Indirect Potable Reuse for Groundwater Recharge – Succession Strategy for Recycled Water

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Today’s Presentation

• Background on Eastern Municipal Water District
• Water supply portfolio and challenges
• Indirect Potable Reuse as a succession strategy for EMWD’s recycled water program
• Statewide supply potential from recycling and Potable Reuse
• Summary and Conclusions
Eastern Municipal Water District

- Established in 1950
- 542 square-mile service area - population of 768,000
- Serving seven cities and unincorporated areas
- One of 26 MWD member agencies
- High-growth area
- 11.0” to 12.6” of rain per year (4” last year)
 Eastern Municipal Water District Services

• **Potable (drinking water):**
  - Retail and wholesale
  - 140,000 accounts
  - 88,900 AF sold in 2014/2015
  - Imported and local supplies

• **Wastewater collection & treatment:**
  - 229,000 accounts
  - Four regional reclamation facilities treating: 49 MGD

• **Recycled water:**
  - 38,900 AF sold in 2014/2015
  - 10,800 acres of agricultural irrigation

• **Water Use Efficiency:**
  - Landscape standards, incentives, Turf removal, Budget-based rates
  - 45% reduction per-capita use in last decade
Local Supply Diversity - EMWD’s Current Water Supply Portfolio - 2015

Imported Water Supply from MWD: 76,900 AF 51%

Import Colorado River (CRA) 26%

Import Untreated Water 15%

Wells 12%

Recycled Water 32%

Desalination 5%

Import Delta (SWP) 10%

Local Water Supply:
74,800 AF 49%
Eastern MWD - Sources of Water

Bay Delta
State Water Project

Local Supplies:
- Groundwater
- Desalination
- Recycled Water
- Stormwater capture

Sierra Nevada Mountains
Colorado River Aqueduct

“Best Practices” in Water Use Efficiency (Conservation)

- 26 member agencies
- Owns Colorado River Aqueduct
- State Water Project Contractor
- Imports water to meet ½ of So. Cal retail demands
- Typical demands: 2.1 MAF (1.7 MAF in 2015)

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State Water Project Allocations

SWP Allocation Percentage by Year

- 2014 Lowest allocation in 54-year history of the SWP
- 4.1 MAF requested with 205,000 AF delivered
## Current Sources of Imported Recharge Water

<table>
<thead>
<tr>
<th>Imported Supply</th>
<th>Salt (TDS – mg/l)</th>
<th>Lbs. of salt/acre foot</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colorado River Water</td>
<td>(~500) to (700) mg/l</td>
<td>(1,360) to (1,900) lbs/af</td>
</tr>
<tr>
<td>State Water Project (current range)</td>
<td>(~250) to (399^*) mg/l</td>
<td>(680) to (1,085) lbs/af</td>
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</tbody>
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* Elevated TDS due to low SWP deliveries and drought
Groundwater Supply and Salinity

Basin Plan Objectives

- Hemet /S.J. (Max Ben Obj.) 320 mg/l
- S.J. Low. Press. (500 mg/l)
- Lakeview Less than
- Hemet North 570 mg/l
- Perris North
- Hemet South 730 mg/l
- Menifee Less than
- Perris South 1260 mg/l
• **Brackish Desalination**
  - Two brackish desalters operating.
  - Program is presently able to produce 5,000-6,000 acre feet/year of potable water from otherwise unusable groundwater.

• **Salinity Management**
  - Current salt removal: 27,000 tons annually (3.3 MGD brine from desalters and industrial discharge).
  - Offsets majority of 31,000 ton import.
  - Current disposal: 70 mile brine line to Pacific Ocean.

*Strategic Supply Goal:* Expand Brackish Desalination to provide over 17,500 af/year and 50,000 tons/year salt removal
Program started in 1960’s:

- Four tertiary treatment plants – 49 MGD
- Agricultural Irrigation (10,800 acres)
- Sport fields, golf courses, parks, schools, medians, habitat (San Jacinto wetlands)
- Industrial (regional power plant, industrial)
- $188 million in capital investments

Currently 100% of Wastewater is Recycled for Beneficial Use

38,900 af in 2015

Succession Plan: Indirect Potable Reuse project
• EMWD’s Urban Water Management Plan based upon 2045 build-out of city county general plans

**2045 Demands: 215,000 AF – an increase of 68%**

• EMWD Adopted Supply Strategic Plan:
  – Local supply and water use efficiency focused
  – Protect and enhance groundwater resources through increased yield and salinity management
  – Recycle 100% of wastewater for beneficial use

• To support growth, EMWD has committed to local resource investments:
  – Water Use Efficiency standards and Stormwater capture
  – Maximize Brackish Desalination (new capacity and brine recovery)
  – Expand and Transition Recycled Water Use (Indirect Potable Reuse)

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• Sustain and expand Hemet-San Jacinto basin production through additional replenishment supplies

• Develop a highly reliable source of replenishment water to modulate variations in SWP deliveries and stormwater

• Ensure long-term succession for recycled water that maximizes use of the resource (100% utilization)

• Provide replenishment source that meets all water quality requirements and is low in salt

• Develop multi-use groundwater recharge facilities (IPR, Imported and Stormwater)
San Jacinto IPR Project Elements

San Jacinto IPR Project Strategy: Recharge Advanced Treated/RO water and Tertiary Treated Recycled Water with SWP and Stormwater

Diluent Water Supplies:
- SWP deliveries from untreated water pipeline
- Stormwater diversion/capture
Preferred Alternative - Blend of Tertiary Recycled Water/RO Permeate Balanced Salt Reduction

**Legend:**
- **Phase 1 Flows**
- **Phase 2 Flows**

**Project Phasing**
- Phase 1 = 5,000 AFY
- Phase 2 expansion = 10,000 AFY
- Total capacity = 15,000 AFY
Indirect Potable Reuse - Cost Profile

$ per acre foot of water

- Imported water from MWD: $942 - $1,076
- Groundwater Wells: $250
- Desalinated Groundwater: $1,015 - $1,235
- Recycled Water (Purple pipe): $401
- Ocean Desalination: $2,014 - $2,257
- Indirect Potable Reuse: $1,079 - $1,295

Current EMWD Supplies
New Alternative Supplies
### Public Support for Potable Reuse

**Question:** Would you support or oppose **indirect** potable reuse of recycled water in your community?

<table>
<thead>
<tr>
<th>Support Level</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Strongly support</td>
<td>34%</td>
</tr>
<tr>
<td>Somewhat support</td>
<td>28%</td>
</tr>
<tr>
<td>Somewhat oppose</td>
<td>13%</td>
</tr>
<tr>
<td>Strongly oppose</td>
<td>18%</td>
</tr>
<tr>
<td>Don't know/NA</td>
<td>7%</td>
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**Total Support:** 62%

**Total Oppose:** 31%

*Source: WaterReuse California*
...and there’s not support for Potable Reuse
2010 California Water Plan:
Increase recycling to 2.5 MAF to 2030 from 650,000 AF in 2010

California’s Recycling Opportunities

IPR is at 75% of “purple pipe” with just eight full scale projects
Potable Reuse is key to meeting goal

Currently existing and permitted recycling: 774,000 AF

Goal not met until 2055 at current pace

Currently California discharges 2.6 MAF/y of treated wastewater to the ocean
Indirect Potable Reuse - Significant Interest

PERMITTED GROUNDWATER (8)
Existing ≈ 200,000 AFY ~ 1.6 M People

PLANNED GROUNDWATER (19)
Planned ≈ 293,500 AFY ~ 1.6 M People

PLANNED SURFACE WATER AUGMENTATION (4)
Planned ≈ 100,000 AFY ~ 800,000 People

Planned IPR Total = 393,500 AF
Serving 2.4 million People
Summary and Conclusions

• For EMWD, the IPR program will ensure long-term succession and 100% utilization of recycled water

• The project will sustain and expand groundwater production in the Hemet-San Jacinto basin to meet future growth

• Costs are very competitive with imported water and other new sources of water (desalination)

• Statewide, California discharges 2.6 MAF/y of treated wastewater into the ocean

• Potable Reuse has the potential to meet the municipal needs for 8 million Californians or 1/5 of the state’s population
Thank You!

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