

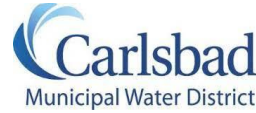
# Chapter Meeting

MARCH 5, 2024 | LEUCADIA WASTEWATER DISTRICT

*Thank you  
to our sponsor!*



**WATERWORKS**  
ENGINEERS



Welcome to 2024! Please remember to sign-in!

# Agenda

1

## Welcome to Leucadia Wastewater District

*Paul Bushee, LWD*

2

## Chapter Updates

- Introduction of new Board
- Regulatory Update
- Funding Update
- Recent and Upcoming Events

3

## Sponsor Highlight

*Tim Lewis, WaterWorks Engineers*

4

## Leucadia Wastewater District RW Program

*Paul Bushee, LWD*

5

## Direct Potable Reuse Regulations

*Mitch Bartolo, Trussell*

6

## Tour of Gafner WRF



**Welcome to LWD!**

# Chapter Updates

WateReuse San Diego Officers

# 2024 Officers



**Past-President**  
Lindsey Stephenson  
Olivenhain MWD



**President**  
Rosalyn Prickett  
Rincon Consultants



**President-Elect**  
Mitch Bartolo  
Trussell Technologies



**Treasurer**  
Aaron Cook  
Fallbrook PUD



**Secretary**  
Jessica Cleaver  
San Diego CWA



**Director of PR**  
Antonia Estevez-Olea  
Water Systems  
Consulting



**Newsletter Editor**  
Megan Drummy  
Hazen and Sawyer



**Chapter Representative**  
Tom Falk  
San Elijo JPA

# Regulatory Update

## 24-25 State Budget

- \$40-60B deficit
- WRCA is working to restore funding for recycled water
- Reduced funding cap for CWSRF projects

## Cross Connection Control Policy Handbook

- Adopted December 2023
- Effective July 1, 2024

## Making Conservation a CA Way of Life

- Recycled water provisions
- Revised draft regulation spring 2024
- Adoption anticipated late summer 2024

## Advanced Clean Fleets

- Proposed amendments to meet AB 1594 requirements (March 25 workshop)
- Upcoming meetings:  
*March 5, 11, 12, & 25*  
[Meetings & Events Information](#)

# Funding Update

## USBR WaterSMART Planning & Project Design

- Up to **\$400k**, second applications due April 2, 2024

## USBR WaterSMART Title XVI Water Reclamation & Reuse

- **\$30M**, applications due September 30, 2024

## USBR WaterSMART Water & Energy Efficiency (WEEG)

- **\$500k - \$5M**, applications due October 30, 2024



## WaterReuse California Appointed Brenley McKenna as the New Managing Director

- Brenley McKenna currently serves as the Chief of Subscriber Services for The Water Research Foundation (WRF)
- WaterReuse Colorado President from 2015-2017
- Rosario Cortés will serve as the interim Managing Director until April 1, 2024



# Upcoming Events

## 2024 WateReuse Symposium

- Mar 11-13, 2024
- Denver, CO

## Greater San Diego Science & Engineering Fair

- Wednesday, March 13th
- Balboa Park – San Diego Municipal Gym
- Please see **Antonia** if you are interested in volunteering!

## WRSD Q2 Chapter Meeting

- Location and exact date TBD

## 2024 WateReuse CA Conference

- Sep 15-17, 2024
- Garden Grove, CA



**WATERWORKS**  
ENGINEERS

# Sponsor Highlight

Tim Lewis, WaterWorks Engineers



# WATERWORKS

E N G I N E E R S

## Local Water Works Team Members



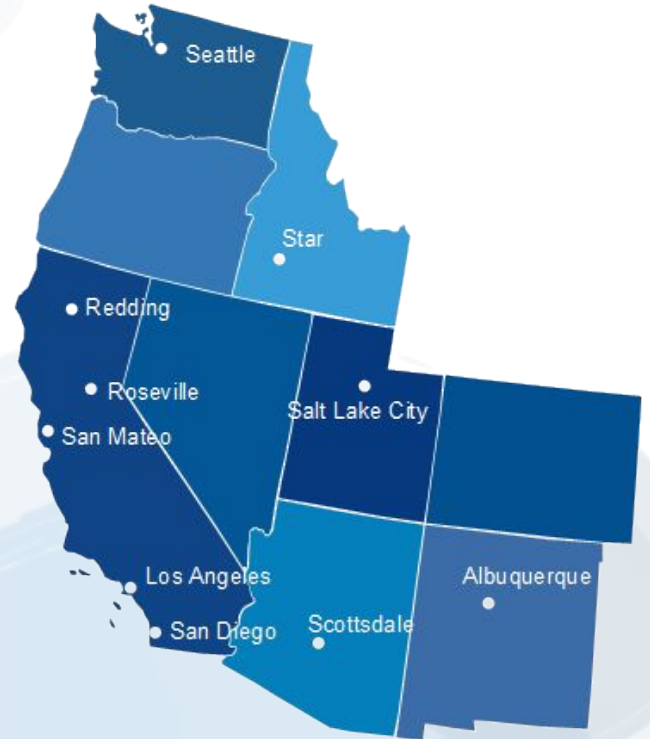
**PRINCIPAL**  
**Mike Fisher** PE  
(San Diego)



**PROJECT MANAGER**  
**Tim Lewis** PE  
(San Diego)



**PROJECT MANAGER  
& MEMBER**  
**Andrew Borgic** PE  
(Los Angeles)



## OUR HISTORY



**WATERWORKS**  
ENGINEERS

- Formed in 2005 by engineers who combined the technical expertise typical of a large firm with the efficiency and personal attention of a small firm.
- Focused on water, wastewater, and recycled water infrastructure projects, including indirect potable reuse, aquifer storage and recovery, conveyance, transmission, treatment, and recycled water projects.



**Golden State**  
Water Company



*Local and regional clients*



MORRO BAY  
**OUR WATER**  
RELIABLE. CLEAN. FOR LIFE.



2023 Outstanding Environmental Project of the Year

**Water Reclamation Facility Program (Conveyance Project)**



# LWD Recycled Water Program

Paul Bushee, General Manager, LWD

# LWD - Who Are We?

- Established in 1959
- Public Agency
- Special District
- 5 Member Board
  - Publicly Elected
  - By Division
- 19 Member Staff

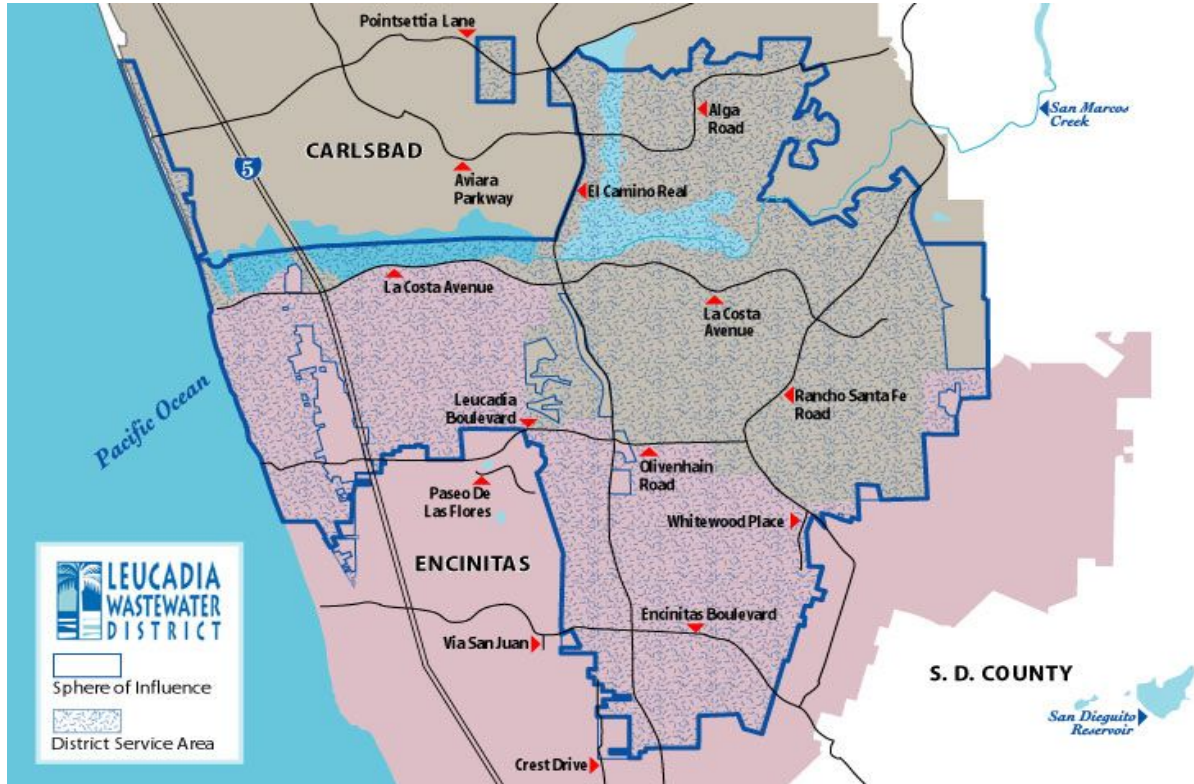




# What do we do?

- Service Area 16 Square Miles
  - Southern Half of Carlsbad
  - Northern Half of Encinitas
- Transport wastewater from homes and safely treat it
- Provide Recycled Water to the La Costa Golf Course

## Wastewater Services to Over 60,000 Residents



## Recycled Water History

# Agreement with La Costa - 1961

- 25 Year Term \$10,000 Headquarter Site & Easements
- 0.75 MGD Reclaimed Water
  - 0.47 MGD Golf Course
  - 0.28 MGD To Cow Pasture
- Reclaimed Water = Disinfected Secondary Effluent
- Primary Clarifier To Trickling Filter To Secondary Clarifier
- Plant Later Named Forest R. Gafner Plant in Honor Of Founding Community Leader

# Tertiary Upgrade

## 1993 – Upgraded Gafner WRF

- Title 22 Tertiary Facilities
- Rated Capacity = 1.0 MGD Title 22 Tertiary Treatment 1993

## Resumed RW Service to La Costa Resort Legends Golf Course

## 2000 – Began Receiving Treated Secondary Effluent from Encina treatment plant

- Decommission Gafner Primary & Secondaries

## 2003 – Demolished Gafner Primary & Secondary Facilities

**Encina Water  
Pollution Control  
Facility**

# Forest R. Gafner Water Reclamation Plant

*located on the District's  
Headquarters Site  
(1.8 miles East of Interstate I-5)*



**Chemical  
Feed & Storage**

**Garner Plant**

**Headquarters  
Building**



# District Headquarters Site

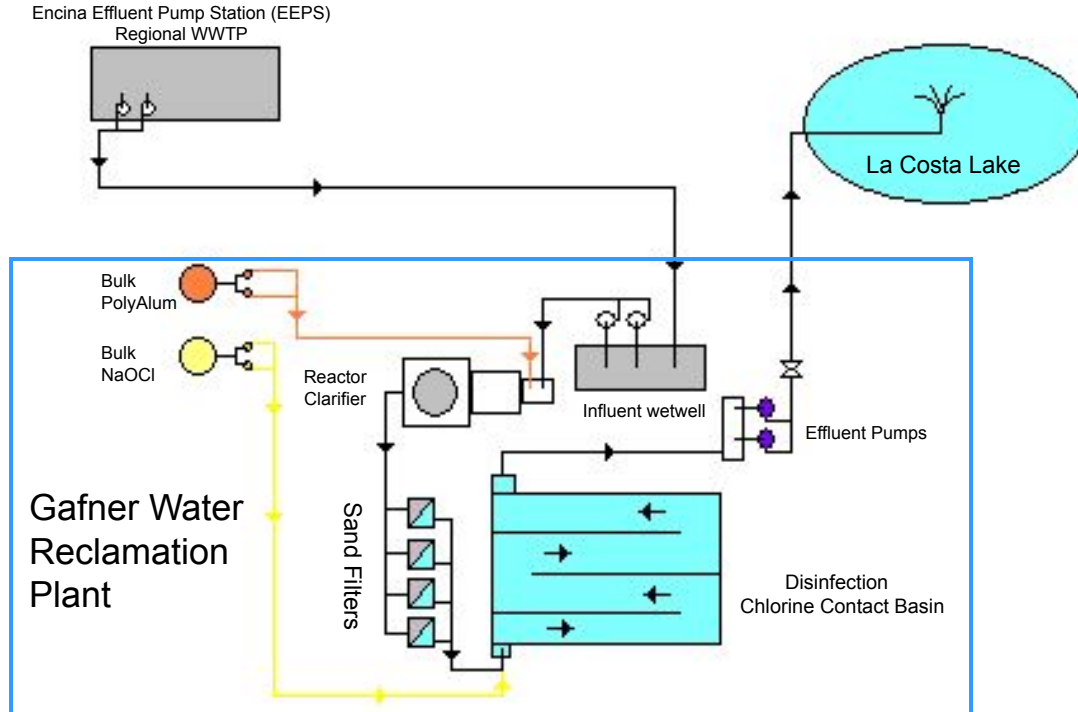


**La Costa Pond**

**Gafner Plant**



# Gafner Water Reclamation Plant



1. 1.0 MGD Design Capacity
2. Reactor Clarifier (*Coagulation & Sedimentation*)
3. San Filtration - (4) Upward-Flow DynaSand Filters
4. Chlorine Disinfection - Sodium Hypochlorite (12% Bleach)
5. Recycled Water Delivered to Lake On La Costa Golf Course

# Gafner WRP

Turbidity Display



PLC

Digital  
Chart  
Recorders

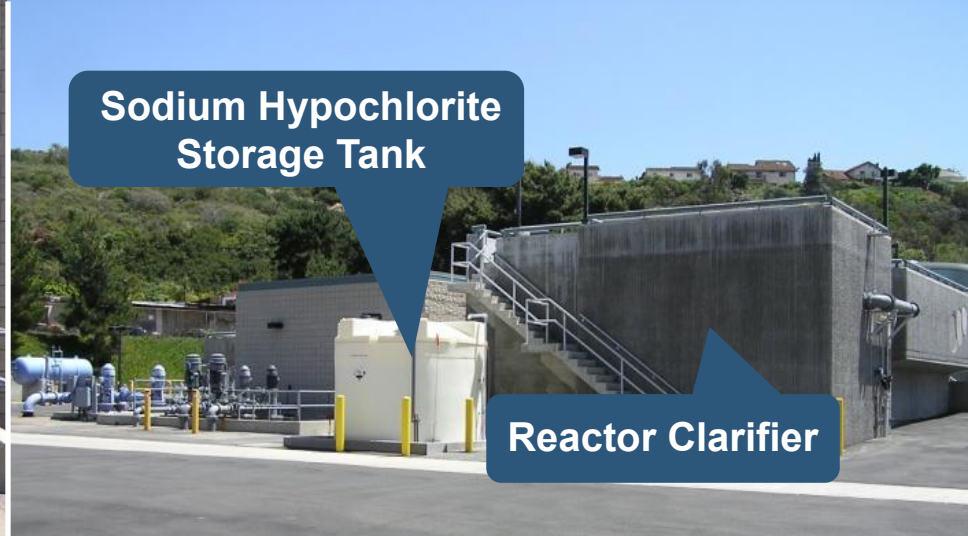
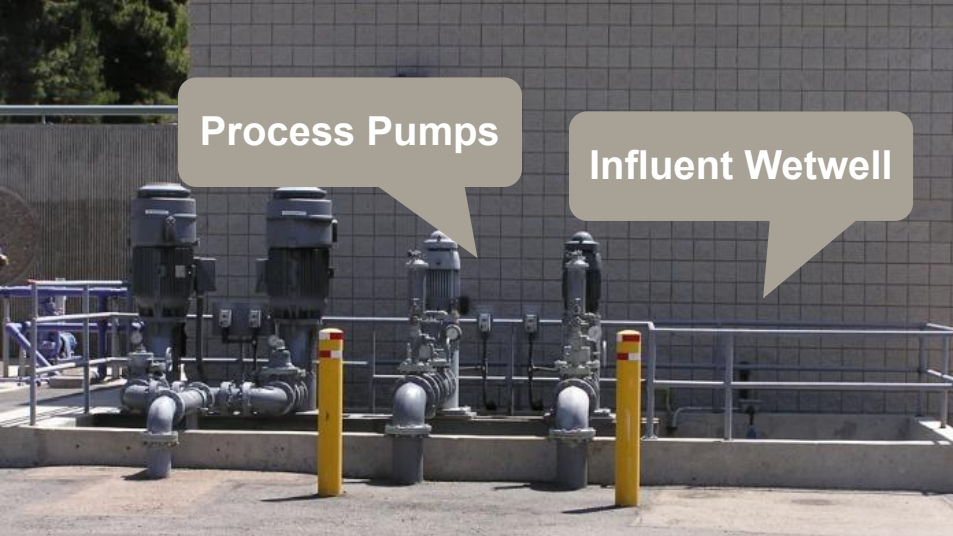


Effluent Pumps



Motor Control Center





# Gafner WRP



**Chlorine Analyzer**



**Lake at  
La Costa Golf Course**



**Bulk Poly Alum**

# Operations

**Production: 257 af/yr (avg. last 5 years)**

## **Certified staff:**

**Wastewater Grade III**  
*SEJPA Contract Service*

**Water Treatment Grade II**  
*5 LWD Staff*

**Water Treatment Grade II**  
*5 LWD Staff*



**State Water Resources Control Board Title 23 Allows Water Treatment Plant Operators To Operate "Water Recycling Plants"**

# Omni La Costa Contract

- January 1, 2023 thru Dec. 31, 2032
- \$1,540 per acre-foot thru 2025
  - Increase is based on CPI-LA
- Estimated annual revenue: \$400,000
- Typical operating cost: \$310,000



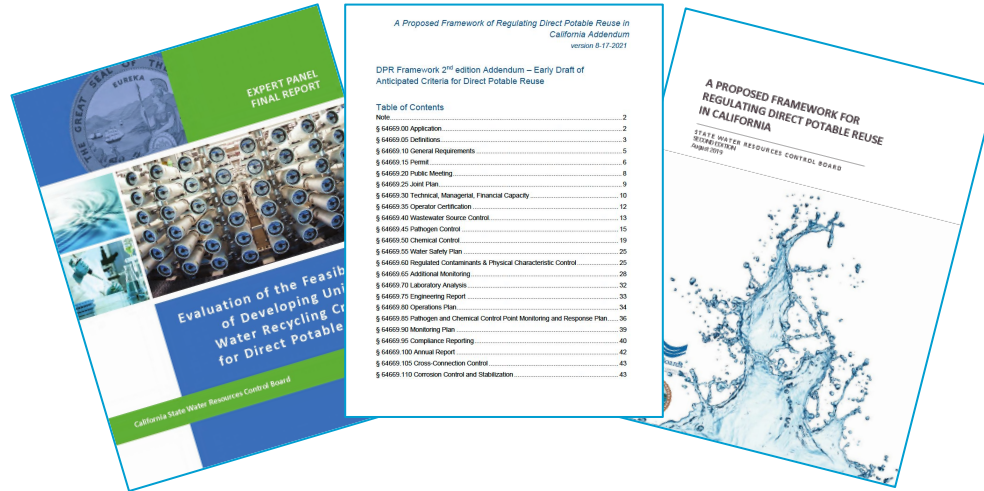
A scenic landscape photograph featuring a multi-lane bridge crossing a wide, calm body of water. The bridge has several concrete pillars supporting it. In the background, a hillside is covered in green and yellow vegetation, with a row of houses with red roofs perched on top. The sky is clear and blue. The text "Questions / Comments" is overlaid in the center in a large, white, sans-serif font.

# Questions / Comments

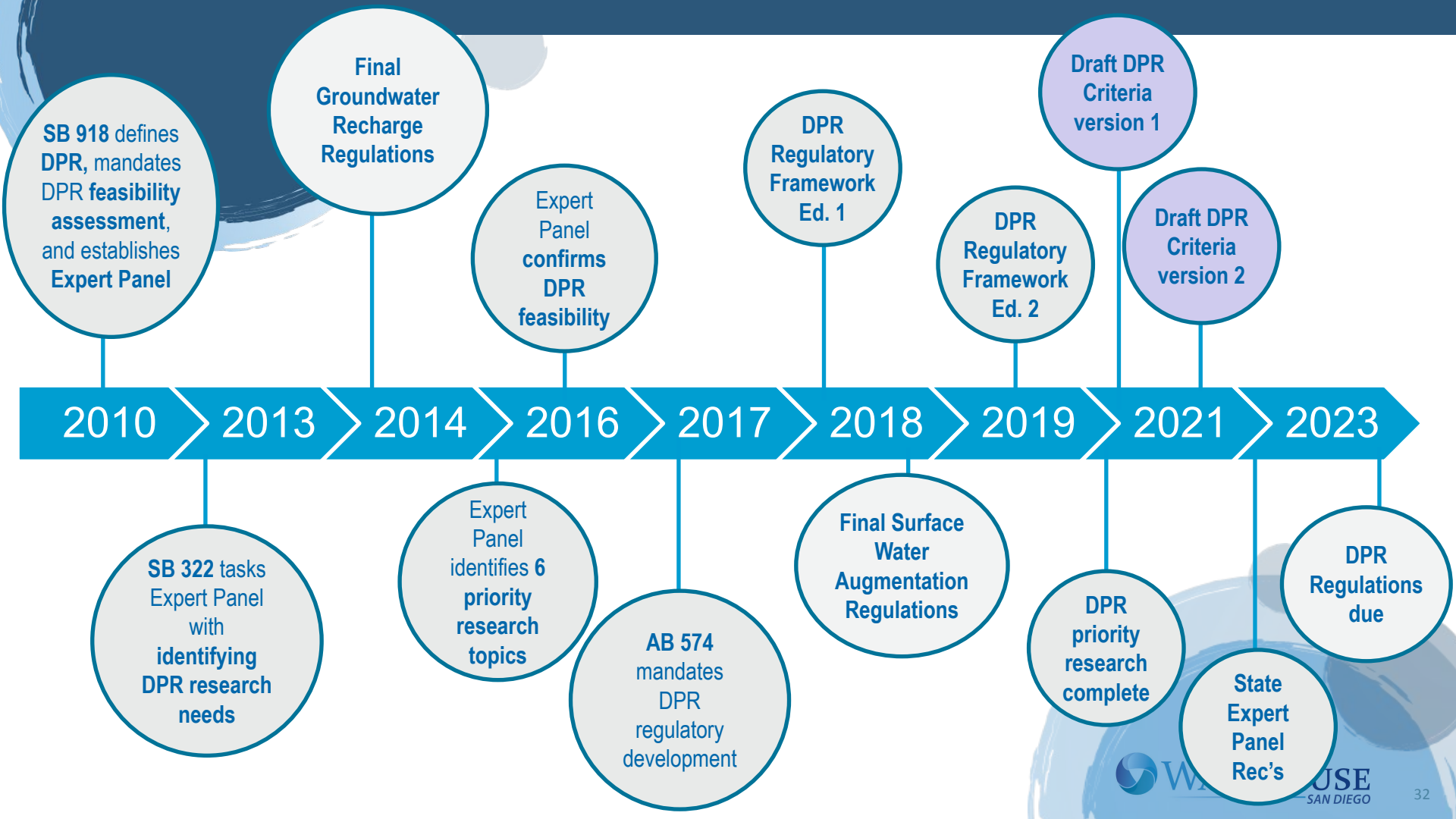
# California DPR Regulations

Mitch Bartolo, Supervising Engineer, Trussell Technologies

# Summary of the Final CA DPR Regulations



Mitchel Bartolo, P.E.  
Trussell Technologies, Inc.  
mitchb@trusselltech.com



SB 918 defines DPR, mandates DPR feasibility assessment, and establishes Expert Panel

Final Groundwater Recharge Regulations

Expert Panel confirms DPR feasibility

DPR Regulatory Framework Ed. 1

Draft DPR Criteria version 1

DPR Regulatory Framework Ed. 2

Draft DPR Criteria version 2

2010

2013

2014

2016

2017

2018

2019

2021

2023

SB 322 tasks Expert Panel with identifying DPR research needs

Expert Panel identifies 6 priority research topics

AB 574 mandates DPR regulatory development

Final Surface Water Augmentation Regulations

DPR priority research complete

State Expert Panel Rec's

DPR Regulations due



Draft DPR  
Criteria  
version 1

Draft DPR  
Criteria  
version 2

Draft DPR  
Criteria  
version 3

DPR  
Regulations  
Adopted

2021

2022

2023



Expert Panel Meetings

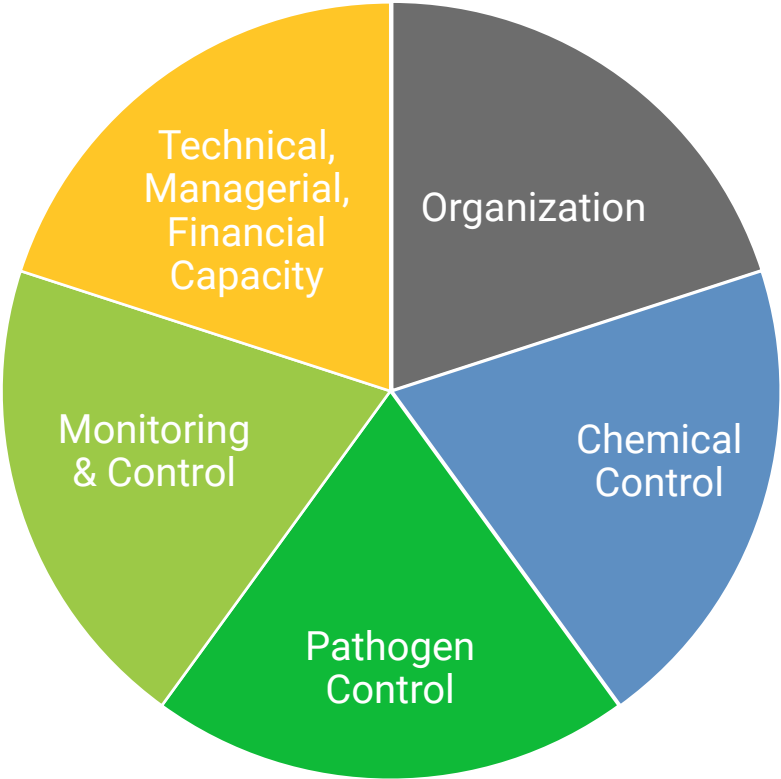
DDW  
Response to  
Expert Panel  
findings

Expert  
Panel draft  
report on  
preliminary  
findings

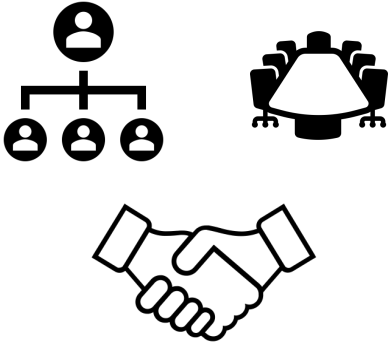
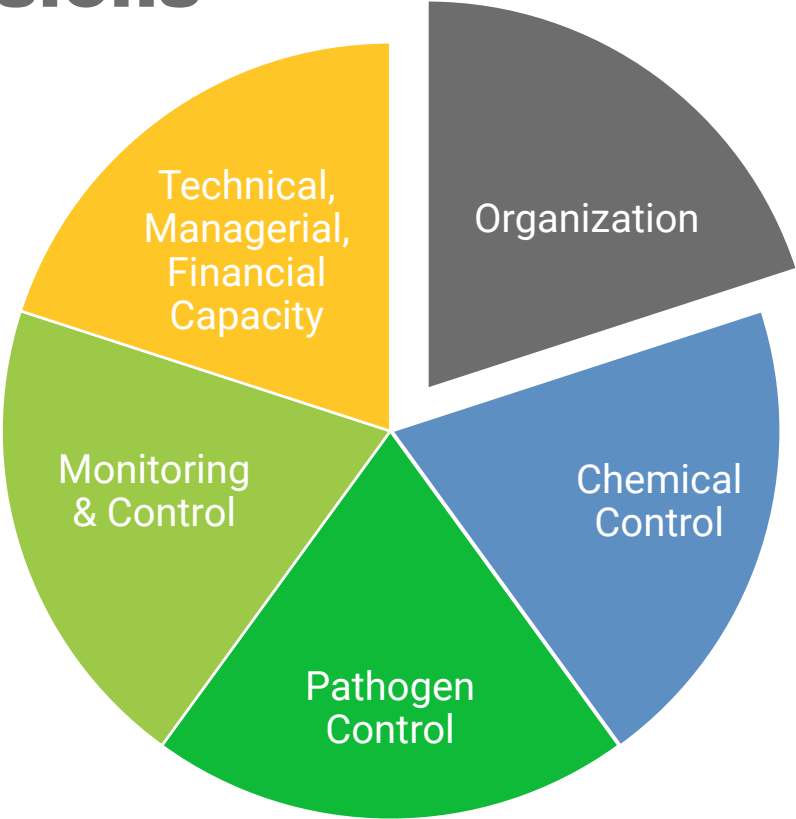
Sep 2023  
Public  
hearing

Nov 2023  
Final draft reg  
text and  
comment  
period

# Major Provisions



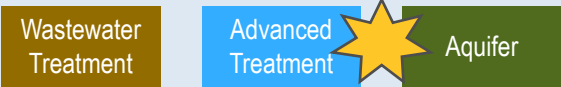
# Major Provisions



# Organization – Responsible Party

## Indirect Potable Reuse

### Groundwater Recharge



GRRP Sponsor

### Surface Water Augmentation



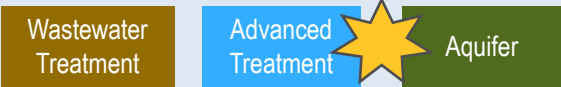
SWSAP  
Water  
Recycling  
Agency

SWSAP  
Public  
Water  
System

# Organization – Responsible Party

## Indirect Potable Reuse

### Groundwater Recharge



GRRP Sponsor

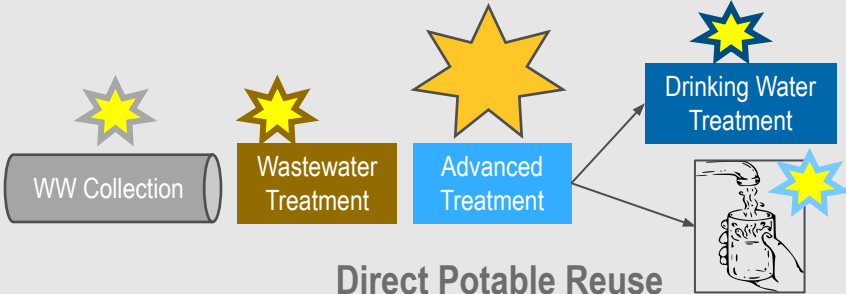
### Surface Water Augmentation



SWSAP  
Water  
Recycling  
Agency

SWSAP  
Public  
Water  
System

## Direct Potable Reuse

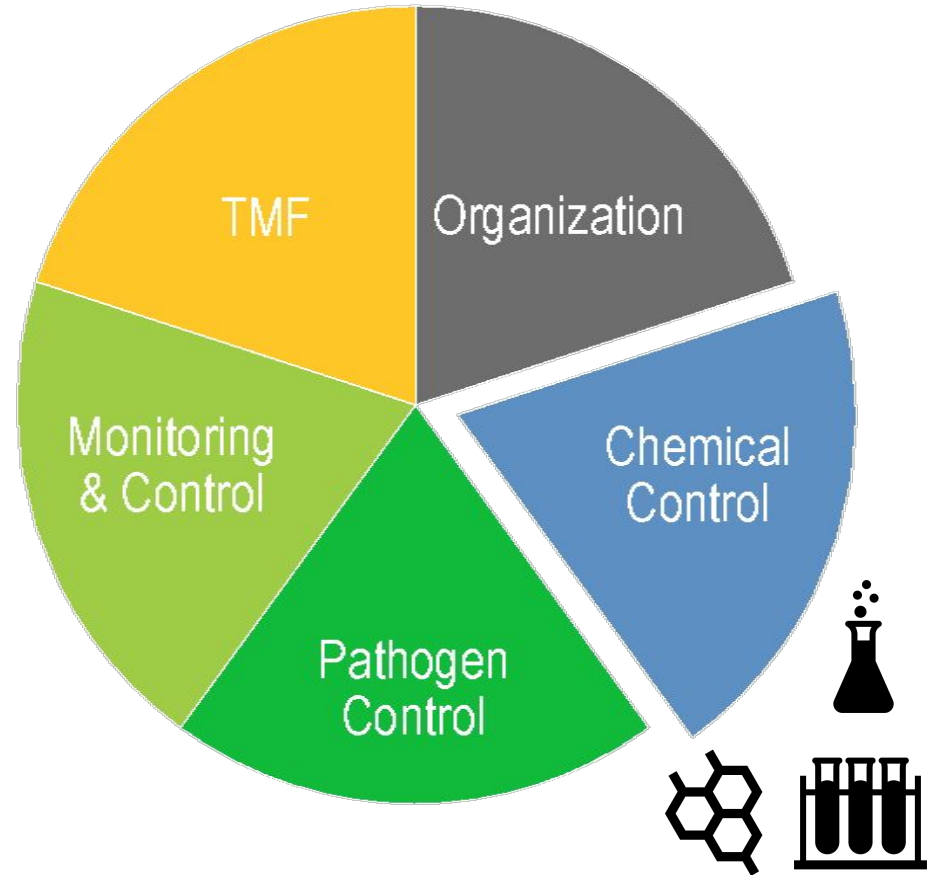


Direct Potable Reuse  
Responsible Agency  
(DiPRRA)

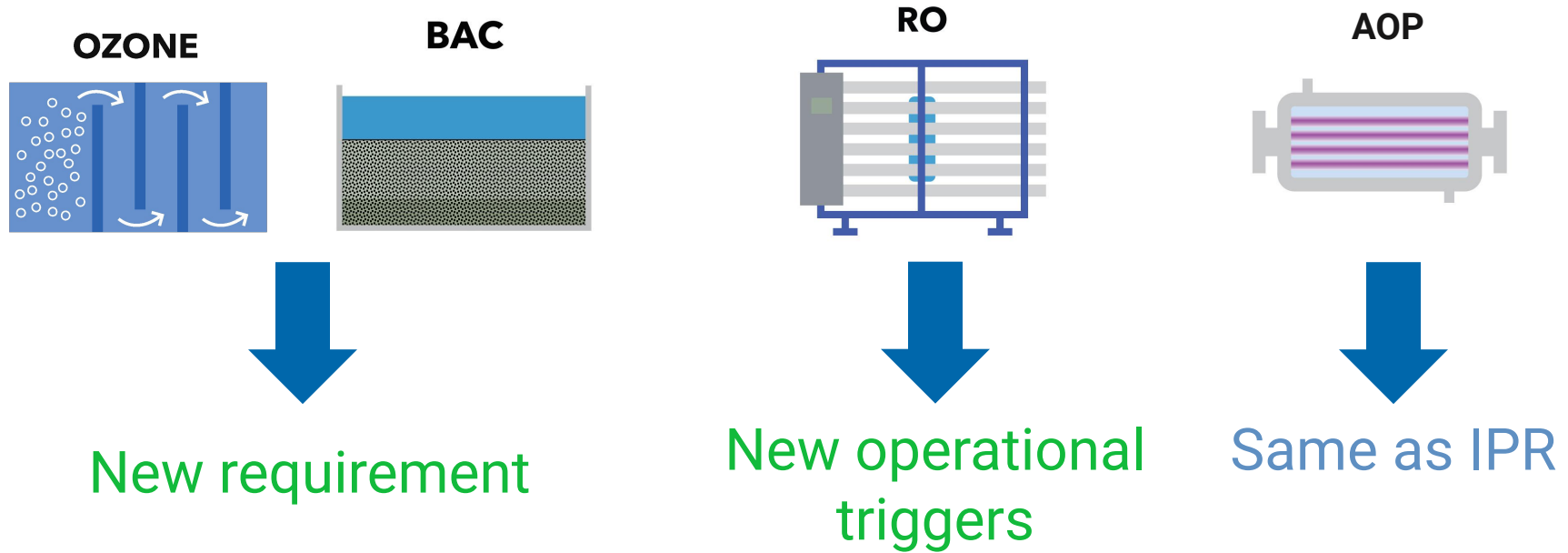


# Chemical Control

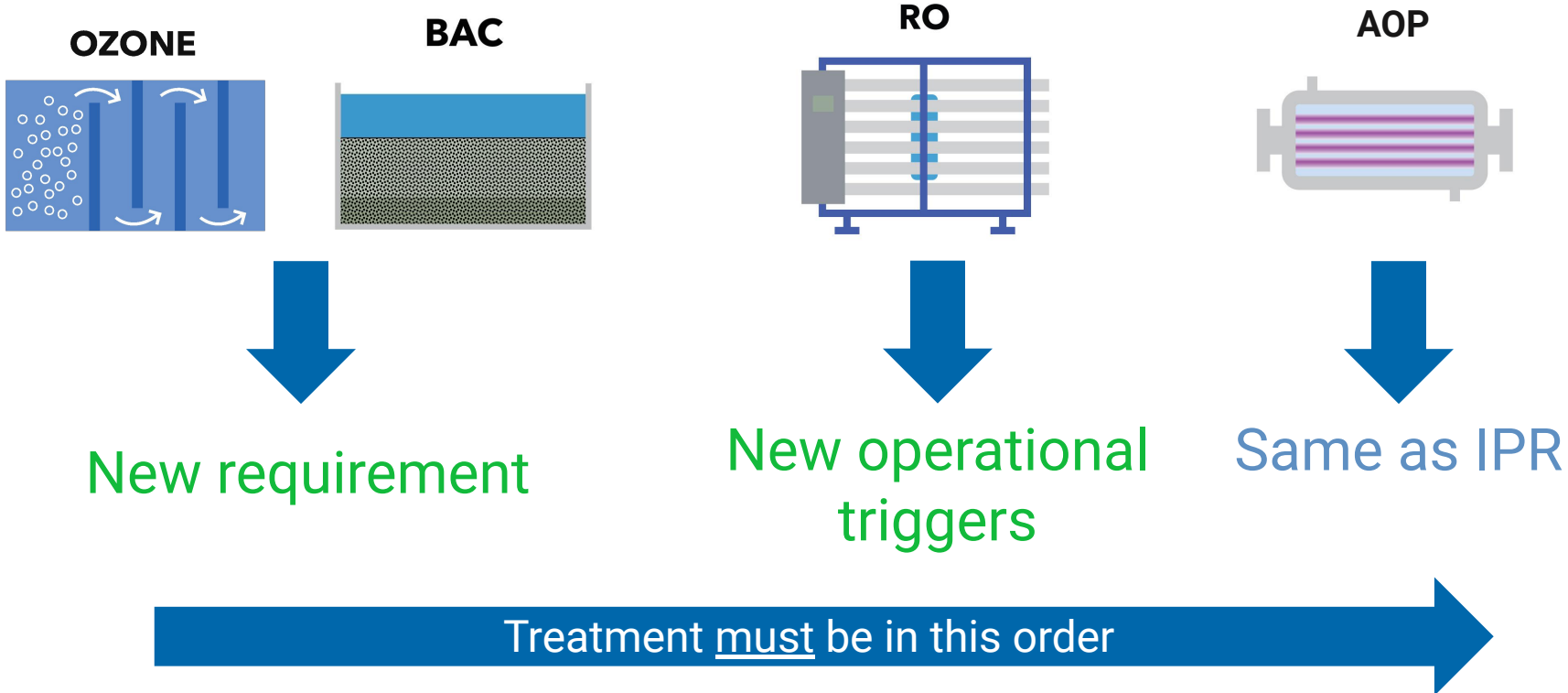
- Treatment Train Requirements
- Blending
- Peak Attenuation
- Source Control



# Chemical Control – Treatment

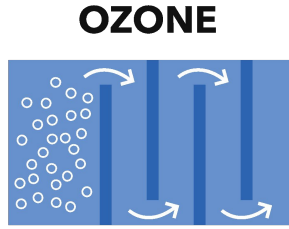
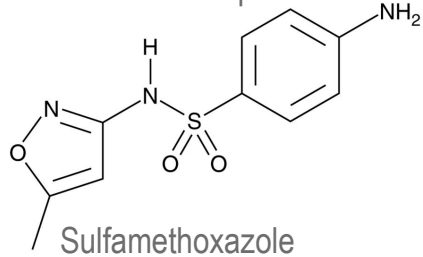
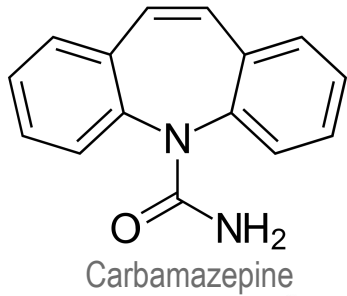
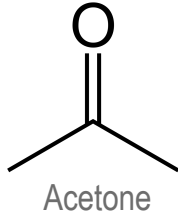
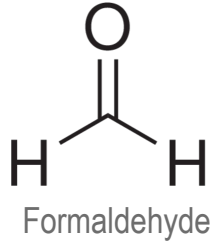


# Chemical Control – Treatment



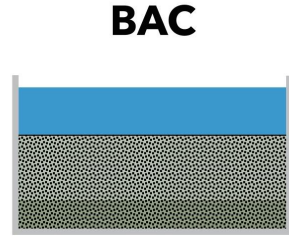


# O3/BAC Requirements



$O_3:TOC > 1$  (or less)\*

- 1-log reduction:
- Sulfamethoxazole
  - Carbamazepine



EBCT  $\geq 15$  min (or less)\*

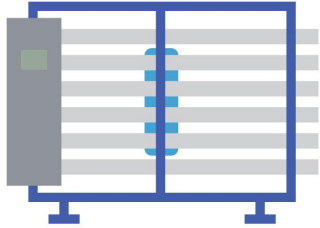
- 1-log reduction:
- Formaldehyde
  - Acetone



\*Alternative design criteria allowable given that defined treatment criteria is demonstrated

# Chemical Control – RO TOC Operational Triggers

RO



TOC must be monitored every 15 minutes

TOC Trigger	Action
> 0.1 mg/L for more than 24 hours	Perform a 5-day total trihalomethane formation potential study
> 0.15 mg/L for more than 5 days at RO permeate	Perform conductivity profile to identify underperforming vessel or element
> 0.25 mg/L at RO permeate for > 60 minutes	Collect samples to investigate peak
> 0.5 mg/L* prior to distribution at any time	Automatically discontinue delivery of water to distribution system

\*If blending prior to distribution, TOC shall not exceed 0.5 mg/L/WWC

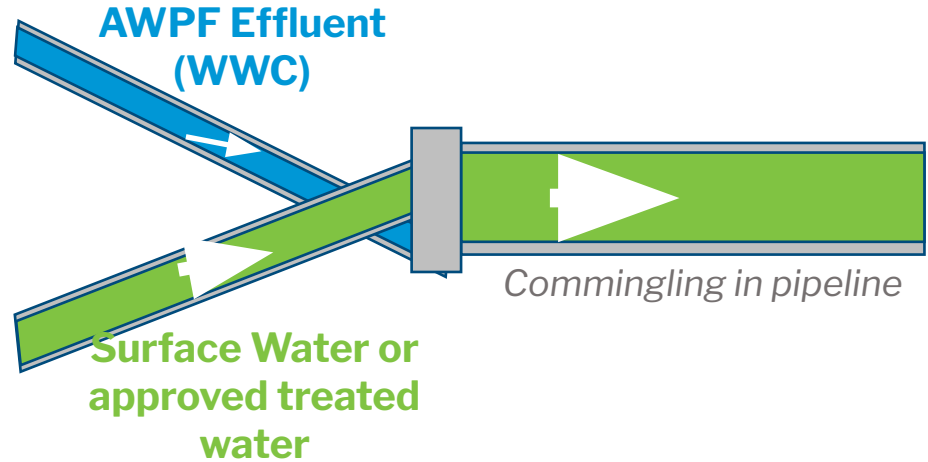
\*If discharging to reservoir, TOC CCP limit may be temporarily increased depending on dilution demonstrated by hydrodynamic modeling

# Blending

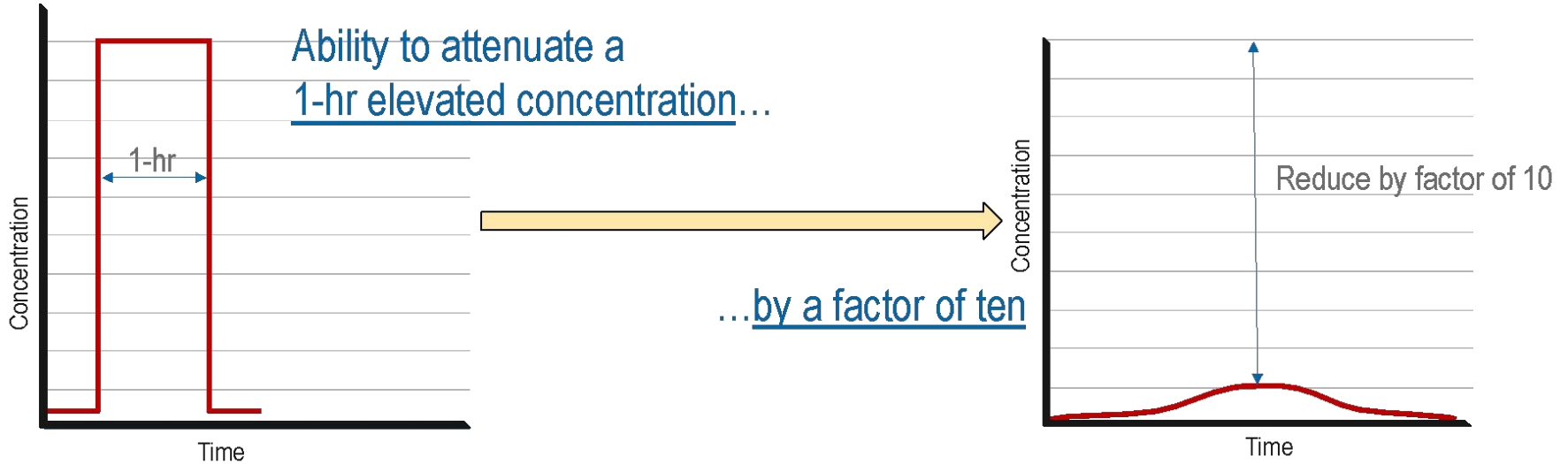
- A continuous blending process can be used to fully or partially replace O<sub>3</sub>/BAC
- Wastewater Contribution (WWC)

$$WWC = \frac{Q_{wastewater}}{Q_{wastewater} + Q_{dilution}}$$

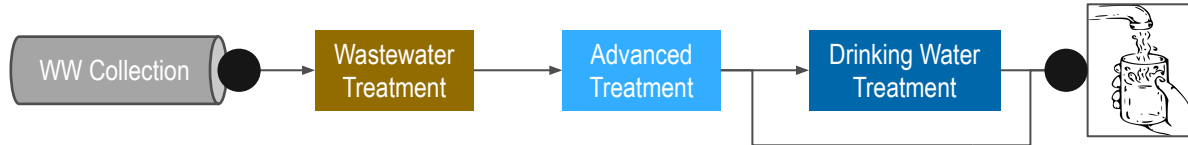
- Blending can be used to increase TOC critical limit above 0.5 mg/L  
( $TOC_{critical} = 0.5 \text{ mg/L} / WWC$ )



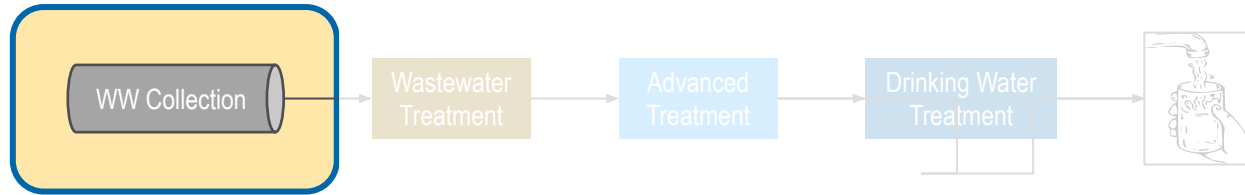
# Chemical Control – Peak Attenuation



...via longitudinal mixing.



# Source Control

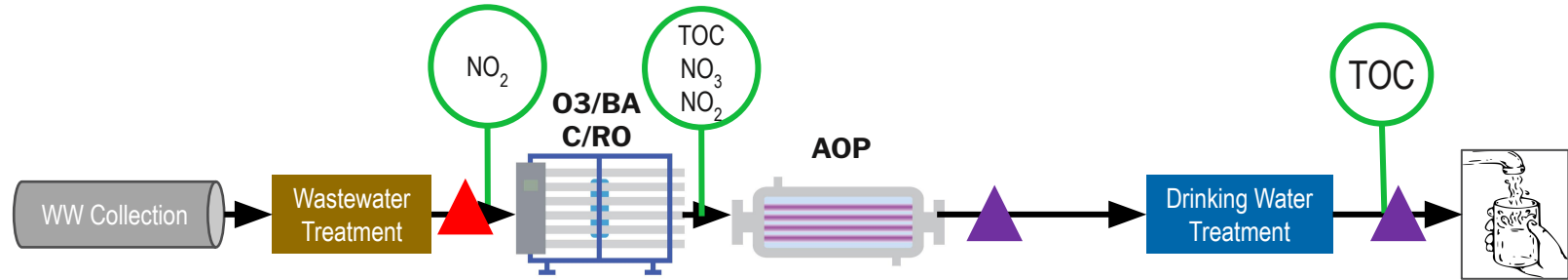


- Baseline requirements are the same as indirect potable reuse
- New requirements include:
  - Local limits utilized to identify and limit contaminants in wastewater
  - Source control committee
  - 5-year audit by independent party

Quantitative risk assessment (requirements moved to Engineering Report section)

- Early warning program
  - Online monitoring
  - Notification of failures
  - Community outbreak surveillance

# Chemical Control – Water Quality Monitoring



3 Sampling Locations:

Wastewater feed

Post AOP

Finished water

- Weekly sampling of acutes in finished water

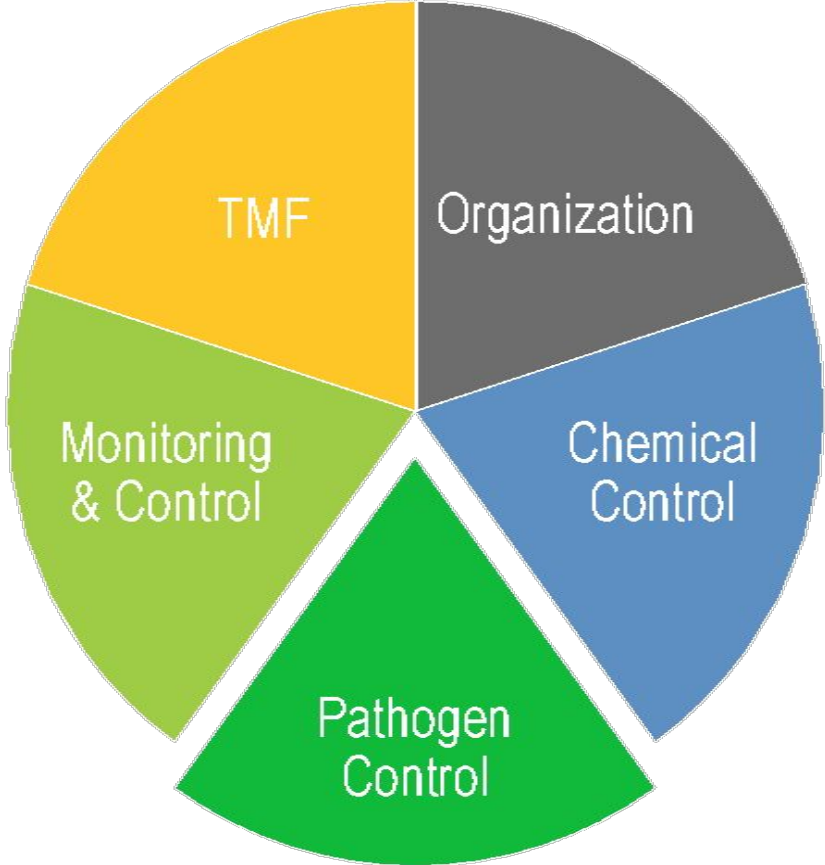
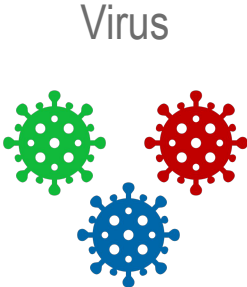
- Monthly sampling at all 3 locations

- MCLs, NLs, lead, copper
- Low molecular weight compounds
- Byproducts & precursors
- Business/household sources of chemicals

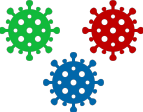


- Quarterly sampling at all 3 locations

- Industrial sources and business/household pharmaceuticals, PCPs, and hazardous substances
- CECs based on State Board Advisory Bodies and scientific literature
- List of prescribed chemicals

# Pathogen Control



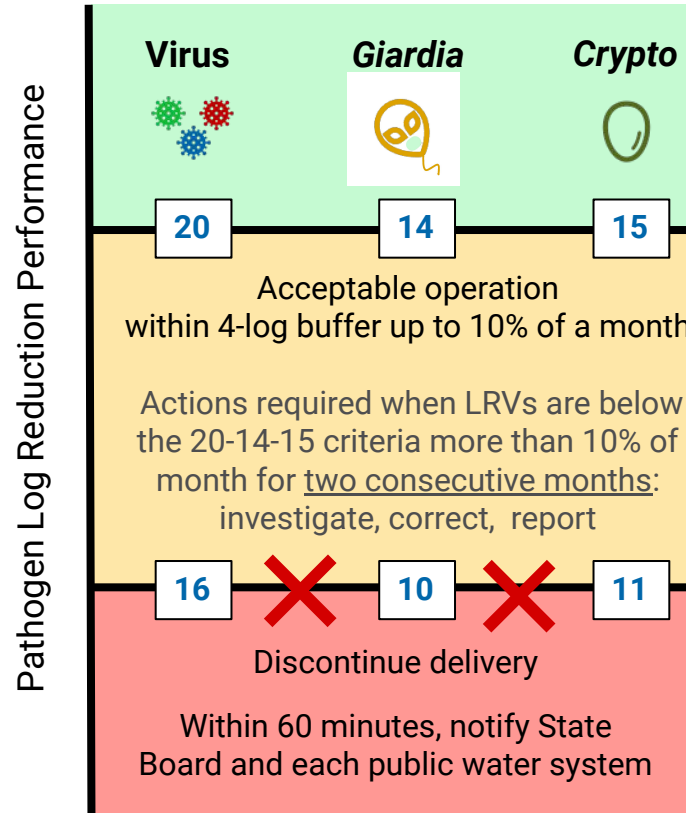
# Pathogen Control

	Groundwater Recharge	Surface Water Augmentation	Direct Potable Reuse
Virus 	12	12 to 14	20
Giardia 	10	10 to 12	14
Cryptosporidium 	10	10 to 12	15

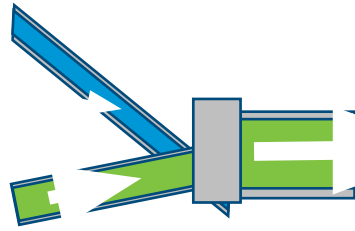
- 4 processes providing at least 1-log for each pathogen
  - *GWR is 3 processes total*
  - *SWA is 2-3 processes total*
- 3 mechanisms for each pathogen including:
  - *UV inactivation (300 mJ/cm<sup>2</sup>)*
  - *Physical separation*
  - *Chemical inactivation*
- An alternative mechanism may be approved
  - *Must still include 'physical' and 'inactivation'*



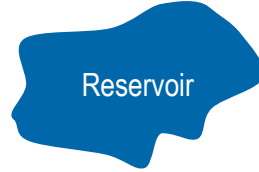
# Pathogen Control



# Pathogen Control: Additional Crediting Flexibility



Continuous Blending



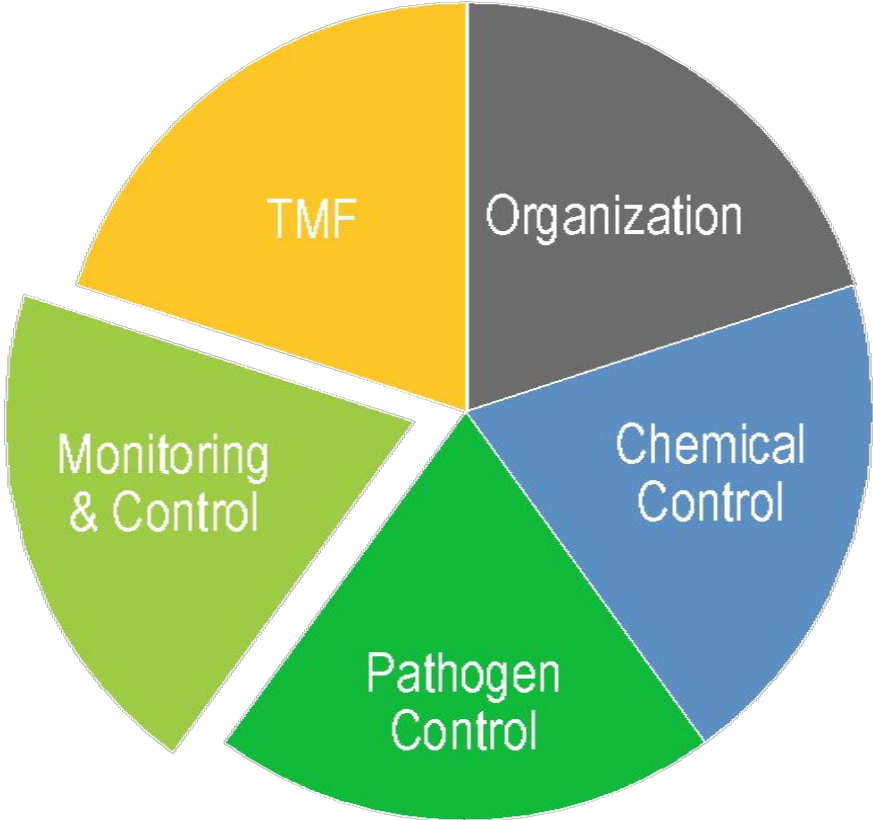
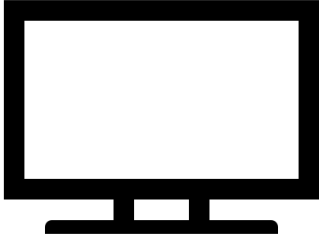
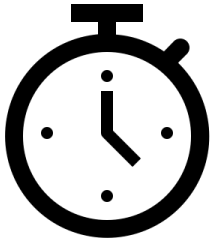
Continuous Mixing



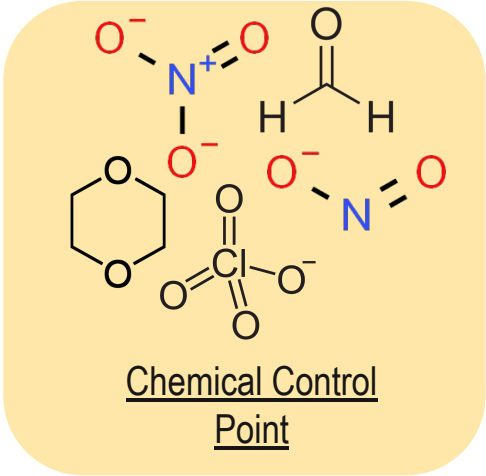
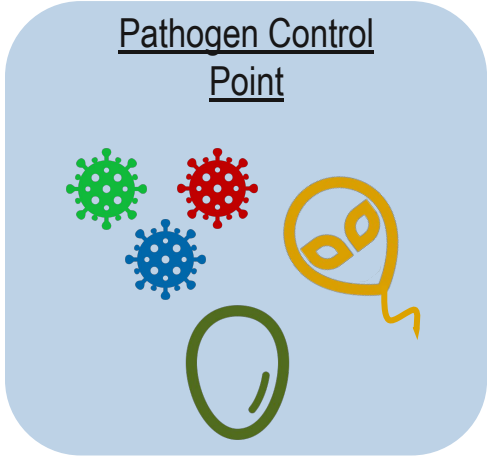
Groundwater Recharge

Max Credit	2 logs (for any process alone or in combination)		
Credit Calculation	- Log (WWC)	Attenuation of 1-h peak	.033 log/day
Relevant Pathogens	V/G/C	V/G/C	Virus only
Other Requirements		Hydraulic modeling + tracer test reviewed by IAP	Groundwater modeling + tracer test reviewed by IAP

# Monitoring & Control

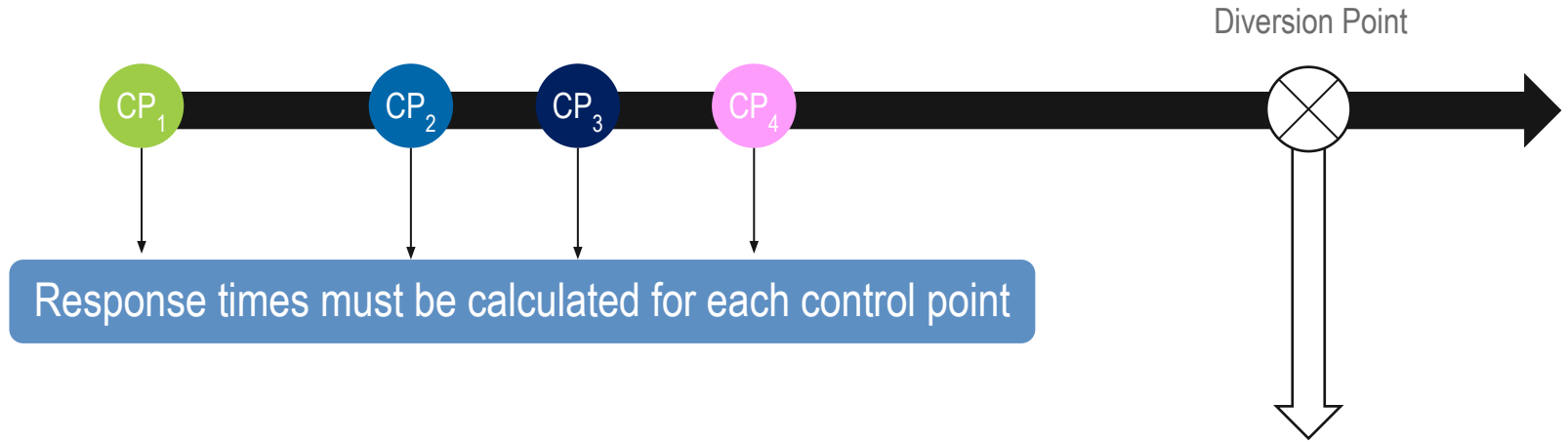


# Key Definitions



An activity, procedure, or process that is essential for removing pathogen or chemical hazards

# Response Time – Pathogens & Acute Chemicals



$$\text{Response Time} = \sum t_1, t_2, t_3$$

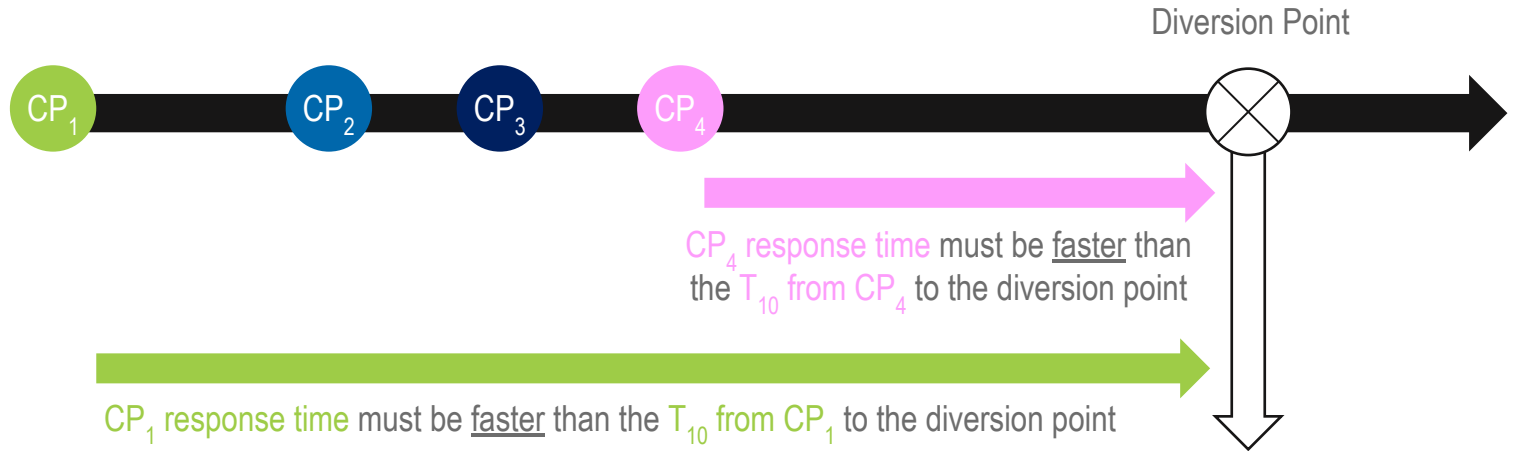
$t_1$  = time interval between online measurements

$t_2$  = time for SCADA to access data

$t_3$  = time for SCADA to implement a response:

- Determine an exceedance is occurring,
- Actuate a diversion or shutoff valve, and
- Divert or completely stop flow to distribution system

# Response Time – Pathogens & Acute Chemicals



$$\text{Response Time} = \sum t_1, t_2, t_3$$

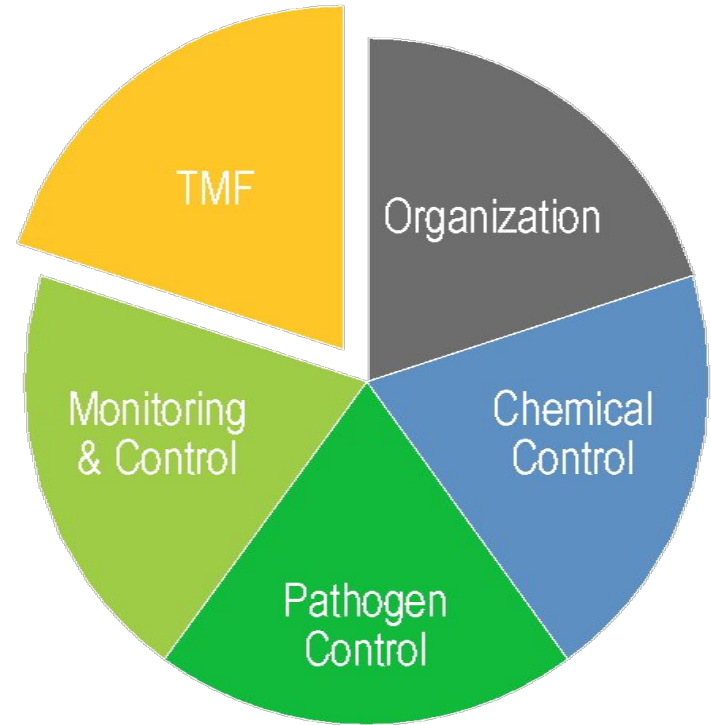
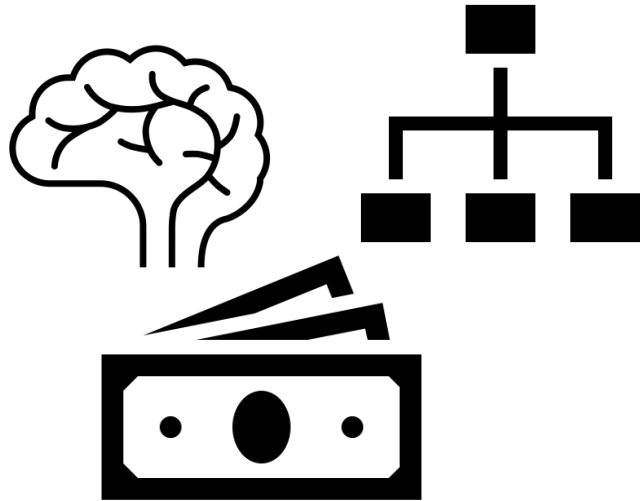
$t_1$  = time interval between online measurements

$t_2$  = time for SCADA to access data

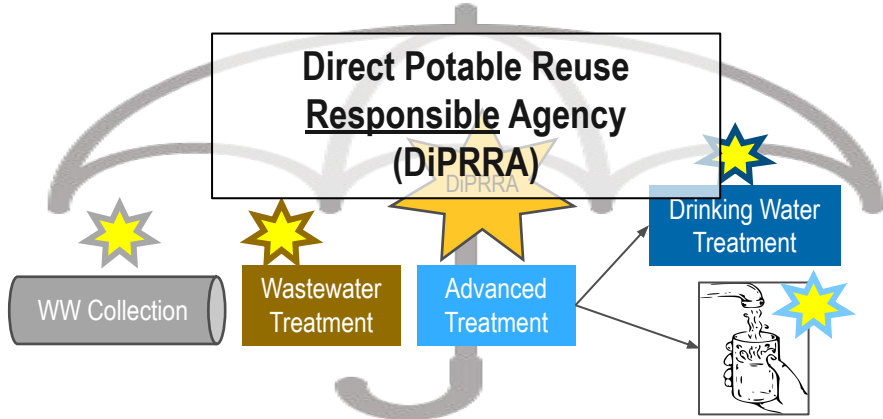
$t_3$  = time for SCADA to implement a response:

- Determine an exceedance is occurring,
- Actuate a diversion or shutoff valve, and
- Divert or completely stop flow to distribution system

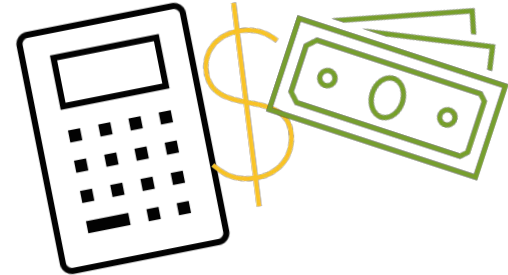
# Technical, Managerial, Financial Capacity



# TMF – Capital Preparedness & Responsibility



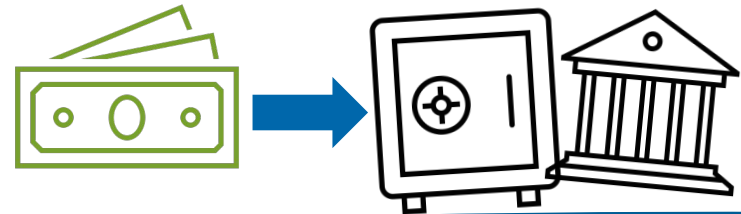
Cost analysis required



Reliable and continuing funding sources must be identified for O&M, and capital replacement

Participating agencies must provide details on facilities, staffing, and support services

An icon representing participating agencies, showing a building, a group of four people, and a hand holding a document.





# TMF Requirements

## Project Development:

- Engineering Report
- Joint Plan
- Source Control Program
- Water Safety Plan

## Project Startup:

- Operations Plan
- Monitoring Plan
- Pathogen and Chemical Control Point Monitoring & Response
- Corrosion Control and Stabilization Plan

## Ongoing Compliance:

- Annual Report
- Monthly Compliance Report
- Cross-Connection Control Survey (Annual)
- Consumer Confidence Reporting
- Water Safety Plan (audit every 5 years)
- Source Control Program (audit every 5 years)
- Source Control Committee Formation
- On-going training program
- Annual Climate Change Report

# Operator Certification

Entire Treatment Train

Chief Operator T5    Shift Operator T3

Wastewater Treatment Plant

Advanced Treatment Facility

Surface Water Treatment Plant

Chief Operator AWT5<sup>1</sup>    Shift Operator AWT3<sup>1</sup>

Chief Operator AWT5    Shift Operator AWT3

Chief Operator AWT5<sup>1</sup>    Shift Operator AWT3<sup>1</sup>



Either chief or shift operator required on-site 24/7<sup>2</sup>

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<sup>1</sup> Required if chemical control provided at the facility  
<sup>2</sup> Required if pathogen and/or chemical control provided at the facility

# Major Takeaways with Final Reg

- Environmental buffers are being recognized
  - *Groundwater basin*
  - *Surface water reservoir*
  - *Blending*
- Some positive response to WRCA comments
  - *Online TOC frequency reduced from 5 to 15 min interval*
  - *Empty bed contact time less than 15 min for BAC is possible with demonstration and application as alternative*
  - *Online sewershed surveillance can be accomplished by monitoring at the WWTP*
- Broad alternatives clause is not provided
  - *Alternatives remain in specific sections (pathogen and chemical)*
  - *Unclear what sections may not be appropriate without real world examples*
  - *Potential risk to project sponsors and State of California*



**Please join us  
for a tour of  
Gafner WRF!**