



Regional Recycled Water Program

Engineering and Operations Committee

Item 6b

September 10, 2018

Outline

- CA Recycled Water Regulatory Framework
- Demonstration Project Activities
 - Regulatory Collaboration
 - Testing Approach
 - Independent Scientific Advisory Panel
 - Construction Status
- Full-Scale Program Planning



California Recycled Water Regulations



Non-Potable
Reuse

***Irrigation
Industrial Uses***

2000



Indirect
Potable Reuse

***Groundwater
Replenishment***

2014



Indirect
Potable Reuse

***Reservoir Water
Augmentation***

2018



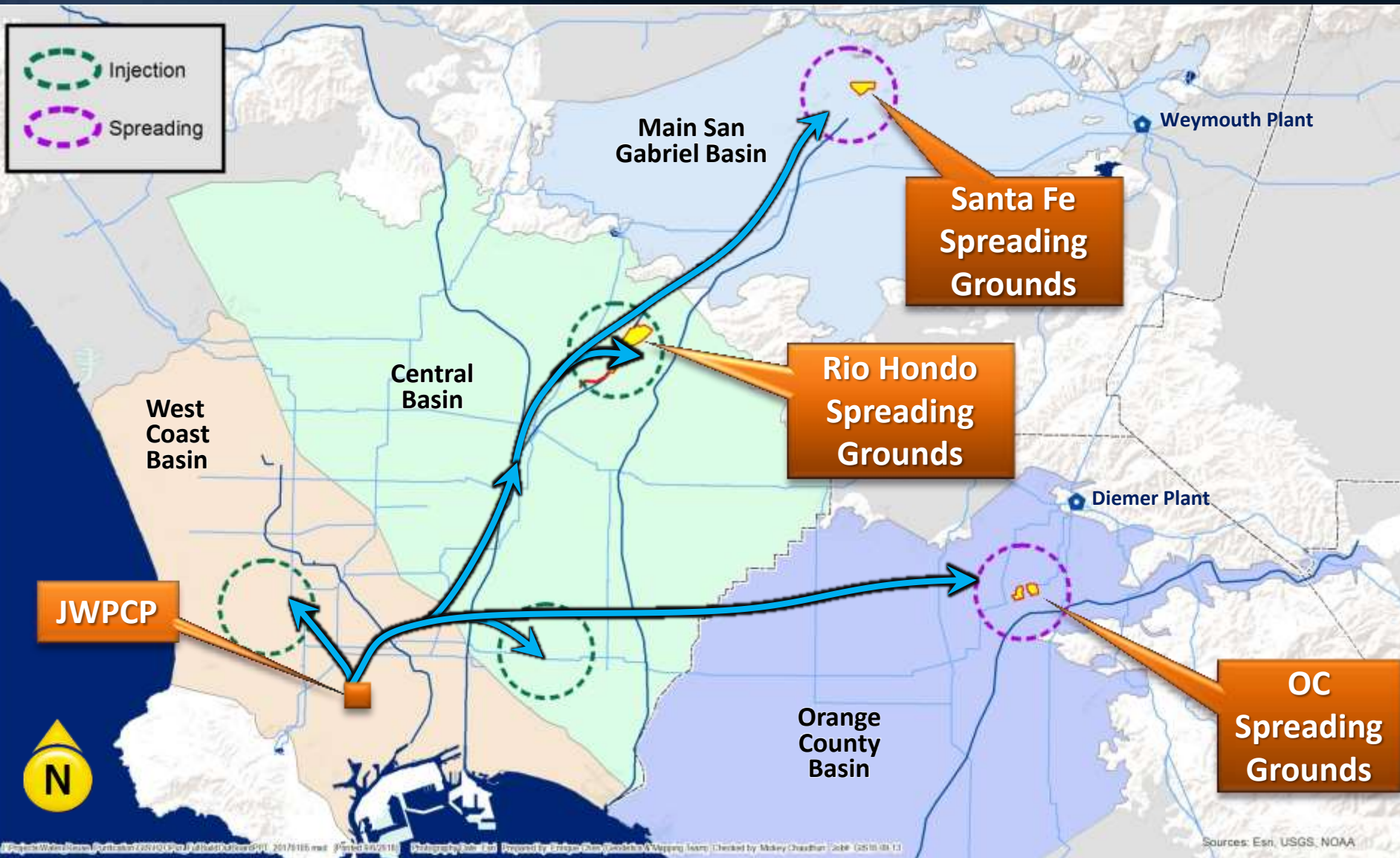
Direct Potable
Reuse

***Raw Water
Augmentation***

2023/TBD

Increasing requirements for public health protection

Potential Full Program (up to 150 MGD)



Potential Full Program (up to 150 MGD)



Regulatory Oversight of Program



Regulatory Collaboration

2016

- Program Introduction
- AWT Demo Process Design

2017

- Prelim. Groundwater Assessments
- MBR Technology Acceptance

2018

- Demonstration Testing and Monitoring Plan – Workshop (Aug 9)

2019

- Field Tour of Demonstration Plant
- Baseline Testing Data Review



Regional Recycled Water Advanced Purification Center

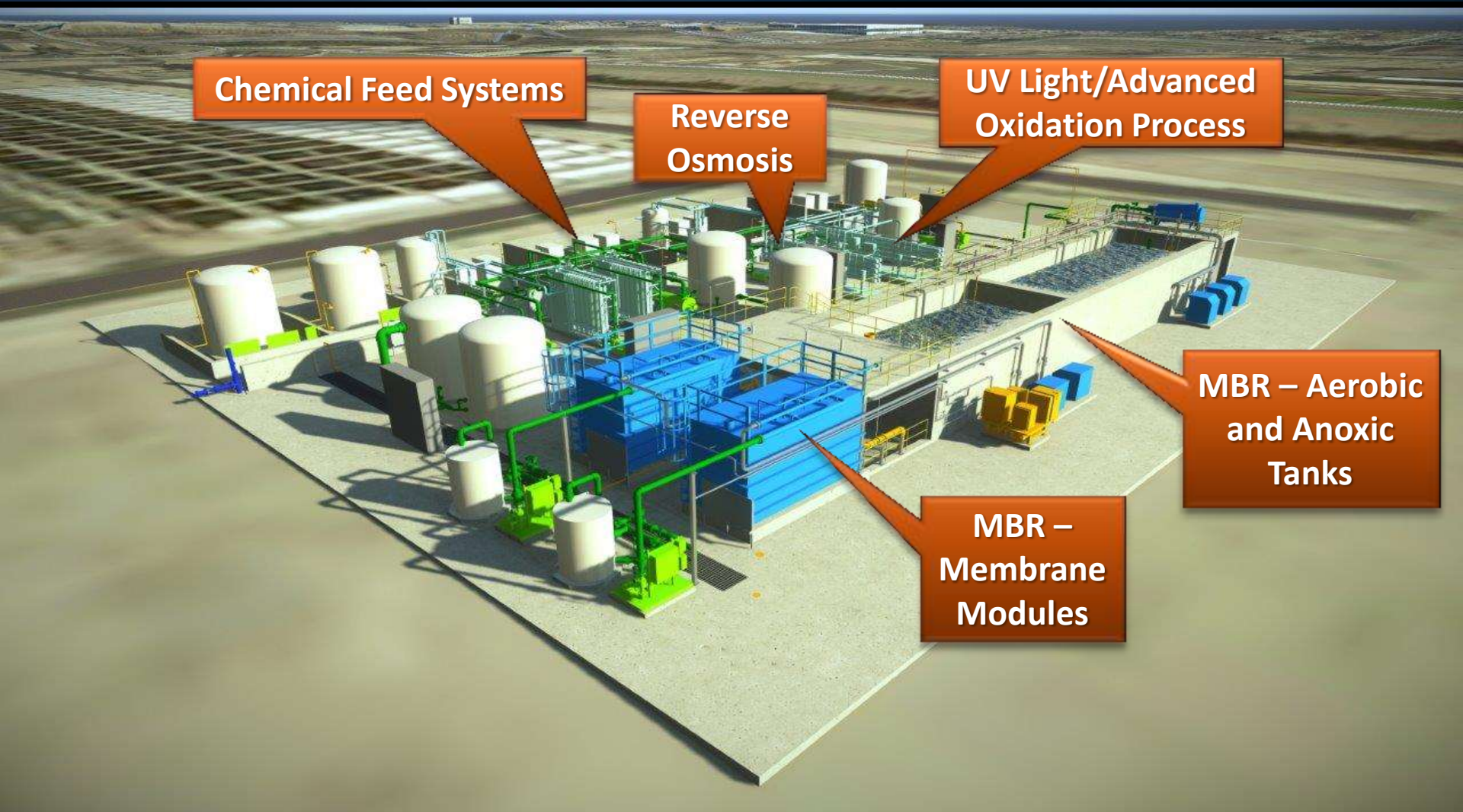
Chemical Feed Systems

Reverse
Osmosis

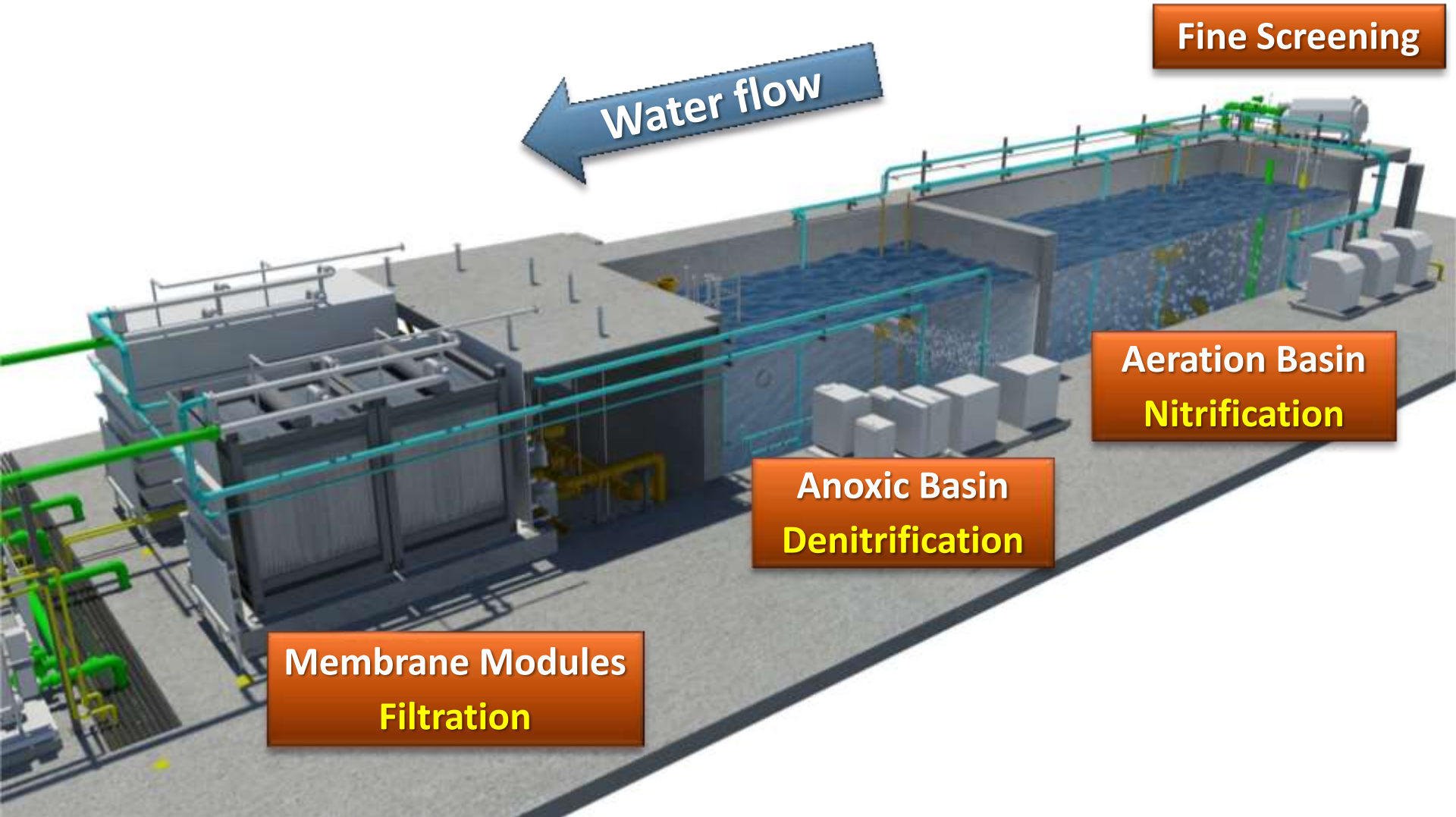
UV Light/Advanced
Oxidation Process

MBR – Aerobic
and Anoxic
Tanks

MBR –
Membrane
Modules



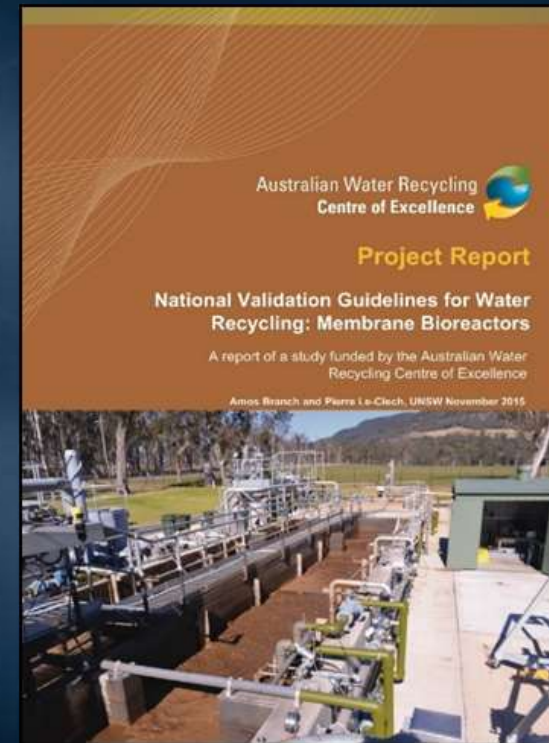
MBR Process at Demonstration Plant



MBR Technology Acceptance

Regulatory Approach

- Growing knowledge base from national and international research on pathogen removal in MBR systems
- Australia's MBR validation protocol outlines 3-tiered approach to achieve pathogen reduction credit
- California regulators concur with Metropolitan's proposed MBR testing approach utilizing this protocol



Testing and Monitoring Plan

MBR Technology Acceptance

- Final test plan to be submitted to regulators in early October for approval by end of 2018
- Testing anticipated to begin early 2019

Pre-testing

- Equipment Testing and Process Acclimation (3 months)

Phase 1

- Baseline Performance Testing (4 months)

Phase 2

- Challenge Testing and Evaluation (8 months)

- Additional testing for process optimization and full-scale design criteria to follow

Demonstration Testing and Monitoring Laboratory Analysis



Independent Scientific Advisory Panel

- Title 22 Regulations require independent panel of experts to review alternative approaches for meeting existing regulations (e.g., application of Membrane Bioreactor)
- National Water Research Institute commissioned to secure panel for demonstration project
- Panel will help guide demonstration project
 - Testing and Monitoring Plan
 - Water quality and operational data
 - MBR Technology Acceptance report
 - Stakeholder engagement



Ed Means
Thomas Harder
Paul Westerhoff
Vernon Snoeyink
Chuck Haas (Chair)
Adam Olivieri
Richard Bull
Joe Cotruvo
Michael Stenstrom*
Kevin Hardy

**not pictured*

Facilitation
Hydrogeology
Drinking/Advanced Water Treatment
Pipeline Corrosion/Water Chemistry
Microbiology
Regulations/Permitting
Toxicology
Chemistry
Wastewater Treatment
NWRI Administration

ISAP Workshop 1: August 8-9, 2018

Focus Areas/Panel Feedback



Process Technology

- Testing Approach
- Operational Criteria



Monitoring and Analysis

- Monitoring Frequency
- Analytical Methodology



Source Control and Brine Mgmt

- Source Assessments
- Discharge Requirements

Independent Scientific Advisory Panel

Workshop Report



Final ISAP report available by end of Sept 2018

Demonstration Plant Construction

Current Status and Schedule

- Construction approximately 65% complete
- Complete construction – December 2018
- Commence start-up and operation – January 2019



Construction Site Overview



Construction Site Overview



Electrical Building



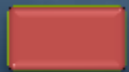
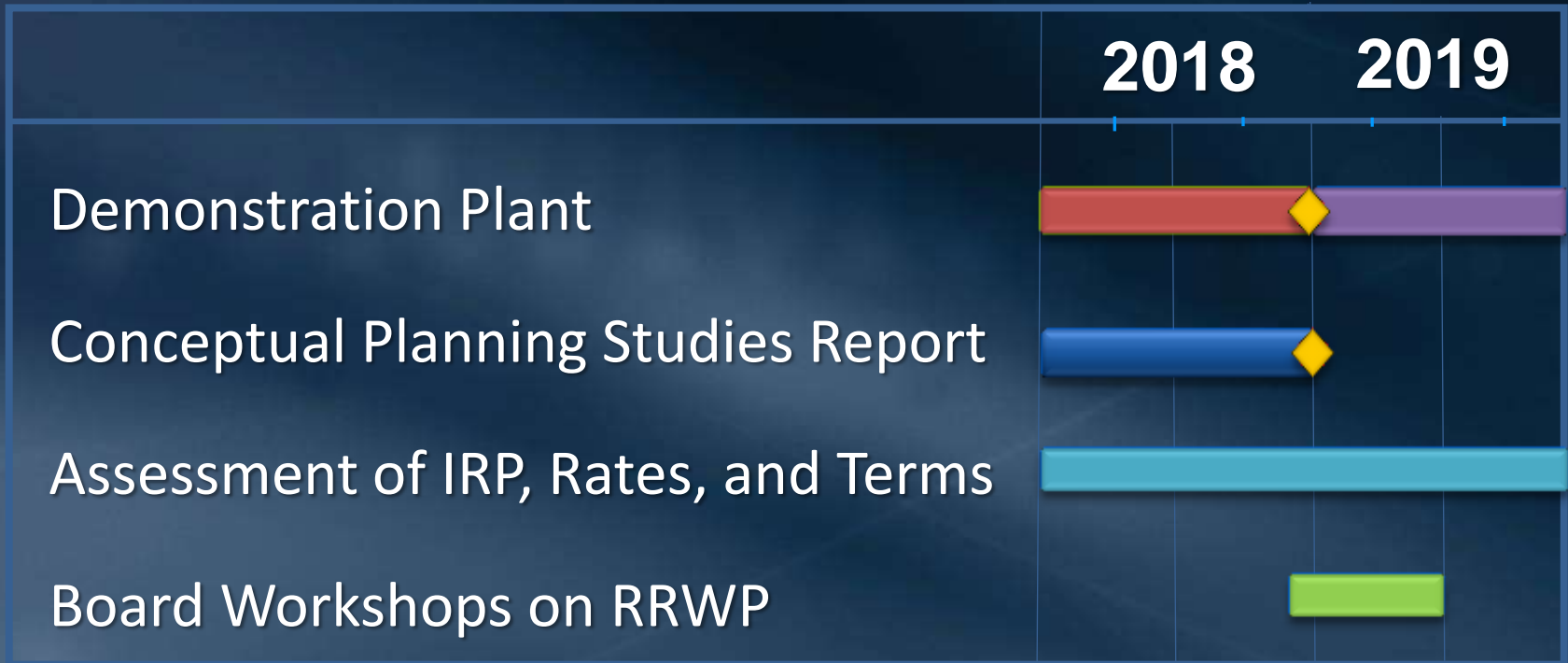
Operations Trailer



Full-Scale Program Planning

- Conceptual planning and phasing evaluation
- Groundwater modeling
- Source control assessments and nitrogen management studies
- Institutional and financial arrangements
- Public outreach planning efforts

Schedule



Construction



Operations/Testing



Studies



Other



Board Workshops



Completion

Metropolitan Recycled Water Website



INTRODUCTION HOW IT WORKS PROCESS BENEFITS STRATEGY MILESTONES RESOURCES PARTNERSHIP



Regional Recycled Water Advanced Purification Center

A NEW SOURCE OF WATER FOR SOUTHERN CALIFORNIA

Water is too precious to use just once. So the Metropolitan Water District of Southern California is making a major investment in a potential water recycling project that will reuse water currently sent to the ocean.

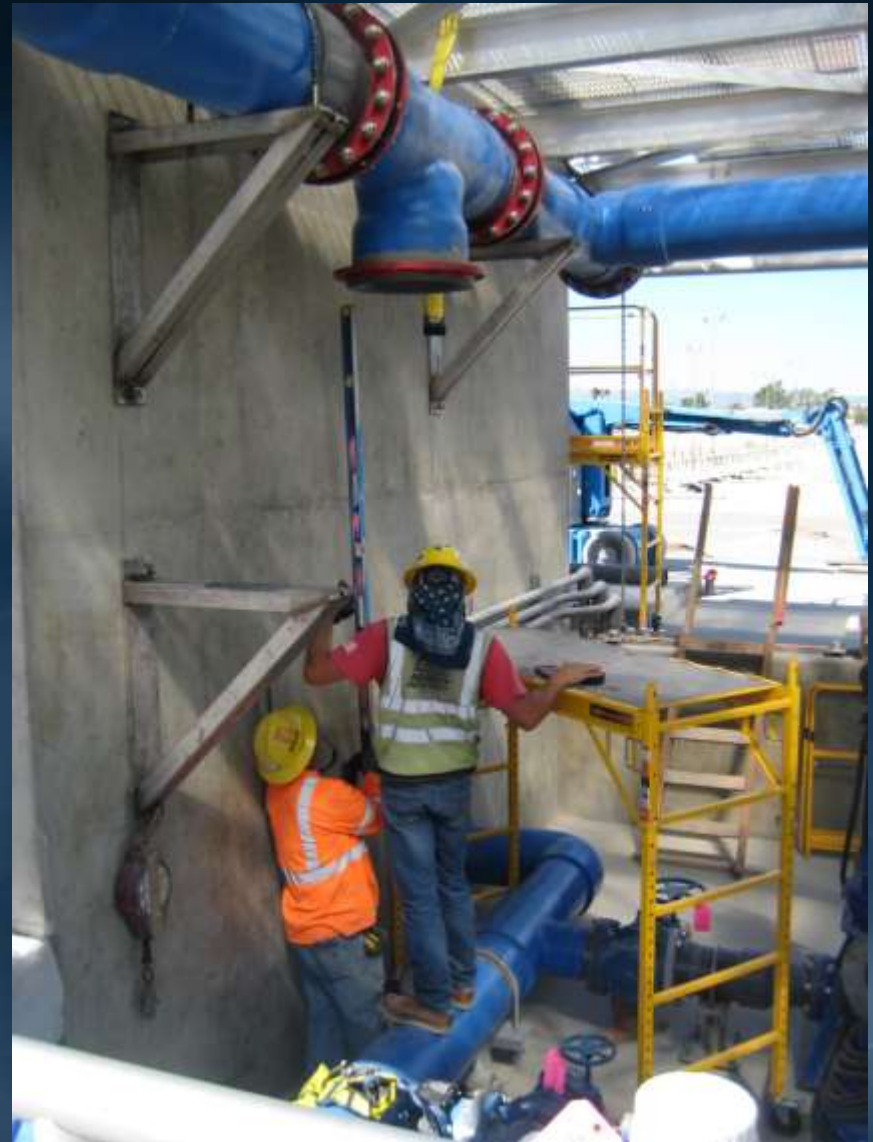
www.mwdh2o.com/RRWP



MBR Equipment



MBR Equipment (cont'd)



RO Equipment



UV/AOP Equipment



Chemical Tank Farm

