Joint Tri-Valley Potable Reuse Technical Feasibility Study

WateReuse Northern California Chapter
August 24, 2018

Engineers...Working Wonders With Water®

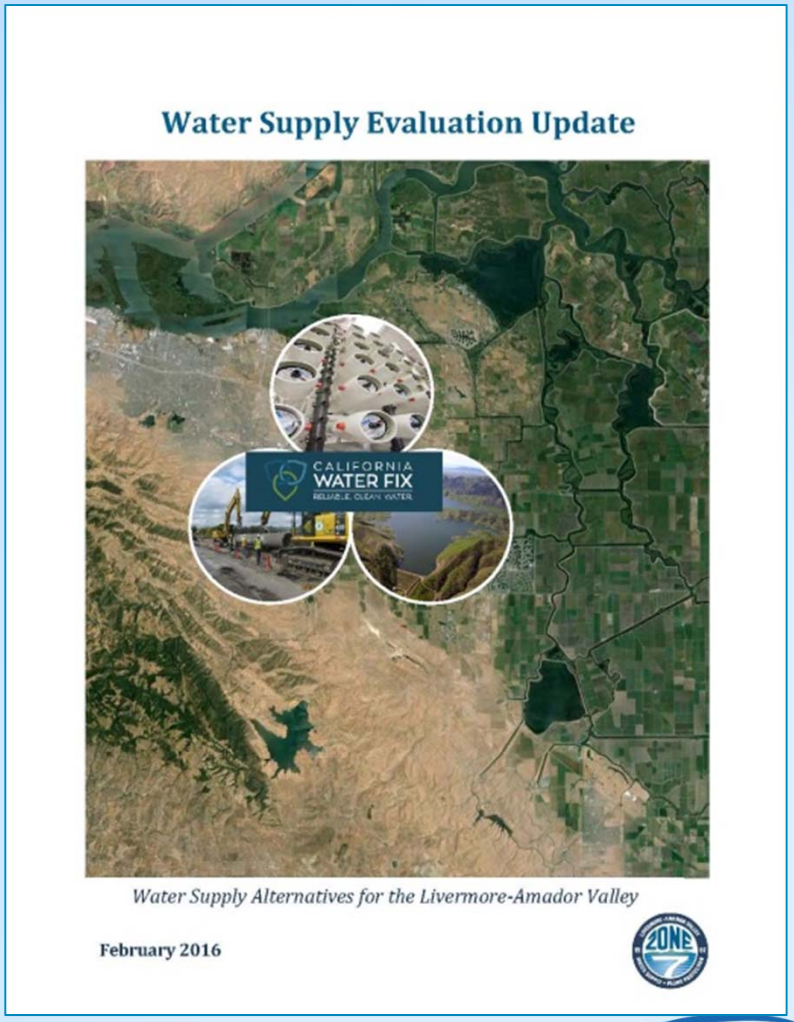
Motivation for the Feasibility Study

- Need to pursue water supply options to enhance long-term water supply reliability for the Livermore-Amador Valley.
- Potential options identified in the 2016 WSE Update include the California WaterFix, desalination, and potable reuse ("purified recycled water").

Potable Reuse Benefits:

- ***Drought-resistant***
- ***Local***
- ***Reuse of resource***

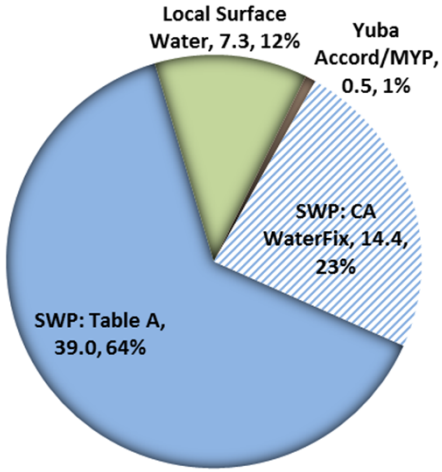
February 11, 2016: Liaison Committee (Tri-Valley elected officials) supported a more detailed study of potable reuse options.



Updated Water Supply Portfolios: Zone 7 Supplies

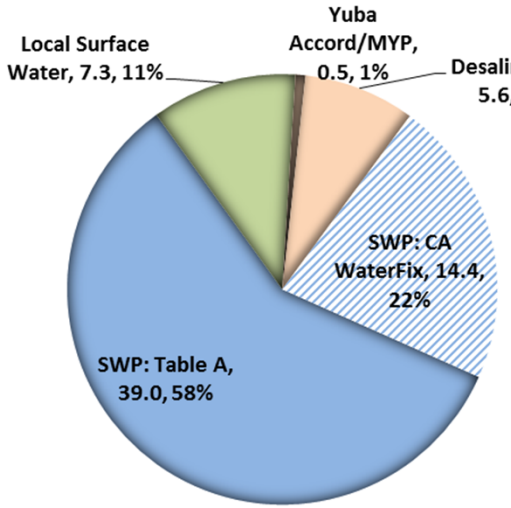
Current Plan

61 TAF



Portfolio A

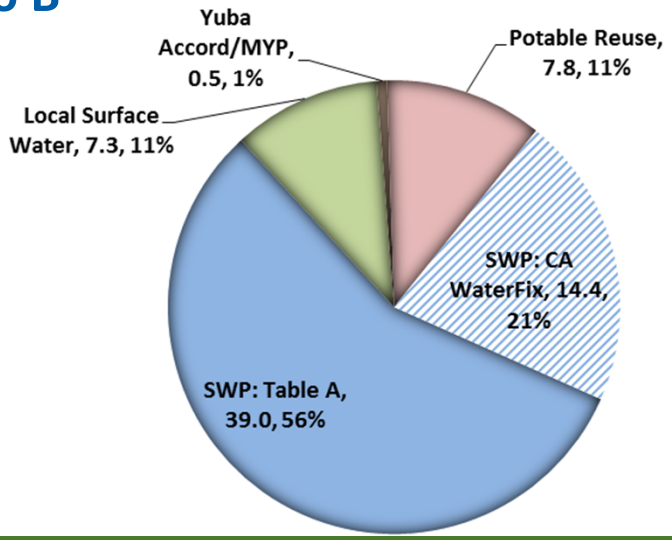
67 TAF



Long-Term Demand = 60 TAF

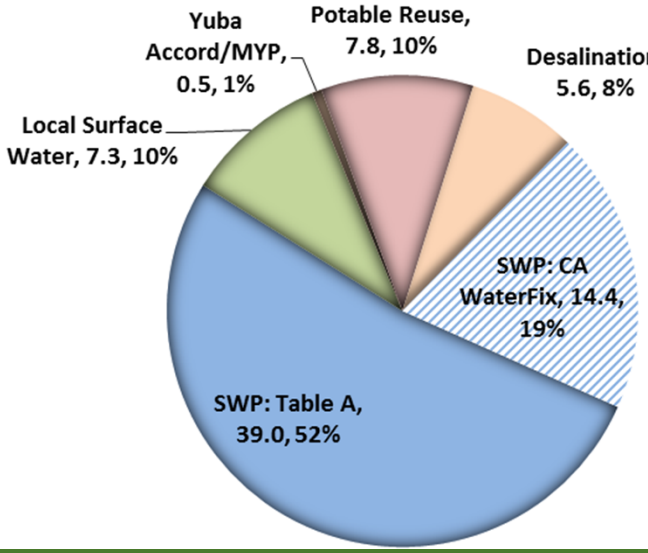
Portfolio B

69 TAF



Portfolio C

75 TAF



Portfolio C is the only option supplying enough water without CA WaterFix.

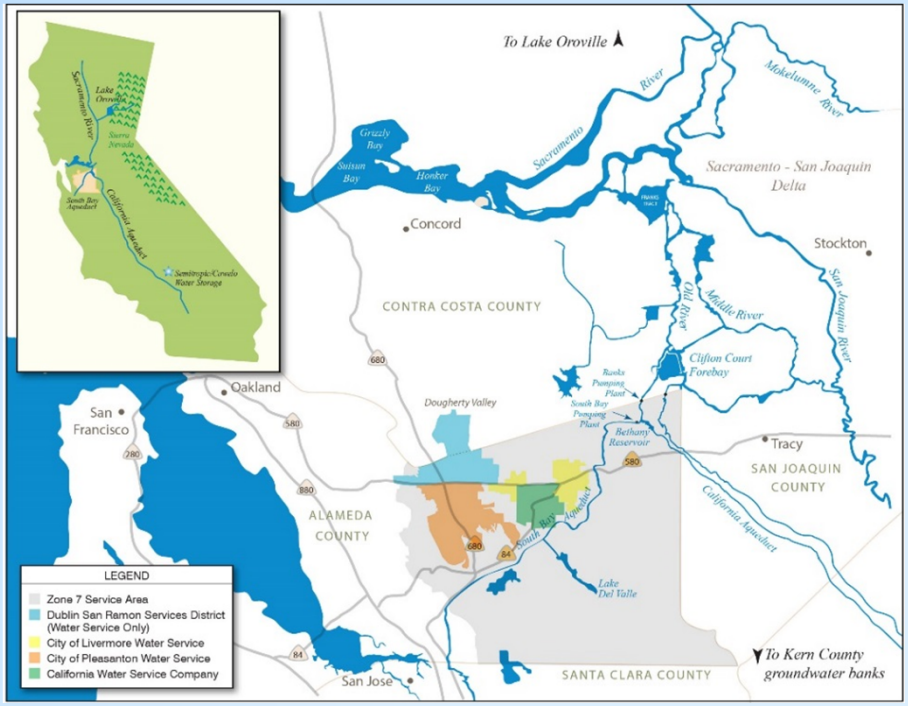
Under these portfolios, SWP would still represent 70-90% of Zone 7's water supplies.

This Project was a Partnership

- The study is jointly funded and managed by the Tri-Valley water agencies:
  - **Steering Committee** – executive oversight.
  - **Project Management Committee** - oversee the technical work, with a designated project manager from Zone 7.
  - **Zone 7** - contract administrator for consulting services.
- Separate efforts to address outreach and institutional issues, with Livermore taking the lead on outreach and Pleasanton taking the lead on institutional issues.

Study's Primary Goals are to determine feasibility

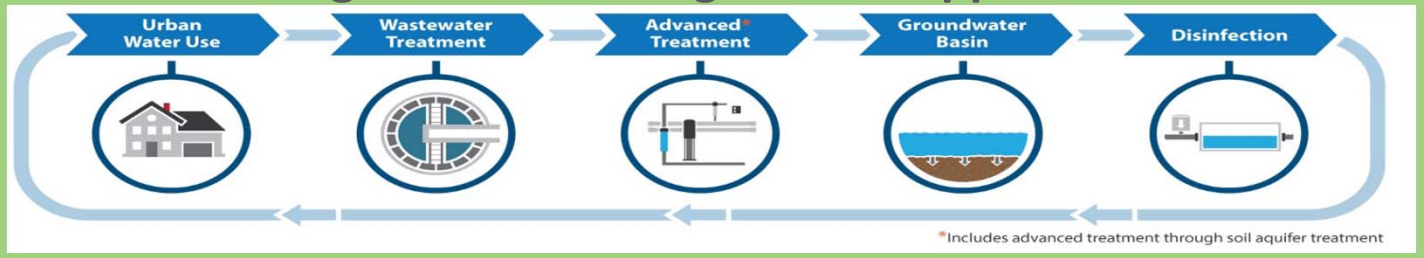
- Determine if potable reuse is feasible based on regulatory, technical and financial considerations
- Bookend a short list of alternative potable reuse projects for evaluation
- Recommend technical next steps.



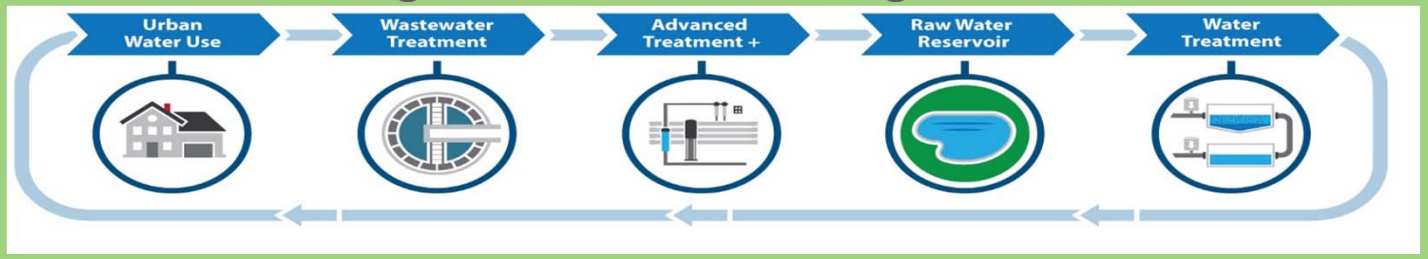
Status of Regulations for "Potable Reuse" in CA

Considered in the Feasibility Study

1. Groundwater Augmentation – Regulations Approved

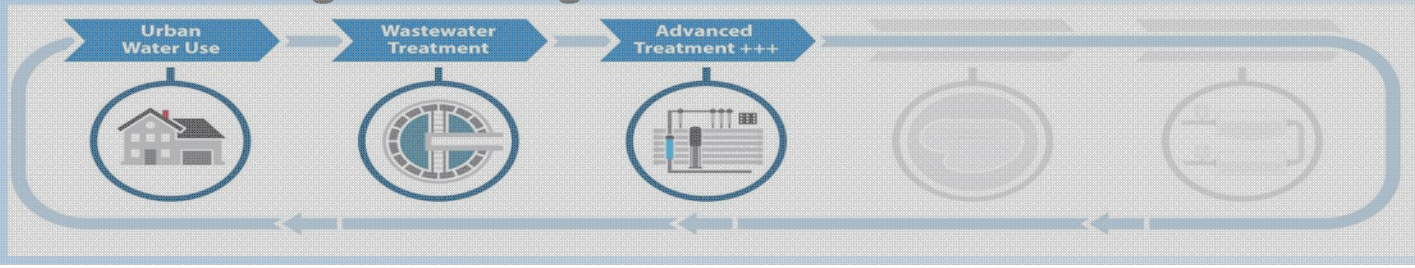


2. Reservoir Water Augmentation – Draft Regulations



3. Raw Water Augmentation – Regulations to be developed by 2023

4. Treated Drinking Water Augmentation - TBD



[Project Status](#)

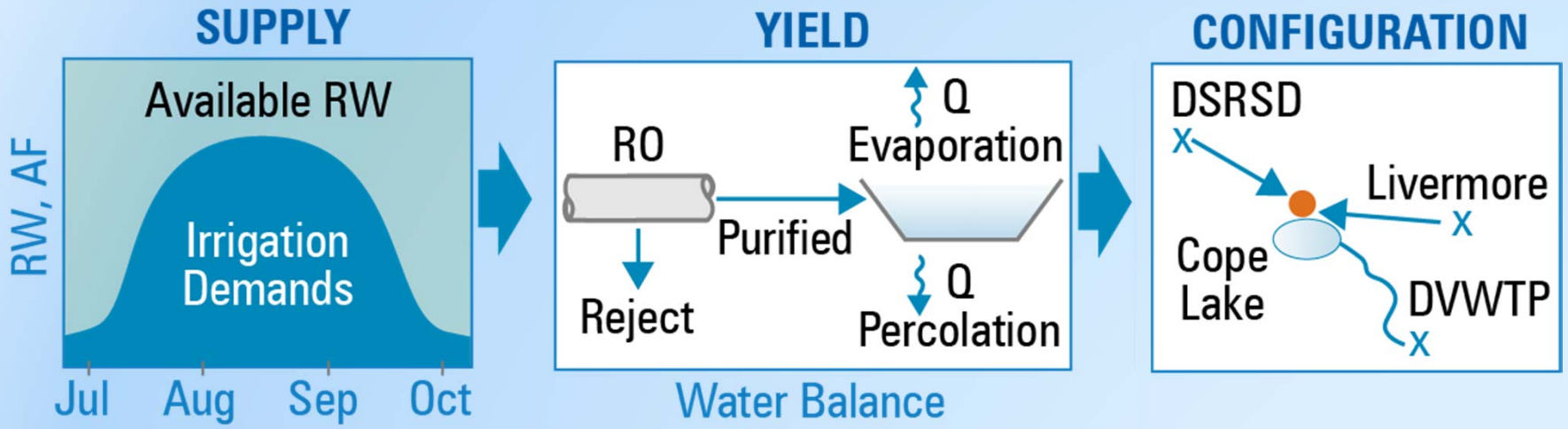
Operations since the 1960's

Concept approved for San Diego 2018

5 CA agencies working with NWRI

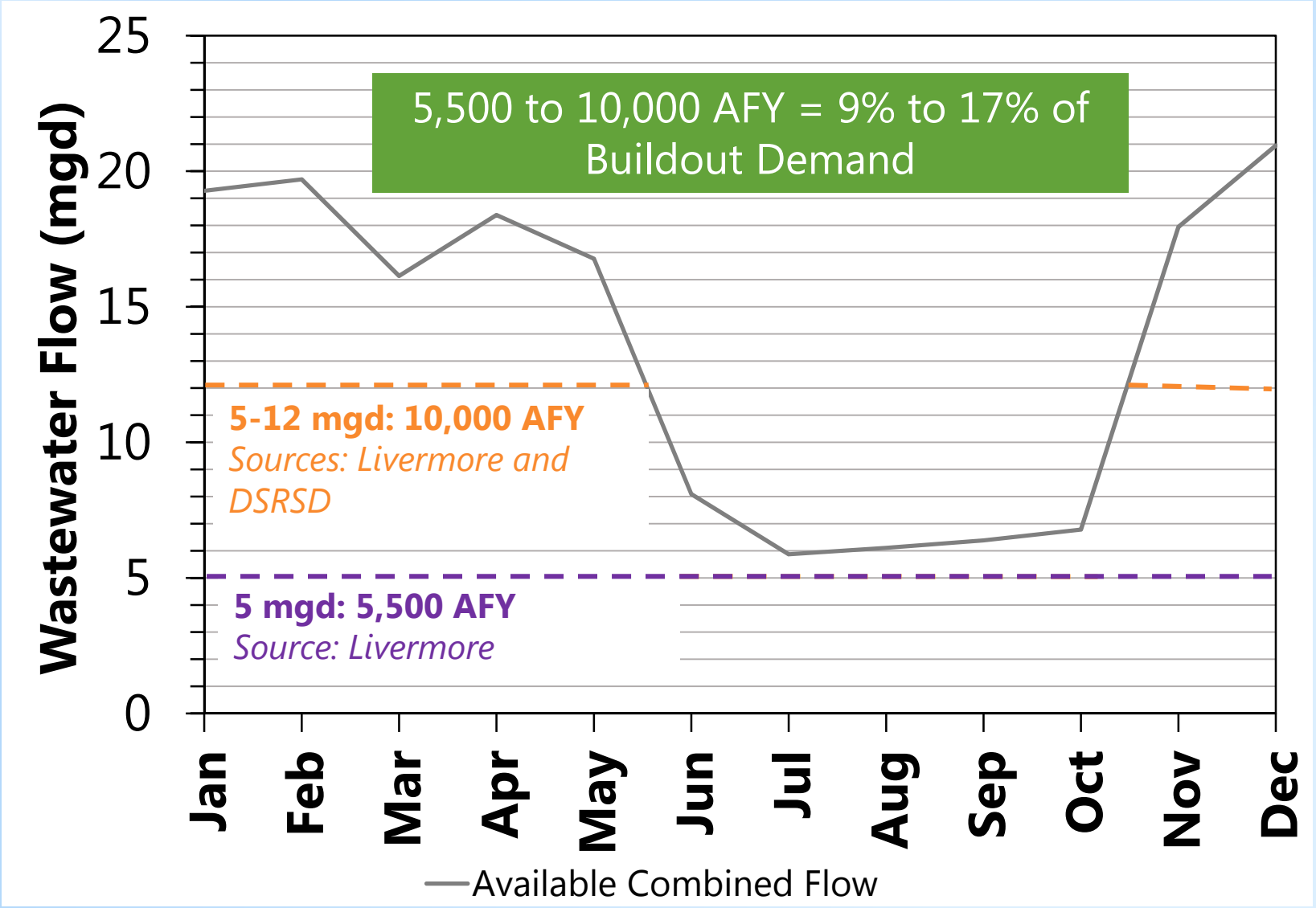
Lots of Interest

Alternatives analysis incorporates source, treatment, storage, and end use options

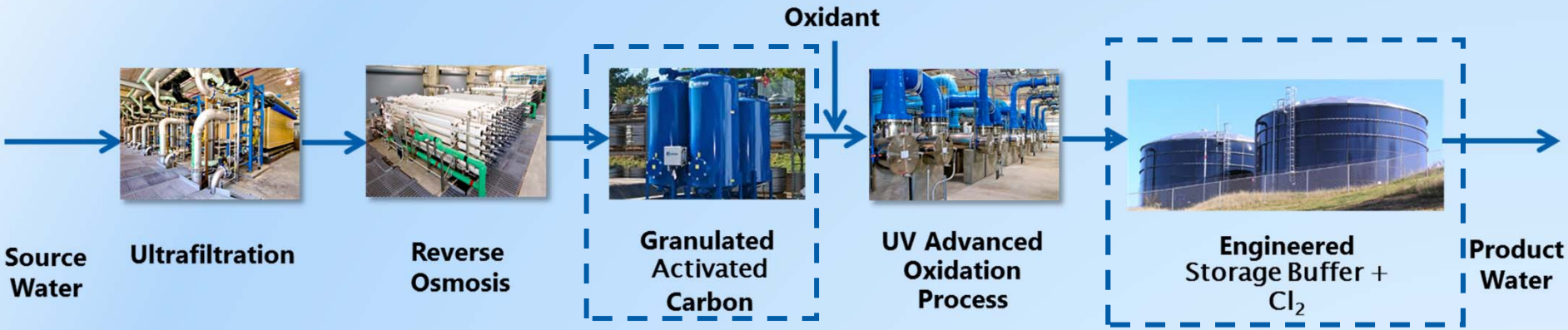


1. Source
2. Treatment/Location
3. Storage/Location
4. End Use/Location

Range of supplies available varies seasonally

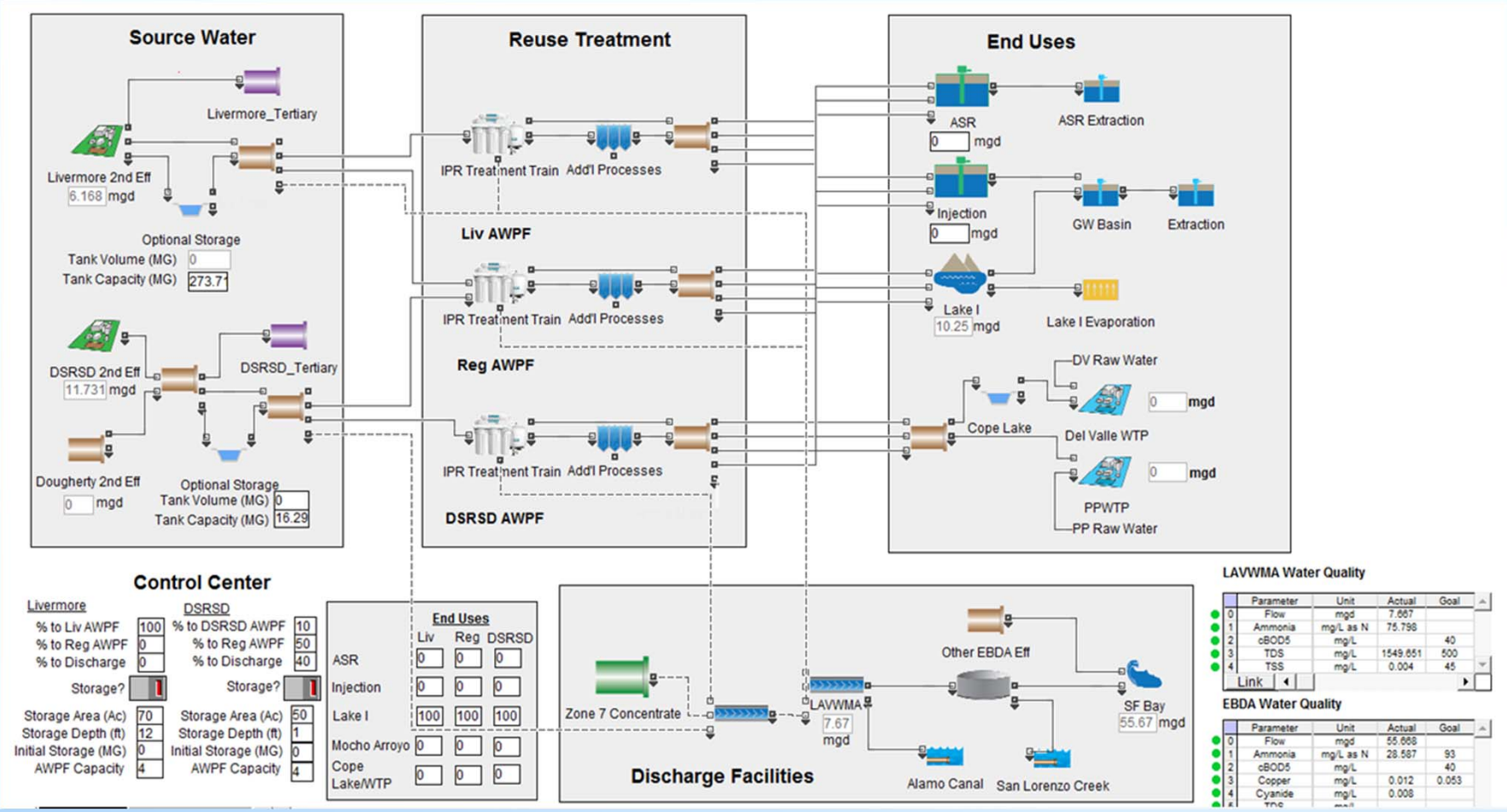


Potable reuse uses multiple barriers for reliable purification to assure protection of public health.

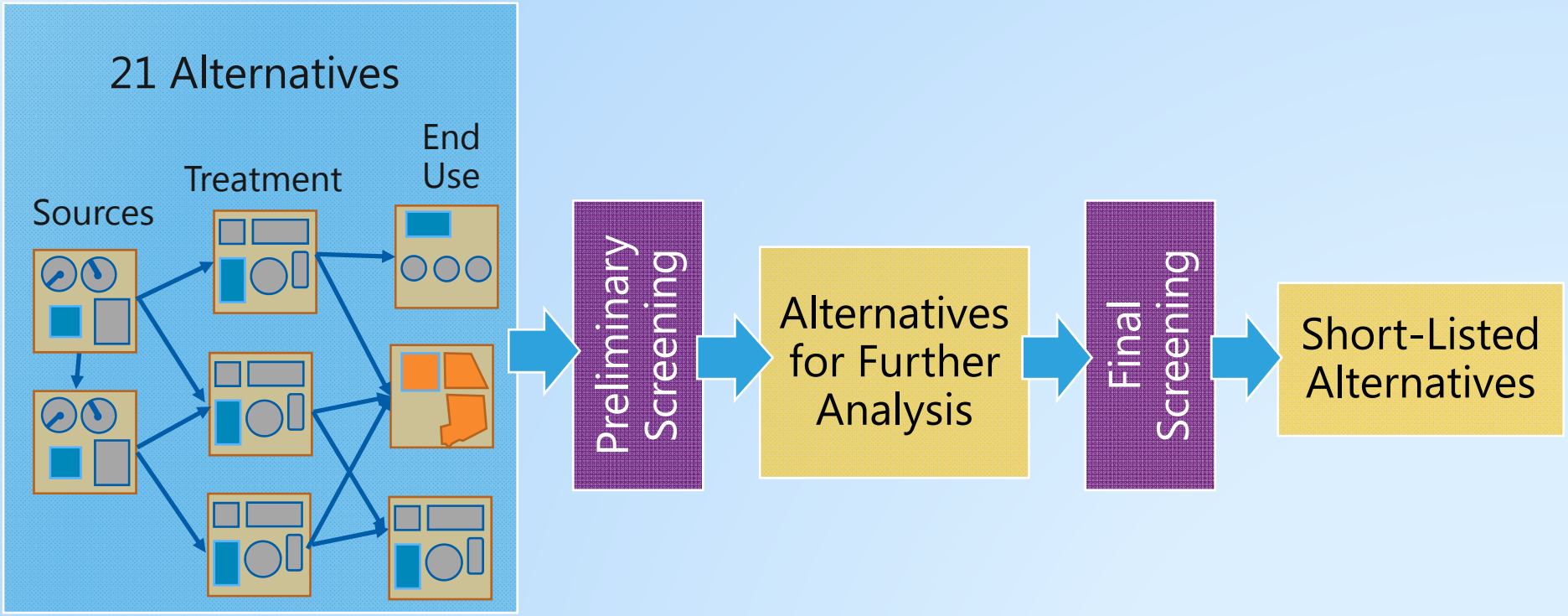


Target	UF	RO	GAC	UV AOP	ESB + Cl_2
Solids	X				
Protozoa & Bacteria	X	X		X	
Virus		X		X	X
Maximum Contaminant Limits (Salts, chemicals)		X	X	X	
Contaminants of Emerging Concern		X	X	X	
Retention Time					X

21 Alternatives for potable water reuse evaluated using Blue Plan-it®



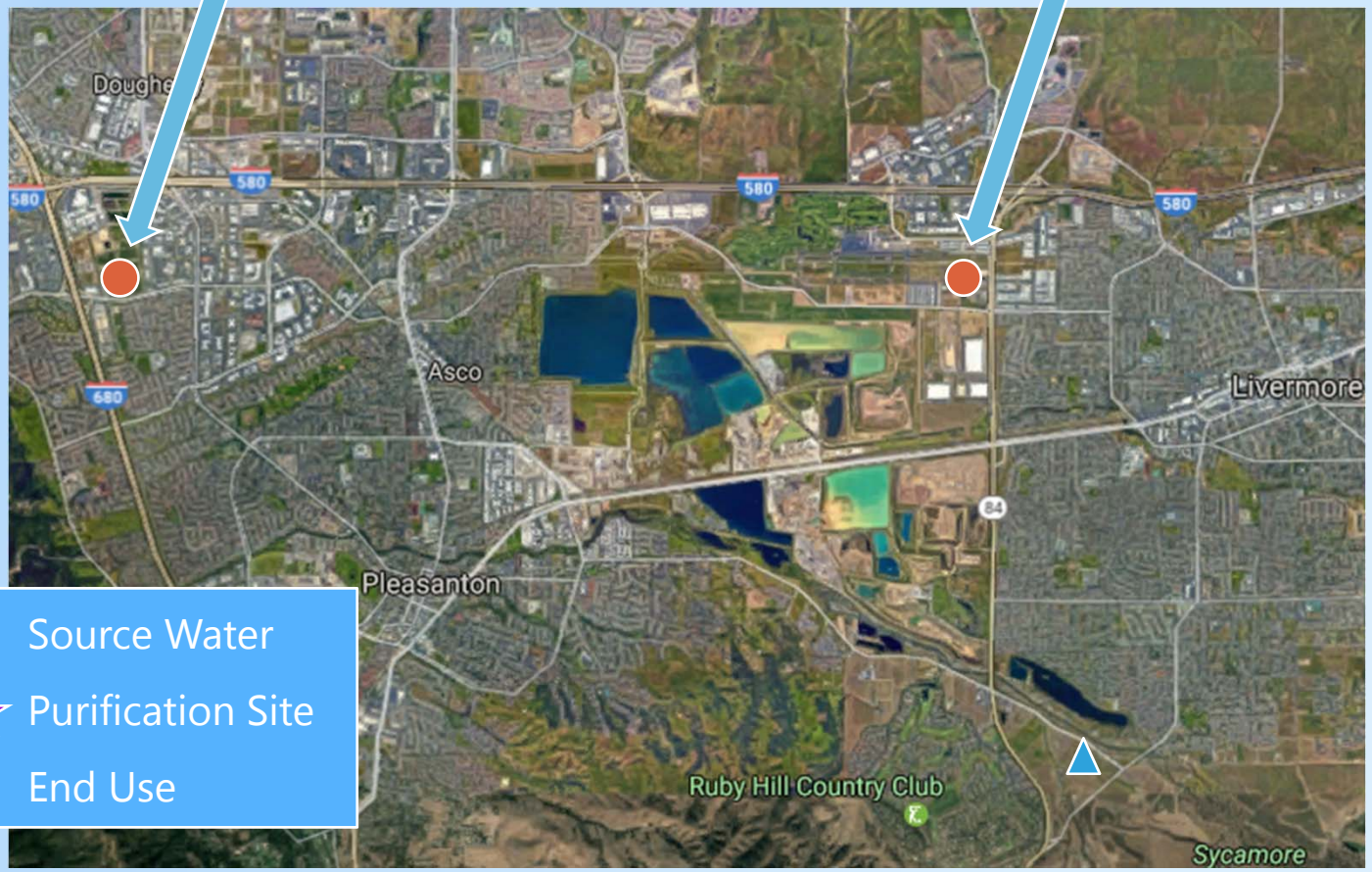
Alternatives analysis used to develop short list/bookends.



Short-listed Alternatives use different combinations of sources, sites, and end use

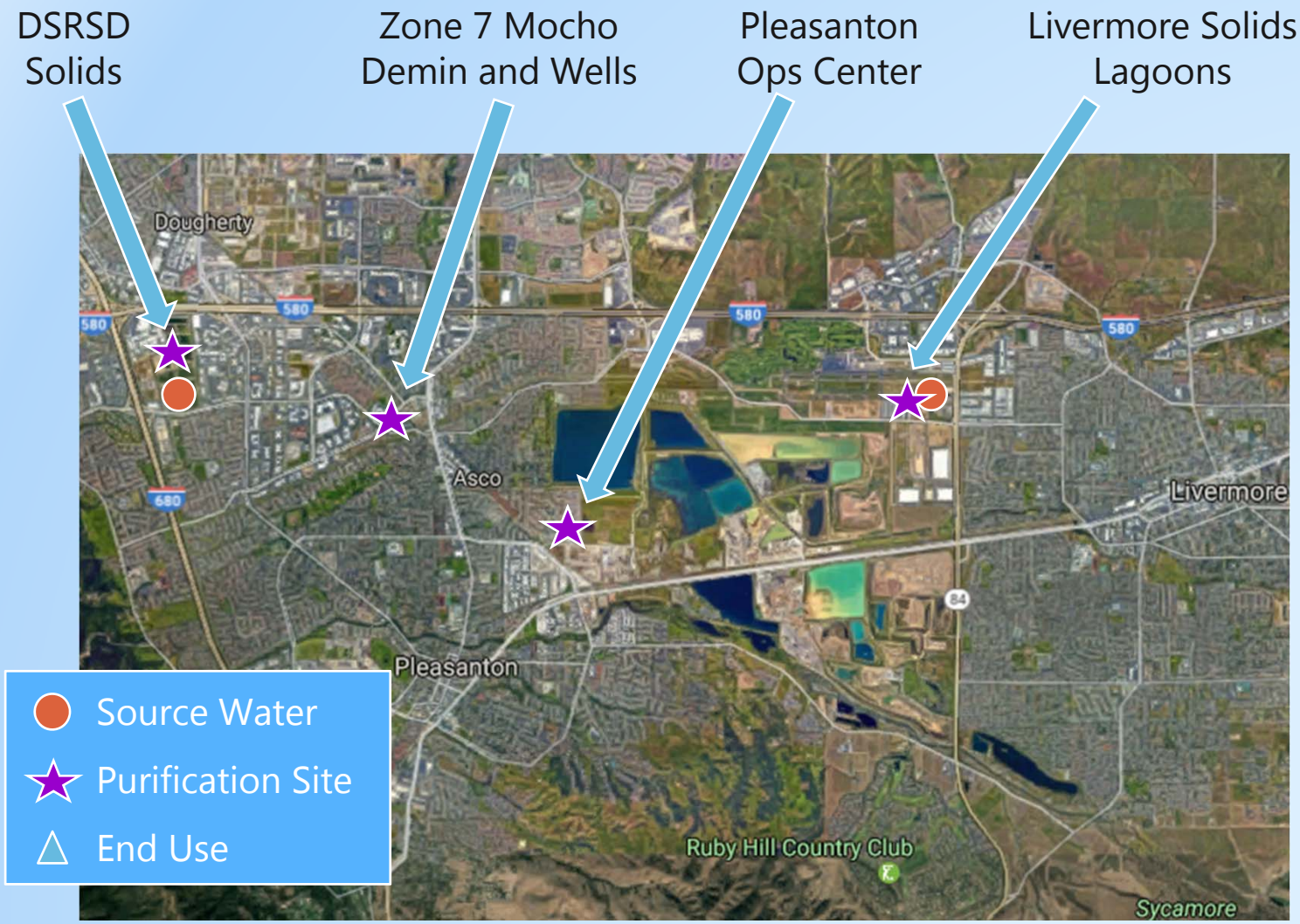
DSRSD Wastewater Treatment Plant

Livermore Water Reclamation Plant



- Source Water
- Purification Site
- End Use

Short-listed Alternatives use different combinations of sources, sites, and end use



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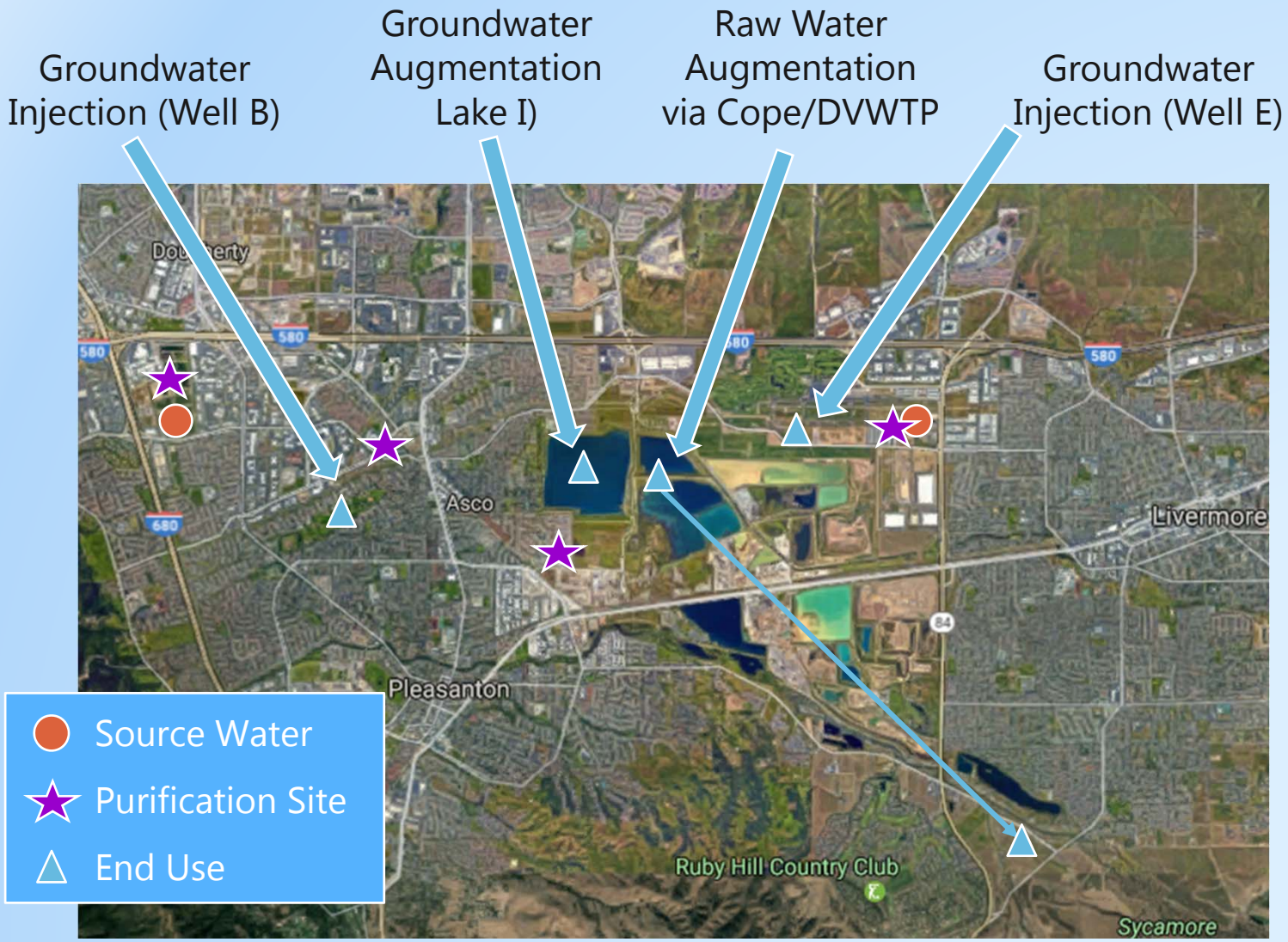
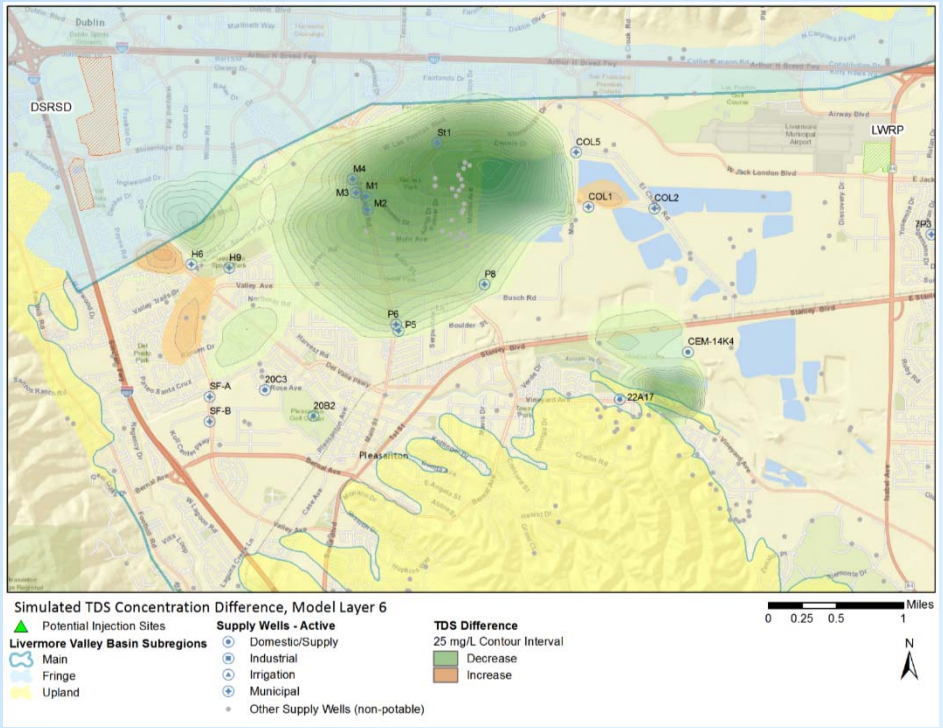


Evaluated siting/layout for short-listed options

Performed groundwater modeling of options

- Evaluated impacts of recharge on basin salt balance
  - Baseline
  - Recharge through Lake I
  - Deep aquifer injection
- Evaluated travel time
  - Injection site to nearest production well



Compared alternatives using evaluation criteria

Yield (AFY)
Cost (M$)
Improve Supply Reliability
Improved Delivered Water Quality
Improve Groundwater Basin Quality
Clear Regulatory Pathway
Minimizes Neighborhood Impacts
Ability to Phase the Project
Operational Flexibility
Ease of Construction

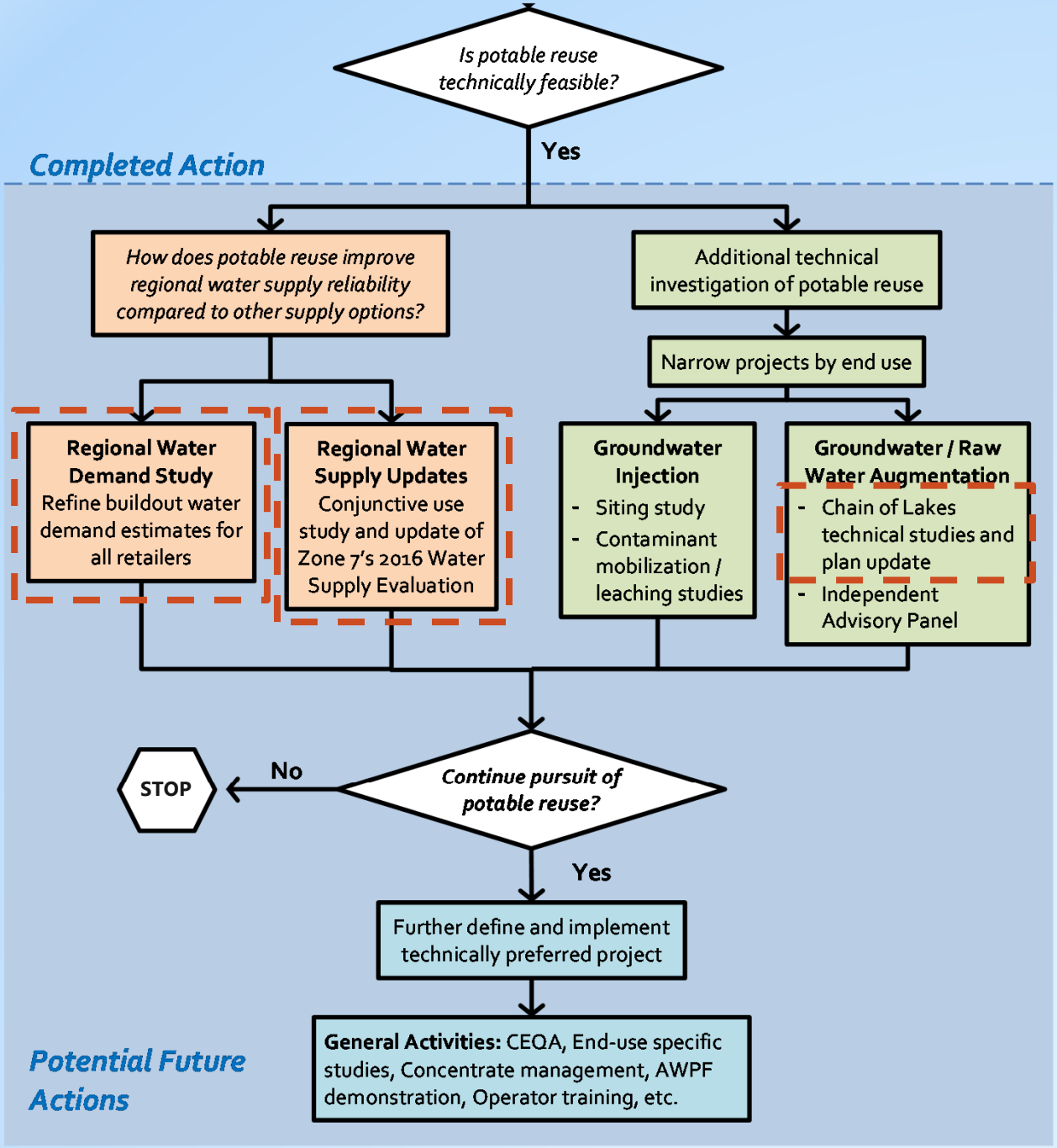
Summary of Short-Listed Alternatives

Alternative	AWPF Location	End Use	Yield [AFY]	Project Cost $M	Unit Cost $/AF
1. Livermore AWPF to COL/DVWTP	Livermore	COL/ DVWTP	5,500	$112	$2,530
2. Livermore AWPF to Well E	Livermore	GW Injection	5,500	$103	$2,420
3. DSRSD AWPF to DVWTP/COL	DSRSD	COL/ DVWTP	10,000	$222	$2,350
4. DSRSD AWPF to Well B	DSRSD	GW Injection	10,000	$194	$2,160
5. Mocho AWPF to Well B	Mocho	GW Injection	10,000	$210	$2,250
6. Pleasanton AWPF to COL/DVWTP	Pleasanton	COL/ DVWTP	10,000	$208	$2,240

Summary of Study Findings

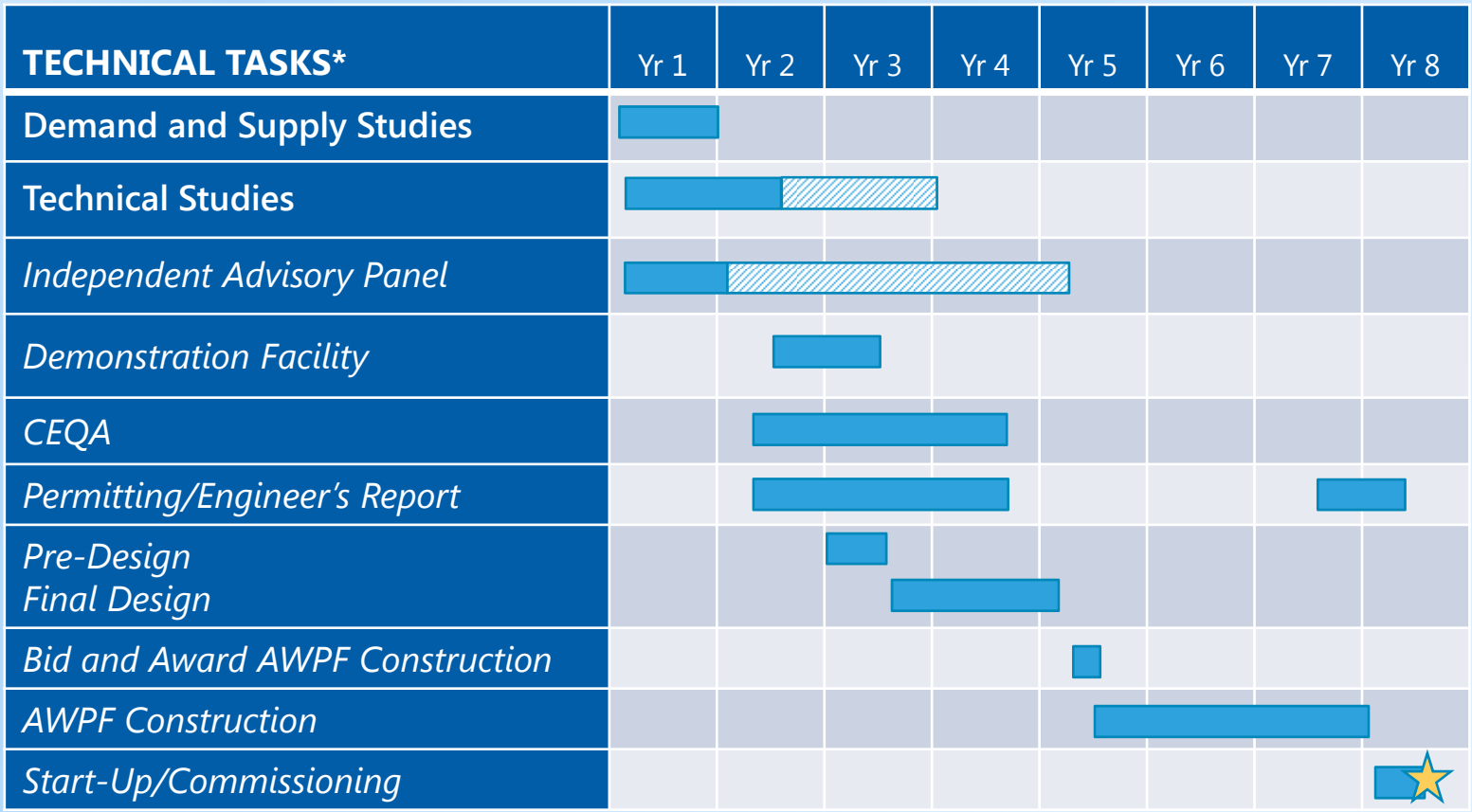
- Potable reuse for the Tri Valley is technically feasible. There were no fatal flaws identified by this technical evaluation.
- All alternatives increase water supply reliability, but impact varies depending on yield (5,500-10,000 AFY) and, less significantly, end use.
- All alternatives improve drinking water quality and some improve the overall groundwater basin quality.
- There are good options available to site the AWPF facility.
- Regulatory pathways exist for all options evaluated in the study.
- There is some variability in the overall operational flexibility and constructability depending on the option.
- Cost ranges for the book-end options:
  - *Capital costs = $103 to $222 million.*
  - *Operations and Maintenance Costs = $6.5 to $9M/year.*
  - *Overall unit costs = $2,200-2,500/AF.*

Next Steps



Recommended immediate next steps. Previously identified in the Zone 7 CIP and staff planning efforts.

Potable Reuse Conceptual Timeline for Implementation



*Tasks in italics (and hashed boxes) are needed only if a project is selected for implementation.

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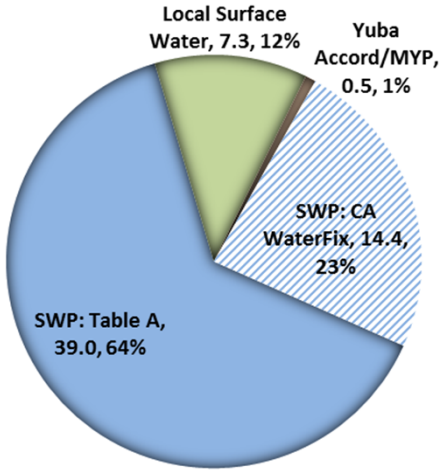

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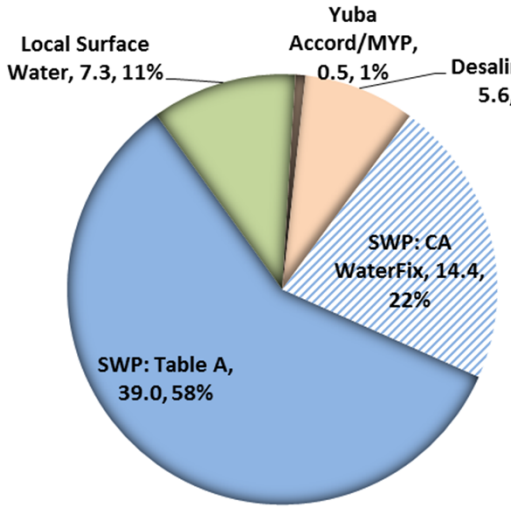

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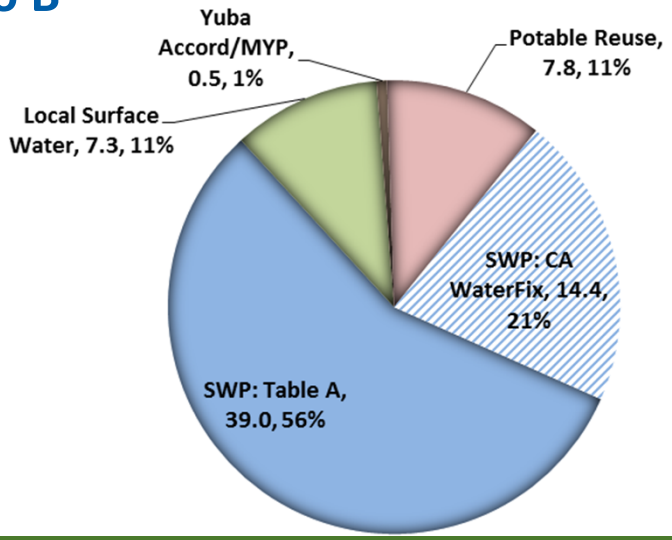

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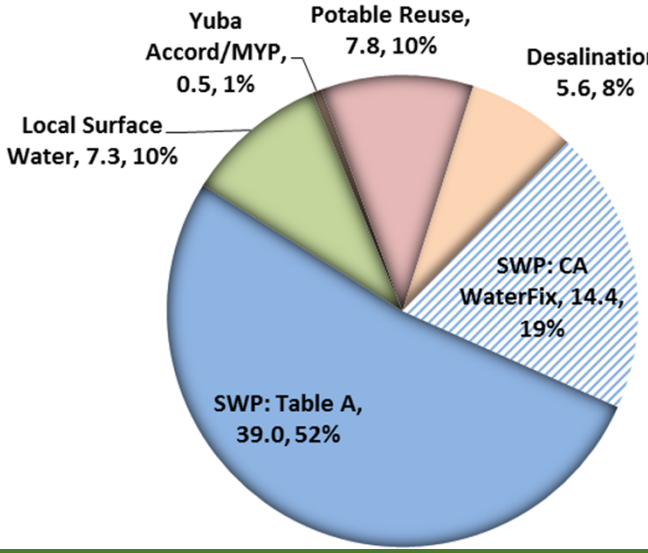

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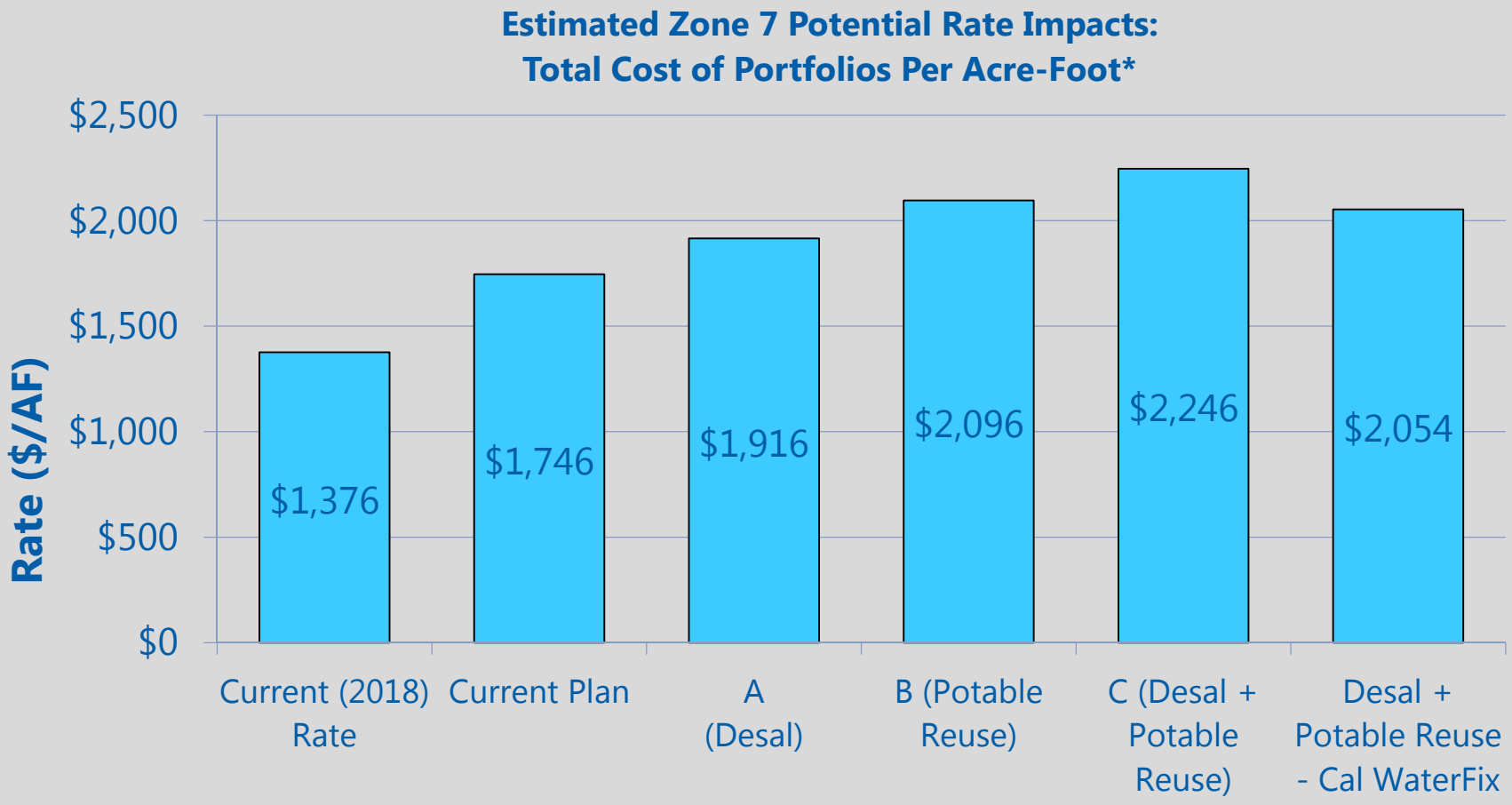
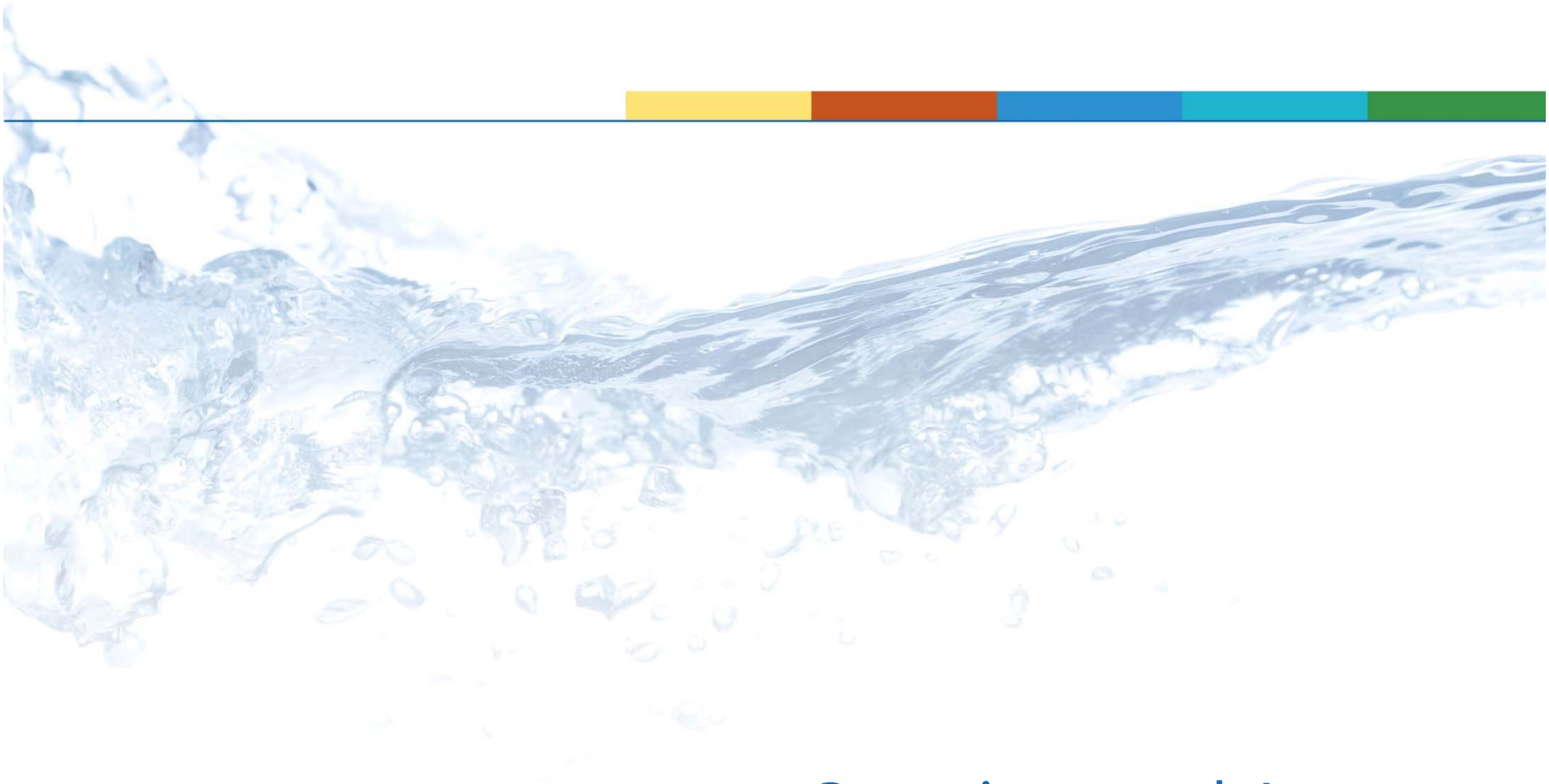
Potential Zone 7 Rate Impacts



**Portfolios as defined in the 2016 WSE Update, with updated cost estimates (7,700 AF Potable Reuse). Zone 7 rates incorporate melded fixed and variable costs. Presented for comparative purposes only. Actual rates would need to be determined through the rate-setting process.*



Questions and Answers