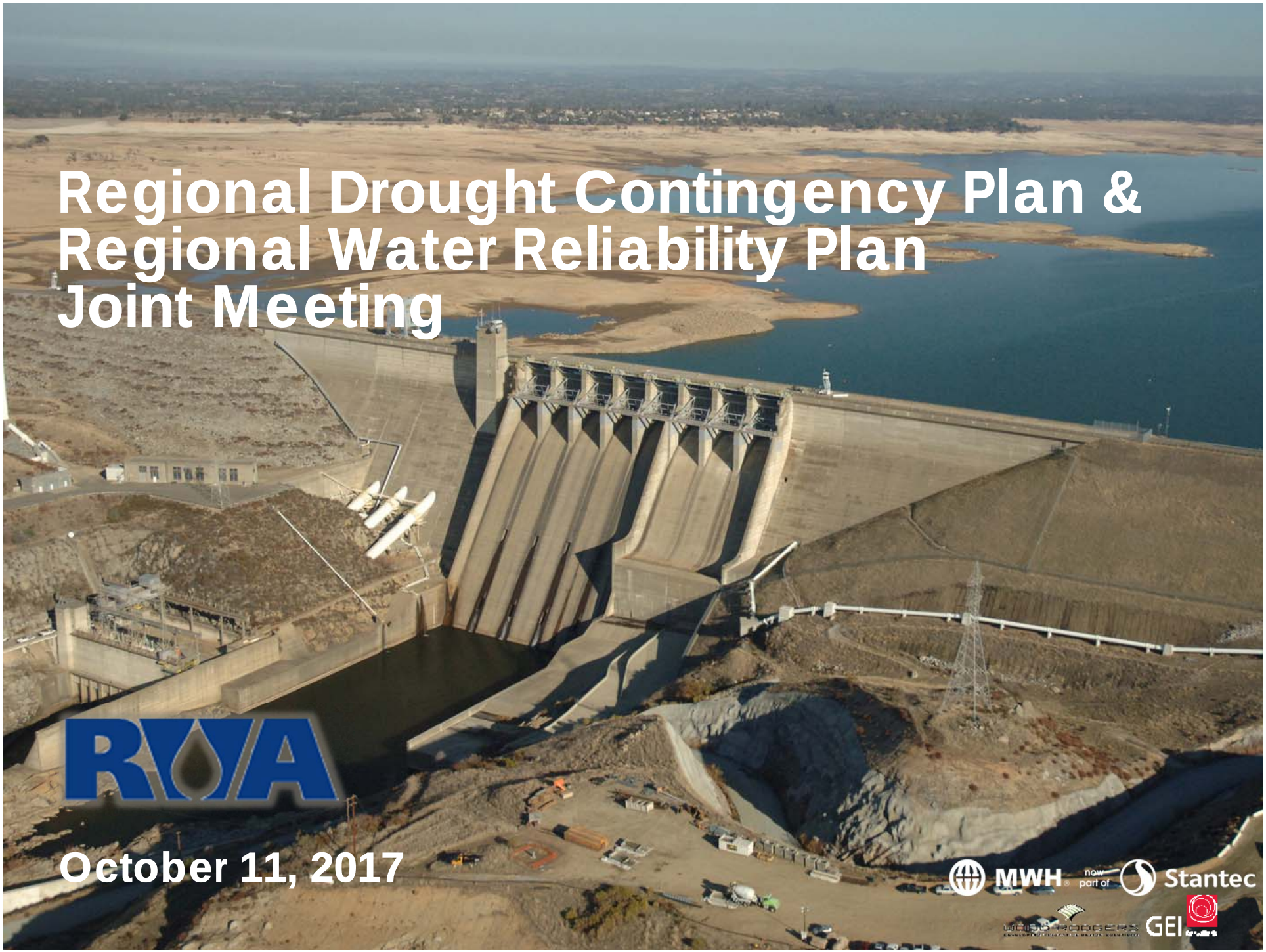
Regional Drought Contingency Plan & Regional Water Reliability Plan Joint Meeting



October 11, 2017

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Wood Rodgers GEI

Today's Agenda

1 Regional Drought Contingency Plan Update

2 Regional Water Reliability Plan

- Vulnerability Update
- Mitigation Actions
- Conjunctive Use Analysis

3 Key Dates

1. Regional Drought Contingency Plan Update

RDCP

- Reclamation comments received September 12th
- Revised RDCP submitted to Reclamation September 27th
- Pending Reclamation final review and acceptance
- Reclamation extended grant to December 31, 2017

2. Regional Water Reliability Plan

RWRP Vulnerability Update

RWRP Vulnerabilities

Conjunctive Use-Specific

Vulnerability Effects on CU

= Low
= Moderate
= High

Vulnerability Theme	Vulnerability Examples	Effect on Wet Year In-Lieu / Recharge	Effect on Dry Year Recovery
Institutional threats to surface water availability	• CVP/Folsom Reservoir Operations • Evolving State and Federal Regulations • Agency Specific Water Rights/Contract Limitations	■ ■ ■	■ ■ ■
Physical threats to surface water availability	• Climate Change/Hydrologic Variability • Inability to Divert during Low Storage/Flow Conditions • Source Contamination	■ ■ ■	■ ■ ■
Institutional threats to groundwater availability	• New Drinking Water Standards • New State Water Quality Regulations • Future constraints related to SGMA	■ ■ ■	■ ■ ■
Physical threats to groundwater availability	• Groundwater Contamination • Groundwater Production Capacity Limitations • Groundwater Injection Limitations	■ ■ ■	■ ■ ■
Institutional limitations on sharing supplies	• Existing POU/Service Area Limitations • Disparity in Cost of Water • Diverse Agency Goals & Interests	■ ■ ■	■ ■ ■
Physical limitations on sharing supplies	• Differing Fluoridation Practices • Limited Intertie Capacities • Incompatible Pressure Zones • Differing Water Quality • Lack of metering on interties	■ ■ ■ ■ ■	■ ■ ■ ■ ■
Threats to infrastructure integrity	• Aging Infrastructure • Lack of redundancy for critical facilities • Geologic Hazards • Flooding Hazards	■ ■ ■ ■	■ ■ ■ ■
Other Challenges	• Reliance on single supply source • Unrealized recycled water potential • Limited capacity to serve growth • Lack of Real-time Data Sharing	■ ■ ■ ■	■ ■ ■ ■

Conjunctive Use-Specific Water Supply Vulnerabilities

1. Groundwater Production Limitations
2. Groundwater Injection Limitations
3. Limited Intertie Capacities
4. Differing Fluoridation Practices
5. Water Quality Concerns
6. Existing POU/Service Area Limitations
7. Disparity in Cost of Water

Vulnerabilities Identified by Agency

Agency	Groundwater Production Capacity Limitations	Groundwater Injection Limitations	Existing POU/Service Area Limitations	Disparity in Cost of Water	Differing Fluoridation Practices	Limited Intertie Capacities	Water Quality Concerns
California American Water				■			■
Carmichael Water District						■	■
Citrus Heights Water District					■		■
City of Folsom						■	
City of Lincoln		■					
City of Roseville		■			■		
City of Sacramento	■		■	■			
City of West Sacramento						■	
City of Yuba		■	■			■	
Del Paso Manor Water District					■		■
El Dorado County Water Agency			■				
El Dorado Irrigation District							
Elk Grove Water District	■						
Fair Oaks Water District	■						
Golden State Water Company				■		■	■
Orange Vale Water Company			■		■	■	
Placer County Water Agency			■				
Rancho Murieta Community Services District							
Rio Linda/Elverta Community Water District							■
Sacramento County Water Agency							
Sacramento Regional Sanitation District							
Sacramento Suburban Water District	■			■	■		■
San Juan Water District	■		■				

RWRP Vulnerability TM

- Agency review of TM anticipated early 2018.

RWRP Mitigation Actions

Mitigation Actions

- Initial list compiled during agency interviews and sub-regional work group meetings (December 2016 - March 2017).

- **For RDCP:** Focused on mitigation actions that contributed to drought resiliency.

- **For RWRP:** Expand scope to include mitigation actions that improve regional reliability (mostly via conjunctive use).

Screening & Evaluation Approach

1. Screening of Identified Actions:

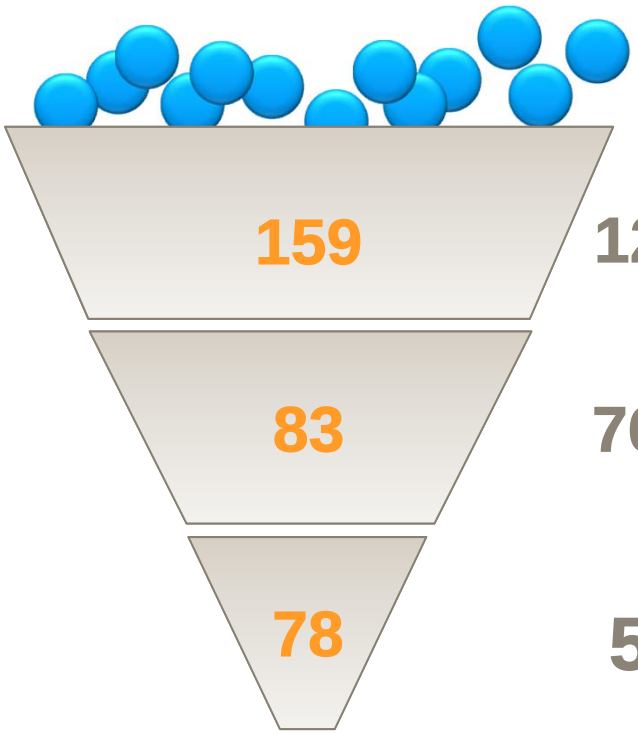
- Contribution to objectives
- Implementation status
- Duplicate/Redundant

2. Evaluation of Retained Actions:

- Qualitative assessment of effectiveness and implementation requirements
- Ranking of retained actions

Screening of Mitigation/Actions

171 **Identified mitigation actions**



12 Implemented/under implementation

76 Duplicate/redundant

5 Beyond Scope of Regional Water Reliability Plan

78 **Retained mitigation actions**

Screening Criteria

1. **Improve Conjunctive Use**
2. **Benefit to Drought Resiliency**
3. **Local Priority for Short-Term Implementation**
4. Project Yield
5. Potential Costs – Capital
6. Status of Available Information
7. Completion Schedule
8. Implementation Complexity

Contribution to Objective #1a

Improve Conjunctive Use (Quantitative):

- **High** = Large magnitude (≥ 10 mgd) of improvement to conjunctive use
- **Moderate** = Moderate magnitude (<10 mgd) of improvement to conjunctive use
- **Low** = Limited to no benefit to conjunctive use, or beyond scope of Regional Water Reliability Plan.

Contribution to Objective #1b

Improve Conjunctive Use (Qualitative):

- **High** = Addresses vulnerability that has a high impact on conjunctive use
- **Moderate** = Addresses vulnerability that has a moderate impact on conjunctive use
- **Low** = Limited to no benefit to conjunctive use, or beyond scope of Regional Water Reliability Plan.

Contribution to Objective #2

Improve Drought Resiliency:

- **High** = Increase ability to receive additional supplies during drought or emergency conditions.
- **Moderate** = Indirectly improves drought resiliency by improving groundwater conditions through conjunctive use or recycled water use.
- **Low** = Limited to no benefit to drought resiliency, or beyond scope of drought contingency plan.

Contribution to Objective #3

Local Priority for Short-Term Implementation:

- **High** = One of the agency's top priority actions and high confidence in implementation in the near-term (1-3 years)
- **Moderate** = Agency places moderate priority on implementing the action in the near-term (1-3 years).
- **Low** = Agency places lower priority in implementing action in the near-term (1-3 years).

Identified Mitigation Actions

Mitigation Action Category	Number of Actions	Total Capital Cost Preliminary Estimates ($ million)
Structural		
Intertie	14	$74 - $104
Groundwater Well • Rehabilitation • New Installation • Injection	12	$90 - $180
Surface Water Treatment	2	$300 - $400
Surface Water Storage	2	$500 - $2,500
Diversion	3	$1,010 - $2,010
Booster Pump/Pressure Reduction	7	$38 - $50
Recycled Water	7	$30 - $100
Non-Structural		
Water transfers	10	not assessed
Wheeling	2	not assessed
Banking	3	not assessed
Modify Contracts/Place of Use	7	not assessed
Federal Action and Collaboration	6	not assessed
Institutional Barriers	3	not assessed
Total Structural Costs		$ 2,042 - $ 4,344

Mitigation Action Next Steps

- Agencies Provide Feedback on Mitigation Actions by Wednesday 10/18

Conjunctive Use Analysis

Conjunctive Use Analysis

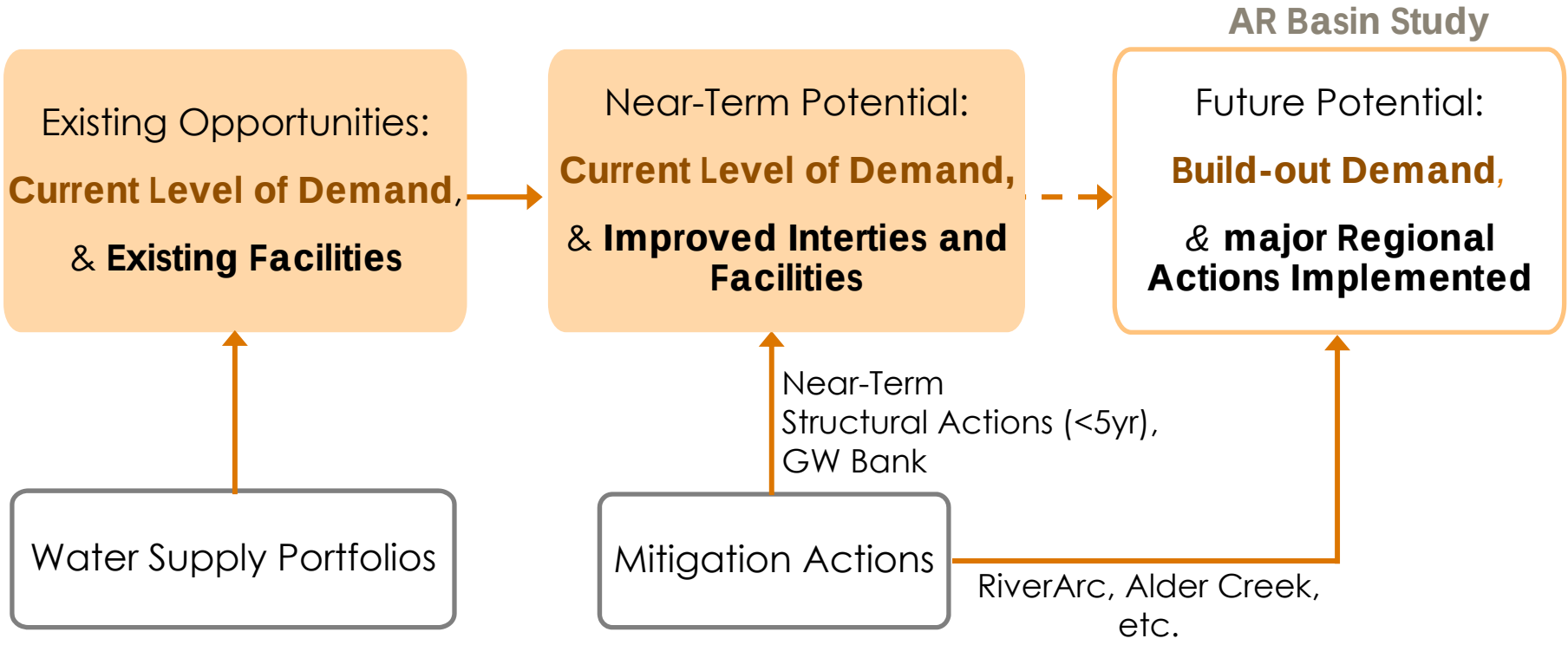
Purpose:

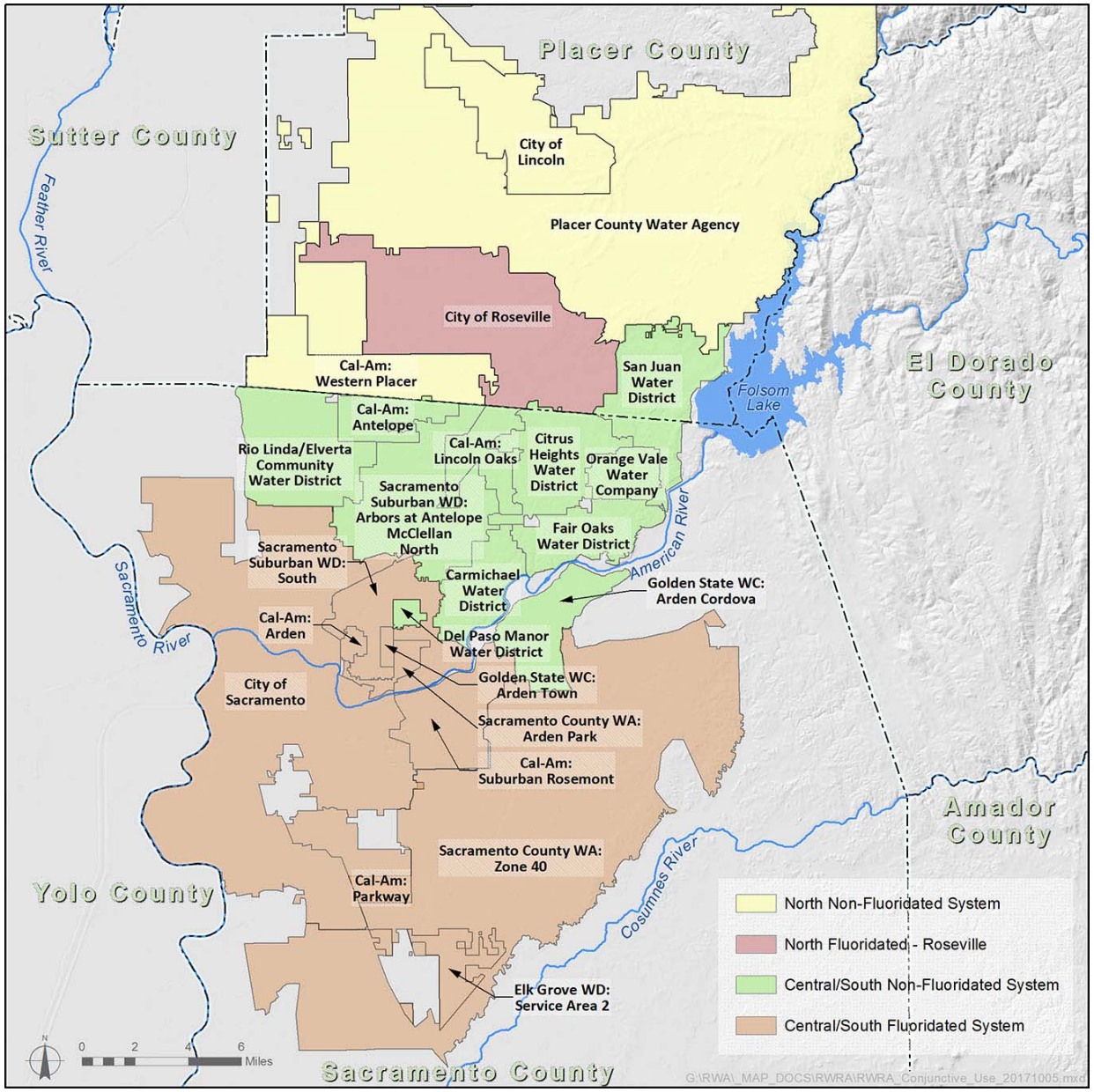
Quantify conjunctive use existing opportunities & future potential

Scope:

- Focus on current level of demands
- Consider existing physical limitations
- Consider mitigation actions (near-term structural actions)

Conjunctive Use Analysis Approach





Analysis Areas

RWA

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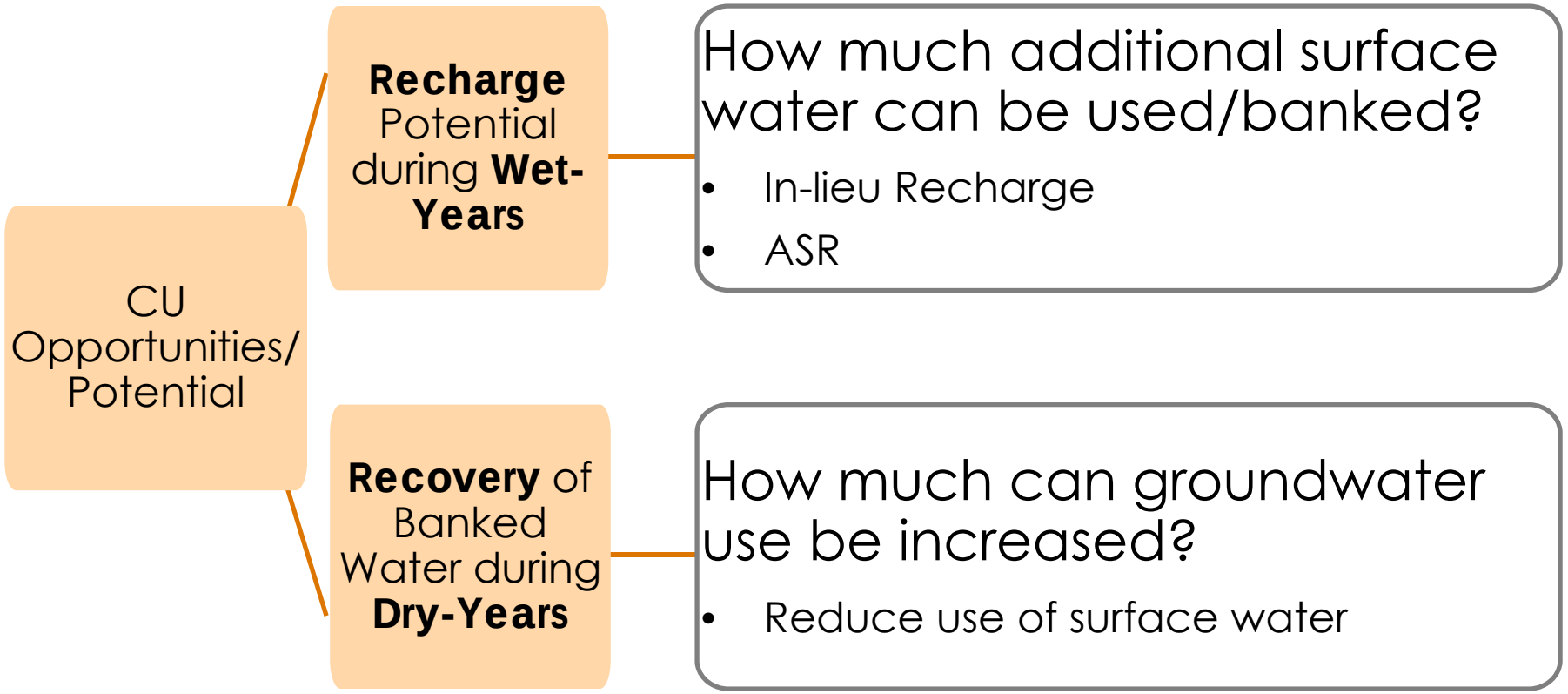
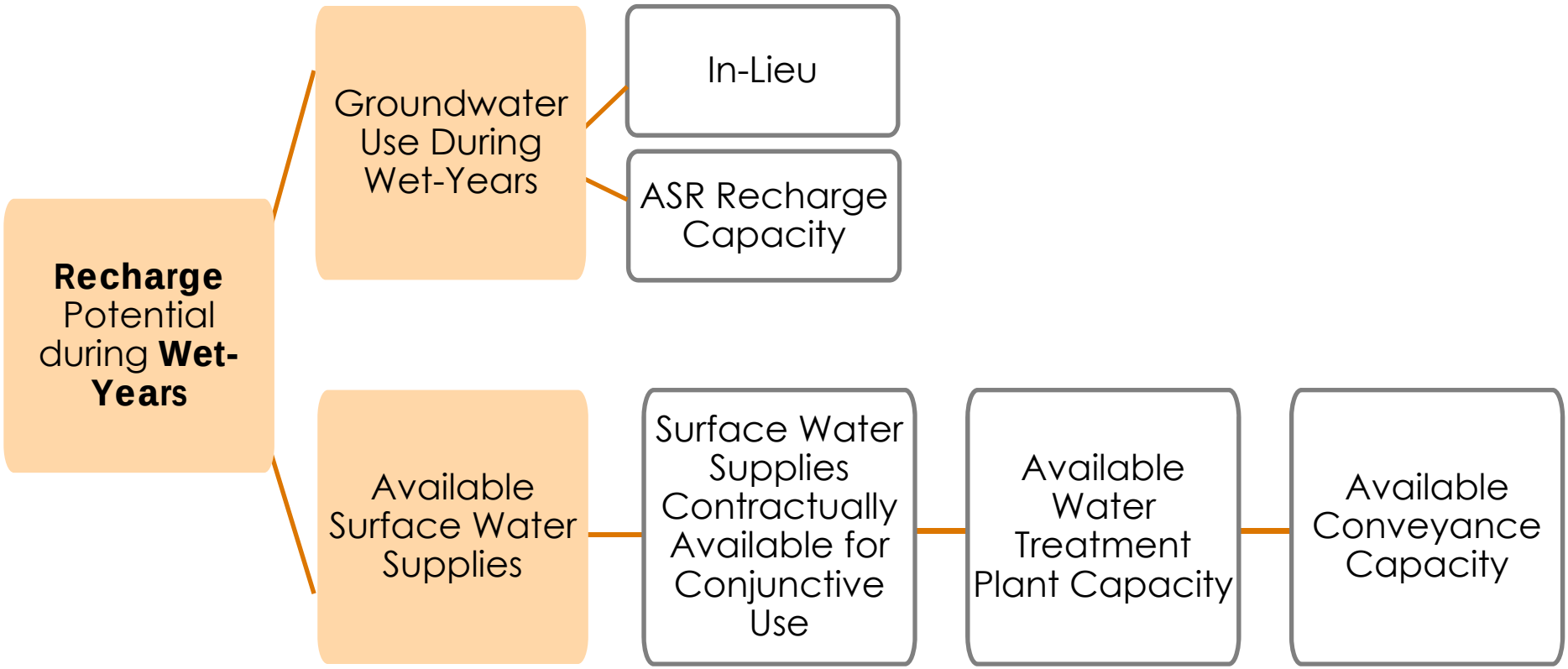
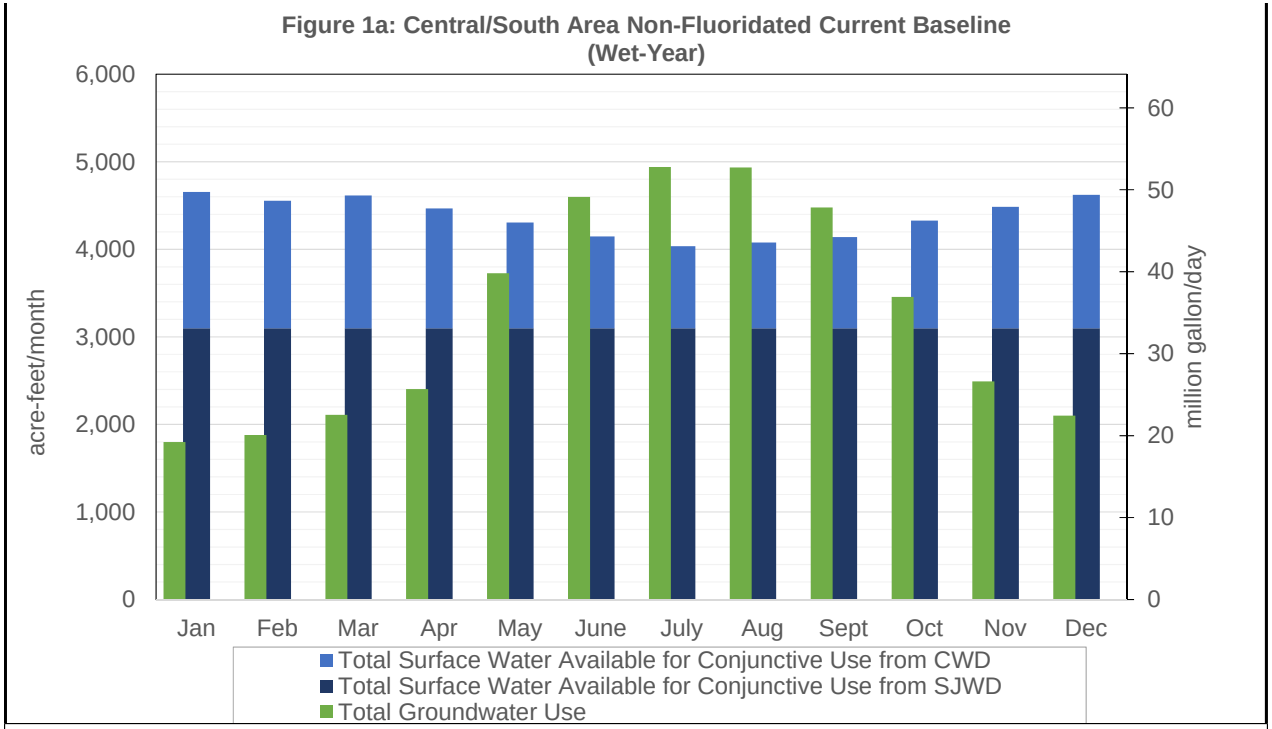
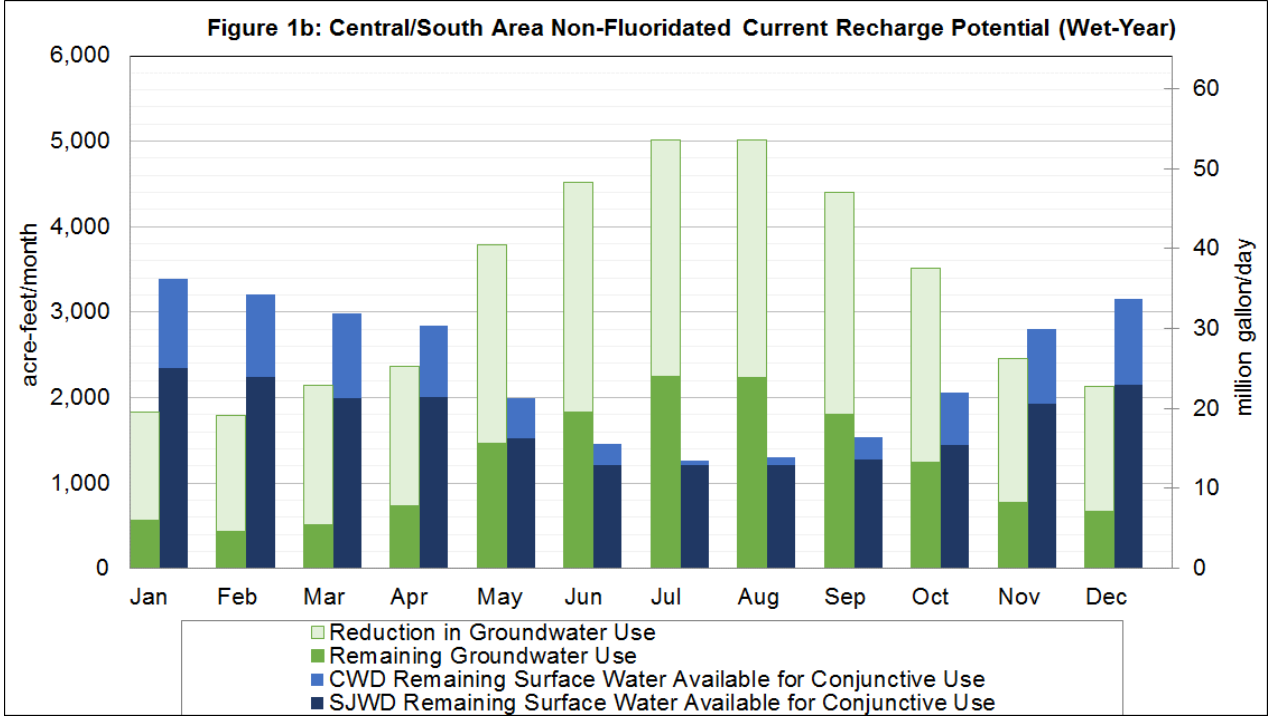
CU Analysis Process



Wet Year Recharge Analysis Constraints

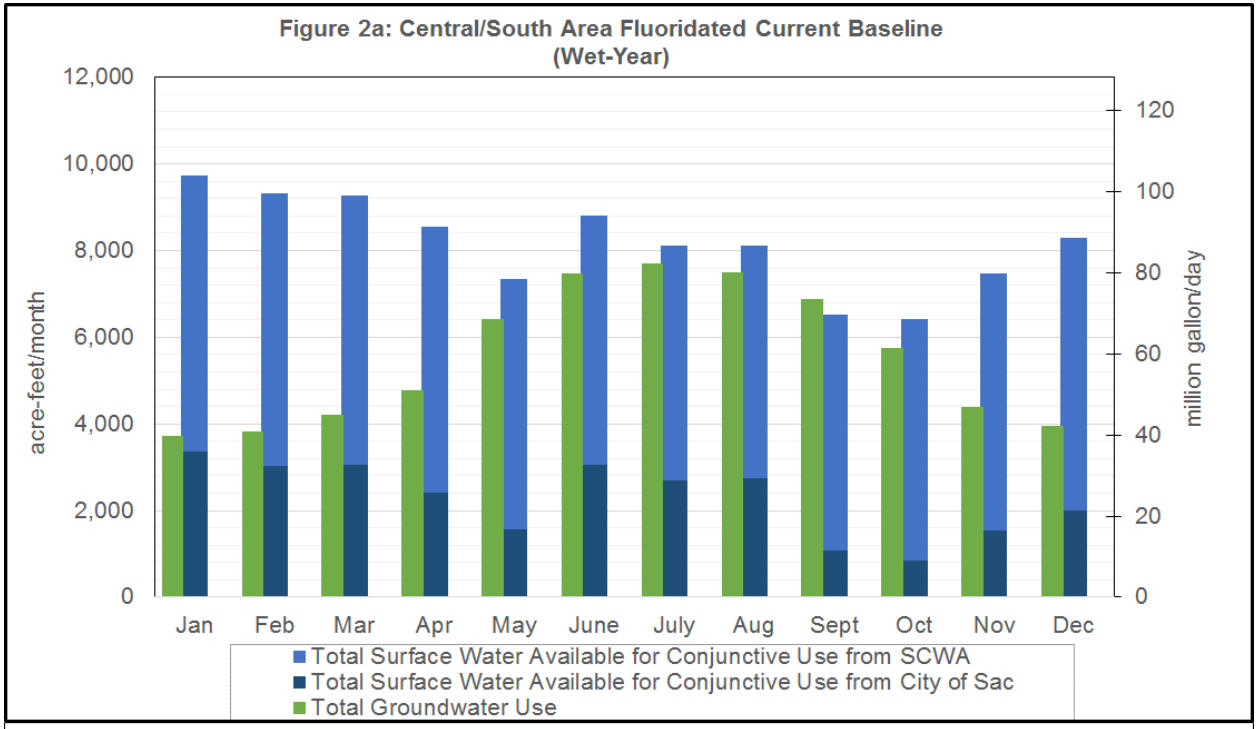


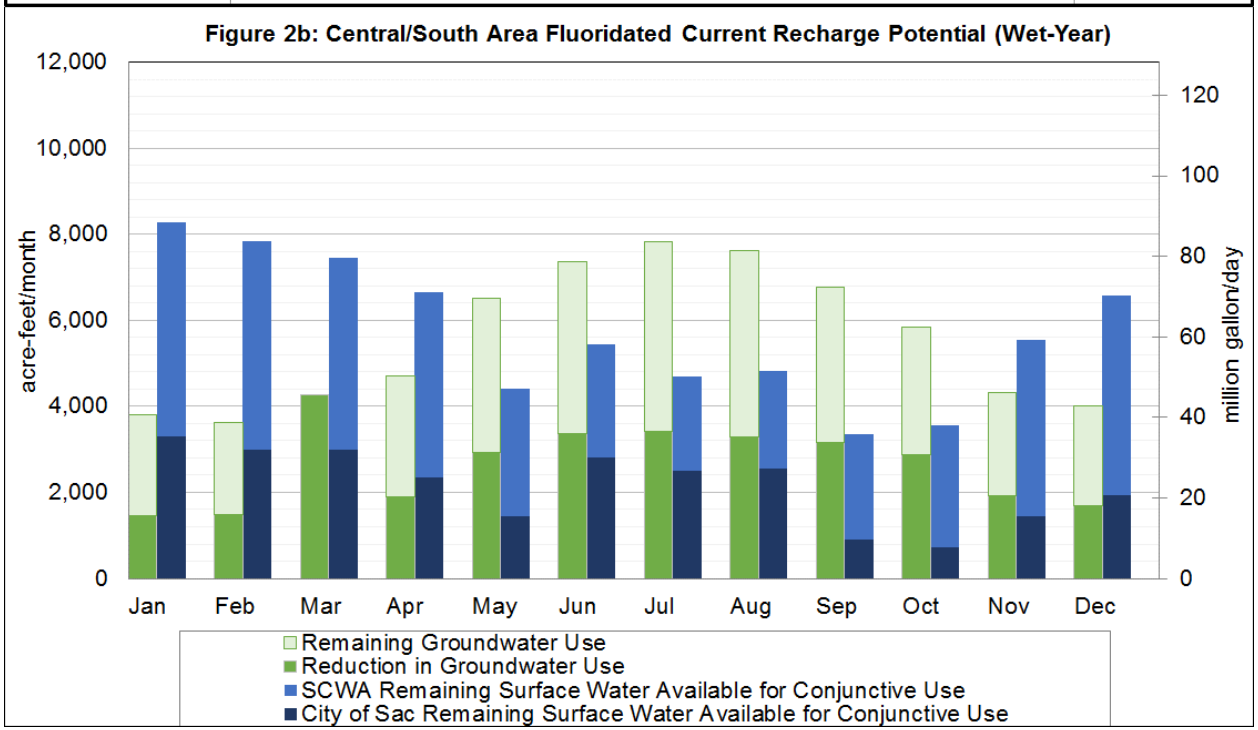




Revised Wet Year Results:

Central/ South Area Non-Fluoridated





Revised Wet Year Results:

Central/ South Area Fluoridated

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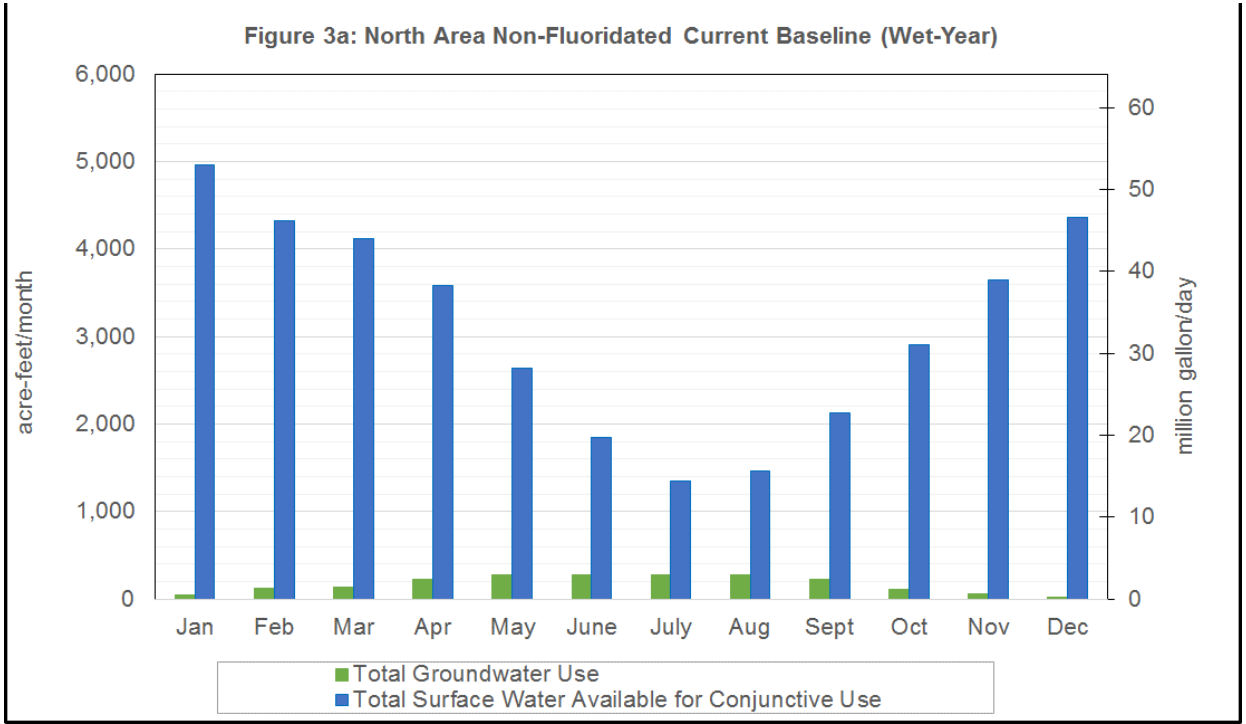

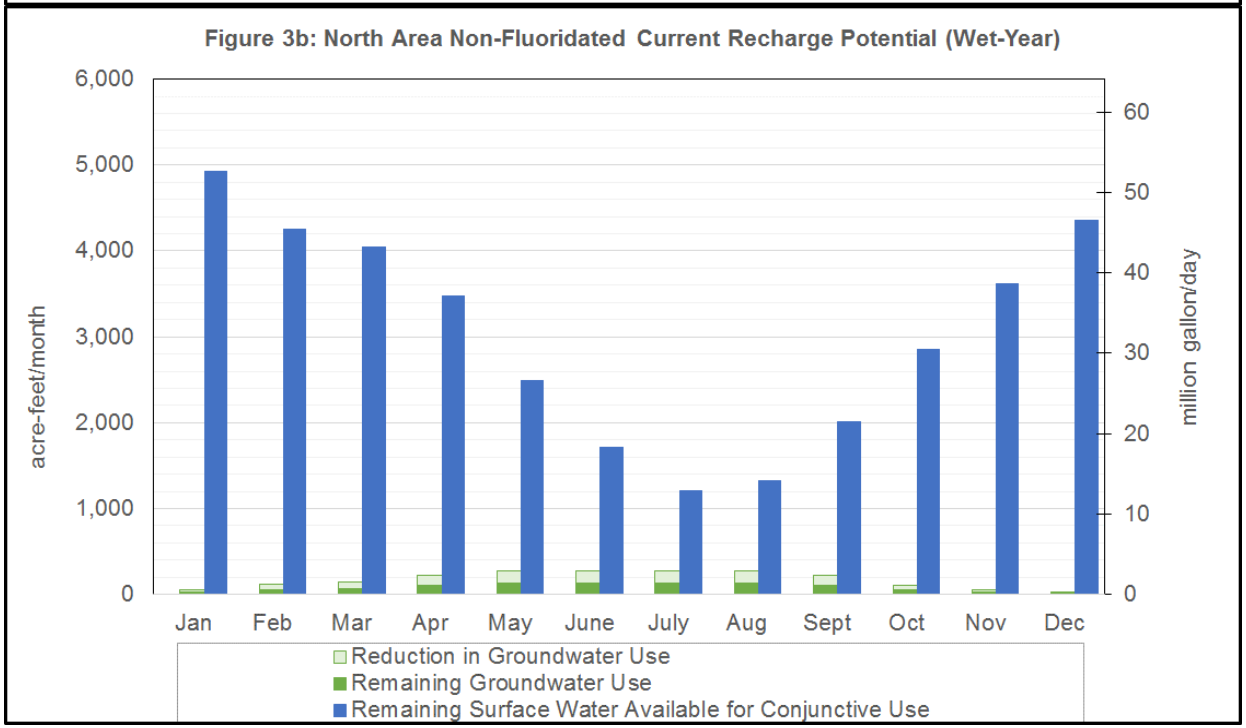

Revised Wet Year Results:

North Area Non-Fluoridated

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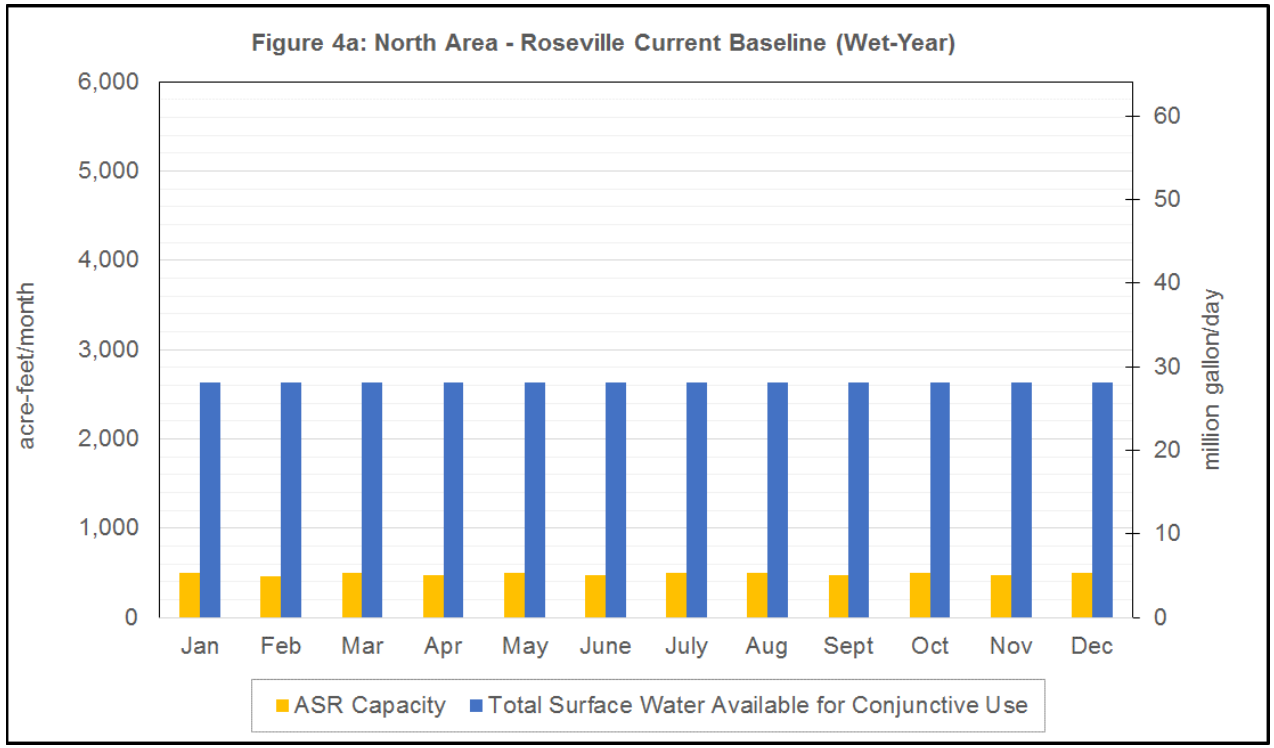
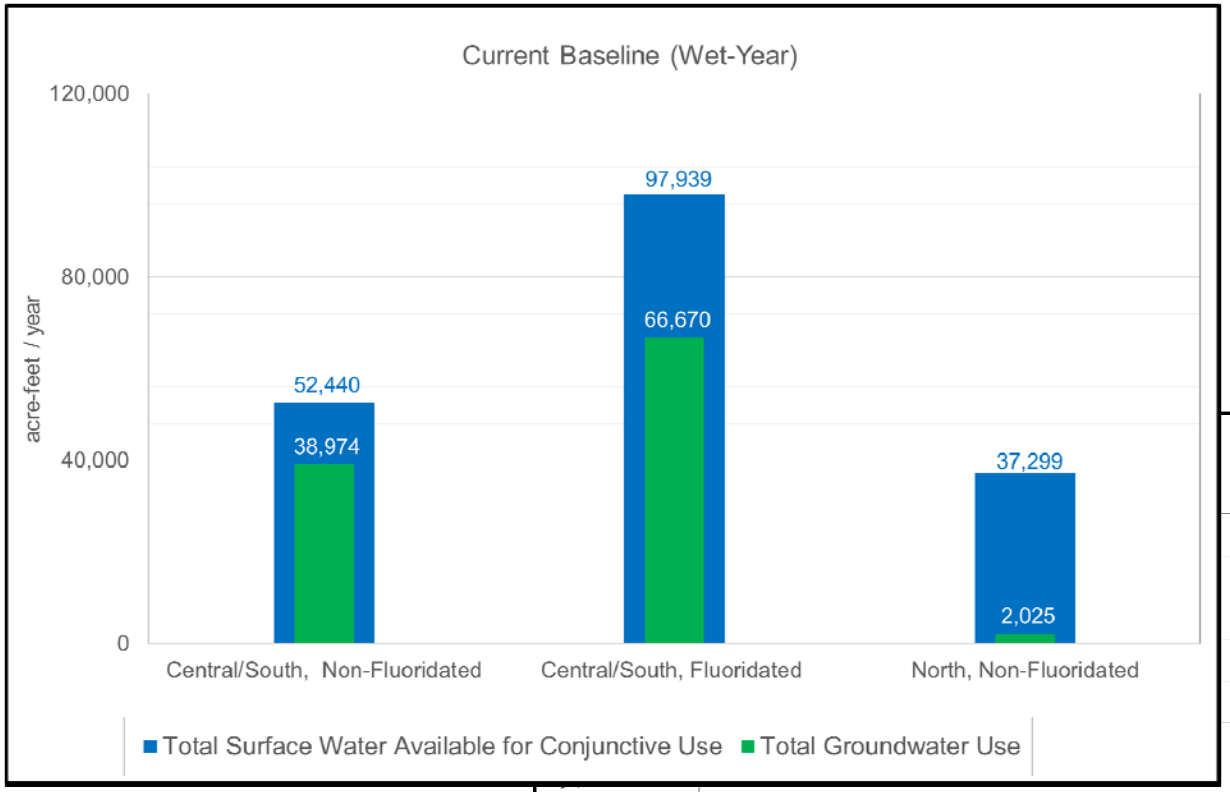
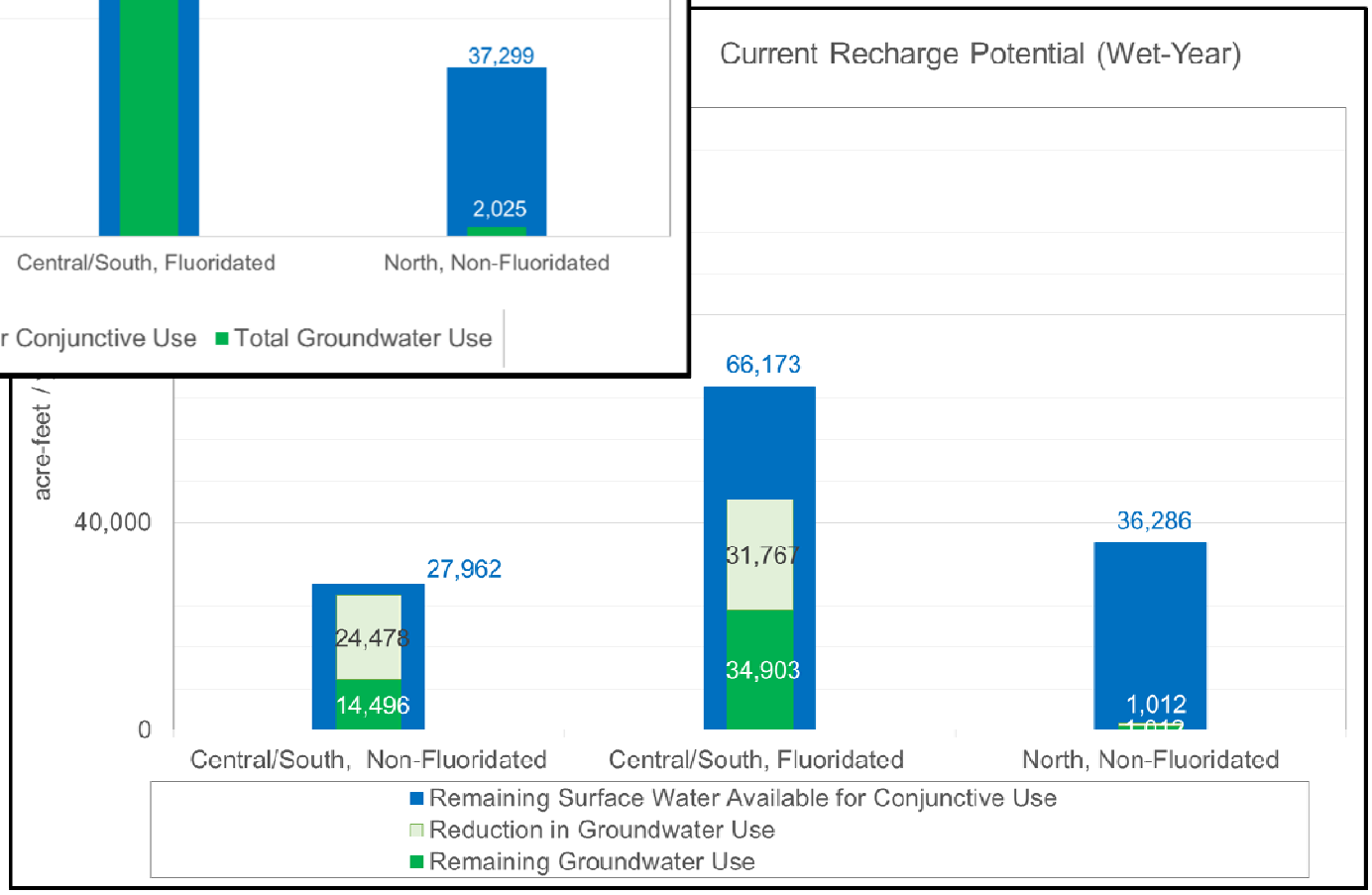


Revised Wet Year Results:

North Area - Roseville

Summary of Recharge Opportunities





Limitations on Recharge

Area	Limitations on Recharge (Wet-Year)
Central/South Non-Fluoridated	• Interties limitations • Need to maintain some groundwater production
Central/South Fluoridated	• Interties limitations • Limited intra-district infrastructure • Uncertainty of future availability of surface water from Fairbairn WTP.
North Non-Fluoridated	• Limited existing M&I groundwater use
North Roseville	• Limited ASR capacity

RMA

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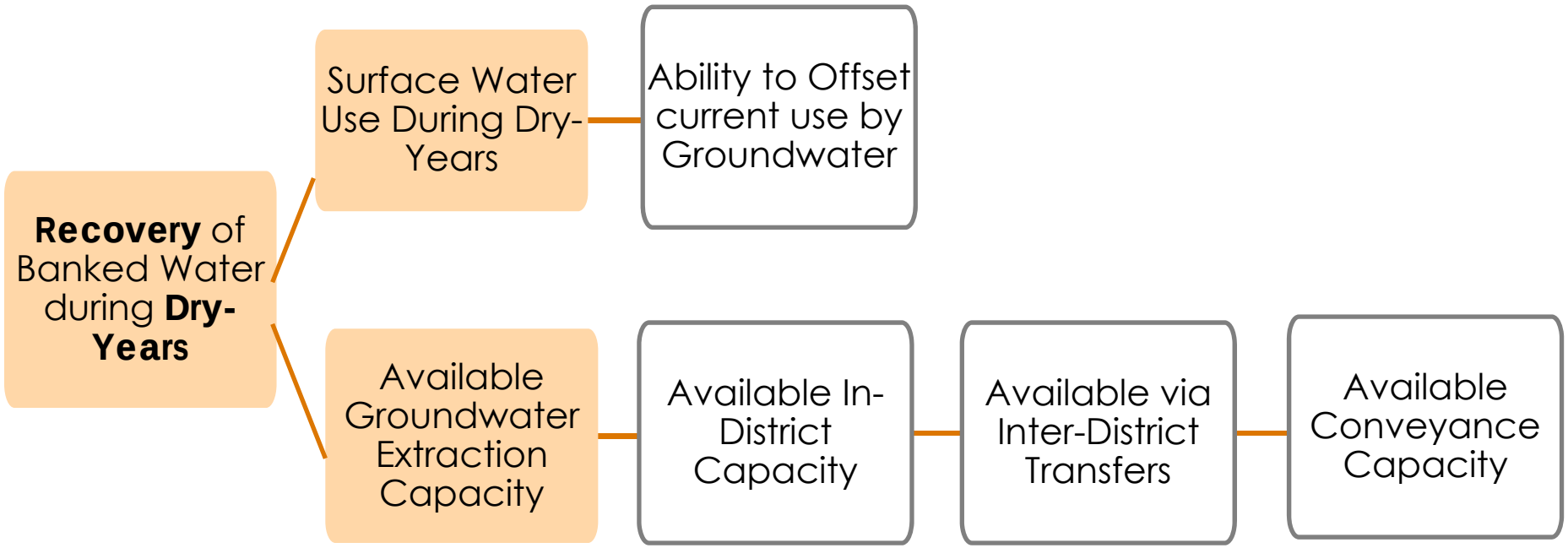
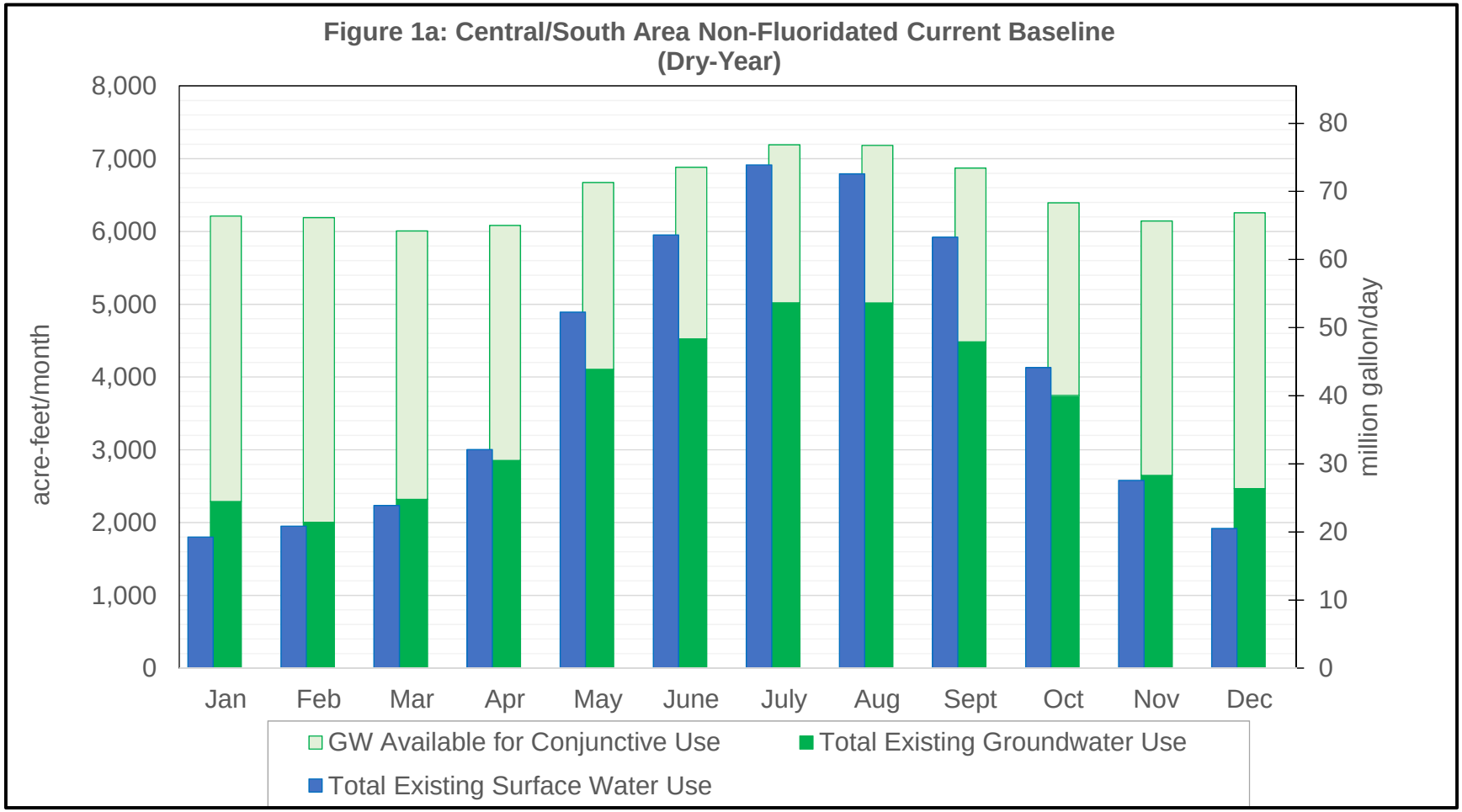
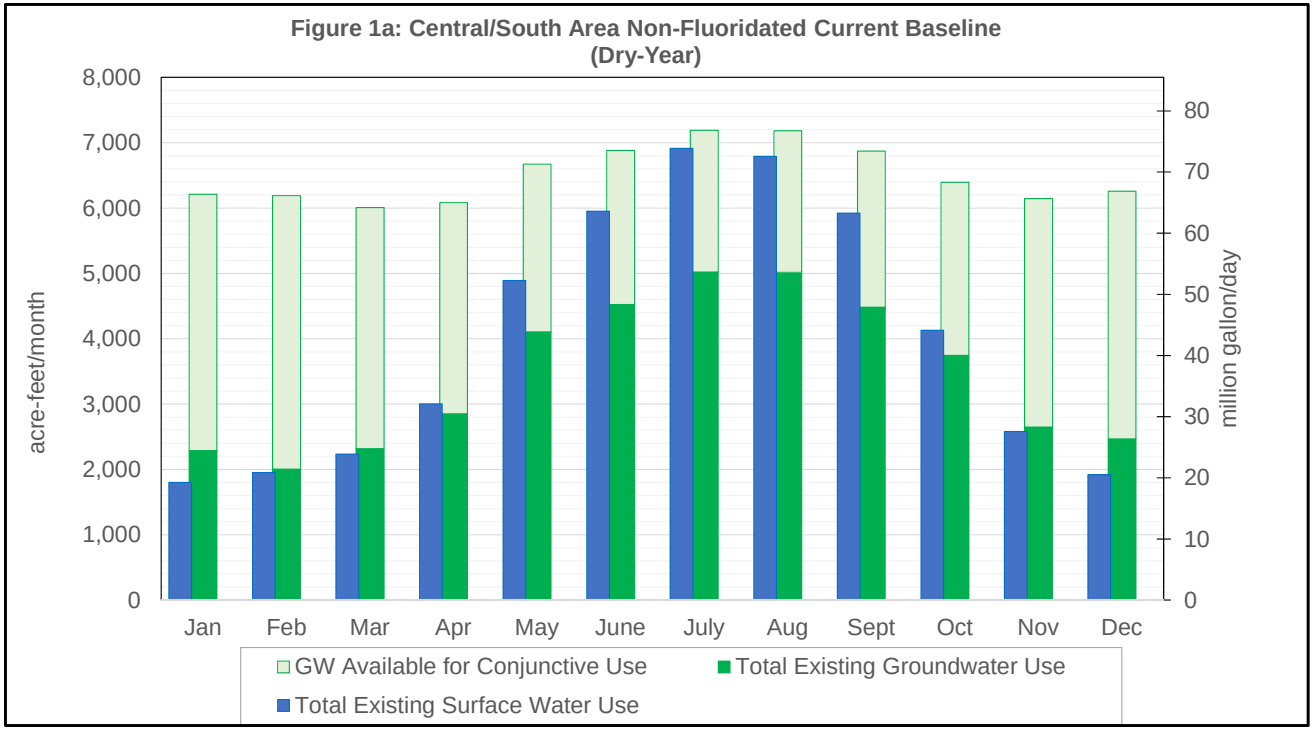
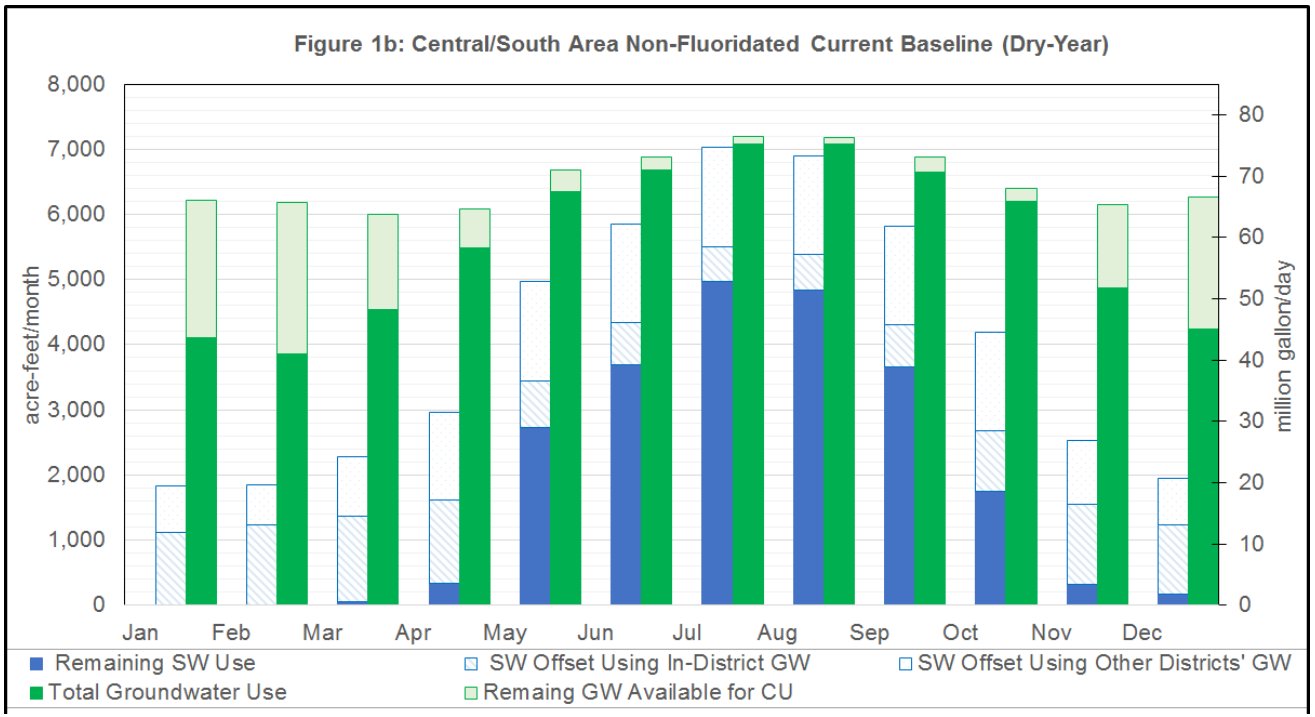
Dry-Year Recovery Analysis Constraints



Dry Year Results: Central/South Area Non-Fluoridated







Dry Year Results:

Central/ South Area Non-Fluoridated

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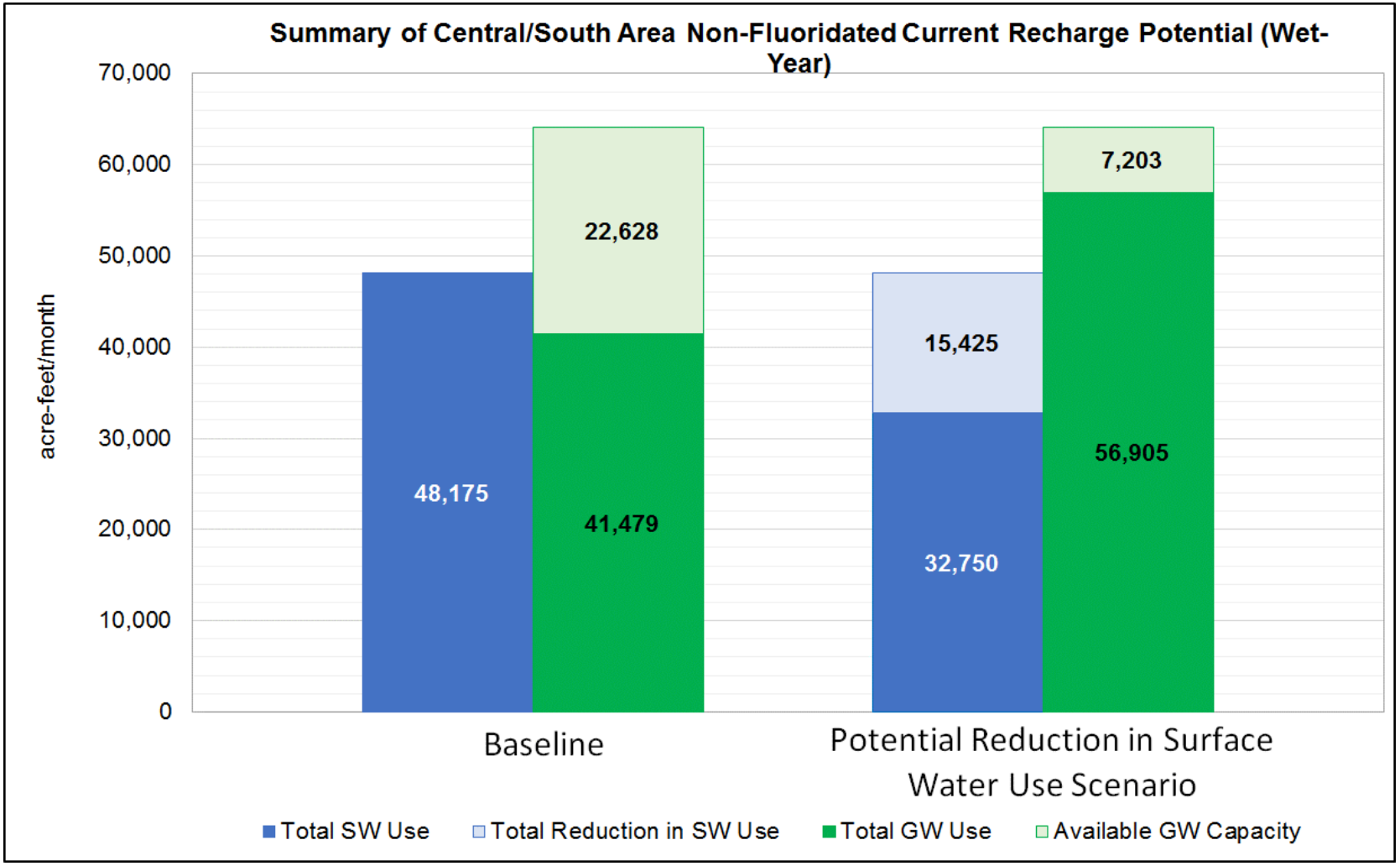
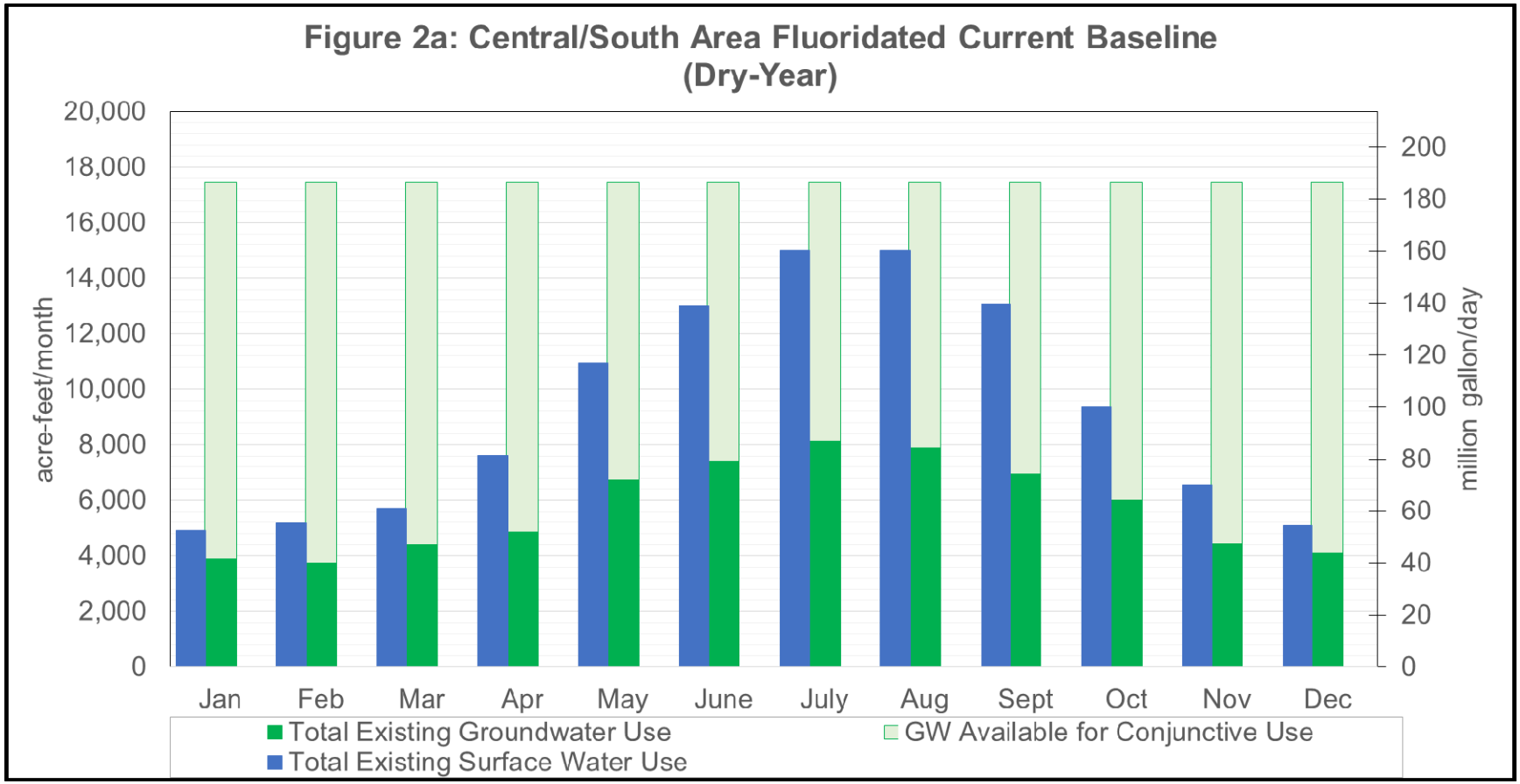
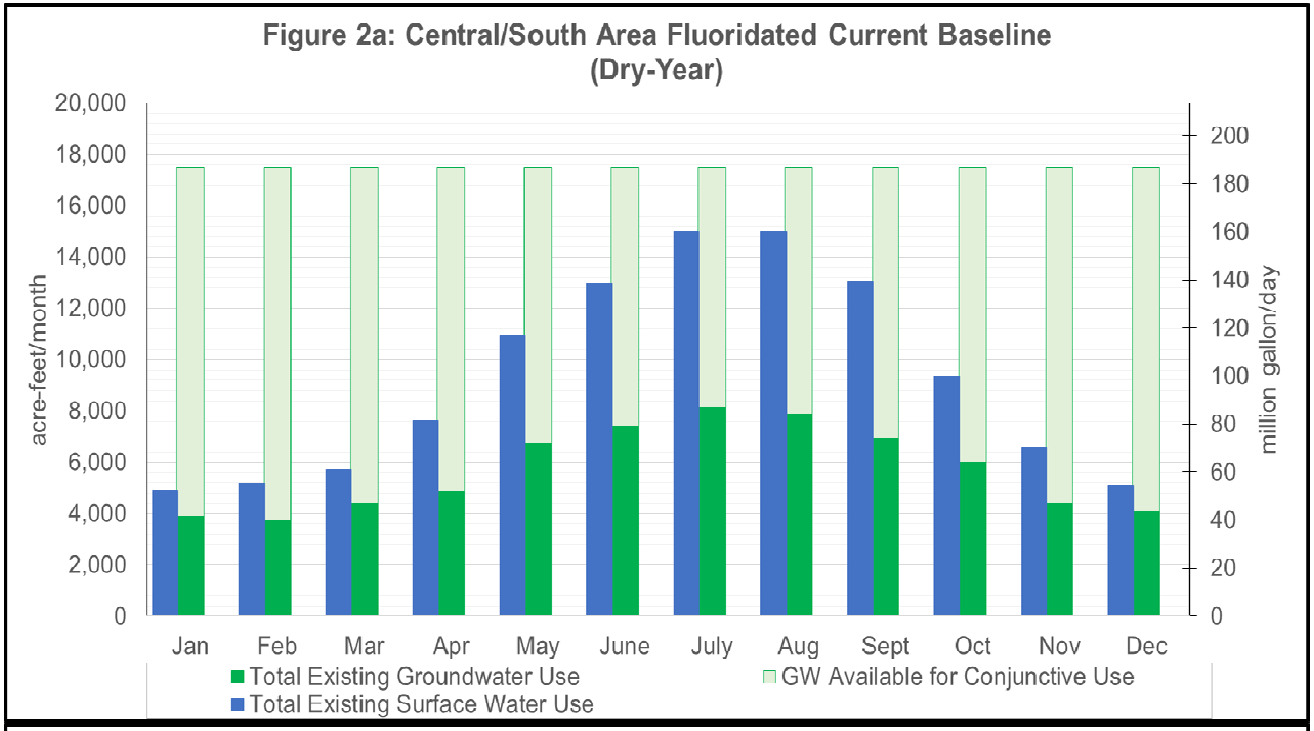
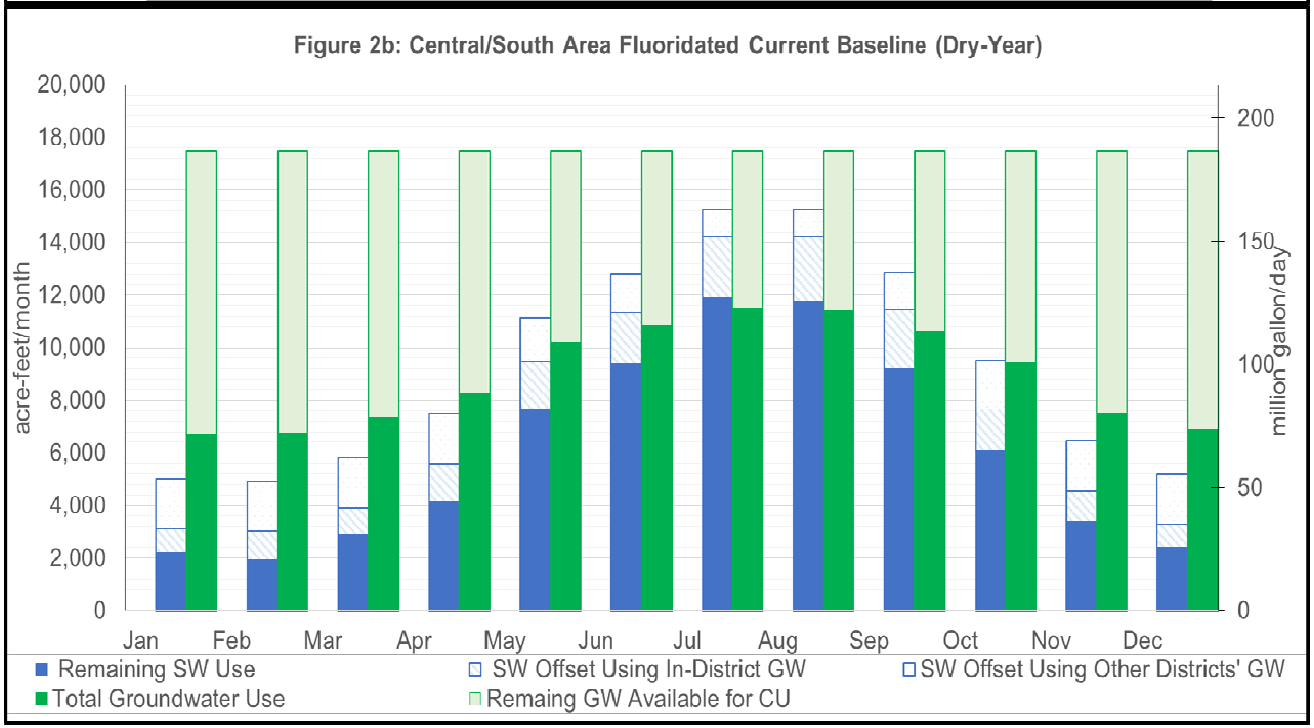
Central/South Area Non-Fluoridated



Dry Year Results: Central/South Area Fluoridated







Dry Year Results:

Central/ South Area Fluoridated

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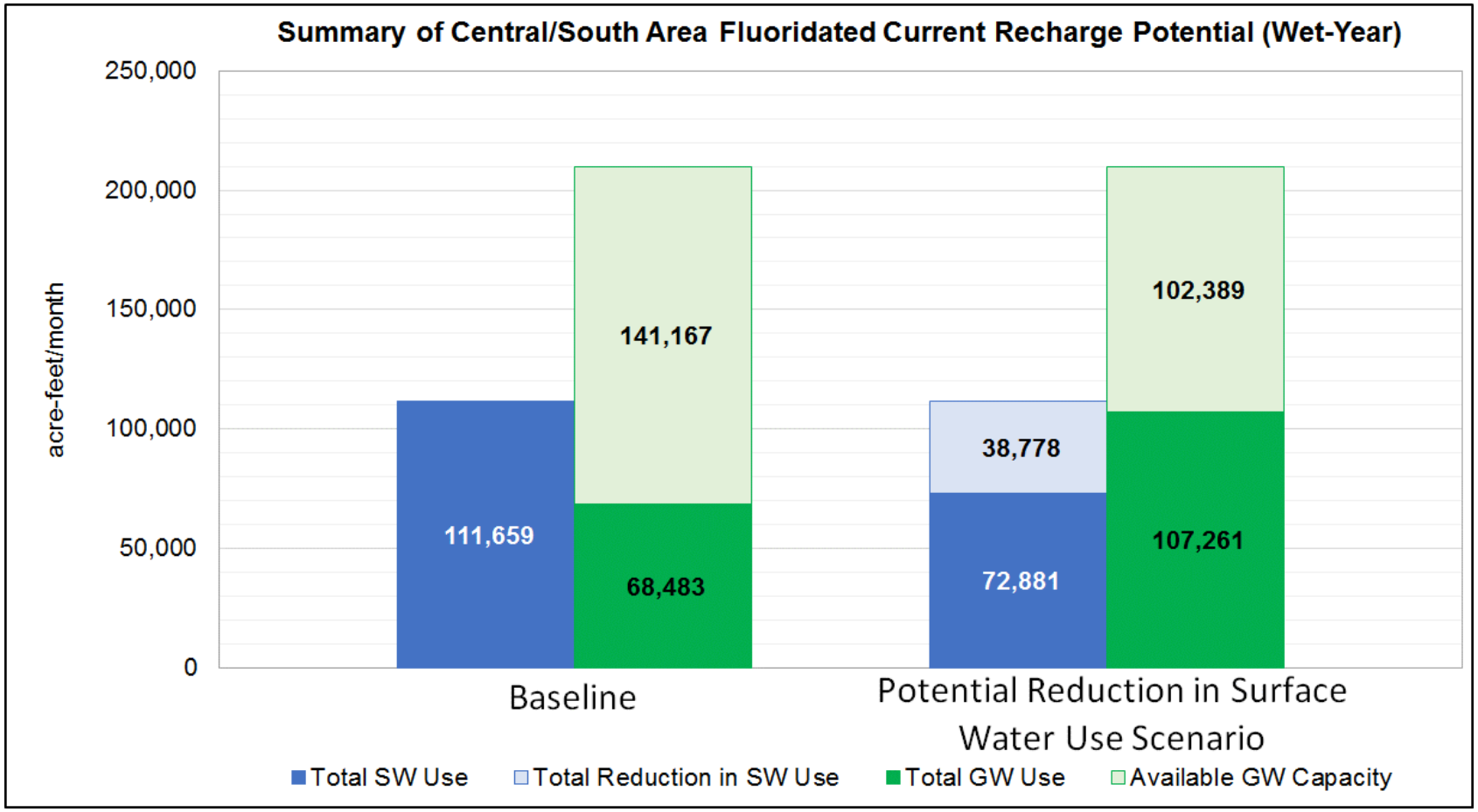
Central/South Area Fluoridated



Next Steps

- Agencies Provide Feedback on Dry Year Recovery Assumptions by Wednesday 10/18
- Characterizing Groundwater Basin Storage Potential

3. Key Dates

Key Dates

Comments Due on Mitigation Actions & Conjunctive Use	October 18
IRWMP Meeting	October 23
RWRP Meeting	January 10
Final RDCP	TBD