

Public Hearing

Water Supply and Treatment Options

City of Cottonwood, Minnesota
March 12, 2024

Project No. 0W1.129525



Current Conditions

- Two wells pump directly into the system
- Chemical feed for disinfection, fluoridation, and corrosion control
- No filtration for iron and manganese removal
- Very basic low-cost system

Current Conditions (cont'd)

- Water is very hard, 45 grains range
- Manganese is very high 1.5 mg/L and exceeds Health Advisory Limit (HAL) 0.2 mg/L
 - High levels can cause developmental issues
 - Black staining
 - Metallic sheen on coffee
- Iron levels moderate
 - Orange fixtures and laundry staining
- Sulfate levels very high
 - Taste issues
 - Diarrhea risk
- Sodium levels high
 - Issue for those on low sodium diet
 - Home softeners make issue worse

Potential Alternatives

- Connection with Lincoln Pipestone Rural Water (LPRW)
- Construction of filter plant
- Construction of filter and reverse osmosis (RO) softening plant
- In home options are not compliant with Minnesota Department of Health (MDH) requirements



In Home Temporary Alternatives

- Homeowners may want to install in home options to provide treatment in interim
 - Water softeners
 - Removes Manganese
 - Increases already high sodium
 - In home RO units
 - More expensive
 - Will remove other contaminants

LPRW Connection

- LPRW would construct connection piping with meter house
- Capital charge for piping
- Capital charge for capacity allocation
- Annual usage charge of \$3.10/1,000 gallons usage



LPRW Connection (cont'd.)

- Water is typically in 18 grains range
 - Significantly softer than current
 - Many would still utilize softeners
- Water would have near non-detect iron and manganese water supply
- Sulfate and sodium levels significantly lower
- City's existing O&M costs stay similar

Construct Iron and Manganese Filter Plant

- City would have capital cost of filtration plant
- Provides near non-detect iron and manganese water supply
- Hardness would not change, 45 grains range
- Sulfate and sodium would not change
- O&M marginal increase for additional time and utilities

Construct Iron and Manganese Filter and RO Softening Plant

- Similar as previous with additional softening
- Provides water softened to approximately 10-12 grains of hardness
 - Many would eliminate home softeners
- Would remove:
 - Sulfates
 - Sodium
 - Iron
 - Manganese
- Higher capital and operating costs
- Additional wastewater capacity required

Cost Comparison (No Grants)

	LPRW Option	Filter Plant	RO Softening	Existing
Capital Cost	\$3,500,000	\$6,500,000	\$9,000,000	\$0
Annual Loan Payment	\$235,270	\$437,000	\$605,000	\$0
Annual Water Purchase (\$3.10/1,000 x 30 MG)	\$93,000	\$0	\$0	\$0
Current Annual O&M (minus depreciation)	\$125,000	\$125,000	\$125,000	\$125,000
Proposed Increased O&M	\$0	\$30,000	\$70,000	\$0
Total Annual Cost	\$453,270	\$592,000	\$800,000	\$125,000
Cost for 5,000 Gallons per Month User	\$77	\$100	\$134	\$37
Expected Hardness (grains/gallon)	18	45	12	45

Cost Comparison (Emerging Contaminant Grant)

	LPRW Option	Filter Plant	RO Softening	Existing
Capital Cost after Grant	\$700,000	\$3,500,000	\$6,000,000	\$0
Annual Loan Payment	\$47,000	\$235,000	\$403,000	\$0
Annual Water Purchase (\$3.10/1,000 x 30 MG)	\$93,000	\$0	\$0	\$0
Current Annual O&M (minus depreciation)	\$125,000	\$125,000	\$125,000	\$125,000
Proposed Increased O&M	\$0	\$30,000	\$70,000	\$0
Total Annual Cost	\$265,000	\$390,000	\$599,000	\$125,000
Cost for 5,000 Gallons per Month User	\$46	\$66	\$101	\$37
Expected Hardness (grains/gallon)	18	45	12	45

Schedule

- Design in summer and fall of 2024
- Construction 2025-2027
- New Improvements online 2027

Funding Options

- PFA Drinking Water Revolving Fund (DWRF)
 - Emerging contaminant grant
 - Up to 80% with \$3 million maximum
 - Low-interest loans
 - Hardship grants potential
 - \$62/month state hardship rate
 - Application May 2024
 - Earliest possible start fall of 2024

Funding Options

- USDA Rural Development
 - Loan and grant
 - Affordability level \$72/month per user
 - Commonly tied to other significant distribution projects
 - Schedule varies, but often 24-36 months to secure financing and bid project

Thank You! Questions?

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