



Subcommittee on Pure Water Southern California and  
Regional Conveyance

# Assessment of Reuse Alternatives for Pure Water Southern California

Item 3b

January 23, 2023

## Item 3b

### Assessment of Reuse Alternatives for Pure Water Southern California

## Subject

Assessment of Reuse Alternatives for Pure Water Southern California

## Purpose

Respond to questions received from Directors related to the application of direct potable reuse (DPR) for PWSC

## Next Steps

- Continue to pursue flexible/hybrid DPR through raw water augmentation (RWA) for Phase 1
- Consider additional DPR alternatives for Phase 2

# Reuse Alternatives for Pure Water Southern California



## Questions received:

- *Has Metropolitan considered Treated Water Augmentation, given proposed DPR regulations could now allow for it?*
- *Why do we need to take the PWSC water (from Carson) up to the Water Treatment Plant?*

## Response outline:

- California Recycled Water Regulations
- Progressive approach to DPR alternatives
- Considerations of DPR approaches
- Future opportunities to expand DPR approach

# Progressive Approach to PWSC Reuse Alternatives

## Indirect Potable Reuse

Groundwater  
Recharge:  
Surface  
Spreading



Advanced Water  
Treatment

Groundwater  
Aquifer

Chlorination

Groundwater  
Recharge:  
Subsurface  
Injection



Advanced Water  
Treatment

Groundwater  
Aquifer

Chlorination

Surface Water  
Augmentation



Advanced Water Treatment

Reservoir

Surface Water Treatment

## Direct Potable Reuse

Raw Water  
Augmentation



Advanced Water  
Treatment

Pipeline to

Surface Water  
Treatment

Potable Water  
Distribution  
System

Treated Water  
Augmentation



Advanced Water  
Treatment

Potable Water  
Distribution  
System

SWRCB, DDW  
**California  
Recycled  
Water  
Regulations**

*Expansion of planned reuse projects resulting from decades of research and advancement in monitoring, treatment technologies, and compliance.*



Non-Potable  
Reuse

***Irrigation  
Industrial Uses***

2000



Indirect  
Potable Reuse

***Groundwater  
Replenishment***

2014



Indirect  
Potable Reuse

***Surface Water  
Augmentation***

2018



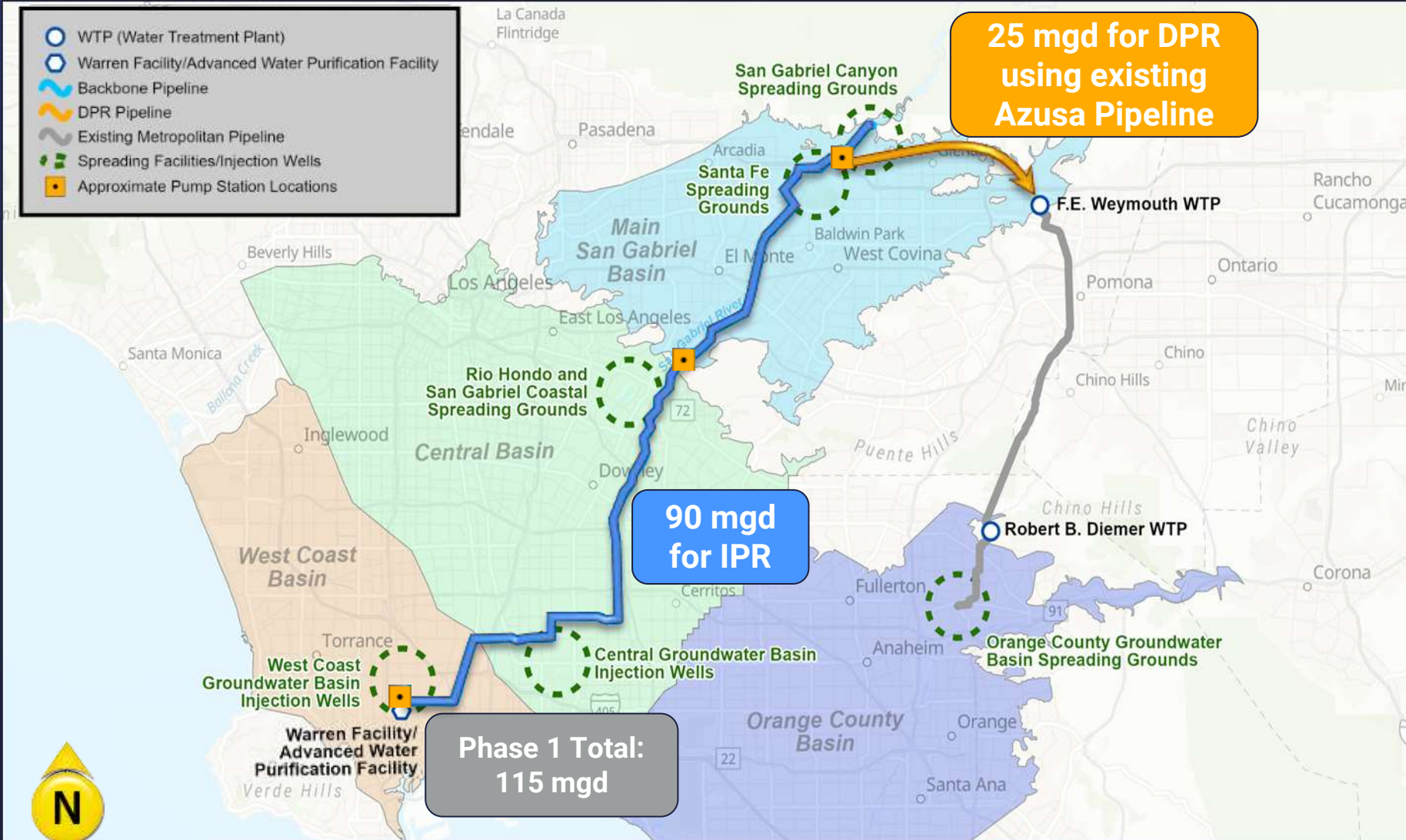
Direct Potable  
Reuse

***Raw & Treated  
Water  
Augmentation***

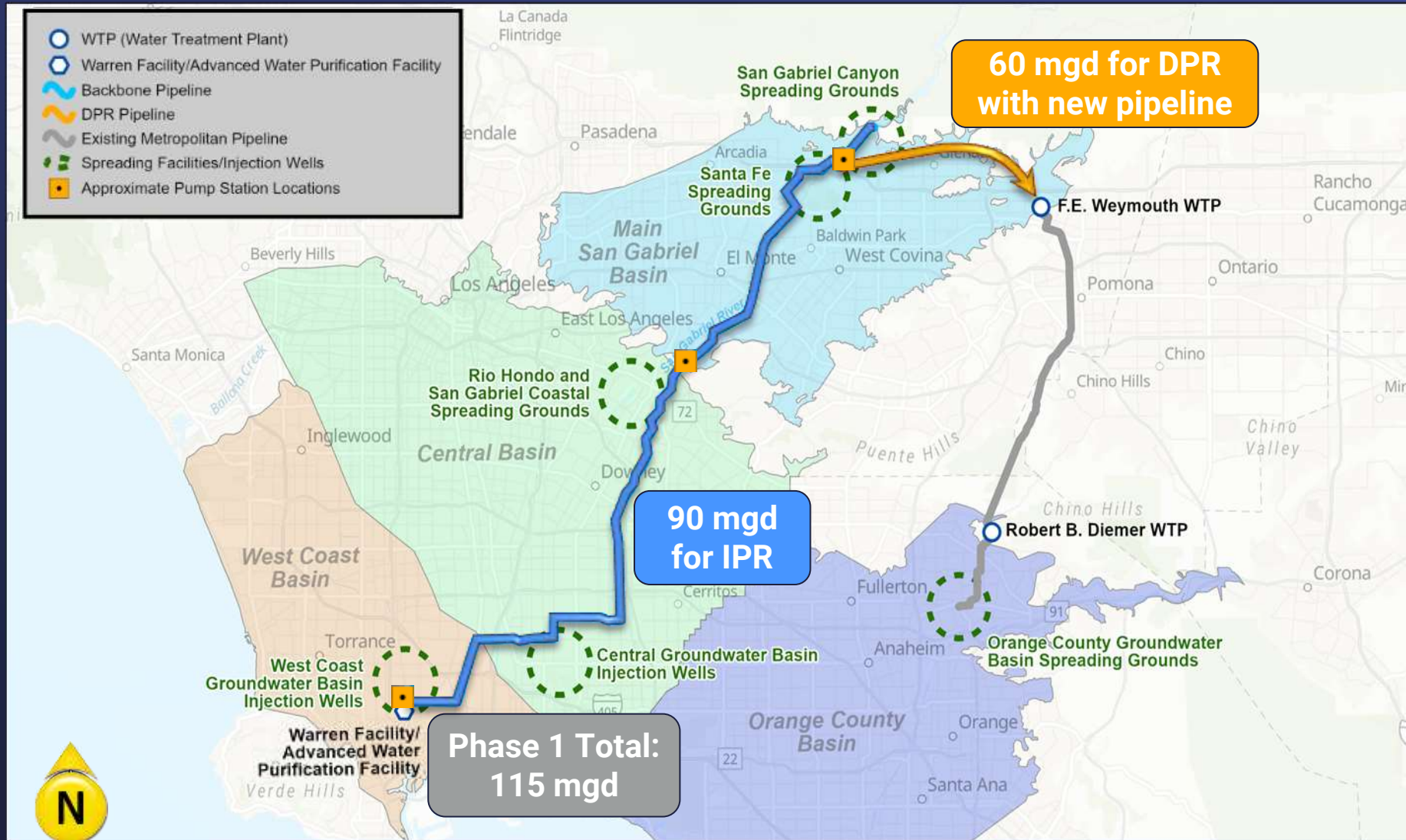
2024

***Increasing requirements for public health protection***

# PWSC Program Overview – Phase 1 (25 mgd for DPR)



# PWSC Program Overview – Phase 2 (60 mgd for DPR)



## Phase 2 DPR RWA Approach

New pipeline to Weymouth WTP needed; can also go to Diemer

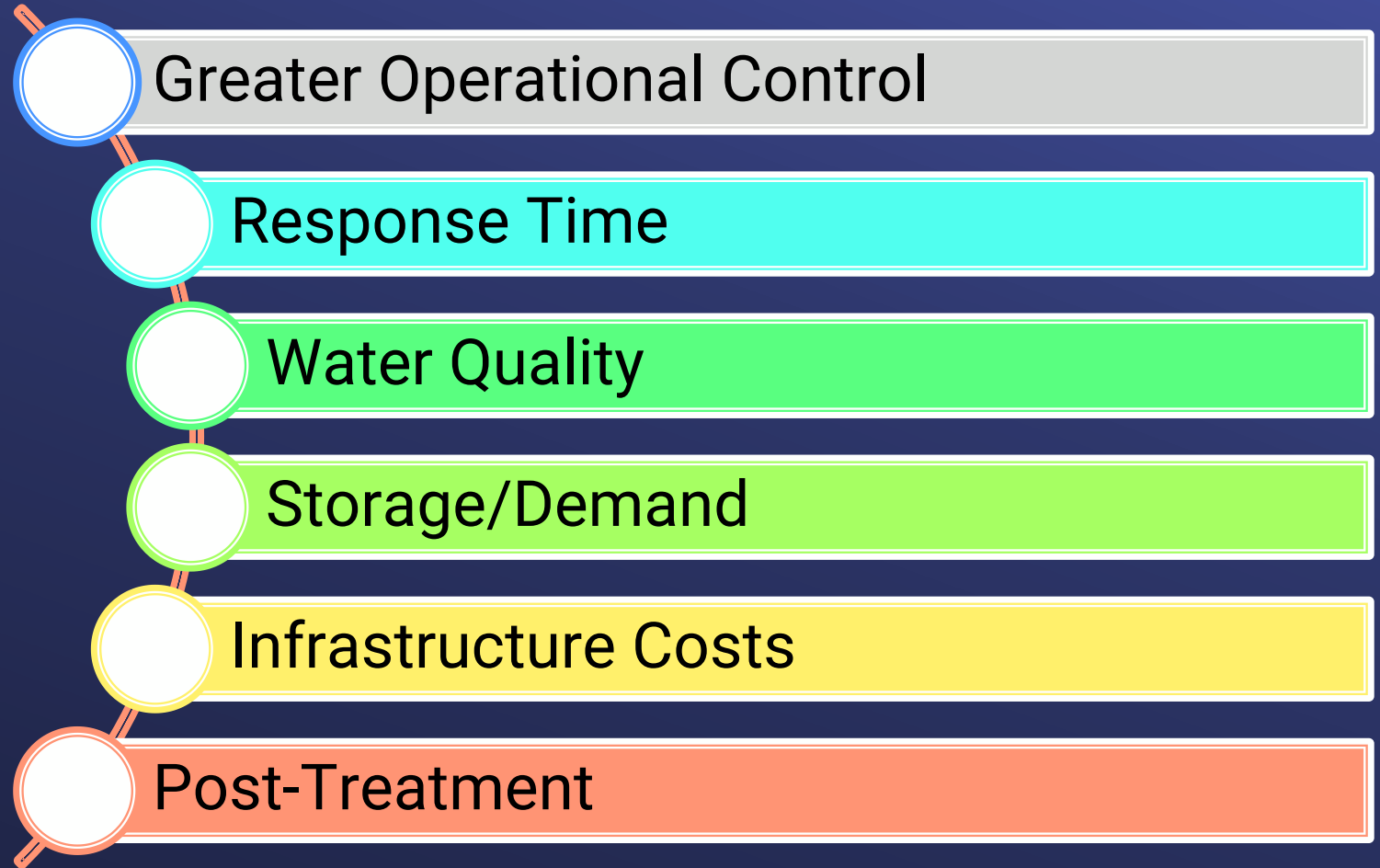
Increase in percent blend of AWT water (would be > 10%)

Triggers additional treatment for regulatory pathogen and chemical control requirements

- Process - TBD
- Location - TBD

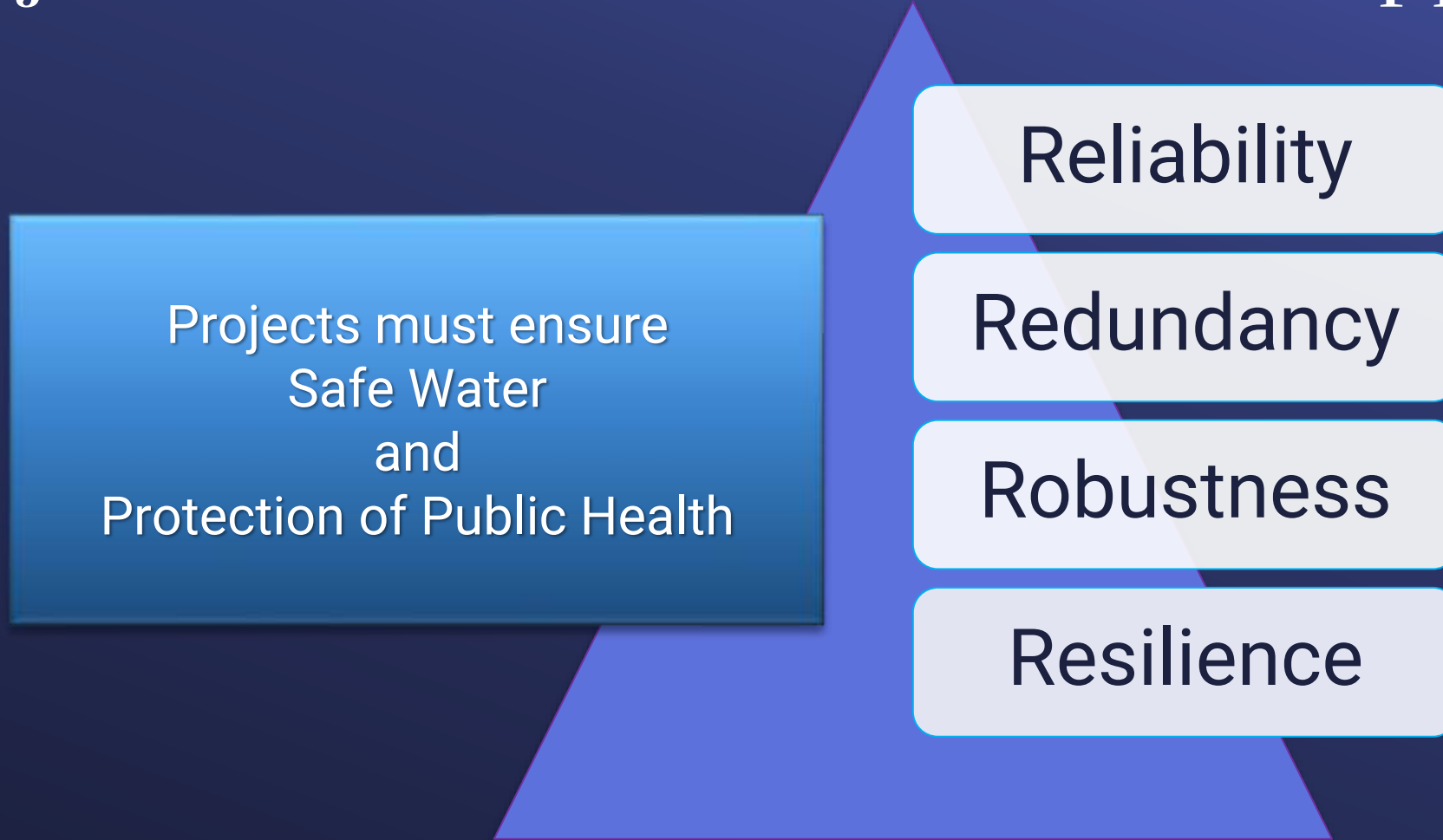
# Considerations of Direct Potable Reuse

## CA Direct Potable Reuse Regulations

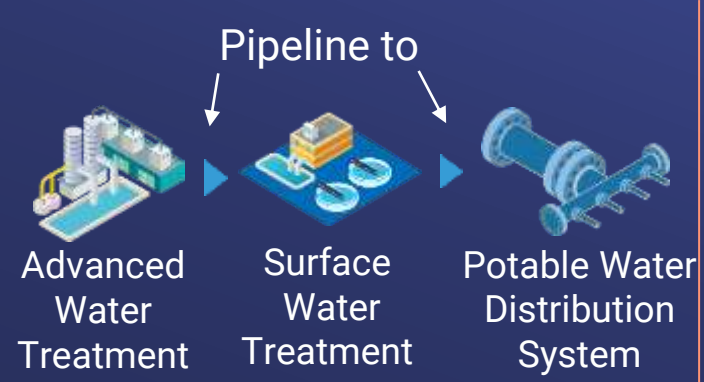




# Regulatory Requirements Balanced with Project Framework for Potable Reuse Approach



*Credit: The Four R's, Pecson et al, JAWWA, 2015*



# Direct Potable Reuse Raw Water Augmentation

*RWA – planned introduction of recycled water into a raw water supply immediately upstream of a Surface Water Treatment Plant*

## Benefits to PWSC pursuing RWA

- Provides Regional Accessibility
  - Leverages existing infrastructure
  - Potential integration with other reuse projects
- Increases Operational Control
  - Allows additional buffer in pipeline
  - Expands response time
  - Blending opportunities
  - Advantages and value of Surface Water Treatment Plant operations
    - Enhances water quality and process performance
    - Balances water quality objectives

# Considerations for DPR Treated Water Augmentation

Response Time  
(limited)

Level of Treatment  
(additional redundancy)

Hydraulics/Demands  
(real-time monitoring,  
immature)

Control Logic  
(complexity increases)

Storage Needs  
(additional, onsite  
needs)

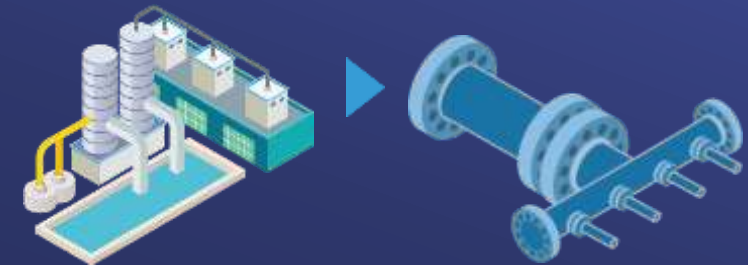
Monitoring  
(real-time)

Risk Contingency  
(increased  
consequence)

Post-Treatment  
(prior to any delivery)

## Direct Potable Reuse

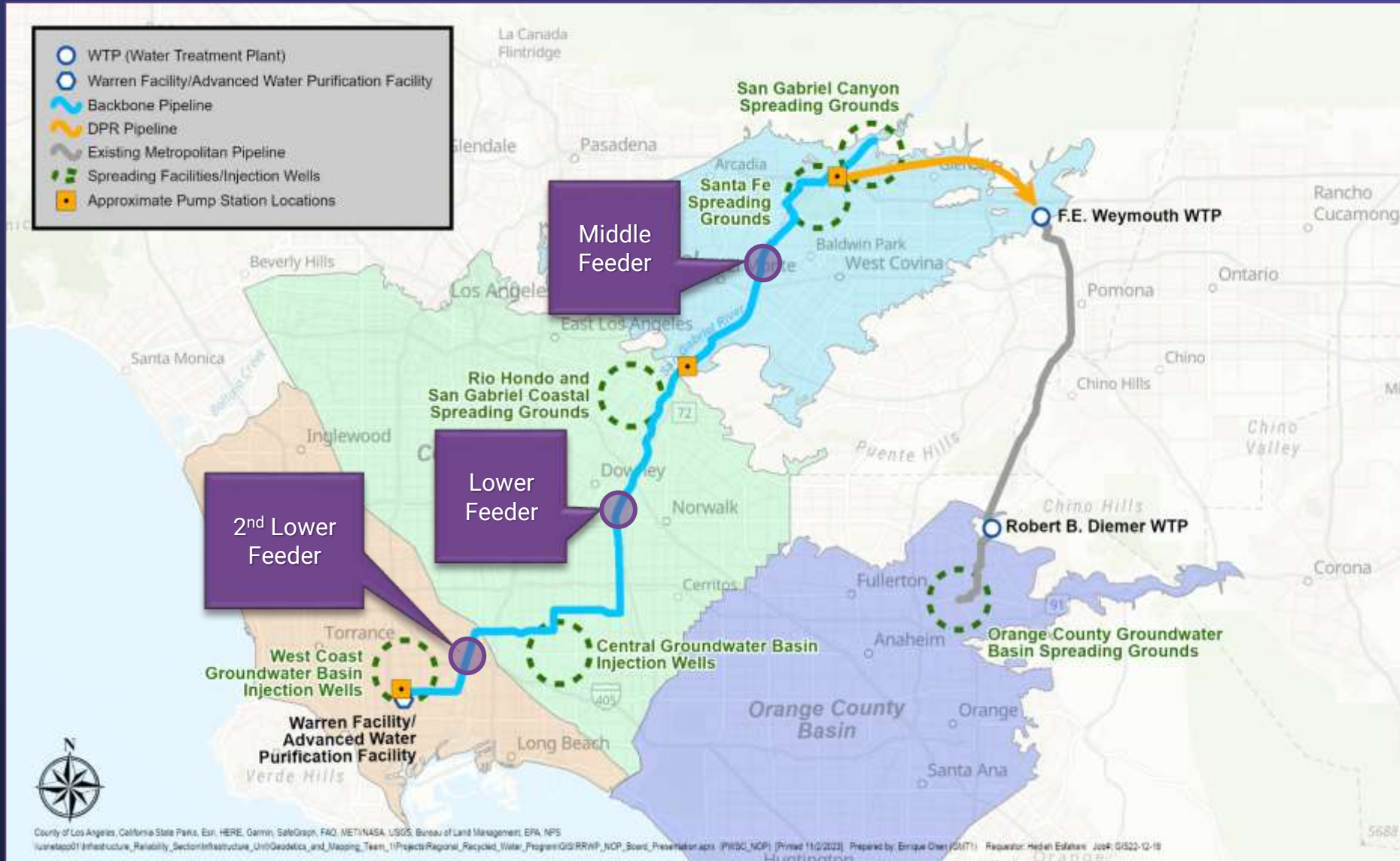
Treated Water  
Augmentation



Advanced  
Water  
Treatment

Potable  
Water  
Distribution  
System

# Potential Metropolitan Feeder Tie-in Locations DPR Treated Water Augmentation (TWA)



DPR by way of treated water augmentation is the planned introduction of recycled water **directly** into a public water system

Potential treated water feeder tie-in intersections along planned backbone pipeline for PWSC

- Middle Feeder
- Lower Feeder
- 2<sup>nd</sup> Lower Feeder

# Next Steps for DPR Development

- Continue to pursue flexible/hybrid RWA approach for Phase 1
- Plan for additional testing and modifications at Demonstration Plant to help inform DPR full-scale operations
- Engage in DPR research/development and monitor/assess lessons learned with reuse sector
  - In consideration for future Treated Water Augmentation opportunities

