Regional Recycled Water
Advanced Purification Center

PROGRAM IMPLEMENTATION AND DELIVERY

Report on MWDSC Board Workshop #1

August 7, 2019

PURPOSE OF WORKSHOPS

- Obtain Metropolitan Board input on program next steps
- Prepare for future Board actions following a full discussion of options
- Identify key issues and concerns before moving forward to next steps

2

BOARD WORKSHOPS

White Paper

Board Letter

Fall 2019

Workshop #1: Implementation and DPR Considerations

Workshop #2: Planning, Agreements and Financial Considerations

Board Action on Next Steps

July 23, 2019

White Paper

Late 2019 – Early 2020

3

TWO KEY QUESTIONS TODAY

1 Implementation Urgency?

What additional activities (if any) should Metropolitan undertake during the environmental review process in order to accelerate program implementation?

2 DPR Development?

How would Metropolitan proceed in developing raw water augmentation opportunities, considering DPR regulations are not currently in place?

4

OUTLINE

- Program Overview
- Treatment Plant Site Conditions
- Environmental Review Process
- Implementation Options
- Direct Potable Reuse (DPR) Considerations
- Wrap-up and Next Steps

5

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PROGRAM OVERVIEW

PROGRAM BACKGROUND

- Pilot Scale Studies (2010-12)
- Progress Report (Sept. 2015)
- Board approval and appropriation for Demonstration Plant (Nov. 2015)
- Feasibility Study Report (Nov. 2016)
- Demonstration Plant
  - Completion of Final Design (Feb. 2017)
  - Construction Completion & Start-up (Sept. 2019)
- Conceptual Planning Studies Report (Feb. 2019)

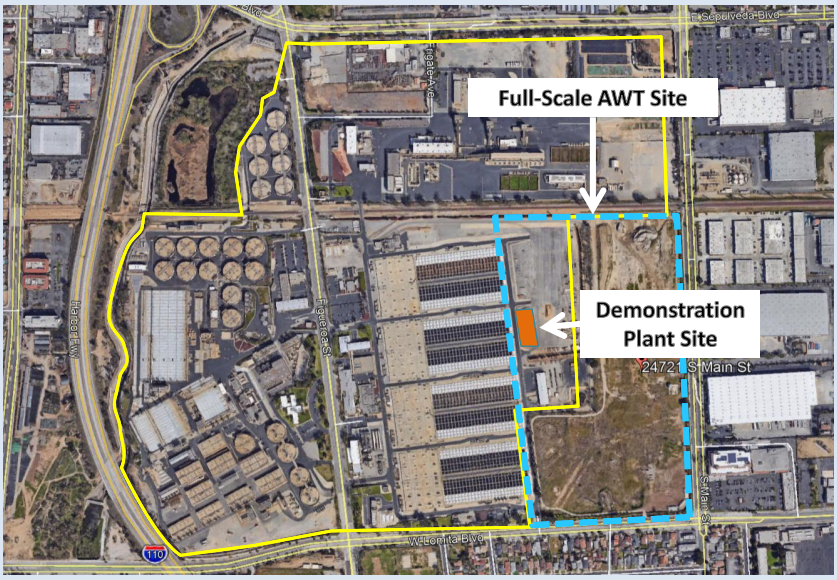
7

PROGRAM APPROACH

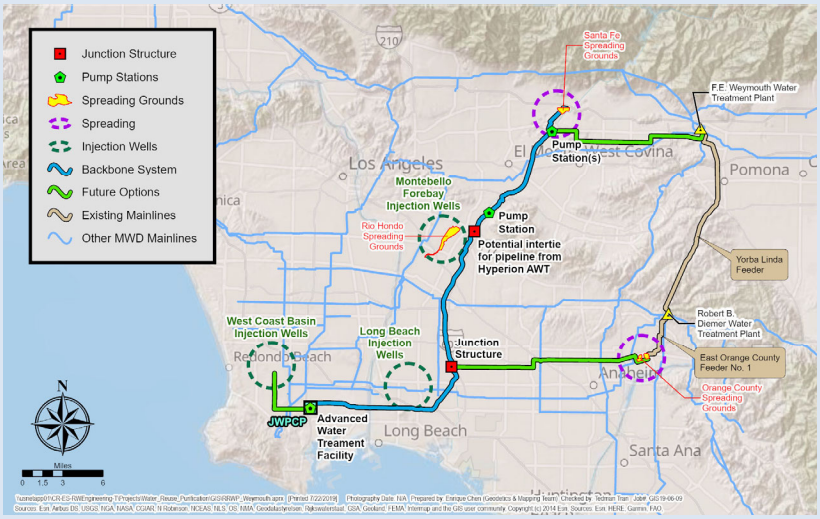
- Primary objective indirect potable reuse for groundwater recharge
- Two-phase approach (100 mgd followed by 50 mgd or more)
- Built around backbone conveyance system
- Preserving flexibility for the future
  - DPR utilizing raw water augmentation
  - Additional effluent from JWPCP
  - Integration with City of Los Angeles and other purified water systems

8

AWT LOCATION AT JWPCP



PROGRAM ELEMENTS



10

LETTER OF INTENT WITH CITY OF LOS ANGELES

- In place July 2019
- Intent
  - Provides a basis for collaboration between the City's Hyperion Program and Metropolitan's Regional Program
  - Supports development of a formal Memorandum of Understanding between the parties
- Benefits
  - Improves potential for integration between two systems
  - Allows for coordination in planning and regulatory process
  - Reduces potential conflicts/duplication of activities

11

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ENVIRONMENTAL REVIEW PROCESS

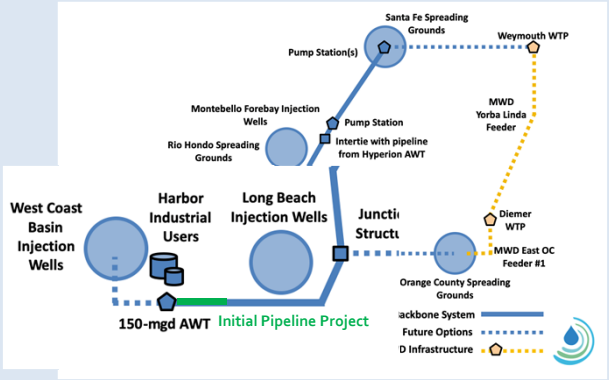
APPROACHES TO THE CEQA PROCESS

- Programmatic EIR (PEIR) provides high-level analysis of effects of a multi-year, multi-phase program
- Project-specific tiered documents
  - can be prepared as part of the initial PEIR, or at later date
  - conducted when additional design and site information is available

13

TIERED PROCESS

Programmatic EIR



Tiered Project-specific Document

14

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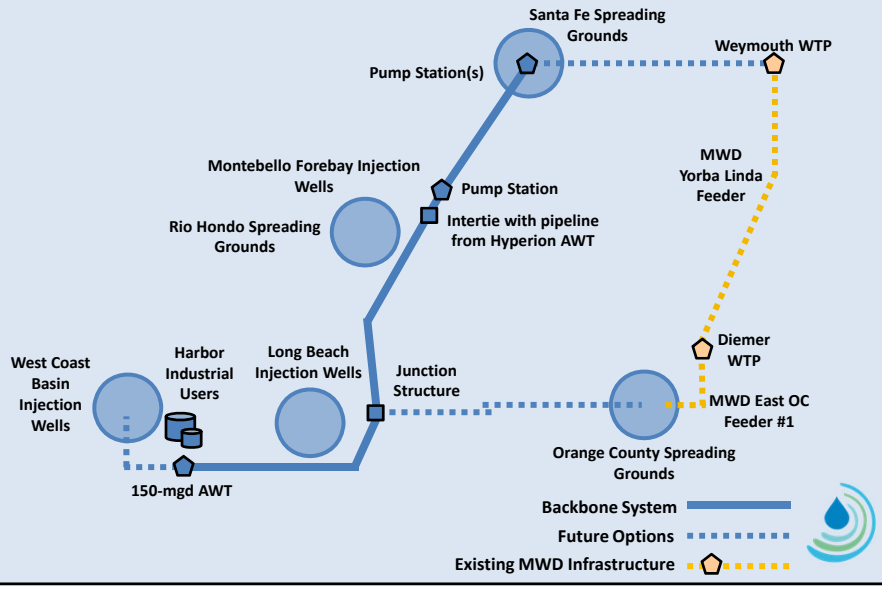
IMPLEMENTATION OPTIONS

THREE OPTIONS

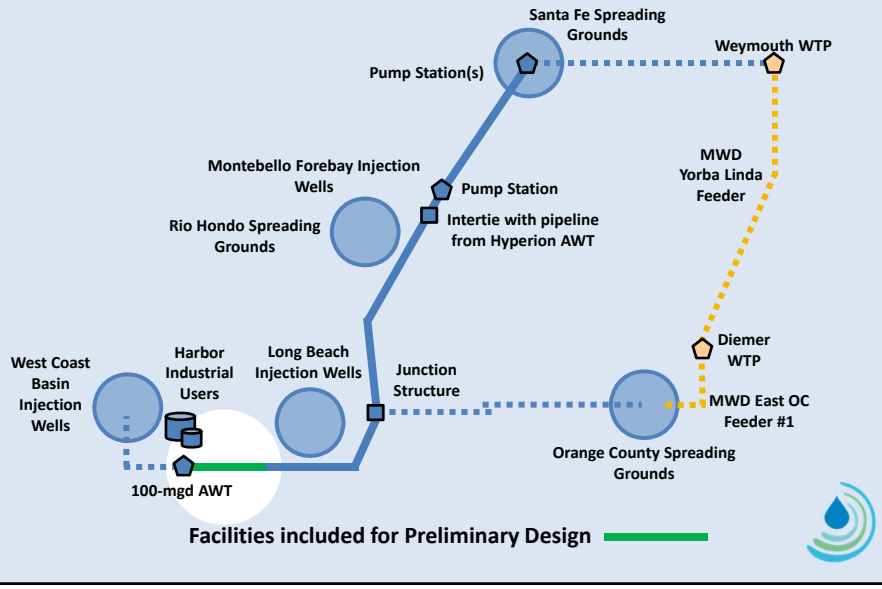
Traditional Option	Programmatic EIR (PEIR)
Accelerated Construction	Everything above plus: • Tiered project-level document for 3.5-mile pipeline
Accelerated Water Delivery	Everything above plus: • Initial AWT plant (approx. 20 mgd) • Conveyance to West Coast Basin

16

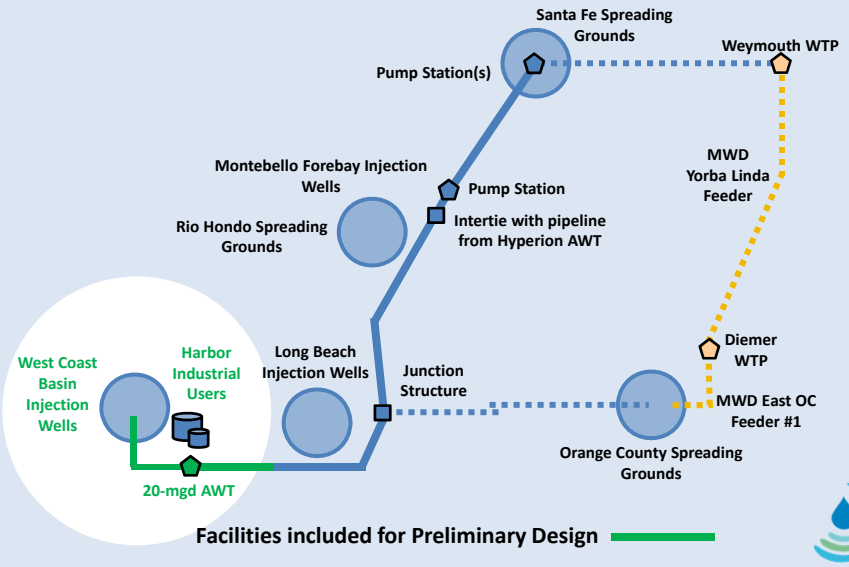
TRADITIONAL PEIR APPROACH



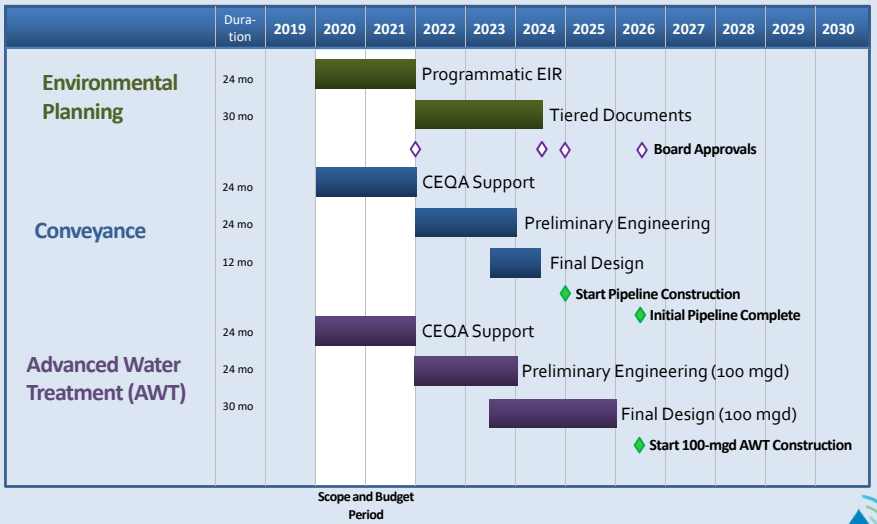
ACCELERATED CONSTRUCTION WITH PRELIMINARY DESIGN



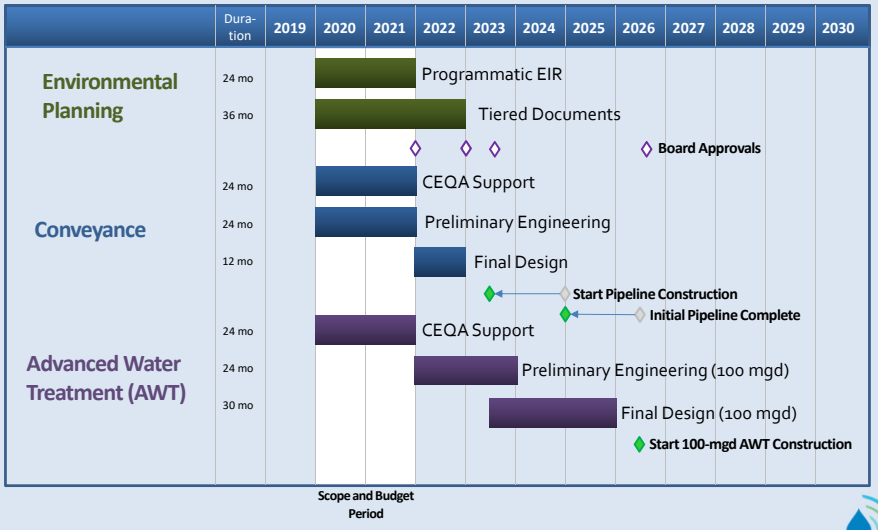
ACCELERATED DELIVERIES WITH PRELIMINARY DESIGN



TRADITIONAL

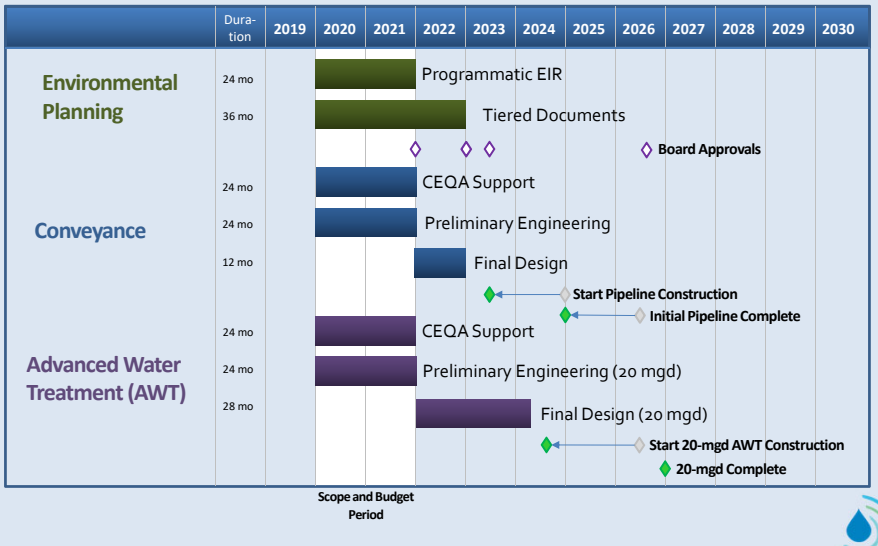


ACCELERATED CONSTRUCTION



21

ACCELERATED DELIVERIES



22

BENEFITS

Accelerated Construction

- Minimizes cost increases resulting from inflation
- Reduces impacts of unexpected delays on final completion date
- Launches preliminary design and risk management as early as possible
- Accelerates project team learning curve

Accelerated Deliveries

- All of the accelerated construction benefits
- Enables early acquisition of operational experience and knowledge
- Accelerates regional benefits of additional water supply
- Provides early water sales and cost recovery
- Utilizes existing facilities made available by the Sanitation Districts for the program

23

RISKS

Accelerated Construction

- Additional mitigation measures required
- Complex pipeline alignments must be revised
- Engineering rework required

Accelerated Deliveries

- All of the accelerated construction risks
- Contingent on:
  - ✓ MBR treatment process approvals
  - ✓ Nitrogen management strategy decision
  - ✓ Timing of need for replenishment water in the West Coast Basin

24

BUDGET RANGES

Estimated Budget Range (24 Month Duration)		
Option	Low	High
Traditional	$20,000,000	$33,000,000
Accelerated Construction	$30,000,000	$41,000,000
Accelerated Water Delivery	$47,000,000	$60,000,000

25

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DIRECT POTABLE REUSE CONSIDERATIONS

CALIFORNIA RECYCLED WATER REGULATIONS

Non-Potable Reuse

Irrigation Industrial Uses

2000

Indirect Potable Reuse

Groundwater Augmentation

2014

Indirect Potable Reuse

Reservoir Water Augmentation

2018

Direct Potable Reuse

Raw Water Augmentation

2023

Direct Potable Reuse

Treated Drinking Water Augmentation

TBD

Increasing requirements for public health protection

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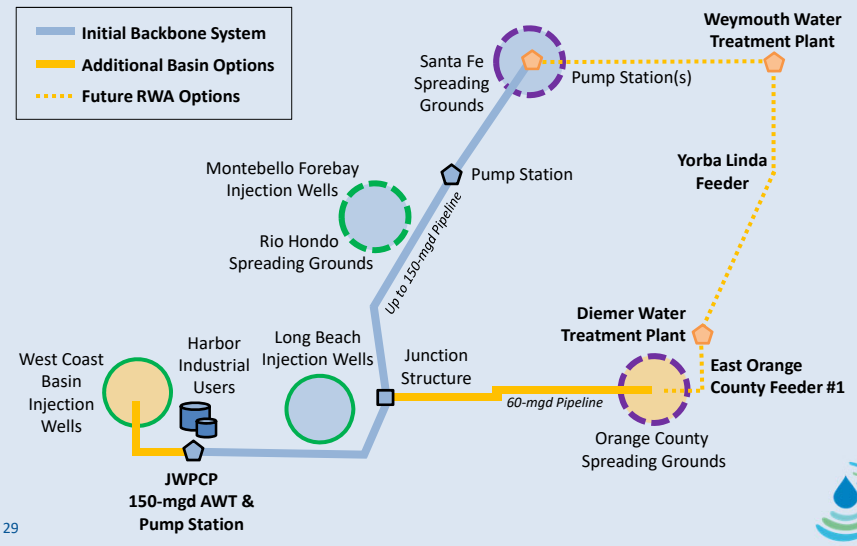
RAW WATER AUGMENTATION OPPORTUNITIES

RAW WATER AUGMENTATION OPTIONS



29

RWA CONSIDERATIONS AND ANTICIPATED REQUIREMENTS

- Enhanced source control and wastewater treatment optimization
- Higher levels of advanced treatment and treatment redundancy through multiple independent barriers
- More rigorous monitoring and enhanced tools to respond to "off-spec" events
- System integration that minimizes impacts on blended water quality

30

TREATMENT FACILITY OPTIONS

- Additional RWA treatment processes could be:
  - Part of the AWT facility planned at JWPCP, or
  - At a potential satellite facility downstream; only flow to be used for RWA would be treated to more stringent requirements
- Further discussion with State Board is needed to determine potential acceptance of a satellite facility concept

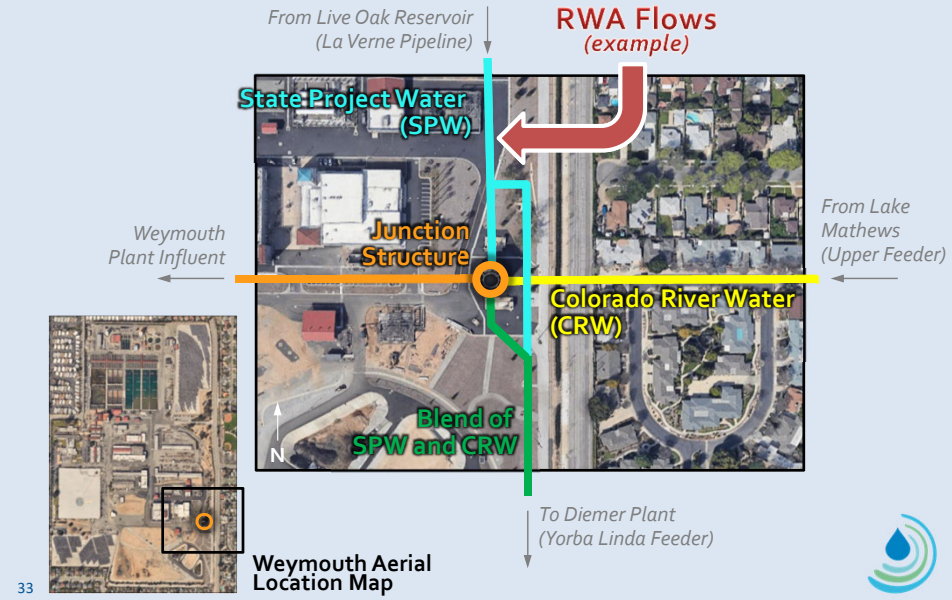
31

BLENDING AT METROPOLITAN'S TREATMENT PLANTS

- State Board has expressed that blending requirements would be incorporated into future RWA regulations to the degree that it provides a *"meaningful public health benefit"* (SWRCB, 2018)
- Metropolitan may also establish blending requirements for introducing advanced treated water to Weymouth or Diemer plants to ensure water quality goals are met
- Blending percentage may increase with greater project experience and demonstration of public health protection

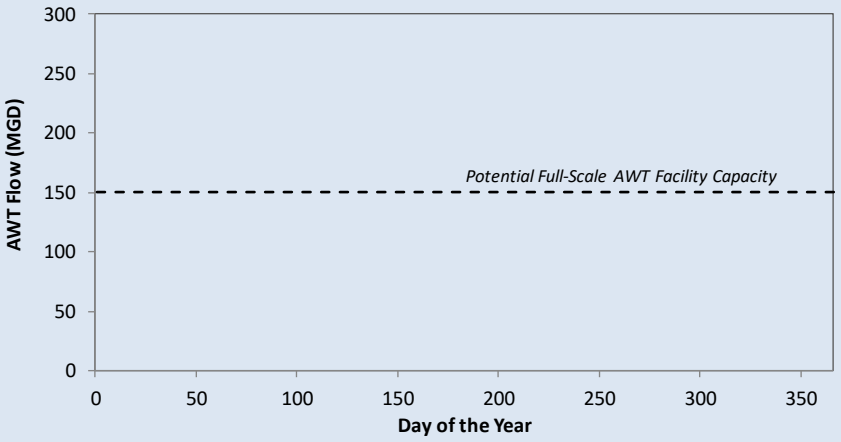
32

BLENDING SUPPLIES AT WEYMOUTH



33

POTENTIAL AWT FLOWS TO WEYMOUTH AND DIEMER PLANTS



34

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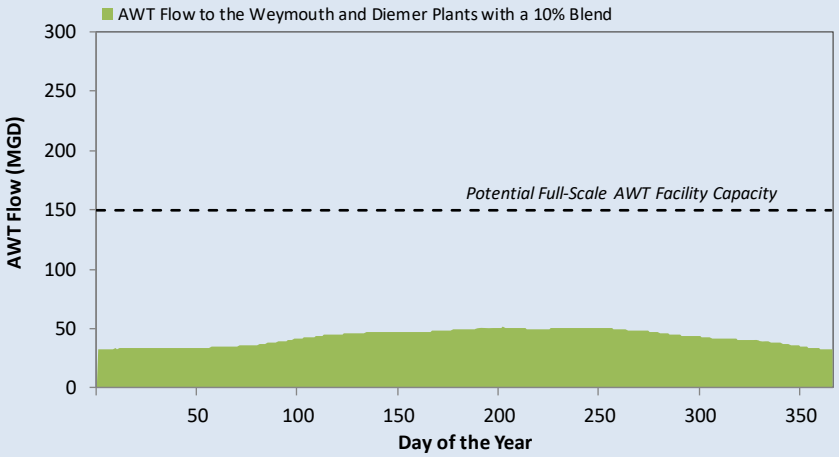
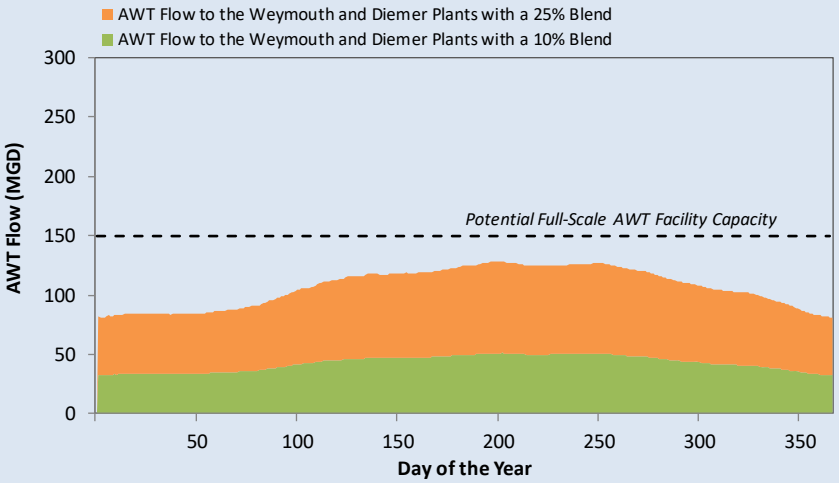


*Based on median daily average flow at the Weymouth and Diemer plants that ranged from 143 to 261 mgd and 120 to 293 mgd, respectively, in 2009 -2018.

35

POTENTIAL AWT FLOWS TO WEYMOUTH AND DIEMER PLANTS



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36

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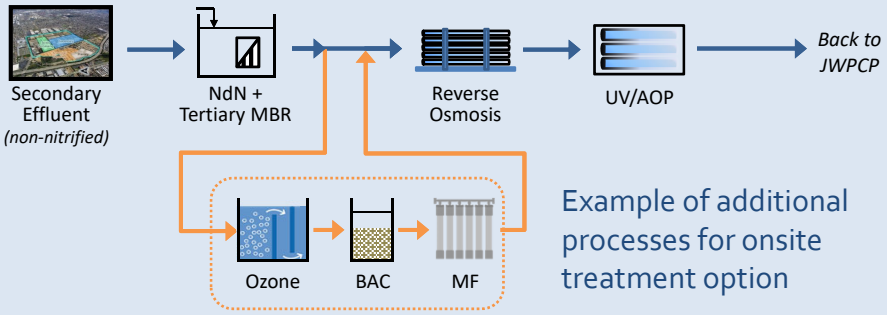
RAW WATER AUGMENTATION DEVELOPMENT ROADMAP

RWA SUGGESTED NEXT STEPS

- Begin RWA test plan development and treatment process design in 2021
  - Design and construction of RWA treatment processes at demonstration facility would require future Board action
- Begin RWA testing with draft regulatory criteria in 2023, prior to State Board's final adoption of raw water augmentation regulations
- Support research and collaborate with regulators and stakeholders in development of raw water augmentation regulations

38

DEMONSTRATION FACILITY TESTING OPTIONS FOR RWA

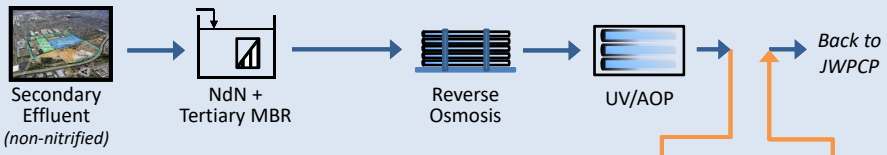


Example of additional processes for onsite treatment option

- Additional processes could be applied at pilot or demonstration scale in various treatment train configurations

39

DEMONSTRATION FACILITY TESTING OPTIONS FOR RWA



Further discussion with State Board needed on additional processes for satellite treatment option

- Additional processes could be applied at pilot or demonstration scale in various treatment train configurations

40

PRELIMINARY COSTS FOR RWA DEVELOPMENT

RWA Treatment Facility Type	System Option	Capital	O&M
Onsite Treatment	Pilot Scale *(10-50 gpm)*	$4.4M – $4.8M+	$5.5-$6.5M/yr^
	Demonstration Scale *(0.5 mgd)*	$12.8 M	
Satellite Treatment	Pilot Scale	*TBD**	
	Demonstration Scale	*TBD**	

+Cost varies depending if pilot system is integrated/fixed or trailer-based
*Further discussion needed with State Board regarding potential satellite facility options
^Includes conservative assumptions for staff, O&M, chemicals, and analytical costs

NOTE: The costs above are not included in earlier Implementation Options budget estimates.

41

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WRAP-UP / NEXT STEPS

NEXT STEPS

- Receive input on implementation options and DPR opportunities
- Will compile Board's ideas and suggestions
- Board Workshop #2 later this fall
  - White Paper #2: "Planning, Agreements, and Financial Considerations" prior to workshop
- Both workshops will contribute to preparation of potential Board actions
- Future potential actions related to RWA development will follow

43

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