



Oakdale Irrigation District Agricultural Water Management Plan Overview of 2020 Update

March 2, 2021



Outline

- Agricultural Water Management Plan (AWMP) Overview
 - Regulatory Context, AWMP Contents, Adoption Process
- Water Budget Analysis and Summary
- Efficient Water Management Practice (EWMP) Status and Positions
- Water Resources Plan Implementation Status
- Questions and Discussion



Regulatory Context (AB 3616 and SBx7-7)

- AB 3616 - Agricultural Water Suppliers Efficient Water Management Practices Act (1990)
 - Voluntary preparation of AWMPs
 - Initial OID AWMP adopted in 2005
- SBx7-7 – Water Conservation Act of 2009
 - AWMP mandatory for suppliers over 25,000 acres
 - Includes two critical mandatory EWMPs
 - Delivery measurement and volumetric pricing requirements
 - Includes additional conditional EWMPs
 - Non-compliance results in ineligibility for State water grants and loans



Regulatory Context (AB 1668)

- AB 1668 – Water Management Planning Legislation
 - Enacted in 2018
 - Requires inclusion of annual water budget in AWMP*
 - Identify water management objectives and quantify water use efficiency
 - Include Drought Management Plan (DMP)**
 - Modifies AWMP adoption deadline to 4/1/21 and every five years thereafter

*A water budget was already included as an important component of prior AWMPs.

**A DMP was already included in the 2015 Plan per Executive Order B-29-15.



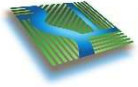
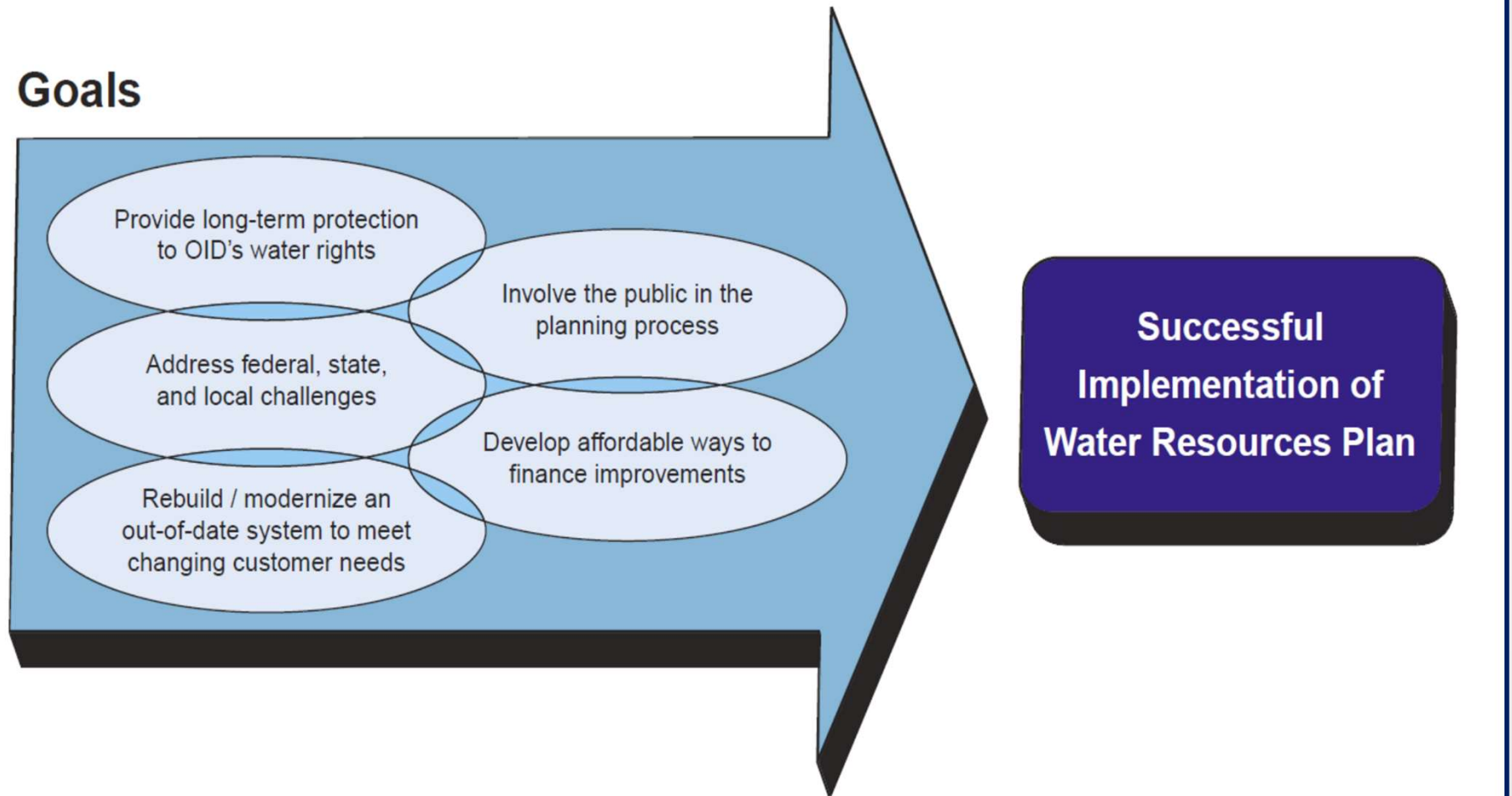
AWMP Contents

- Background and Description of Service Area
 - History, Distribution System, Climate, Operations, Water Rates, etc.
- Inventory of Water Supplies
 - Surface Water, Groundwater, Other Water Supplies, Water Quality
- Water Budget
 - Water Uses, Water Accounting, Water Supply Reliability, Water Management Objectives, Water Use Efficiency, etc.
- Climate Change Evaluation
- Description of EWMP Implementation
 - 2 Critical (Mandatory) EWMPs, 14 Additional (Conditional) EWMPs
- Water Resources Plan (WRP) Implementation Review



OID Water Resources Plan

Goals



DAVIDS
ENGINEERING, INC.

2020 AWMP Update Adoption Process

- Provide AWMP draft for public review (**February 2**)
- Set hearing date, notify counties and cities of AWMP update, publish notice of AWMP update in Oakdale Leader (**February**)
- Hold public hearing (**March 2**)
- Consider adoption at Board meeting (**March 2**)
- Make final adopted plan available (**Within 30 days of adoption**)
 - Send to Department of Water Resources
 - Send to counties, cities, and GSAs
 - Send to California State Library
 - Post on Internet



AWMP Results

Water Budget Analysis and Results



What is a Water Budget?

- Complete accounting of all water flowing into and out of the district over a specified period (months or years)
- Basic accounting principle:
$$\text{Inflow} - \text{Outflow} \pm \text{Change in Storage} = 0$$
- Same as a checking account:
$$\text{Deposits} - \text{Withdrawals} \pm \text{Change in Balance} = 0$$



Water Budget Benefits

- Provide insights into water management
- Assess water supply adequacy and conservation opportunities
- Assess water measurement and data management practices and opportunities
- Evaluate exchanges with underlying groundwater basin and demonstrate sustainable management

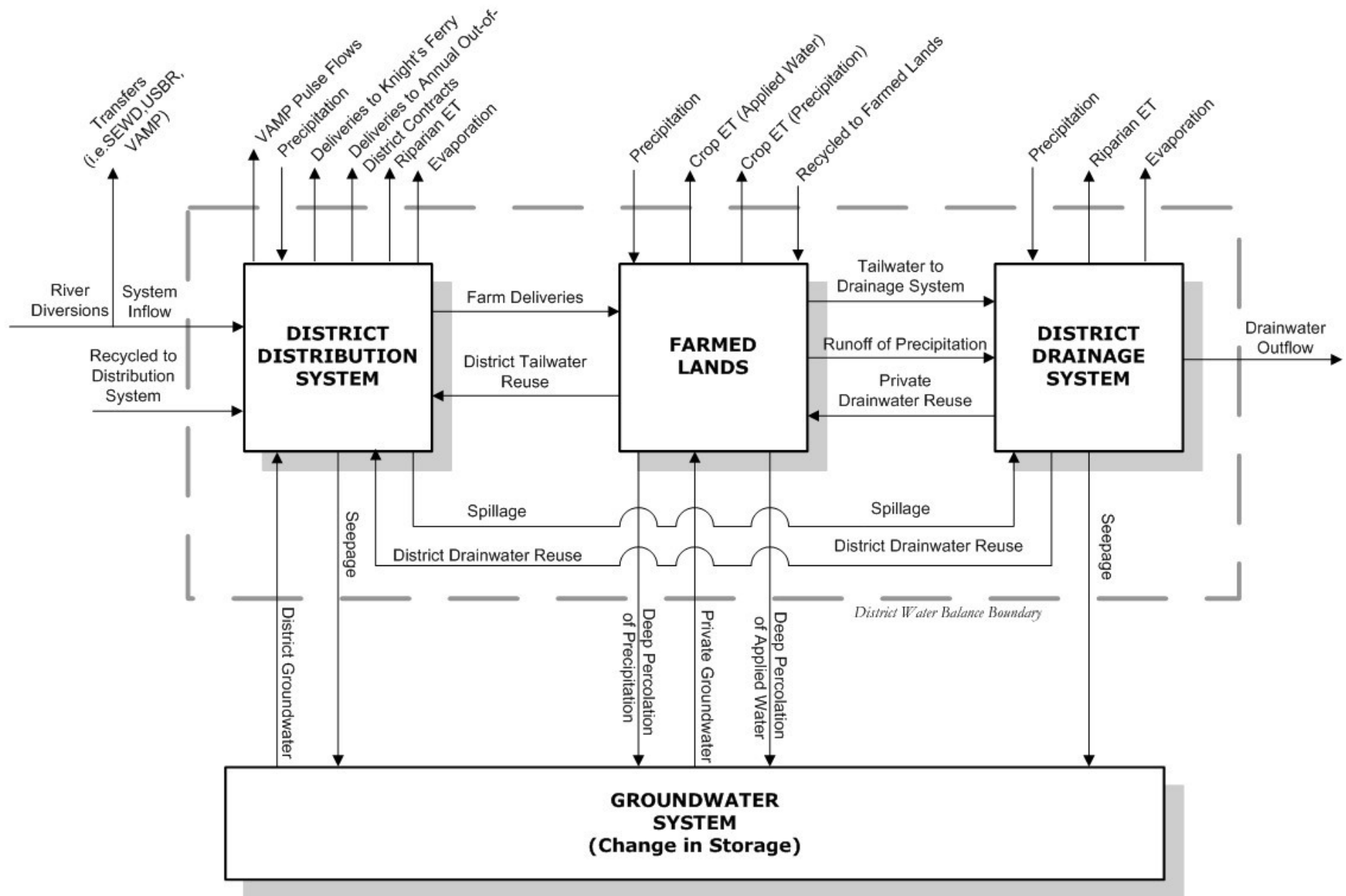


OID Water Budget

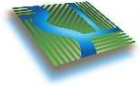
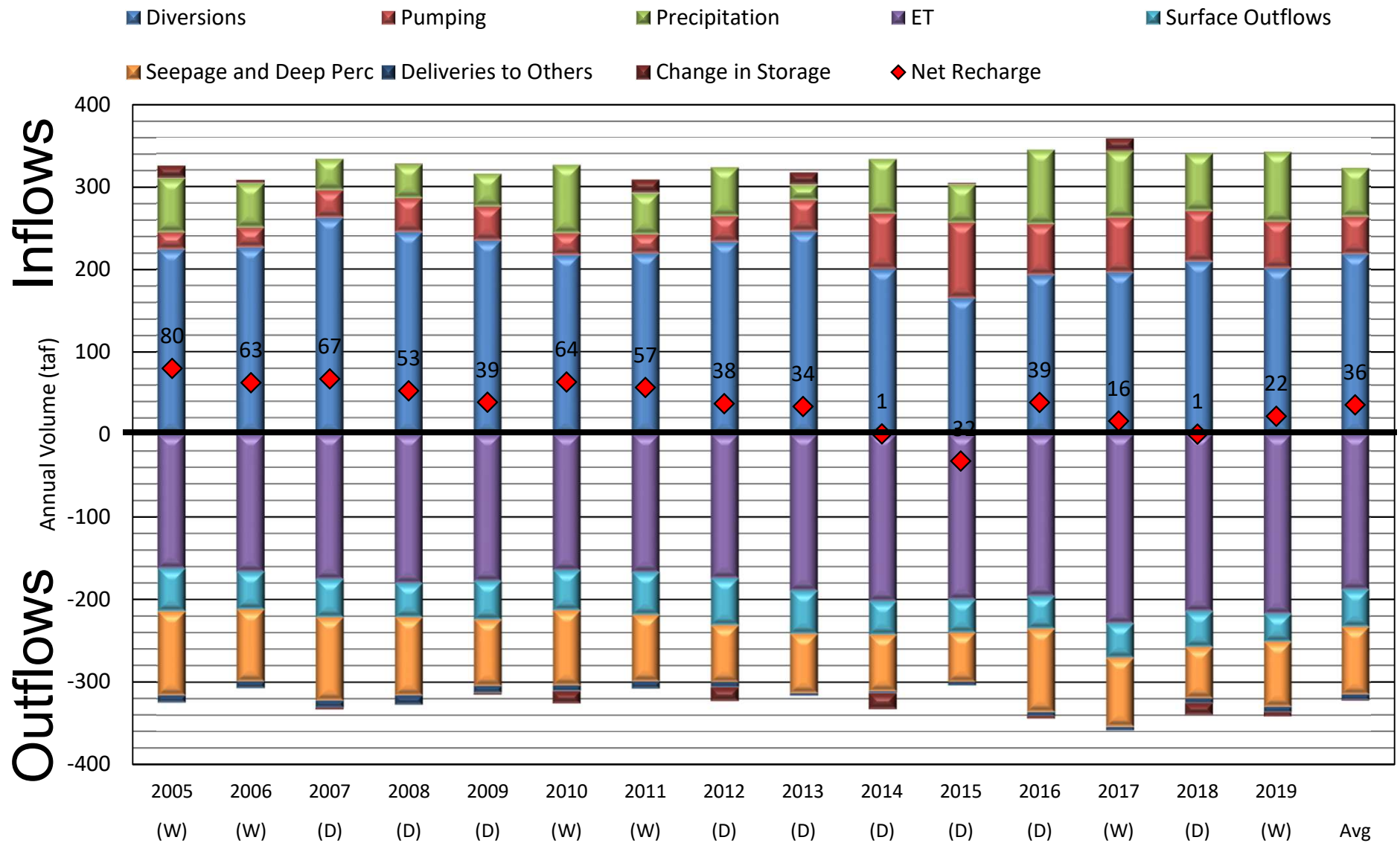
- Separated into 3 accounting centers
 - Distribution system (OID canals)
 - Farmed lands
 - Drainage system (OID drains)
- Monthly Accounting from 2005 to 2019
 - 2015 to 2019 added as part of update
- “Flow through” winter flows not fully accounted
- Results demonstrate the following:
 - Efficient water management
 - Net contribution to groundwater system



OLD Water Budget Structure



OID Water Budget Summary



DAVIDS
ENGINEERING, INC.

Groundwater Recharge

Table 5-8. OID Net Groundwater Recharge, 2010 to 2019.

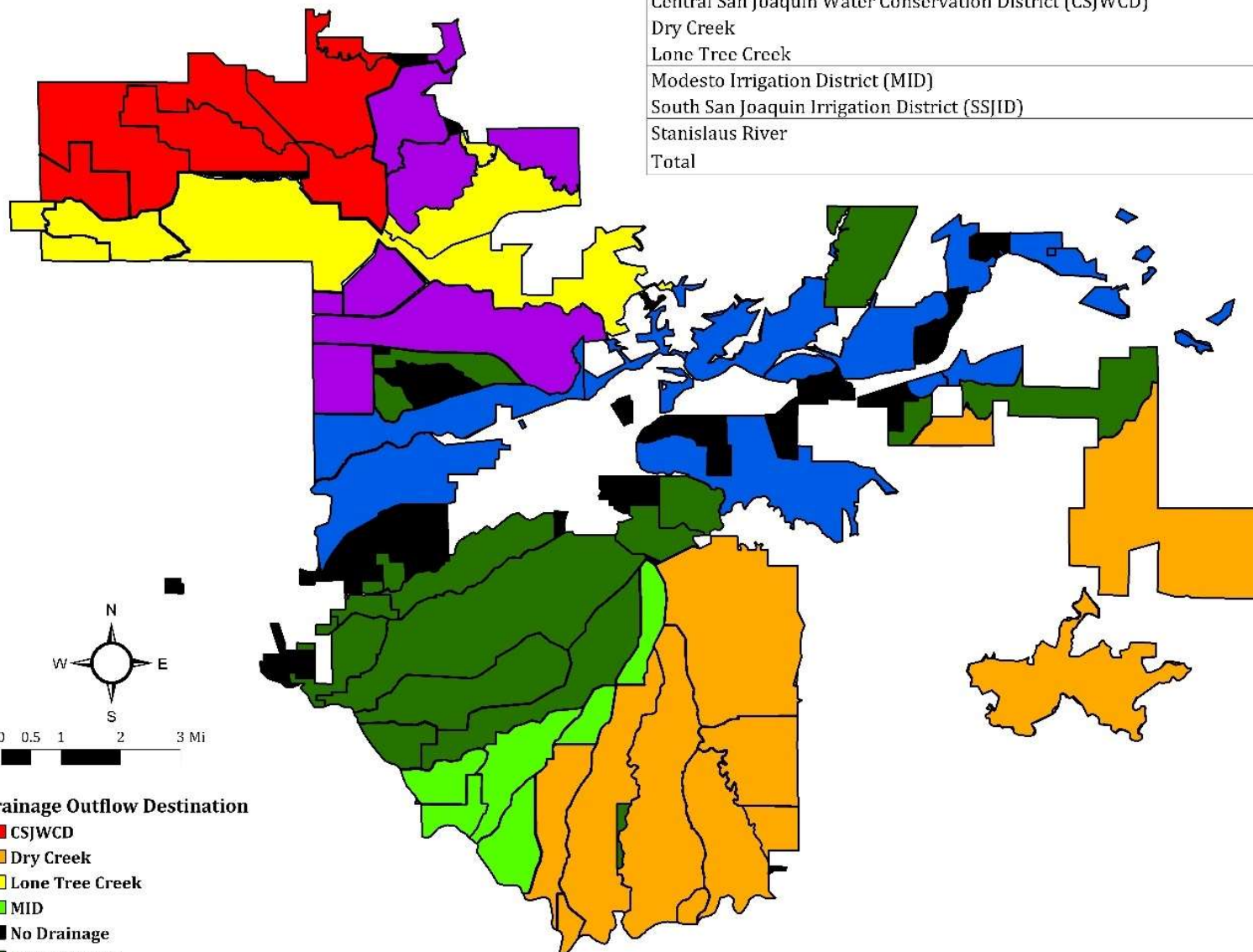
Year	Surface Water Allotment	Hydrologic Year Type	Total Recharge (af)	Groundwater Pumping (af)	Net Recharge	
					(af)	(af/ac)
2010	Full	Wet	90,682	25,770	64,912	1.3
2011	Full	Wet	80,349	22,090	58,258	1.1
2012	Full	Dry	68,934	30,199	38,735	0.7
2013	Partial	Dry	72,109	36,880	35,228	0.7
2014	Partial	Dry	68,202	66,261	1,941	0.0
2015	Partial	Dry	59,592	90,516	-30,924	-0.5
2016	Full	Dry	100,566	60,419	40,147	0.6
2017	Full	Wet	83,128	65,613	17,516	0.3
2018	Full	Dry	62,076	60,307	1,769	0.0
2019	Full	Wet	78,664	55,243	23,421	0.4
Wet Year Average			83,206	42,179	41,027	0.8
Dry Year Average			71,913	57,430	14,483	0.3
Overall Average			76,430	51,330	25,100	0.4



Surface Outflow Destinations

Average 2010-2019 Seasonal Outflow by Outflow Destination

Outflow Destination	Average Seasonal Outflow (ac-ft)
Central San Joaquin Water Conservation District (CSJWCD)	6,200
Dry Creek	12,300
Lone Tree Creek	6,000
Modesto Irrigation District (MID)	8,100
South San Joaquin Irrigation District (SSJID)	5,200
Stanislaus River	7,300
Total	45,100



Drainage Outflow Destination

- CSJWCD
- Dry Creek
- Lone Tree Creek
- MID
- No Drainage
- Reused in OID
- SSJID
- Stanislaus River

AWMP Results

Efficient Water Management Practice Implementation Status



Efficient Water Management Practices

- SBx7-7 requires districts to evaluate & implement two types of EWMPs
 - 2 Critical (Mandatory) EWMPs [§10608.48(b)]
 - Delivery Measurement
 - Volumetric Pricing
 - 14 Additional (Conditional) EWMPs [§10608.48(c)]



Critical (Mandatory) EWMPs

1. Delivery Measurement

- District-wide inventory and inspection completed and compliant turnout standards developed
- Improvements underway, in accordance with WRP, as funds allow, with highest priority on turnouts serving largest acreages
- 89% of acreage served is compliant, anticipated that 98% of acreage will be compliant within 4 years

2. Volumetric Pricing

- Adopted and implemented a pricing structure based in part on volume



Additional (Conditional) EWMPs

	<u>Status</u>
1. Facilitate alternative land use	Not Feasible
2. Facilitate use of available recycled water	✓
3. Facilitate financing of on-farm capital improvements	✓
4. Implement incentive pricing	✓
5. Line or pipe canals, and construct regulatory reservoirs	✓
6. Increase flexibility in water ordering and delivery	✓
7. Construct and operate supplier spill and tailwater recovery systems	✓



Additional (Conditional) EWMPs, cont.

Status

- | | |
|--|---|
| 8. Increase planned conjunctive use of surface water and groundwater | ✓ |
| 9. Automate canal control structures | ✓ |
| 10. Facilitate or promote customer pump testing and evaluation | ✓ |
| 11. Designate Water Conservation Coordinator | ✓ |
| 12. Provide for the availability of water management services to customers | ✓ |
| 13. Evaluate supplier's policies | ✓ |
| 14. Improve supplier's pumping efficiency | ✓ |



AWMP Results

Water Resources Plan Implementation Status



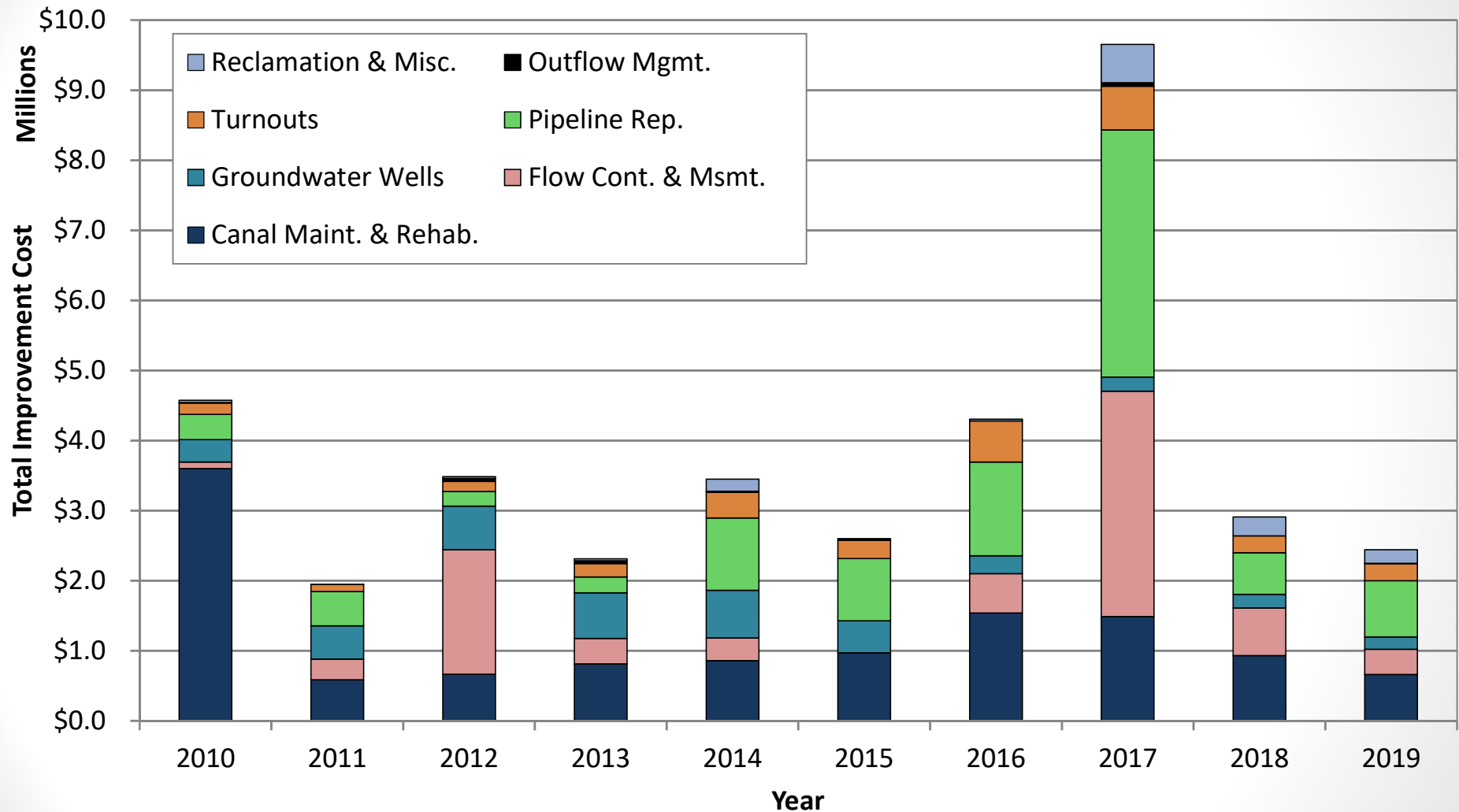
Water Resources Plan

- Under Implementation since 2006
 - Nearly 900 capital improvement projects between 2006 and 2019 (\$94 million total, \$6.7 million per year)
 - Over 330 projects since 2015 (\$42.5 million)
- Currently being updated
- Increased focus on turnouts for compliance with new State regulations
- Recent projects possible through temporary water transfers, annexations, and DWR grant funding



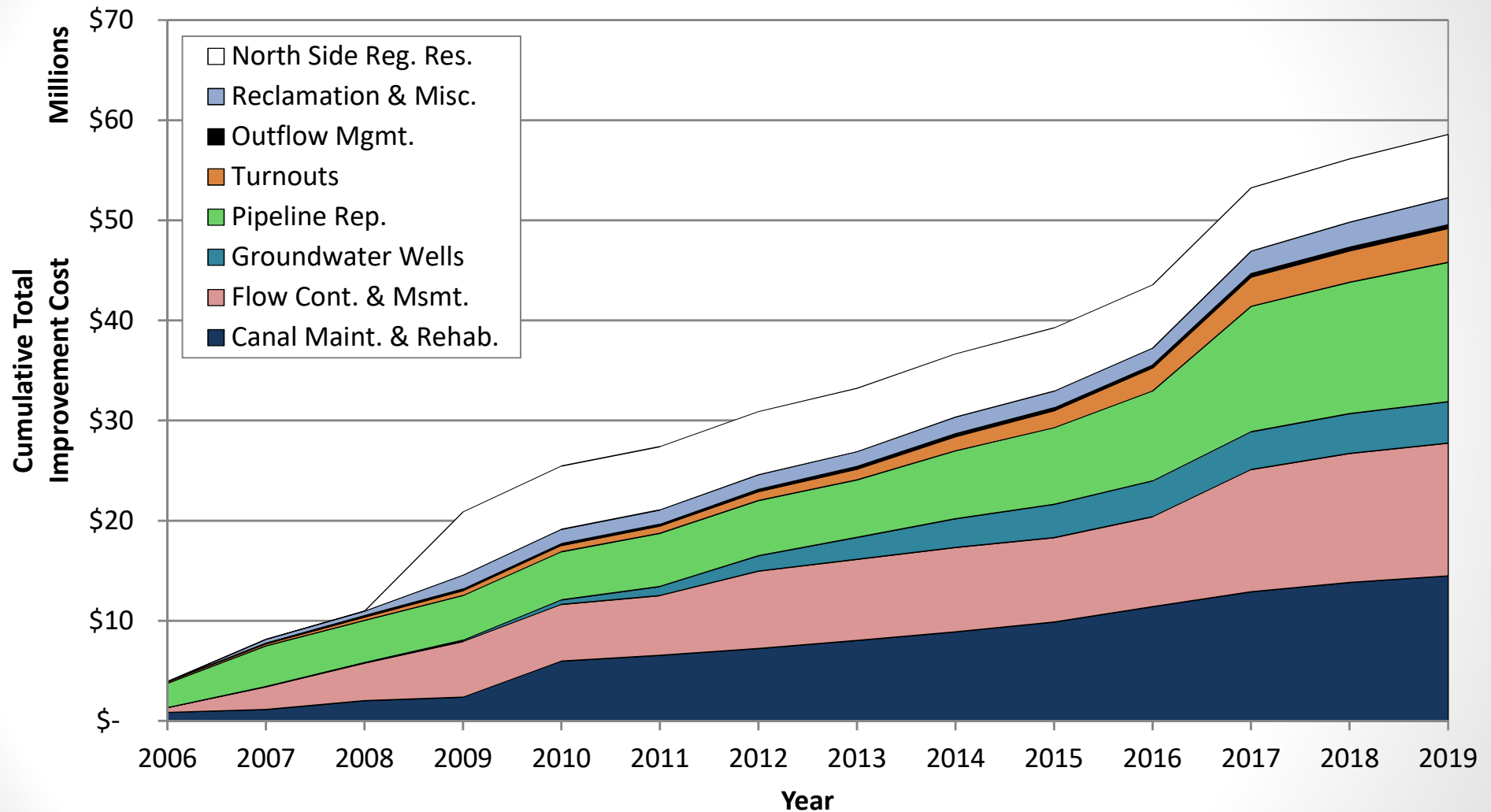
Capital Improvements by Year

(Does not include main canal and tunnel improvements)



Cumulative Capital Improvements

(Does not include main canal and tunnel improvements)



Questions and Discussion





Oakdale Irrigation District Agricultural Water Management Plan Overview of 2020 Update

March 2, 2021



Outline

- Agricultural Water Management Plan (AWMP) Overview
 - Regulatory Context, AWMP Contents, Adoption Process
- Water Budget Analysis and Summary
- Efficient Water Management Practice (EWMP) Status and Positions
- Water Resources Plan Implementation Status
- Questions and Discussion



Regulatory Context (AB 3616 and SBx7-7)

- AB 3616 - Agricultural Water Suppliers Efficient Water Management Practices Act (1990)
 - Voluntary preparation of AWMPs
 - Initial OID AWMP adopted in 2005
- SBx7-7 – Water Conservation Act of 2009
 - AWMP mandatory for suppliers over 25,000 acres
 - Includes two critical mandatory EWMPs
 - Delivery measurement and volumetric pricing requirements
 - Includes additional conditional EWMPs
 - Non-compliance results in ineligibility for State water grants and loans



Regulatory Context (AB 1668)

- AB 1668 – Water Management Planning Legislation
 - Enacted in 2018
 - Requires inclusion of annual water budget in AWMP*
 - Identify water management objectives and quantify water use efficiency
 - Include Drought Management Plan (DMP)**
 - Modifies AWMP adoption deadline to 4/1/21 and every five years thereafter

*A water budget was already included as an important component of prior AWMPs.

**A DMP was already included in the 2015 Plan per Executive Order B-29-15.



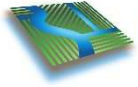
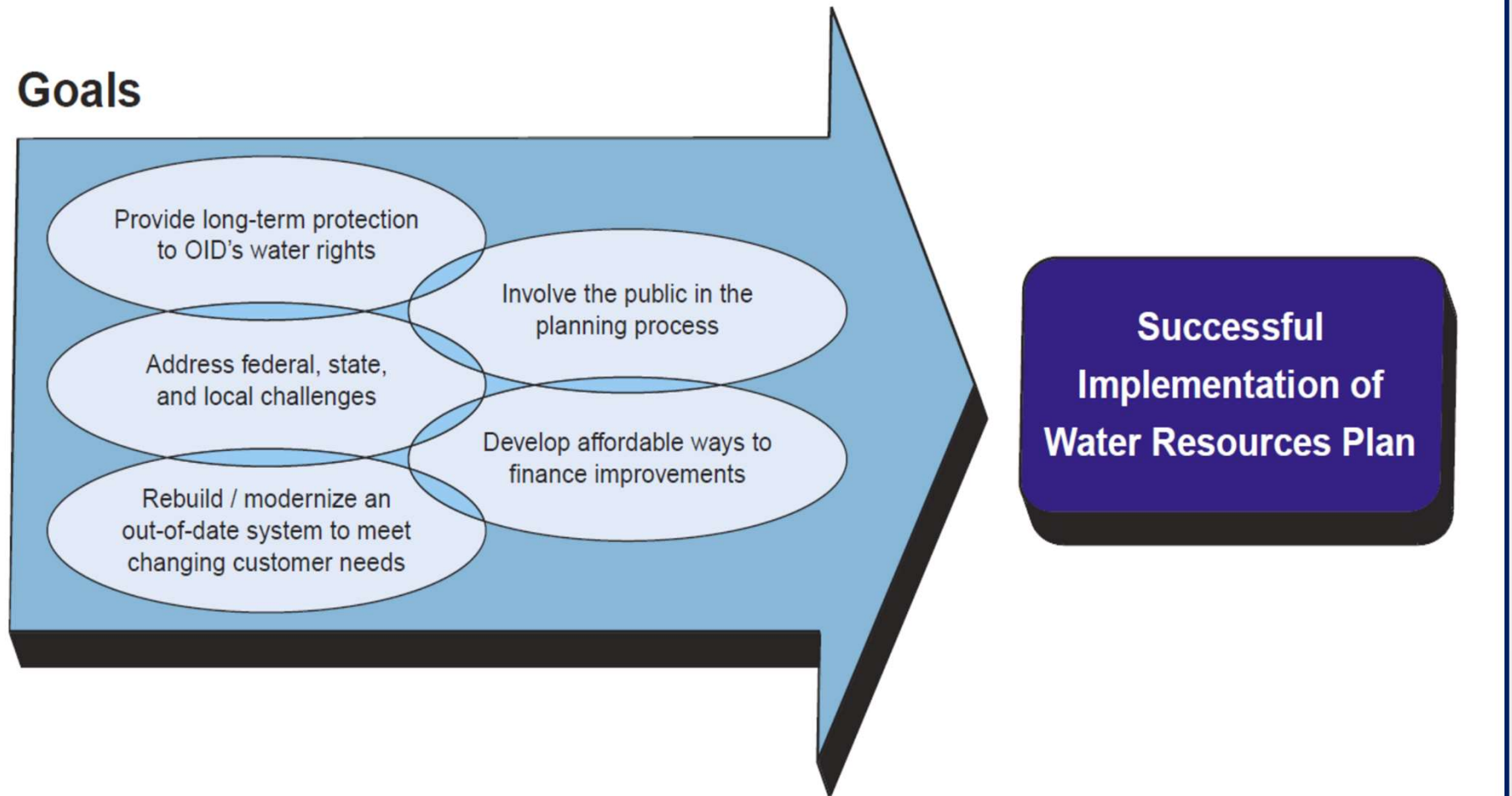
AWMP Contents

- Background and Description of Service Area
 - History, Distribution System, Climate, Operations, Water Rates, etc.
- Inventory of Water Supplies
 - Surface Water, Groundwater, Other Water Supplies, Water Quality
- Water Budget
 - Water Uses, Water Accounting, Water Supply Reliability, Water Management Objectives, Water Use Efficiency, etc.
- Climate Change Evaluation
- Description of EWMP Implementation
 - 2 Critical (Mandatory) EWMPs, 14 Additional (Conditional) EWMPs
- Water Resources Plan (WRP) Implementation Review



OID Water Resources Plan

Goals



DAVIDS
ENGINEERING, INC.

2020 AWMP Update Adoption Process

- Provide AWMP draft for public review (**February 2**)
- Set hearing date, notify counties and cities of AWMP update, publish notice of AWMP update in Oakdale Leader (**February**)
- Hold public hearing (**March 2**)
- Consider adoption at Board meeting (**March 2**)
- Make final adopted plan available (**Within 30 days of adoption**)
 - Send to Department of Water Resources
 - Send to counties, cities, and GSAs
 - Send to California State Library
 - Post on Internet



AWMP Results

Water Budget Analysis and Results



What is a Water Budget?

- Complete accounting of all water flowing into and out of the district over a specified period (months or years)
- Basic accounting principle:
$$\text{Inflow} - \text{Outflow} \pm \text{Change in Storage} = 0$$
- Same as a checking account:
$$\text{Deposits} - \text{Withdrawals} \pm \text{Change in Balance} = 0$$



Water Budget Benefits

- Provide insights into water management
- Assess water supply adequacy and conservation opportunities
- Assess water measurement and data management practices and opportunities
- Evaluate exchanges with underlying groundwater basin and demonstrate sustainable management

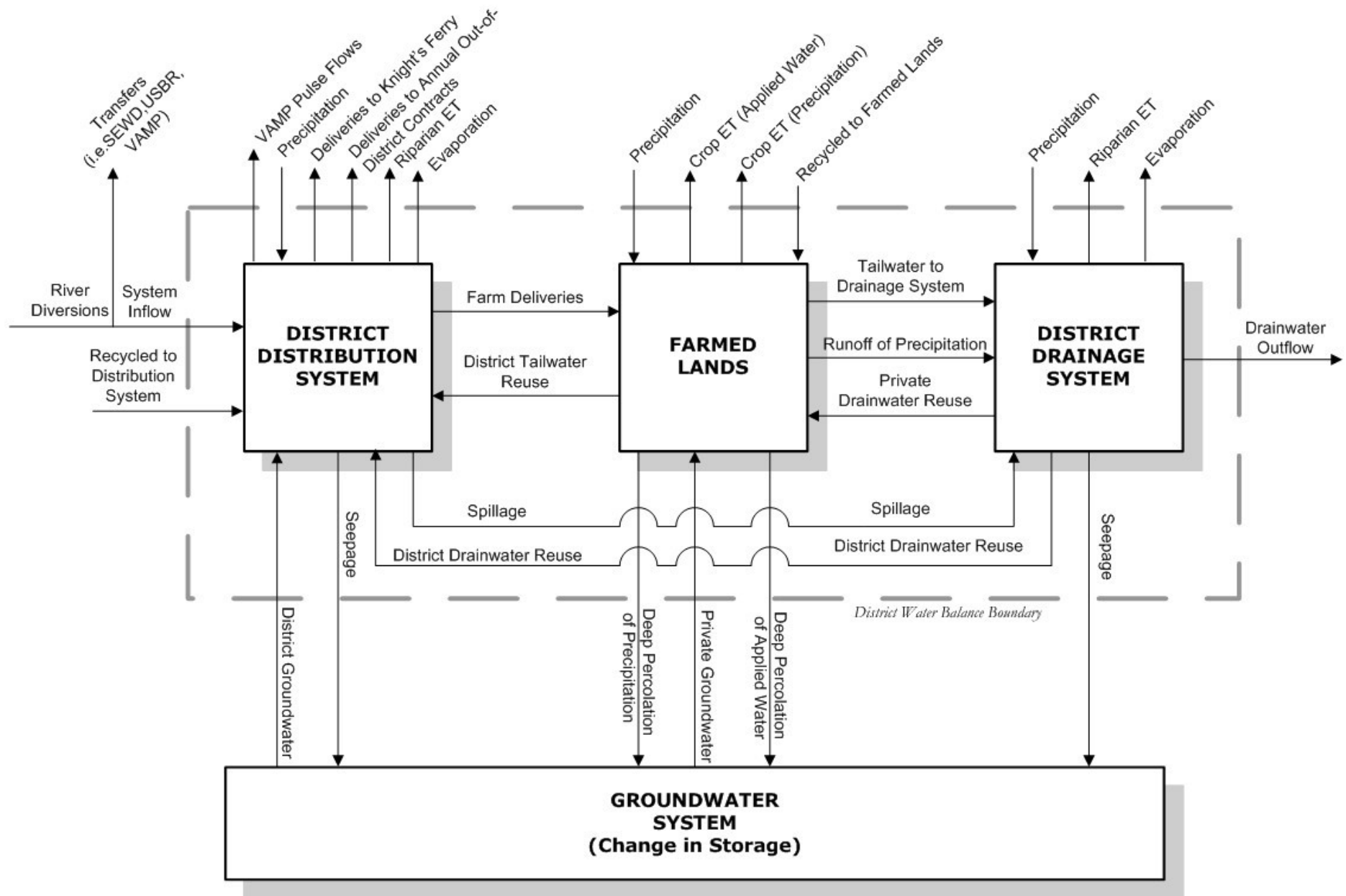


OID Water Budget

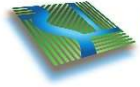
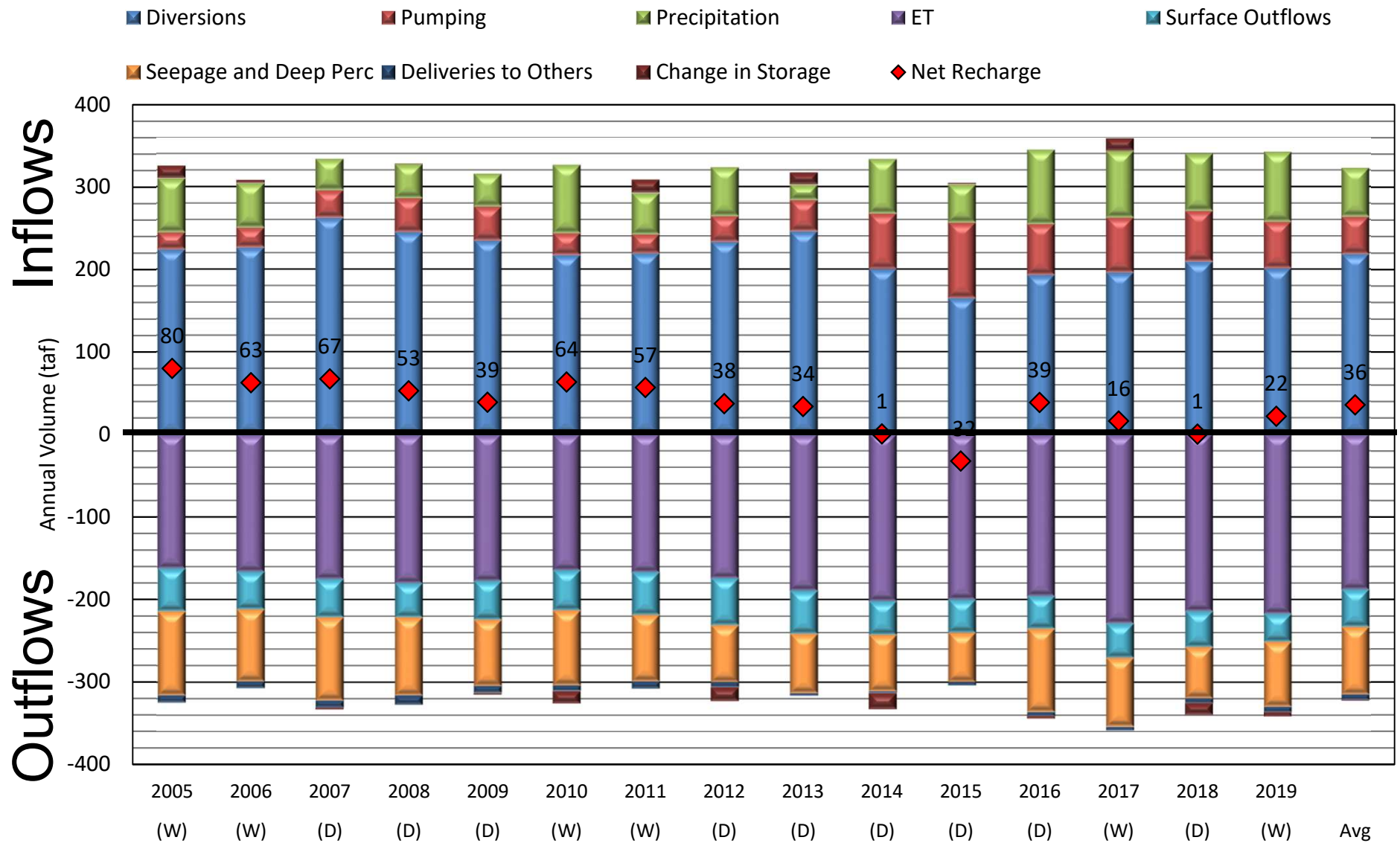
- Separated into 3 accounting centers
 - Distribution system (OID canals)
 - Farmed lands
 - Drainage system (OID drains)
- Monthly Accounting from 2005 to 2019
 - 2015 to 2019 added as part of update
- “Flow through” winter flows not fully accounted
- Results demonstrate the following:
 - Efficient water management
 - Net contribution to groundwater system



OLD Water Budget Structure



OID Water Budget Summary



DAVIDS
ENGINEERING, INC.

Groundwater Recharge

Table 5-8. OID Net Groundwater Recharge, 2010 to 2019.

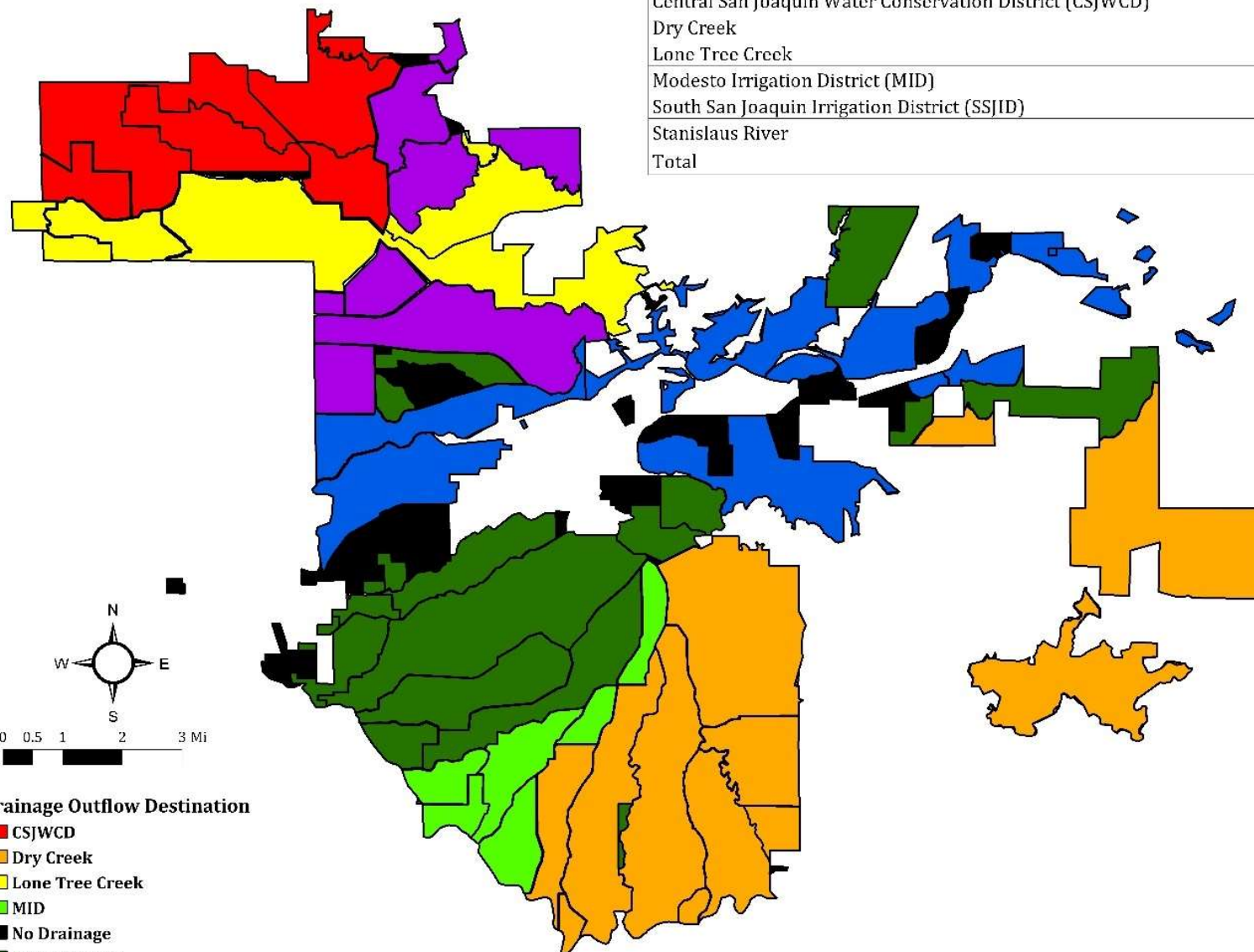
Year	Surface Water Allotment	Hydrologic Year Type	Total Recharge (af)	Groundwater Pumping (af)	Net Recharge	
					(af)	(af/ac)
2010	Full	Wet	90,682	25,770	64,912	1.3
2011	Full	Wet	80,349	22,090	58,258	1.1
2012	Full	Dry	68,934	30,199	38,735	0.7
2013	Partial	Dry	72,109	36,880	35,228	0.7
2014	Partial	Dry	68,202	66,261	1,941	0.0
2015	Partial	Dry	59,592	90,516	-30,924	-0.5
2016	Full	Dry	100,566	60,419	40,147	0.6
2017	Full	Wet	83,128	65,613	17,516	0.3
2018	Full	Dry	62,076	60,307	1,769	0.0
2019	Full	Wet	78,664	55,243	23,421	0.4
Wet Year Average			83,206	42,179	41,027	0.8
Dry Year Average			71,913	57,430	14,483	0.3
Overall Average			76,430	51,330	25,100	0.4



Surface Outflow Destinations

Average 2010-2019 Seasonal Outflow by Outflow Destination

Outflow Destination	Average Seasonal Outflow (ac-ft)
Central San Joaquin Water Conservation District (CSJWCD)	6,200
Dry Creek	12,300
Lone Tree Creek	6,000
Modesto Irrigation District (MID)	8,100
South San Joaquin Irrigation District (SSJID)	5,200
Stanislaus River	7,300
Total	45,100



Drainage Outflow Destination

- CSJWCD
- Dry Creek
- Lone Tree Creek
- MID
- No Drainage
- Reused in OID
- SSJID
- Stanislaus River

AWMP Results

Efficient Water Management Practice Implementation Status



Efficient Water Management Practices

- SBx7-7 requires districts to evaluate & implement two types of EWMPs
 - 2 Critical (Mandatory) EWMPs [§10608.48(b)]
 - Delivery Measurement
 - Volumetric Pricing
 - 14 Additional (Conditional) EWMPs [§10608.48(c)]



Critical (Mandatory) EWMPs

1. Delivery Measurement

- District-wide inventory and inspection completed and compliant turnout standards developed
- Improvements underway, in accordance with WRP, as funds allow, with highest priority on turnouts serving largest acreages
- 89% of acreage served is compliant, anticipated that 98% of acreage will be compliant within 4 years

2. Volumetric Pricing

- Adopted and implemented a pricing structure based in part on volume



Additional (Conditional) EWMPs

	<u>Status</u>
1. Facilitate alternative land use	Not Feasible
2. Facilitate use of available recycled water	✓
3. Facilitate financing of on-farm capital improvements	✓
4. Implement incentive pricing	✓
5. Line or pipe canals, and construct regulatory reservoirs	✓
6. Increase flexibility in water ordering and delivery	✓
7. Construct and operate supplier spill and tailwater recovery systems	✓



Additional (Conditional) EWMPs, cont.

Status

- | | |
|--|---|
| 8. Increase planned conjunctive use of surface water and groundwater | ✓ |
| 9. Automate canal control structures | ✓ |
| 10. Facilitate or promote customer pump testing and evaluation | ✓ |
| 11. Designate Water Conservation Coordinator | ✓ |
| 12. Provide for the availability of water management services to customers | ✓ |
| 13. Evaluate supplier's policies | ✓ |
| 14. Improve supplier's pumping efficiency | ✓ |



AWMP Results

Water Resources Plan Implementation Status



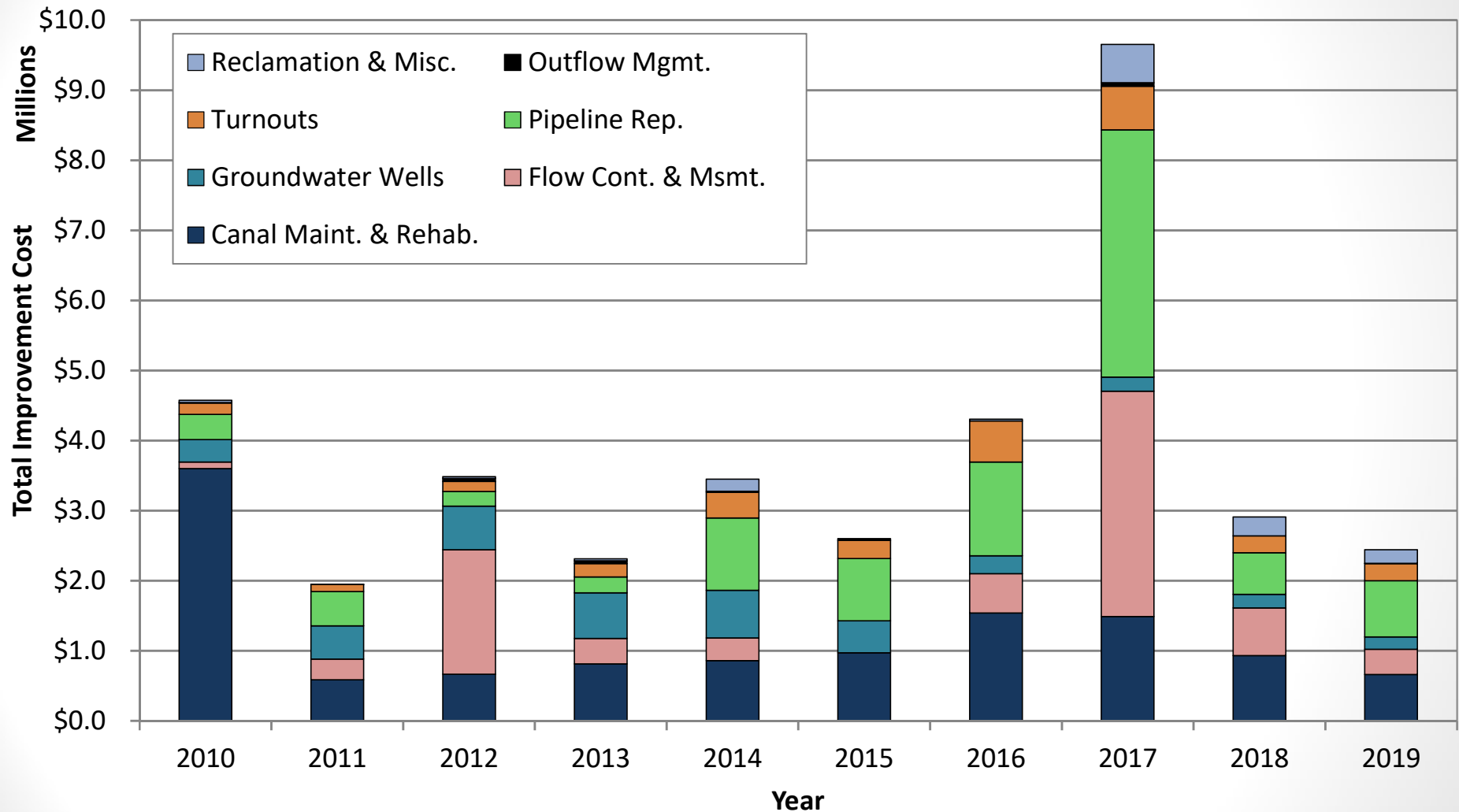
Water Resources Plan

- Under Implementation since 2006
 - Nearly 900 capital improvement projects between 2006 and 2019 (\$94 million total, \$6.7 million per year)
 - Over 330 projects since 2015 (\$42.5 million)
- Currently being updated
- Increased focus on turnouts for compliance with new State regulations
- Recent projects possible through temporary water transfers, annexations, and DWR grant funding



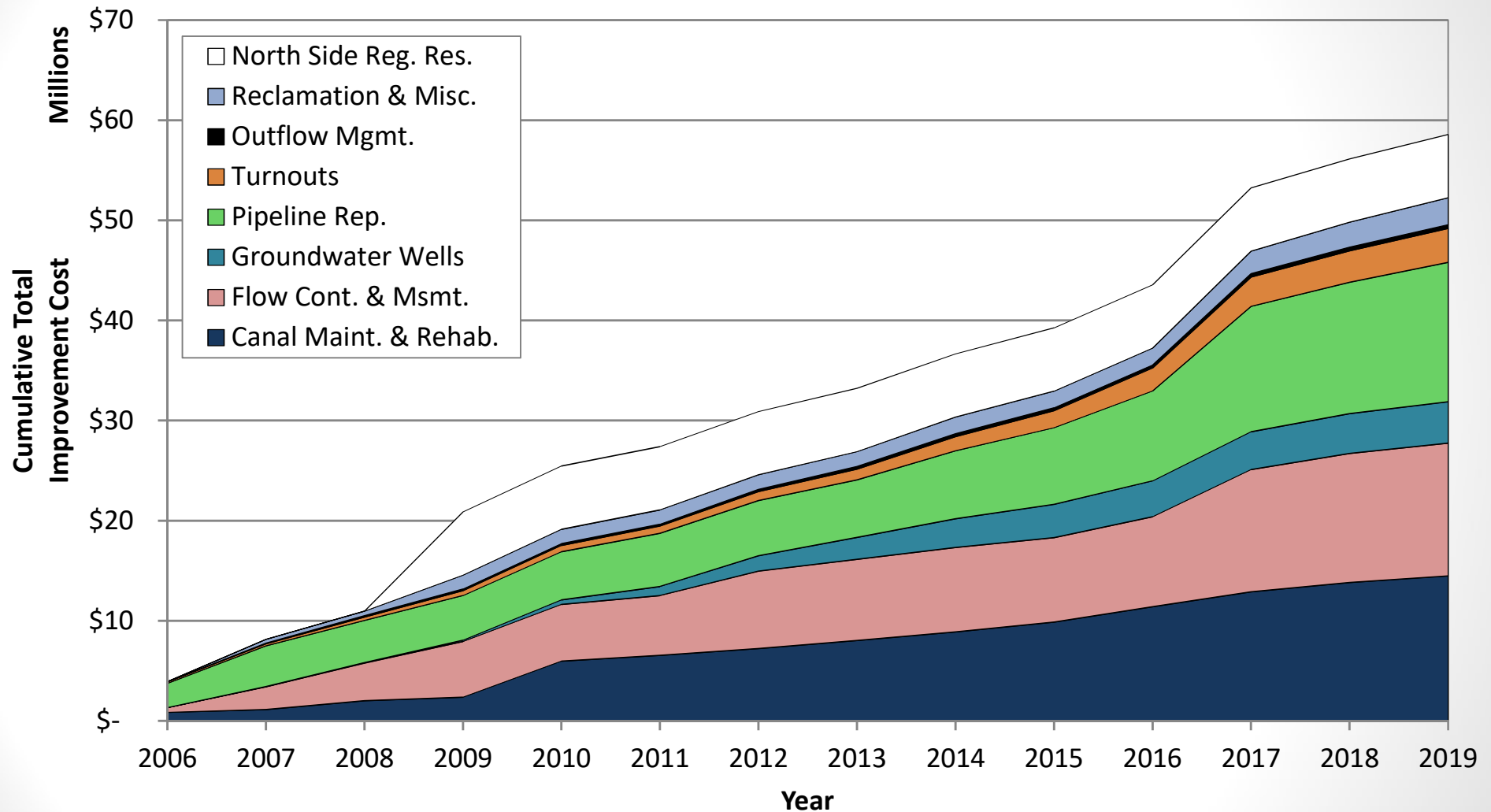
Capital Improvements by Year

(Does not include main canal and tunnel improvements)



Cumulative Capital Improvements

(Does not include main canal and tunnel improvements)



Questions and Discussion

