



DEPARTMENT OF WATER RESOURCES

AGRICULTURAL WATER MANAGEMENT PLAN

WORKSHOP

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By

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Topics of the Presentation

- Overview of Revised 2015 AWMP Guidebook
- Water Code and Executive Order Requirements
- Preparing an Agriculture Water Management Plan
 - Efficient Water Management Practices (EWMPs)
 - Agriculture Water Measurement & Volumetric Pricing

Changes to 2015 AWMP Guidebook

- Removal of Agricultural Water Management Council MOU process as an AWMP as the Council dissolved in spring 2013.
- Addition of Governor Brown's Executive Order B-29-15 (April 1, 2015)

Guidebook Organization

Part 1	<ul style="list-style-type: none">• Introduction
Part 2	<ul style="list-style-type: none">• AWMP Preparation Checklist
Part 3	<ul style="list-style-type: none">• AWMP Guidance
Part 4	<ul style="list-style-type: none">• USBR CVPIA/RRA Process Guidance
Part 5	<ul style="list-style-type: none">• Water Measurement Documentation
Appendices A1 & A2	AWMP Template & worksheets



Who Prepares an AWMP?

- Agricultural water suppliers providing water to 25,000 or more irrigated acres (Water Code)
- Agricultural water suppliers providing water to 10,000 to 25,000 irrigated acres (Executive Order B-29-15)
- Includes Bureau of Reclamation water suppliers (RRA & CVPIA)
- Those that do not comply with Water Code are not eligible for State grants or loans

Important Dates

**December
31
2015**

- Water suppliers \geq 25,000 acres adopt 2015 Plan; submit to DWR within 30 days

**July 1
2016**

- Water suppliers \geq 10,000 - 25,000 acres submit to DWR per Executive Order

Compliance Options

Option 1

- **SBX7-7 AWMP**

Option 2

- **USBR CVPIA/RRA** water conservation plan + additional documentation for Ag. Water Measurement Regulation
- WCPs up to 4 years old are acceptable

Contents of Plan

3.1 - Plan Preparation and Adoption (p 23)

- A. Description of Previous Water Management Activities (p 24)
- B. Coordination Activities (pp 24-26)
- C. Plan Adoption and Submittal (pp 26-29)
- D. Plan Implementation (p 30)

Contents of Plan

3.2 Description of the Agricultural Water Supplier and Service Area (p 31)

A. Physical Characteristics - Description of:

1. Service area size (pp 31-32)
2. Location of the service area and water management facilities (p 32)
3. Terrain and soils (p 33)
4. Climate (p 33-34)

Contents of Plan

3.2 Description of the Agricultural Water Supplier and Service Area (p 34)

B. Operational Characteristics - Description of:

1. Operating rules and regulations (p 34)
2. Water delivery measurements or calculations (pp 34-35)
3. Water rate schedules and billing (p 35)
4. Drought Management Plans and Water shortage allocation policies (p 35-36)

Contents of Plan

3.3 - Description of the Quantity of Water Uses of the Agricultural Water Supplier (Demands) (p 36)

- A. Agricultural (p 39)
- B. Environmental (p 39-40)
- C. Recreational (p 40)
- D. Municipal and industrial (p 40)
- E. Groundwater recharge (p 40)
- F. Transfers and exchanges (p 41)
- G. Other water uses (p 41)

► Quantification of water supplies and demands for 2013, 2014, and 2015

Contents of Plan

3.4 - Description of Quantity and Quality of the Water Resources of the Agricultural Water Supplier (p 41)

A. Quantity

1. Surface water supply (p 43)
2. Groundwater supply (p 44)
3. Other water supplies (p 45)
4. Drainage from the water supplier's service area (p 45)

► Quantification of water supplies and demands for 2013, 2014, and 2015

Contents of Plan

B. Quality (p 46)

1. Surface water supply (p 47)
2. Groundwater supply (p 47-48)
3. Other water supplies (p 48)
4. Drainage from the water supplier's service area (p 48)

C. Water Quality Monitoring Practices (pp 48-49)

1. Source water
2. Drainage water

Contents of Plan

3.5 - Water Accounting and Water Supply Reliability (p 49)

A. Quantifying the Water Supplier's Water Supplies (p 50)

1. Agricultural Water Supplier Water Quantities
2. *Other Water Sources Quantities*

Contents of Plan

3.5 - Water Accounting and Water Supply Reliability

B. Quantification/Tabulation of Water Uses (p 51)

Water delivered for agriculture

- *Surface water*
- *Groundwater*
- *Recycled water*

Contents of Plan

B. Quantification/Tabulation of Water Uses (cont.)

- *Crop consumptive use of water (p 52)*
- *Amount of water used for leaching, if known (p 52)*
- *Amount of water used for other cultural practices (e.g., seedbed preparation, climate control), if known (p 52)*

Contents of Plan

C. Overall Water Budget (p 54)

- *The overall amount of surface water and groundwater supplies, effective precipitation, and transferred water supplies delivered into the service area.*
- *How much is used for all purposes, including amounts delivered for environmental uses and inadvertent drainage from agricultural areas.*
- *How much leaves the service area through surface drainage.*

► Quantification of water supplies and demands for 2013, 2014, and 2015

Contents of Plan

D. Water Supply Reliability (pp 54-55)

- *Conveyance infrastructure reliability*
- *Water storage reliability*
- *Contracted water reliability*
- *Natural reliability (such as hydrologic and climate uniformity)*
- *Land use alterations (these could affect the water demands, water supply sources, groundwater recharge locations, and other conditions)*
- *Pertinent regulations*

Contents of Plan

3.6 - Climate Change (pp 55-58)

- Potential impacts to agriculture and water management
- Potential decrease in supply, increase in demand
- Extreme weather events
- Sea level rise

Contents of Plan

3.7 - Water Use Efficiency Information (p 58)

- A. EWMP Implementation and Reporting
- B. Documentation For Non-Implemented EWMPs



Efficient Water Management Practices

(Water Code)

- Required for all agricultural water suppliers meeting size criteria identified above
- Critical EWMPs (p 60)
- Other (conditional) EWMPs (pp 61-64)



Critical EWMP 1

(p 60)

1. Agriculture Water Measurement: measure the volume of water delivered to customers with sufficient accuracy
 - Water measurement regulation only applies to $\geq 25,000$ ac suppliers unless funding is supplied
 - Aggregated farm-gate delivery reporting is adequate to report in AWMP for 10,000-25,000 ac water suppliers



Critical EWMP 2

(p 60)

2. Volume-Based Pricing Structure: adopt a pricing structure for water customers based at least in part on quantity delivered



Non-Critical EWMPs

1. Facilitate alternative land use for lands with exceptionally high water duties or whose irrigation contributes to significant problems, including drainage (p 61)
2. Facilitate use of available recycled water (p 61)
3. Facilitate the financing of capital improvements for on-farm irrigation systems (p 61)



Non-Critical EWMPs

4. Implement an incentive pricing structure that promotes one or more of the following goals (p 61):
 - 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.



Non-Critical EWMPs

5. Expand line or pipe distribution systems, and construct regulatory reservoirs to increase distribution system flexibility and capacity, decrease maintenance, and reduce seepage (p 62)
6. Increase flexibility in water ordering by, and delivery to, water customers within operational limits (p 62)
7. Construct and operate supplier spill and tailwater recovery systems (p 62)



Non-Critical EWMPs

8. Increase planned conjunctive use of surface water and groundwater within the supplier service area (p 62)
9. Automate canal control structures (p 62)
10. Facilitate or promote customer pump testing and evaluation (p 62)
11. Designate a water conservation coordinator (p 62)



Non-Critical EWMPs

12. Provide for the availability of water management services to water users (p 62)
 - 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.



Non-Critical EWMPs

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 (p 63)
14. Evaluate and improve the efficiencies of the supplier's pumps (p 63)

EWMPs Comparison

SBX7-7 EWMP	USBR BMP
Critical	
1 – Water Measurement	Critical 1
2 - Volume-Based Pricing	Critical 4
Conditional	
1 – Alternate Land Use	Exemptible 1
2 – Recycled Water Use	Exemptible 2
3 – On-Farm Irrigation Capital Improvements	Exemptible 3
4 – Incentive Pricing Structure	Exemptible 4
5 – Infrastructure Improvements	Exemptible 5a Exemptible 5b

EWMPs Comparison (cont.)

SBX7-7 EWMP	USBR BMP
Conditional (<i>continued</i>)	
6 – Order/Delivery Flexibility	Exemptible 6
7 – Supplier Spill and Tailwater Systems	Exemptible 7
8 – Conjunctive Use	Exemptible 9
9 – Automated Canal Controls	Exemptible 10
10 – Customer Pump Test/Eval.	Exemptible 11
11 – Water Conservation Coordinator	Critical 2
12 – Water Management Services to Customers	Critical 3
13 – Identify Institutional Changes	--



EWMPs Reporting

Non-Federal Ag. Water Suppliers

Documentation in AWMP (pp 63-64):

- Provide detailed information that an EWMP is not locally cost-effective or technically feasible
- Provide cost estimates (including a budget)
- Explain why it is technically infeasible



EWMPs Reporting

Non-Federal Ag. Water Suppliers (Cont.)

Report in AWMP:

- EWMPs that have been implemented
- EWMPs planned to be implemented
- An estimate of the water use efficiency improvements that have occurred since the last report**
- An estimate of the water use efficiency improvements estimated to occur five to ten years**

EWMPs Reporting

Non-Federal Ag. Water Suppliers

Report of EWMPs				
EWMP No.	Description of EWMP Implemented	Estimate of Water Use Efficiency Improvements That Occurred Since Last Report*	EWMPs Planned	Estimated Water Use Efficiency Improvements 5-10 years in future
Critical EWMPs				
1				
2				
Conditionally Required EWMPs (locally cost-effective and technically feasible EWMPs)				
1				
2				
3				
4				
5				

EWMPs Reporting

Non-Federal Ag. Water Suppliers

Schedule to Implement EWMPs			
EWMP	Implementation Schedule	Staffing Requirements	Budget Allotment
Critical			
1 – Water Measurement			
2 - Volume-Based Pricing			
Conditional			
1 – Alternate Land Use			
2 – Recycled Water Use			
3 – On-Farm Irrigation Capital Improvements			
4 – Incentive Pricing Structure			
5 – Infrastructure Improvements			
6 – Order/Delivery Flexibility			
7 – Supplier Spill and Tailwater Systems			
8 – Conjunctive Use			
9 – Automated Canal Controls			
10 – Customer Pump Test/Eval.			

EWMPs Reporting

Non-Federal Ag. Water Suppliers

Non-Implemented EWMP Documentation				
EWMP #	Description	<i>(check one or both)</i>		Justification/Documentation*
		Technically Infeasible	Not Locally Cost-Effective	

Notes:
 *Justification/Documentation can include summary cost-benefit analysis or engineering determination with reference to the specific study/agency/engineer responsible for making that determination.



Water Measurement Regulation

(See Appendix B7)

- Required for agricultural water supplier providing water to 25,000 irrigated acres or more, excluding acres than only received recycled water
- Required for agricultural water supplier providing water to 10,000 to 25,000 irrigated acres, excluding acres than only received recycled water, if sufficient funding is available (Not subject of Executive Order)

Water Measurement for CVPIA/RRA Water Suppliers

- Federal 2011 or 2014 standard criteria or its future amendment that complies with State regulation

Velocity, flow rate, and volume

- If device measures flow rate:
 - Volume (cubic feet) = flow rate (cubic feet per second) x duration of delivery (seconds).
- If device measures velocity:
 - Volume (cubic feet) = velocity (feet per second) x cross-section flow area (square feet) x duration of delivery (seconds)

Agricultural Water Measurement

(p 75-78)

- Applicability: suppliers $\geq 25,000$ acres
- Range of options
 - a. Farm-gate standards (5, 10, 12%)
 - b. Lateral standards (5, 10, 12%)
- Certification and Performance Requirements
- Document submittal and retention
 - * DWR, QSA- Exempt

Measurement Options

Option a- Farm-Gate



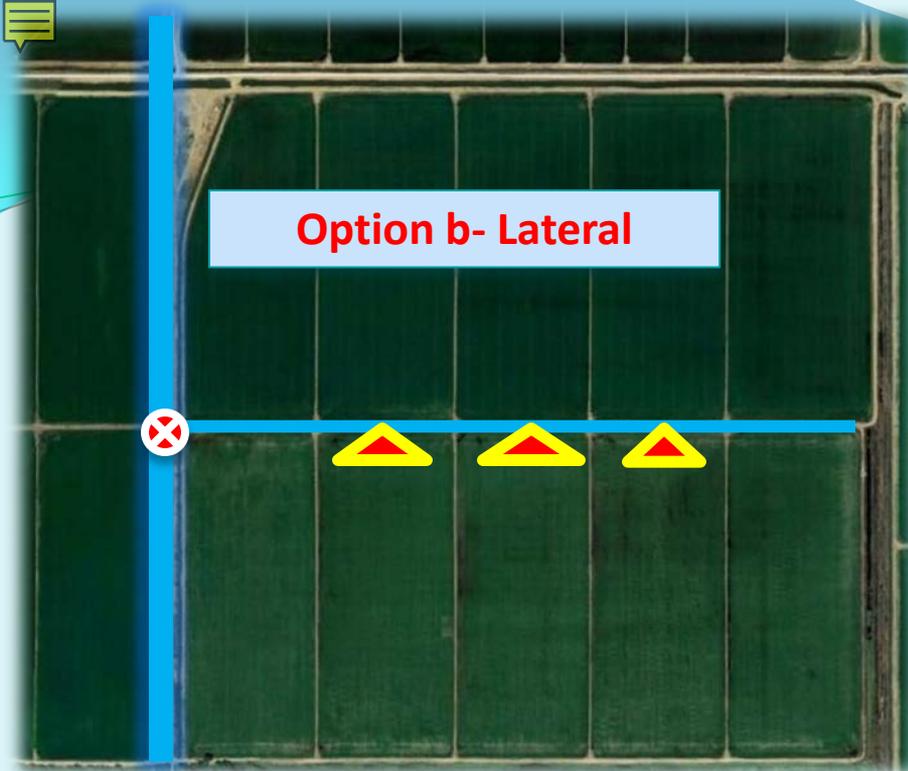
Measurement device at customer delivery point

Accuracy Standards:

Laboratory certified -5%

Non-lab certified- 10%

Field tested/inspected- 12%

An aerial photograph of a canal system. A vertical blue line on the left represents the main canal. A horizontal blue line branches off to the right, representing a lateral canal. A white circle with a red 'X' is placed on the main canal, indicating a measurement device. Three yellow triangles with red interiors are placed along the lateral canal, representing delivery points for customers. A white box with a red border is positioned above the lateral canal, containing the text 'Option b- Lateral'.

Option b- Lateral

 Measurement device upstream of multiple customers delivery points

Accuracy Standards:
Laboratory certified -5%
Non-lab certified- 10%
Field tested- 12%

Option b- Device Accuracy at Lateral (upstream of multiple customers)

- Provide documentation in AWMPs that:
 - No legal access to customers' farm-gatesOR
 - Large flow fluctuations exist (rice), and
 - Method is suitable for pricing structure, and
 - It accounts for differences in water use, and
 - Is adopted by the suppliers' board

Certification Requirements

(pp 65-66)

- Existing devices:
 - Field analysis/inspection
- New/replacement devices
 - Laboratory certification
 - Non-laboratory certification

Performance Requirements

- Installation and O&M follow Best Professional Practices
- Repair and replace if the device is non-compliant

Document Retention

- Submit documentation in Agricultural Water Management Plans
 - Description of best professional practices
 - Compliance with option b
 - Plan and schedule of analysis or if repair/replacements not completed
 - Irrigation acreage, time, frequency of measurement, and volumetric calculations
 - Water Supplier retain records for two cycles of AWMP (or 10 years)

Questions?



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