

**Pilot Testing an Alternative Treatment
Process to Remove Chromium-6 from
Drinking Water
and
Rescind Authorization to Execute
Agreement for Chromium-6 Treatment
Project Construction Services**

Coachella Valley Water District Board Meeting
October 25, 2016



Stannous Chloride (SnCl_2) Water Treatment

- Salt made of tin and chloride (SnCl_2)
- Drinking water additive used to protect pipes
- Tin like iron reduces Cr_6 to Cr_3 and has low toxicity – food products, water plumbing
- Evaluated for Chromium-6 (Cr_6) water treatment (2004)
 - Removed 40-60% of Total Cr in 3 water types tested
 - Did not meet City of Glendale's 5 ppb goal for Cr_6

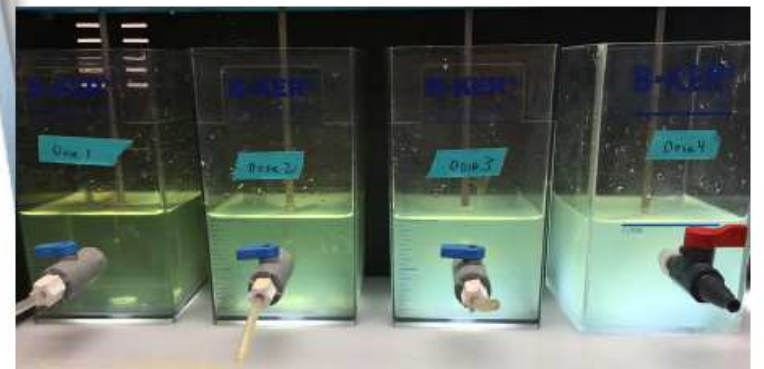


Dr. Seidel's Recent Findings

- Prop 50 funded research on Cr6 treatment
 - Cal Water System (Willows, California)
- Included SnCl_2 treatment testing on spent brine
- Added bench test of SnCl_2 treatment for drinking water
- Received results in late September 2016



Ferrous sulfate



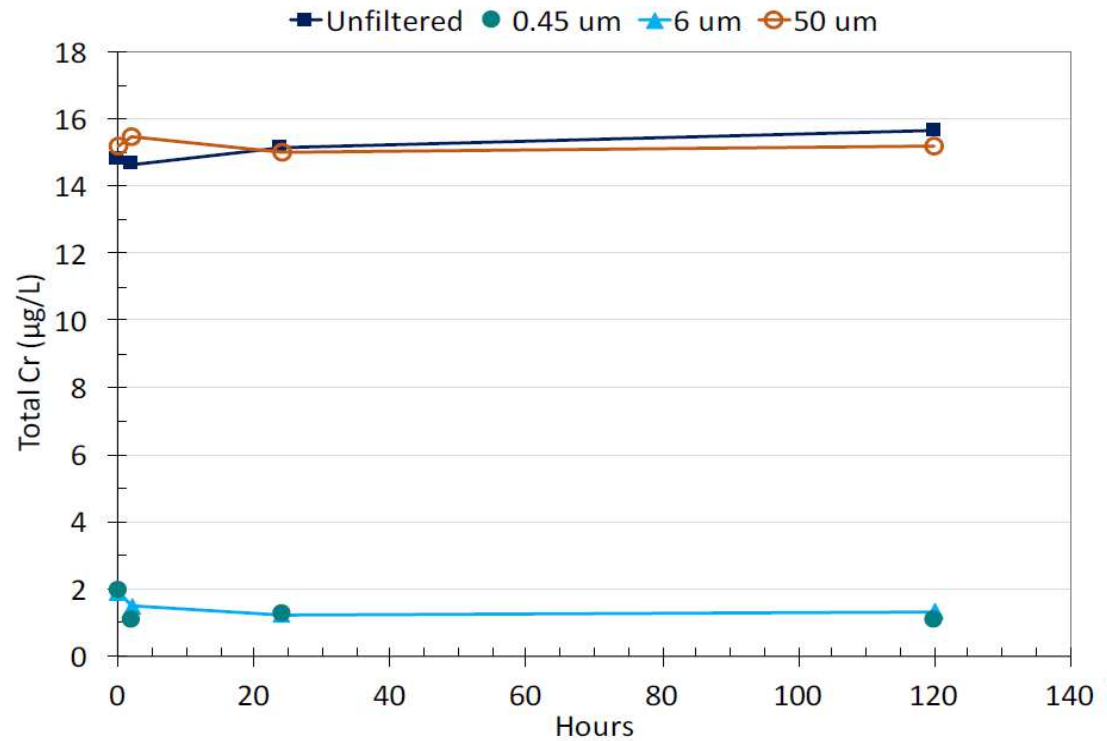
Stannous chloride



Slide from Dr. Seidel's Update on Recent Cr6 Treatment Activities (9/27/16)

Observed rapid reduction of Cr6 with low SnCl2 dose (<1 ppm) and over 85% total chromium removal with 0.45 & 6 micron filters

Chlorinated Results

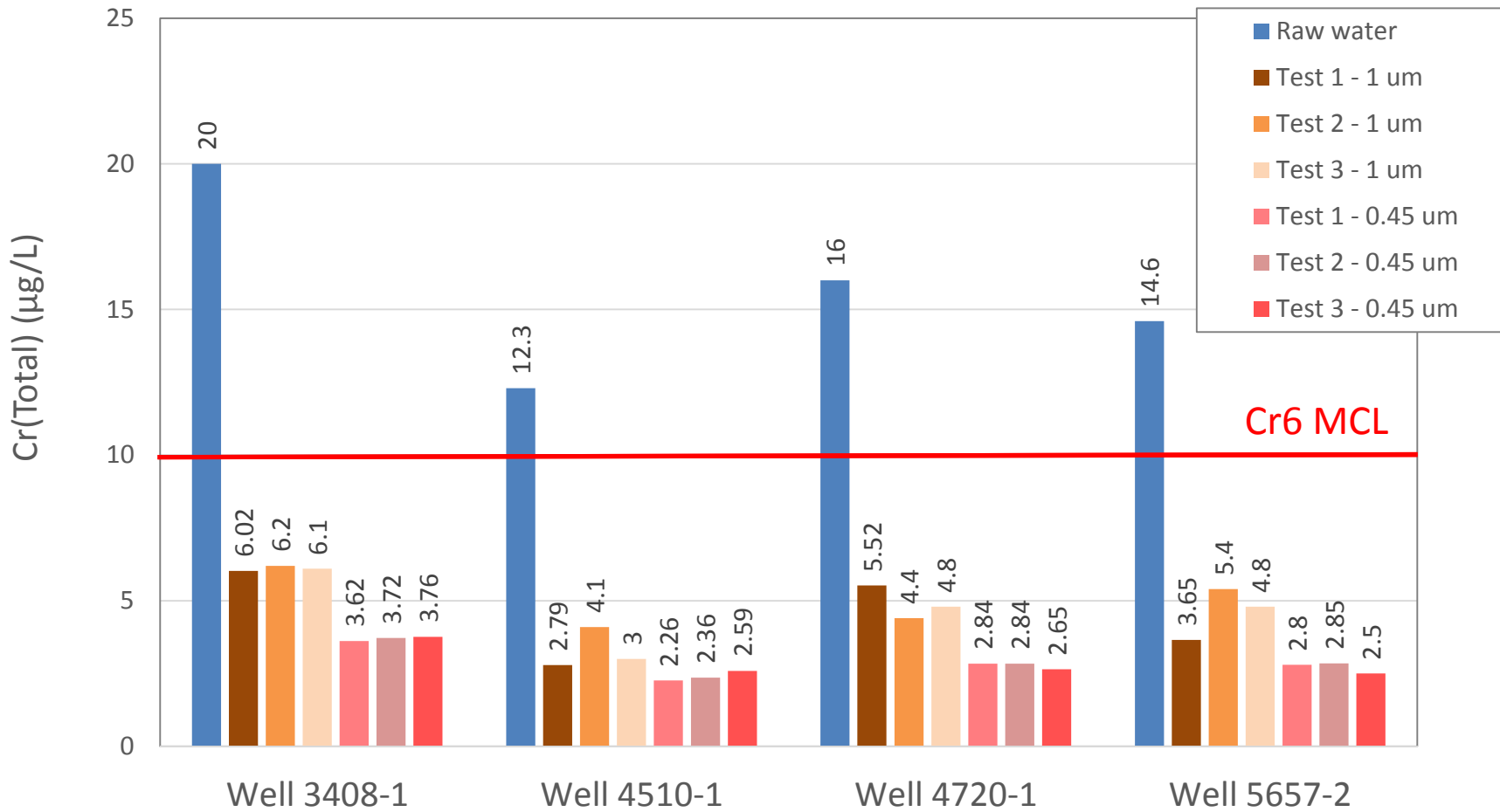


CVWD Evaluation Results

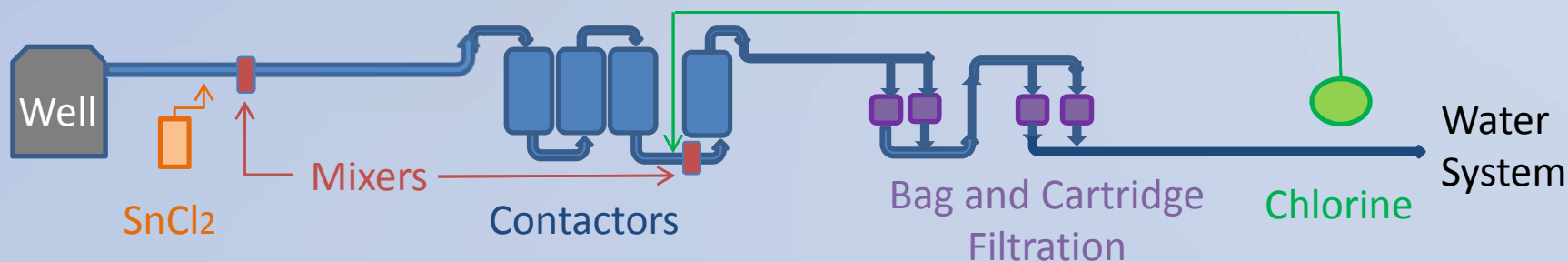
- SnCl₂ Desktop evaluation
 - No regulatory challenges or drinking water health effects identified
 - No supply or use challenges expected (drinking water use recertification in progress)
 - No unintended consequences found
- Completed Bench Tests for representative wells
 - Low SnCl₂ doses (<1 mg/L) achieved rapid reduction of Cr₆ to Cr₃ (<5 min)
 - Total Cr levels in treated water are reduced below the 10 ppb MCL with 1 and 0.45 micron filters



Tests with Pre-filter Chlorination
0.75 mg/L SnCl₂ dose, 5 min reduction time



Well Site SnCl₂ Treatment Concept



- Low doses (< 1 ppm) effective in bench tests
- Most SnCl₂ removed with Cr during bench test filtration

- Less costly, simpler vessels and plumbing (similar contact time)
- Amenable to lower profile design

- 5 micron bag filters included in current design
- 1 micron cartridge filters removed enough Cr to meet MCL during bench test
- Disposable used bags & cartridges would represent the treatment process waste



Potential Benefits

- Capital Cost Savings
 - \$135 M of planned facilities not needed
- Operating & Maintenance Cost Savings
 - Less than half of current plan (over \$5 M annual savings)
- Prevents stranded well assets
 - Saves \$12-15 M in well replacement costs
- Simpler process to construct and operate
- Allows lower profile equipment at well sites
- Generates substantially less waste



Proposed Pilot Test and Evaluation

- State & Stakeholder Collaboration
 - Proposition 50 funding, State needs & testing by others
- Treatability Testing
 - Test process using flowing conditions at CVWD wells
 - Optimize dosing, contact time & filtration options
- Water System Compatibility Testing
 - Evaluate treated water interaction with water pipes
- Conceptual Implementation Evaluation
 - Develop process treatment plan, costs & schedule
- Complete pilot test and evaluation by mid-2017



Current Project Status

- Project design packages are essentially complete
- PCL is completing work under the Preconstruction services agreement
- Contract and Notice to Proceed for construction has not been issued to PCL pending results of Bench Testing



Potential Impacts due to Pilot Testing Activities

- Compliance Plan milestones will need to be revised
- Risk of not meeting Jan. 1, 2020 compliance date if pilot testing does not work and current project goes out to bid
- Contractor may request compensation for rescinding award of construction agreement
- Potential to save significant costs and time if alternative treatment process works



Staff Recommendation

- Authorize issuance of a Request for Proposals for pilot testing and evaluation of alternative treatment process
 - Staff will request separate Board approval for award of a professional services agreement to top-ranked firm
 - Complete pilot testing by mid-2017
- Rescind July 26, 2016 authority to execute CMAR Services Agreement for Construction and Post-construction phases with PCL
 - If alternative treatment process is deemed not feasible, then request approval to solicit bids



QUESTIONS?

