



Subcommittee on Pure Water Southern California and
Regional Conveyance

Assessment of Reuse Alternatives for Pure Water Southern California

Item 3b

January 23, 2023

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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



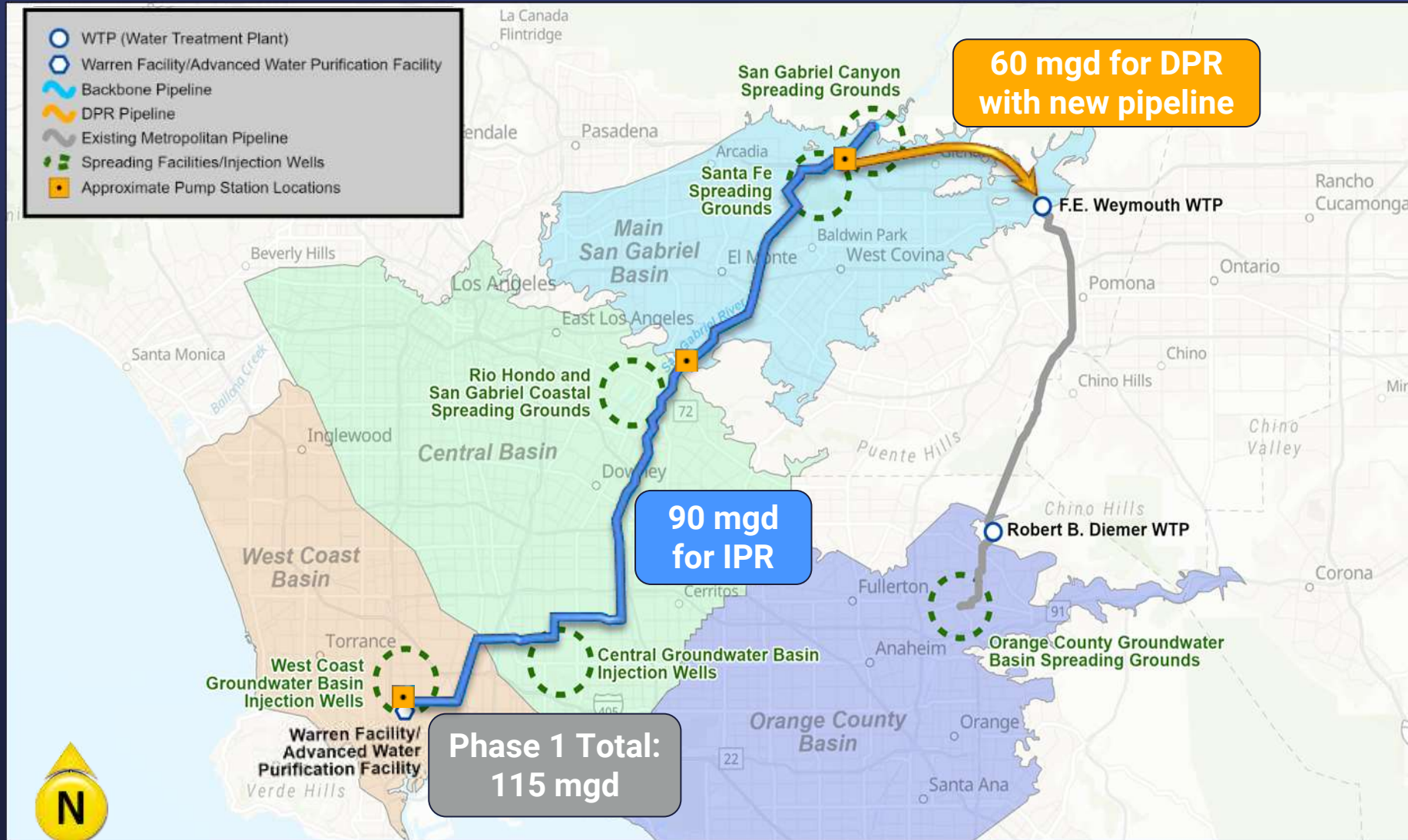
Direct Potable
Reuse

***Raw & Treated
Water
Augmentation***

2024

Increasing requirements for public health protection

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



Phase 2 DPR RWA Approach

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

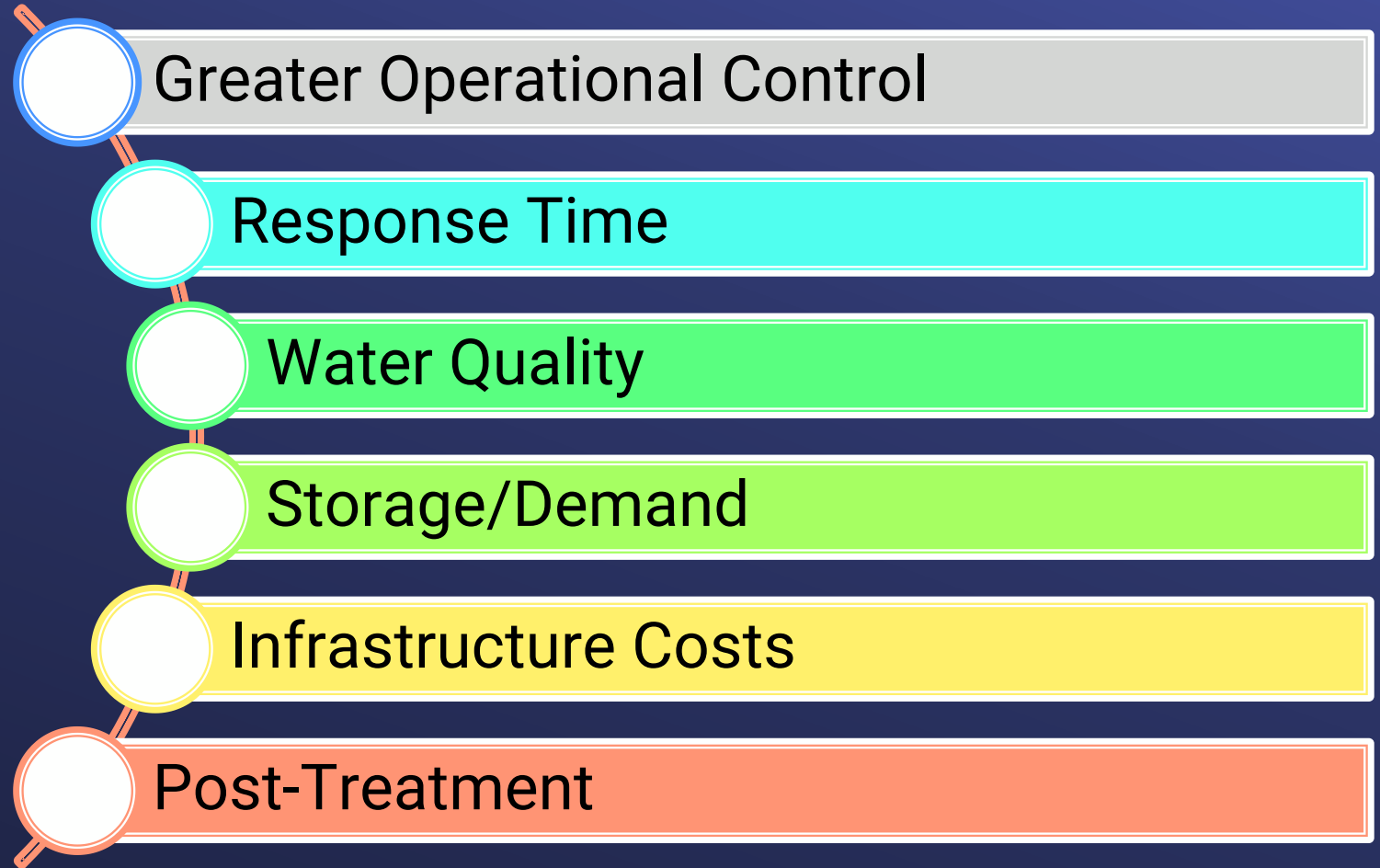
Increase in percent blend of AWT water (would be > 10%)

Triggers additional treatment for regulatory pathogen and chemical control requirements

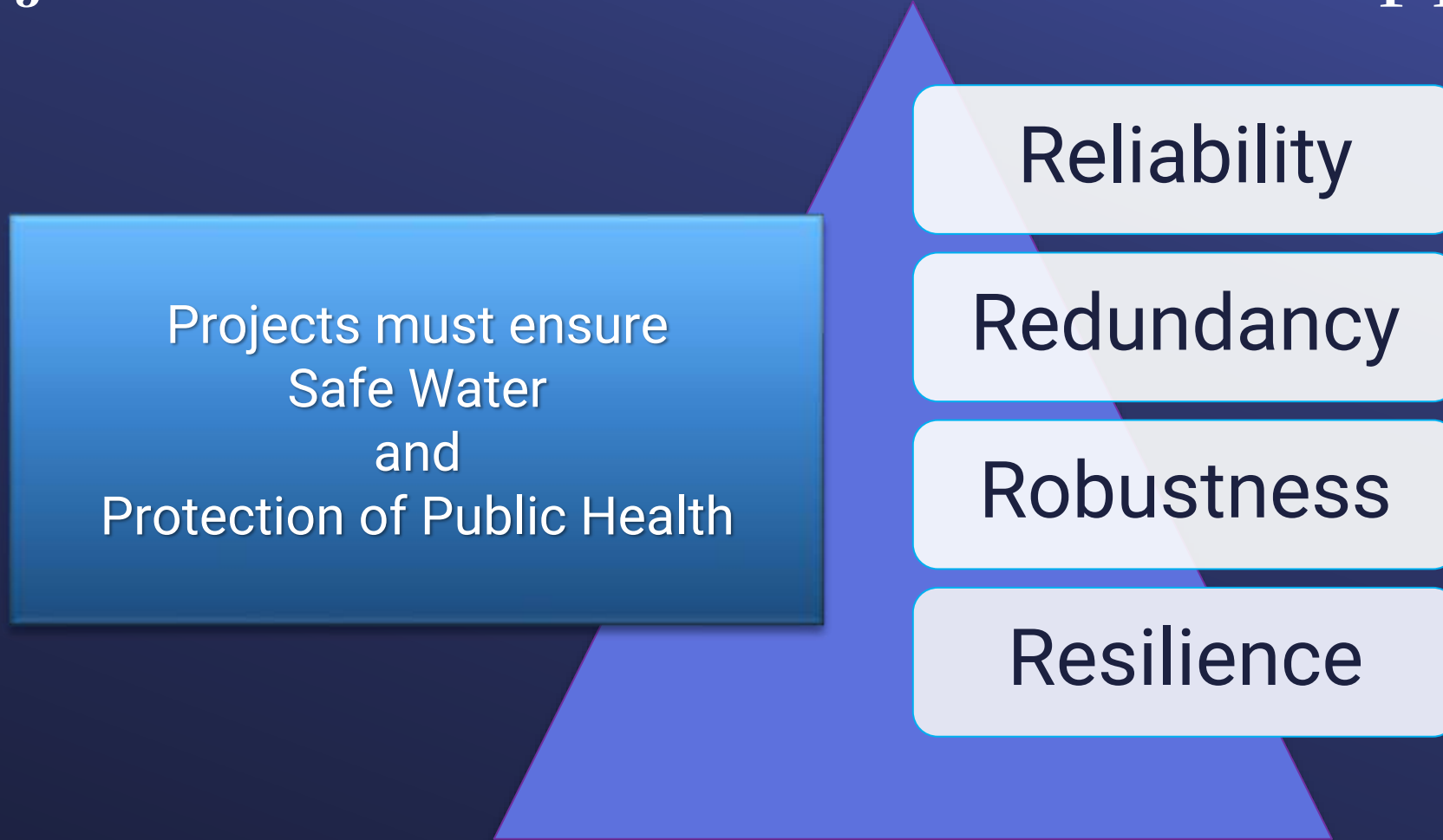
- Process - TBD
- Location - TBD

Considerations of Direct Potable Reuse

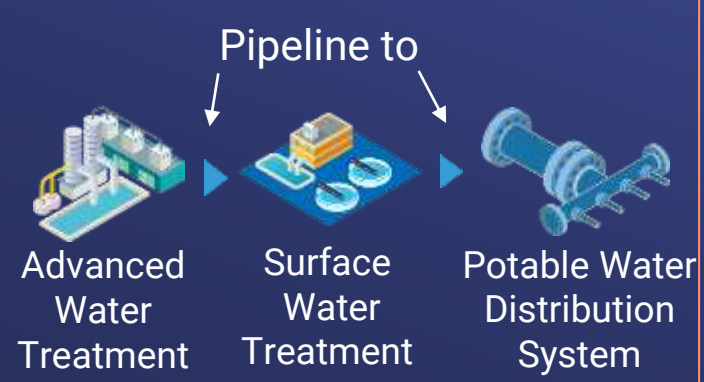
CA Direct Potable Reuse Regulations



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)

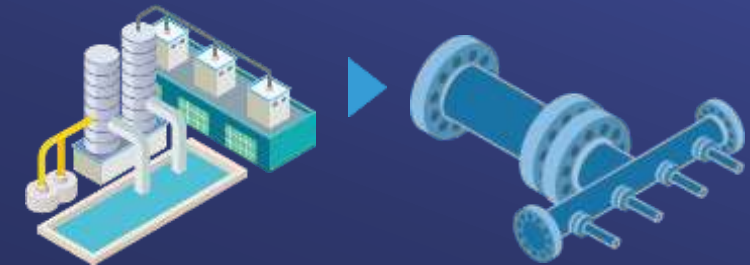
Monitoring
(real-time)

Risk Contingency
(increased
consequence)

Post-Treatment
(prior to any delivery)

Direct Potable Reuse

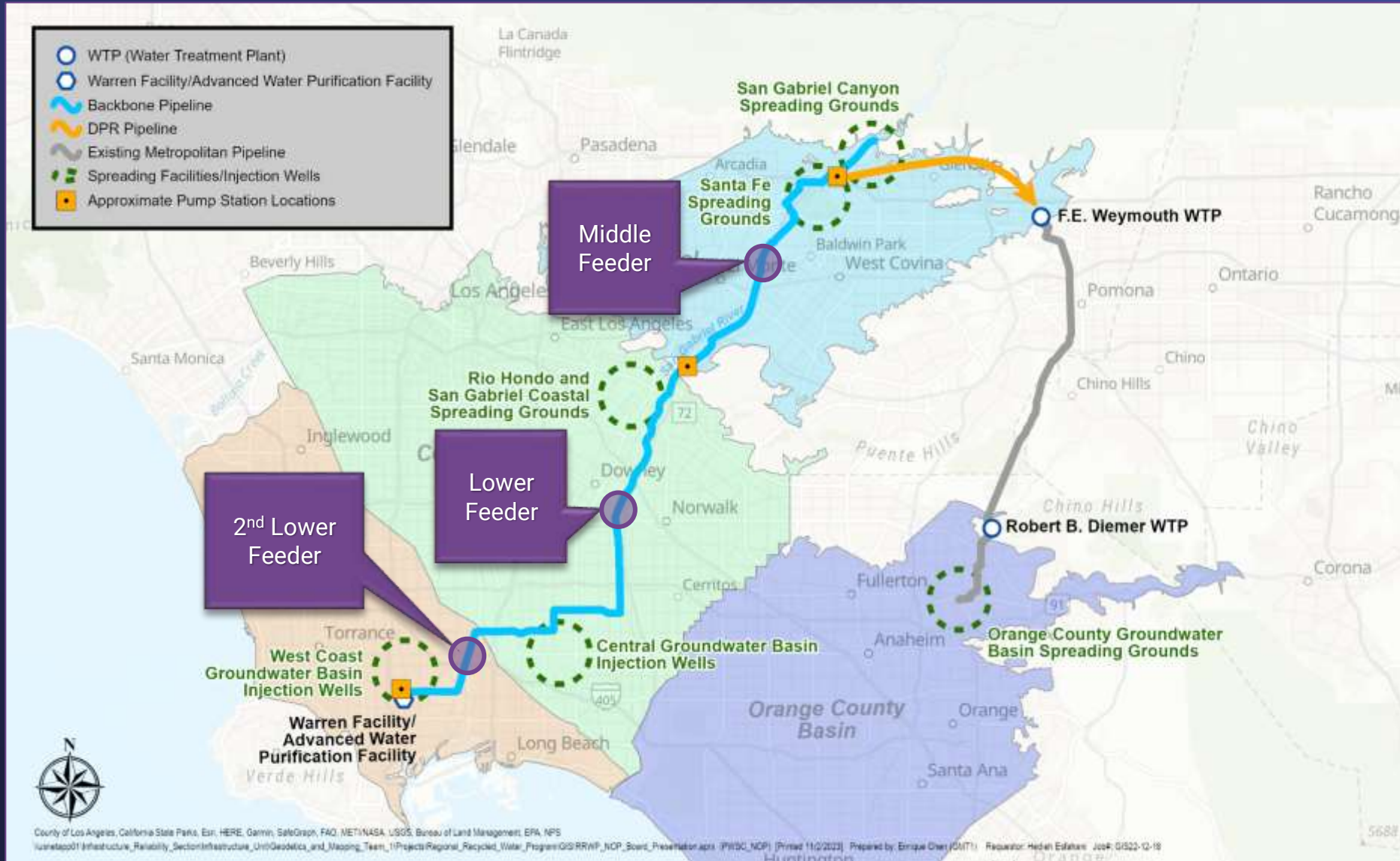
Treated Water
Augmentation



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
- 2nd 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

