

# Regional Recycled Water Program

Developing a new source of water for Southern California

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December 13, 2018



# OUTLINE

- MWD-LACSD Partnership
- Program Overview
- Demonstration Project
- Testing for JWPCP Compliance
- Nitrogen Management Studies
- Final Thoughts





A Collaboration Between Two Regional Agencies

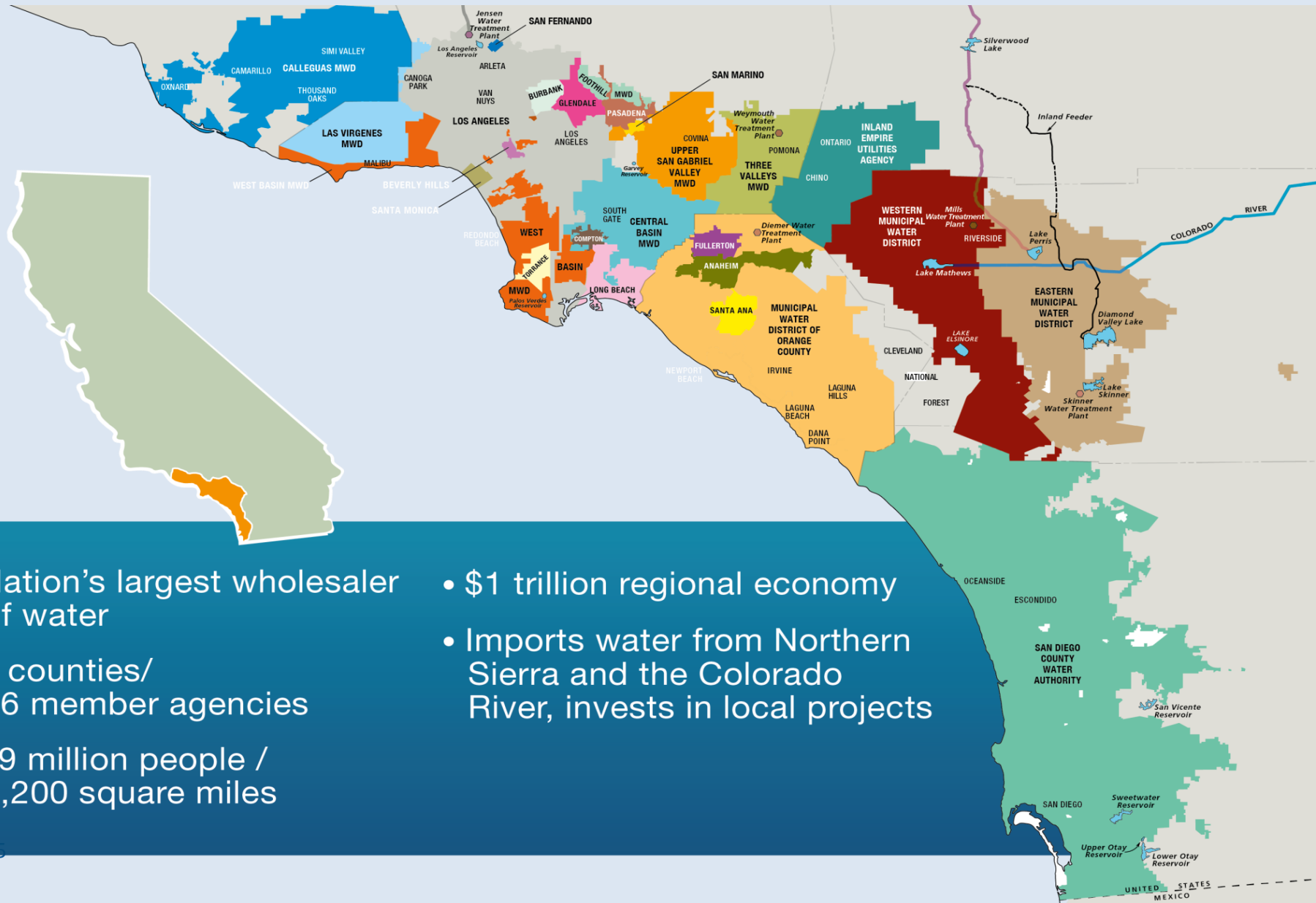
# MWD-LACSD PARTNERSHIP

# REGIONAL RECYCLED WATER PROGRAM

- Collaboration between Metropolitan Water District of Southern California and the Sanitation Districts of Los Angeles County
- Would develop a new regional water source
  - Up to 150 mgd (168,000 AFY)
  - Deliveries exclusively to Metropolitan member agencies
  - Recharge & storage in multiple GW basins
  - Increase in regional storage reserves



# METROPOLITAN OVERVIEW



- Nation's largest wholesaler of water
- 6 counties/ 26 member agencies
- 19 million people / 5,200 square miles

- \$1 trillion regional economy
- Imports water from Northern Sierra and the Colorado River, invests in local projects

# LACSD OVERVIEW



- Wastewater and Solid Waste Management
  - 24 special districts
  - 850 sq. mile service area
  - Serves 5.6 million people
  - Encompasses 78 cities and unincorporated territory within county



# AGENCY OBJECTIVES



*Metropolitan Water District  
of Southern California*



SANITATION DISTRICTS OF LOS ANGELES COUNTY

- Diversify regional supplies
  - Improve storage and delivery capabilities
  - Provide new source of high quality, drought-resistant water
- Increase overall reuse within its system
  - Begin beneficial reuse at the Joint Water Pollution Control Plant
  - Reduce ocean discharges





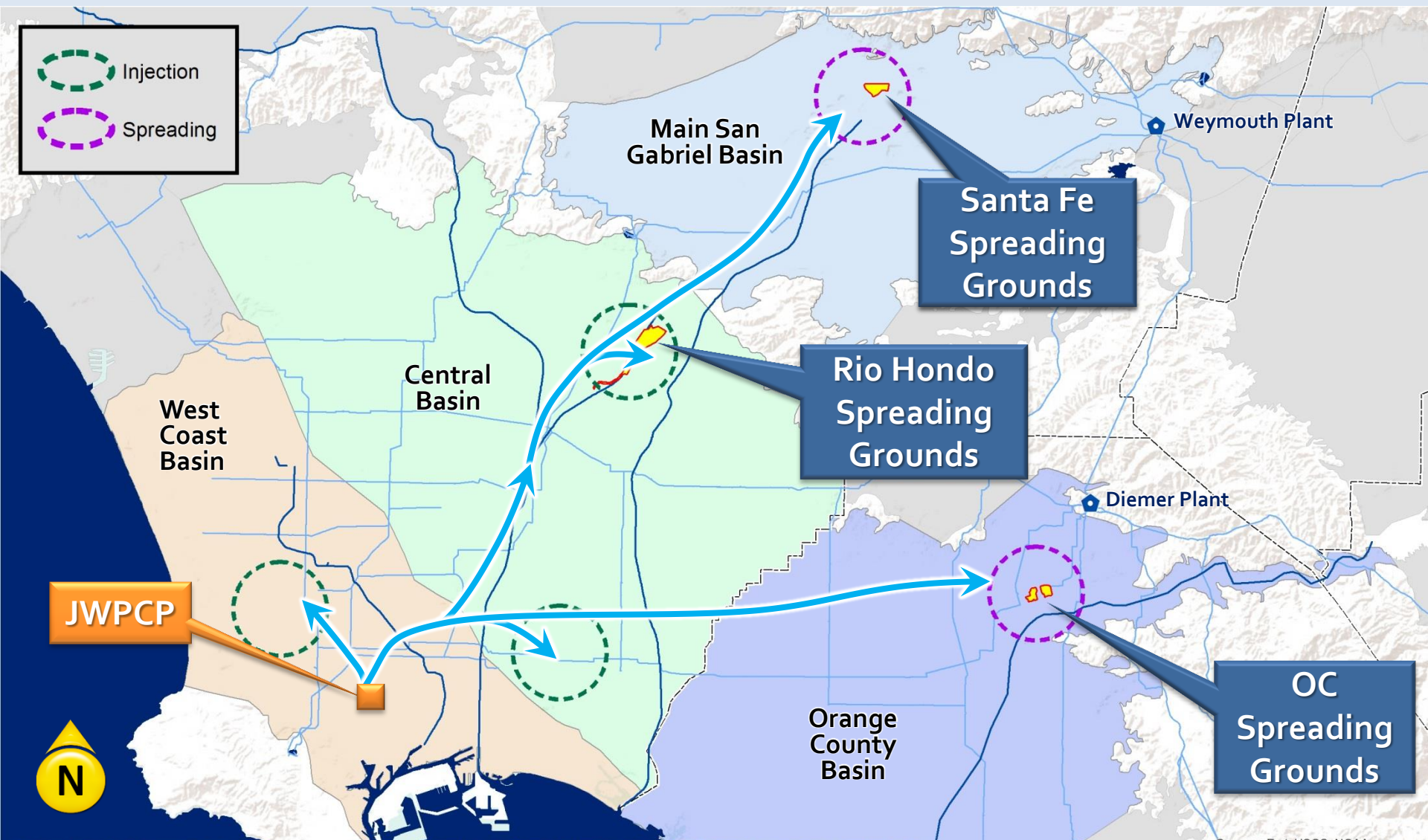
A New, Drought-Proof Source of Local Supply

# PROGRAM OVERVIEW

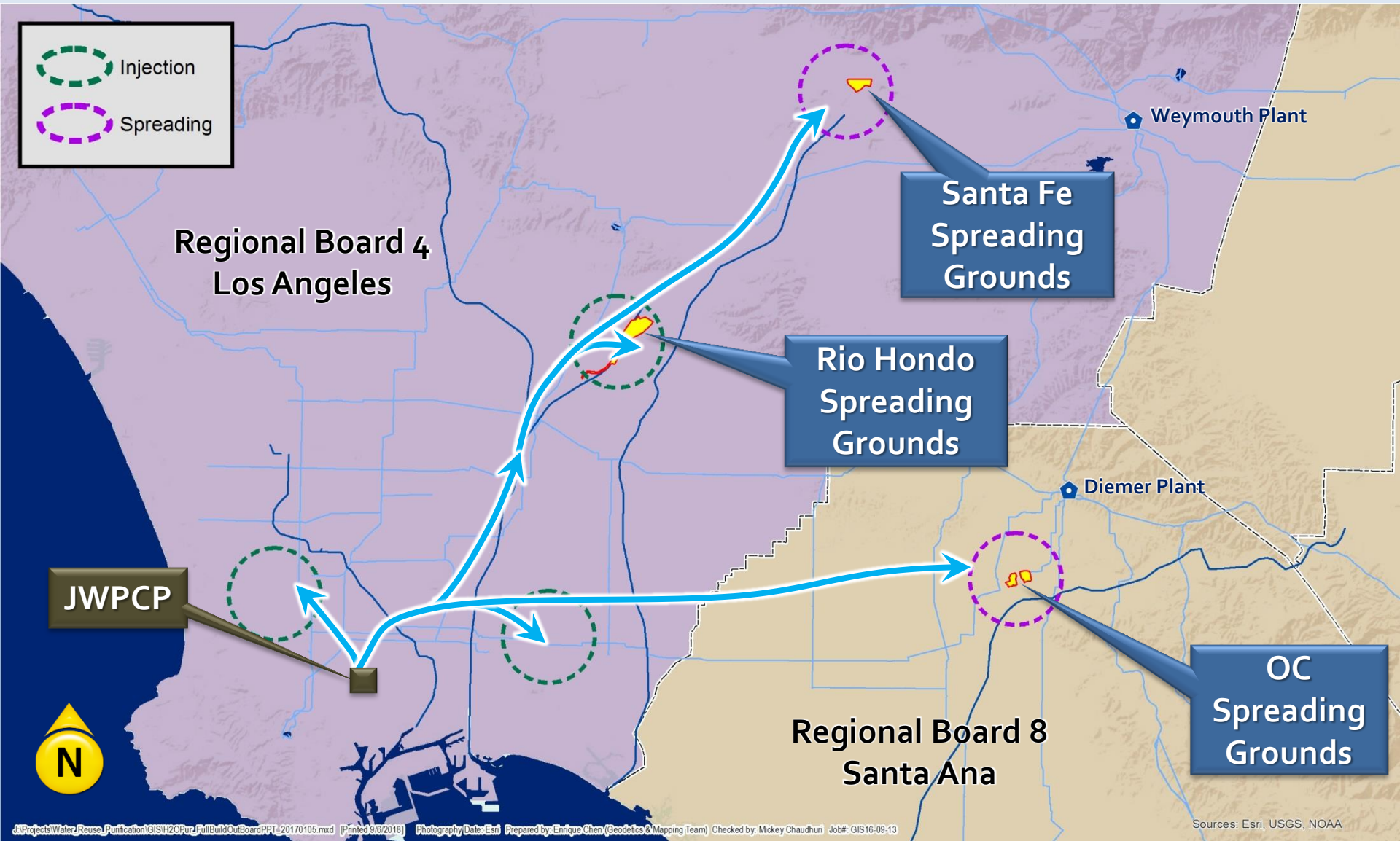


# POTENTIAL FULL PROGRAM

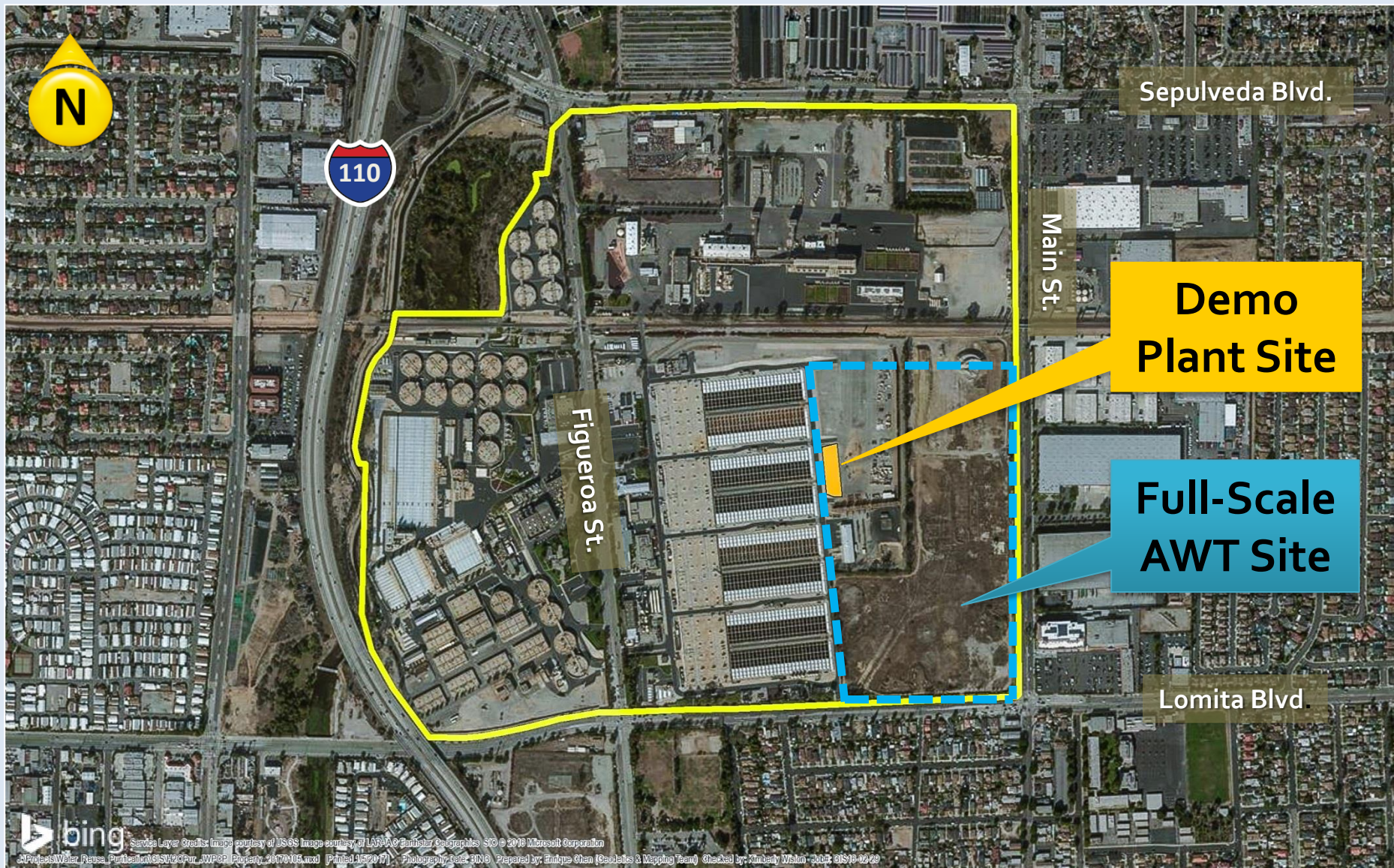
(up to 150 MGD)



# MULTIPLE REGIONAL BOARD JURISDICTIONS



# LOCATION OF AWT FACILITIES AT JWPCP



# RRWP PLANNING PROCESS

Feasibility Study  
Report  
(Completed Nov.  
2016)

- Can it be done?
- What will it cost?

Conceptual  
Planning  
(Underway  
~Feb./Mar. 2019)

- How should it be done?
- Can it be phased?

Environmental  
Permitting  
(Future)

- What are impacts?

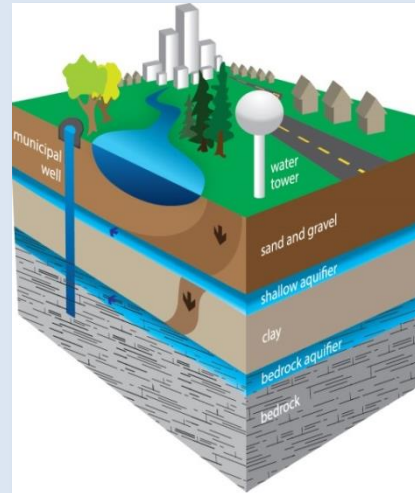
# FEASIBILITY STUDY ELEMENTS



Treatment



Conveyance



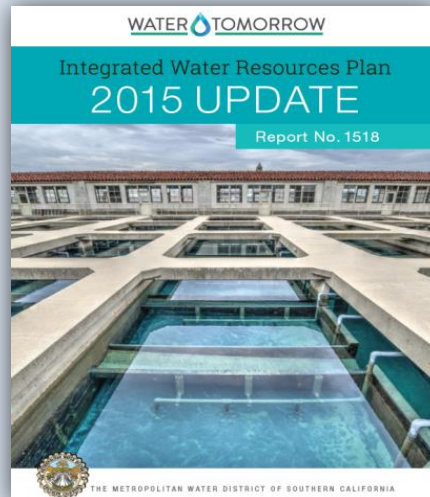
Groundwater



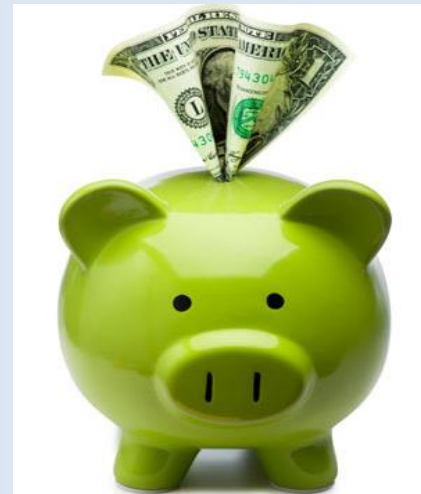
Regulatory



Institutional



IRP Consistency

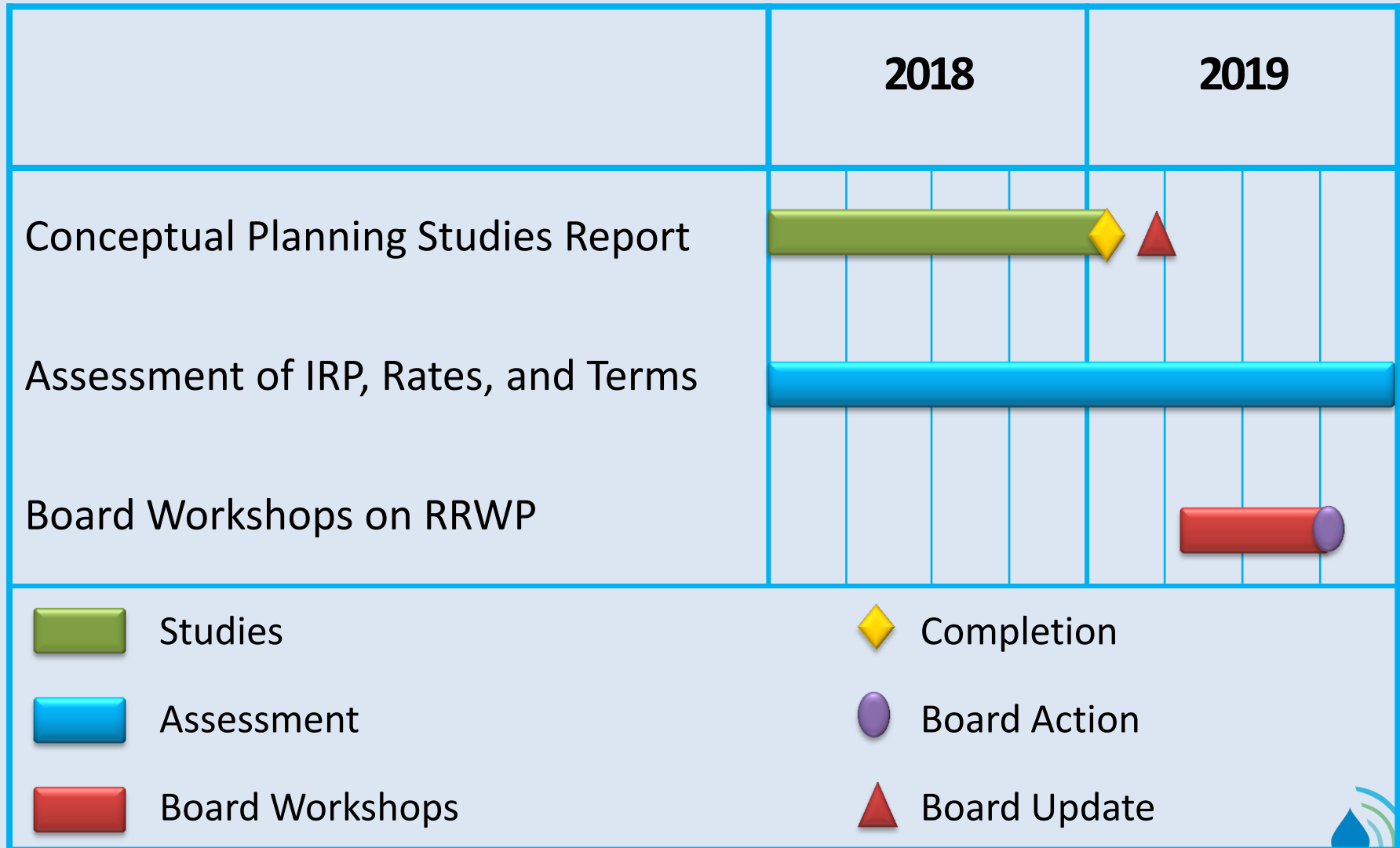


Cost



Public Acceptance

# FULL-SCALE PROGRAM: Initial Activities





Regional Recycled Water Advanced Purification Center

# DEMONSTRATION PROJECT



# Regional Recycled Water Advanced Purification Center

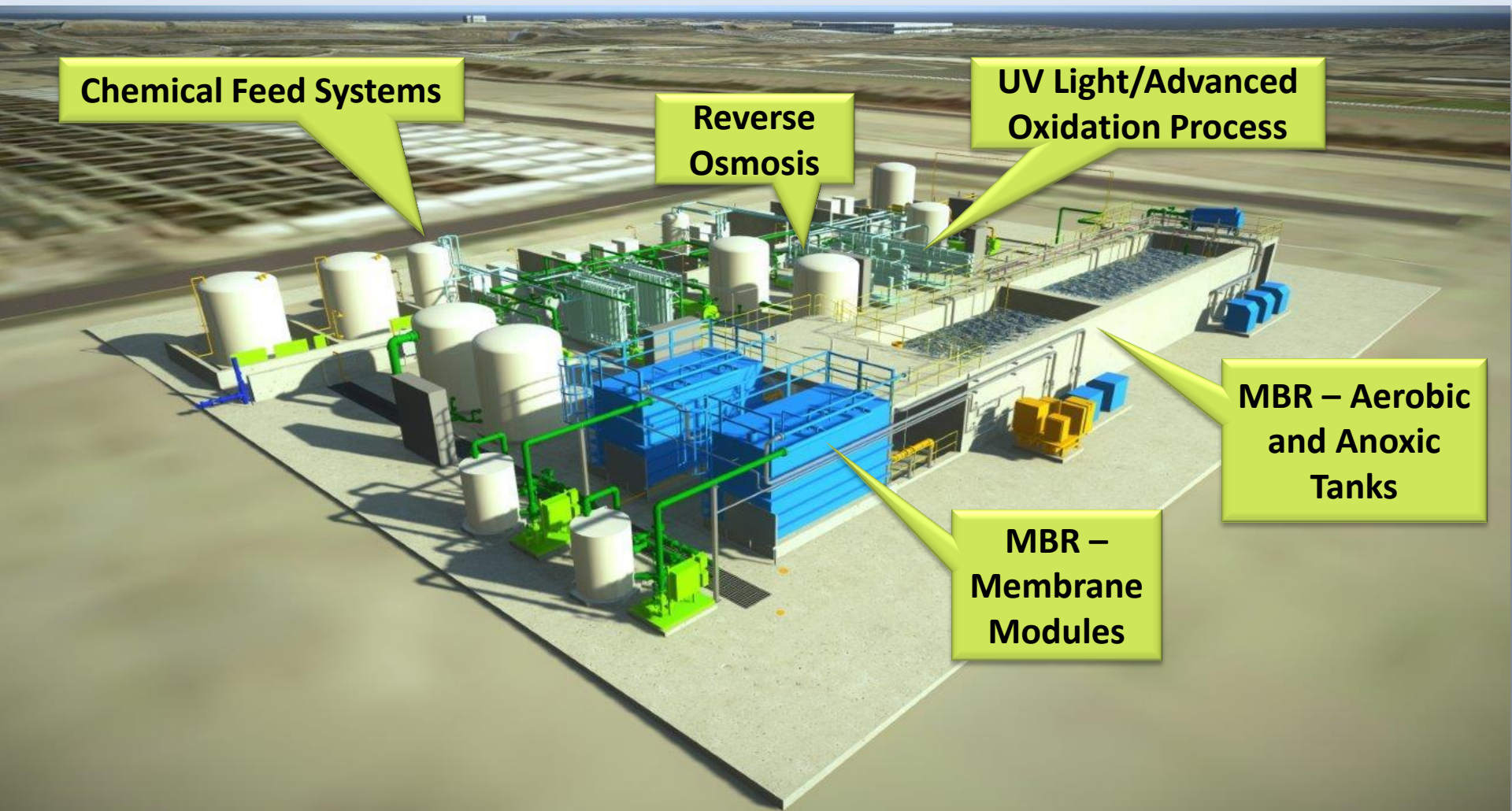
**Chemical Feed Systems**

**Reverse  
Osmosis**

**UV Light/Advanced  
Oxidation Process**

**MBR – Aerobic  
and Anoxic  
Tanks**

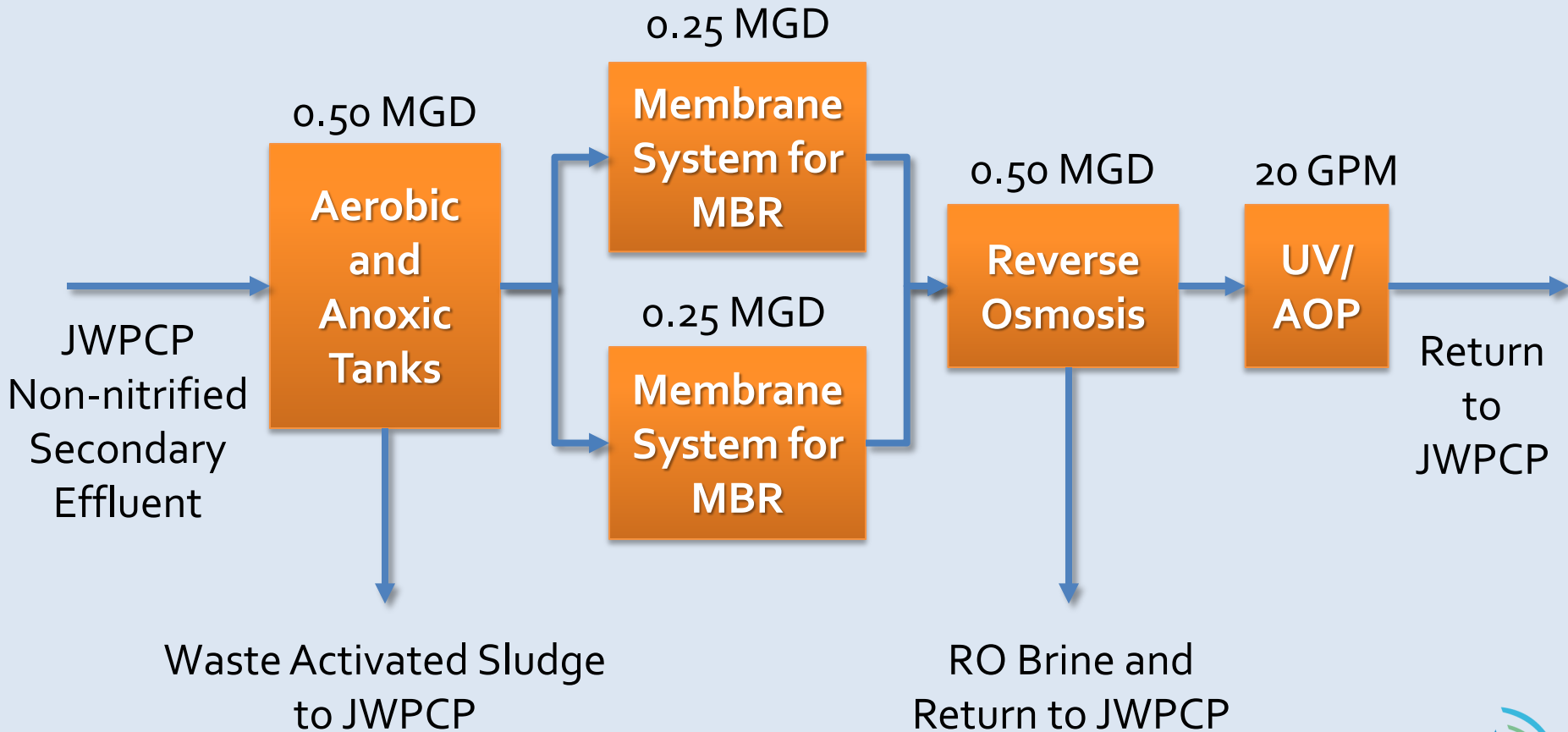
**MBR –  
Membrane  
Modules**





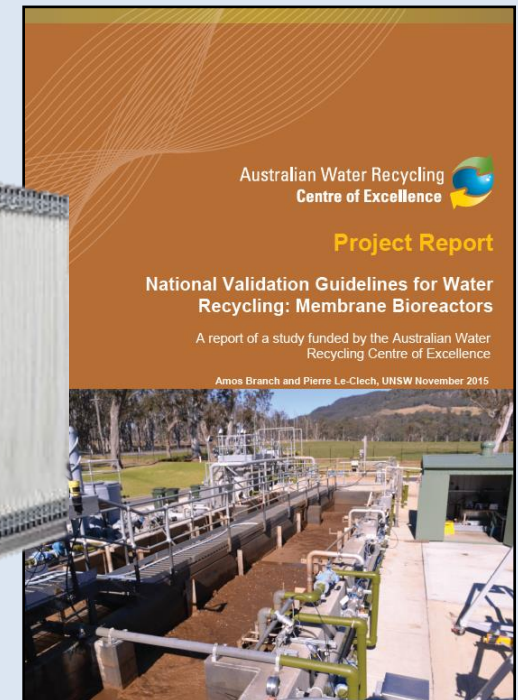
# DEMONSTRATION PLANT PROCESS TRAIN

(0.5 MGD Capacity)

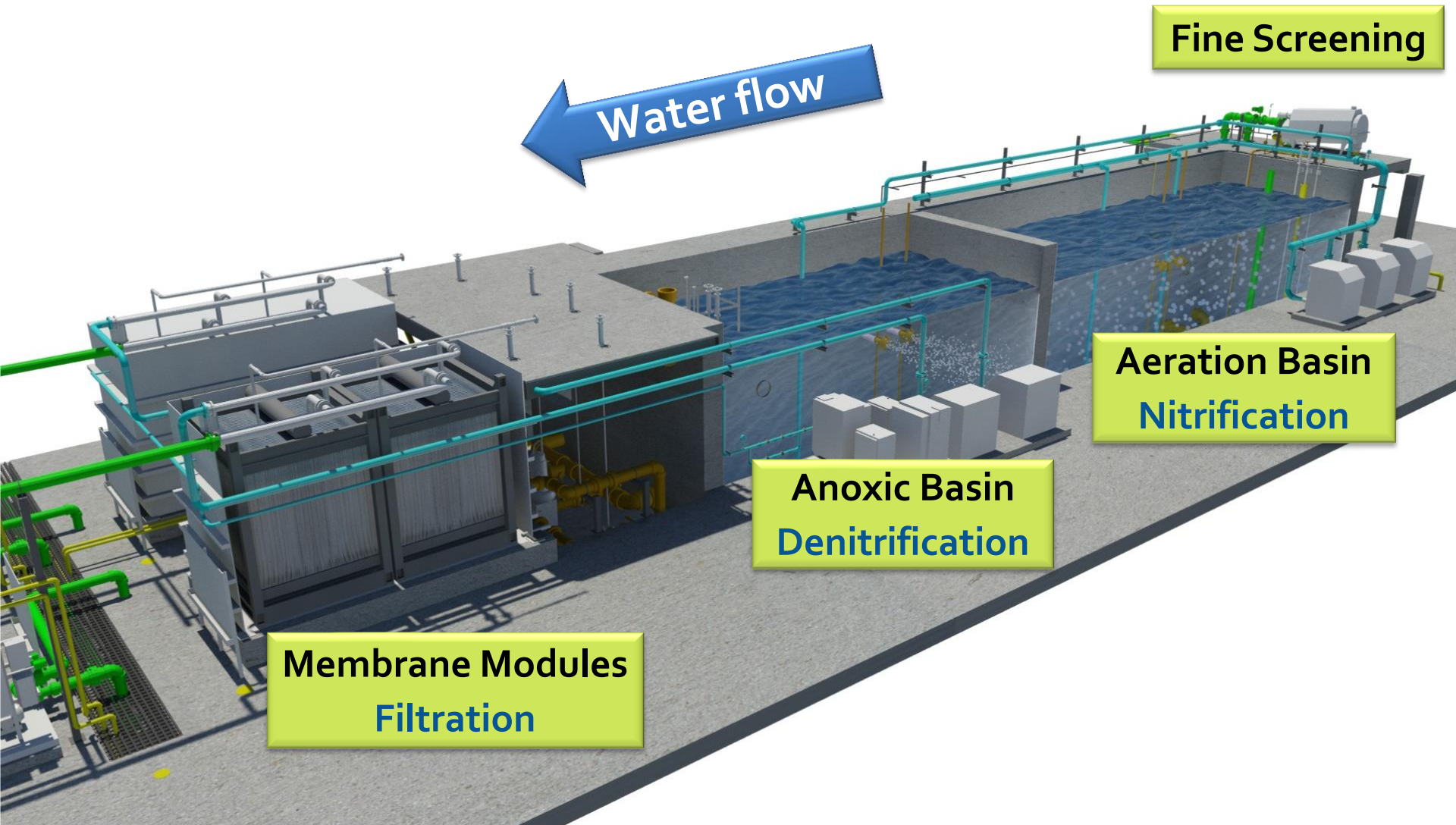


# MEMBRANE BIOREACTOR FOR WATER REUSE

- Commonly used in non-potable reuse applications
- Limited use in potable reuse projects due to lack of pathogen removal regulatory credit to date
- Growing knowledge base from industry research on pathogen removal through MBR
- Effective technology for treating JWPCP effluent
  - Removes pathogens
  - Manages nitrogen
  - Minimizes RO fouling
  - Removes biodegradable CECs



# MBR PROCESS AT DEMONSTRATION PLANT



# DEMONSTRATION PLANT OBJECTIVES

- Provide data for regulatory acceptance
- Confirm viability of membrane bioreactor (MBR) process

***INITIAL  
TESTING  
PERIOD***

- Optimize full-scale treatment process design
- Establish cost clarity for treatment

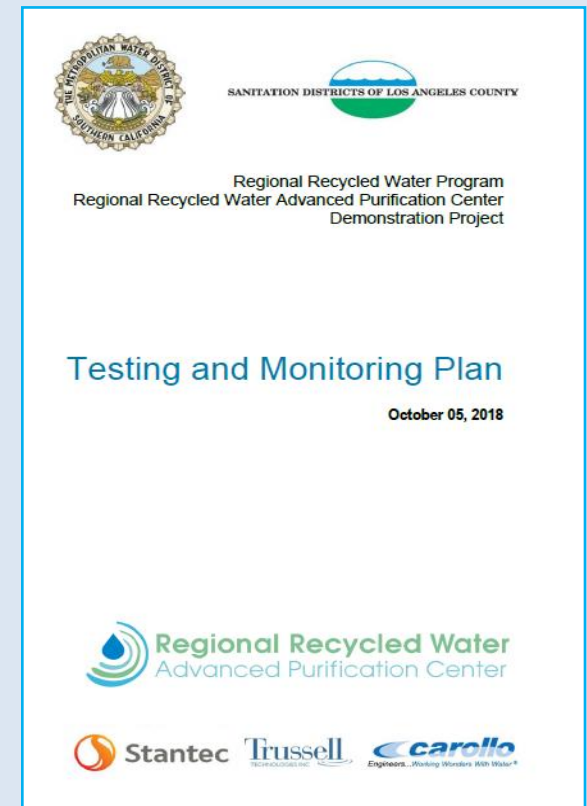
***FUTURE  
TESTING  
PERIOD***

- Confirm operational dependencies/ interfaces with LACSD
- Provide vehicle for public outreach and acceptance

***ONGOING***

# TESTING & MONITORING PLAN

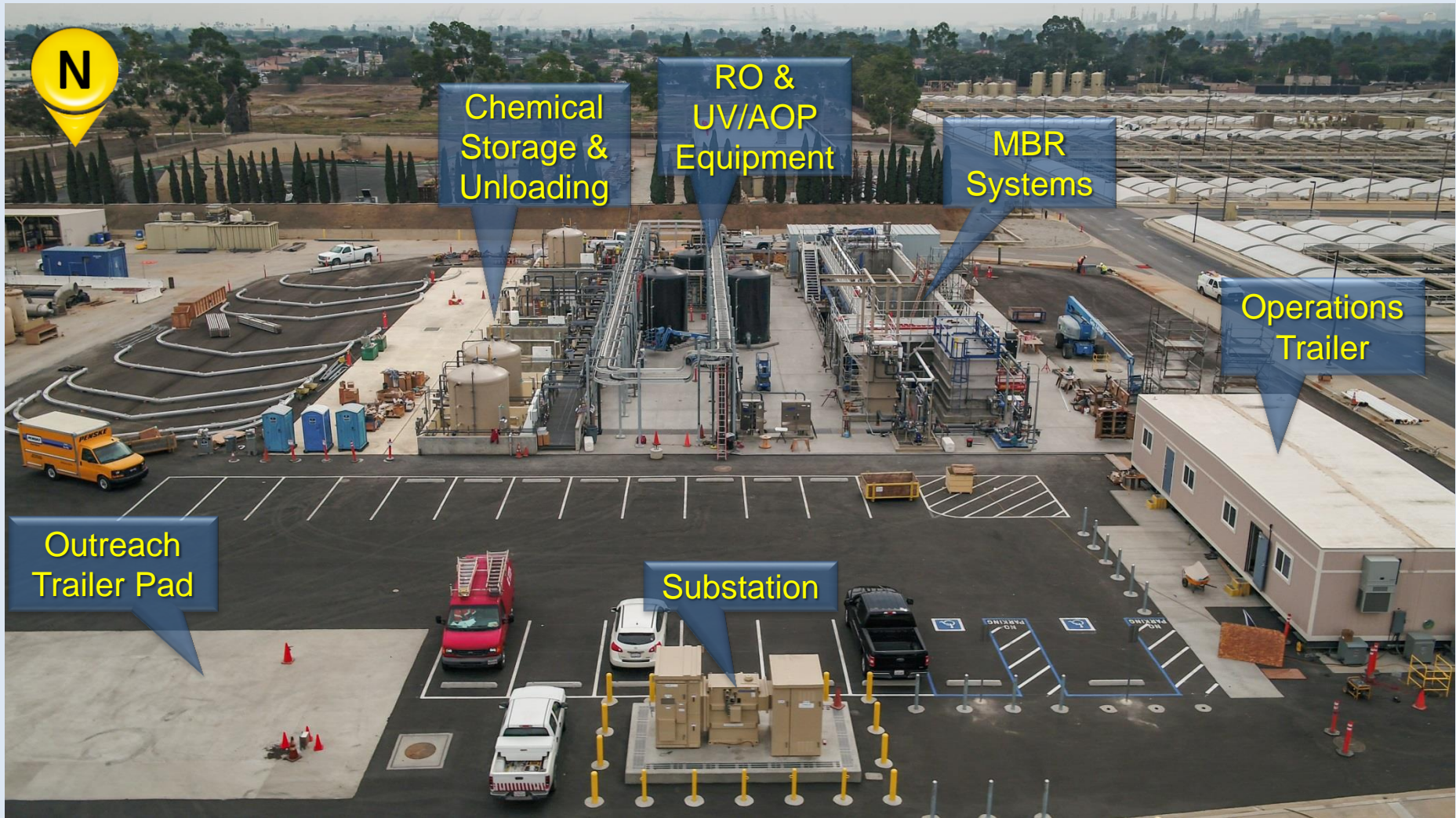
- Draft plan submitted in early October
- Plan incorporated input from Independent Scientific Advisory Panel
- Regulatory approval of final plan anticipated in early 2019
  - January 2019 meeting scheduled to review final plan
- Testing to begin in March 2019 for 15-month duration



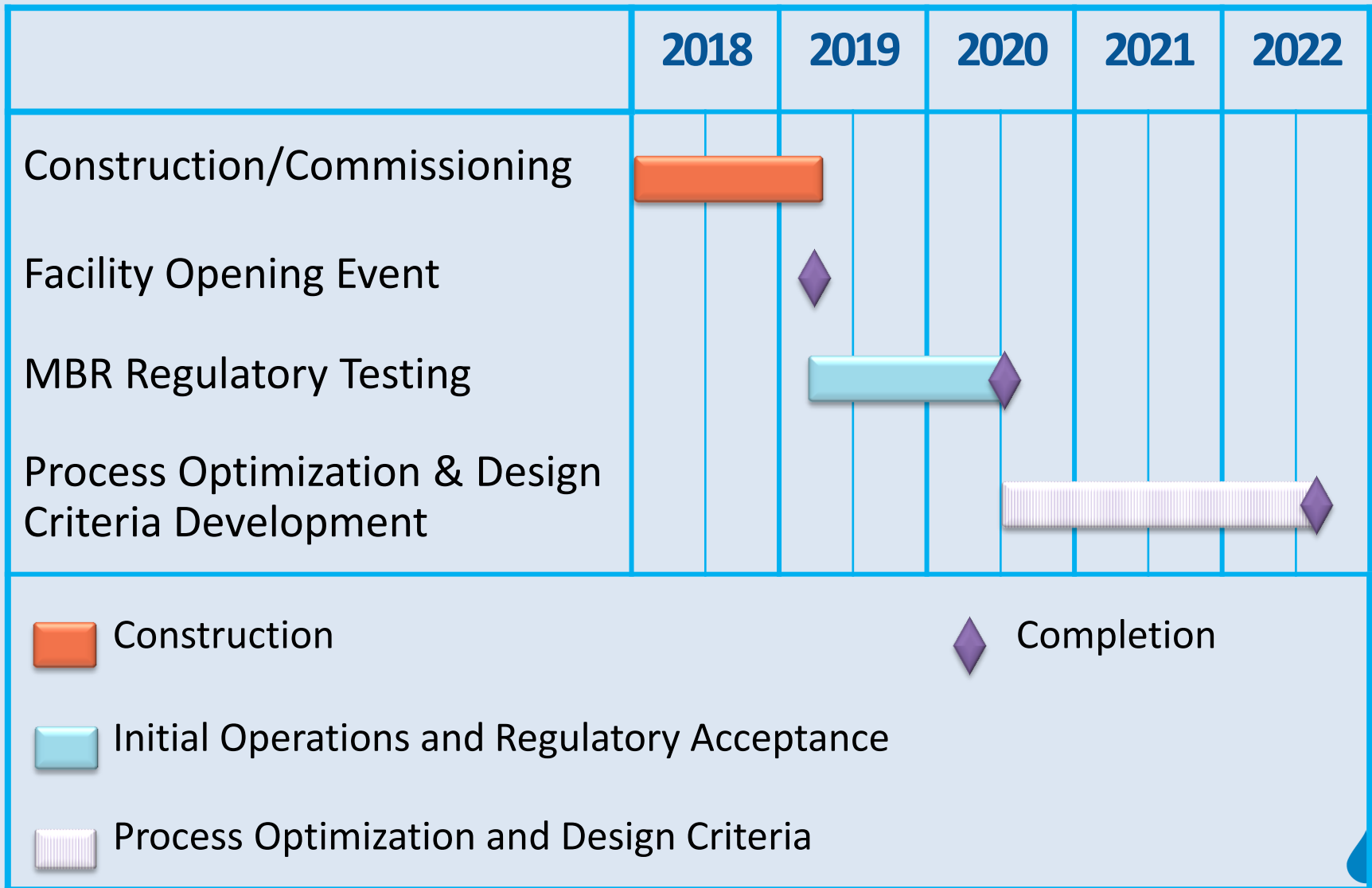
# CONSTRUCTION SITE OVERVIEW



# CONSTRUCTION SITE OVERVIEW



# DEMONSTRATION PLANT SCHEDULE







Collaborative Support and Program Partner

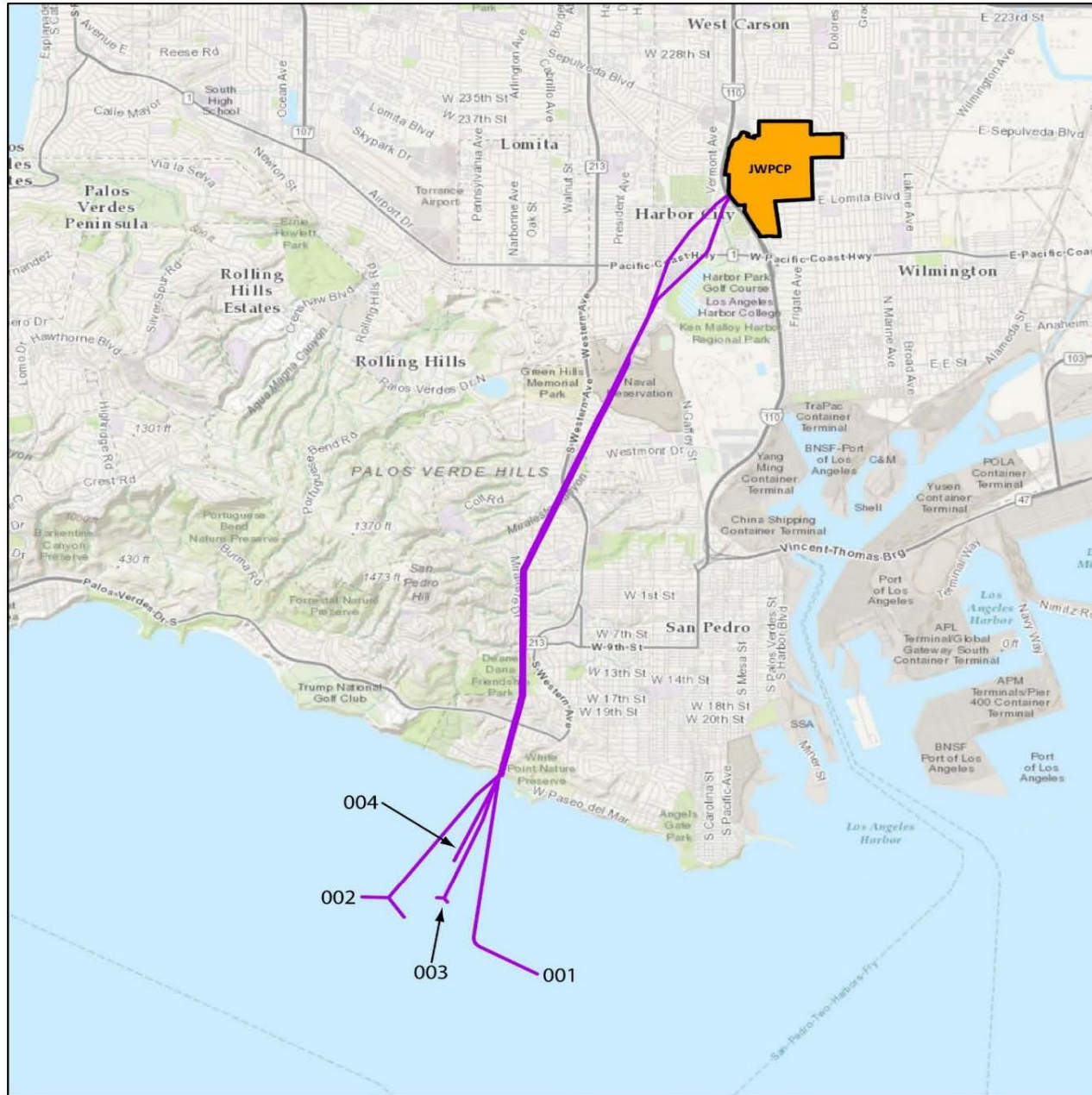
# COUNTY SANITATION DISTRICTS OF LOS ANGELES COUNTY

# JOINT WATER POLLUTION CONTROL PLANT

- 2017 average flow of ~260 MGD
- Permitted capacity of 400 MGD
- Primary and secondary treatment
- Currently discharges to the ocean



# JWPCP OUTFALLS



# TESTING FOR JWPCP COMPLIANCE

- LACSD will manage all waste residuals from the full-scale AWTF
  - Including ~26 MGD of RO concentrate
- During demo plant testing will collect water quality information to:
  - Assess impact of residual waste streams
  - Collect data for source control program



# NEED FOR BRINE TESTING

- Brine (RO concentrate) from the full-scale AWTF will be discharged to the ocean
- JWPCP NPDES permit requirements
- Potential brine related concerns:
  - Toxicity to marine life -Ammonia, other toxicants
  - Unpredictability of toxicity
  - Microorganisms -Pathogens, indicator microbes



# NITROGEN MANAGEMENT WORKGROUP

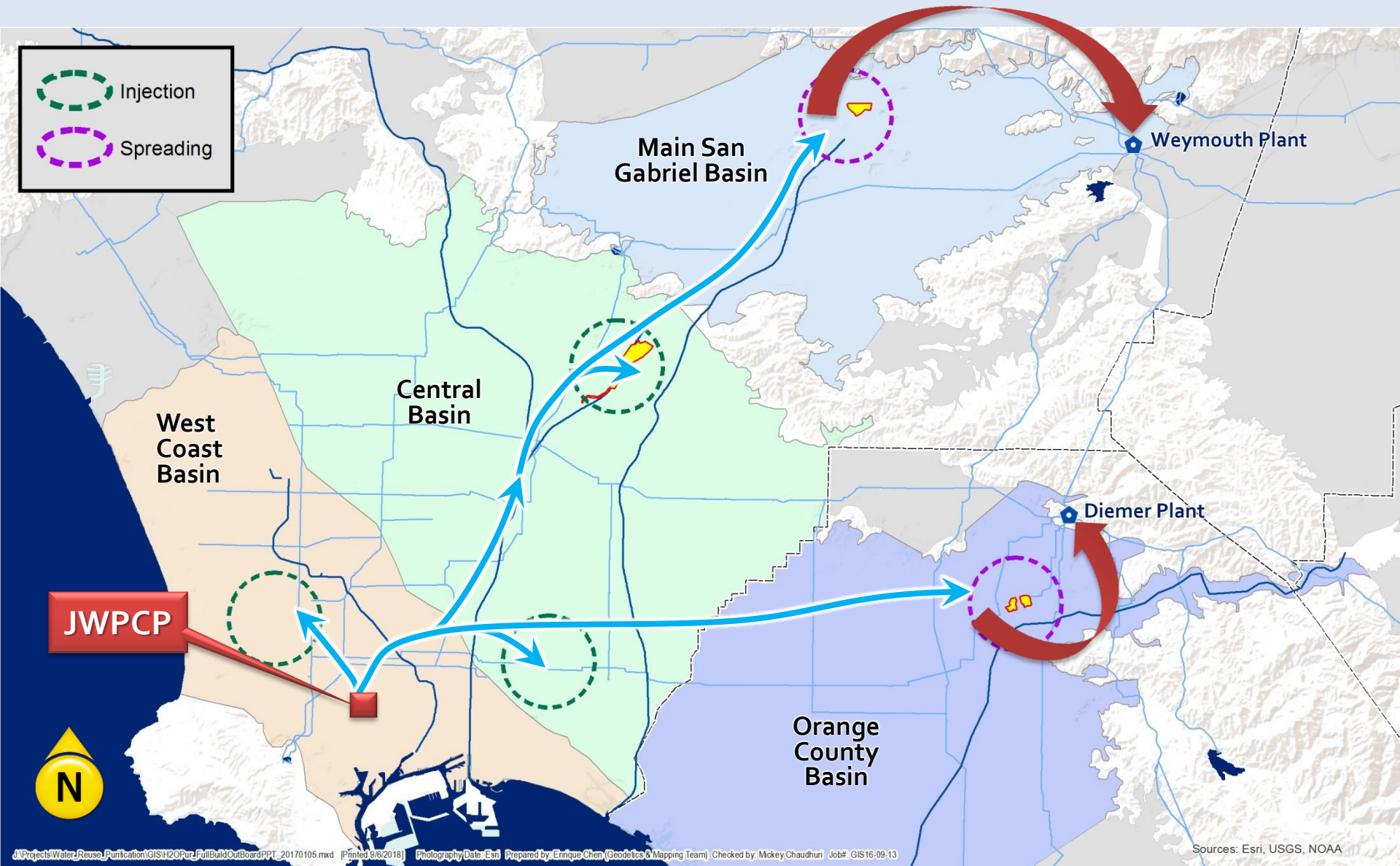
- Formed with MWD/LACSD staff and consultants to explore optimal approach for removing nitrogen
  - Objective: Identify optimal nitrogen management practice
- Series of meetings; report to be released with conceptual report
- Refinement nitrogen management strategies after demonstration testing





# FINAL THOUGHTS

# COULD DPR BE A FUTURE OPTION?





# FINAL THOUGHTS

- Metropolitan/LACSD collaboration on RRWP
- Ongoing regulator participation
- Facility opening event on March 21, 2019
- Outreach efforts



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