A Vision for Recycled Water at Oro Loma

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WateReuse Association Northern California Chapter Meeting
March 1, 2019
Agenda

• A Big Thanks – Sara Rhodes
• Background
• Status of the Study
• Review of Leading Alternatives
• Next Steps
• We are hiring!
Background

- GWR – Groundwater Recharge
- SWA – Surface Water Augmentation
- IPR/DPR – Indirect Potable Reuse vs. Direct Potable Reuse
- All likely scenarios require Full Advanced Treatment (FAT)
### Full Advanced Treatment

<table>
<thead>
<tr>
<th></th>
<th>2° Effluent</th>
<th>Ozone</th>
<th>Bio Active Carbon Filter</th>
<th>MF</th>
<th>RO</th>
<th>UV-AOP</th>
<th>Total</th>
<th>Minimum</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Virus</strong></td>
<td>2</td>
<td>6</td>
<td>--</td>
<td>--</td>
<td>1-2</td>
<td>6</td>
<td>15-16</td>
<td>12 or 13</td>
</tr>
<tr>
<td><strong>Crypto</strong></td>
<td>1</td>
<td>2-4</td>
<td>--</td>
<td>4</td>
<td>1-2</td>
<td>6</td>
<td>14-17</td>
<td>10 or 11</td>
</tr>
<tr>
<td><strong>Giardia</strong></td>
<td>2</td>
<td>6</td>
<td>--</td>
<td>4</td>
<td>1-2</td>
<td>6</td>
<td>19-20</td>
<td>10 or 11</td>
</tr>
</tbody>
</table>

- **Biological**
- **Oxidation**
- **Phys Rem**
- **Phys Degradation**
- **Adsorption**
- **Chem Inactivation**
- **Inactivation UV Light**

Adapted from Trussell et al., 2015
Groundwater Recharge (GWR)

• Subsurface injection into the Southeast Bay Plain Groundwater Basin
  • Groundwater in basin moves east-west
  • Injection assumed east of OLSD WWTP
  • Preliminary travel time modeled in MODFLOW
    • 2 month modeled travel time (2 month actual) required

• Potential Project Capacity: 9 MGD
  • 10% loss to aquifer (per regulations)
  • Extraction well capacity: 2 MGD (per Bayside & ACWD wells)
  • Injection well capacity: 1 MGD (Typ ½ of extraction capacity)
Conceptual Well Locations for GWR
Surface Water Augmentation (SWA)

- Piping water from OLSD WWTP to Upper San Leandro (USL)
  - 4 Conceptual alignments
  - 10-17 Miles 24” pipe
- Potential Project Capacity 5 MGD
  - Upper SL WTP capacity is 50 MGD
  - 1:10 Dilution
## Preliminary Costs - GWR

<table>
<thead>
<tr>
<th>Cost Element</th>
<th>Cost Range</th>
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<tbody>
<tr>
<td>Treatment</td>
<td>$121 M</td>
</tr>
<tr>
<td>Conveyance</td>
<td>$43 M</td>
</tr>
<tr>
<td>Wells</td>
<td>$76 M</td>
</tr>
<tr>
<td><strong>Total Capital Cost</strong></td>
<td><strong>$214 M</strong></td>
</tr>
<tr>
<td><strong>Annual O&amp;M Costs</strong></td>
<td><strong>$11 M</strong></td>
</tr>
<tr>
<td><strong>Estimated Unit Cost ($/AF)</strong></td>
<td><strong>$2,200 - $2,500</strong></td>
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</tbody>
</table>

**Notes:**
- Potential to utilize full flow – also scalable at near linear treatment and well costs (1 MG = $21M)
- Clear regulations exist
- 10 injection, 4 new extraction wells, & additional modeling required
- Existing marginal costs of EBMUD water are $1,700/AF
Conclusions

• Significant irrigation or industrial demands do not exist in the service area today.
• Recycled Water is not economically viable now. (50% over marginal EBMUD costs)
• Expectations are that this will change in 10-20 years. (see Hetch Hetchy – SFPUC)
• More stringent effluent limits may decrease the incremental cost to deliver Full Advanced Treatment.
New Developments

- Social Justice
- Changing Board
- Hampton Road SD – Ted Henifin - SWIFT
- Hertzberg: 95% diversion?
- Nutrient Optimization Project
Recommendations Considered
But Not Put Forward

- Adopt policy to put recycled pipe in ground when sewer trench is open along likely alignment.
- Develop a “Vision 2040” for Recycled Water in Oro Loma. Begin communicating the vision through video and web outreach.
- Set goal of recycling 10% of effluent in 10 years.
- Join Western Water Coalition, support lobbying efforts for more RW funding, and seek grant funds for projects (Typically up to 35% available).
- Identify likely injection sites. Seek opportunities with San Lorenzo schools, Hayward Area Recreation District, Caltrans, or other partners to reserve land.
Recommendations

• Consider likely potential for reduced flow, brine, and UV systems in EBDA negotiations and Electrical System Master Planning.

• Partner with EBMUD to insure that recycled water is considered when evaluating potential new water sources.

• Create a simple brochure casting a potential vision for Recycled Water for Oro Loma. Create links to Recycle Water Education on our website.

• Invest in educating our staff and Board on recycled water and outreach issues.

• Wait until the economics of water recycling improves or when EBMUD wants the water.
Thank You!

This presentation represents the work of many.

Thank you for your interest.