Status of 2020 Agricultural Water Management Plans and Implementation of Efficient Water Management Practices Report

A report to the Legislature pursuant to California Water Code Sections 10845(a) & (b) and 10608.48(g)

May 2023

California Department of Water Resources
Water Use Efficiency Branch

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Abbreviations and Acronyms

2020 Plan	A submitted 2020 AWMP and/or Reclamation Plan
AB	Assembly Bill
AF	Acre-Feet
Act	Agricultural Water Conservation Act (CWC Sections 10800 to 10852)
AWMP	Agricultural Water Management Plan(s) or Plan
BMP	Best Management Practice(s)
CCR	California Code of Regulations
CIMIS	California Irrigation Management Information System
Criteria, or Standard Criteria	United States Bureau of Reclamation Mid-Pacific Region, 2014 Standard Criteria
CVP	Central Valley Project
CVPIA	Central Valley Project Improvement Act of 1992
CWC, WC, or Water Code	California Water Cove
DWR	California Department of Water Resources
EWMP	Efficient Water Management Practice(s)
Guidebook or AWMP Guidebook	A Guidebook to Assist Agricultural Water Suppliers to Prepare a 2015 Agricultural Water Management Plan
GSP	Groundwater Sustainability Plan
ID	Irrigation District
Reclamation	United States Bureau of Reclamation
RRA	Reclamation Reform Act of 1982
SB X7-7	Senate Bill X7-7, the Water Conservation Act of 2009
SGMA	Sustainable Groundwater Management Act of 2014
SWP	State Water Project
WD	Water District
WSD	Water Storage District
WMOs	Water Management Objectives
WUE	Water Use Efficiency

Executive Summary

As required by the California Water Code (CWC), Agricultural Water Suppliers (AWS) must implement Efficient Water Management Practices (EWMPs) and submit an Agricultural Water Management Plan (AWMP) to the Department of Water Resources (DWR) every five years. Agricultural Water Suppliers subject to United States Bureau of Reclamation (Reclamation) requirements for a Water Conservation Plan (Reclamation Plan) may submit those plans to DWR in lieu of an AWMP. DWR then reports to the Legislature on the status of AWMPs, including outstanding elements, and implementation of EWMPs or Reclamation Best Management Practices (EWMPs/BMPs). This legislative report addresses the requirements for reporting on AWMPs and EWMPs in a single report that documents the status of AWMP submittals and the implementation of associated EWMPs. This report is the final Legislative report on EWMPs under CWC Section 10608.48(g).

Key Findings

- DWR identified 53 Agricultural Water Suppliers required to submit an AWMP or Reclamation Plan (2020 Plans).
- 94% (50 of 53) of Agricultural Water Suppliers submitted required 2020 Plans.
    - Submitted 2020 Plans represent approximately 35% of statewide irrigated agricultural lands.
    - Required 2020 Plans not yet received represent, approximately, an additional 2% of the statewide irrigated agricultural lands.
- 10 Agricultural Water Suppliers irrigating less than 25,000 acres submitted voluntary plans.
    - Voluntarily submitted plans represent an additional 1.7% of statewide irrigated agricultural lands.
- In total, 2020 Plans represented almost 37% of statewide irrigated agricultural lands.

Additional information on Estimated California Irrigated Agricultural Acreage Statistics Associated with 2020 Planning can be found on Tables 1 and 2, and in Section 1.3.

- 98% (48 of 49[1]) of Agricultural Water Suppliers that submitted plans and were required to implement EWMPs/BMPs:
    - Implemented the two critical EWMPs/BMPs
    - 100% (49 of 49) implemented those of the 14 conditional EWMPs/BMPs that were deemed locally cost-effective and technically feasible.
- Agricultural Water Suppliers that submitted required AWMPs, reported applied water use efficiencies of between 75% to 104%, on average, depending on which calculation method was used, demonstrating that they are largely efficient.

2020 Plan Reporting Compliance

- DWR identified 53 Agricultural Water Suppliers that are required to submit a 2020 Plan.
- A total of 94% (50 of 53) have submitted their 2020 Plans as of May 9, 2023.
    - This is 7% higher than the compliance rate seen in the 2015 Plan reporting cycle and a 9% total increase in compliance since 2012.

Table ES-1: Summary of 2020 Plan Submittals

Plan Type	Required to Submit	Submitted Individual or Regional Plans	% Compliance
AWMP	27	25	93%
Reclamation Plan*	26	25	96%
Total	53	50	94%

Notes: This category includes Central Valley Project Improvement Act (CVPIA) and Reclamation Reform Act of 1982 (RRA) plans.

The three Agricultural Water Suppliers who have not submitted required 2020 Plans have been notified by DWR that they are out of compliance with the CWC unless they submit a 2020 Plan, can document that they currently consistently serve water to less than 25,000 irrigated acres or are otherwise exempt, or are making significant progress towards completion of their 2020 Plan. All three Suppliers have demonstrated that they

[1] As a signatory to the Quantification Settlement Agreement, Coachella Valley Water District (CVWD), is exempt from implementing EWMPs, per CWC 10608.8(d).

are making significant progress towards submission. Agricultural Water Suppliers that are not compliant with AWMP requirements are not eligible for a grant or loan awarded or administered by the State (CWC Section 10852).

Efficient Water Management Practices Implementation

CWC and Reclamation require that Agricultural Water Suppliers implement EWMP/BMPs and report on their implementation in their 2020 Plan.

- 52[2] Agricultural Water Suppliers were required to implement and report on the status of EWMPs/BMPs in their 2020 Plan.
- Sixteen EWMPs are listed in the CWC.
  - Two must be implemented by all Agricultural Water Suppliers (Critical EWMPs).
  - The remaining 14 EWMPs must be implemented unless an Agricultural Water Supplier determines that they are not technically feasible or not locally cost-effective (Conditional EWMPs).

Agricultural Water Suppliers that do not implement all required EWMPs will not be eligible for a grant or loan administered by the State (CWC Section 10608.56(b)). EWMPs are described in Section 1.1.2.

Implementation Status

- 49 Agricultural Water Suppliers submitted 2020 Plans addressing EWMPs/BMPs.
  - 98% (48[3] of 49) reported implementing the two critical EWMPs/BMPs (water measurement and volumetric pricing).
  - 100% (10 of 10) of the voluntary 2020 Plan submittals have reported implementing of the two critical EWMPs/BMPs.

[2] As a signatory to the Quantification Settlement Agreement, Coachella Valley Water District is exempt from implementing EWMPs, per CWC 10608.8(d).

[3] Palo Verde Irrigation District did not implement volumetric pricing. However, their plan was approved by USBR.

- 100% (49 of 49) of Agricultural Water Suppliers that submitted 2020 Plans and were required to implement EWMPs/BMPs have implemented those that were deemed cost effective and technically feasible.

Tables 7a-d in Section 3 provide specific information on EWMP and BMP implementation by Agricultural Water Suppliers and voluntary submitters.

Efficient Water Management Practices Effectiveness

92% (23 of 25) CWC Agricultural Water Suppliers that submitted AWMPs calculated overall service area water use efficiencies using one or more of four specific methods required by CWC section 10826(h)[4]. Reported water use efficiencies averaged between 75 to 104%.

While EWMP implementation is assumed to improve agricultural water use efficiency, water savings from these improvements are not required to be quantified and no Agricultural Water Supplier has quantified their water savings. Estimating the effect of EWMPs on water use and operations is complex; effects of the EWMPs must be separated from other effects due to, for example, weather, farm prices, and water supply restrictions. Additionally, some EWMPs could have competing effects.

Many agricultural water suppliers have implemented and continue to implement projects that improve the efficiency of their water operations and their customers' water use.

Recommendations for Legislative Changes to Agricultural Water Management Plans

The report *California's Water Supply Strategy: Adapting to a Hotter Drier Future*[5] (August 2022) projected that California will lose up to 10 percent of its water supplies within the next 20 years due to rising temperatures. Additionally, as California's climate continues to change, data models expect less rain and snowfall, more evaporation, and higher water consumption for both human needs and the environment (e.g., vegetation, soil, atmosphere). This will affect agricultural operations and allocation of limited water resources. Currently, AWMPs have minimal requirements for assessing potential impacts of climate change and do not require planning for future water supply reliability. Agricultural water management practices could be improved if the potential impacts of

[4] As a signatory to the Quantification Settlement Agreement, Coachella Valley Water District is exempt from implementing EWMPs, per CWC 10608.8(d).

[5] California's Water Supply Strategy: Adapting to a Hotter Drier Future. August 2022. Available at: https://resources.ca.gov/-/media/CNRA-Website/Files/Initiatives/Water-Resilience/CA-Water-Supply-Strategy.pdf

climate change on crop water consumption and supplies are considered as part of the AWMP process. As such, DWR recommends the Legislature:

- Support statewide, regionally scaled studies and models to understand the impacts of higher temperatures and hydrologic regime changes on crops to support future cropping decisions and water management planning.

- Require Agricultural Water Suppliers include in their AWMPs robust future supply and demand projections and identify future infrastructure needs and opportunities.

These recommendations are expanded on in section 4.0.

Conclusion

AWMPs help support the long-term resource planning activities of Agricultural Water Suppliers. AWMP requirements also encourage suppliers to evaluate activities that may or may not directly benefit their operations and are considered valuable from a regional or statewide perspective. The 2020 AWMPs demonstrate that Agricultural Water Suppliers are largely efficient and continue to improve efficiency through on-going and expanded implementation of EWMPs. However, with increasing temperatures and aridification, and increasing demands for limited water resources, it is recognized that continued effort is advised.

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1.0 Introduction

This report is respectfully submitted to the Legislature pursuant to the requirements of CWC Sections 10845(a) and (b) and Section 10608.48(g).

CWC Section 10845(a) and (b) requires DWR to summarize the status of adopted AWMPs, as well as:

- Identify outstanding (exemplary) elements of any submitted AWMPs.
- Include an evaluation of the effectiveness of AWMPs in promoting efficient water management practices.
- Recommend changes to AWMPs, as appropriate.

Additionally, CWC Section 10608.48(g) directs DWR, in consultation with the State Water Resources Control Board (State Water Board), to prepare and submit to the Legislature a report on:

- EWMPs that have been implemented or are planned to be implemented.
- An assessment of the manner in which the implementation of an EWMP has affected and will affect agricultural operations and an estimation of water use efficiency improvements, if any.

AWMPs are prepared by California's Agricultural Water Suppliers to support their resource planning and ensure efficient use of water.

This report presents the information provided in the 2020 AWMPs that are required by the Agricultural Water Conservation Act (California Water Code (CWC) Sections 10800 to 10852) supplemented by AB 1668 (Friedman 2018), and CWC Sustainable Water Use and Demand Reduction (CWC Sections 10608 to 10609.42) requirements.

1.1 Water Suppliers Subject to Preparation of an Agricultural Water Management Plan and Implementation of Efficient Water Management Practices

The Agricultural Water Conservation Act (CWC Sections 10800 to 10852) (Act), and CWC Sustainable Water Use and Demand Reduction (CWC Sections 10608 to 10609.42) require agricultural water suppliers who provide water to more than 25,000 irrigated acres excluding acreage irrigated by recycled water (Agricultural Water Suppliers) to adopt and submit an Agricultural Water Management Plan (AWMP) to DWR and to implement and report on Efficient Water Management Practices (EWMPs).

Agricultural Water Suppliers include suppliers or contractors for water, regardless of the basis of right, that distribute or sell water for ultimate resale to customers.

- Water suppliers that are wholesale agricultural water suppliers are not to prepare AWMPs unless they have the consent of all their retail members (CWC Section 10820(d)).
- Agricultural Water Suppliers who are United States Bureau of Reclamation (Reclamation) contractors may meet the water management planning requirements of CWC Sections 10820 to 10852 and Sustainable Water Use and Demand Reduction requirements of CWC Sections 10608.48 by submitting an approved Reclamation Water Conservation Plan (Reclamation Plan) to DWR (CWC Sections 10608.48(f) and 10828). DWR will accept these plans if they also include reporting elements required under California Code of Regulations (CCR), Title 23, Section 597 (Agricultural Water Measurement Regulation). Reclamation Plan best management practices (BMPs) are similar to CWC EWMPs and are summarized in this report under the relevant EWMP category. Appendix D provides a table showing the BMPs corresponding to CWC EWMPs.
- Water suppliers that became an Agricultural Water Supplier after December 31, 2012, are required to prepare and adopt an AWMP within one year of becoming an Agricultural Water Supplier.

DWR identified 53 Agricultural Water Suppliers required to submit an AWMP or Reclamation Plan (2020 Plans) based on previous submittals and the latest Aggregated Farm Gate Delivery Report information submitted to DWR.

1.2 Statutory Requirements

1.2.1 Relevant Legislation

Sustainable Water Use and Demand Reduction (CWC Division 6 Part 2.55)

CWC Section 10608.48 requires Agricultural Water Suppliers to implement water measurement and volumetric pricing of water deliveries, by July 31, 2012. This Part also requires Agricultural Water Suppliers to implement 14 additional EWMPs that are locally cost-effective and technically feasible and report on the implementation and plans for implementation in their AWMP. Agricultural water suppliers that provide water to between 10,000 and 25,000 irrigated acres, excluding recycled water, are only required to implement Sustainable Water Use and Demand Reduction if sufficient funding has been specifically provided for those purposes (CWC Section 10853). No funding was available for the 2020 planning cycle.

Agricultural Water Management Planning Act (CWC Division 6 Part 2.8)

The Act requires Agricultural Water Suppliers to adopt an AWMP by April 1 of each year ending in 6 and 1 and submit their AWMP to DWR within 30 days of adoption. The Act permits adoption and submittal of AWMPs that are part of a regional plan, providing that those plans meet the CWC plan content requirements.

AB 1668 (Friedman 2018) updated the Act and requires Agricultural Water Suppliers to include these additional elements:

- An annual water budget based on quantification of all inflow and outflow components for the service area (CWC Section 10826(c))
- Identification of water management objectives based on the water budget to improve system efficiency or to meet other water management objectives (CWC Section 10826(f))
- Quantification of water use efficiency using the appropriate method(s) from DWR's 2012 Report to the Legislature, *A Proposed Methodology for Quantifying the Efficiency of Agricultural Water Use.*
- A Drought Plan describing actions for drought preparedness (resilience planning) and management of water allocation for periods of limited water supplies (response planning) (CWC Section 10826.2)

Agricultural water suppliers that provide water to between 10,000 and 25,000 irrigated acres, excluding recycled water, were required to prepare and submit plans by July 31, 2016, per Governor Brown's Emergency Executive Order B-29-15, which has since been rescinded. Per CWC, these suppliers are only mandated to implement Agriculture Water Management Planning Act requirements if sufficient funding has been specifically provided for those purposes (CWC Section 10853).

Agricultural Water Measurement Regulation (CCR, Title 23, Section 597)

California Code of Regulation Title 23, Section 597 requires Agricultural Water Suppliers to implement water measurement at the delivery point to customers with a specified degree of accuracy and report on this implementation in their AWMPs. Pursuant to Section 597.4, measurement accuracy and operation must be certified, tested, inspected, and/or analyzed by the appropriate officials (e.g. engineer certification).

Points of measurement may vary depending on the number of customers. For a single customer, an Agricultural Water Supplier may measure water at the delivery point or farm-gate. For multiple customers, an Agricultural Water Supplier may measure water delivered upstream of the delivery points or farm-gates, if the Agricultural Water Supplier does not (A) have legal access to the delivery points of individual customers or group of customers, and (B) an engineer determines that accuracy standards will be inadequate by installing a measurement device(s) with or without additional components

(i.e., gauging rod, water level control structure). In both scenarios, Agricultural Water Suppliers must employ one of the measurement options described in Section 597.3 (a).

Measurement units should be taken as volume delivered, and conversions must be made if data is not recorded in these units (i.e. flow rate, velocity, or water elevation) Data must also state numerical accuracy for each measurement option that is converting values into volume (Section 597.4(e)). Existing measurement devices shall be certified accurate within ± 12% of volume, while new or replacement measurement devices shall be certified accurate within ±5% of volume (laboratory certification) or ±10% of volume (non-laboratory certification).

Documentation must be provided if the Agricultural Water Supplier lacks legal access to the delivery points of the customer(s) and if delivery point locations change as certified by an engineer. Suppliers should also document water measurement device unavailability.

Delta Plan (CCR, Title 23, Section 5003)

Policy WR P1 of the Delta Plan states that water shall not be exported from, transferred through, or used in the Delta if all of the following apply:

(a) One or more water suppliers that would receive water as a result of the export, transfer, or use have failed to adequately contribute to reduced reliance on the Delta and improved regional self-reliance consistent with all of the requirements listed in paragraph (1) of subsection (c).

(b) That failure has significantly caused the need for the export, transfer, or use; and

(c) The export, transfer, or use would have a significant adverse environmental impact in the Delta.

Section (c)(1) of Policy WR P1 states that agricultural water suppliers that have (A) completed an agricultural water management plan, (B) implemented the efficiency measures in that plan, and (C) shown a measurable reduced reliance on Delta supplies in the plan, are consistent with the policy of reducing reliance on the Delta.

1.2.2 Requirements for Agricultural Water Suppliers' Agricultural Water Management Plans

Agricultural Water Suppliers must include the following elements in their AWMP, as specified in the CWC Section 10826. Per CWC Section 10829, two or more water suppliers may participate in an area wide, regional, watershed, or basin wide AWMP as a means of sharing the cost of preparing a plan. Agricultural water suppliers who are Reclamation contractors can meet the water management planning requirements by submitting approved Reclamation plans adopted within the last four years and containing supplemental information required for CCR Title 23, Section 597.

- A description of the Agricultural Water Supplier and its service area, including service area size, location of service area and water management facilities, terrain and soils, and climate.
- A description of operational characteristics, including operating rules and regulations, water delivery measurements or calculations, water rate schedules and billing, and water shortage allocation policies.
- A description of the quantity and quality of water resources, including surface water supplies, groundwater supplies, and other water supplies (including recycled water).
- A description of the water uses in the service area, including agricultural, environmental, recreational, municipal and industrial, and groundwater recharge (including estimated flows from deep percolation of irrigation and seepage).
- Annual water budget based on quantification of all inflow and outflow components.
- Analysis based on available information on effects of climate change.
- Description of previous water management activities.
- Identification of water management objectives based on the water budget and water use efficiency or to meet other water management objectives.
- Information regarding EWMPs.
- Quantification of the efficiency of agricultural water use in accordance with the methods describe in the May 8, 2012, report to the Legislature entitled *A Proposed Methodology for Quantifying the Efficiency of Agricultural Water Use.*
- A Drought Plan for periods of limited water supply describing the actions for drought preparedness (resilience planning) and management of water supplies and allocations during drought conditions (response planning).
- Supporting documentation for the Agricultural Water Measurement Regulation (CCR 23 Section 587 et seq.).

Although it is not required by the Agricultural Water Management Planning Act, an assessment of improved regional water supply reliance and supporting information for use in demonstrating reduced reliance on the Delta would provide documentation for Delta Plan consistency analysis if included in AWMPs.

1.2.3 Requirements for Agricultural Water Suppliers' Efficient Water Management Practices

- Critical EWMPs – required of all Agricultural Water Suppliers:
    - Measure the volume of water delivered to customers.

    - Adopt a pricing structure based at least in part on quantity of water delivered.

- Conditional EWMPs – required if locally cost-effective and technically feasible
    - Facilitate alternate land use for lands with exceptionally high-water duties or problem drainage.
    - Facilitate use of recycled water.
    - Facilitate financing of on-farm irrigation systems capital improvements.
    - Implement an incentive pricing structure to reduce waste, increase groundwater recharge, reduce problem drainage, improve management of environmental resources, or effectively manage all water sources by adjusting seasonal pricing structures.
    - Expand and improve conveyance and storage infrastructure.
    - Increase flexibility in water ordering and delivery.
    - Construct and operate spill and tail-water recovery systems.
    - Increase planned conjunctive use of surface water and groundwater.
    - Automate canal control devices.
    - Facilitate customer pump testing.
    - Designate a water conservation coordinator.
    - Provide technical assistance including, but not limited to on-farm irrigation and drainage system evaluations, normal year and real-time irrigation scheduling and crop water use information, water quantity and quality data, agricultural water management education program.
    - Evaluate policies of agencies that provide water supplies to identify potential institutional changes to allow more flexible water deliveries and storage.
    - Evaluate and improve Agricultural Water Supplier's pump efficiencies.

1.2.4 Eligibility for State Funding

The Agricultural Water Management Planning Act requires Agricultural Water Suppliers to adopt an AWMP every five years and submit it to DWR to be eligible for a water grant or loan awarded or administered by the state (CWC Section 10852).

Agricultural Water Suppliers subject to Reclamation requirements may submit their Reclamation Plans in lieu of an AWMP, provided supplemental documentation pertaining to CCR 23 Section 597 is included.

Sustainable Water Use and Demand Reduction (CWC Division 6 Part 2.55) requires Agricultural Water Suppliers to implement two water measurement and volumetric pricing EWMPs along with all other 14 EWMPs if locally cost-effective and technically feasible in order to be eligible for a water grant or loan administered by the State (CWC Section 10608.56(b)).

1.2.5 Requirements for the Department of Water Resources

As specified in the Act, Agricultural Water Suppliers submit their AWMPs or Reclamation Plans to DWR.

- DWR reviews the submitted AWMPs for compliance with the Water Management Planning Act. DWR may require remediation of deficiencies and AWMP development by a third party if the Agricultural Water Supplier does not prepare their own AWMP. Agricultural Water Suppliers are not eligible for water grants or loans provided by the State of California unless compliant with the Agricultural Water Management Planning Act (CWC Section 10608.56).
- DWR does not review the submitted Reclamation Plans, except for inclusion of supplemental documentation for CCR 23 Section 597 and if supplemental EWMP information is needed for grant or loan eligibility.

CWC Section 10608.48(g) directs DWR, in consultation with the State Water Board, to prepare and submit to the Legislature a report on:

- EWMPs that have been implemented or are planned to be implemented
- An assessment of the manner in which the implementation of an EWMP has affected and will affect agricultural operations and an estimation of water use efficiency improvements, if any

DWR consulted with the State Water Board and received back no significant comments.

DWR is required to submit a report to Legislature as specified in CWC Section 10845(a), 10845(b), and 10608.48(g). The report shall:

- Summarize the EWMPs that have been implemented and are planned to be implemented.
- Assess the manner in which the implementation of said EWMPs has affected and will affect agricultural operations.
- Identify outstanding elements of any submitted AWMPs.
- Include an evaluation of the effectiveness of AWMPs in promoting efficient water management practices.
- Recommend changes to AWMP requirements, as appropriate.

1.3 Importance of Agricultural Water Management Plans and Efficient Water Management Practices

1.3.1 Agricultural Water Suppliers in California

- 53 Agricultural Water Suppliers were required to submit 2020 Plans and 52[6] were required to implement EWMPs, 49 of which did so.

According to the data reported in the submitted 2020 Plans:

- Approximately 3,327,800 irrigated acres were served by these Agricultural Water Suppliers.
- These plans represent over 35% of the 9.6 million irrigated agricultural lands in California (National Agricultural Statistic Service ((NASS), 2017)).
- Voluntary plans cover an additional 163,600 irrigated acres, or about 2%, for a total of approximately 37% of the 9.6 million (NASS 2017) irrigated agricultural lands in California.

If all required 2020 Plans were submitted, including the plans voluntarily submitted, the total irrigated agricultural lands covered statewide would be approximately 3,682,700 acres, or almost 39% of the 9.6 million (NASS 2017) irrigated agricultural lands in California.

Table 1. Estimated California Irrigated Agricultural Acreage Statistics Associated with 2020 Planning

Irrigated Agricultural Acreage Category	Approximate Acres	Approximate % of Total Statewide Irrigated Agricultural Acreage
California Total (NASS 2017)	9,597,400	100%
2020 Plan Required	3,519,100	37%
2020 Plan Received	3,327,800	35%

[6] As a signatory to the Quantification Settlement Agreement, Coachella Valley Water District (CVWD) is exempt from implementing EWMPs, per CWC 10608.8 (d).

Irrigated Agricultural Acreage Category	Approximate Acres	Approximate % of Total Statewide Irrigated Agricultural Acreage
2020 Plans Not Received	191,244	2%
Voluntary 2020 Plans Received	163,600	2%
Not Subject to the Water Management Planning Act 2020 Plan Requirement	6,078,300	63%

Table 2. Agricultural Water Supplier Estimated Irrigated Acres

Plan Type	Estimated Irrigated Acres of All Required Suppliers	Estimated Irrigated Acres Covered by Submitted Required Plans
AWMP	1,579,200	1,425,700
Reclamation	1,939,800	1,902,100
Total	**3,519,000**	**3,327,800**

1.3.2 Importance to Agricultural Water Suppliers

An AWMP is a legal and technical water management foundation for Agricultural Water Suppliers operations throughout California. A well-prepared AWMP can save time and money when used as the basis for an Agricultural Water Supplier's short-term and long-term water management and planning. It provides the Agricultural Water Supplier's staff, the public, and elected officials with an understanding of water conditions and management, and documents future 5- and 10-year plans for EWMP implementation. Agricultural Water Suppliers organize and synthesize water-related information from numerous sources to provide the following:

- An assessment of the current conditions in geography, soils, climate, and water sources.
- Identification of water supply conditions and water use variability.
- Identification of water management objectives based on the water budget.
- Identification of EWMPs implemented and planned to conserve water resources.
- Recognition of EWMP funding, needs, and opportunities.
- Use of accurate water data to facilitate water management objectives.
- Quantification of overall service area water use efficiencies.
- Drought plans that include resilience and response actions.

1.3.3 Importance to DWR and the State of California

California irrigates over 9 million acres of agricultural land and provides over $22.5 billion in exported commodity crops to the world (CDFA 2022). With competing demands for water resources, EWMPs/BMPs help ensure efficient use of water resources and AWMPs provide essential information to DWR and the State to document agricultural water use and efficiency for purposes of statewide and regional planning. The new requirements for quantifying the water budget, identifying water management objectives, and quantifying water use efficiency provide DWR and the State with necessary water use information for policy decisions.

1.4 DWR Guidance and Assistance to Agricultural Water Suppliers

DWR offered several sources of guidance and assistance to help Agricultural Water Suppliers develop their AWMPs. A description of the assistance provided is listed below:

- **2020 AWMP Guidebook.** DWR updated and made available a 2020 Agricultural Water Management Plan Guidebook to assist Agricultural Water Suppliers in the preparation of their plans. https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Water-Use-And-Efficiency/Agricultural-Water-Use-Efficiency/Files/Draft-2020-AWMP-Guidebook.pdf
- **Water Use Efficiency Data (WUEdata) Portal.** DWR developed and hosts an online portal for Agricultural Water Suppliers to submit their 2020 Plans and associated data to DWR and to access DWR related tools. The data provided by Agricultural Water Suppliers is populated into a database. All associated data is made available to the public. https://wuedata.water.ca.gov
- **2020 AWMP Table Templates.** DWR developed standardized forms and table templates for Agricultural Water Suppliers to report their 2020 AWMP data. These forms and tables provide greater consistency, transparency, and accessibility of the AWMP data. https://wuedata.water.ca.gov/public/public_resources/2163144767/2020%20AWMP%20Draft%20Tables%2012.21.20.xlsx
- **Methodologies for Calculating Agricultural Water Use Efficiency.** The Water Conservation Act directed DWR to develop technical methodologies and criteria to ensure consistent implementation of the Act and to provide guidance to Agricultural Water Suppliers in determining agricultural water use efficiency. https://wuedata.water.ca.gov/public/public_resources/3461454093/A%20Proposed%20Methodology%20for%20Quantifying%20the%20Efficiency%20of%20Agricultural%20Water%20Use.pdf

- **Technical Assistance.** DWR provides direct technical assistance and tools to agricultural water suppliers in determining components of their annual water budget, including effective precipitation, drought planning, and crop evapotranspiration through DWR's Regional Offices, CalSIMETAW (California Simulation of Evapotranspiration of Applied Water) model, California Irrigation Management Information System (CIMIS) and Spatial CIMIS.
- **Public and Online Workshop.** DWR conducted a workshop to assist Agricultural Water Suppliers, consultants, planners, and other interested parties in preparing AWMPs, including a recorded virtual workshop held during the COVID-19 pandemic that provided step-by-step guidance and information as well as the opportunity for participants to ask questions or make comments. https://csus.zoom.us/rec/play/oBYJmUrqLQWD7nm8ZT39dMYnx9JgIfo01oxHltIxmTk87dNa9apRJgjE-JlCrQ2y-rV5hk2EiARcmjSV.WK_xfvG8Ahg9HF4V?startTime=1600292059000&_x_zm_rtaid=RpVUs6r3QeWmqg-ZkCQP8A.1673994695701.b09e2881b8c29c2e19060553f35857b0&_x_zm_rhtaid=478
- **Website.** DWR has a website that offers links to the information discussed above and provides additional resources to help Agricultural Water Suppliers and other interested parties in preparing AWMPs. https://water.ca.gov/Programs/Water-Use-And-Efficiency/Agricultural-Water-Use-Efficiency
- **Dedicated email.** If, at any time, Agricultural Water Suppliers or interested parties cannot find the information they are looking for, they can contact a dedicated email address created by DWR. This address is monitored by a small team that can respond to inquiries, questions, and concerns. AgWUE@water.ca.gov

1.5 Elements New to 2020 Agricultural Water Management Plans

The following are additional requirements passed by the Legislature for 2020 AWMPs:

1.5.1 Planning Elements

- Annual water budget, on a water-year basis, based on quantification of all inflow and outflow components for the service area (includes six specified components) (CWC Section10826(c)).
- Identification of water management objectives based on the water budget to improve system efficiency or to meet other water management objectives (CWC Section10826(f)).

- Quantification of water use efficiency using the appropriate method(s) from DWR's 2012 Report to the Legislature, *A Proposed Methodology for Quantifying the Efficiency of Agricultural Water Use*. In quantifying the efficiency of agricultural water use, all 14 water uses must be accounted for including: crop water use, agronomic use, environmental use, and recoverable surface flows (CWC Section10826(h)).
- A Drought Plan for periods of limited water supplies describing actions for drought preparedness (resilience planning) and management and allocation of water supply during drought conditions (response planning) (CWC Section10826.2).

1.5.2 Submittal and Compliance Requirements (CWC Section 10820):

- Authority for DWR to review AWMPs for compliance with CWC requirements.
- Requirement for AWMPs to be submitted electronically and include any standardized forms, tables, or displays specified by DWR.
- Compliance timeline after notification of a deficiency and remedial actions DWR can take for continued non-compliance.

2.0 Summary of 2020 Agricultural Water Management Plan Submittals and Review

This section has descriptive data associated with submitted AWMPs, including the number of plans submitted to date and a history of AWMP submittals over the past 10 years, and describes DWR's review process.

It is important to note that AWMPs were due by April 1, 2021, during the height of the COVID-19 pandemic. It is imperative to acknowledge the challenges faced by Agricultural Water Suppliers during this time and the associated resource constraints including stay at home requirements, business and school closures, broadband internet and equipment constraints, illness, and supply chain disruptions that all contributed to delays in reporting progress.

2.1 Submittals

DWR has identified 53 Agricultural Water Suppliers that are required to submit 2020 Plans as defined in the CWC and based on data collected through the current and historic Aggregated Farm Gate Delivery Reporting (AFGDR) system, and data reported in previous and current AWMPs (or Reclamation Plans). The data in AFGDR provides information on the irrigated acreage to help identify Agricultural Water Suppliers that would need to submit an AWMP, while previous and current plans provide supporting documentation.

As of May 9, 2023, 94% (50 of 53) of Agricultural Water Suppliers that were required to have adopted 2020 Plans have submitted them to DWR.

Of the 50 that submitted 2020 Plans:

- 25 are Agricultural Water Suppliers required to submit an AWMP in accordance with CWC.
- 25 are Reclamation Agricultural Water Suppliers that may submit a Reclamation Plan along with pertinent information required by the Agricultural Water Measurement Regulation (CCR 23 597 et seq.) in lieu of an AWMP.
- Of the three Agricultural Water Suppliers that have not yet submitted 2020 Plans, all are currently making significant progress towards Plan submission.
- 10 Agricultural Water Suppliers submitted a CWC 2020 Plan voluntarily. These Agricultural Water Suppliers each irrigate fewer than 25,000 acres and were not required to submit a plan in this cycle.

A summary of required submittals is provided in Table 3; Table 4 provides a summary of voluntary submittals. Table 5 provides historical information on past AWMP and Reclamation Plan submittals.

Appendix A contains tables listing all Agricultural Water Suppliers that submitted required or voluntary 2020 Plans. Appendix A also contains tables listing Agricultural Water Suppliers that were required to submit a 2020 Plan but have not done so as of May 9, 2023.

Table 3: Summary of 2020 Required 2020 Plan Submittals

Plan Type	Required to Submit	Submitted Individual or Regional Plans	% Compliance
AWMP	27	25	93%
Reclamation Plan	26	25	96%
Total	53	50	94%

Agricultural Water Suppliers may submit individual AWMPs or may coordinate with other water suppliers and submit a Regional AWMP. DWR received Regional AWMPs from eight Agricultural Water Suppliers.

Table 4: Summary of Voluntary 2020 Plan Submittals

Plan Type	Submitted Individual or Regional Plans
AWMP	3
Reclamation	7
Total	**10**

Table 5 summarizes the number of Agricultural Water Suppliers over 25,000 irrigated acres that submitted their AWMPs or Reclamation Plans over the last three cycles, starting in 2012. Note that in 2015, all suppliers providing water to between 10,000 and 25,000 irrigated acres (mid-size suppliers) were also required to submit plans under the Governor's emergency Executive Order (EO B-29-15). EO-B-29-15 expired, and under CWC Section 10853, these mid-size suppliers are not required to prepare, adopt, and submit a 2020 AWMP unless funding was specifically provided for that purpose. Table 5 does not include the mid-size suppliers in determination of compliance rates.

Table 5: AWMP and Reclamation Plan Submissions since 2012.

Category	2012	2015	2020
Number Required to Submit	54	54	53
AWMPs and Reclamation Plans Submitted	46	47	50
Did Not Submit by the Time of Report Submission	8	7	3
% Compliance	85%	87%	94%
Under Threshold - Voluntarily Submitted	19*	19*	10

* Out of these 19 voluntarily submitted plans, 15 were submitted as part of two regional plans.

2.2 DWR Review Process

Once AWMPs are submitted, each plan goes through several levels of review to determine if all CWC requirements have been addressed. DWR has multiple staff dedicating many hours to the review process. The primary review took approximately 12 months. Secondary review and final verification for sending compliance and deficiency letters is still ongoing.

If an Agricultural Water Supplier does not submit a required plan or submits a plan that does not address all the requirements in the CWC, DWR sends them a Notification of Non-Compliance, notifying them of the deficiency. These Agricultural Water Suppliers are given 120 days to submit an AWMP or amended AWMP to DWR or show they are making significant progress in completing their AWMP or remediating any deficiencies.

2.3 Outstanding Elements

This section identifies outstanding elements in 2020 Plans demonstrating investments and innovative collaborations to sustainably manage water resources, along with robust analytical methods to verify water deliveries in the service area.

- Multi-level planning and collaboration to sustainably manage water:
    - Solano Irrigation District partnered with Dixon Resource Conservation District, the Natural Resources Conservation Service, Solano County Water Agency, Maine Prairie Water District, and Reclamation District 2068 to form the Agricultural Water Conservation Committee with the goal of implementing infrastructure improvements and providing education outreach services to over 1000 participants annually. Outreach opportunities included field days, workshops, and newsletters.

- Investments by Agricultural Water Suppliers:
    - Since 2015, Laguna Irrigation District (LID) has constructed 53 acres of recharge basins and completed improvements to 20 acres of existing recharge basins, allowing the district to capture more surface water and increase conjunctive use. In order to take full advantage of abundant water years, LID plans to continue investing in recharge facilities as funding allows.
- Investments in Innovative Collaboration:
    - Biggs-West Gridley Water District, Butte Water District, Richvale Irrigation District and six smaller water suppliers have joined together to create the Feather River Regional AWMP to manage water resources on a regional level. This cooperation leverages resources and provides a more holistic approach to water management.
- Robust Analysis for Quantifying the Water Budget and Water Use Efficiency:
    - Reclamation District 108 described in their AWMP the implementation of their Flow Control and Measurement Project, including a project to upgrade water-level control and measurement infrastructure, resulting in 2,000 AF of water savings and $20,000 in annual savings from pumping costs reductions. In addition, the Sacramento River Settlement Contractors, of which Reclamation District 108 is a part of, conducted water balance calculations for both individual suppliers and the region, providing a robust analysis on multiple scales.
- Extensive Emergency Preparation Through Drought Plans:
    - Nevada Irrigation District included a detailed analysis of various drought mitigation strategies in their Drought Plan. *Plan for Water*, the district's integrated water management program, conducts continuous supply reliability analyses and developed a climate change hydrologic model to prepare for future drought conditions. Their extensive Drought Plan outlines six potential water shortage level scenarios, each with specific alternative response actions for both water customers and suppliers.

2.4 Effectiveness of Implemented Agricultural Water Management Plans

AWMPs have been effective in promoting efficient agricultural water management practices as can be seen by the quantified water use efficiency metrics and ongoing implementation of EWMPs as part of their 2020 Plans.

Agricultural Water Use Efficiency

In 2020 AWMPs, Agricultural Water Suppliers were required to calculate water use efficiencies using at least one of four 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*. These four methods include:

- Crop Water Use Fraction (CWUF), which assesses the efficiency of applied water compared to how much water crops use.
- Agronomic Water Use Fraction (AWUF), which assesses the efficiency of applied water compared to how much water it takes to grow the crop(s) including other necessary water uses such as leaching for soil salinity.
- Total Water Use Fraction (TWUF), which assesses the efficiency of applied water when considering agronomic uses and environmental uses, such as agricultural spills to support wetland functions.
- Water Management Fraction (WMF), which assesses the efficiency of crop water use and the amount of water leaving the service area (surface flows or deep percolation) that can be recovered for beneficial uses.

Table 6, below, lists the average, maximum, and minimum water management fractions reported in AWMPs. Note that since Agricultural Water Suppliers were only required to use one of the calculations, the number of Agricultural Water Suppliers reporting in each category are different.

Table 6. Water Use Efficiency Fractions Reported in Required 2020 AWMPs

	Crop Water Use Fraction	Agronomic Water Use Fraction	Total Water Use Fraction	Water Management Fraction
Average	0.75	0.83	0.89	1.04
Maximum	0.91	0.96	1.17	1.35
Minimum	0.42	0.70	0.70	0.91

A value of 1.0 means all of the applied water use was, or could be, beneficially used. Overall, agricultural water use efficiency ranged from an average of 0.75 to 1.04, depending on which of the four metrics was used. However, it should be noted that the CWUF can tell an incomplete story about agricultural water use efficiency because it does not address the fact that much of the water not used by the crops is recoverable – it can be used later on because it percolates to groundwater, or it can be used by downstream growers. For example, for two water suppliers that calculated both CWUF and WMF, the CWUFs were 0.53 and 0.42, whereas the WMFs were 1.0 and 0.91, respectively. This means that even though the crops, themselves, only used half the irrigation water, the remainder was still available for beneficial uses.

Agricultural Water Suppliers and customers have successfully met the challenge of efficient agricultural water use. The continued long-term need for water conservation is addressed with legislation AB 1668, (Friedman 2018) and SB 606, (Hertzberg 2018), also known as *Making Water Conservation a California Way of Life*. In conjunction with important changes to existing agricultural water management planning and enhanced drought planning, AB 1668 called for additional reporting requirements for AWMPs to better address water use and efficiency and improve local drought resilience and planning, which are essential for California as a leader in adapting to climate change. However, expected changes in water availability and reliability that will result from climate change require additional water management planning.

Drought Plans

Pursuant to AB 1668, 2020 AWMPs must include a Drought Plan for periods of limited water supplies describing actions for drought preparedness (resilience planning) and management of water supply allocations during drought conditions (response planning) (CWC Section10826.2). The Drought Plan includes information to determine the water supply availability, levels of drought severity, identification of potential vulnerability to drought, a description of the opportunities and constraints for improving drought resilience planning and policies, and a process for declaring a water shortage and for implementing water shortage allocations. The Drought Plan requirements do not include long-term supply and demand projections or water service reliability assessments.

- Most Agricultural Water Suppliers report that they have plans in place to implement their Water Shortage Allocation policies and drought resilience and response actions. Policy components and actions are ever evolving as new technology and knowledge are made available regarding drought response and resilience.
- Some Agricultural Water Suppliers included initiatives associated with a Groundwater Sustainability Plan, that identify areas of drought vulnerability on a regional scale. This helps with identifying planning shortfalls and may strengthen their ability to accommodate customer needs.

Agricultural Water Suppliers in California and their customers, deal with drought as an inherent and routine part of business. Agricultural drought planning and response differs from urban areas because allocations for human uses during water shortage conditions must be maintained at a level sufficient for human health and safety. Thus, higher urban water users are encouraged to conserve water through various mechanisms in accordance with the urban drought plan in order to ensure sufficient water for all customers.

However, many Agricultural Water Suppliers simply do not have irrigation water to deliver during times of drought; during periods of moderate shortfalls, customers must adapt by reducing irrigated area, deficit irrigating crops, or using alternative sources such as groundwater. During periods of severely limited to no-water supplies, agricultural irrigation allocations often equate to a zero allocation for all or many

customers resulting in little recourse for irrigating their crops besides switching to groundwater supplies or other supplies, if available.

Robust water use and supply projections, as affected by climate change, is not required of or typically incorporated into Agricultural Water Suppliers' AWMPs or Drought Plans, but similar to urban plans, could help improve identification of local or regional infrastructure needs, water management decisions, and the ability to accommodate customer needs, along with providing a tool for customers to consider long-term changes in types of crops grown and irrigation systems used in light of overall future water supply conditions.

3.0 Summary of Efficient Water Management Practices

The CWC requires that an Agricultural Water Supplier include in its AWMP, "a report on which EWMPs have been implemented or 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 ten years in the future. If an Agricultural Water Supplier determines that a EWMP is not locally cost-effective or technically feasible, the Agricultural Water Supplier shall submit information documenting that determination." (CWC Section 10608.48(d)). CWC allows Agricultural Water Suppliers subject to Reclamation requirements to submit a Reclamation Plan in-lieu of an AWMP to meet the requirements of reporting EWMP implementation.

CWC requires that AWMPs address a specific list of EWMPs. Agricultural water suppliers are encouraged to carefully examine the list and determine which EWMPs can be implemented, how well they are working, if there is room for improvement, and what the priorities may be to meet local water management objectives. Two of the 16 total EWMPs listed in CWC are critical EWMPs and must be implemented by all Agricultural Water Suppliers submitting AWMPs. These critical EWMPs require Agricultural Water Suppliers to measure the volume of water delivered to customers in accordance with CCR 23 Section 597 and adopt a pricing structure based at least in part on quantity of water delivered. The remaining 14 EWMPs are conditional EWMPs and are required only if locally cost-effective and technically feasible. All EWMPs are listed in Section 1.1.3 of this report. Agricultural Water Suppliers providing water to less than 25,000 irrigated acres are not required to implement EWMPs (CWC Section 10853).

Agricultural Water Suppliers, including those that submit Reclamation Plans, are not eligible for State-administered water grants or loans unless they have implemented the two critical EWMPs, as well as the locally cost-effective and technically feasible conditional EWMPs, or submit to DWR for approval a schedule, financing plan, and budget, to be included in the grant or loan agreement, for implementation of the CWC EWMPs.

3.1 Summary of EWMP Submittals

Below is a summary of EWMPs/BMPs implemented by Agricultural Water Suppliers who submitted required 2020 Plans. There was a total of 52[7] Agricultural Water Suppliers who were required to submit a 2020 Plan to DWR that addressed EWMPs/BMPs, and DWR received 49. In addition, DWR received 10 voluntary plans that addressed EWMPs, that are not included in the statistics below.

- 98% (48[8] of 49) of those reporting have implemented both of the critical EWMPs/BMPs ("Water Measurement" and "Volume Based Pricing").
- 100% (49 of 49) of Agricultural Water Suppliers who submitted required 2020 Plans implemented the conditional EWMPs/BMPs that were deemed cost effective and technically feasible. Of those:
  - The most implemented conditional EWMPs/BMPs found in 2020 Plans were "Conjunctive Use of Groundwater" and "Water Management Services" with implementation from 48 suppliers each.
  - The least implemented conditional EWMPs/BMPs found in 2020 Plans were "Facilitate Alternate Land Use" with implementation from 15 suppliers, and "Recycled Water Use" with implementation from 26 suppliers.
  - "Facilitate Alternative Land Use" was the most common EWMP to be listed as not locally cost-effective by Agricultural Water Suppliers.

Estimates to quantify water use efficiency improvements may be feasible if more comprehensive and consistent data is available and when these practices have been implemented, assessed, and reported over a longer period of time and by a consistent group of Agricultural Water Suppliers, with similar climate conditions and crop types.

[7] As a signatory to the Quantification Settlement Agreement, Coachella Valley Water District is exempt from implementing EWMPs, per CWC 10608.8 (d).

[8] Palo Verde I.D. did not implement Critical BMP/EWMP Equivalent for Volume-Based Pricing, Water Management Services, or Improved Pump efficiency; however, their plan was approved by USBR.

Additionally, some EWMPs have competing effects. For example, lining or piping canals reduces transportation losses for improved water use efficiency, but also reduces groundwater recharge for improved water use efficiency. Identification and implementation of locally specific water management objectives enables Agricultural Water Suppliers to implement appropriate EWMPs to improve overall service area water use efficiency and resilience.

Table 7a: CWC Critical Efficient Water Management Practices Implementation for 24 Agricultural Water Suppliers

Critical EWMP	Implemented # AWS	Planned # AWS	Not Technically Feasible # AWS	Not Cost Effective # AWS
1. Water Measurement	24	0	0	0
2. Volume-Based Pricing	24	0	0	0

Table 7b: CWC Conditional Efficient Water Management Practices Implementation for 24 Agricultural Water Suppliers

Conditional EWMP	Implemented # AWS	Planned # AWS	Not Technically Feasible # AWS	Not Cost Effective # AWS
1. Facilitate Alternate Land Use	12	0	11	1
2. Recycled Water Use	15	0	8	1
3. Facilitate On-Farm Capital Improvements	23	0	1	0
4. Incentive Pricing Structure	23	0	0	1
5. Infrastructure Improvements	19	1	1	3
6. Order/Delivery Flexibility	22	0	2	0
7. Supplier Spill & Tailwater Systems	23	0	1	1
8. Conjunctive Use	24	0	0	0
9. Automated Canal Controls	22	0	1	1
10. Facilitate or Promote Customer Pump Test & Evaluation	21	3	0	0

Conditional EWMP	Implemented # AWS	Planned # AWS	Not Technically Feasible # AWS	Not Cost Effective # AWS
11. Conservation Coordinator	21	3	0	0
12. Water Management Services to Customer	24	0	0	0
13. Identify Institutional Changes	24	0	0	0
14. Supplier Improved Pump Efficiency	19	0	5	0

Table 7c: Reclamation Plan Best Management Practices Equivalent CWC Critical EWMPs for 25* Agricultural Water Suppliers

Critical EWMP	Implemented # AWS	Planned # AWS	Not Technically Feasible # AWS	Not Cost Effective # AWS
1. Water Measurement	25	0	NA	0
2. Volume-Based Pricing	24	0	NA	1

Table 7d: Reclamation Plan Best Management Practices Equivalent CWC Conditional EWMPs for 25* Agricultural Water Suppliers

Conditional EWMP	Implemented # AWS	Planned # AWS	Not Technically Feasible # AWS	Not Cost Effective # AWS
1. Facilitate Alternate Land Use	3	0	17	5
2. Recycled Water Use	11	1	10	3
3. Facilitate On-Farm Capital Improvements	21	1	2	1
4. Incentive Pricing Structure	20	0	4	1
5. Infrastructure Improvements	20	0	4	1
6. Order/Delivery Flexibility	25	0	0	0
7. Supplier Spill & Tailwater Systems	17	0	8	0
8. Conjunctive Use	24	0	0	1

Conditional EWMP	Implemented # AWS	Planned # AWS	Not Technically Feasible # AWS	Not Cost Effective # AWS
9. Automated Canal Controls	23	0	2	0
10. Facilitate or Promote Customer Pump Test & Evaluation	24	0	0	1
11. Conservation Coordinator	25	0	0	0
12. Water Management Services to Customer	24	0	0	1
13. Identify Institutional Changes	0	0	0	0
14. Supplier Improved Pump Efficiency	21	0	3	1

Notes:
*Three Reclamation Agricultural Water Suppliers are not subject to Reclamation BMPs and instead implement “CALFED Targeted Benefits”
“Implemented” are the number of Agricultural Water Suppliers that implemented each of the individual BMPs listed the leftmost column as reported in their 2020 Plan.
“Planned” are the number of Agricultural Water Suppliers where the individual EWMP or Reclamation BMP-equivalent are in the planning stage and will be implemented in the near future.
“Not Locally Cost Effective/Feasible” are the numbers of Agricultural Water Suppliers where the individual EWMP or Reclamation BMP-equivalent is not feasibly implemented for a variety of reasons.
“# AWS” = Number of Agricultural Water Suppliers,
“NA” = Not applicable
There is no BMP equivalent for Conditional EWMP 13.

3.2 Outstanding Elements

This section highlights just a few of the outstanding elements of how Agricultural Water Suppliers discussed implementation of their EWMPs and the level of detail they provided for increasing water use efficiency. Some outstanding elements are:

- Under the EWMPs to identify institutional changes and make infrastructure improvements to achieve water management goals:
    - Yolo County Flood Control & Water Conservation District increased initiatives to diversify agricultural water supplies in collaboration with multiple organizations and agencies to achieve water management goals. The District used new technology funded by the Local Groundwater Assistance Fund through AB 303 and developed a computer simulation of the aquifer in Yolo County to assess aquifer recharge and recovery. Particular areas in Yolo County are unique in there are no reliable surface water sources and must rely on groundwater as the primary source for irrigation. This same technology is being applied to subbasins throughout Yolo County, and these projects have yielded approximately 21,000 AF of high flows that were diverted for groundwater recharge.
    - Belridge Water Storage District phased out furrow irrigation systems and converted to sprinkler, micro irrigation, and solid-set sprinklers to increase water use efficiency. The permanent acreage irrigated with micro irrigation has increased from 5,400 acres in 1990 to nearly 35,000 acres in 2020. Micro irrigation systems are considered the more water efficient option as compared to traditional furrow and flood irrigation systems.
- Significant Implementation of EWMPs
    - Modesto Irrigation District has a high EWMP implementation rate. In addition to implementing all critical and conditional EWMPs, the supplier has detailed how they have improved and plan to improve their water use efficiency. By comparing data from the last report and projecting what improvements can be made 5 to 10 years in the future, they are able to classify efficiency improvements in a ranking system. This ranking system allows them to easily track and monitor their water use efficiency improvements.
- Using EWMPs to support region-wide planning:
    - Feather River Regional AWMP includes Biggs-West Gridley Water District, Butte Water District, Richvale Irrigation District and six smaller water suppliers. Their EWMP reporting is a good example of using EWMP data to identify areas that require support and how multi-level regional

planning can achieve water management goals. Various programs were created to support districts where EWMPs may not be technically feasible and/or lack significant effectiveness. The programs focused on improving water supply reliability during periods of drought.

3.3 Efficient Water Management Practices Implementation Effects on Agricultural Operations

Implementation of EWMPs has improved agricultural water use efficiency, although insufficient information exists at this time to quantify these improvements. Implementation of EWMPs such as 'on-demand' delivery allows both customers and Agricultural Water Suppliers to better schedule irrigation for improved irrigation efficiencies. Other infrastructure improvements allow customers to use higher efficiency irrigation systems and increase use of recycled water and tailwater return systems (systems where drainage water is captured, stored, and reused) to save water and stretch limited water supplies, thereby reducing the need for more expensive new water supply development.

An example of the ability of the EWMP to improve operations is highlighted by the Buena Vista Water Storage District (BVWSD). BVWSD maximized water use by investing in new technology for their operations. Implementing multiple Conditional EWMPs, they replaced flow meters, lined ditches and canals, and updated spill water and tailwater recovery systems to better capture, store, and deliver water for irrigation use. Completion of these EWMPs may save at least 170,000 AF of water within the next 10 years. By reducing water use, the district will also be reducing energy, maintenance, and water delivery costs for their overall operation.

Many Agricultural Water Suppliers are planning on expanding implementation of EWMPs within their service areas. These will allow for both improved Agricultural Water Supplier operations as well as improved customer operations. It is also expected that development and deployment of new technology, such as increased use of remote sensing capabilities and better irrigation and scheduling systems, will help to improve agricultural water use efficiency moving forward.

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4.0 Conclusion

Key Findings

- DWR identified 53 Agricultural Water Suppliers required to submit an AWMP or Reclamation Plan (2020 Plans).
- 94% (50 of 53) of Agricultural Water Suppliers submitted required 2020 Plans.
    - Submitted 2020 Plans represent approximately 35% of statewide irrigated agricultural lands
    - Required 2020 Plans not yet received represent an additional approximate 2% of the statewide irrigated agricultural lands.
    - In total, 2020 Plans represented almost 37% of statewide irrigated agricultural lands.
- 10 Agricultural Water Suppliers irrigating less than 25,000 acres submitted voluntary plans.
    - Voluntarily submitted plans represent an additional 2% of statewide irrigated agricultural lands.

Additional information on Estimated California Irrigated Agricultural Acreage Statistics Associated with 2020 Planning can be found on Tables 1 and 2, and in Section 1.3.

- 98% (48 of 49) of Agricultural Water Suppliers that submitted plans and were required to implement EWMPs/BMPs:
    - Implemented the two critical EWMPs/BMPs
- 100% (49 of 49[9]) implemented those of the 14 conditional EWMPs/BMPs that were deemed locally cost-effective and technically feasible.
- Agricultural Water Suppliers that submitted AWMPs, reported applied water use efficiencies of between 75% and 104%, on average, depending on which calculation method was used, demonstrating that they are largely efficient.

[9] As a signatory to the Quantification Settlement Agreement, Coachella Valley Water District (CVWD), is exempt from implementing EWMPs, per CWC 10608.8(d).

Recommendations for Legislative Changes to Agricultural Water Management Plans

The report *California's Water Supply Strategy: Adapting to a Hotter Drier Future*[10] (August 2022) projected that California will lose up to 10 percent of its water supplies within the next 20 years due to rising temperatures. Additionally, as California's climate continues to change, data models expect less rain and snowfall, more evaporation, and higher water consumption for both human needs and the environment (e.g., vegetation, soil, atmosphere). This will affect agricultural operations and allocation of limited water resources. Currently, AWMPs have minimal requirements for assessing potential impacts of climate change and do not require planning for future water supply reliability.

Agricultural water management practices could be improved if the potential impacts of climate change on crop water consumption and supplies are considered as part of the AWMP process. Considering this, DWR's first recommendation to the Legislature:

- Support statewide, regionally scaled studies and models to understand the impacts of higher temperatures and hydrologic regime changes on crops to support future cropping decisions and water management planning.

Supporting statewide, regionally scaled studies and the development of models to understand the impact of higher temperatures and hydrologic regime changes on crops to support future cropping decisions and water management planning would inform expected changes in agricultural water demands necessary for long-term, resilient agricultural water management planning. These studies and improved models of climate change effects on regional water supply conditions and projected demands on water supplies, and crop market projections, would allow agricultural water suppliers and growers to plan for future conditions and could better help the State plan for water allocations, storage options and needs, and development of alternative supply sources. Some of these studies and analysis can be coordinated through partnerships with Groundwater Sustainability Planning through the Sustainable Groundwater Management Office and Groundwater Sustainability Agencies, California water plan climate change hydrologic forecasts, Flood Managed Aquifer Recharge watershed hydrology modeling and future scenarios forecasting, and regional and local partnerships.

[10] California's Water Supply Strategy: Adapting to a Hotter Drier Future. August 2022. Available at: https://resources.ca.gov/-/media/CNRA-Website/Files/Initiatives/Water-Resilience/CA-Water-Supply-Strategy.pdf

The agricultural water management planning process could be strengthened by understanding the potential impacts of climate change on crop consumption and supplies, as well as planning for short or long-term mitigation to improve resilience

DWR's second recommendation to the legislature:

- Require Agricultural Water Suppliers include in their AWMPs robust future supply and demand projections and identify future infrastructure needs and opportunities.

Requiring Agricultural Water Suppliers include in their AWMPs robust future supply and demand projections, based on the outcomes of the statewide, regionally scaled studies and models mentioned above in the first recommendation, could strengthen AWMP drought and long-term resiliency planning efforts by identifying future infrastructure needs and opportunities such as conjunctive use, flood managed aquifer recharge, or use of recycled wastewater. Since infrastructure plans often take time to implement, including supply and demand projections and future infrastructure plan reporting in the AWMPs strengthens Agricultural Water Suppliers' drought and long-term resiliency planning efforts.

Summary

AWMPs help support Agricultural Water Suppliers with their long-term resource planning and ensure the availability and reliability of adequate water supplies to meet existing and future water demands. The 2020 AWMPs demonstrate that Agricultural Water Suppliers are working to become more water efficient while demonstrating resiliency to climate change. Some AWMPs saw delays in completion or implementation of EWMPs due to extraordinary water use impacts from wildfires and COVID-19.

To aid in drought preparedness, all Agricultural Water Suppliers were required to provide a Drought Plan. Most Agricultural Water Suppliers report that they have plans in place to implement their water shortage allocation policies and drought resilience and response actions. Policy components and actions are ever evolving as new technology and knowledge are made available regarding drought response and resilience.

Since the adoption of the Agricultural Water Management Planning Act 37 years ago, agricultural water management planning has expanded to reflect the tightening supply of a finite resource. Consistent with *California's Water Supply Strategy, Adapting to a Hotter, Drier Future* (CNRA 2022), the growing demands for water continue to make local planning processes, such as the AWMP, critical to ensuring a secure water future for California residents, businesses, and industries.

California is considered a top leader in water efficiency and sustainability however, with increasing temperatures and aridification, and increasing need for limited water resources, it is recognized that continued effort is necessary.

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Appendix A – 2020 Agriculture Water Management Plan Submittals

Table A1a. Agricultural Water Suppliers (>25,000 irrigated acres) that submitted required 2020 AWMPs

Agricultural Water Supplier	Date AWMP Submitted to DWR	Estimated Irrigated Acres	Plan Type
Belridge W.S.D.	9/15/2022	34,461	CWC
Biggs-West Gridley W.D.	5/27/2021	27,448	Feather River Regional AWMP
Buena Vista W.S.D.	8/13/2021	33,721	CWC
Cawelo W.D.	9/3/2021	33,024	CWC
Coachella Valley W.D.	11/1/2022	65,745	Quantification Settlement Agreement (QSA)
Corcoran I.D.	11/3/2022	40,542	CWC
Kern Delta W.D.	8/5/2021	100,000	CWC
Laguna I.D.	4/4/2023	30,101	CWC
Lakeside Irrigation W.D.	2/1/2023	26,310	CWC
Lost Hills W.D.	9/19/2022	28,481	CWC
Merced I.D.	5/12/2022	100,090	CWC
Modesto I.D.	8/25/2021	66,274	CWC
Nevada I.D.	5/14/2021	32,323	CWC
North Kern W.S.D.	12/3/2021	55,000	CWC
Oakdale I.D.	2/23/2022	64,906	CWC
Richvale I.D.	5/26/2021	34,374	Feather River Regional AWMP
Semitropic W.S.D.	5/25/2021	94,288	CWC
South San Joaquin I.D.	4/29/2022	48,347	CWC
South Sutter W.D.	8/25/2021	42,320	CWC
Tulare Lake Basin W.S.D.	3/31/2021	100,000	CWC
Turlock I.D.	4/14/2021	149,269	CWC
Western Canal W.D.	5/12/2021	55,816	Feather River Regional AWMP
Wheeler Ridge-Maricopa W.S.D.	8/9/2021	61,756	CWC
Yolo County F.C.W.C.D.	8/25/2021	44,295	CWC
Yuba County Water Agency	3/2/2022	56,794	CWC
Total: 25		**1,425,685**	

Table A1b. Reclamation Agricultural Water Suppliers (>25,000 irrigated acres) that submitted required Reclamation Plans for 2020

Agricultural Water Supplier	Date Reclamation Plan Submitted to DWR	Estimated Irrigated Acres	Plan Type
Arvin-Edison W.S.D.	7/19/2022	65,873	CVPIA
Central California I.D.	7/22/2022	140,158	San Joaquin River Exchange Contractors Water Authority
Chowchilla W.D.	9/15/2021	75,000	CVPIA
Colusa County W.D.	11/10/2022	36,992	CVPIA
Del Puerto W.D.	8/11/2022	45,229	CVPIA
Delano-Earlimart I.D.	5/8/2023	49,154	CVPIA
Fresno I.D.	8/15/2022	151,943	CVPIA
Glenn-Colusa I.D.	4/13/2021	158,348	Sacramento River Settlement Contractors
Lower Tule River I.D.	11/7/2022	85,000	CVPIA
Madera I.D.	8/15/2022	126,595	CVPIA
Orange Cove I.D.	11/14/2022	27,557	CVPIA
Orland-Artois W.D.	8/22/2022	28,918	CVPIA
Palo Verde I.D.	9/9/2022	94,000	Reclamation Reform Act of 1982
Pixley I.D.	11/7/2022	48,956	CVPIA
Reclamation District No. 108	4/13/2021	45,547	Sacramento River Settlement Contractors
San Luis Canal Co.	7/27/2022	40,637	San Joaquin River Exchange Contractors Water Authority
San Luis W.D.	8/25/2022	32,928	CVPIA
Shafter-Wasco I.D.	8/29/2022	29,106	CVPIA
Solano I.D.	4/30/2021	37,740	CVPIA
Southern San Joaquin M.U.D.	11/17/2022	48,140	CVPIA
Stockton-East W.D.	4/20/2021	109073*	CVPIA
Sutter Mutual Water Co.	4/13/2021	46,600	Sacramento River Settlement Contractors
Tulare I.D.	12/20/2022	58,706	CVPIA
Tule Lake I.D.	5/8/2023	54,314	RRA
Westlands W.D.	8/26/2022	374,684	CVPIA
Total		**1,902,125**	**25**

5-year average

Table A2. Agricultural Water Suppliers (<25,000 irrigated acres) that submitted voluntary 2020 Plans

Water Supplier	Date Submitted to DWR	Estimated Irrigated Acres	Plan Type
Butte W.D.	12/16/2021	12,229	Feather River Regional AWMP
Berrenda Mesa W.D.	9/21/2022	24,556	AWMP
Dudley Ridge W.D.	6/14/2022	15,815	AWMP
Anderson-Cottonwood I.D.	8/2/2022	6,834	Sacramento River Settlement Contractors
Columbia Canal Co.	7/29/2022	15,571	San Joaquin River Exchange Contractors Water Authority
Firebaugh Canal W.D.	7/26/2002	21,663	San Joaquin River Exchange Contractors Water Authority
Provident I.D.	8/4/2022	8,751	Sacramento River Settlement Contractors
Natomas M.W.C.	8/30/2022	19,304	Sacramento River Settlement Contractors
Reclamation District No. 1004	8/5/2022	20,068	Sacramento River Settlement Contractors
San Benito County W.D.	10/28/2021	18,800	CVPIA
Total: 10		**163,591**	

Table A3a. Agricultural Water Suppliers (>25,000 irrigated acres) that did not submit required 2020 AWMPs.

Agricultural Water Supplier	Making Significant Progress?	Estimated Irrigated Acres	Plan Type
Alta I.D.	Yes	59,172	AWMP
Consolidated I.D.	Yes	94,376	AWMP
Total:2		**153,548**	

Table A3b. Reclamation Agricultural Water Suppliers (>25,000 irrigated acres) that did not submit required Reclamation Plans for 2020.

Agricultural Water Supplier	Making Significant Progress?	Estimated Irrigated Acres	Plan Type
Panoche W.D.	Yes	37,696	CVPIA
Total:1		**37,696**	

Note: DWR identified I**mperial Irrigation District (IID) as a Reclamation Agricultural Water Suppliers that is required to submit an approved 2020 Plan. However, IID is a signatory to the QSA, and interprets CWC Section 10608.8(d) to exempt them from the AWMP requirement.**

Appendix B – EWMP Water Code

CWC Section 10608.48. (a) On or before July 31, 2012, an agricultural water supplier shall implement efficient water management practices pursuant to subdivisions (b) and (c).

(b) Agricultural water suppliers shall implement both of the following critical efficient management practices:

(1) 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).

(2) Adopt a pricing structure for water customers based at least in part on quantity delivered.

(c) Agricultural water suppliers shall implement additional efficient management practices, including, but not limited to, practices to accomplish all of the following, if the measures are locally cost effective and technically feasible:

(1) Facilitate alternative land use for lands with exceptionally high-water duties or whose irrigation contributes to significant problems, including drainage.

(2) Facilitate use of available recycled water that otherwise would not be used beneficially, meets all health and safety criteria, and does not harm crops or soils.

(3) Facilitate the financing of capital improvements for on-farm irrigation systems.

(4) Implement an incentive pricing structure that promotes one or more of the following goals:

(A) More efficient water use at the farm level.

(B) Conjunctive use of groundwater.

(C) Appropriate increase of groundwater recharge.

(D) Reduction in problem drainage.

(E) Improved management of environmental resources.

(F) Effective management of all water sources throughout the year by adjusting seasonal pricing structures based on current conditions.

(5) Expand line or pipe distribution systems and construct regulatory reservoirs to increase distribution system flexibility and capacity, decrease maintenance, and reduce seepage.

(6) Increase flexibility in water ordering by, and delivery to, water customers within operational limits.

(7) Construct and operate supplier spill and tailwater recovery systems.

(8) Increase planned conjunctive use of surface water and groundwater within the supplier service area.

(9) Automate canal control structures.

(10) Facilitate or promote customer pump testing and evaluation.

(11) Designate a water conservation coordinator who will develop and implement the water management plan and prepare progress reports.

(12) Provide for the availability of water management services to water users.

These services may include, but are not limited to, all of the following:

(A) On-farm irrigation and drainage system evaluations.

(B) Normal year and real-time irrigation scheduling and crop evapotranspiration information.

(C) Surface water, groundwater, and drainage water quantity and quality data.

(D) Agricultural water management educational programs and materials for farmers, staff, and the public.

(13) Evaluate the policies of agencies that provide the supplier with water to identify the potential for institutional changes to allow more flexible water deliveries and storage.

(14) Evaluate and improve the efficiencies of the supplier's pumps.

(d) Agricultural water suppliers shall include in the agricultural water management plans required pursuant to Part 2.8 (commencing with Section 10800) 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.

Appendix C – Text of California Water Code Pertaining to Agriculture Water Management Plans

Chapter 3. Agricultural Water Management Plans

CWC Section 10825. (a) It is the intent of the Legislature in enacting this part to allow levels of water management planning commensurate with the numbers of customers served and the volume of water supplied.

(b) This part does not require the implementation of water use efficiency programs or practices that are not locally cost effective.

(Amended by Stats. 2018, Ch. 15, Sec. 14. (AB 1668) Effective January 1, 2019.)

10826.

An agricultural water management plan shall be adopted in accordance with this chapter. The plan shall do all of the following:

(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.

(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, including all of the following:

(A) Agricultural.

(B) Environmental.

(C) Recreational.

(D) Municipal and industrial.

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

(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 agricultural water suppliers in developing and quantifying components necessary to develop a water budget.

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

(e) Describe previous water management activities.

(f) 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.

(g) Include in the plan information regarding efficient water management practices required pursuant to Section 10608.48.

(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.

(Amended by Stats. 2018, Ch. 15, Sec. 15. (AB 1668) Effective January 1, 2019.)

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. The drought plan shall contain both of the following:

(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 water supplies during drought conditions.

(C) A description of other actions planned for implementation 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.

(Added by Stats. 2018, Ch. 15, Sec. 16. (AB 1668) Effective January 1, 2019.)

10827.

Agricultural water suppliers that are members of the Agricultural Water Management Council, and that submit water management plans to that council in accordance with the "Memorandum of Understanding Regarding Efficient Water Management Practices By Agricultural Water Suppliers In California," dated January 1, 1999, may submit the water management plans identifying water demand management measures currently being implemented, or scheduled for implementation, to satisfy the requirements of Section 10826.

(Added by Stats. 2009, 7th Ex. Sess., Ch. 4, Sec. 4. (SB 7 7x) Effective February 3, 2010.)

10828.

(a) Agricultural water suppliers that are required to submit water conservation plans to the United States Bureau of Reclamation pursuant to either the Central Valley Project Improvement Act (Public Law 102-575) or the Reclamation Reform Act of 1982, or both, may submit those water conservation plans to satisfy the requirements of Section 10826, if both of the following apply:

(1) The agricultural water supplier has adopted and submitted the water conservation plan to the United States Bureau of Reclamation within the previous four years.

(2) The United States Bureau of Reclamation has accepted the water conservation plan as adequate.

(b) This part does not require agricultural water suppliers that are required to submit water conservation plans to the United States Bureau of Reclamation pursuant to either the Central Valley Project Improvement Act (Public Law 102-575) or the Reclamation Reform Act of 1982, or both, to prepare and adopt water conservation plans according to a schedule that is different from that required by the United States Bureau of Reclamation.

(Added by Stats. 2009, 7th Ex. Sess., Ch. 4, Sec. 4. (SB 7 7x) Effective February 3, 2010.)

10829.

An agricultural water supplier may satisfy the requirements of this part by adopting an urban water management plan pursuant to Part 2.6 (commencing with Section 10610) or by participation in areawide, regional, watershed, or basinwide water management planning if those plans meet or exceed the requirements of this part.

(Added by Stats. 2009, 7th Ex. Sess., Ch. 4, Sec. 4. (SB 7 7x) Effective February 3, 2010.)

ARTICLE 3. Adoption and Implementation of Plans [10840 - 10845]

(Article 3 added by Stats. 2009, 7th Ex. Sess., Ch. 4, Sec. 4.)

10840.

Every agricultural water supplier shall prepare its plan pursuant to Article 2 (commencing with Section 10825).

(Added by Stats. 2009, 7th Ex. Sess., Ch. 4, Sec. 4. (SB 7 7x) Effective February 3, 2010.)

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. A privately owned agricultural water supplier shall provide an equivalent notice within its service area and shall provide a reasonably equivalent opportunity that would otherwise be afforded through a public hearing process for interested parties to provide input on the plan. After the hearing, the plan shall be adopted as prepared or as modified during or after the hearing.

(Added by Stats. 2009, 7th Ex. Sess., Ch. 4, Sec. 4. (SB 7 7x) Effective February 3, 2010.)

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.

(Added by Stats. 2009, 7th Ex. Sess., Ch. 4, Sec. 4. (SB 7 7x) Effective February 3, 2010.)

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 (b) of Section 10820.

(b) An agricultural water supplier shall submit a copy of its plan to each of the following entities:

(1) The department.

(2) Any city, county, or city and county within which the agricultural water supplier provides water supplies.

(3) Any groundwater management entity within which jurisdiction the agricultural water supplier extracts or provides water supplies.

(4) The California State Library.

(Amended by Stats. 2018, Ch. 15, Sec. 17. (AB 1668) Effective January 1, 2019.)

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.

(b) An agricultural water supplier that does not have an Internet Web site shall submit to the department, not later than 30 days after the date of adopting its plan, a copy of the adopted plan in an electronic format. The department shall make the plan available for public review on the department's Internet Web site.

(Added by Stats. 2009, 7th Ex. Sess., Ch. 4, Sec. 4. (SB 7 7x) Effective February 3, 2010.)

10845.

(a) The department shall prepare and submit to the Legislature, on or before April 30, 2022, and thereafter in the years ending in seven and years ending in two, a report summarizing the status of the plans adopted pursuant to this part.

(b) The report prepared by the department shall identify the outstanding elements of any plan adopted pursuant to this part. The report shall include an evaluation of the effectiveness of this part in promoting efficient agricultural water management practices and recommendations relating to proposed changes to this part, as appropriate.

(c) The department shall provide a copy of the report to each agricultural water supplier that has submitted its plan to the department. The department shall also prepare reports

and provide data for any legislative hearing designed to consider the effectiveness of plans submitted pursuant to this part.

(d) This section does not authorize the department, in preparing the report, to approve, disapprove, or critique individual plans submitted pursuant to this part.

(Amended by Stats. 2018, Ch. 15, Sec. 18. (AB 1668) Effective January 1, 2019.)

CHAPTER 4. Miscellaneous Provisions [10850 - 10853]

(Chapter 4 added by Stats. 2009, 7th Ex. Sess., Ch. 4, Sec. 4.)

10850.

(a) Any action or proceeding to attack, review, set aside, void, or annul the acts or decisions of an agricultural water supplier on the grounds of noncompliance with this part shall be commenced as follows:

(1) An action or proceeding alleging failure to adopt a plan shall be commenced within 18 months after that adoption is required by this part.

(2) Any action or proceeding alleging that a plan, or action taken pursuant to the plan, does not comply with this part shall be commenced within 120 days after submitting the plan or amendments to the plan to entities in accordance with Section 10844 or the taking of that action.

(b) In an action or proceeding to attack, review, set aside, void, or annul a plan, or an action taken pursuant to the plan by an agricultural water supplier, on the grounds of noncompliance with this part, the inquiry shall extend only to whether there was a prejudicial abuse of discretion. Abuse of discretion is established if the agricultural water supplier has not proceeded in a manner required by law, or if the action by the agricultural water supplier is not supported by substantial evidence.

(Added by Stats. 2009, 7th Ex. Sess., Ch. 4, Sec. 4. (SB 7 7x) Effective February 3, 2010.)

10851.

The California Environmental Quality Act (Division 13 (commencing with Section 21000) of the Public Resources Code) does not apply to the preparation and adoption of plans pursuant to this part. This part does not exempt projects for implementation of the plan or for expanded or additional water supplies from the California Environmental Quality Act.

(Added by Stats. 2009, 7th Ex. Sess., Ch. 4, Sec. 4. (SB 7 7x) Effective February 3, 2010.)

10852.

An agricultural water supplier is not eligible for a water grant or loan awarded or administered by the state unless the supplier complies with this part.

(Added by Stats. 2009, 7th Ex. Sess., Ch. 4, Sec. 4. (SB 7 7x) Effective February 3, 2010.)

10853.

An agricultural water supplier that provides water to less than 25,000 irrigated acres, excluding recycled water, shall not be required to implement the requirements of this part or Part 2.55 (commencing with Section 10608) unless sufficient funding has specifically been provided to that water supplier for these purposes.

(Amended by Stats. 2010, Ch. 328, Sec. 236. (SB 1330) Effective January 1, 2011.)

Efficient Water Management Practices

Agricultural Suppliers Water Code Section 10608.48

10608.48.

(a) On or before July 31, 2012, an agricultural water supplier shall implement efficient water management practices pursuant to subdivisions (b) and (c).

(b) Agricultural water suppliers shall implement all of the following critical efficient management practices:

(1) 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).

(2) Adopt a pricing structure for water customers based at least in part on quantity delivered.

(c) Agricultural water suppliers shall implement additional efficient management practices, including, but not limited to, practices to accomplish all of the following, if the measures are locally cost effective and technically feasible:

(1) Facilitate alternative land use for lands with exceptionally high-water duties or whose irrigation contributes to significant problems, including drainage.

(2) Facilitate use of available recycled water that otherwise would not be used beneficially, meets all health and safety criteria, and does not harm crops or soils.

(3) Facilitate the financing of capital improvements for on-farm irrigation systems.

(4) Implement an incentive pricing structure that promotes one or more of the following goals:

(A) More efficient water use at the farm level.

(B) Conjunctive use of groundwater.

(C) Appropriate increase of groundwater recharge.

(D) Reduction in problem drainage.

(E) Improved management of environmental resources.

(F) Effective management of all water sources throughout the year by adjusting seasonal pricing structures based on current conditions.

(5) Expand line or pipe distribution systems and construct regulatory reservoirs to increase distribution system flexibility and capacity, decrease maintenance, and reduce seepage.

(6) Increase flexibility in water ordering by, and delivery to, water customers within operational limits.

(7) Construct and operate supplier spill and tailwater recovery systems.

(8) Increase planned conjunctive use of surface water and groundwater within the supplier service area.

(9) Automate canal control structures.

(10) Facilitate or promote customer pump testing and evaluation.

(11) Designate a water conservation coordinator who will develop and implement the water management plan and prepare progress reports.

(12) Provide for the availability of water management services to water users. These services may include, but are not limited to, all of the following:

(A) On-farm irrigation and drainage system evaluations.

(B) Normal year and real-time irrigation scheduling and crop evapotranspiration information.

(C) Surface water, groundwater, and drainage water quantity and quality data.

(D) Agricultural water management educational programs and materials for farmers, staff, and the public.

(13) Evaluate the policies of agencies that provide the supplier with water to identify the potential for institutional changes to allow more flexible water deliveries and storage.

(14) Evaluate and improve the efficiencies of the supplier's pumps.

(d) Agricultural water suppliers shall include in the agricultural water management plans required pursuant to Part 2.8 (commencing with Section 10800) 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.

(e) The department shall require information about the implementation of efficient water management practices to be reported using a standardized form developed pursuant to Section 10608.52.

(f) An agricultural water supplier may meet the requirements of subdivisions (d) and (e) by submitting to the department a water conservation plan submitted to the United States Bureau of Reclamation that meets the requirements described in Section 10828.

(g) On or before December 31, 2013, December 31, 2016, and December 31, 2021, the department, in consultation with the board, shall submit to the Legislature a report on the agricultural efficient water management practices that have been implemented and are planned to be implemented and an assessment of the manner in which the implementation of those efficient water management practices has affected and will affect agricultural operations, including estimated water use efficiency improvements, if any.

(h) The department may update the efficient water management practices required pursuant to subdivision (c), in consultation with the Agricultural Water Management Council, the United States Bureau of Reclamation, and the board. All efficient water management practices for agricultural water use pursuant to this chapter shall be adopted or revised by the department only after the department conducts public hearings to allow participation of the diverse geographical areas and interests of the state.

(i) (1) The department shall adopt regulations that provide for a range of options that agricultural water suppliers may use or implement to comply with the measurement requirement in paragraph (1) of subdivision (b). (2) The initial adoption of a regulation authorized by this subdivision is deemed to address an emergency, for purposes of Sections 11346.1 and 11349.6 of the Government Code, and the department is hereby

exempted for that purpose from the requirements of subdivision (b) of Section 11346.1 of the Government Code. After the initial adoption of an emergency regulation pursuant to this subdivision, the department shall not request approval from the Office of Administrative Law to readopt the regulation as an emergency regulation pursuant to Section 11346.1 of the Government Code.

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Appendix D – Comparison of SB X7-7 Water Code and Reclamation CVPIA (2018) Standard Criteria

	Water Code	**Reclamation CVPIA**
1	Code: Not Required (N/R)	N/R
	Chapter 3, Article 1, Section 10820(a) Except as provided in paragraph (2), an agricultural water supplier shall prepare and adopt an agricultural water management plan in the manner set forth in this chapter on or before December 31, 2012, and shall update that plan on December 31, 2015. **Chapter 3, Article 2, Section 10820** (A) The agricultural water management plan shall be updated on or before April 1, 2021, and thereafter on or before April 1 in the years ending in six and one. The plan shall satisfy the requirements of Section 10826.	**Section 210 of Reclamation Reform Act of 1982 (RRA); Central Valley Project Improvement Act of 1992 (Public Law 102-575)** Requires federal contractors to prepare and submit plans every 5 years
2	**Section 10826.** An agricultural water management plan shall be adopted in accordance with this chapter. The plan shall do all of the following: (a) Describe the agricultural water supplier and the service area, including all of the following:	**Section 1** Description of the District
3	(1) Size of the service area	**Section 1A** History
4	(2) Location of the service area and its water management facilities	**Section 1B** Location and facilities
5	(3) Terrain and Soils	**Section 1C** Topography and Soils
6	(4) Climate	**Section 1D** Climate

	Water Code	**Reclamation CVPIA**
7	**N/R**	**Section 1E** Natural and Cultural Resources
8	(5) Operating rules and regulations	**Section 1F** Operating Rules and Regulations
9	(6) Water delivery measurements or calculations	**Section 1G** Water Measurement, Pricing and Billing
10	(7) Water rate schedules and billing	**Section 1G** Water Measurement, Pricing and Billing
11	(8) Water shortage allocation policies	**Section 1H** Water Shortage Allocation Policies
12	(b) Describe the quantity and quality of water resources of the agricultural water supplier, including all of the following:	**Section 2** Inventory water resources
13	(1) Surface water supply	**Section 2A** Surface Water Supply
14	(2) Groundwater supply	**Section 2B** Groundwater Supply
15	(3) Other water supplies	**Section 2C** Other Water Supplies
16	(4) Source water quality monitoring practices	**Section 2D** Source Water Quality Monitoring Practices
17	(5) Water uses within the agricultural water supplier's service area, including all of the following:	**Section 2E** Water Uses with the District
18	(A) Agricultural	**Section 2E1** Agricultural
19	(B) Environmental	**N/R**
20	(C) Recreational	**N/R**
21	(D) Municipal and industrial	**Section 2E2** Urban
22	(E) Groundwater recharge	**Section 2E3** Groundwater Management Plan/Banking Programs

	Water Code	**Reclamation CVPIA**
23	**N/R**	**Section 2E4** Transfers, Exchanges, Rescheduling, Purchases, or Sales
24	**N/R**	Section 2E5 Other
25	**N/R**	**Section 2F** Outflow from the District
26	**N/R**	**Section 2G** Water Accounting
27	**N/R**	**Section 2G1** Quantify Contractor's Water Supplies
28	**N/R**	**Section 2G2** Quantify Water Used
29	(c) Annual water budget, quantifying inflow and outflow supply	**Section 2G3** Overall Water Budget
30	(d) Analysis of climate change effects on future water supplies	**N/R**
31	(e) Describe previous water management activities	**N/R**
32	(f) Identify Water Management Objectives (WMOs)	**N/R**
33	(g) Efficient Water Management practices pursuant to Section 10608.48	**Section 3A** Critical BMPs for Agricultural Contracts
	(h) Quantify agricultural water use efficiency, employing one of four WUE quantification methods	**N/R**
34	**Section 10608.48.** (a) On or before July 31, 2012, an agricultural water supplier shall implement efficient water management practices pursuant to subdivisions (b) and (c). (b) Agricultural water suppliers shall implement all of the following critical efficient management practices:	**Section 3A** Critical BMPs for Agricultural Contractors
36	**Section 10608.48 (a)(1)** Measure the volume of water delivered to customers with sufficient accuracy to comply with	**Section 3A1** Water Measurement

	Water Code	**Reclamation CVPIA**
	subdivision (a) of Section 531.10 and to implement paragraph (2)	
37	(2) Adopt a pricing structure for water customers based at least in part on quantity delivered	**Section 3A4** Pricing Structure
38	(c) Agricultural water suppliers shall implement additional efficient management practices, including, but not limited to, practices to accomplish all of the following, if the measures are locally cost effective and technically feasible:	**Section 3B** Exemptible BMPs for Agricultural Contractors
39	(1) Facilitate alternative land use for lands with exceptionally high water duties or whose irrigation contributes to significant problems, including drainage	**Section 3B1** Facilitate Alternative Land Use
40	(2) Facilitate use of available recycled water that otherwise would not be used beneficially, meets all health and safety criteria, and does not harm crops or soils	**Section 3B2** Facilitate use of available recycled water that otherwise would not be used beneficially, meets all health and safety criteria, and does not cause harm to crops or soils
41	(3) Facilitate the financing of capital improvements for on-farm irrigation systems	**Section 3B3** Facilitate the financing of capital improvements for on-farm irrigation systems
43	(4) Implement an incentive pricing structure that promotes one or more of the following goals:	**Section 3B4** Incentive Pricing
44	(A) More efficient water use at the farm level	**N/R**
45	(B) Conjunctive use of groundwater	**Section 3B9** Optimize Conjunctive Use
46	(C) Appropriate increase of groundwater recharge	(see above)

	Water Code	**Reclamation CVPIA**
47	(D) Reduction in problem drainage	**N/R**
48	(E) Improved management of environmental resources	**N/R**
49	(F) Effective management of all water sources throughout the year by adjusting seasonal pricing structures based on current conditions	**N/R**
50	(5) Expand line or pipe distribution systems, and construct regulatory reservoirs to increase distribution system flexibility and capacity, decrease maintenance, and reduce seepage	**Section 3B5** Canal lining/Piping Regulatory Reservoirs
51	(6) Increase flexibility in water ordering by, and delivery to, water customers within operational limits	**Section 3B6** Increase flexibility in water ordering by, and delivery to, water users
52	(7) Construct and operate supplier spill and tailwater recovery systems	**Section 3B7** Construct and operate spill and tailwater recovery systems
53	**N/R**	**Section 3B8** Plan to Measure Outflow
54	(8) Increased planned conjunctive use of surface water and groundwater within the supplier service area	**Section 3B9** Optimize Conjunctive Use
55	(9) Automate canal control structures	**Section 3B10** Automate Distribution and/or Drainage System Structures
56	(10) Facilitate or promote customer pump testing and evaluation	**Section 3B11** Facilitate or Promote Water User Pump Testing and Evaluation
57	**N/R**	**Section 3B12** Mapping (GIS)
	N/R	**Section 3C** Five Year Budget

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58	(11) Designate a water conservation coordinator who will develop and implement the water management plan and prepare progress reports	**Section 3A2** Designate the Water Conservation Coordinator
59	(12) Provide for the availability of water management services to water users. These services may include, but are not limited to, all of the following:	**Section 3A3** Provide or support the availability of water management services to water users
60	(A) On-farm irrigation and drainage system evaluations	**Section 3A3(1)** On-farm evaluations
61	(B) Normal year and real-time irrigation scheduling and crop evapotranspiration information	**Section 3a3(2)** Normal year and real-time irrigation scheduling and crop ET information
62	(C) Surface water, groundwater, and drainage water quantity and quality data	**Section 3A3(3)** Surface, ground, and drainage water quantity and quality data
63	(D) Agricultural water management educational programs and materials for farmers, staff, and the public	**Section 3A3(4)** Agricultural water management educational programs and material for farmers and staff, and the public
65	(13) Evaluate the policies of agencies that provide the supplier with water to identify the potential for institutional changes to allow more flexible water deliveries and storage	**Section 1I** Evaluate policies of regulatory agencies affecting the contractor and identify policies that inhibit good water management
66	(14) Evaluate and improve the efficiencies of the supplier's pumps	**Section 3A5** Evaluate and improve efficiencies of contractor's pumps
68	**Section 10608.48(d)** Agricultural water suppliers shall include in the AWMPs a report on which EWMPs have been implemented and are planned to be implemented, an estimate of the water use efficiency improvements since the last report, and an estimate of the water use efficiency improvements estimated to occur five and 10 years in the future.	**Section 3B Exemptible BMPs for Agricultural Contractors** Each contractor shall implement the following BMPs, unless the contractor has an approved exemption from Reclamation. The contractor is required to follow the exemption process (see Addendum

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	Submit documentation if an EWMPs is not locally cost effective or technically feasible.	A) to justify exemptions. Refer to Addendum B for example justifications for each exemptible BMP. Document the exemption in this section.
69	**Section10608(e)** The data shall be reported using a standardized form developed pursuant to Section10608.52	**N/R**
70	**Section 10841 (Plan Review)** 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. A privately owned agricultural water supplier shall provide an equivalent notice within its service area and shall provide a reasonably equivalent opportunity that would otherwise be afforded through a public hearing process for interested parties to provide input on the plan. After the hearing, the plan shall be adopted as prepared or as modified during or after the hearing	Reclamation releases the plans for public comment after they are received from the water supplier and deemed adequate.
72	**Section 10608.48(g)** on or before December 31, 2013, and December 31, 2016, and December 31, 2021, DWR, in consultation with the Water Board, shall submit to the Legislature a report on the agricultural efficient water management practices that have been implemented and are planned to be implemented, and an assessment how those measures have affected and will affect agricultural operations, and	**N/R** – No Congressional report required. A **Ten-year** progress report was issued in 2004 for years 1993-2002 and covered all aspects of CVPIA.

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	estimated water use efficiency improvements, if any. **Section 10845** DWR shall prepare and submit to the Legislature, on or before December 31, 2013, and thereafter in the years ending in six and one, a report summarizing the status of the plans adopted.	
73	**Section 10608.56(b)** On and after July 1, 2013, an agricultural water supplier is not eligible for a water grant or loan awarded or administered by the state unless the supplier complies with this part.	**Consequences of Non-Compliance (2017 Standard Criteria)** An adequate Plan must be in place before Reclamation will consider extending any discretionary benefits, such as financial and technical assistance. Consequences of noncompliance may include but are not limited to ineligibility for any Reclamation grants.