Colorado Water Resources and Power Development Authority

November 2022
CIFA Conference
### Colorado - BIL Emerging Contaminant Capitalization Grants - 2022

<table>
<thead>
<tr>
<th>Category</th>
<th>Amount</th>
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<tbody>
<tr>
<td>2022 BIL Drinking Water Emerging Contaminants:</td>
<td>$14,927,000</td>
</tr>
<tr>
<td>2022 BIL Water Pollution Control Emerging Contaminants:</td>
<td>$727,000</td>
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<tr>
<td>Total 2022 EC:</td>
<td>$15,654,000</td>
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All Colorado 2022 BIL Cap Grants have been awarded. One EC project has applied and is working through SRF process.
Colorado’s State Health Department

PFAS Action Plan - identify contamination, reduce exposure and prevent further contamination

Regulatory authority

- Site specific GW standard in El Paso County
- PFOA and PFOS listed as hazardous constituents
- Policy to monitor/limit PFAS entering state waters
- Requirements for PFAS registration and testing
- Stakeholder process to sample biosolids

Legislation addressing PFAS foam/products

- HB19-1279, HB20-1119, SB20-218, HB22-1345
Updated EPA PFAS Health Advisories

- EPA to regulate PFOA and PFOS in drinking water
  - Proposed rule late 2022, final rule late 2023
- EPA used health effects info to update their lifetime health advisories
  - Essentially zero for PFOA and PFOS (non-regulatory)
- Not an immediate public health risk, people don’t need to stop drinking tap water
- We are following EPA’s recommendations in partnership with our water utilities:
  - Assess, inform public if confirmed in tap water, reduce if possible
- PFAS Grant Program supporting sampling, treatment, emergency assistance
  - We’re encouraging water systems that haven’t tested and high-risk private wells to sign up
- PFAS Takeback Program: so far 13k gallons of PFAS foam taken out of service
<table>
<thead>
<tr>
<th>PFOA+PFOS levels</th>
<th>Colorado Water Systems</th>
<th>Cumulative population</th>
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<tbody>
<tr>
<td>&gt;20 ppt</td>
<td>South Adams County WSD (Commerce City), Wigwam (Fountain Valley), Garden Valley (Fountain Valley)</td>
<td>68,510</td>
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<tr>
<td>&gt;15 ppt</td>
<td>Above and Frisco</td>
<td>73,005</td>
</tr>
<tr>
<td>&gt;10 ppt</td>
<td>Above and Arapahoe County WWWA, 6 more communities</td>
<td>140,586</td>
</tr>
<tr>
<td>&gt;5 ppt</td>
<td>Above and Brighton, Thornton, East Cherry Creek Valley, Aurora, Englewood, 18 more communities</td>
<td>1,317,440</td>
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<tr>
<td>Detection</td>
<td>Above and 51 more communities</td>
<td>1,420,726</td>
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South Adams County Water & Sanitation District
Colorado’s first emerging contaminant SRF applicant.

Population of approximately 67,000 served by SACWSD.

Issue: PFAS/PFOA and 1,4 Dioxane groundwater contamination.

Completed pilot testing and cost-benefit analysis:
- Ion Exchange (IX)
- Granular Activated Carbon

$70 million to remove PFAS/PFOA using IX. $60 million to remove 1,4 Dioxane. Higher future O&M costs.

BIL EC funds will help but cannot fund entire project.
PFAS and 1,4-Dioxane.

Highest contamination in the south wellfield

Current health advisory is below detection limits ng/L

Current health advisory is 35 ug/L

South Adams County Water & Sanitation District
<table>
<thead>
<tr>
<th>Approximate population served</th>
<th>Current treatment capacity</th>
<th>Design capacity of IX treatment/UV-AOP</th>
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<tbody>
<tr>
<td>67k</td>
<td>13.5 mgd</td>
<td>18 mgd</td>
</tr>
<tr>
<td>~80%</td>
<td>11 alluvial wells</td>
<td></td>
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<tr>
<td>Planned potable water supply (local groundwater) and ~20% Denver Water</td>
<td>with a combined production capacity of 21 MGD provide local potable supplies</td>
<td></td>
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South Adam County WSD
Pilot testing of IX

- Side by side evaluation of 3 resins.
- Pilot testing objectives
  - Assess performance of IX at treatment goals of 35 ng/l and non-detect (<2 ng/L)
  - Determine life cycle capital and O&M costs

- Resin
  - Purolite PFA694A
  - Purolite A592
  - Evoqua DOW PSR2+
South Adams County WSD Evaluations Performed

- **Existing GAC contactors**
  - Full scale demonstration testing of F300, F400, and catalytic media.
  - Bench scale (RSSCT) testing of alternative water quality and operational conditions.

- **Source Water Evaluation**
  - Desktop evaluation of purchasing more Denver Water and alluvial well management.

- **Ion Exchange Pilot Testing**
  - Three resins in side-by-side comparison over 15 months.
South Adams County WSD Results

In the short-term, the District has increased Denver Water supplies, strategized which wells to use, and is optimizing the existing GAC

- The wells that are currently not useable due to high PFAS levels will be needed for drought and system resiliency and to meet future demand
- Reliance on unusually frequent GAC change-outs is not operationally sustainable

In the long-term, **IX followed by GAC** polishing was identified as the most practical and flexible strategy

- IX is more reliable than GAC for low-level treatment goals and for the higher PFAS concentrations found in some of the District’s wells
- IX system will provide flexibility to treat additional PFAS compounds in the future, and to continue testing and potentially implement new resins as technology evolves
Security Water & Sanitation District

PFAS/PFOA detected in 2016 in several wells

El Paso County, Colorado.

Nearby AF Base fire training center used fire fighting foam.

2016 - PFAS detected in alluvial groundwater wells.

2021: $26.8 million – IX treatment plant and piping provided by USAF.