System Consolidation as a Solution for Water Contamination in Disadvantage Communities

Laura Ramos
Public Water Systems in California

1. Public water systems serving California (39.6 million residents)
   7,897 total water systems
   a. 6,745 (85-percent) serve 1,000 persons or less
   b. 4,056 (51-percent) serve 100 persons or less

2. Public water systems serving the San Joaquin Valley (4.2 million residents)
   1,976 total water systems
   a. 1,768 (89.5-percent) serve 1,000 persons or less
   b. 1,022 (51.7-percent) serve 100 persons or less
Consolidation

1. Conduct Feasibility Study (technical, operational, and financial feasibility – Preliminary Go/No Go Decision)
2. Negotiate Extra-Territorial Service Agreement (*City and Small System*)
3. Negotiate Incentives (*Water Board and City*)
4. Designate an Applicant to serve at Lead Agency for Consolidation
   a. Small Water System
   b. City of Fresno
5. Conduct Preliminary Engineering (Technical Assistance Grant)
6. Conduct Final Design, Service During Construction, Startup Testing, Project Closeout (Construction Grant)
Potential Benefits

- No certified operator cost
- No monthly utility cost to pump water
- No water sampling requirements
- No reporting requirements to Department of Drinking Water
  - Annual inspections
  - Annual reports
  - Any upcoming changes/requirements to water systems
- No well maintenance

- Well Replacement if/when well fails
- Need to haul water in case well goes dry or is irreparable
- Concerns over water quality:
  - Current and future changes to the water contaminant list
- Free up personnel regarding maintaining/ensuring safe drinking water standards
- Economies of Scale
<table>
<thead>
<tr>
<th>Water Bill Factors/Costs</th>
<th>Small Water System (29 Connections)</th>
<th>City of Fresno (133,000 Connections)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monthly Meter Charge</td>
<td>$26.74</td>
<td>$13.50</td>
</tr>
<tr>
<td>Usage Charge, $/HCF</td>
<td>$2.27</td>
<td>$1.74</td>
</tr>
<tr>
<td>Total Water Bill @ 6 HCF</td>
<td>$40.34</td>
<td>$23.94</td>
</tr>
<tr>
<td>Total Water Bill @ 12 HCF</td>
<td>$53.93</td>
<td>$34.38</td>
</tr>
<tr>
<td>Total Water Bill @ 18 HCF</td>
<td>$67.53</td>
<td>$44.82</td>
</tr>
</tbody>
</table>

<p>| Cost Differential, %          | 98.07%                              | 30.23%                               |
| Total Cost Differential       | 68.49%                              | 56.87%                               |
| Total Yearly Cost Differential| 50.66%                              |                                      |</p>
<table>
<thead>
<tr>
<th>System Name</th>
<th>Water Board Concern</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green Acres MHP</td>
<td>Single well vulnerability</td>
</tr>
<tr>
<td>New Horizons MHP</td>
<td>Single well vulnerability</td>
</tr>
<tr>
<td>Elm Court</td>
<td>Single well vulnerability</td>
</tr>
<tr>
<td>Woodward Bluffs MHP</td>
<td>Single well vulnerability</td>
</tr>
<tr>
<td>Three Palms MHP</td>
<td>MCL violation (1,2,3-TCP), single well vulnerability</td>
</tr>
<tr>
<td>Sunnyside Convalescent</td>
<td>Single well vulnerability</td>
</tr>
<tr>
<td>Sunset West MHP</td>
<td>Two wells, but single well vulnerability exists for systems</td>
</tr>
<tr>
<td>Country View Alzheimer Center</td>
<td>Single well vulnerability</td>
</tr>
<tr>
<td>Madison Elementary</td>
<td>Single well vulnerability</td>
</tr>
<tr>
<td>Del Oro Metropolitan</td>
<td>MCL violation (1,2,3-TCP), single well vulnerability</td>
</tr>
<tr>
<td>Lone Star Elementary</td>
<td>Single well vulnerability</td>
</tr>
<tr>
<td>Roosevelt Elementary</td>
<td>Single well vulnerability</td>
</tr>
</tbody>
</table>

City of Fresno Water Consolidation Study
Fresno City Limit Boundary

Legend
- A: Country View Alzheimer Center
- B: Del Oro Water Co. - Metro Dist
- C: Elm Court
- D: Green Acres MHP
- E: Lone Star Elementary
- F: Madison Elementary
- G: New Horizons MHP
- H: Roosevelt Elementary School
- I: Sunnyside Convalescent Hospital
- J: Sunset West Community
- K: Three Palms MHP
- L: Woodward Bluffs MHP
- Yellow: City Limits

Map and Spatial Analysis prepared by: Doug Beggyn

Data Used: Fresno City Current Well Data, Agra Private Well Data, Shapefiles, Fresno Small Watershed Location Data.

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Consolidation Options

- Option A – No action
- Option B – Direct Connection
- Option C – Looped Connection
**Consolidation Method**

**Direct-Connect vs Looped Connect**

- Loop provides two sources of water for small water system customers.
- Direct is less capital cost, but greater O&M cost.
- Dead-ends in water system create hot-spots for regulatory compliance.
Consolidation Method
Direct-Connect vs Looped Connect

Capital Cost Comparison

• Direct = $875,000
• Looped = $2.1 million

Eligible Funding = $785,000
(@ $30,000 per service connection)

Preliminary Assessment

• Looped and Direct technically feasible
• Looped not financially feasible
• Direct not operationally feasible

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## Estimated water charges for consolidation

<table>
<thead>
<tr>
<th>Water Charge Description</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Capacity Fee</td>
<td>$ 268,836</td>
</tr>
<tr>
<td>Water Supply Development Fee</td>
<td>$ 122,888</td>
</tr>
<tr>
<td>Total Annual Meter Charges (fixed)</td>
<td>$ 8,460</td>
</tr>
<tr>
<td>Total Annual Water Use Charges (variable)</td>
<td>$ 9,330</td>
</tr>
<tr>
<td>Total Annual Water Charges</td>
<td>$ 17,790</td>
</tr>
<tr>
<td>20-Year Cumulative Annual Water Charges</td>
<td>$ 478,026</td>
</tr>
</tbody>
</table>
## Estimated Capital Costs

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Looped Connect (Del Oro)</th>
<th>Looped Connect (Fresno)</th>
</tr>
</thead>
<tbody>
<tr>
<td>16-inch Water Line Install</td>
<td>$ 728,000</td>
<td>$ 728,000</td>
</tr>
<tr>
<td>12-inch Water Line Install</td>
<td>$ 48,000</td>
<td>$ -</td>
</tr>
<tr>
<td>8-inch Water Line Install</td>
<td>$ -</td>
<td>$ 160,800</td>
</tr>
<tr>
<td>Water Meter and Service Line Installation</td>
<td>$ 20,000</td>
<td>$ 290,000</td>
</tr>
<tr>
<td><strong>Subtotal - Direct Construction Cost</strong></td>
<td><strong>$ 796,000</strong></td>
<td><strong>$ 1,178,800</strong></td>
</tr>
<tr>
<td>General Conditions (15%)</td>
<td>$ 119,400</td>
<td>$ 176,820</td>
</tr>
<tr>
<td>Contingency (30%)</td>
<td>$ 238,800</td>
<td>$ 353,640</td>
</tr>
<tr>
<td><strong>Subtotal - Total Construction Cost</strong></td>
<td><strong>$ 1,154,200</strong></td>
<td><strong>$ 1,709,260</strong></td>
</tr>
<tr>
<td>Engineering Legal Admin (25%)</td>
<td>$ 288,550</td>
<td>$ 427,315</td>
</tr>
<tr>
<td><strong>Total Estimated Capital Cost</strong></td>
<td><strong>$ 1,442,750</strong></td>
<td><strong>$ 2,136,575</strong></td>
</tr>
</tbody>
</table>

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Types Funding Available

• Planning grants
  • Population less than 10,000
  • Community MHI lower than 80% of Statewide MHI
  • Funding is based on service connections – 29 for Del Oro

• Construction grants
Potential State Funding

1. The **eligible funding** available for water system consolidations is defined annually in the Water Board’s Intended Use Plan (IUP).

2. The Water Board’s IUP for Fiscal Year **2019-2020** indicates the following for **eligible funding**:
   
   a. The construction project financing limitation for a public water system extending water service to a small disadvantaged community is $30,000 per connection.
   
   b. Consolidation projects that provide regional benefit can be eligible for up to $60,000.

Updated IUP at
Potential State Funding – Del Oro

• Based on **2019-2020** IUP’s
  • $875,000 based on initial construction limitations of $30,000 per connection or
  • $1.7 million if the consolidation project provides regional benefits for more than one small water system.
Water System Consolidation Process

✓ Conduct Feasibility Study (technical, operational, and financial feasibility – Preliminary Go/No Go Decision)

2. Letter of intent to State Water Board
3. Evaluate potential economic savings
   a. Validate water usage
   b. Validate potential water system cost savings
4. Negotiate Agreement (City and Small System)
5. Designate an Applicant to serve at Lead Agency for Consolidation
   a. Small Water System
   b. City of Fresno
6. Apply for Funding
   a. Conduct Preliminary Engineering (Technical Assistance Planning Grant)
   b. Conduct Final Design, Service During Construction, Startup Testing, Project Closeout (Construction Grant)
Questions