

**SACWSD – Water Hardness Advisory Committee (HAC)**  
**April 4, 2017**  
**Meeting Summary**

Members of the South Adams County Water and Sanitation District (SACWSD) Water Hardness Advisory Committee (HAC) convened for their second meeting. The purpose of the meeting was: to review and approve a survey instrument and discussion benefits and drawbacks of various options to address hardness. (*See appendix A for a list of attendees and appendix B for the agenda.*)

**I. SURVEY REVIEW**

The survey will provide the District and the HAC with information related to customer perceptions, actions and willingness to fund a hardness solution. How constituents feel about hard water (care a little or a lot); how many people are treating their water and how much they are spending; and about their willingness to have their rates increased for softer water (or property taxes). This information will help the HAC recommend which option is best to address hardness and possibly how much education/campaign will be needed for a successful ballot initiative.

The Committee discussed some concerns with the survey instrument/questions:

- Concern: Asking too many questions and some seem unrelated; too long
  - Response: A 10 minute survey is an industry norm; neither too long (time-wise), nor too short (data-wise). This may be the District's one opportunity this year to conduct a survey, therefore it is cost effective to ask general District questions as well as questions on addressing hard water. The questions related to reactions to other utilities puts the information gathered about the District (service, cost, etc.) in context. We need some comparative analysis to best understand respondents' preferences for the District.
- Concern: People may not want to answer some demographic questions (e.g., age, gender, education level)
  - Response: We need to ensure the survey responses match the demographics in the District; we want to ensure balance. The results would be less valid if respondents were predominantly one gender, ethnicity, age, education level, etc. We need to ask age; it is illegal to survey anyone less than 18 years of age.
- Concern: Need to know if there is variability between renters and owners
  - Response: We should add the owner/renter question. If we add, we may need to subtract another question.
- Concern: Need to know if there is variability geographically
  - Response: The survey will ensure geographic representation; specifically, ensure that half of the responses are from the General Service Area. We will reconsider the geographic spread (maybe use north/south, or core area/not).
- Concern: The questions should start with whether the respondent is treating their water in order to get them thinking of costs at the survey's beginning.
  - Response: We ordered them to start respondents thinking about water quality. Then ask what they do to address it, and finally what the District might do.

## II. INTEREST/CRITERIA LIST

The Committee reviewed and approved the criteria list (originally generated at the first meeting) that will be used in considering and evaluating options; finding the option that best balances all or most of their interests/criteria (*see appendix C*).

## III. INFORMAL FACILITATOR POLL OF HAC MEMBERS' DIY COSTS

Jody Erikson, JSE Associates (facilitator), gathered informal data from each participant, via telephone, on how they address hardness and their costs. Jody was concerned about the usefulness of the informal data because there were so many variables with each data point (e.g., guesstimate of how much water was consumed if someone only uses bottled water for their coffee making; or is the resulting number per person or per house; or how to break down the per sink softener costs with a whole house softener cost). Knowing that the survey would provide more statistically valid data, Jody provided the informal data on costs for DIY, using a softener, reverse osmosis system, and water heater replacement (the cost to install spread out over the life of the unit):

- HAC members average monthly cost (\$47-\$68)
- HAC members highest monthly cost (\$120)
- HAC members lowest monthly cost (\$22)
- HAC members monthly cost just for softeners and reverse osmosis system (\$20-\$40)

## IV. POSSIBLE OPTIONS - OPTION MATRIX

Blair Corning, SACWSD, reviewed an options table. The table used data from a SACWSD commissioned study of the most viable central treatment options to achieve a hardness level of 110 mg/L calcium carbonate (CaCO<sub>3</sub>). The table included central treatment options and rebate options and their: capital costs, operations and maintenance costs, level of softness achieved (level of hardness in the water), and potential rate increase needed. In brief:

### ***Central Treatment Options***

This list developed by a contractor; the District requested the most viable options for to achieve 110 mg/L of hardness.

- Reverse Osmosis - RO pushes water through membranes to filter out magnesium and calcium. The pressure needed is energy intensive and costly. Disposal of the brine byproduct is an issue. Cherry Creek did receive permits for injection wells, but there are environmental concerns and there is public dislike of injection wells. RO does result in the softest water and is the only proven system in the area. RO treats a certain percentage of water and then is blended with untreated water (pure RO water is too corrosive).
- Pellet softening – This system uses sand to attract magnesium and calcium, then the sand and chemicals sinks to the bottom. This system is widely used in Europe, but not widely used in the US. This option is less expensive, and lowers the hardness level to less than half of the current amount (165 mg/L), but not as much as RO.

- **Blending** – The District would purchase and add more Denver water (less hard due to surface water sources), but this would not decrease the hardness level very much (270-325 mg/L) and would only be temporary (approximately 10 years).

*The following two options have greater challenges than the others, therefore were not seen as equally viable by the District, but were presented to the group:*

- **Ion Exchange** - This system replaces magnesium and calcium with salt. Similar to RO in expense and hardness improvement, but adds a lot of sodium to the water, a lot of sodium to a person's daily intake. There are also brine disposal issues and expensive operations.
- **Lime Soda** – Similar to ion exchange in cost and results, but this option's byproduct is a slurry/sludge that requires a large footprint/space to be dried into solids for disposal. Although it is possible to use the slurry for fertilizer (depending on the chemical composition), it is not a significantly viable or reliable disposal option.

### **Rebate Programs**

These were developed in response to HAC and public comments; assists in treatment, but is not central treatment. These programs could be less expensive than central treatment options, but the level of hardness will vary depending what system each individual chooses, and there would be no change to hardness if an individual does not install a system. There were no details about how a program would be managed (e.g., who and what qualifies, how often, how to prove installation, etc.)

- High Rebate \$1500 (costs assumed for 100% or 30% participation)
- Low Rebate \$250 (costs assumed for 100% or 30% participation)

## **V. OPTIONS MATRIX - DISCUSSION**

### **Discussion of the Options - Broadly**

HAC members discussed and explored the benefits and drawbacks of each of the options. Key points raised, using the HAC's criteria and other key factors mentioned during the discussion:

#### Addresses the problem of water hardness (decrease hardness)

- Reverse Osmosis (RO) system lowers the hardness level the most - lowers the magnesium and calcium level from current 350 mg/L to 110 mg/L (the metro area average is 100-150 mg/L).
- Least improvement was from the Blending option, would only lower the level to 270-325 mg/L.
- The rebate programs results are unknown - rebate programs could either improve the level of hardness a lot or a little depending on what system each customer decides to install; and the rebate would only address hardness for those who chose to participate
- There would be some improvement with the Pellet system - results cut the current hardness level in half (from 350 to 165 mg/L).
- Concern: Rebate programs don't address the problem as a whole; some people will still have hard water.

Mindful of the cost to rate payers

- Highest rate increase is for the RO option - requires a 39% increase, or \$31 monthly increase for the average \$80 bill (increase over three years to achieve total).
- Lowest rate increase would be to make no change, DIY or the low dollar rebate program – if no change there would be an inflation increase (9% or \$7 monthly); the small dollar rebate program, assuming only 30% participation, is a 1% increase or \$1 monthly increase (for the average \$80 bill).
- Concern: People will not want any cost increase.
- Concern: If we go with an expensive option and the change is not obvious to people, there will be increased public resentment and anger.

Equity

- Central treatment options are more equitable; they would provide improved water for all, equally – all pay, all benefit.
- Concern: Rebate programs are less equitable; a business or individuals would see a rate increase, but may not get a benefit (an individual may not get a softener; a business may not qualify for a rebate).

Protect the Environment

- Central treatment options have varying potential environmental impacts from disposal of the byproducts or remaining materials:
  - Brine byproduct (RO, ion exchange options) – requires injection wells, with the corresponding impacts and public aversion (the public dislike could increase causing greater disposal challenges).
  - Solid waste (Pellet option) – environmental impacts with landfill or other solid waste disposal.
- Concern: The long-term viability/reliability of acquiring permits for injection wells – how likely is it to get the permits? Cherry creek got 2 permits recently, but the public is not in favor and could go against injection wells; and long term effects are unknown

Provides good tasting water

It was agreed that taste is very subjective and any option could be considered to taste better, or worse depending on the person.

***Discussion of initial option preference***

HAC members explored the options, discussed additional benefits and drawbacks. Towards the end of the discussion each member communicated which option they initially leaned towards as a preferred option. The most mentioned leanings were:

- Central system - It was the most equitable (rate increase paid by all, and all would receive softer water) and significantly lowers hardness levels, but there were concerns with the receptivity of the cost increase, and the impact for low/fixed incomes.
- Combined central treatment and a rebate program - It starts with the equitable central treatment, and provides a rebate program for those who would like a bit more, but

there were concerns with how the rebate program is set (thresholds for qualification) and with the cost increase for doing both.

The most expensive option (RO) did not have a lot of support due to the negative impact on rate payers (higher rate increase or property tax increase is needed). Nor was there any support for the blending option (purchase more Denver water) because it does not improve hardness permanently (approximately 10 years).

Rebate programs raised a lot of unanswered questions: who is qualified to receive the rebate? Is it based the homeowner or the home (could someone move in and get a rebate or only if there wasn't a rebate given to that home)? Is the rebate program a one time program or a rebate is available every set number of years (assuming the life span of a DIY system)?

Additional discussion points:

- The Committee should build agreement on the hardness level goal first and let the technical experts decide how to get there.
  - But costs are unlikely to change significantly if we change the goal from the original study's goal of 110 mg/L.
- Concern: There could be unintended consequences for incentivizing DIY treatment; it could impact the wastewater treatment plants.
- Concern with RO: The consequence of scaling sloughing off pipes and impacting appliances. Most pipes were galvanized; the District did not find a lot of copper pipes.
- Concern: Details on the rebate programs
  - Homes only? What about businesses?
  - For homes or the homeowner (would the newest home owner be able to get a rebate)?
  - What kind of system could qualify for the rebate?
  - What would the rebate pay for – system, install, upgrade? Per sink and how many sinks? Per house?
  - How would a person prove they met the requirements for the rebate?
  - Would it be a one-time rebate or every x-years rebate (assuming life span of system)?
  - Possibly a list of approved systems? Concern: Distract cannot approve one system over another (becomes a huge problem), even harder if approving one company or another (how would this be credible, and it would a lot of staff hours)
  - Would there be a rebate for hardness impacts (replacing pipes or appliances)
- What have other cities done to address hardness levels
  - Some change the water source – This would not be easy for SACWSD. The District would need to acquire surface water rights, which are in small supply. Colorado's western slope is not amenable to sending any more water to the front range, and if the District could get rights from the western slope, how would the water get here. The cost to change from the currently held alluvial water rights would be approximately \$370 million for the infrastructure alone (for a system like Denver).

- Some use an RO system - Brighton has an RO for nitrate levels (nitrate is regulated for drinking water). Their brine byproduct goes into storm water, but this will only be allowed by the State for another 5 years. Brighton is considering retiring their RO system.

## **VI. INFORMATION NEEDED FOR FURTHER DISCUSSION**

HAC members considered other information they need to build agreement on a recommendation of how to address hardness and be mindful of rate payers:

- Disposal impacts of pellets – how much waste, how much landfill needed?
- Marketability of byproducts – is it viable to sell slurry/sludge?
- Does changing the hardness level goal significantly lower the cost estimates?
- More information on what others have done – what have other communities done and what were the impacts?

## **VII. NEXT STEPS**

The next HAC meeting is May 2, 2017.

## **APPENDIX A: Attendance**

### **HAC Members Present:**

- Brett Burrough, Business-North
- Danny Thomas, Resident-South
- Elaine Hassinger, Tri-County
- Glenn Murray, Historic/Special-North
- Jack Hagaman, Business -South
- Jessica Monahan, Resident-North
- Jim Jones, SACWSD-District Manager
- Pamela Sprattler, Resident-South
- Robyn Jeffords, Resident-North
- Steven Erwin, Resident-North
- Tillie Villarreal, Resident-South
- William Frew, Business-North

### **SACWSD Staff & Consultants**

- Blair Corning, Environmental Program Manager
- Amanda Thomas, Environmental Communication Specialist
- Jody Erikson, JSE Associates (Facilitator)
- Doug Jeavons, BBC (Researcher)

## **APPENDIX B: Agenda**

### **SACWSD – Water Hardness Advisory Committee (HAC) April 4, 2017**

#### **Objectives:**

- Review & accept the survey instrument/question
  - Discuss trade-offs of possible options
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**6:00** *Dinner*

**6:15** **Welcome & Introductions**

**6:20** **Survey Review – Anything missing?** – *Remember the survey has to balance the amount of information we want to ask with how long it will take; it must prioritize questions.*

**6:30** **Interest list**

**6:40** **Informal Poll on DIY Costs** *(from facilitator interviews)*

**6:50** **Possible Options – Discussion of trade-off (pros & cons)** – *no evaluation or narrowing*

**8:25** **Next Steps** - Next meeting: May 2

**8:30** **Adjourn**

**APPENDIX C: Interest/Criteria List – approved**

**INTEREST/CRITERIA LIST  
SACWSD – Hardness Advisory Committee**

Any solution must balance (address to the extent possible) the following criteria:

- ❖ *Address water hardness in the district (added following 4/4/17)*
- ❖ Be mindful of costs to rate payers (costs to consumers via rates)
- ❖ *Equitable (added following 4/4/17, mentioned most often in the meeting)*
- ❖ Diminish costs to consumers for doing it themselves (DIY)
  - Costs for customers to treat water themselves
  - Cost from impacts of deposits (e.g., appliance replacement & fixing, pipes etc.)
- ❖ Protect the environment (decrease impacts)
- ❖ Provide good tasting/drinkable water
- ❖ Minimize negative impacts to human skin
- ❖ Be affordable to scale for growth
- ❖ Protect or improve property value for resale
- ❖ Ensure stable water sources

*Originally generated: March 7, 2017 HAC meeting*

*Approved: April 4, 2017*