce Center are served by the TCWD and are not included in the deliveries reported herein.</p>					

3.5 Groundwater Recharge Use

Groundwater recharge within the District occurs through a combination of indirect recharge, on-farm recharge, and direct recharge at regional groundwater banking² facilities.

Indirect groundwater recharge occurs when surface water deliveries offset groundwater pumping for irrigation. Each acre-foot of surface water delivered in lieu of pumping provides an immediate recharge benefit by reducing groundwater extractions.

In 2023, the District initiated a landowner on-farm recharge program as a new PMA under SGMA. This program provided financial incentives for landowners to intentionally infiltrate surplus surface water on agricultural lands to recharge the underlying aquifer during suitable conditions.

The District also participates in several long-term groundwater banking programs that provide direct recharge opportunities using spreading and percolation basins. These facilities allow surplus surface water to be stored during wetter periods for later recovery during dry years. Participating projects include the Kern Water Bank, the Pioneer Project, the Mettler Recharge Project, the Berrenda Mesa Project, and North Kern Water Storage District facilities. These projects are located primarily on the Kern River alluvial fan, with the exception of the Mettler Recharge Project, which is located within the White Wolf Subbasin (**Figure 5**).

Recharge volumes for 2021-2025 are summarized in **Table 3-5**, which illustrates that the majority of recharge occurs during wet years when surplus surface water supplies are available and recharge facilities can operate at higher capacity.

Together, indirect recharge, on-farm recharge, and off-site groundwater banking provide the District with a flexible portfolio of recharge options that support groundwater sustainability objectives and improve water supply reliability during dry and critically dry conditions.

**Table 3-5. District Groundwater Recharge Uses (including percolation and seepage)
for Water Years 2021 to 2025 by Subbasin**

Subbasin	Groundwater Recharge Uses per Year (AF)				
	2021	2022	2023	2024	2025
On-Farm Landowner Recharge and Percolation Estimate ²	0	0	5,657	1,481	0
Sub-Total Kern County Subbasin	0	0	5,657	1,481	0
Mettler Recharge Facility ¹	0	0	11,077	1,014	0
On-Farm Landowner Recharge and Percolation Estimate ²	0	0	11,694	743	0
Sub-Total White Wolf Subbasin	0	0	22,771	1,757	0
District Total	0	0	28,428	3,238	0
<p>Abbreviations: AF = acre-feet</p> <p>Notes: ¹ Deliveries for managed groundwater recharge are documented in the District’s annual surface water deliveries to land reports. ² On-farm landowner recharge and percolation represents the intentional infiltration of surplus surface water on agricultural lands conducted pursuant to District programs or incentives.</p>					

3.6 Evaporative Losses on Open Storage or Channels

Evaporative losses from the Mettler Recharge Facility and from the 850 Canal is estimated based on hook gage readings at District operated Greenlee’s pasture climate station. At the Mettler Recharge Facility, the total daily wetted area of the recharge basin determined based on pond level height (in acres) is multiplied by the daily evaporation (in feet) to calculate a volumetric evaporation loss (in AF). Daily values are summed to annual over the water year. Similarly, for the 850 Canal, total surface area of the canal is multiplied by the monthly evaporation, and monthly values are summed over the water year. Both the 850 Canal and Mettler Recharge Facility are located in the White Wolf Subbasin. Evaporative loss estimates are provided in **Table 3-6** below.

Table 3-6. Evaporative Losses for Water Years 2021 to 2025 for the White Wolf Subbasin

Facility	Evaporative Losses by Year (AF)				
	2021	2022	2023	2024	2025
850 Canal	47	104	92	99	111
Mettler Recharge Facility	0	0	203	39	0
White Wolf Subbasin / District Total ¹	47	104	295	138	111
<p>Abbreviations: AF = acre-feet</p> <p>Notes: ¹ Facilities are located in the White Wolf Subbasin and therefore totals also represent totals for the District.</p>					

3.7 Summary of District Water Uses

This subsection summarizes total water uses within the District’s service area, based on the planning-level estimates and data described in the preceding subsections. Water use information is presented in **Tables 3-7A** through **3-7C**, with two tables summarizing water uses by subbasin (Kern County and White Wolf), and the last table providing a District-wide total.

**Table 3-7A. Kern County Subbasin Sub-Total
Summarized Water Uses for Water Years 2021 to 2025**

Water Uses (AWMP Table) ¹	Water Uses by Year (AF)				
	2021	2022	2023	2024	2025
Agricultural (3-1)	155,064	158,832	146,987	144,508	124,419
Environmental (3-2)	0	0	0	0	0
Recreational (3-3)	0	0	0	0	0
M&I (3-4)	3	92	105	106	23
Groundwater Recharge (3-5)	0	0	5,657	1,481	0
Subbasin Total	155,067	158,924	152,749	146,095	124,442
Abbreviations: AF = acre-feet M&I = municipal and industrial					
Notes: ¹ Values summarized from Tables as cited.					

**Table 3-7B. White Wolf Subbasin Sub-Total
Summarized Water Uses for Water Years 2021 to 2025**

Water Uses (AWMP Table) ¹	Water Uses by Year (AF)				
	2021	2022	2023	2024	2025
Agricultural (3-1)	56,563	66,012	66,947	66,604	58,868
Environmental (3-2)	0	0	0	0	0
Recreational (3-3)	0	0	0	0	0
M&I (3-4)	3,251	2,526	3,046	3,162	2,955
Groundwater Recharge (3-5)	0	0	22,771	1,757	0
Evaporative Losses (3-6)	47	104	295	138	111
Subbasin Total	59,861	68,642	93,059	71,661	61,934
<i>See notes for Table 3-6A.</i>					

**Table 3-7C. District Total Summarized Water Uses
for Water Years 2021 to 2025**

Water Uses (AWMP Table) ¹	Water Uses by Year (AF)				
	2021	2022	2023	2024	2025
Agricultural (3-1)	211,627	244,844	213,934	211,112	183,287
Environmental (3-2)	0	0	0	0	0
Recreational (3-3)	0	0	0	0	0
M&I (3-4)	3,254	2,618	3,151	3,268	2,979
Groundwater Recharge (3-5)	0	0	28,428	3,238	0
Evaporative Losses (3-6)	47	104	295	138	111
District Total	214,928	227,566	245,808	217,756	186,376
<i>See notes for Table 3-6A.</i>					

4 DESCRIPTION OF WATER SUPPLY QUANTITY AND QUALITY

CWC §10826(b)

Describe the quantity and quality of water resources of the agricultural water supplier, including all of the following:

- (1) Surface water supply.*
- (2) Groundwater supply.*
- (3) Other water supplies, including recycled water.*
- (4) Source water quality monitoring practices.*
- (5) Water uses within the agricultural water supplier's service area.*

Pursuant to CWC §10826, this section describes the quantity and quality of water supplies available to the District. Section 4.1 summarizes the quantity of surface water, groundwater, and other water supplies available to meet District demands, while Section 4.2 describes the general quality characteristics of these water sources. Together, these sections provide a planning-level characterization of the water resources used by the District, including surface water, groundwater, and other supplies, where applicable.

Consistent with the District's groundwater management framework under SGMA, information on water supply quantity and quality is presented, where applicable, by subbasin and summarized at the District-wide level. This approach maintains consistency with the adopted GSPs for the Kern and White Wolf Subbasins, and reflects differences in water supply sources, availability, and management considerations across the District's service area.

4.1 Water Supply Quantity

This section describes the quantity and sources of water supplies available to the District, including surface water, groundwater, and other supplemental supplies, as well as consideration of effective precipitation, consistent with CWC requirements and the 2025 Guidebook.

4.1.1 Surface Water Supply

Surface water deliveries to the District commenced in 1971. All surface water delivered by the District is raw, untreated water suitable for agricultural irrigation and is not treated for potable use. The District's primary surface water supply is imported SWP water delivered via the California Aqueduct. In addition to contracted SWP supplies, the District may receive supplemental surface water from other sources in certain years.

Table 4-1 summarizes surface water supplies delivered to the District, including contracted SWP deliveries, supplemental SWP supplies, transferred water, and water recovered from regional groundwater banking programs in which the District participates.

4.1.1.1 State Water Project Supplies

The District imports SWP pursuant to a 1967 contract with KCWA, which is subject to 15 November 1963 Water Supply Contract between the State of California, acting through DWR, and KCWA, as amended. The District's maximum SWP contract amount is 197,088 AFY (the "Table A" amount). Actual deliveries vary annually based on hydrologic conditions, regulatory and operational constraints affecting the SWP, and allocation determinations made by DWR, which are typically expressed as a percentage of the Table A amount.

In addition to annual allocations, SWP supplies available to the District may include water available through DWR's "Turnback Pool," which consists of SWP Table A water that other contractors elect not to

take in a given year and that DWR makes available to willing contractors on a temporary basis. Availability of Turnback Pool water is dependent on hydrologic conditions, system capacity, and participation by other SWP contractors, and is not guaranteed from year to year.

The District may also utilize “Carryover Water” stored in San Luis Reservoir, which allows unused allocated SWP water from a prior year to be retained for delivery in a subsequent year, subject to DWR rules, reservoir storage conditions, and operational constraints. Carryover supplies provide limited inter-annual flexibility but are dependent on available storage space and may be reduced or unavailable during extended dry periods.

From time to time, additional SWP supplies - commonly referred to as “Article 21” water, pursuant to contract provisions – may be made available purchase during periods of surplus conditions. Historically, the District has been able to receive Article 21 water in some years; however, increasing operational and regulatory constraints on SWP pumping have limited the availability of these supplies. Over the most recent five-year period, Article 21 water was available to the District only in 2023, a wet year with 100-percent SWP Table A allocation.

4.1.1.2 Kern River-Related Supplies

The District does not hold direct surface water diversion rights to the Kern River. However, pursuant to contractual and cooperative agreements facilitated through KCWA, Kern River water may be available to the District in some years through exchanges, transfers, or other regional water management arrangements. As Kern River water supplies received by the District are supplemental and are not relied upon as a primary water source. These supplies are typically limited to wet-year conditions and are not available on a regular or predictable basis.

4.1.1.3 Water Transfers

Surface water transfers represent a supplemental and non-contractual component of the District’s overall water supply portfolio. In some years, the District may acquire water through short-term transfers or exchanges with other water agencies or landowners, including transfers involving SWP supplies, Central Valley Project Friant Division exchange water, or other regionally available supplies conveyed through existing conveyance facilities. The District may also facilitate common landowner transfers,⁵ whereby water associated with lands or rights held by the same landowner is moved or exchanged consistent with applicable contracts, regulations, and operational constraints.

Transferred and exchanged supplies are obtained in response to hydrologic conditions, market availability, and operational considerations, and are subject to conveyance capacity, regulatory approvals, and third-party agreements. These supplies are not guaranteed and may vary substantially from year to year.

4.1.1.4 Banking Recovery

Recovered banked water represents a supplemental surface water supply consisting of previously imported water that was stored in regional groundwater banking or managed aquifer recharge (MAR) programs during periods of surplus availability. In years when recovery is available, the District may recover a portion of its banked water pursuant to established agreements, subject to hydrologic conditions, conveyance availability, and applicable operational and recovery limitations. Banking recovery

⁵ “Common landowner transfers” refer to the movement or exchange of water associated with lands or water rights held by the same landowner, and do not represent new water supplies and are not guaranteed in any given year.

is not a guaranteed annual supply and is therefore considered a flexible resource that may augment primary SWP supplies and local groundwater use, particularly during dry or critically dry years.

The District participates in several regional groundwater banking and recharge programs that provide recharge and recovery opportunities outside the District's service area, as well as one facility located within the White Wolf Subbasin. These programs are summarized below.

Kern Water Bank Participation

The WRMWSO participates in the Kern Water Bank Authority (KWBA), a large regional groundwater banking program located on the Kern River alluvial fan north of the District and within the Kern Subbasin. The Kern Water Bank provides substantial interannual storage capacity through recharge during wet years and recovery during drier years. Water recovered through KWBA participation – up to **XX AF** of groundwater storage by WRMWSO - is considered a supplemental and non-guaranteed supply that enhances the District's ability to manage variability in SWP availability.

Pioneer Recharge Facility

The District also participates in the Pioneer Recharge Project, a MAR facility operated by KCWA on the Kern River alluvial fan and within the Kern Subbasin west of Bakersfield. The project includes recharge basins and conveyance facilities that allow surplus water from regional sources to be recharged during periods of excess availability. Participation in the Pioneer Recharge Project provides additional flexibility to store up to **XX AF** of the District's surplus water during wet years for later recovery during dry periods, subject to project priorities and operational constraints.

Berrenda Mesa Project

The WRMWSO participates in the Berrenda Mesa Project, a MAR facility located in the Kern Subbasin. The project is designed to store surplus surface water in underlying aquifers during wet years through spreading and percolation, with stored water available for recovery during periods of drought or high demand. The District's participation in this project – up to **XX AF** of groundwater storage – provides another supplemental groundwater banking option that supports regional groundwater sustainability and improves water supply reliability during dry and critically dry conditions.

4.1.1.5 Local Stream Diversions

Approximately 3,000 acres within the District are irrigated with surface water diverted from local stream diversions, including Tejon Creek, El Paso Creek, Tunis Creek, Pastoria Creek, and Live Oak Creek. These diversions are made by individual landowners pursuant to applicable water rights and are stored in on-site reservoirs for later use. In some cases, diverted water may also be conveyed through the District's 850 Canal for distribution to agricultural fields using District facilities. These local diversions represent a minor and localized component of the District's overall water supply.

**Table 4-1. Breakdown of District Surface Water Supplies
For Water Years 2021 to 2025**

Source of Surface Water Supply	Type of Supply	Total Surface Water Supplies by Year ¹ (AF)				
		2021	2022	2023	2024	2025
		Critical ²	Critical	Wet	Above Normal	Above Normal
		5% ²	5%	100%	40%	50%
SWP Surface Supplies ³	Surface	36,784	37,667	120,670	91,467	85,241
Kern River Supplies	Surface	0	0	5,991	0	0
Water Transfers	Surface	3,450	6,657	11,142	35,415	54,194
Banking Project Recovery ⁴	Bank Return	52,672	67,546	13,768	15,723	30
Local Stream Diversions ⁵	Surface	2,334	2,387	2,912	3,008	2,521
District Total		95,240	114,257	154,483	145,613	141,986

Notes:
¹ Surface water supplies tabulated from Engineer-manager’s monthly reports
² Reported San Joaquin Hydrologic Index and SWP Table A Allocation Percentage per DWR sources.
³ Sub-total of Table A, Turnback Pool, Carryover Storage, and Article 21 SWP-based supplies.
⁴ Sub-total of recovered water from the Kern Water Bank, Pioneer Recharge Project, Berrenda Mesa Project, and Mettler Recharge Project.
⁵ Sub-total of Pastoria Creek/TRC.

For consistency with the tables above, and groundwater management and planning under SGMA, total surface water supplies provided to the District’s service area are reported in **Table 4-2** below by subbasin.

Table 4-2. Surface Water Supplies for Water Years 2021 to 2025 by Subbasin

Subbasin	Surface Water Supplies by Year (AF)				
	2021	2022	2023	2024	2025
Kern County Subbasin	76,319	99,665	69,069	100,104	95,487
White Wolf Subbasin	18,921	14,592	85,414	45,509	46,499
District Total	95,240	114,257	154,483	145,613	141,986

Abbreviations:
AF = acre-feet

Notes:
1. Surface water supplies for White Wolf Subbasin from Annual Reports. Kern County Subbasin water supplies calculated as the difference between total district supplies and White Wolf Subbasin supplies.

4.1.1.6 Regulatory and Operational Limitations

This subsection describes regulatory and operational constraints that may affect the availability, timing, and reliability of the District’s surface water supplies. **Table 4-3** summarizes the primary limitations applicable to the District’s surface water sources.

Surface water supplies delivered through the SWP are subject to hydrologic conditions, regulatory requirements, regulatory requirements, and operational constraints that influence annual delivery volumes and timing. These constraints include requirements associated with the protection of listed species under state and federal law, actions of the SWRCB affecting Delta operations, and related judicial

decisions. Collectively, these factors affect DWR’s facilities operations within and upstream of the Delta, and contribute to variability in SWP deliveries.

The same regulatory and operational constraints may also limit the conveyance of transferred water through the Delta and the ability to move surplus supplies to or recover stored supplies from regional groundwater banking programs. As a result, the availability of transferred or banked surface water supplies may vary by year and hydrologic conditions.

Regulatory and operational limitations may also influence the cost of surface water supplies. Fixed costs associated with SWP participation are incurred regardless of annual delivery volumes, while supplemental supplies obtained through transfers or banking programs are subject to market availability, conveyance constraints, and operational feasibility.

Table 4-3. Regulatory and Operational Limitations Affecting Surface Water Supplies

Impacted Source	Restrictions or Imposed Limitations	Name of Agencies Imposing Restrictions	Operational Constraints
SWP Imported Water	Hydrologic conditions; Delta pumping and delivery constraints.	USFWS, NMFS, SWRCB, Federal Courts	Variability and reduced reliability of SWP deliveries conveyed through the Delta
Procured Water Transfers	Delta and SWP facilities conveyance limitations.	USFWS, NMFS, SWRCB, Federal Courts	Reduced opportunities or timing limitations for conveying transferred supplies through the Delta
<p>Abbreviations: NMFS = National Marine Fisheries Services SWP = State Water Project SWRCB = State Water Resources Control Board USFWS = United States Fish and Wildlife Services</p>			

4.1.2 Groundwater Supply

The District overlies portion of two groundwater subbasins, the Kern Subbasin and the White Wolf Subbasin, both of which are part of the larger San Joaquin Valley Groundwater Basin within the Central Valley aquifer system. The relationship between the District’s service area and the underlying groundwater subbasins is shown in **Figure 1**. Key characteristics of each subbasin are summarized in **Table 4-4**. Detailed descriptions of groundwater conditions, aquifer characteristics, and groundwater management approaches within the District’s service area are provided in the adopted GSPs. Groundwater management in the Kern Subbasin is addressed in the 2025 Plan, while groundwater management in the White Wolf Subbasin is addressed in the adopted White Wolf GSP.

Table 4-4 Kern County and White Wolf Subbasins - Size and Characteristics

Basin Name	Size (Sq. Mi.)	Estimated Capacity (AF)	Sustainable Yield (AFY)
Kern County Subbasin	2,834 ¹	40,000,000 ²	1,312,200 ¹
White Wolf Subbasin	168 ³	4,000,000 ³	38,200 to 47,200 ³
<p>Abbreviations: AF = acre-feet AFY = acre-feet per year Sq. Mi. = Square miles</p> <p>Notes: ¹ Source: 2025 Kern County Subbasin GSP. ² Source: DWR California’s Groundwater Bulletin 118 (Update 2025). ³ Source: White Wolf GSP.</p>			

The District owns and operates 14 groundwater wells, of which two are located in the Kern Subbasin and 12 are located in the White Wolf Subbasin (**Figure 5**). Groundwater production from all District-owned wells is metered. Water produced from these wells is pumped into the District’s distribution system and delivered to meet agricultural demands within the SWSA.

Although District-delivered water supplies meet most agricultural demands within the SWSA, some landowners supplement District deliveries with groundwater pumped from privately owned wells. Lands located outside the SWSA but within the District’s jurisdiction rely primarily on privately pumped groundwater. In addition, the District has historically allowed a user-input program under which landowners may pump groundwater from private wells into the District’s system during periods of low demand for credit and recover water during periods of higher demand, subject to District policies.

Accordingly, total groundwater extraction within the District consists of production from District-owned wells, groundwater pumped through the user-input program, and groundwater pumped from private wells serving lands within the District. While the District maintains accurate records of groundwater production from its own facilities and groundwater conveyed through the user-input program, direct metered data for privately pumped groundwater are not uniformly available.

As part of a groundwater service charge adopted in 2023, the District has begun estimating parcel-level groundwater use using remote-sensing-based ETc data. Landowners may elect to submit data from existing well meters, subject to District review, in lieu of ETc-based estimates. These estimates are used for planning and billing purposes and do not alter groundwater management authorities established under SGMA. **Table 4-5** summarizes the total groundwater supplies used within the District for the period 2021 through 2025.

Table 4-5. District Groundwater Supplies for Water Years 2021 to 2025 by Subbasin

	Groundwater Supplies by Year (AF)				
	2021	2022	2023	2024	2025
District-owned Wells ¹	848	1,532	171	18	0
Private Wells ²	76,834	68,281	28,385	29,817	31,894
Sub-Total Kern County Subbasin	77,682	69,813	28,556	29,835	31,894
District-owned Wells ¹	5,038	6,816	1,099	132	3
Private Wells ²	54,595	40,506	15,645	15,021	11,866
Sub-Total White Wolf Subbasin	59,633	47,322	16,744	15,153	11,869
District Total	137,315	117,135	45,301	44,988	43,764

Abbreviations:
AF = acre-feet

Notes:
¹ Metered data based on the District’s *Summary of Deliveries*.
² Estimates based on White Wolf Groundwater Flow Model or as provided by the District on 21 October 2025 (2021) and on 28 January 2026 (2022-2025), as follows:
 – Kern County Subbasin: 2021 is reported as calendar year and is estimated from delivered water, crop acres, and crop coefficients. 2022-2025 is a summation of private user input and as estimated by the groundwater service charge calculator. 2022 is reported as calendar year and 2023-2025 are reported as water year.
 – White Wolf Subbasin: October 2020 to December 2021 is estimated by the White Wolf Groundwater Flow Model. January 2022 to September 2025 is a summation of private user input and as estimated by the groundwater service charge calculator.

4.1.3 Other Water Supplies (including Recycled Water)

The District does not utilize recycled water and does not rely on any additional water supply sources beyond those described in Section 4.1.1 and 4.1.2.

Precipitation is not considered a managed or deliverable water supply for District operations. However, consistent with the annual water budget requirements of CWC §10826(c), estimates of effective precipitation are included below for planning and accounting purposes.

4.1.3.1 Effective Precipitation

Effective precipitation within the District’s service area is calculated as the total rainfall over the developed or irrigated acres of the District. It assumes that 95% of precipitation is effective and available to meet crop consumptive used due to several local conditions: (1) precipitation is rarely significant enough to cause runoff from developed fields; and (2) the volume of precipitation is assumed to remain in the shallow vadose zone and, therefore, is available for uptake by crops.

Precipitation data is monitored by the District at six locations within its service area: (1) Greenlee’s Pasture, (2) District Headquarters, (3) WRM-2 Pumping Plant, (4) 5P-P2 Pumping Plant, (5) PA-2 Pumping Plant, and (6) Spillway Basin. The Thiessen average for precipitation can be calculated across the service area using these monitoring stations. **Table 4-6A** through **4-6C** provides the annual effective precipitation over the irrigated acres of the District for 2021 to 2025.

Table 4-6A. Kern County Subbasin Sub-Total Effective Precipitation for Water Years 2021 to 2025

	2021	2022	2023	2024	2025
Active Cropped (Irrigated, acres) ¹	59,091	57,818	53,014	50,435	45,666
Precipitation (inches) ²	2.81	5.38	11.63	8.39	4.98
Subbasin Total Effective Precipitation Supply (AF)³	13,145	24,626	48,810	33,499	18,004
Abbreviations: AF = acre-feet					
Notes: ¹ Active cropped irrigated acres as presented in Table 2-2. ² Precipitation calculated as the Thiessen Average using the District rain gauge data. ³ Effective Precipitation calculated as the product of irrigated acreage and precipitation, estimated around 95% efficiency per Chapter II. Measurement of Effective Rainfall by the Food and Agricultural Organization.					

Table 4-6B. White Wolf Subbasin Sub-Total Effective Precipitation for Water Years 2021 to 2025

	2021	2022	2023	2024	2025
Active Cropped (Irrigated, acres)	23,976	24,164	24,219	23,790	22,195
Precipitation (inches)	2.81	5.38	11.63	8.39	4.98
Subbasin Total Effective Precipitation Supply (AF)	5,334	10,292	22,299	15,802	8,750
<i>See notes for Table 4-6A.</i>					

Table 4-6C. District Total Effective Precipitation for Water Years 2021 to 2025

	2021	2022	2023	2024	2025
Active Cropped (Irrigated, acres)	83,067	81,982	77,233	74,225	67,861
Precipitation (inches)	2.81	5.38	11.63	8.39	4.98
District Total Effective Precipitation Supply (AF)	18,479	34,918	71,109	49,301	26,754
<i>See notes for Table 4-6A.</i>					

4.1.4 Summary of District Water Supplies

This subsection summarizes total water supplies within the District’s service area, based on the planning-level estimates and data described in the preceding subsections. Water supply information is presented in **Table 4-7A** through **4-7C**, with two tables summarizing water supplies by subbasin (Kern and White Wolf), and the last table providing a District-wide total.

**Table 4-7A. Kern County Subbasin Sub-Total Summarized
Water Supplies for Water Years 2021 to 2025**

Water Supplies (AWMP Table) ¹	Water Supplies by Year (AF)				
	2021	2022	2023	2024	2025
Surface Water (4-2)	76,319	99,665	69,069	100,104	95,487
Groundwater (4-5)	77,682	69,813	28,556	29,835	31,894
Effective Precipitation (4-6A)	13,145	24,626	48,810	33,499	18,004
Subbasin Total	167,146	194,104	146,436	163,438	145,385
Abbreviations: AF = acre-feet					
Notes: ¹ Values summarized from Tables as cited.					

**Table 4-7B. White Wolf Subbasin Sub-Total
Summarized Water Supplies for Water Years 2021 to 2025**

Water Supplies (AWMP Table) ¹	Water Supplies by Year (AF)				
	2021	2022	2023	2024	2025
Surface Water (4-2)	18,921	14,592	85,414	45,509	46,499
Groundwater (4-5)	59,633	47,322	16,744	15,153	11,869
Effective Precipitation (4-6B)	5,334	10,292	22,299	15,802	8,750
Subbasin Total	83,888	72,206	124,457	76,464	67,119
<i>See notes for Table 4-7A.</i>					

Table 4-7C. District Total Summarized Water Supplies for Water Years 2021 to 2025

Water Supplies (AWMP Table) ¹	Water Supplies by Year (AF)				
	2021	2022	2023	2024	2025
Surface Water (4-2)	95,240	114,257	154,483	145,613	141,986
Groundwater (4-5)	137,315	117,135	45,301	44,988	43,764
Effective Precipitation (4-6C)	18,479	34,918	71,109	49,301	26,754
District Total	251,034	266,309	270,893	239,902	212,504
<i>See notes for Table 4-7A.</i>					

4.2 Water Supply Quality

This section describes the quality of surface water and groundwater supplies available to the District and summarizes applicable source water quality monitoring practices, consistent with CWC §10826.

4.2.1 Surface Water Quality

The District’s primary surface water supply is SWP water delivered via the California Aqueduct. Other supplemental and imported surface water supplies, when available, are conveyed through the same facilities. Based on available monitoring data and operational experience, SWP water delivered to the District is generally of good quality and suitable for agricultural irrigation, with no persistent water quality constraints affecting its use within the service area.

Surface water quality data are collected at the Teerink Pumping Plant on the California Aqueduct, located approximately 4.5 miles downstream of Maricopa Highway and 2 miles upstream of the District’s WRM-10 Pumping Plant. Water quality samples are typically collected on a monthly basis. Representative water quality data for the 2021–2025 period are summarized in **Table 4-8**. Parameters monitored include major ions, nutrients, and total dissolved solids (TDS), which are commonly used indicators of irrigation suitability.

Table 4-8. Representative Surface Water Quality Breakdown for SWP Sources to District

Parameter	Units	Concentration	Irrigation Suitability Limit ¹
Boron	mg/L	0.16	0.7
Calcium	mg/L	22.0	--
Magnesium	mg/L	6.1	--
Sodium	mg/L	52.3	69
Chloride	mg/L	55.0	106
Sulfate	mg/L	42.7	--
Nitrate	mg/L	3.2	5
TDS	mg/L	248	450

Abbreviations:
mg/L = milligrams per liter
TDS = total dissolved solids

Notes:
¹ “None” degree of restriction on use, as presented in Table 1 of Ayers and Westcot, 1994. Sodium and chloride values translated from milliequivalents to mg/L.

4.2.2 Groundwater Quality

Groundwater quality conditions within the District’s service area are documented in the adopted GSPs for the Kern Subbasin (including the South of Kern River area) and the White Wolf Subbasin. Under SGMA, groundwater quality is addressed as a sustainability indicator at the basin scale, and the GSPs summarize existing conditions, trends, and management considerations relevant to agricultural use.

The primary constituents of concern identified in both subbasins include salinity (TDS), nitrate, and arsenic. Groundwater quality varies spatially and reflects a combination of geologic conditions, recharge sources, and historic land use practices. Both GSPs indicate that observed groundwater quality impacts are largely attributable to non-point agricultural sources and historical conditions, rather than current District surface water delivery operations.

Delivery of surface water supplies by the District can provide incidental groundwater quality benefits by reducing reliance on groundwater pumping and, during wetter periods, facilitating recharge that may dilute existing groundwater constituents. Groundwater quality monitoring and management are conducted by the respective GSAs, and the District conducts monitoring consistent with that outlined in

the 2025 Plan and White Wolf GSP, including water quality monitoring at designated representative and supplemental monitoring wells.

4.2.3 Other Water Supplies (including Recycled Water)

The District does not utilize recycled water and does not rely on any other water supply sources beyond those described above. Surface water drainage is not used as a water supply source for District operations.

4.2.4 Source Water Quality Monitoring Practices

The District conducts limited and periodic water quality monitoring around its surface water infrastructure, groundwater wells, and customer turnouts to support agricultural water management and irrigation suitability. Analyses focus on parameters relevant to irrigation water quality, including general minerals, boron, sodium adsorption ratio, and indices used to evaluate irrigation suitability.

Water quality data are maintained in a District database and supplemented with historical data compiled from prior sampling efforts, including records dating back several decades. While some data are provided by private well owners under confidentiality agreements, these data are used internally to inform water management and coordination with basin-scale groundwater sustainability efforts.

4.2.5 Drainage Water and Irrigated Lands Regulatory Program

The District is a member of the KRWCA, which participates in the Southern San Joaquin Valley Water Quality Coalition and supports implementation of the Regional Water Quality Control Board's Irrigated Lands Regulatory Program. Through this participation, the District assists in facilitating compliance with applicable surface water and groundwater quality requirements associated with agricultural activities.

The District does not own or operate regional drainage facilities and does not manage on-farm subsurface drainage systems. Accordingly, limitations associated with drainage water reuse are not applicable to District operations.

5 WATER BUDGET

CWC §10826(c)

Include an annual water budget based on the quantification of all inflow and outflow components for the service area of the agricultural water supplier. Components of inflow shall include surface inflow, groundwater pumping in the service area, and effective precipitation. Components of outflow shall include surface outflow, deep percolation, and evapotranspiration. An agricultural water supplier shall report the annual water budget on a water-year basis. The department shall provide tools and resources to assist Suppliers in developing and quantifying components necessary to develop a water budget.

Pursuant to CWC §10826(c), this section presents an annual water budget for the District based on the quantification of inflow and outflow components within the District's service area. The water budget is reported on a water year basis and is intended to provide a planning-level accounting of water supplies and uses consistent with the requirements of the Act.

Inflow components quantified in the water budget include surface water deliveries, groundwater pumping within the service area, and estimates of effective precipitation. Outflow components include agricultural evapotranspiration (ET), deep percolation, and surface outflows where applicable. Quantification of these components is based on available data, planning-level assumptions, and analytical tools commonly used for water management planning, including tools and resources provided by DWR.

Consistent with the District's groundwater management framework under the applicable GSAs, water budget components are summarized, where applicable, by subbasin and at the District-wide level.

5.1 Quantification of Water Budget Inflows

Consistent with, the District's annual water budget inflows are based on quantified surface water supplies, groundwater pumping within the service area, and effective precipitation. The sources and methods used to characterize these inflows are described in Section 4; this section summarizes how those components are incorporated into the annual water budget.

Water budget inflows include the following components:

- *Surface water supplies*, consisting of imported surface water supplies delivered to the District, as described in Section 4.1.1 and summarized in **Tables 4-1** and **4-2**.
- *Groundwater pumping within the service area*, including groundwater pumped from District-owned wells and groundwater pumped by private landowners within the District's service area, as described in Section 4.1.2 and summarized in **Table 4-5**.
- *Effective precipitation*, estimated for irrigated lands consistent with water budget requirements, and described in Section 4.1.3.1 and summarized in **Tables 4-6A** through **4-6C**.

The District does not utilize recycled water, and no other inflow components beyond those specified in CWC §10826(c) are applicable.

Each inflow component is quantified using the best available data for the reporting period, including delivery records, metered pumping data, remote-sensing-based estimates, and accounting records. Reported volumes represent water reasonably available to meet the demands within the District's service area during the applicable water year. Inflows are presented by subbasin and for the District as a whole in **Tables 5-1A** through **5-1C**.

Table 5-1A. Water Budget Inflows Kern County Subbasin Sub-Total for Water Years 2021 to 2025

Inflow Component	AWMP Location for Supporting Calculations	How Inflow was Quantified	Uncertainty Percent	Inflow Quantity (AF)				
				2021	2022	2023	2024	2025
Effective Precipitation	4.1.3.1, Table 4-6A	Calculated	15%	13,145	24,626	48,810	33,499	18,004
Water Supplier Surface Water	4.1.1, Table 4-2	Measured	10%	76,319	99,665	69,069	100,104	95,487
Water Supplier Groundwater Pumping	4.1.2, Table 4-5	Measured	5%	848	1,532	171	18	0
Private Groundwater Pumping	4.1.2, Table 4-5	Estimated	30%	76,834	68,281	28,385	29,817	31,894
Total	--	--		167,146	194,104	146,436	163,438	145,385
Abbreviations: AF = acre-feet								

Table 5-1B. Water Budget Inflows White Wolf Subbasin Sub-Total for Water Years 2021 to 2025

Inflow Component	AWMP Location for Supporting Calculations	How Inflow was Quantified	Uncertainty Percent	Inflow Quantity (AF)				
				2021	2022	2023	2024	2025
Effective Precipitation	4.1.3.1, Table 4-6B	Calculated	15%	5,334	10,292	22,299	15,802	8,750
Water Supplier Surface Water	4.1.1, Table 4-2	Measured	10%	18,921	14,592	85,414	45,509	46,499
Water Supplier Groundwater Pumping	4.1.2, Table 4-5	Measured	5%	5,038	6,816	1,099	132	3
Private Groundwater Pumping	4.1.2, Table 4-5	Estimated	30%	54,595	40,506	15,645	15,021	11,866
Total	--	--		83,888	72,206	124,457	76,464	67,119
Abbreviations: AF = acre-feet								

Table 5-1C. Water Budget Inflows District Total for Water Years 2021 to 2025

Inflow Component	AWMP Location for Supporting Calculations	How Inflow was Quantified	Uncertainty Percent	Inflow Quantity (AF)				
				2021	2022	2023	2024	2025
Effective Precipitation	4.1.3.1, Table 4-6C	Calculated	15%	18,479	34,918	71,109	49,301	26,754
Water Supplier Surface Water	4.1.1, Table 4-2	Measured	10%	95,240	114,257	154,483	145,613	141,986
Water Supplier Groundwater Pumping	4.1.2, Table 4-5	Measured	5%	5,886	8,348	1,270	150	3
Private Groundwater Pumping	4.1.2, Table 4-5	Estimated	30%	131,429	108,787	44,031	44,838	43,761
Total	--	--		251,034	266,309	270,893	239,902	212,504
Abbreviations: AF = acre-feet								

5.2 Quantification of Water Budget Outflows

Water budget outflows represent the disposition of water supplied to and used within the District’s service area. Consistent with CWC §10826(c), components of outflow include evapotranspiration, deep percolation, and surface outflow. These components are quantified and summarized using the water use information presented in Section 3.

Water budget outflows include the following:

- *ET representing consumptive use of applied water.* For the District, ET consists primarily of agricultural crop consumptive use, estimated using satellite-based ETc data as described in Section 3.1 and summarized in **Table 3-1**.
- *Deep percolation,* defined as applied water in excess of consumptive use that percolates below the root zone and contributes to groundwater recharge. Deep percolation includes incidental recharge from irrigation, on-farm recharge activities, and managed recharge programs described in Section 3.5. Deep percolation is also estimated as part of the overall budget balance as a closure term, as described in Section 5.4
- *Surface outflow,* defined as surface water leaving the District’s service area. Due to the District’s largely flat terrain, highly efficient irrigation systems, and limited storm runoff, surface outflow from the service area is assumed to be negligible.

For completeness and transparency, water uses described in Section 3 are incorporated into the outflow components as follows:

- Agricultural water use contributes to evapotranspiration and deep percolation components.
- M&I water use, including metered industrial deliveries described in Section 3.4.

- Environmental and recreational water uses are not applicable, as the District does not supply water for these purposes within its service area. These uses are summarized in Sections 3.2 and 3.3, respectively.
- Evaporative losses on open storage or channels, including losses from the Mettler Recharge Facility and from the 850 Canal are summarized in Section 3.6.

Outflows are presented by subbasin and for the District in **Tables 5-2A** through **5-2C**.

Table 5-2A. Water Budget Outflows Kern Subbasin Sub-Total for Water Years 2021 to 2025

Outflow Component	AWMP Location for Supporting Calculations	How Outflow was Quantified	Percent Uncertainty	Outflow Quantity (AF)				
				2021	2022	2023	2024	2025
Crop Consumptive Use	3.1, Table 3-1	Measured	15%	155,064	158,832	146,987	144,508	124,419
Surface Outflows	5.2	Calculated	10%	0	0	0	0	0
Deep Percolations	3.5, Table 3-5, 5.4, Table 5-5	Calculated	20%	12,079	35,180	5,657	18,824	20,943
Other - Industrial Use	3.4, Table 3-4	Measured	5%	3	92	105	106	23
Other – open channels	3.6, Table 3-6	Estimated	10%	0	0	0	0	0
Total	--	--		167,146	194,104	152,749	163,438	145,385

Table 5-3B. Water Budget Outflows White Wolf Subbasin Sub-Total for Water Years 2021 to 2025

Outflow Component	AWMP Location for Supporting Calculations	How Outflow was Quantified	Percent Uncertainty	Outflow Quantity (AF)				
				2021	2022	2023	2024	2025
Crop Consumptive Use	3.1, Table 3-1	Measured	15%	56,563	66,012	66,947	66,604	58,868
Surface Outflows	5.2	Calculated	10%	0	0	0	0	0
Deep Percolations	3.5, Table 3-5, 5.4, Table 5-5	Calculated	20%	24,026	3,564	54,169	6,560	5,184
Other - Industrial Use	3.4, Table 3-4	Measured	5%	0	0	0	0	0
Other – open channels	3.6, Table 3-6	Estimated	10%	47	104	295	138	111
Total	--	--						

Table 5-4C. Water Budget Outflows District Total for Water Years 2021 to 2025

Outflow Component	AWMP Location for Supporting Calculations	How Outflow was Quantified	Percent Uncertainty	Outflow Quantity (AF)				
				2021	2022	2023	2024	2025
Crop Consumptive Use	3.1, Table 3-1	Measured	15%	211,627	224,844	213,934	211,112	183,287
Surface Outflows	5.2	Calculated	10%	0	0	0	0	0
Deep Percolations	3.5, Table 3-5, 5.4, Table 5-5	Calculated	20%	36,106	38,744	59,826	25,384	26,128
Other - Industrial Use	3.4, Table 3-4	Measured	5%	3	92	105	106	23
Other – open channels	3.6, Table 3-6	Estimated	10%	47	104	295	138	111
Total	--	--		247,783	263,783	274,160	236,740	209,549

5.3 Annual Water Budget Summary

This section presents the District’s annual water budget for Water Years 2021 through 2025, based on the quantified inflow and outflow components described above. Together, these presented in **Tables 5-5A.** through **5-3C** provide a planning-level accounting of water supplies and uses within the District’s service area consistent with the requirements of CWC §10826(c).

Table 5-5A. Kern Subbasin Sub-Total Summarized Water Budget for Water Years 2021 to 2025

Water Budget Item ¹ (AWMP Table)	Water Volume by Year ² (AF)				
	2021	2022	2023	2024	2025
Subbasin Total Water Uses (3-7A)	155,067	158,924	152,749	146,095	124,442
Subbasin Total Water Supplies (4-7A)	167,146	194,104	146,436	163,438	145,385
Budget Closure³	12,079	35,180	-6,313	17,343	20,943
<p>Abbreviations: AF = acre-feet</p> <p>Notes: ¹ Water budget components that are not applicable to the District (e.g., recycled water inflow, surface outflow, subsurface outflow) are reported as zero, consistent with CWC §10826(c) and the 2025 DWR Guidebook. ² Reported in Water Year (October 1 of the prior year through September 30 of the reported year). ³ Represents difference between Supplies and Uses; positive indicates unaccounted supplies, and negative unaccounted demands for water budget.</p>					

Table 5-5B. White Wolf Subbasin Sub-Total Summarized Water Budget for Water Years 2021 to 2025

Water Budget Item (AWMP Table)	Water Volume by Year ¹ (AF)				
	2021	2022	2023	2024	2025
Subbasin Total Water Uses (3-7B)	59,861	68,642	93,059	71,661	61,934
Subbasin Total Water Supplies (4-7B)	83,888	72,206	124,457	76,464	67,119
Budget Closure²	24,026	3,564	31,398	4,803	5,184
<i>See notes for Table 5-1A.</i>					

Table 5-5C. District Total Summarized Water Budget for Water Years 2021 to 2025

Water Budget Item (AWMP Table)	Water Volume by Year ¹ (AF)				
	2021	2022	2023	2024	2025
District Total Water Uses (3-7C)	214,928	227,566	245,808	217,756	186,376
District Total Water Supplies (4-7C)	251,034	266,309	270,893	239,902	212,504
Budget Closure²	36,106	38,744	25,085	22,146	26,128
<i>See notes for Table 5-1A.</i>					

5.4 Budget Closure Term

The difference between total annual inflows and outflows represents estimated deep percolation within the District's service area, including applied irrigation water percolating below the crop root zone and incidental recharge associated with conveyance and operational losses. This residual is consistent with the hydrogeologic setting of the District and the use of surface water in lieu of groundwater pumping. The resulting water budget is internally consistent and provides a reasonable planning-level representation of water movement within the District, consistent with CWC §10826(c) and the 2025 DWR Guidebook.

6 WATER MANAGEMENT OBJECTIVES

CWC §10826(g)

Identify water management objectives based on the water budget to improve water system efficiency or to meet other water management objectives. The agricultural water supplier shall identify, prioritize, and implement actions to reduce water loss, improve water system management, and meet other water management objectives identified in the plan.

Pursuant to CWC §10826(g), this section identifies the District’s water management objectives and describes how those objectives are implemented to promote efficient agricultural water use and sustainable water resource management. The District’s objectives are informed by adopted GSPs and related planning efforts and are achieved through a combination of facility improvements, management actions, and EWMPs described in subsequent sections of this AWMP. Implementation schedules and performance tracking for PMAs are governed through the GSPs and are not duplicated in this AWMP.

6.1 Identify Water Management Objectives

In the development of the White Wolf GSP and the 2025 Plan, the District identified a suite of PMAs intended to support efficient, reliable, and sustainable agricultural water management within the District’s service area.

For purposes of this AWMP, the District’s water management objectives are to improve agricultural water use efficiency, enhance supply reliability, and support sustainable management of surface water and groundwater resources across its service area. These objectives are implemented through PMAs adopted under SGMA, including facility improvements, conjunctive use and recharge projects, and management actions such as water budgets, groundwater service charges, and allocation frameworks.

In combination with EWMPs identified in Section 9, these objectives are intended to influence measurable indicators such as water deliveries, groundwater pumping, recharge volumes, and crop water use, which are tracked through existing District accounting systems and SGMA reporting processes.

Details regarding applicable PMAs are provided in **Appendix A**, as defined in the White Wolf GSP and the 2025 Plan.

6.2 Prioritization of the Water Management Objectives

The District prioritizes water management objectives that address near-term water supply reliability and groundwater sustainability concerns. Priority PMAs include those that increase recharge capacity (e.g., the Mettler Recharge Project and landowner recharge incentives), enhance delivery system flexibility (e.g., the South Canal–850 Canal Intertie), and manage demand through economic and administrative mechanisms (e.g., land conversion trends, groundwater service charges, and allocation frameworks).

Lower-priority objectives include management actions that may require additional regulatory development, coordination, or long-term implementation, such as basin-wide pumping limitations. Prioritization reflects current hydrologic conditions, regulatory requirements, operational feasibility, and consistency with adopted GSP implementation schedules.

7 QUANTIFY THE EFFICIENCY OF AGRICULTURAL WATER USE

CWC §10826(h)

Quantify the efficiency of agricultural water use within the service area of the agricultural water supplier using the appropriate method or methods from among the four water use efficiency quantification methods developed by the department in the May 8, 2012, report to the Legislature entitled “A Proposed Methodology for Quantifying the Efficiency of Agricultural Water Use.” The agricultural water supplier shall account for all water uses, including crop water use, agronomic water use, environmental water use, and recoverable surface flows.

This section quantifies the efficiency of agricultural water use within the District in accordance with the 2025 Guidebook and CWC §10826. Agricultural water use efficiency may be quantified using one of four methods identified by DWR: (1) Crop Consumptive Use Fraction, (2) Agronomic Water Use Fraction, (3) Total Water Use Fraction, or (4) Water Management Fraction.

The District quantified agricultural water use efficiency using the Total Water Use Fraction (TWUF) method, as described in *A Proposed Methodology for Quantifying the Efficiency of Agricultural Water Use* (DWR, 2012). The TWUF method is appropriate for the District because agricultural water use is dominated by irrigation deliveries and groundwater pumping for crop production, with negligible agronomic and environmental uses, and because reliable estimates of applied water and crop evapotranspiration are available at the District scale.

7.1 Evapotranspiration of Applied Water

As a first step, the evapotranspiration of applied water (ETAW) was calculated using estimates of total crop evapotranspiration for irrigated agricultural lands and effective precipitation. The ETAW represents the portion of crop evapotranspiration attributable to applied water rather than precipitation and was calculated using the following equation:

$$ETAW = ET_{Total} - P_e$$

Where:

- ET_{Total} = total crop evapotranspiration of all irrigated agricultural lands within the District⁶
- P_e = effective precipitation on irrigated agricultural lands within the District⁶

As described in Section 4.1.3.1, due to the arid climate, limited magnitude of precipitation, relatively flat topography, and permeable soil conditions within the District, precipitation occurring on irrigated agricultural lands was assumed to be fully effective for purposes of estimating the ETAW. This assumption is consistent with DWR guidance for arid agricultural regions and is applied at a planning level.

Effective precipitation was calculated as the measured annual precipitation multiplied by the total irrigated agricultural acreage within the District. Annual ET, effective precipitation, and the calculated ETAW for Water Years 2021 through 2025 are presented in **Table 7-1**.

⁶ Irrigated lands, as used herein, represent lands that were actively irrigated during the applicable water year. This differs from the District’s developed agricultural lands, which are defined as lands subject to the General Project Service Charge. Differences between these two land classifications reflect year-to-year changes in cropping practices, temporary land fallowing, and other landowner management decisions.

Table 7-1. Evapotranspiration of Applied Water for Agricultural Lands

	Volume by Year (AF)				
	2021	2022	2023	2024	2025
Total ET (AF) ¹	211,627	224,844	213,934	211,112	183,287
Effective Precipitation (AF) ²	18,479	34,918	71,109	49,301	26,754
ETAW (AF)	193,148	189,926	142,825	161,811	156,533
<p>Abbreviations: AF = acre-feet ETAW = Evapotranspiration of applied water</p> <p>Notes: ¹ Values for District Total from Table 3-1. ² Values for District Total from Table 4-7C.</p>					

7.2 Total Water Use Fraction

The Total Water Use Fraction (TWUF) was calculated using the following equation:

$$TWUF = \frac{ETAW + AU + EU}{AW}$$

Where:

- *ETAW* = evapotranspiration of applied water
- *AU* = agronomic water use (e.g., salinity management, climate control, seed germination)
- *EU* = environmental water use
- *AW* = total applied water

Applied Water represents the total volume of surface water deliveries and groundwater pumping applied within the District’s service area for agricultural use during the reporting year, consistent with inflows quantified in the annual water budget.

As documented in Sections 3.2, the District does not supply water for environmental or agronomic uses within its service area. Accordingly, AU and EU were set to zero for purposes of this analysis.

The calculated TWUF values for Water Years 2021 through 2025 are presented in **Table 7-2**. The TWUF is a dimensionless ratio.

Table 7-2. Total Water Use Fraction

	Volume by Water Year (AF)				
	2021	2022	2023	2024	2025
ETAW (AF) ¹	193,148	189,926	142,825	161,811	156,533
AU (AF) ²	0	0	0	0	0
EU (AF) ²	0	0	0	0	0
AW (AF) ³	232,555	231,392	199,784	190,601	185,750
TWUF	0.83	0.82	0.71	0.85	0.84
<p>Abbreviations: AF = acre-feet AU = agronomic water use AW = total applied water EU = environmental water use ETAW = evapotranspiration of applied water TWUF = total water use fraction</p> <p>Notes: ¹ Values from Table 7-1. ² District does not supply water for environmental or agronomic uses within its service area. ³ Values from Table 4-7C.</p>					

7.3 Interpretation and Limitations

The calculated TWUF represents a planning-level estimate of agricultural water use efficiency at the District scale. Annual variation in TWUF reflects changes in hydrologic conditions, surface water availability, precipitation, and irrigation demand. These values are intended to support evaluation of relative efficiency trends over time rather than parcel-level or operational decision-making.

Overall, the results indicate a high level of agricultural water use efficiency within the District, consistent with the predominance of permanent crops, widespread use of high-efficiency irrigation systems, and long-standing conjunctive use and water management practices.

8 CLIMATE CHANGE

CWC §10826(d)

Include an analysis, based upon available information, of the effect of climate change on future water supplies.

CWC §10826(2) requires agricultural water suppliers to assess the potential effects of climate change on future water supplies. Consistent with the 2025 Guidebook, this section describes the anticipated effects of climate variability and long-term climate trends on the District's water supply reliability and agricultural water demands, and summarizes how those considerations are incorporated into the District's planning framework.

This analysis is intended to provide a planning-level assessment based on best available state and regional information and does not establish independent regulatory requirements or forecasts beyond those reflected in adopted planning documents.

8.1 Effects of Climate Change on Water Supply

State and regional climate assessments indicate that California has experienced measurable warming over recent decades and is expected to continue warming under a range of future climate scenarios (Bedsworth et al, 2018). These changes are associated with shifts in precipitation timing, form, and intensity that directly affect surface water availability.

A historically critical component of California's water supply has been the Sierra Nevada snowpack, which functions as a natural reservoir by storing winter precipitation and releasing runoff during the spring and summer. Climate projections indicate a continued decline in snowpack and an increasing proportion of winter precipitation falling as rain rather than snow (PPIC, 2013). This shift is expected to result in earlier runoff, increased winter flows, and reduced late-season water availability.

These changes are particularly relevant to the District because the SWP - the District's primary surface water source - relies on runoff from the Feather River Watershed and storage in Lake Oroville (in Northern California), and conveyance through the Delta. Increased hydrologic variability, combined with existing regulatory and operational constraints in the Delta, may further reduce the reliability and predictability of SWP deliveries, as reflected in recent DWR planning guidance and allocation forecasting (DWR, 2025).

Climate-driven increases in the frequency and intensity of atmospheric river events may increase flood risk and challenge reservoir operations, potentially limiting opportunities to capture and store surplus runoff for later use. Together, these factors may increase reliance on groundwater supplies, previously banked water, and supplemental transfers during dry and critically dry periods (Schwarz et al., 2018; Bedsworth et al., 2018).

8.2 Effects of Climate Change on Water Demand

Projected increases in temperature and heat extremes are expected to increase crop evapotranspiration rates and extend irrigation seasons, resulting in higher agricultural water demands. Warmer conditions may also increase the frequency and severity of drought years, further elevating irrigation requirements during extended dry periods.

As surface water deliveries become more variable, agricultural producers may increase reliance on groundwater pumping to meet crop water needs (Escriva-Bou et al., 2023; UCLA, 2024). This shift could

contribute to declining groundwater levels, increased pumping costs, and localized land subsidence if not managed within the framework established by SGMA.

Permanent crops, which constitute a substantial portion of irrigated acreage within the District, are particularly sensitive to water supply variability due to their continuous annual water requirements and limited flexibility for fallowing. In addition, some permanent crops require adequate winter chill for economically viable production, and rising winter temperatures may adversely affect yields over time.

8.3 Regional Climate Change Vulnerability Assessment

The WRMWSD participates in regional water management efforts through the Kern Regional Water Management Group. As part of these efforts, the District contributed to a regional climate change vulnerability assessment using the *Vulnerability Assessment Checklist* presented in the *DWR Climate Change Handbook for Regional Water Planning* (DWR, 2011).

The results of this assessment, summarized in **Appendix F**, identify relative vulnerabilities across multiple sectors, including water supply, water demand, flooding, ecosystem and habitat, water quality, sea level rise, and hydropower. Based on this evaluation, water supply and water demand were identified as the highest-priority vulnerabilities for the District, reflecting reliance on imported surface water supplies, increasing hydrologic variability, and projected increases in irrigation demand (UCLA, 2024).

8.4 Response to Climate Change Effects

The District addresses climate-related risks through ongoing planning, monitoring, and implementation of adopted management actions. Key elements of the District's response include:

- Continued participation in regional and statewide water management planning efforts;
- Use of groundwater banking, recharge, and conjunctive use programs to buffer variability in surface water supplies;
- Monitoring hydrologic conditions, SWP allocation forecasts, and groundwater conditions to inform operational decisions;
- Implementation of water management objectives and EWMPs identified in Sections 6 and 9 of this AWMP; and
- Incentivizing on-farm recharge during wet years when surplus surface water supplies are available.

Climate change considerations are also incorporated into the 2025 Plan and White Wolf GSP, which evaluate climate scenarios and their potential effects on groundwater sustainability and SWP supplies under future conditions. Implementation of PMAs under those plans provides the primary mechanism for addressing long-term climate-related risks within the District. These climate-related considerations are reflected in the District's drought preparedness and response framework described in Section 2.8 and do not establish separate operational triggers.

9 EFFICIENT WATER MANGEMENT PRACTICES

CWC §10608.48(d)

A report on which efficient water management practices have been implemented and are planned to be implemented, an estimate of the water use efficiency improvements that have occurred since the last report, and an estimate of the water use efficiency improvements estimated to occur five and 10 years in the future. If an agricultural water supplier determines that an efficient water management practice is not locally cost effective or technically feasible, the supplier shall submit information documenting that determination.

Pursuant to CWC §10608.48, agricultural water suppliers are required to implement EWMPs and report on their implementation as part of the AWMP. The EWMPs represent best management practices intended to improve agricultural water use efficiency and support effective water resource management.

For WRMWSD, EWMPs serve as the primary operational mechanisms through which the water management objectives identified in Section 6 are implemented. The EWMP implementation complements PMAs adopted under the GSPs and does not establish separate or duplicative requirements.

Consistent with the 2025 Guidebook, EWMPs are categorized as:

- *Critical EWMPs*, which are required for all agricultural water suppliers; and
- *Conditional EWMPs*, which are required only if locally cost-effective and technically feasible.

9.1 Implemented and Planned EWMPs

Table 9-1 summarizes the District’s implementation status for each critical and conditional EWMP identified in CWC §10608.48(c). For each EWMP, the table describes actions already implemented and, where applicable, actions planned or under consideration. Where EWMPs overlap with PMAs adopted under SGMA, implementation is coordinated through the GSPs and is not duplicated in this AWMP.

Critical EWMPs identified by statute have been implemented by the District. Conditional EWMPs are implemented where locally cost-effective and technically feasible, consistent with statutory requirements.

Table 9-1. Description of Implemented EWMPs and Additional Actions, if Applicable

EWMP No. ¹	Description of EWMP Implemented	Additional Actions Planned (if applicable)
Critical 1	District water delivery points to farm gates or turnouts are metered using McCrometer propeller meters ($\pm 2\%$ accuracy and $\pm 0.25\%$ repeatability) and actively monitored by District staff. Delivery points from the California Aqueduct into the District are metered by DWR.	None
Critical 2	The District charges water uses based on the volume of water delivered, as described in Section 2.2.3.	None
Conditional 1	The District does not facilitate alternate land uses, which is beyond its jurisdiction. Changes in land use have occurred due to economic conditions and water availability rather than District programs.	Not applicable

Table 9-1. Description of Implemented EWMPs and Additional Actions, if Applicable (Continued)

EWMP No.	Description of EWMP Implemented	Additional Actions Planned (if applicable)
Conditional 2	This EWMP is not applicable because the District's existing conveyance and delivery system configuration already achieves the functional objective of this practice, and no additional action would result in measurable water use efficiency improvements. As such, no separate implementation is warranted.	None identified
Conditional 3	The District is not a provider of on-farm capital. The District supports irrigation efficiency through funding on-farm irrigation evaluations (e.g., on-farm mobile lab) and providing information on grants, loans, and energy-efficiency programs.	Continue existing support and information sharing
Conditional 4	The District does not apply tiered or seasonal pricing. Efficient water use is encouraged through volumetric pricing and contract provisions, as described in Section 2.2.3.	None
Conditional 5	The District's conveyance system is predominantly a piped network. Infrastructure investments focus on maintenance and continued operation of this system, as described in Section 2.1.2.	None
Conditional 6	On-demand water delivery and operational flexibility are governed by the Rules and Regulations (Section 2.2.1). The California Aqueduct functions as a regulating reservoir enabling flexible timing and flows.	None
Conditional 7	Irrigated lands are primarily permanent crops using high-efficiency irrigation methods. Tail-water systems are minimal and managed by individual growers. Operational spills are minimized through system design and operations.	None
Conditional 8	Due to deep groundwater levels and high pumping costs, the District participates in groundwater recharge and banking projects (e.g., Mettler Recharge Project, Kern Water Bank, Pioneer Project, Berrenda Mesa Project) and has initiated an on-farm recharge program. The District has practiced conjunctive use since 1971.	Continue implementation through adopted GSPs
Conditional 9	The conveyance system is largely automated and monitored via SCADA. Opportunities for additional automation are limited given the predominately piped network and existing automation.	None
Conditional 10	Pump efficiency testing is conducted by utilities or pump companies at the request of landowners.	None
Conditional 11	The Water Conservation Coordinator role is fulfilled by the Manager/Assistant Engineer-Manager, who is responsible for implementing water management plans and progress reporting.	None

Table 9-1. Description of Implemented EWMPs and Additional Actions, if Applicable (Continued)

EWMP No.	Description of EWMP Implemented	Additional Actions Planned (if applicable)
Conditional 12	The District funds irrigation efficiency evaluations and maintains weather stations. Climate data are available on the District website for irrigation scheduling. District obtained LandIQ ET data.	Continue existing programs
Conditional 13	The District receives SWP supplies through KCWA and participates in turn-in and point-of-delivery agreements with DWR. Regulatory and judicial constraints on Delta pumping affect delivery reliability.	None
Conditional 14	District pump testing and efficiency monitoring are conducted as needed. Routine maintenance is performed by District staff; non-routine work is contracted.	None
Notes:		
1. EWMP numbers correspond to Water Code Section 10608.48(c)		

9.2 Estimate of Water Use Efficiency Improvements

CWC §§10608.48(d) and 10608.48(e) require agricultural water suppliers to estimate water use efficiency improvements associated with EWMP implementation. Where available, efficiency outcomes are tracked through District accounting, groundwater service charge reporting, and SGMA annual reports; however, isolating incremental changes attributable to individual EWMPs is not practicable.

For the District, quantitative estimation of incremental efficiency improvements attributable to individual EWMPs is not practicable, due to overlapping influences from crop type, climate variability, groundwater conditions, and SGMA implementation. Therefore, water use efficiency improvements are described qualitatively, consistent with the 2025 Guidebook.

Table 9-2 summarizes observed and anticipated water use efficiency improvements since the previous AWMP and over the next five- and ten-year planning horizons, expressed descriptively where quantitative estimates are not available.

Table 9-2. Report of EWMPs Efficiency Improvements

EWMP No. ¹	Estimate of Water Use Efficiency Improvements that Occurred Since Last Report (Quantitative or Descriptive)	Estimated Water Use Efficiency Improvements 5 and 10 Years in the Future (Quantitative or Descriptive)
Conditional 8	The District recharged surface water in the Mettler Recharge Facility in WY 2023 and 2024. The District initiated financial compensation for landowner recharge pilot program in 2023. The District initiated planning and construction for additional turnouts in the White Wolf Subbasin in 2025.	The District will complete construction of additional turnouts in the White Wolf Subbasin in 2026.
Conditional 12	The District obtained monthly parcel-level ET data from LandIQ starting in 2022. The District uses ET data to calculate parcel-level ETc and associated groundwater use to support implementation of the	The District will continue to obtain monthly ET data, estimate groundwater use and implement the

EWMP No. ¹	Estimate of Water Use Efficiency Improvements that Occurred Since Last Report (Quantitative or Descriptive)	Estimated Water Use Efficiency Improvements 5 and 10 Years in the Future (Quantitative or Descriptive)
	groundwater service charge.	groundwater service charge.
Notes:		
1. EWMP numbers correspond to Water Code Section 10608.48(c)		

9.3 Non-Implemented Conditional EWMPs

Consistent with CWC §10608.48(d), conditional EWMPs may be omitted if they are not locally cost-effective or technically feasible. Determinations that certain conditional EWMPs are not locally cost-effective are based on the definition provided in CWC §10608.12(k), under which a practice is not locally cost-effective if the present value of local benefits does not exceed the present value of local implementation costs. **Table 9-3** documents the conditional EWMPs not implemented by the District, including the basis for each determination. Non-implemented conditional EWMPs do not affect the District’s ability to meet its water management objectives identified in Section 6.

Table 9-3. Non-Implemented Conditional EWMP Documentation

EWMP No.	Description	Technically Infeasible	Not Locally Cost-Effective	Justification
Conditional 1	Alternate Land Use		X	Land use decisions are driven by agricultural economics and water availability and are beyond the District’s jurisdiction. The District does not provide capital for alternate land uses.
Conditional 3	On-Farm Irrigation Capital Improvements		X	The District is not a provider of on-farm capital. All on-farm irrigation systems are owned and operated by landowners; District facilities end at farm turnouts.
Conditional 4	Incentive Pricing Structure		X	The District does not apply tiered pricing. Efficient water use is encouraged through volumetric pricing and contractual arrangements with water users.
Conditional 7	Supplier Operational Outflow and Tail-water Systems		X	Permanent crops and high-efficiency irrigation methods result in minimal tail-water and drainage needs; on-farm systems are managed by growers.
Conditional 10	Customer Pump Test/Evaluations		X	Pump efficiency testing is conducted by landowners through utilities or pump service providers; District policy does not include funding on-farm pump testing.
Notes:				
¹ EWMP numbers correspond to Water Code Section 10608.48(c)				

10 SUPPORTING DOCUMENTATION

This section provides supporting documentation required under the Agricultural Water Measurement Regulation (Title 23, CCR, §597 et seq.), as applicable, and supplemental information recommended by the 2025 Guidebook. The WRMWSD serves more than 25,000 irrigated acres and therefore includes documentation demonstrating compliance with measurement access, technical feasibility, best professional practices, volumetric conversion (as applicable), and corrective action procedures, as required by 23 CCR §§597.3 and 597.4.

10.1 Description of Access and Technical Feasibility

The WRMWSD measures agricultural water deliveries at individual customer delivery points, including farm gates and turnouts, using installed flow measurement devices that meet the accuracy standards specified in 23 CCR §597.3(a). The District has legal authority and physical access to install, operate, maintain, and monitor these devices as part of routine District operations.

Because water deliveries are measured at the delivery point for individual customers, WRMWSD is not subject to the alternative documentation pathways for lack of legal access or technical infeasibility described in 23 CCR §597.3(b)(1)(A) or §597.3(b)(1)(B). Measurement at upstream laterals and apportionment of deliveries among multiple customers is not required, and engineer certification under 23 CCR §597.3(b)(2)(B) or §597.3(b)(2)(C) is therefore not applicable.

10.2 Description of Water Measurement Best Professional Practices

Consistent with 23 CCR §597.4(e)(2) and the 2025 Guidebook, this subsection describes the District's best professional practices for agricultural water measurement, including data collection, frequency of measurement, determination of irrigated acres, and quality control and quality assurance procedures.

10.2.1 Collection of Water Measurement Data

The WRMWSD collects agricultural water delivery data at:

- Fifteen (15) delivery points from the California Aqueduct, which are equipped with DWR-owned and maintained Venturi meters; and
- Individual customer farm gates and turnouts, which are equipped with propeller-type flowmeters (McCrometer MW800 vertical and MG900 horizontal meters) with totalizers.

These devices directly measure flow rate and cumulative volume delivered. Manufacturer-certified accuracy for District-owned delivery meters is ± 2 percent by volume, with repeatability of ± 0.25 percent, ensuring reliable volumetric accounting.

10.2.2 Frequency of Measurement

Flow measurements are recorded continuously through totalizer-equipped meters. District Operations and Maintenance staff manually read all customer delivery meters at least once per week and visually screen for abnormal or unexpected readings based on operational conditions and prior data.

Aggregated farm-gate delivery data are compiled and summarized on a monthly basis for annual reporting, consistent with the Agricultural Water Measurement Regulation (23 CCR §597.4) and the 2025 Guidebook. Delivery data are made available to water users upon request.

10.2.3 Method for Determining Irrigated Acres

The District conducts crop surveys in the spring and fall of each year to identify irrigated acreage and crop types by parcel. These surveys are used for water management, reporting, and estimation of agricultural water use, including evapotranspiration-based analyses presented elsewhere in this AWMP.

10.2.4 Quality Control and Quality Assurance Procedures

As a quality control measure, the District compares total volumes delivered into the District (as measured by DWR meters at California Aqueduct turnouts) with the aggregated volumes delivered to customers at farm gates and turnouts. These comparisons are evaluated by lateral and system-wide totals and are presented in **Tables 10-1** through **10-5** for Water Years 2021 through 2025.

Where comparisons indicate discrepancies outside expected ranges, the District investigates the cause, which may include meter malfunction, data gaps, accounting timing differences, or operational conditions. Corrective actions may include field verification, meter testing, repair, replacement, or data correction, as appropriate. Differences observed in the comparisons are generally within the accuracy ranges allowed under 23 CCR §597.3(a).

Table 10-1. Comparison of DWR and District Inflow Measurements at SWP Turnouts for Water Year 2021

2021 Water Year Total				
Turnout/ Meter Name	DWR Measured Turnout Inflow (AF)	WRM Measured Turnout Inflow (AF)	Difference between Measures (AF)	% Difference
WRM 2	3,078.0	3,141.0	63.0	-2.0%
WRM 3	5,720.0	5,806.0	86.0	-1.5%
WRM 4	16,471.0	16,469.0	(2.0)	0.0%
WRM 5	32,545.0	32,271.0	(274.0)	0.8%
WRM 6	2,728.0	3,712.0	984.0	-26.5%
WRM 7	17,213.0	15,415.0	(1,798.0)	11.7%
WRM 8	13,688.0	12,434.0	(1,254.0)	10.1%
WRM 9	8,234.0	8,109.0	(125.0)	1.5%
WRM 9A	2,652.0	2,837.0	185.0	-6.5%
WRM 10	7,842.0	8,744.0	902.0	-10.3%
WRM 11	-	20.0	20.0	-100.0%
WRM 13A	2.0	-	(2.0)	0.0%
WRM 13B	843.0	722.0	(121.0)	16.8%
WRM 14	11,707.0	10,527.0	(1,180.0)	11.2%
WRM 15	2,486.0	2,445.0	(41.0)	1.7%
Total	125,209.0	122,652.0	(2,557.0)	2.1%
Average	8,347.3	8,176.8	(170.5)	-6.2%

Table 10-2. Comparison of DWR and District Inflow Measurements at SWP Turnouts for Water Year 2022

2022 Water Year Total				
Turnout/ Meter Name	DWR Measured Turnout Inflow (AF)	WRM Measured Turnout Inflow (AF)	Difference between Measures (AF)	% Difference
WRM 2	1,929.0	2,002.0	73.0	-3.6%
WRM 3	4,025.0	3,577.0	(448.0)	12.5%
WRM 4	15,266.0	15,310.0	44.0	-0.3%
WRM 5	29,718.0	30,515.0	797.0	-2.6%
WRM 6	2,449.0	3,395.0	946.0	-27.9%
WRM 7	16,422.0	14,987.0	(1,435.0)	9.6%
WRM 8	14,294.0	14,428.0	134.0	-0.9%
WRM 9	6,841.0	7,281.0	440.0	-6.0%
WRM 9A	2,662.0	2,520.0	(142.0)	5.6%
WRM 10	7,213.0	6,962.0	(251.0)	3.6%
WRM 11	-	7.0	7.0	-100.0%
WRM 13A	22.0	-	(22.0)	0.0%
WRM 13B	477.0	461.0	(16.0)	3.5%
WRM 14	11,123.0	10,260.0	(863.0)	8.4%
WRM 15	2,206.0	2,152.0	(54.0)	2.5%
Total	114,647.0	113,857.0	(790.0)	0.7%
Average	7,643.1	7,590.5	(52.7)	-6.4%

Table 10-3. Comparison of DWR and District Inflow Measurements at SWP Turnouts for Water Year 2023

2023 Water Year Total				
Turnout/ Meter Name	DWR Measured Turnout Inflow (AF)	WRM Measured Turnout Inflow (AF)	Difference between Measures (AF)	% Difference
WRM 2	1,139.0	1,122.0	(17.0)	1.5%
WRM 3	2,251.0	1,981.0	(270.0)	13.6%
WRM 4	12,660.0	12,384.0	(276.0)	2.2%
WRM 5	33,451.0	33,166.0	(285.0)	0.9%
WRM 6	3,852.0	4,856.0	1,004.0	-20.7%
WRM 7	18,500.0	16,913.0	(1,587.0)	9.4%
WRM 8	20,509.0	21,498.0	989.0	-4.6%
WRM 9	10,163.0	10,670.0	507.0	-4.8%
WRM 9A	7,218.0	7,691.0	473.0	-6.2%
WRM 10	48,745.0	52,687.0	3,942.0	-7.5%
WRM 11	-	6.0	6.0	-100.0%
WRM 13A	4,709.0	5,326.0	617.0	-11.6%
WRM 13B	1,246.0	1,105.0	(141.0)	12.8%
WRM 14	14,803.0	12,731.0	(2,072.0)	16.3%
WRM 15	1,687.0	1,472.0	(215.0)	14.6%
Total	180,933.0	183,608.0	2,675.0	-1.5%
Average	12,062.2	12,240.5	178.3	-5.6%

Table 10-4. Comparison of DWR and District Inflow Measurements at SWP Turnouts for Water Year 2024

2024 Water Year Total				
Turnout/ Meter Name	DWR Measured Turnout Inflow (AF)	WRM Measured Turnout Inflow (AF)	Difference between Measures (AF)	% Difference
WRM 2	1,120.0	1,118.0	(2.0)	0.2%
WRM 3	2,411.0	2,111.0	(300.0)	14.2%
WRM 4	14,045.0	13,502.0	(543.0)	4.0%
WRM 5	30,543.0	31,224.0	681.0	-2.2%
WRM 6	5,233.0	6,282.0	1,049.0	-16.7%
WRM 7	16,981.0	15,130.0	(1,851.0)	12.2%
WRM 8	16,545.0	17,694.0	1,149.0	-6.5%
WRM 9	7,161.0	7,189.0	28.0	-0.4%
WRM 9A	4,466.0	4,431.0	(35.0)	0.8%
WRM 10	24,432.0	25,514.0	1,082.0	-4.2%
WRM 11	-	12.0	12.0	-100.0%
WRM 13A	253.0	-	(253.0)	0.0%
WRM 13B	2,001.0	1,860.0	(141.0)	7.6%
WRM 14	11,206.0	11,092.0	(114.0)	1.0%
WRM 15	2,900.0	2,220.0	(680.0)	30.6%
Total	139,297.0	139,379.0	82.0	-0.1%
Average	9,286.5	9,291.9	5.5	-4.0%

Table 10-5. Comparison of DWR and District Inflow Measurements at SWP Turnouts for Water Year 2025

2025 Water Year Total				
Turnout/ Meter Name	DWR Measured Turnout Inflow (AF)	WRM Measured Turnout Inflow (AF)	Difference between Measures (AF)	% Difference
WRM 2	998.0	1,039.0	41.0	-3.9%
WRM 3	2,578.0	2,146.0	(432.0)	20.1%
WRM 4	12,259.0	12,333.0	74.0	-0.6%
WRM 5	28,310.0	28,260.0	(50.0)	0.2%
WRM 6	5,284.0	6,117.0	833.0	-13.6%
WRM 7	14,574.0	12,835.0	(1,739.0)	13.5%
WRM 8	12,390.0	12,578.0	188.0	-1.5%
WRM 9	6,335.0	6,656.0	321.0	-4.8%
WRM 9A	4,921.0	4,838.0	(83.0)	1.7%
WRM 10	27,352.0	28,526.0	1,174.0	-4.1%
WRM 11	-	11.0	11.0	-100.0%
WRM 13A	464.0	-	(464.0)	0.0%
WRM 13B	1,939.0	1,791.0	(148.0)	8.3%
WRM 14	10,792.0	10,484.0	(308.0)	2.9%
WRM 15	3,393.0	2,521.0	(872.0)	34.6%
Total	131,589.0	130,135.0	(1,454.0)	1.1%
Average	8,772.6	8,675.7	(96.9)	-3.1%

10.3 Documentation of Water Measurement Conversion to Volume

Under 23 CCR §597.4(e)(3), agricultural water suppliers must document how measured values are converted to volumetric deliveries if measurement devices do not directly record volume. All customer delivery meters used by the District are equipped with totalizers that directly record cumulative volumetric deliveries. Accordingly, additional conversion documentation is not applicable.

10.4 Device Corrective Action Plan Required for Water Measurement

The WRMWSD maintains procedures to ensure that agricultural water measurement devices meet the accuracy standards specified in 23 CCR §597.3(a), including ±12 percent by volume for existing devices and ±5 percent laboratory-certified accuracy for new or replacement devices.

Corrective action is initiated when meter readings indicate abnormal performance, discrepancies are identified through quality control comparisons, or upon customer request. District staff perform field verification, testing, repair, or replacement as necessary. Replacement meters are manufacturer-certified prior to installation and meet applicable accuracy standards.

Records of meter maintenance, testing, repair, and replacement are maintained by the District as part of routine operations.

10.5 Delta Plan Consistency

The District is not a Delta water supplier as defined under the Delta Reform Act of 2009 and does not undertake any covered actions subject to Delta Plan consistency requirements. Although the District receives SWP supplies conveyed through the Delta, the District does not directly operate or control Delta diversions or conveyance facilities.

This AWMP is a planning document and does not propose, approve, or implement any covered action within the legal Delta. Accordingly, the Delta Plan consistency requirements of 23 CCR §5003(c), including Policy WR-P1, are not applicable to this AWMP. Nothing in this AWMP alters the District's contractual, operational, or regulatory relationship with the SWP or its administering agencies.

10.6 Other Supporting Documentation

Additional supporting documentation, including notices, certifications, and reference materials, is provided in the appendices where applicable. The District's completed AWMP compliance checklist is included at the front of this AWMP for reference.

11 REFERENCES

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APPENDIX A

Relevant Projects and Management Actions

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APPENDIX B

Public Notice of Plan Preparation

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APPENDIX C

Board Resolution of Adoption

APPENDIX D

Rules and Regulations for Distribution and Use of Water

APPENDIX E

Draft Groundwater Allocation Policy

APPENDIX F

Regional Climate Change Vulnerability Assessment

DRAFT

Figure 1
District Boundaries Map



Figure 2

Water Facilities Map



Figure 3
Soil Texture Map



Figure 4
Soil Hydrology Map



Figure 5

District Wells and Recharge Areas Map

