Project Updates: Booster Station & Risk Resiliency

December 8, 2020

www.mercerisland.gov

Presentation Overview

- Review Booster Chlorination Station Project
  - Background
  - Project Components
  - Construction Timeframe
- Introduction to Risk & Resiliency project
  - Background
  - Review Project

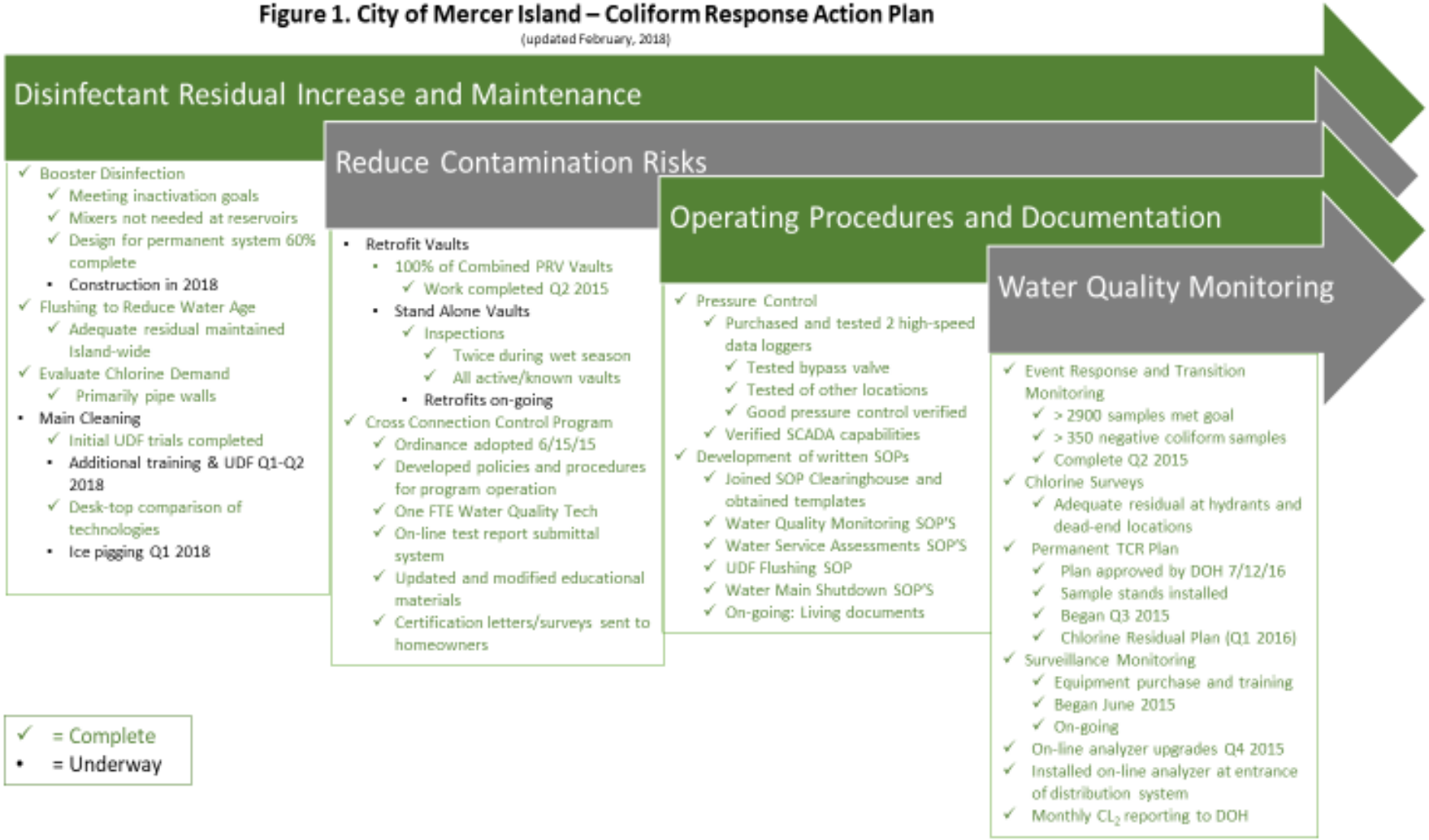
Booster Chlorination Station

Background

- DOH required long-term Action Plan to reduce the risk of future contamination
- City needs to maintain chlorine levels that are higher than SPU purveyor systems
- Three main strategies avoid future contamination in the distribution system
  1. Maintain positive pressure at all times
  2. Maintain adequate disinfectant residuals
  3. Prevent cross connections
- City pursued design and construction of permanent system
  - Utility Board & Council Presentations
  - Project included in 2019-2020 CIP Budget

Figure 1. City of Mercer Island – Coliform Response Action Plan

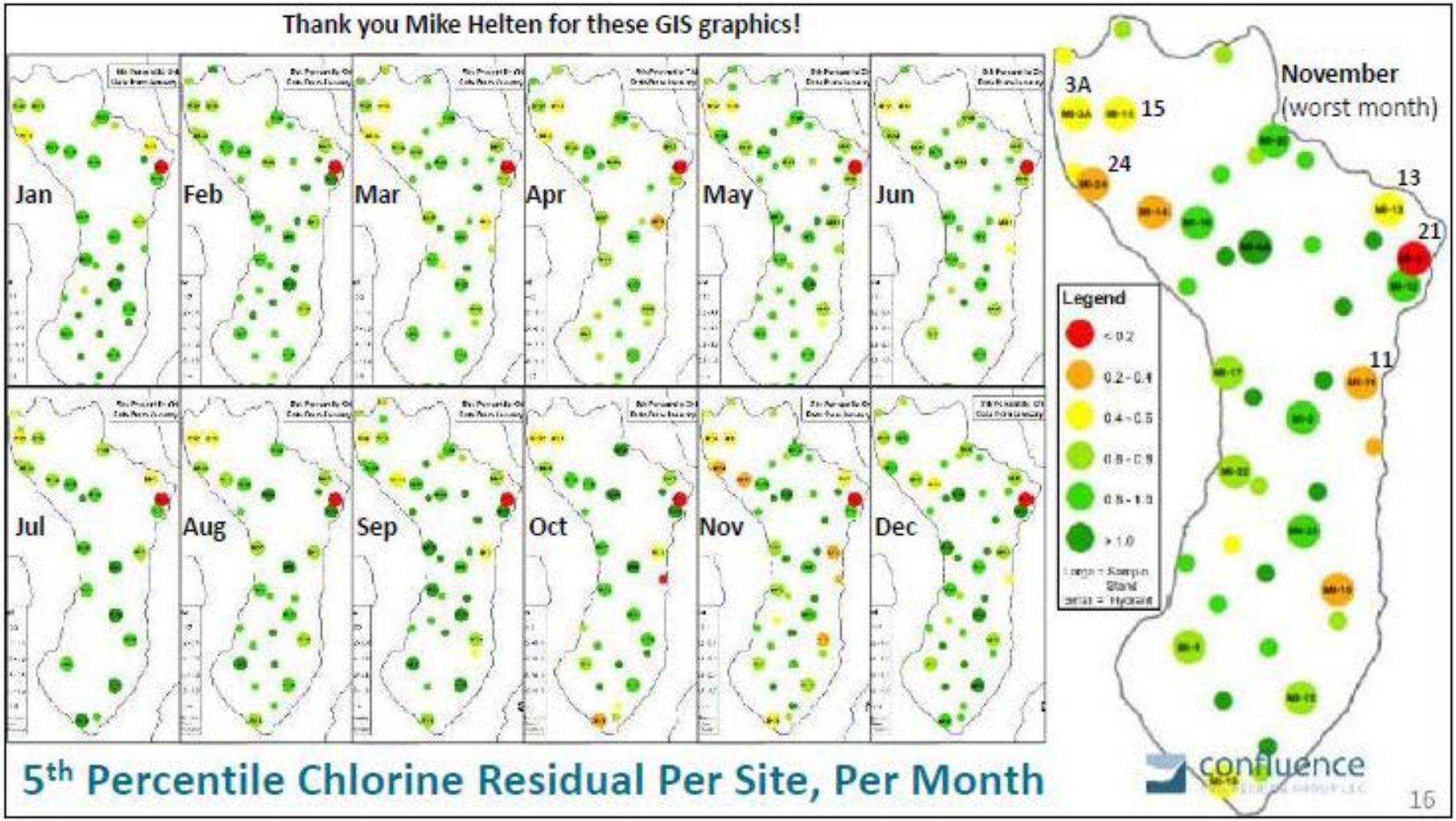
(updated February, 2018)



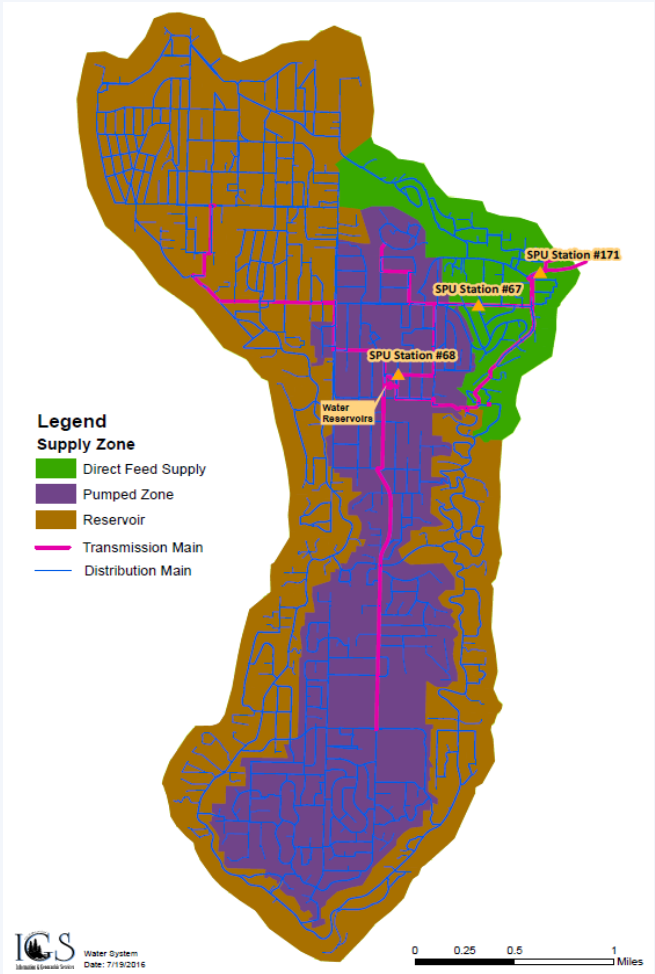
Booster CL2 Design

- In 2016, City consulted with HDR Engineering to design the new Booster Chlorination Station
- Draft Completed in December 2018
- Distribution System Complexity
  - City's chlorine residual goal is to achieve ≥0.6 mg/L in 95 percent of samples collected
  - City's sampling nearly tripled post Advisory Event
  - HDR's model would not provide adequate chlorine levels to the entire City

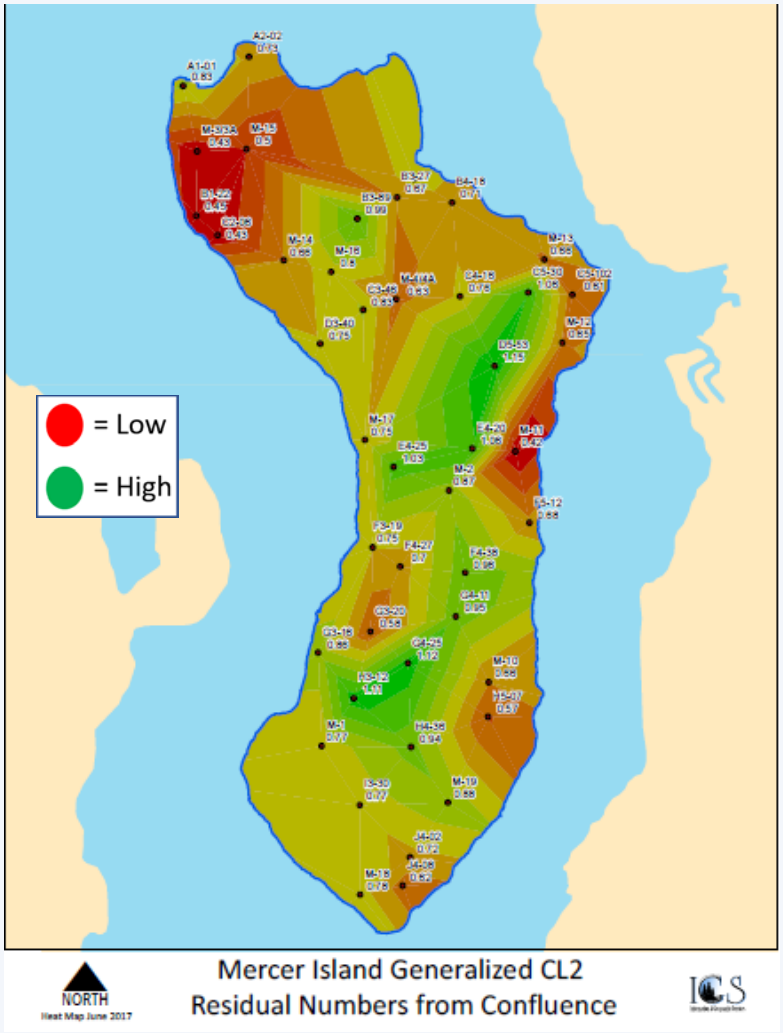
Confluence Data

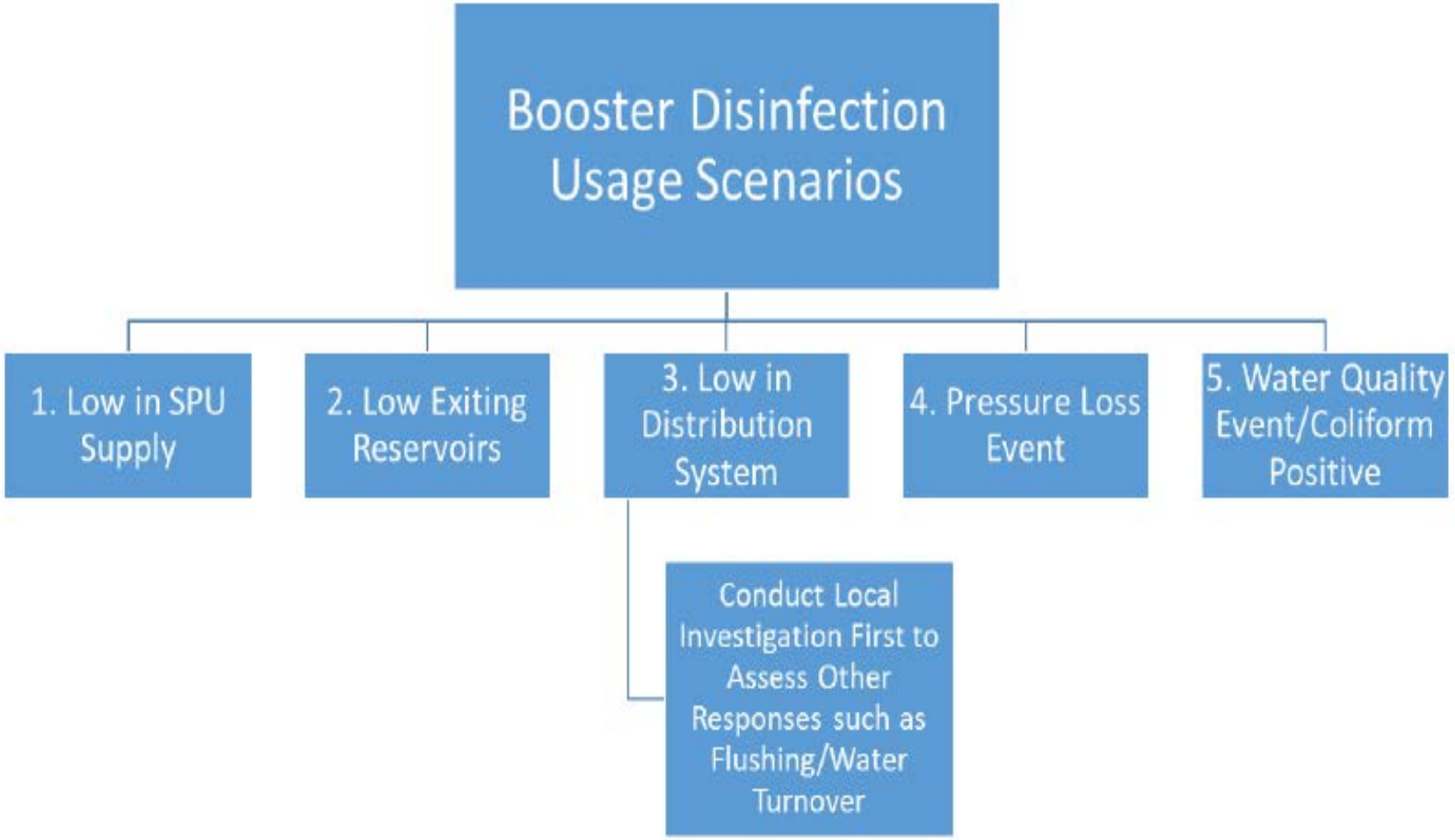


Data Driven Decisions



Water System Distribution Supply Zones




Booster Disinfection Usage Scenarios
1. Low in SPU Supply
2. Low Exiting Reservoirs
3. Low in Distribution System
4. Pressure Loss Event
5. Water Quality Event/Coliform Positive
Conduct Local Investigation First to Assess Other Responses such as Flushing/Water Turnover

Value Engineering

- City partnered with Carollo Engineers in 2019
- Reviewed and analyzed design/operations of the proposed system from HDR
  - Recommend revised design
- Project will continue into June 2021
  - Finalize hydraulic analysis for injection and flow scenarios
  - Complete final report & design

Updated Design

- Finalizes design of a permanent booster disinfection system at City's Reservoir and Main Pump Station
- Additional tasks:
  - Modifications at SPU Meter 68
  - Decommissioning aging supply main
  - Adjust pipes to direct all flow through reservoirs
  - Add mixers at reservoirs to thoroughly mix reservoir tanks
  - Install Cl2 dosing at reservoirs

Updated Timeframe

- Project included in 2021-2022 CIP Budget
- Finished 50% design
- Final design: March 2021
- Bid project: Spring 2021
- Construction begins: Summer 2021

Questions?

Risk and Resilience Assessment & Emergency Response Plan

Background

- On October 23, 2018, Congress signed the America's Water Infrastructure Act (AWIA)
  - Builds on 2002 Safe Drinking Water Act
- Requires City to conduct a Risk and Resilience Assessment (RRA) of community's water system and prepare a corresponding Emergency Response Plan (ERP)
  - Upon completing each task, City needs to self-certify with the EPA informing that it complies with AWIA
- City will need to update the RRA every 5 years

Project Requirements

City solicited RFQ Summer 2020

1. Risk & Resiliency Assessment

   Assess City's water system infrastructure and overall system operations, including hazards

   Deadline for RRA: June 30, 2021

2. Emergency Response Plan

   Develop strategies, recommendations, and other actions the City can implement to improve water system resiliency, reduce risks, and mitigate impacts from hazards

   Deadline for ERP: December 31, 2021

Scope

RRA

- Characterize assets and threats
- Analyze consequences, vulnerability, threats, and risk/resilience
- Manage risk and resilience

ERP

- Review existing ERP from 2002 act
- Incorporate new hazard and risk updates
- Mitigation activities
- Update response procedures
- Train staff on ERP

Questions?