EBDA Wastewater Services: Do Past Structures Meet Future Needs?

Dr. Michael Connor
General Manager
East Bay Dischargers Authority
TODAY’S PRESENTATION

• Geographic Coverage
• Capacity
• Infrastructure
• Future Challenges
EBDA Agency Costs Lower than Bay Area

• Data Comparisons Difficult

• Average Monthly Bills
  – EBDA Agencies $16-$41. Med~$25
  – Bay Area Range$13-$145..Med~$45

• SFR Connection Fees
  – EBDA Agencies $1332- $13,000. Med~$6500
  – Bay Area – Range:$210- $22,000.Med~$4000
EBDA Capacity (mgd) vs NPDES

<table>
<thead>
<tr>
<th></th>
<th>Avg Dry</th>
<th>NPDES Dry Cap.</th>
<th>NPDES Peak Wet</th>
</tr>
</thead>
<tbody>
<tr>
<td>San Leandro</td>
<td>4.5</td>
<td>7.6</td>
<td>22.3</td>
</tr>
<tr>
<td>Oro Loma/CV</td>
<td>13.4</td>
<td>20</td>
<td>69.2</td>
</tr>
<tr>
<td>Hayward</td>
<td>11.4</td>
<td>18.5</td>
<td>35.0</td>
</tr>
<tr>
<td>USD</td>
<td>28.9</td>
<td>38.0</td>
<td>42.9</td>
</tr>
<tr>
<td>Subtotal</td>
<td>58.2</td>
<td>84.1</td>
<td>169.4</td>
</tr>
<tr>
<td>LAVWMA</td>
<td>15.2</td>
<td>35.0</td>
<td>41.2</td>
</tr>
<tr>
<td>Total</td>
<td>73.4</td>
<td>119.1</td>
<td>189.1</td>
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</tbody>
</table>
Capacity - EBDA Flows Declining

Feb 1998

Max Month

Avg Month

Min Month

## Recycled Water Increasing

<table>
<thead>
<tr>
<th>Agency</th>
<th>Annual (acre ft)</th>
<th>Max (MGD)</th>
<th>Avg WW Flow</th>
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<tbody>
<tr>
<td>USD</td>
<td>3300</td>
<td>20</td>
<td>25</td>
</tr>
<tr>
<td>Hayward</td>
<td>2500-3000</td>
<td>3-4</td>
<td>11</td>
</tr>
<tr>
<td>OLSD/CVSD</td>
<td>200-250</td>
<td>1</td>
<td>11</td>
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<tr>
<td>San Leandro</td>
<td>600</td>
<td>1.2</td>
<td>5</td>
</tr>
<tr>
<td>DSRSD</td>
<td>3200</td>
<td>7</td>
<td>8</td>
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<tr>
<td>Livermore</td>
<td>~1000</td>
<td>3.6</td>
<td>5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>~10,000</td>
<td>~20</td>
<td>65</td>
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Infrastructure: Risk-Based Management Strategy

- **High Risk Zone**
  - Strategy: Plan for asset renewal and/or risk mitigation

- **Medium Risk Zone**
  - Strategy: Mix of reactive and proactive strategies - dependent on owner preferences and specific issues

- **Low Risk Zone**
  - Strategy: Proactive condition and/or performance monitoring

- **Probability of Asset Failure** (e.g., 0 to 1)
- **Consequences of Asset Failure** (e.g., Dollars)
Asset Renewals Meet Needs to mid2000s
Moving From Wastewater Treatment to Wastewater Resource Recovery

1. Shortcut Nitrogen Removal
2. P-Recovery
3. Digestion Enhancements
4. Biosolids to Energy
5. Energy from Wastewater
Wastewater Future Must Be Coordinated with Other Bay Issues

- Flood Control & Stormwater Management
- Global Carbon & Climate Change
- Habitat Restoration
- Wastewater Resource Recovery
Evolving Regulatory & Regional Drivers

• Regulatory Drivers
  – Nutrient Discharge Requirements
  – Carbon Emission Requirements
  – Stormwater Treatment Requirements
  – Sewer Lateral Repair
  – Recycled Water Production Requirements
  – Biosolids Discharge Prohibitions

• Regional Drivers
  – Earthquake Response
  – Sea Level Rise
  – Habitat Restoration
  – Population Density
Why the concern about nutrients?

Potential Environmental Impacts of Nitrogen and Phosphorus

- Excessive algal growth
- Harmful Algal Blooms
- Hypoxia (low dissolved oxygen)
- Altered Species Composition
High SFB Nitrogen loads now, but low impacts

Chl-a (µg L⁻¹) during average bloom vs. Nitrogen Load (g N m⁻² yr⁻¹)

- Chesapeake
- Delaware
- MD Coastal Bays
- Barnegat
- Florida Bay
- Pensacola
- Narragansett
- SOU
- CEN
- SPB
- LSB
- SUI

National Estuarine Experts Workgroup (2010)
SFEI (2013)

Chlorophyll-a (µg L⁻¹) during average bloom vs. Nitrogen Load (g N m⁻² yr⁻¹)
SFB Ecosystem response is changing

Will impacts continue to increase, or reach a new plateau?

South Bay: Jun-Oct

Chlorophyll a (μg/L)

Cloern et al. 2007
Nutrient Infrastructure Options

• Increased Treatment
  – $10-$30/gal capital costs depending on reqts.
  – All flows (190 MGD)?Summer flows (60 MGD)

• Maximize Water Recycling

• Wetlands Treatment/Discharge Strategies
Frank’s Dump West - New Year’s Eve 2005
8.9 ft tides; 40mph westerly winds
Sea Level Infrastructure Options

• Relocation
• Levies
• Wetlands Treatment/Discharge Strategies
4. Landscape Solution Requires Coordination

- Short term, individual actions can build resilience

- When water levels reach 36-48” above MHHW the Hayward Focus Area will need a coordinated, multi-benefit, landscape-scale effort for future coastal flood protection.
Responding to Future Wastewater Issues Requires Coordination Among Many Alameda Orgs

<table>
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<tr>
<th>Issue</th>
<th>Regulatory</th>
<th>Coordination</th>
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<tr>
<td>Nutrients</td>
<td>Water Board, Air Board, DFW, USFWS, EPA</td>
<td>Members, BACWA, SCC, County, EBRPD</td>
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<tr>
<td>Carbon</td>
<td>Air Board, Water Board</td>
<td>PGE, BACWA,</td>
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<tr>
<td>Stormwater</td>
<td>Water Board, EPA, DFW, USFWS, BCDC</td>
<td>Cities, County, BACWA</td>
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<tr>
<td>Laterals</td>
<td>Water Board</td>
<td>Cities, BACWA</td>
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<tr>
<td>Recycled Water</td>
<td>Water Board</td>
<td>EBMUD, BACWA, Zone 7, ACWD, Hayward, DOT</td>
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<tr>
<td>Biosolids</td>
<td>EPA</td>
<td>StopWaste, BACWA</td>
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<tr>
<td>Earthquake</td>
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<td>EBRPD, HARD, SCC</td>
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<tr>
<td>Sea Level Rise</td>
<td>BCDC, USCOE, EPA, Water Board</td>
<td>SCC, EBRPD</td>
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<tr>
<td>Habitat Restoration</td>
<td>BCDC</td>
<td>Cities, County, Water, Developers</td>
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<tr>
<td>Population</td>
<td>ABAG</td>
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</table>
Are Wastewater Cooperation Challenges Addressed By LAFCO Objectives?

To Encourage The Orderly Formation Of Local Governmental Agencies (http://www.co.alameda.ca.us/lafco/)

LAFCOs review proposals for the formation of new local governmental agencies and changes of organization in existing agencies. In California, there are 58 LAFCOs working with nearly 4,000 governmental agencies in 58 counties, approximately 500 cities, and over 3,000 special districts. Agency boundaries are often unrelated to one another and sometimes overlap at random. This overlapping often leads to higher service costs to the taxpayer and general confusion regarding service area boundaries. LAFCOs' decisions strive to balance the competing needs in California for affordable housing, economic opportunity and conservation of natural resources.