



Colonial Water Company

Water Discoloration Evaluation

October 21, 2021



TATA & HOWARD



Agenda

- Review of Water Quality
- Options Analyzed
- Recommended Immediate Corrective Actions
- Recommended Short-Term Corrective Actions
- Recommended Long-Term Corrective Actions



Water Quality

Water Quality – Manganese (Mn)

Secondary Maximum Contaminant Limit (SMCL) - 0.05 mg/L

- Francis Street Wells A, B, and C – SMCL exceeded
- Draper Road Wells No. 1 and No. 2 – SMCL exceeded
- Knollwood Drive Wells No. 1 and No. 2 – Most samples nondetectable

Water Quality – Iron (Fe)

Secondary Maximum Contaminant Limit (SMCL) - 0.3 mg/L

- Francis Street Wells A, B, and C – SMCL exceeded in Well B
- Draper Road Wells No. 1 and No. 2 – SMCL exceeded in Well No. 2
- Knollwood Drive Wells No. 1 and No. 2 – Below SMCL

Why is my water discolored?

- Increasing and variable concentrations of Iron and Manganese
- Started chlorination at Francis Street
- Chlorine acts as an oxidizer (takes metals out of solution)
- Iron and manganese in oxidized (not dissolved) form, water can be discolored dark grey, yellow, or orange

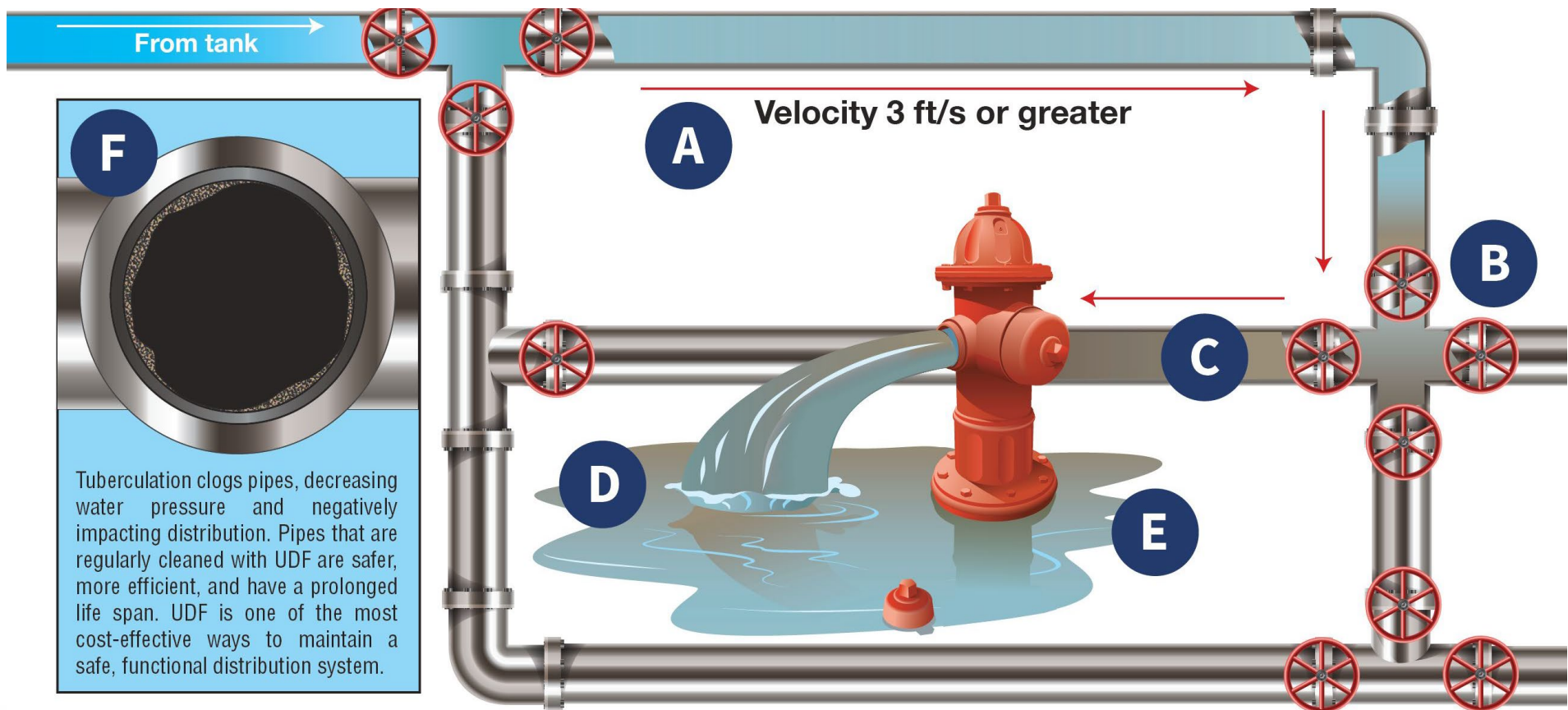


Options Analyzed

Treatment Options Analyzed

- **Sequestration** - adding phosphate keeps the metal from oxidizing in the distribution system
 - Only effective if metals are in the dissolved form
 - Majority of manganese is in the particulate form
 - Not a suitable option
- **Filtration** - Metals filtered out of the water through specialized sand
 - Option is suitable for the Francis Street Wells
 - For the Draper Road Wells, it is cost prohibitive since the Draper Road sources have a small permitted withdrawal allowance

Traditional Unidirectional Flushing



Alternative Flushing/Cleaning Options

- **Preliminary investigation of NO-DES**
 - Contracted services
 - Specialized trucks with pumps and filters
 - Utilizes water circulated in a loop
 - Needs MassDEP approval
 - Located in New Mexico
- **Ice Pigging**
 - Contracted Services
 - Uses ice to scour the pipe
 - Uses a closed system
 - Not available currently

Storage

- Reviewed water storage tank locations at various locations
- Tank provides ability to flush at higher velocities
- Meets peak hour demands – summer irrigation
- Can provide fire protection and emergency storage

Interconnections

- Initiated communications with Medfield and Walpole to discuss the option of an interconnection between the water systems
- Need additional information on water systems

Knollwood Drive Wells

- Reviewed option of using Knollwood Drive Wells to more of the water system
- Currently only serving Knollwood Drive Area and Downtown Dover
- Non-detectable to low concentrations of Iron and Manganese
- Need to review feasibility
- Less withdrawal from Francis Street Wells



Recommended Immediate Actions

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- **Alternative Flushing**
 - Colonial Water Company investigating feasibility of alternative flushing methods
 - Availability is a question
 - MassDEP approval is required

Recommended Immediate Actions

- **Review feasibility of the Knollwood Drive Wells feeding additional portions of the distribution system**
 - Review needed additional infrastructure (larger pumps, additional water mains, a pressure reducing valve vault, chemical feed equipment, new booster pump station, etc.)

Recommended Immediate Actions

- **Interconnections with Surrounding Communities**
 - Colonial Water Company will determine if an interconnection(s) is possible by working with the town officials in Medfield and Walpole
 - Conduct a study to determine infrastructure needs such as water mains, pump systems, meter pits, etc. is necessary if an interconnection(s) is available



Recommended Short-Term Actions

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- **Implement Knollwood Drive Wells to Feed Additional Portions of the Distribution System**
- **Feasibility Study for Filtration of the Francis Street Wells**
 - Determine the best type of filtration system (pilot test)
 - Determining construction costs, land requirements, and permitting implications



Recommended Long-Term Actions

Recommended Long-Term Actions

- **Implement filtration at the Francis Street Wells**
 - Could take 3+ years to pilot test, design, permit, and construct
- **Perform a detailed analysis for storage tank**
 - Siting options, land availability, volume needed, and costs associated with a storage tank



Questions