



Prop 50

Project Completion Report

Project 50-4 Ray Stoyer Water Recycling Facility Demonstration Project

June 1, 2016

Presentation to IRWM Regional
Advisory Committee

SOLANA BEACH

DEL MAR

PADRE DAM MUNICIPAL WATER DISTRICT



POWAY

SANTEE

WSA

ESA

EL CAJON

SAN DIEGO

LA MESA

LEMON GROVE

CORONADO

NATIONAL CITY

CHULA VISTA

PACIFIC
OCEAN

LEGEND



PDMWD BOUNDARIES



SAN DIEGO COUNTY

U.S.

MEXICO

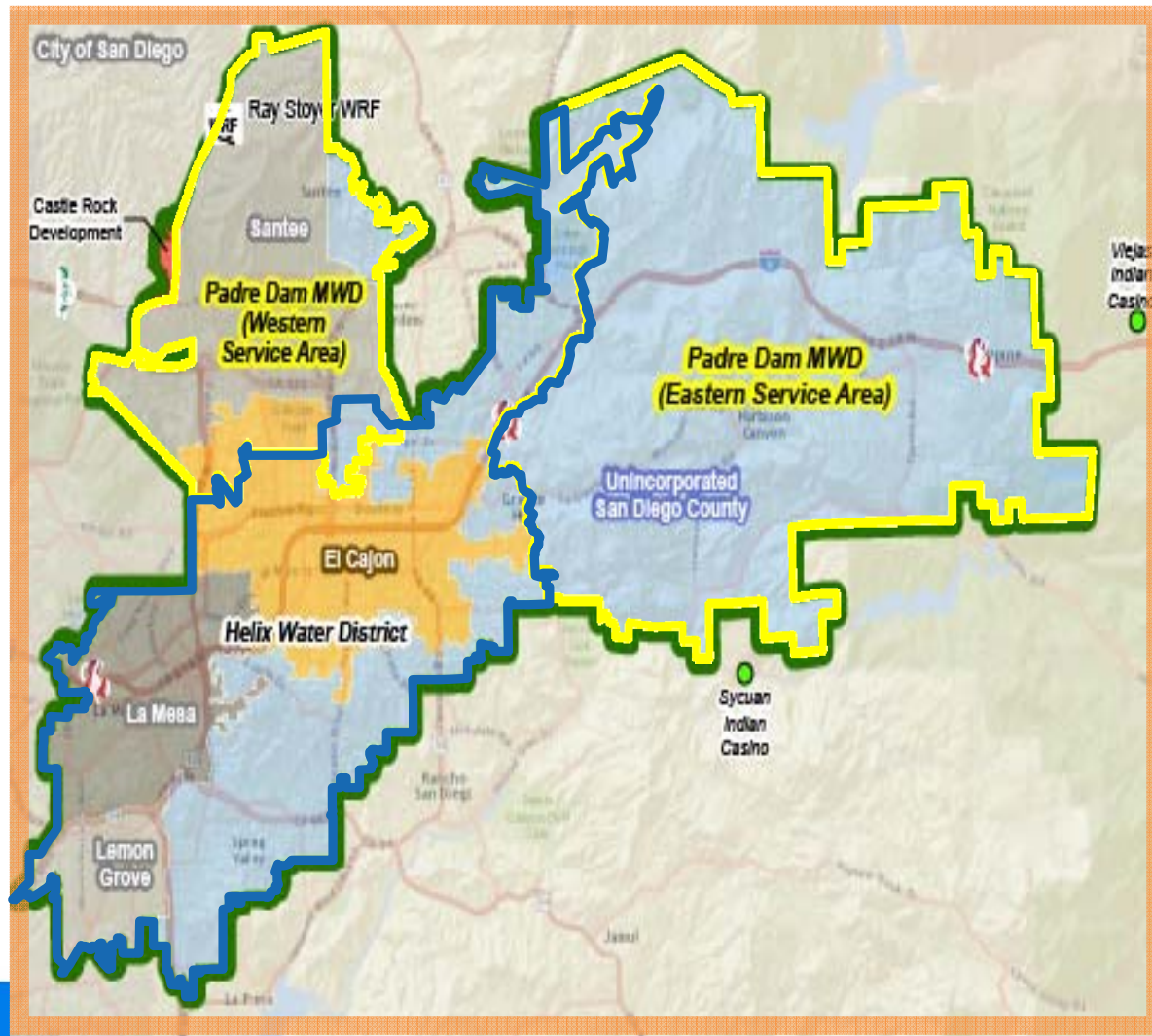


Padre Dam's IPR Program Goals

- Produce minimum of 15% of District's Potable Supply (approx. 2000 AF/Y of local supply)
- Price of water < \$2,000 /AF
- Gain regulatory acceptance & meet regulatory requirements for full scale Potable Reuse Project
- Support District's Strategic Goal to Increase Water, Wastewater and Energy Independence
- Reduce PLWWTP offloading requirement



East County Regional Potable Water Feasibility Study

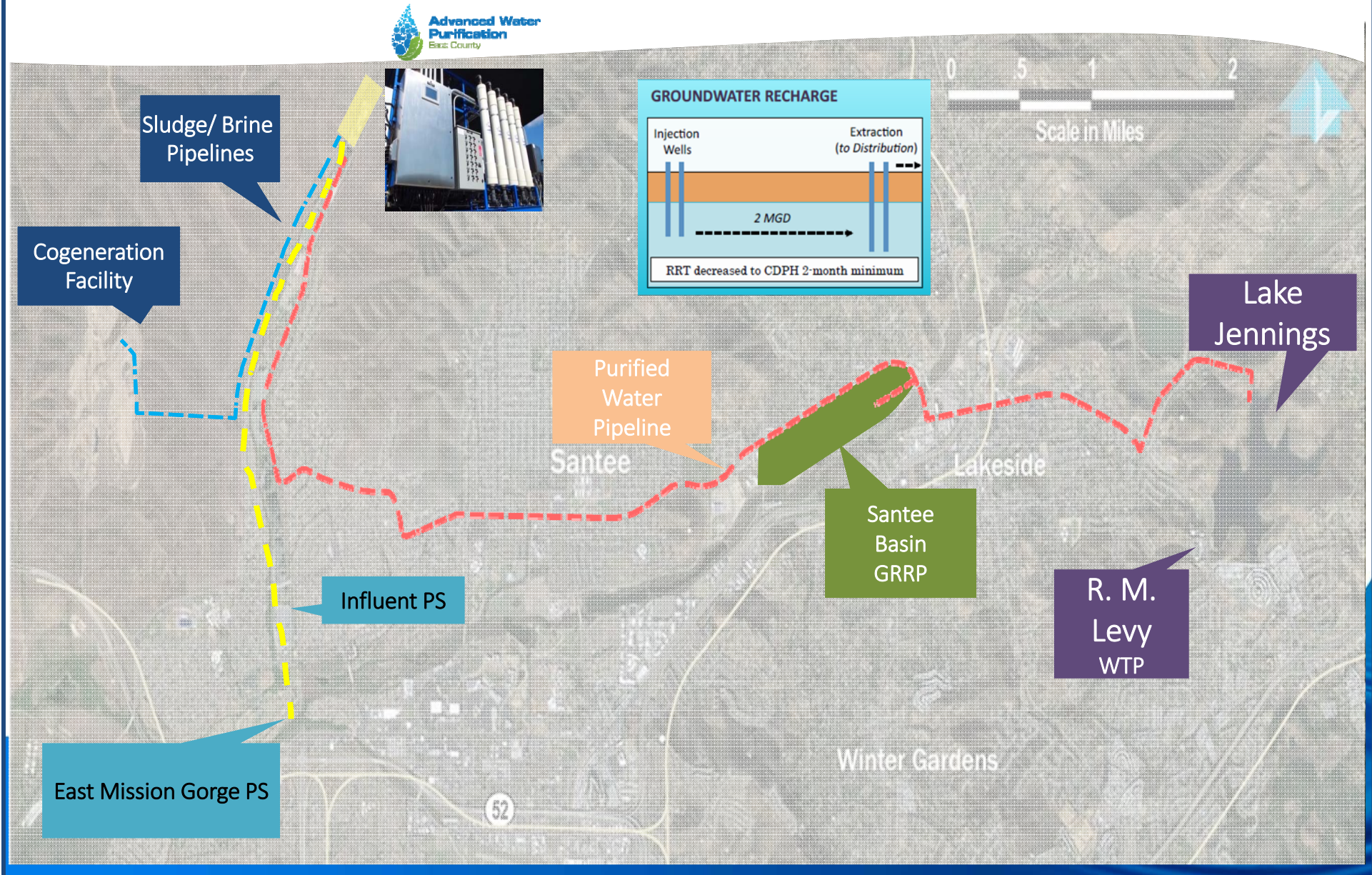


Padre Dam MWD

Helix Water District

Study Area Boundary

Project Infrastructure Elements

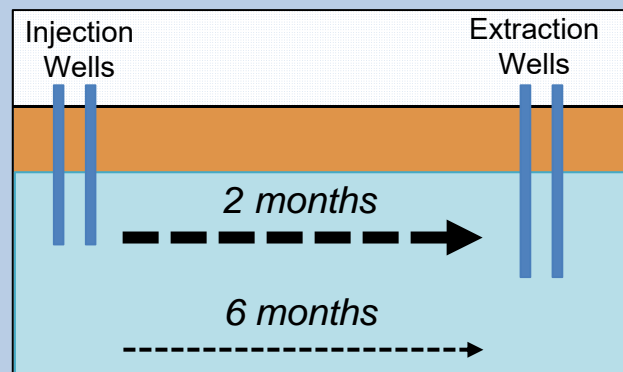


Basic Demo Grant Info

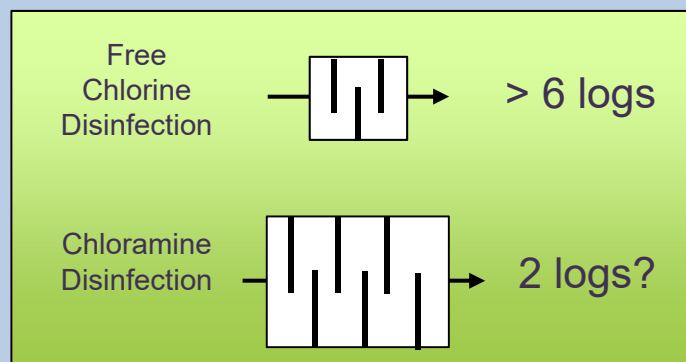
- Grant - \$3M
- Design – Spring 2014
- Construction Sept 2014 – Mar 2015
- Operation Mar 2015 Mar 2016
- Final Report May 2016

Demo Project Objectives

Shortened
response
retention time



Free chlorine
disinfection
credit





**Public
Health**

POTABLE REUSE

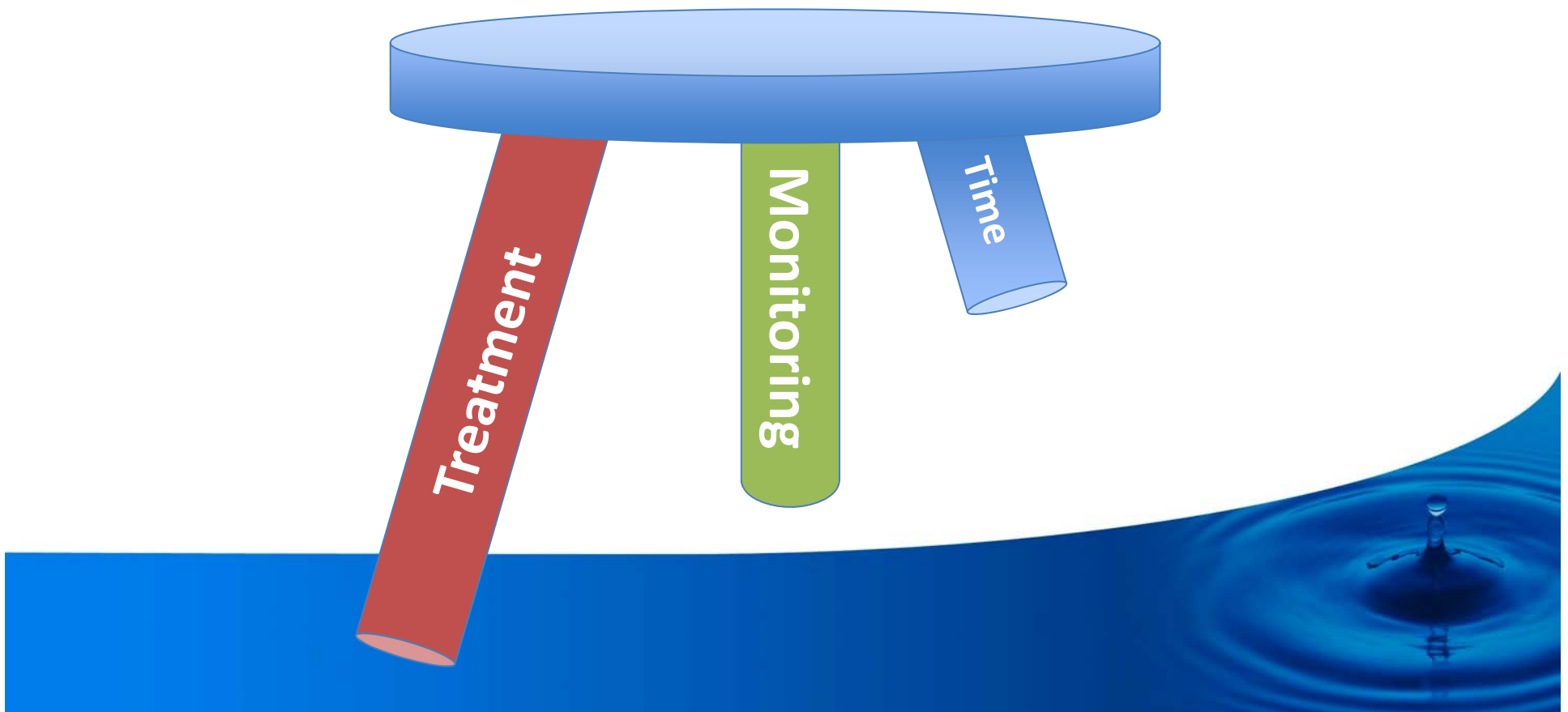
Treatment

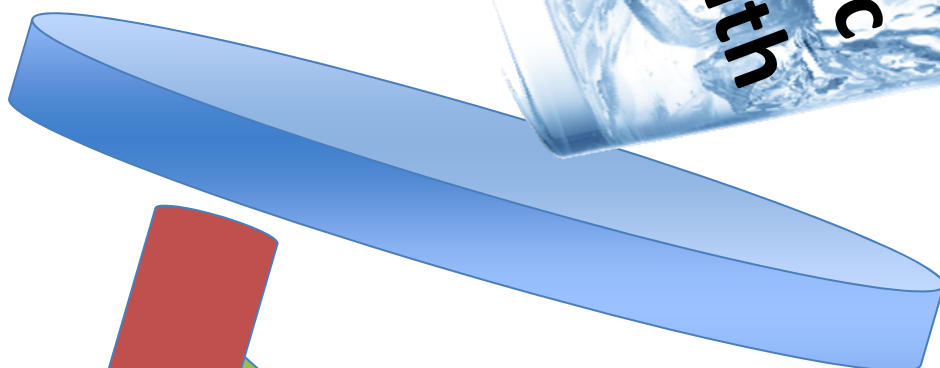
Monitoring

Retention Time

What we lose with less time:

- **Treatment in the aquifer**
- **Time to respond to failures**



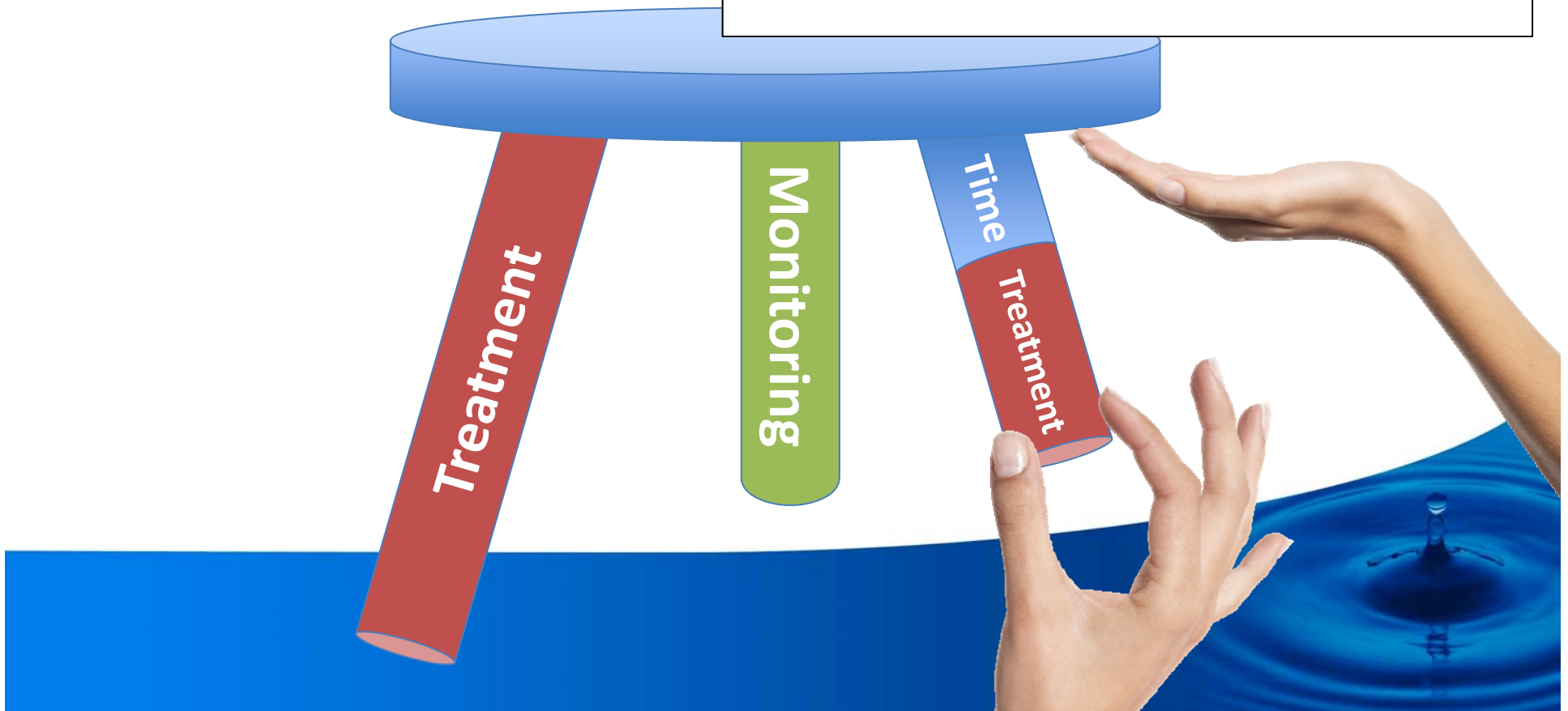


How we compensate:

- **Treatment in aquifer**

Enhance treatment above ground

- **Time for failure response**



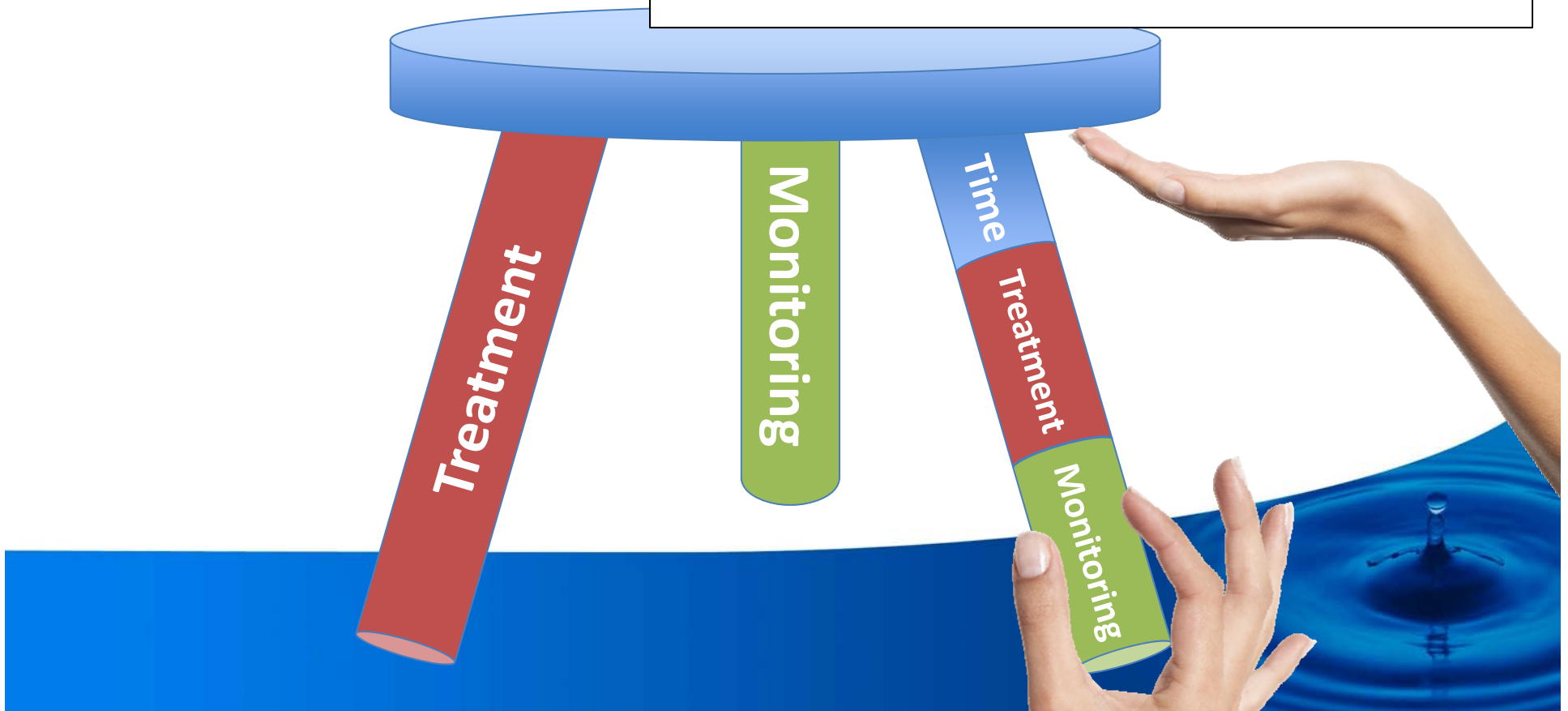
How we compensate:

- **Treatment in aquifer**

Enhance treatment above ground

- **Time for failure response**

Decrease time needed to detect compromise or failure



Public Health

Treatment

Monitoring

Time

Treatment

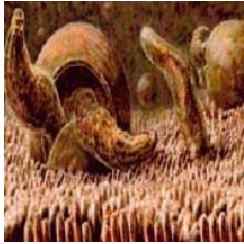
Monitoring



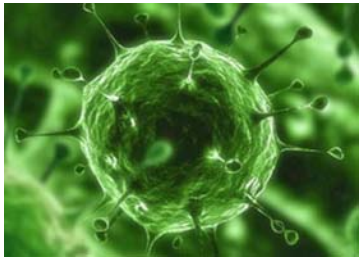
DDW Pathogen Requirements



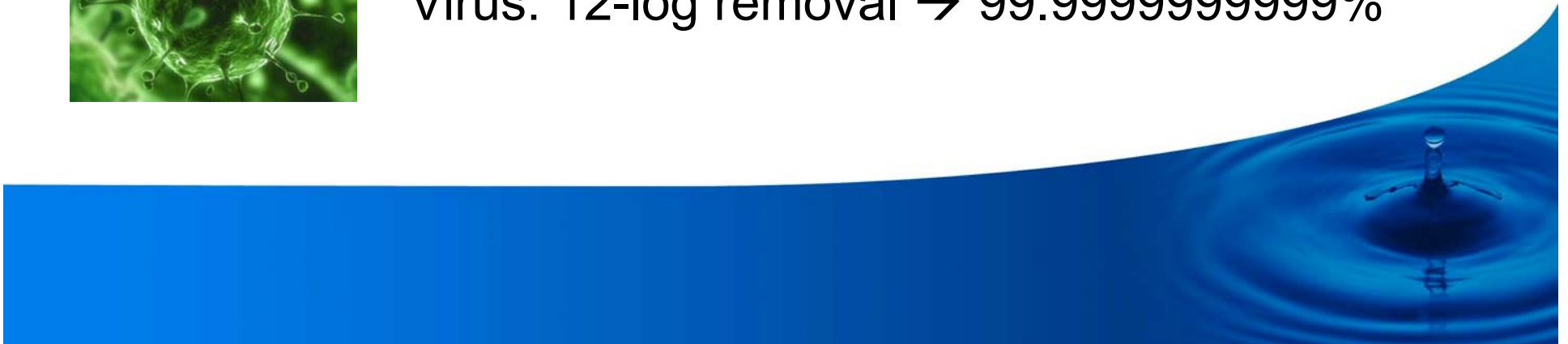
Giardia: 10-log removal → 99.99999999%



Crypto: 10-log removal → 99.99999999%

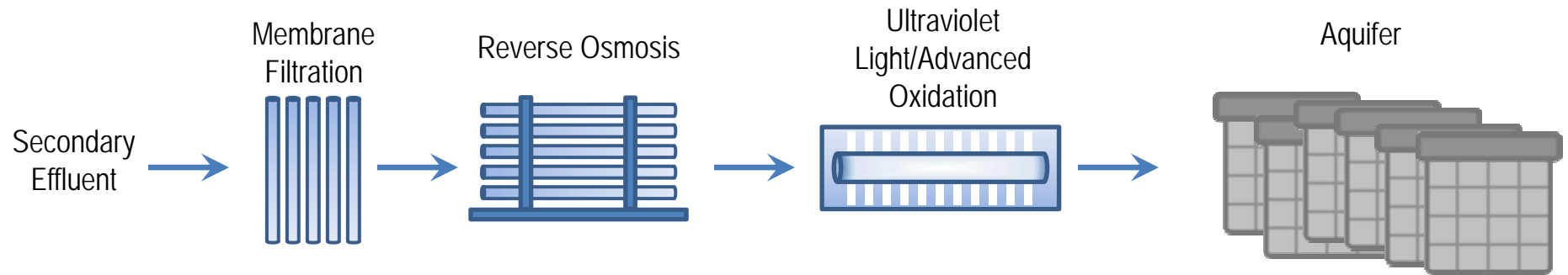


Virus: 12-log removal → 99.9999999999%



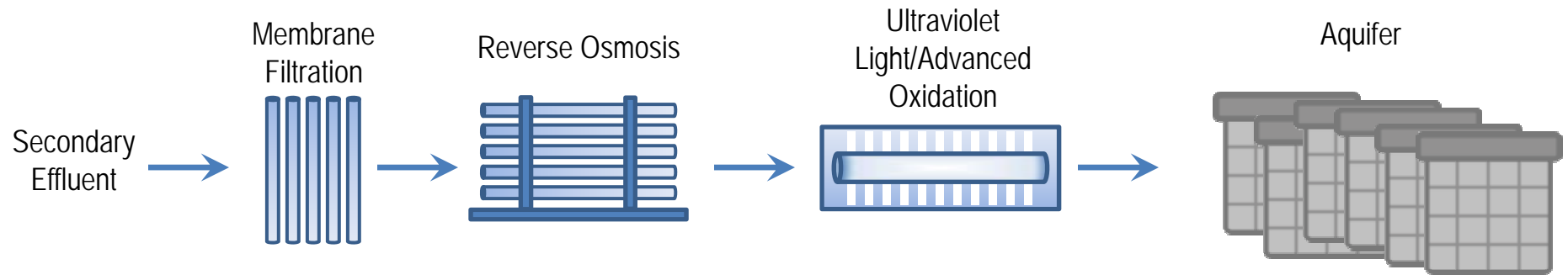
Padre Dam's Advanced Treatment Train

Standard Advanced Treatment Train

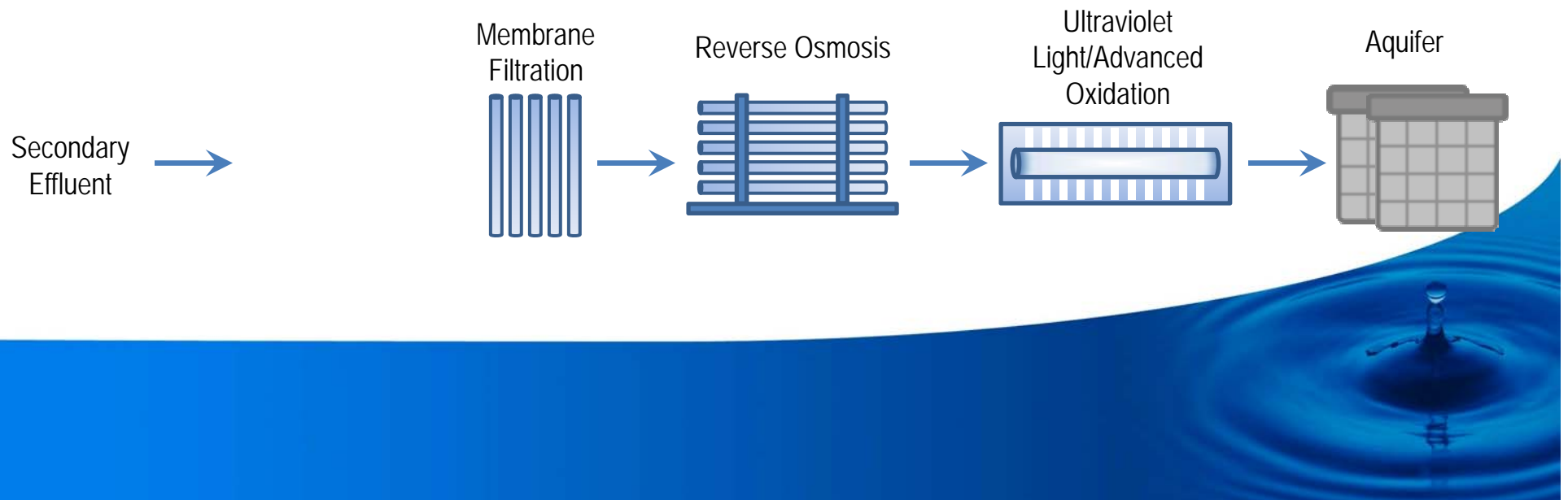


Padre Dam's Advanced Treatment Train

Standard Advanced Treatment Train

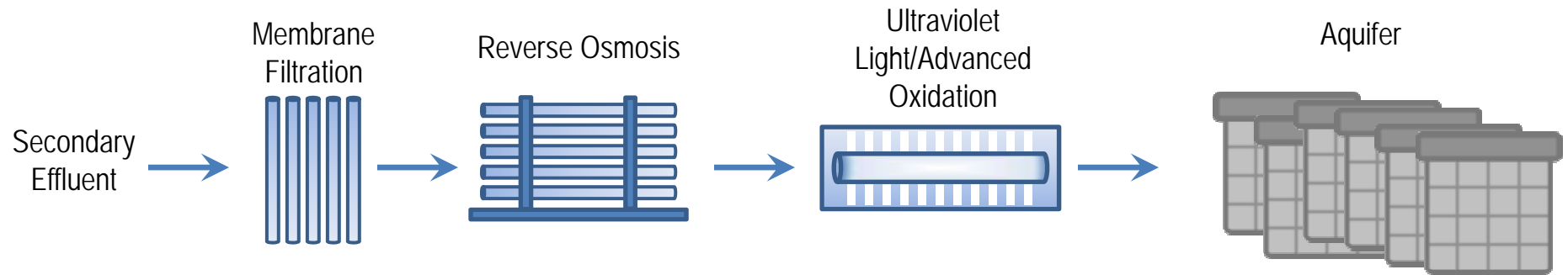


Padre Dam's Advanced Treatment Train

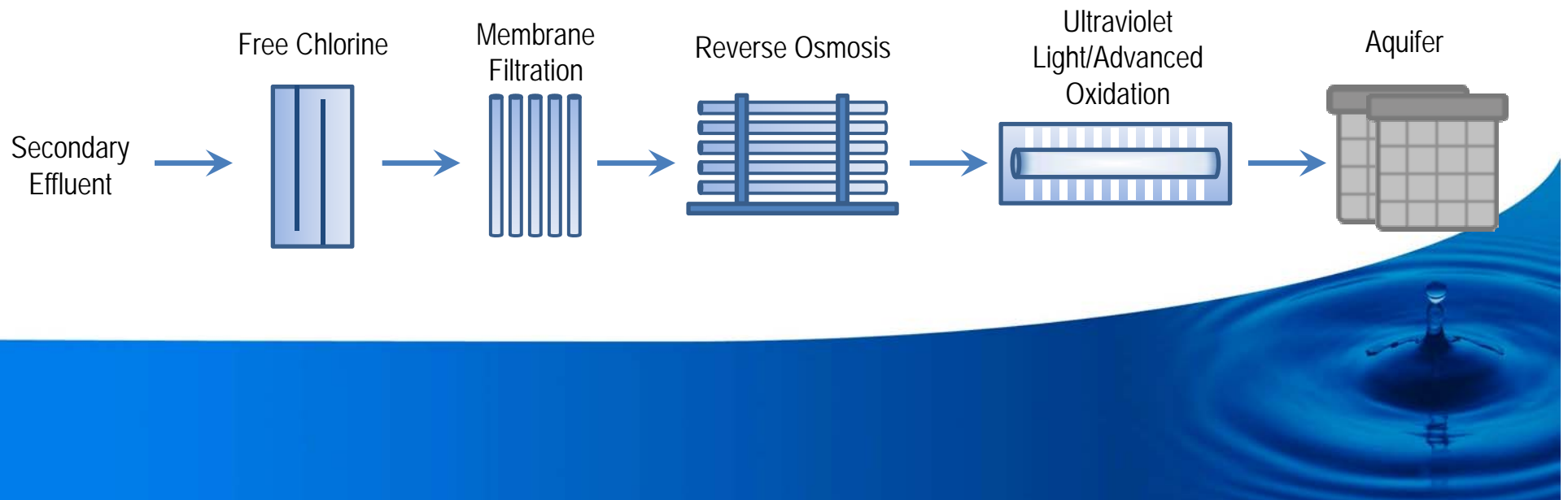


Padre Dam's Advanced Treatment Train

Standard Advanced Treatment Train

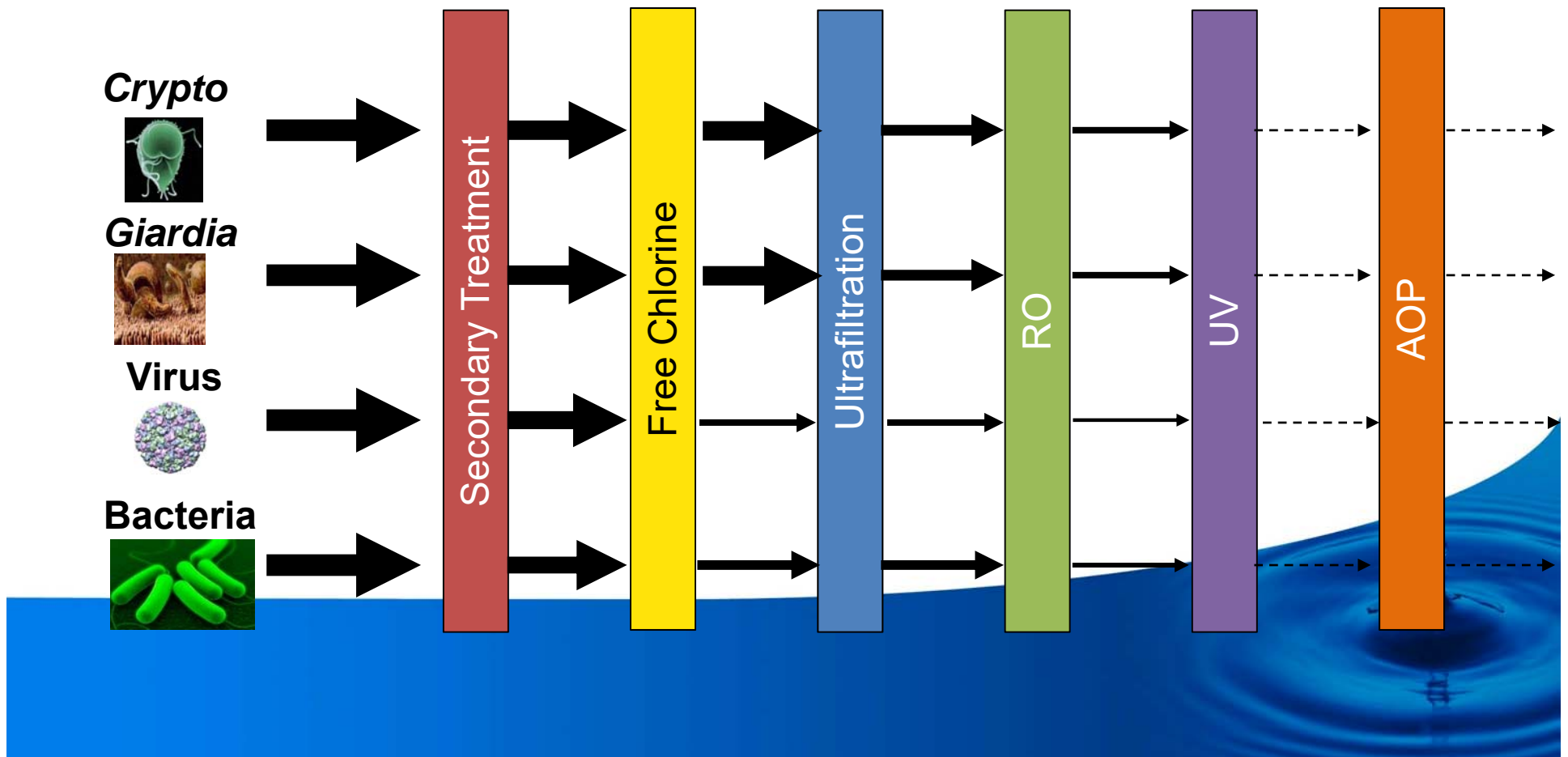


Padre Dam's Advanced Treatment Train



Free Chlorine Disinfection Benefits

- All pathogen requirements met above ground



Demo Project Overview

- Demonstration Testing – 12 months
 - On-line performance and challenge testing
 - More than 4,500 water quality samples
- NWRI Expert Panel – 3 workshops
 - Review/acceptance of testing plan and final results
- DDW Engagement
 - Reviewed and accepted testing plan
 - Attended all IAP workshops



Slide 19

AL1

Add RWQCB engagement?

Suggest moving this to slide #16

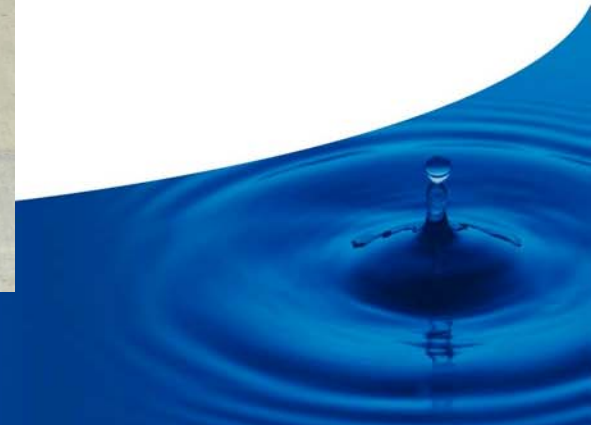
Albert Lau, 5/31/2016

NWRI Independent Advisory Panel



Members

Jason Dadakis
Rick Gersberg
Amy Childress
Jim Crook (chair)
Channah Rock
Dan Gerrity



Free Chlorine Disinfection



IAP Supports Free Chlorine

*“...based on the challenge testing undertaken for free chlorine disinfection, **the Panel supports the use of 5-log credit...**when achieving a free chlorine CT value of greater than 2 milligram-minutes per liter (mg-min/L).”*



Ultrafiltration



Toray HFU-2020N membranes



Reverse Osmosis



UV/AOP



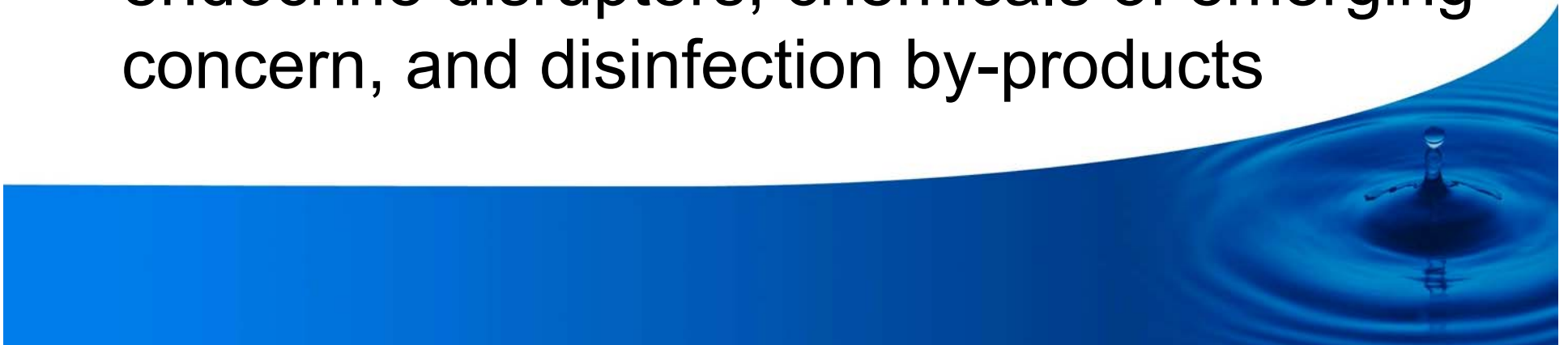
Overall Pathogen Reduction

Organism	Proposed Pathogen LRV Values							Redundancy	Required
	WRF	FC	MF/UF	RO	UV/AOP	Aquifer	Total		
Virus	1.9	5	0	1.3	6	2	16.2	4.2	12
<i>Giardia</i>	0.8	0	4	1.3	6	0	12.1	2.1	10
<i>Cryptosporidium</i>	1.2	0	4	1.3	6	0	12.5	2.5	10



Treatment Conclusions

- Enhanced treatment provides control of all pathogens at AWWPF
- Monitoring provides on-line, continuous verification of treatment performance
- Demonstrated high degree of control of chemicals, including regulated constituents, endocrine disruptors, chemicals of emerging concern, and disinfection by-products



**Public
Health**

Treatment

Monitoring

Time

Treatment

Monitoring



IAP Supports Short Retention Time

*“The Panel believes the proposed approach of **enhanced treatment and monitoring** used by the AWWPF seems to be **appropriate to achieve adequate RRT.**”*



Conclusions

- Final report submitted to DDW in May 2016
- Results serve as basis for permitting future full-scale potable reuse projects
- Additional treatment barrier provides versatility for both groundwater and surface water projects



Public Outreach

- Over 2,000 toured the facility
- Project website developed (www.eastcountyawp.org)
- Fact sheets and other publicity materials produced
- Speakers bureau program
- School age educational materials and scout patch program
- Presentations to community leaders
- Award winning video produced
(<http://www.padredam.org/228/Video-Gallery>)



QUESTIONS?

EXTRA SLIDES

