Consolidated Management of Nitrate Treatment: Implementation, Demonstration, and Affordability Assessment

Project Background & Objectives
Kick-off Meeting - 1st Workshop
April 13th 2018
Background

• Nitrate is a critical water quality concern
• The San Joaquin Valley (SJV) is a highly-productive agricultural region challenged by both nitrate and salinity
• Most CA water systems in violation of the nitrate MCL are in the San Joaquin Valley
• Nearly all of these systems are small water systems
• Many are economically disadvantaged
• Co-occurring contamination
2010 – 2013, Nitrate MCL Violations

SJV systems
= 25% of total CA systems
= 75% of non-compliant CA systems

Small water systems
= 98% of non-compliant SJV systems
= 100% of multiple year violators
1,2,3-TCP: Occurrence

California DDW Data
2002-Feb 2018
Maximum by PWSID

<table>
<thead>
<tr>
<th></th>
<th>Count &gt; 0.005 µg/L</th>
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</thead>
<tbody>
<tr>
<td><strong>Data Period</strong></td>
<td>2002-2018</td>
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<tr>
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<td>Jan-Feb 2018</td>
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<tr>
<td><strong>PWSIDs</strong></td>
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Background

- Grants available for capital equipment
- Most common nitrate treatment process is strong base anion exchange (SBA-IX)
- Regeneration produces waste brine solution
- Cost of brine disposal represents a significant lifetime financial burden
- No grants available for operations & maintenance (O&M)
Two Parts of the Project

Consolidated Management
• Treatment installation
• Shared O&M

Economic Aspect
• What is affordable?
• What are the policy options for making water affordable?
• Workshops and Bob Raucher’s work

Analysis of cost reduction under the consolidated management model
Consolidated Management Definition

Consolidation with nearby system
  - Physical consolidation
  - Pipeline connecting two systems

Consolidated management - reduce operating cost by sharing
  - NOT a physical consolidation
  - An operator
  - Salt delivery
  - Waste brine pick-up
Background

Chronic non-compliance + Lack of affordable solutions

Need alternative approach for small water systems and economically disadvantaged communities

Consolidated management of optimized SBA-IX with Assessment of Affordability
## Project Location

<table>
<thead>
<tr>
<th>Candidate System Name</th>
<th>PWSID</th>
<th>System Address</th>
<th>Population</th>
<th>Connections</th>
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<td>Lindsay Strathmore Irrigation District (LSID) - Tonyville</td>
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<td>Rio Bravo Greeley School Water System</td>
<td>CA1502229</td>
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<td>Woodville Public Utility District</td>
<td>CA5410025</td>
<td>16716 Ave 168, Woodville, CA</td>
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Co-Occurring Contaminants

• 1,2,3-TCP
• Perchlorate
• Hexavalent chromium
Consolidated Management - Objectives

• To minimize small water system O&M costs by sharing:
  • An operator
  • Brine disposal
  • Salt delivery

• Reduce waste brine disposal costs through efficiencies in:
  • collection
  • administration
  • purchasing agreements with disposal providers
Consolidated Management - Objectives

- Equipment maintenance and servicing cost reduction using identical SBA-IX plants located in a geographic cluster.

- Demonstration scale SBA-IX systems will be installed and operated over a three-year period

- Optimized SBA-IX treatment will minimize brine waste production
Affordability Assessment - Objectives

• Estimating and comparing Triple Bottom Line lifecycle treatment costs with and without consolidated management

• Developing and applying a range of informative affordability metrics

• Evaluating a range of potential funding mechanisms for economically disadvantaged communities

• Formulating specific recommendations on addressing affordability on a statewide basis
Questions and Comments