Augmentation Colloquium

Colorado River Water Users Association – Dec 11, 2019

Deven Upadhyay
Assistant GM/Chief Operating Officer
Metropolitan Water District

- Regional water wholesaler
- Diverse communities
- 26 Member Agencies
- Diverse economy
- 19 million residents
- Various levels of access to water
- Regional economy: $1.3 trillion
- Various levels of water resource development
- Retail demand: 4 million acre-feet
- Different water supply challenges
Metropolitan’s Service Area
Diversifying Our Supplies

1990
41% Local/Conservation
- Colorado (26%)
- State WP (33%)
- Local Supply and Conservation (41%)

2040
65% Local/Conservation
- Colorado (15%)
- State WP (20%)
- Local Supply and Conservation (65%)

4 million AF + 7 million people -> 5.5 million AF
A Significant Opportunity

- Collaboration between Metropolitan and the Sanitation Districts of Los Angeles County
- Development of a new regional water source
- Up to 150 mgd (168,000 AFY)
  - Equivalent to the annual use of 500,000 households
- Deliveries for multiple uses
  - Groundwater replenishment
  - Industrial consumption
  - Future direct potable reuse applications
Demonstration Plant Is Online
Grand Opening – October 2019
Concept To Produce
Up To 168,000 AF/Year
Potable Reuse Through Raw Water Augmentation

- Defined as: placement of advanced treated water into a raw water conveyance system upstream of a drinking water treatment plant
- State Water Resources Control Board is expected to adopt uniform water recycling criteria for RWA by the end of 2023
Raw Water Augmentation
Blending Supplies at Weymouth

- Source water: State Water Project & Colorado Supplies
- Treatment: 5-step process (disinfection, coagulation, flocculation, sedimentation, & filtration)
- Capacity: 520 mgd
Raw Water Augmentation
Blending Supplies at Weymouth

State Project Water (SPW)
Colorado River Water (CRW)
Blend of SPW and CRW
Junction Structure
From Live Oak Reservoir (La Verne Pipeline)
RWA Flows (example)
From Lake Mathews (Upper Feeder)
To Diemer Plant (Yorba Linda Feeder)

Weymouth Aerial Location Map
Raw Water Augmentation

Regulatory Collaboration

- Co-funding Independent Science Advisory Panel (ISAP)
- MWD, LADWP, Valley Water
- Research/testing at Demonstration Facility
- Regulatory assistance
  - Treatment trains/processes
  - Acceptance criteria
  - Blending strategies
  - Analytical methods
  - Evaluate pathogen and contaminant removal

<table>
<thead>
<tr>
<th>Description</th>
<th>Start</th>
<th>End</th>
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</thead>
<tbody>
<tr>
<td>Tertiary MBR Testing</td>
<td>10/2019</td>
<td>12/2020</td>
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<tr>
<td>Secondary MBR Testing</td>
<td>1/2021</td>
<td>4/2022</td>
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<tr>
<td>Raw Water Augmentation Demo Construction</td>
<td>1/2022</td>
<td>4/2023</td>
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<tr>
<td>Raw Water Augmentation Testing</td>
<td>5/2023</td>
<td>8/2024</td>
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<tr>
<td>Regulatory Approval</td>
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<td>12/2023</td>
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# Program Cost Estimates

## Recommended Program

<table>
<thead>
<tr>
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<th>Phase 1 Backbone (2018 Dollars)</th>
<th>Full Program¹,² (2018 Dollars)</th>
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<tbody>
<tr>
<td><strong>Production Capacity (mgd)</strong></td>
<td>100</td>
<td>150</td>
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<tr>
<td><strong>Capital Program Cost³</strong></td>
<td>$2.6 billion</td>
<td>$3.4 billion</td>
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<tr>
<td><strong>Program Unit Cost of Yield ($/AF)</strong></td>
<td>$1,813</td>
<td>$1,826</td>
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</tbody>
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¹ Adds Orange County and West Basin deliveries to Initial Backbone system
² Does not include costs for DPR to Weymouth or Diemer WTPs
³ Costs include 25% for engineering services and 35% overall program contingency
Working With Many Partners

- Partnership with LA County Sanitation Districts
- Letter of Interest (LOI) signed with City of Los Angeles
- Developing LOI’s with multiple local agencies
- On-going work/research with regulatory agencies
Innovative Partnership Opportunity: Southern Nevada Water Authority

• Metropolitan and SNWA collaboration and partnership history
  – Colorado River water supply
  – Water quality, treatment technologies, and laboratory methods

• SNWA assessing future long-term supply needs

• Explore partnership opportunities in Program development and potential exchange
  – Letter of Intent
  – Coordination on 2026 Colorado River Operating Guidelines
Next Steps

• Perform Demo Plant Phase 1 & Phase 2 testing
• Refine implementation approaches
• Support development of the Raw Water Augmentation regulations
• Obtain “Letters of Interest” from key stakeholders
• Board authorization to start EIR
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.
RRWP Background

• Pilot Scale Studies (2010-12)
• Board approval and appropriation for Demonstration Plant (Nov. 2015)
• Feasibility Study Report (Nov. 2016)
• Conceptual Planning Studies Report (Feb. 2019)
• Demonstration Plant Online (Oct 2019)
• Regional Recycled Water Program

• Collaboration between Metropolitan and Sanitation Districts of LA County

• Development of a new regional water source
  – Up to 150 mgd (168,000 AFY) of purified recycled water
  – Replenish groundwater basins
  – Provide water to industries
  – Connect to Metropolitan’s water treatment plants
• 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
• Comments being received on second edition