Subcommittee on Pure Water Southern California and Regional Conveyance

Assessment of Reuse Alternatives for Pure Water Southern California

Item 3c

November 28, 2023

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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

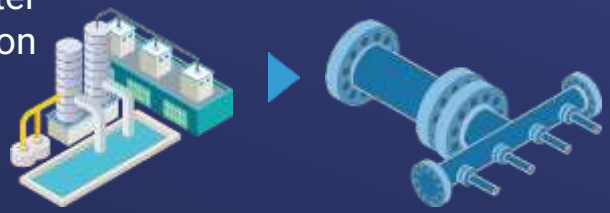
Advanced Water Treatment | Reservoir | Surface Water Treatment

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

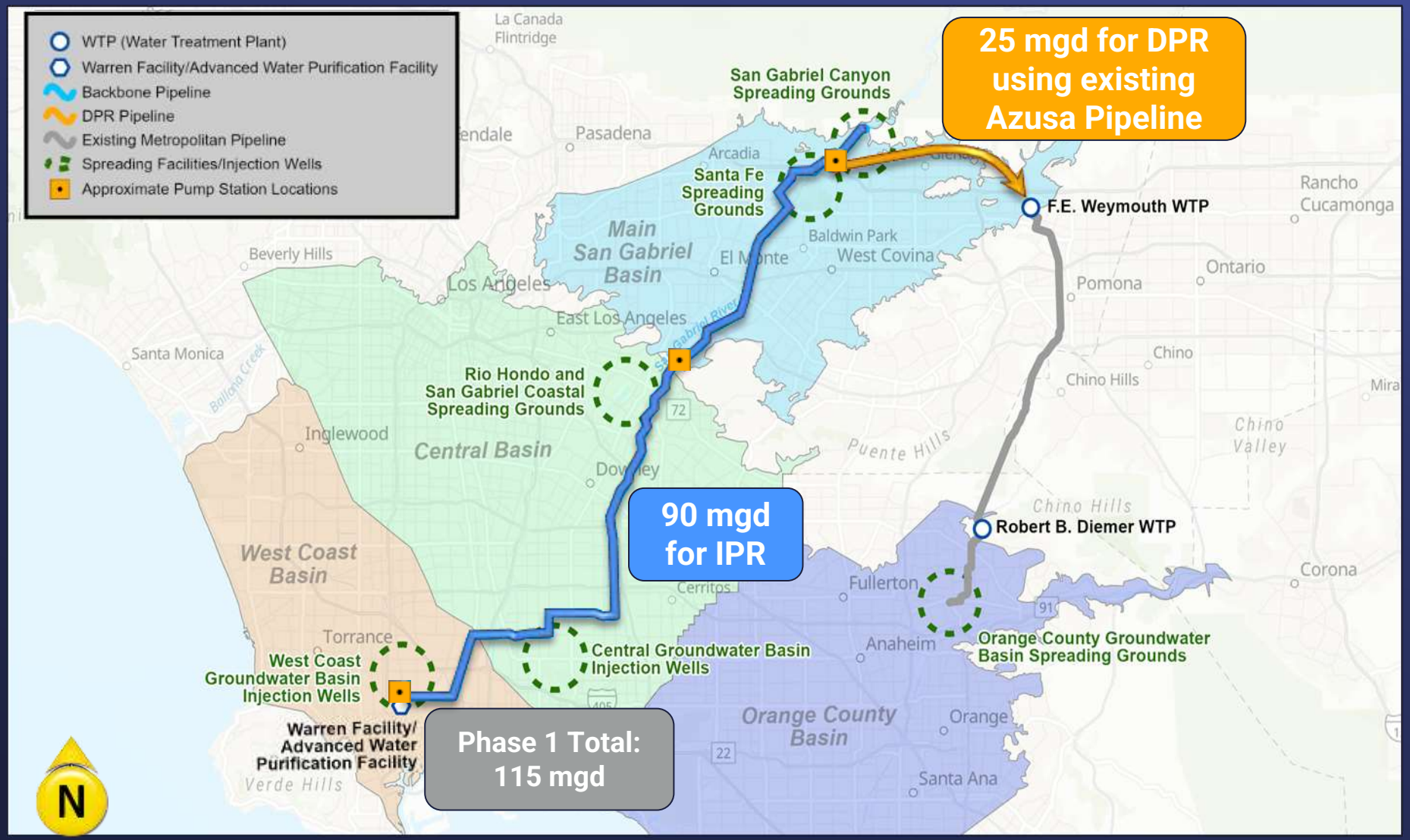
Direct Potable Reuse

Raw & Treated Water Augmentation

~2023/2024

Increasing requirements for public health protection

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



[Phase 1 DPR RWA Approach at Weymouth]

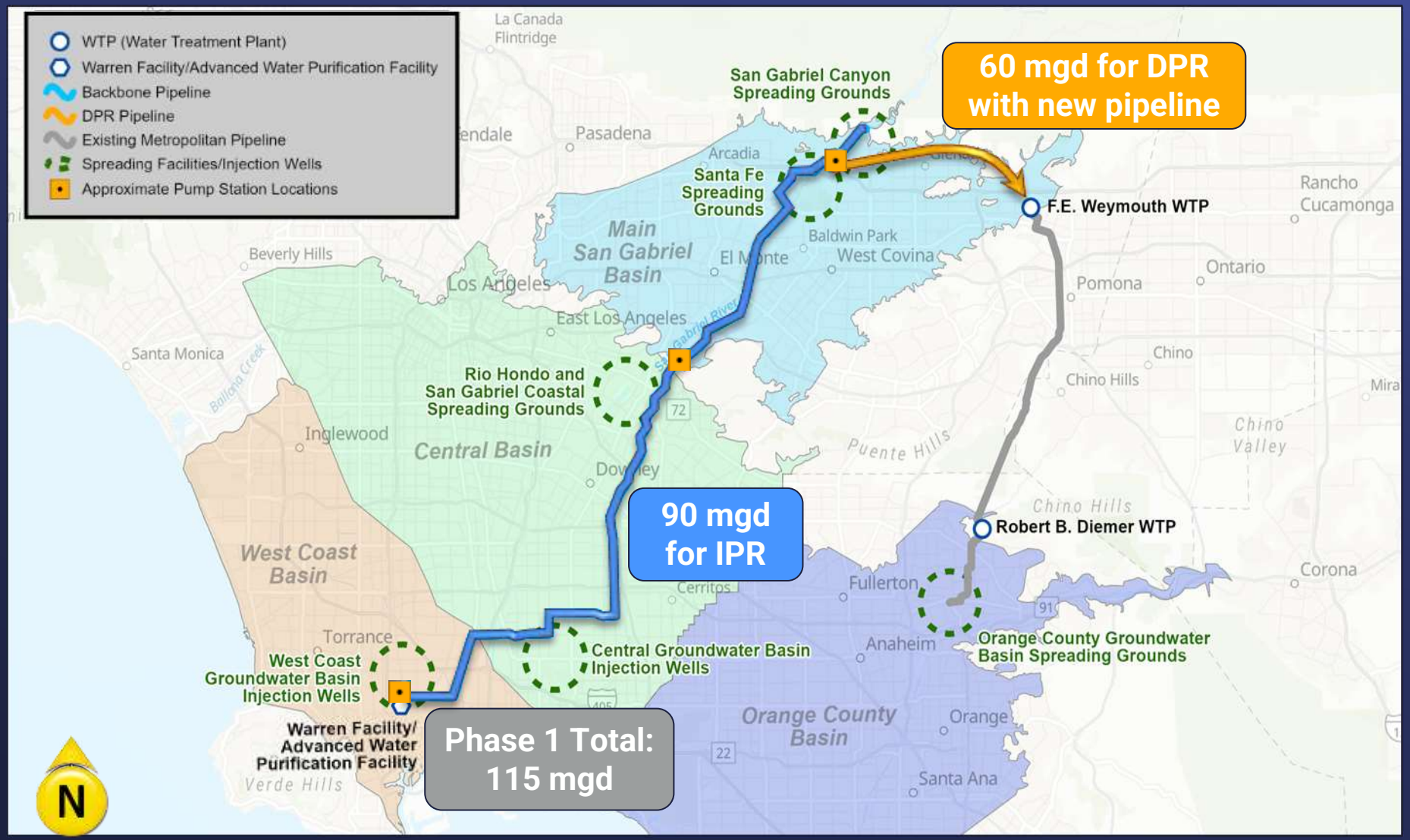
Convey AWT water to Weymouth/Diemer; Blending opportunities with

- CRA
- SWP
- <10% AWT

Additional treatment for regulatory pathogen control requirements

- Chlorine dioxide
- Ultraviolet light

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

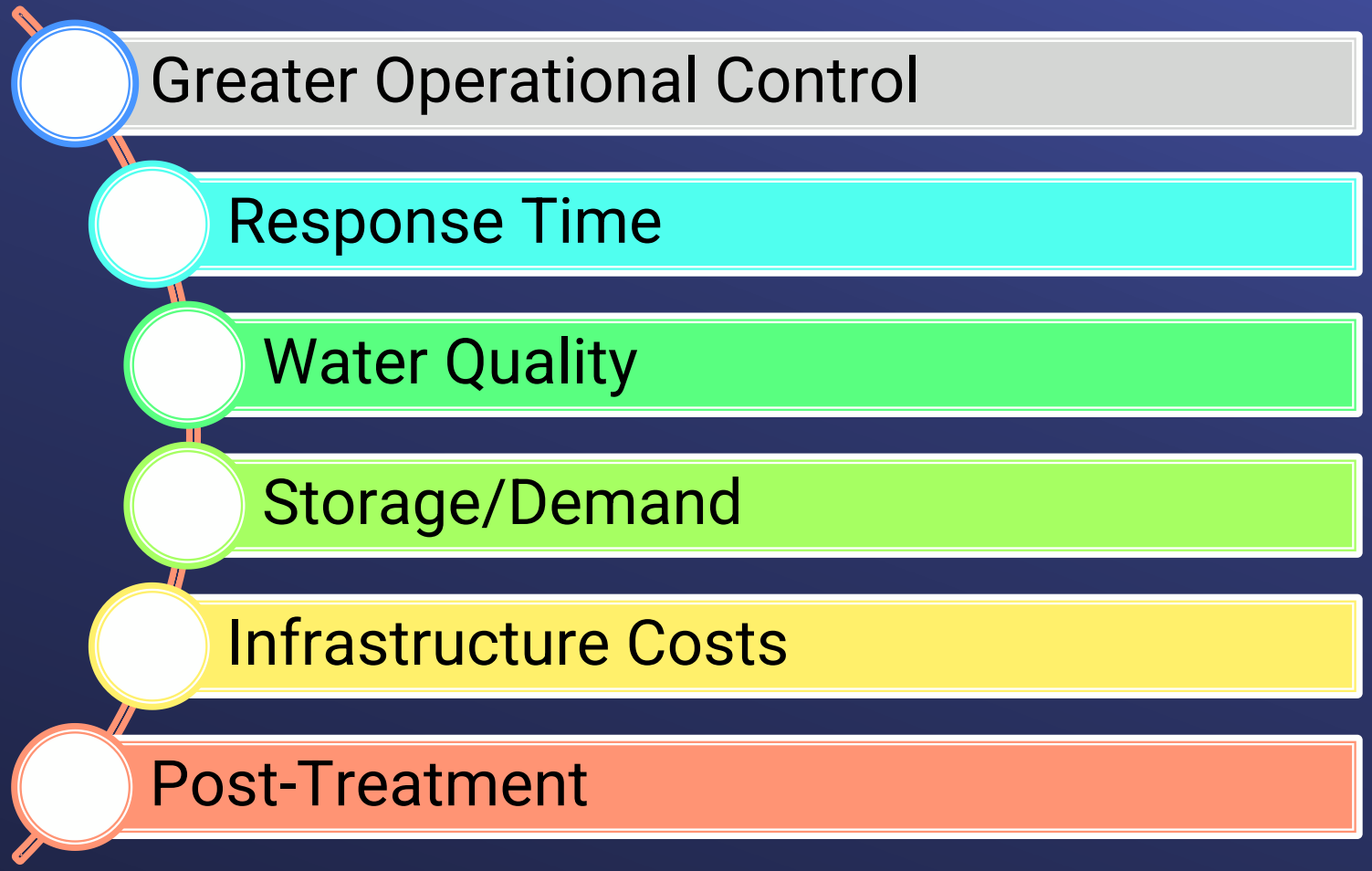
Increase in percent blend of AWT water (would be > 10%)

Triggers additional treatment for regulatory pathogen and chemical control requirements

- Process - TBD
- Location -TBD

CA Direct Potable Reuse Regulations

Considerations of Direct Potable Reuse

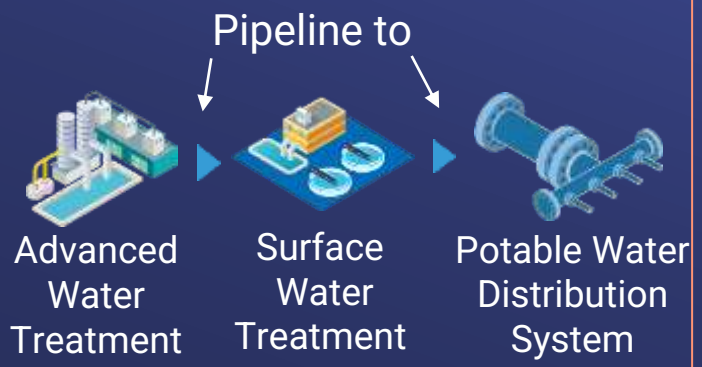


Regulatory Requirements Balanced with Project Framework for Potable Reuse Approach

Projects must ensure
Safe Water
and
Protection of Public Health

- Reliability
- Redundancy
- Robustness
- Resilience

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

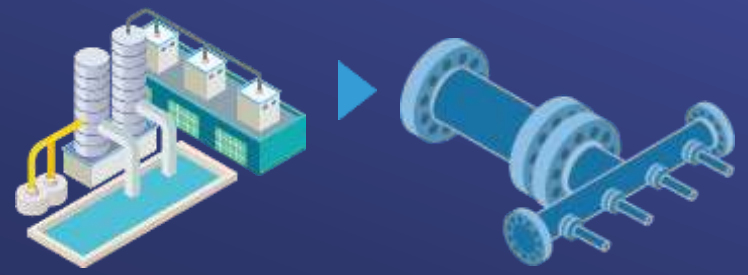
- Provides Regional Accessibility
  - Leverages existing infrastructure
  - Potential integration with other reuse projects
- Increases Operational Control
  - Allows additional buffer in pipeline
  - Expands response time
  - Blending opportunities
  - Advantages and value of Surface Water Treatment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

Considerations for DPR Treated Water Augmentation

- **Response Time** (limited)
- **Hydraulics/Demands** (real time monitoring, immature)
- **Storage Needs** (additional, onsite needs)
- **Risk Contingency** (increased consequence)
- **Level of Treatment** (additional redundancy)
- **Control Logic** (complexity increases)
- **Monitoring** (real-time)
- **Post-Treatment** (prior to any delivery)

Direct Potable Reuse

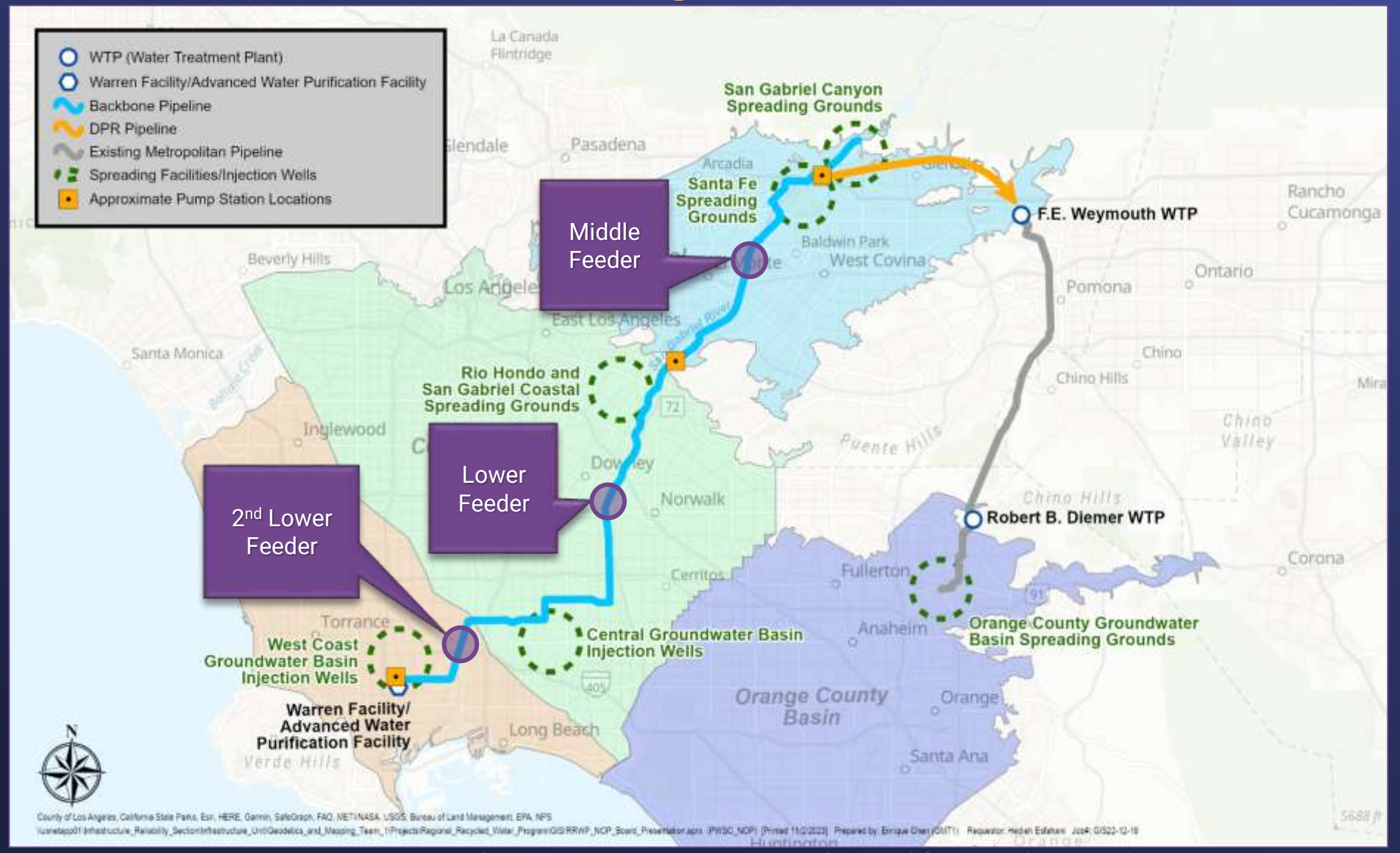
Treated Water Augmentation



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


THE METROPOLITAN WATER DISTRICT OF
SOUTHERN CALIFORNIA
1928