Regional Recycled Water Program Workshop #2

Engineering and Operations Committee
Item 9-4
October 12, 2020
1. Brief Review of the RRWP
2. Overview of White Paper #2
3. Outline of Proposed November Board Actions
Brief Review of the Regional Recycled Water Program
Regional Recycled Water Program

- Partnership with LACSD (2010-Present)
- Demonstration plant on-line (2019)
- Planning for potential full-scale program
  - Potential for groundwater replenishment and DPR via raw water augmentation applications

Next steps
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
Proposed Treatment Process

1. Membrane Bioreactors
   - Primary or secondary effluent treated
   - Microorganisms remove ammonia
   - Membranes filter tiny particles

2. Reverse Osmosis
   - Pressurized membranes further remove microscopic materials, eliminating more than 99% of all impurities

3. Ultraviolet/Advanced Oxidation Process
   - Ultraviolet light/oxidant destroy any remaining viruses and trace chemical compounds.
Summary of Work to Date

- Pilot Scale Studies (2012)
- Feasibility Study Report (2016)
- Demonstration Plant (2019)
- White Paper #2 (2020)
Conceptual Planning Studies

- Concepts for required facilities
- Potential to Phase Program
  - 100 MGD initially
  - 50 MGD at later date
- Conservative assumptions carried forward
  - Treatment process includes tertiary MBR, all new facilities, no retrofits
  - Pipe alignments includes connection to Orange County and full diameter pipeline to MSG
  - 2018 cost estimate includes 35% contingency
- Flexibility to add DPR applications in the future
Phase 1: Backbone System

- JWPCP 100-mgd AWT & Pump Station
- Initial Backbone System
- Potential Intertie for pipeline from Hyperion WTP
- Up to 150-mgd Pipeline
- Long Beach Injection Wells
- Rio Hondo Spreading Grounds
- Montebello Forebay Injection Wells
- Pump Station
- Santa Fe Spreading Grounds
- Harbor Industrial Users
- Rio Hondo Spreading Grounds
- Long Beach Injection Wells
- Montebello Forebay Injection Wells
- Potential Intertie for pipeline from Hyperion WTP
- Up to 150-mgd Pipeline
- Long Beach Injection Wells
- Rio Hondo Spreading Grounds
- Montebello Forebay Injection Wells
- Pump Station
- Santa Fe Spreading Grounds
- Initial Backbone System
DPR Option: Northern Route

- West Coast Basin Injection Wells
- Orange County Spreading Grounds
- Long Beach Injection Wells
- Montebello Forebay Injection Wells
- Rio Hondo Spreading Grounds
- Harbor Industrial Users
- Junction Structure
- Pump Station(s)

Initial Backbone System:
- JWPCP 150-mgd AWT & Pump Station
- Potential Intertie for pipeline from Hyperion WTP

Additional Basin Options:
- Weymouth WTP
- Exisitng Yorba Linda Feeder
- Diemer WTP
- MWD EOCF#1

Future DPR Options:
- Up to 150-mgd Pipeline
- Orange County Spreading Grounds
DPR Option: Southern Route

- West Coast Basin Injection Wells
- Long Beach Injection Wells
- Montebello Forebay Injection Wells
- Rio Hondo Spreading Grounds
- Harbor Industrial Users
- JWPCP 150-mgd AWT & Pump Station
- Santa Fe Spreading Grounds
- LADWP Tie-in
- Pump Station
- Potential Intertie for pipeline from Hyperion WTP
- Up to 150-mgd Pipeline
- Junction Structure
- Orange County Spreading Grounds
- MWD EOCF#1
- Diemer WTP
- Existing Yorba Linda Feeder
- Weymouth WTP
- Potential Intertie for pipeline from Hyperion WTP
- Initial Backbone System
- Additional Basin Options
- Future DPR Options

JWPCP 150-mgd AWT & Pump Station

E&O Committee Item 9-4 Slide 11 October 12, 2020
### Program Cost (2018 costs)

<table>
<thead>
<tr>
<th>Cost Description</th>
<th>Backbone System (2018 Dollars)</th>
<th>Full Program (2018 Dollars)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production Capacity (mgd)</td>
<td>100</td>
<td>150</td>
</tr>
<tr>
<td>Capital Program Cost (^1)</td>
<td>$2.6 billion</td>
<td>$3.4 billion</td>
</tr>
<tr>
<td>Annual O&amp;M Cost ($/year)</td>
<td>$69 million</td>
<td>$129 million</td>
</tr>
</tbody>
</table>

**Program Unit Cost of Yield**

<table>
<thead>
<tr>
<th>Cost Description</th>
<th>Backbone System (AF)</th>
<th>Full Program (AF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capital Unit Cost</td>
<td>$1,181/AF</td>
<td>$1,054/AF</td>
</tr>
<tr>
<td>O&amp;M Unit Cost</td>
<td>$631/AF</td>
<td>$772/AF</td>
</tr>
<tr>
<td>Total Program Unit Cost</td>
<td>$1,813/AF</td>
<td>$1,826/AF</td>
</tr>
</tbody>
</table>

---

1. Costs are from the Conceptual Planning Studies Report (2018 dollars). Costs will be updated during the PEIR phase, if approved by the Board. Does not include cost of DPR.
Discussed multiple potential approaches to program implementation

- Approach 1: Traditional
- Approach 2: Accelerated Construction
- Approach 3: Accelerated Water Delivery

Outlined potential for DPR applications

- Raw water augmentation at Metropolitan's treatment plants
- Regulations in development

White Paper No. 2 – Planning, Financial Considerations, and Agreements
Overview of White Paper #2
White Paper #2: Key Questions

What kind of institutional arrangements or agreements would be required?
Collaboration and Funding
LOIs and MOUs developed

- WRD
- City of Long Beach
- City of Torrance

- MSG Watermaster
- Three Valleys MWD
- USGVMWD

60-80 TAFY

Up to 80 TAFY

LACSD

LACFCD
- LADWP

SNWA
- CAP/AZ-DWR
**Collaboration and Funding**
More than $2 million in Grants Awarded to Date

<table>
<thead>
<tr>
<th>Program</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>USBR Title XVI Reuse Research Grant</td>
<td>• Awarded $750,000 to study MBR pathogen removal</td>
</tr>
<tr>
<td>California Water Recycling Funding Program (WRFP) State Prop 1 /68</td>
<td>• Awarded $1M for Demonstration Plant</td>
</tr>
<tr>
<td></td>
<td>• Awarded $300,000 for four groundwater basin planning studies</td>
</tr>
</tbody>
</table>
## Collaboration and Funding
### Potential Future Grants and Loans

<table>
<thead>
<tr>
<th>Program</th>
<th>Type</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>USBR Title XVI</td>
<td>Grant</td>
<td>Up to $20M for future construction</td>
</tr>
<tr>
<td>California Water Recycling Funding Program (WRFP)</td>
<td>Grant</td>
<td>Up to $5M for construction</td>
</tr>
<tr>
<td>State Prop 1 /68</td>
<td></td>
<td></td>
</tr>
<tr>
<td>USEPA Water Infrastructure Finance and Innovation Act (WIFIA) program</td>
<td>Loan</td>
<td>49% of eligible costs up to $20M</td>
</tr>
<tr>
<td>California Clean Water State Revolving Fund (CWSRF)</td>
<td>Loan</td>
<td>Up to 50% of eligible costs</td>
</tr>
</tbody>
</table>
White Paper #2: Key Questions

What kind of institutional arrangements or agreements would be required?

How does the RRWP fit into Metropolitan's regional resource planning?
Integrated resources plan

- 25-year plan to ensure reliability
- Evolves over time
- 2020 IRP will include scenario planning

Changed conditions in past 5 years

- Declining demand
- Unmet local resource goal
- Climate change
- Constituents of concern

RRWP

- Increases local supplies
- Supports GW & DPR
- Has regional benefits
- Has stakeholder support
Progress in Local Supply Development

2040 local supplies target = 2.4 MAF

10-year average = 2.0 MAF

- Recycled Water
- Groundwater Recovery
- Seawater Desalination
- Surface Reservoir
- Groundwater
- Los Angeles Aqueduct

Average Local Supplies Target

A Selection of Benefits to the Region from Implementing the RRWP

- Lower risk of allocation
- Resilience to climate change
- Water quality improvement & DPR
- Reliability during seismic event
- Increased operational flexibility
White Paper #2: Key Questions

What kind of institutional arrangements or agreements would be required?

How does the RRWP fit into Metropolitan's regional resource planning?

How could the Program’s costs be recovered by Metropolitan?
Potential Cost Recovery Approaches

Overview

Preliminary evaluation in the context of Metropolitan’s organizational structure and systems
Potential Cost Recovery Approaches
Examples of Significant Factors Used in Evaluation

Is it reasonable?

- Is there a significant cost impact to direct recipients to meet same replenishment demands?
- Does the cost recovery approach account for regional benefits?
- Are firm commitments from direct recipients mandatory?
### Potential Cost Recovery Approaches
#### Summary of Significant Factors

<table>
<thead>
<tr>
<th>Factor</th>
<th>Direct Recipients Pay 100%</th>
<th>Integrated Approach</th>
<th>Hybrid Approach</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost impact to Direct Recipients for Same Service</td>
<td>Significant increase in cost to direct recipients</td>
<td>No significant increase in cost because cost recovery is through current rate structure</td>
<td>The cost impact is unclear and depends on the hybrid selected</td>
</tr>
<tr>
<td>Accounts for regional benefits</td>
<td>No</td>
<td>Yes</td>
<td>Depends upon how hybrid approach is implemented</td>
</tr>
<tr>
<td>Firm commitments mandatory</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Reasonable</td>
<td>No</td>
<td>Yes</td>
<td>Unlikely</td>
</tr>
</tbody>
</table>

---

E&O Committee  
Item 9-4  
Slide 26  
October 12, 2020
Outline of Proposed November Board Actions
Proposed November Board Actions

**Board Action 1**
- Authorize staff to commence Environmental Planning phase for RRWP

**Board Action 2**
- Amend existing LACSD Agreement
- Provide support for the RRWP Environmental Planning phase

**Board Action 3**
- Amend existing NWRI Agreement
- Provide continued support for Demo Plant testing program

**Board Action 4**
- New SNWA Agreement
- Provide support for RRWP Environmental Planning phase
Environmental Planning Phase

Proposed Scope of Work

- Program Environmental Impact Report
- Engineering & Technical Support Studies
  - Treatment
  - Conveyance
- Public Outreach support

$30 million included in approved 2020/21 and 2021/2022 biennial O&M budget

Potential contributions from Program partners
LACSD Amendment No. 1

- 2015 Agreement for demonstration plant and term sheet for future full-scale projects
- Amendment to add Environmental phase work
- Scope will cover the following:
  - CEQA documentation
  - Engineering assistance
  - Associated technical studies
  - Public outreach
- Potential LACSD financial contribution $5M - $6M
- Approval requested at November Board meeting
- FORCO remediation up to $50 million
Southern Nevada Water Authority
Letter of Intent

- LOI approved in March 2020
- Scope of LOI
  - Work together to implement the RRWP
  - Provide resources to assist with the planning, design, and construction
  - Discuss exchanges of water volumes
- LOI is non-binding
- Anticipates future coordination on 2026 Colorado River Operating Guidelines
Agreement with SNWA will include:

- Funding contribution for environmental phase
- Partnership and collaboration for environmental phase work

Approval to be requested at November Board meeting

Additional terms to be provided
NWRI Agreement

- Independent Scientific Advisory Panel (ISAP) facilitation
  - Supports ongoing work at Demonstration Plant
- Agreement signed in 2018
  - Initial Budget: $245,000
- Proposed Amendment
  - Additional workshops and reports
  - $200,000 already included in O&M budget
  - Time extension through June of 2022
**Proposed November Board Actions**

**Board Action 1**
- Authorize staff to commence Environmental Planning phase for RRWP

**Board Action 2**
- Amend existing LACSD Agreement
- Provide support for the RRWP Environmental Planning phase

**Board Action 3**
- Amend existing NWRI Agreement
- Provide continued support for Demo Plant testing program

**Board Action 4**
- New SNWA Agreement
- Provide support for RRWP Environmental Planning phase
Discussion