



CITY OF MERCER ISLAND

UTILITY BOARD SPECIAL HYBRID MEETING

Tuesday, June 6, 2023, at 5:30 PM

BOARD MEMBERS:

Tim O'Connell, Chair
Stephen Milton, Vice Chair
Stephen Majewski, George Marshall,
Meredith Lehr, Will Quantz, and William Pokorny

LOCATION & CONTACT

Mercer Island Community & Event Center – Zoom Meeting
8236 SE 24th Street | Mercer Island, WA 98040
Phone: 206.275.7793 | www.mercerisland.gov

We strive to create an inclusive and accessible experience. Those requiring accommodation for meetings should notify the City Clerk's Office 3 days prior to the meeting at 206.275.7793 or by emailing cityclerk@mercerisland.gov.

The virtual meeting will be broadcast live on Zoom and recorded and saved on the City Council's [YouTube Channel](#)

Registering to Speak: Individuals wishing to speak live during Appearances will need to register their request with the City Clerk at **206.275.7793** or email the [City Clerk](#) and leave a message before 4 PM on the day of the Utility Board meeting. Please reference "Appearances" on your correspondence and state if you would like to speak either in person at Mercer Island Community & Event Center or remotely using Zoom. Each speaker will be allowed three (3) minutes to speak.

Join by Telephone at 5:30 PM: To listen to the meeting via telephone, please call **253.215.8782** and enter Webinar ID **895 7493 1093** and Password **730224** if prompted.

Join by Internet at 5:30 PM: To watch the meeting over the internet via your computer, follow these steps:

- 1) Click this [link](#)
- 2) If the Zoom app is not installed on your computer, you will be prompted to download it.
- 3) If prompted for Webinar ID, enter **895 7493 1093**; Enter Password **730224**
- 4) The City Clerk will call on you by name or refer to your email address when it is your turn to speak. Please confirm that your audio works prior to participating.

Join in person at Mercer Island Community & Even Center at 5:30 PM: — 8236 SE 24th Street, Mercer Island, WA 98040

CALL TO ORDER & ROLL CALL, 5:30 PM

STUDY SESSION

1. AB 6281: Joint City Council and Utility Board Study Session: April Water Emergency Debrief

Recommended Action: Receive report. No action necessary.

ADJOURNMENT



BUSINESS OF THE CITY COUNCIL CITY OF MERCER ISLAND

AB 6281
June 6, 2023
Study Session

AGENDA BILL INFORMATION

TITLE:	AB 6281: Joint City Council and Utility Board Study Session: April Water Emergency Debrief	<input checked="" type="checkbox"/> Discussion Only <input type="checkbox"/> Action Needed: <input type="checkbox"/> Motion <input type="checkbox"/> Ordinance <input type="checkbox"/> Resolution
RECOMMENDED ACTION:	Receive report. No action necessary.	

DEPARTMENT:	Public Works
STAFF:	Alaine Sommargren, Deputy Public Works Director Allen Hunter, Utilities Operations Manager
COUNCIL LIAISON:	Jake Jacobson
EXHIBITS:	1. SPU Pipeline Shutdown Presentation
CITY COUNCIL PRIORITY:	n/a

AMOUNT OF EXPENDITURE	\$ n/a
AMOUNT BUDGETED	\$ n/a
APPROPRIATION REQUIRED	\$ n/a

EXECUTIVE SUMMARY

During the joint City Council and Utility Board Study Session, Seattle Public Utilities will present information about the water emergency that took place during the week of April 17-21, 2023.

BACKGROUND

Seattle Public Utilities (SPU) coordinated with the City to conduct two water supply shutdowns the week of April 16, 2023 to complete the disconnection of a 30" pipeline in Mercer Slough that is no longer serviceable. Each shutdown was planned to take no more than 44 hours to ensure that Mercer Island retained adequate water in its reservoirs to supply both Mercer Island utility customers and Shorewood Apartment residents. The City planned to recharge its reservoirs in a 24-hour period between the two shutdowns.

The planned shutdown of the pipeline to Mercer Island began at 12:30 am on April 17. Once SPU completed their work for the first shutdown, they were unable to open multiple valves that would allow the City to refill its reservoirs, and as a consequence, the City launched an emergency response and began water conservation measures.

The extensive repair work needed to restore water to the Mercer Island pipeline was completed on April 20 at approximately 1:30 pm, and the water conservation advisory was lifted early on April 22, once the reservoirs had refilled to normal operating levels.

ISSUE/DISCUSSION

SPU staff will present information about the project that necessitated the planned shutdowns, a recap of the events that took place during the water emergency, and short- and long-term considerations for system and operational improvements (Exhibit 1).

NEXT STEPS

In addition to SPU's plans for improving the reliability of the water supply to Mercer Island, the City has contracted with Confluence Engineering to develop near- and long-term actions plans to reduce the risk of future water emergencies. Their project scope includes working with City staff to identify challenges and potential opportunities (including future capital projects), develop high priority action plans, and outline implementation steps, costs, and timelines. The City Council and Utility Board will be updated on this work as it progresses.

RECOMMENDED ACTION

Receive report. No action necessary.

Mercer Island Pipeline Shutdown

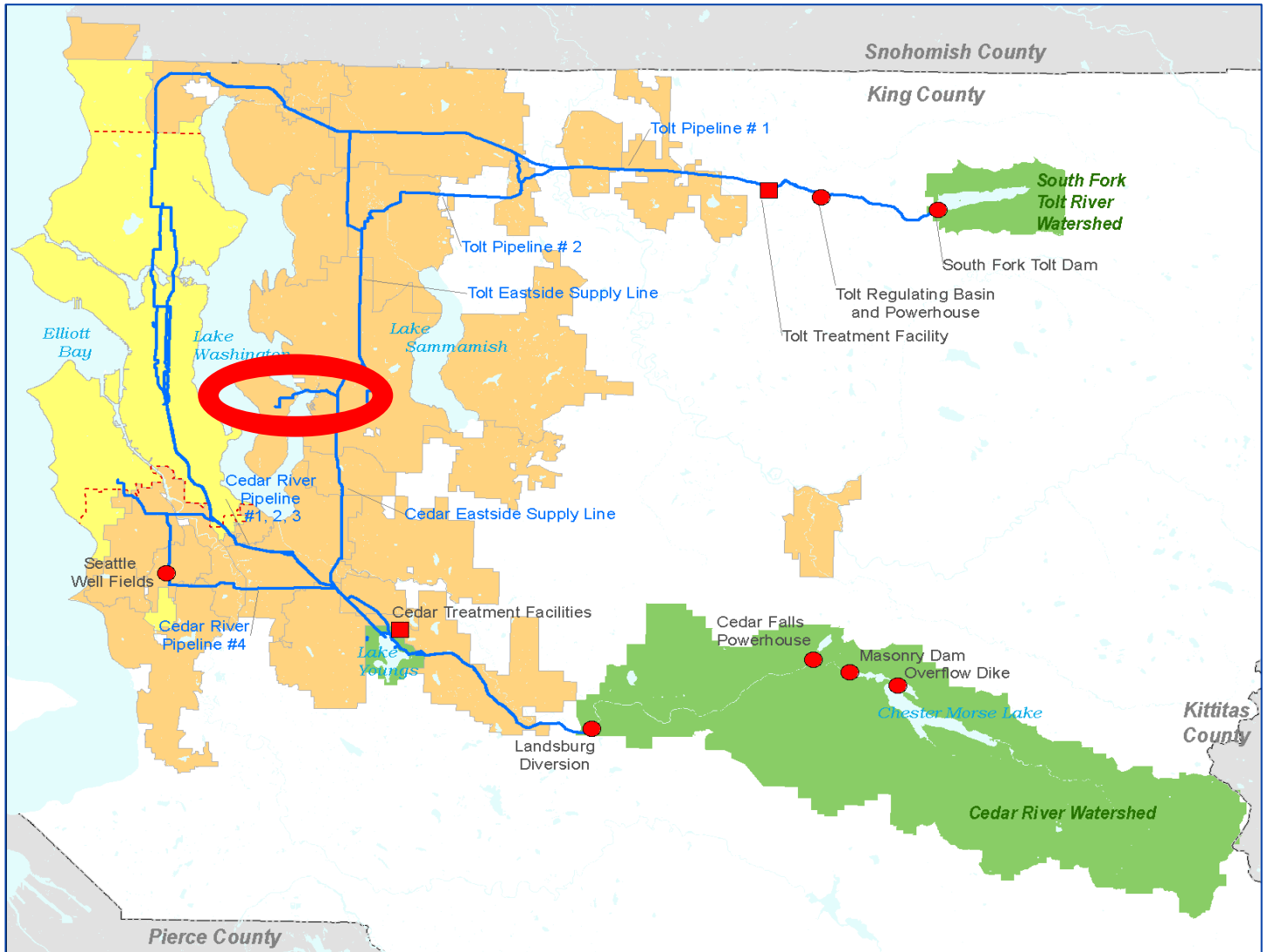
What Happened, Lessons Learned, Next Steps

April 2023



Seattle Regional System

Item 1.



Seattle Retail Service Area

Wholesale Customers

Watersheds



Mercer Island Pipelines Subregional System

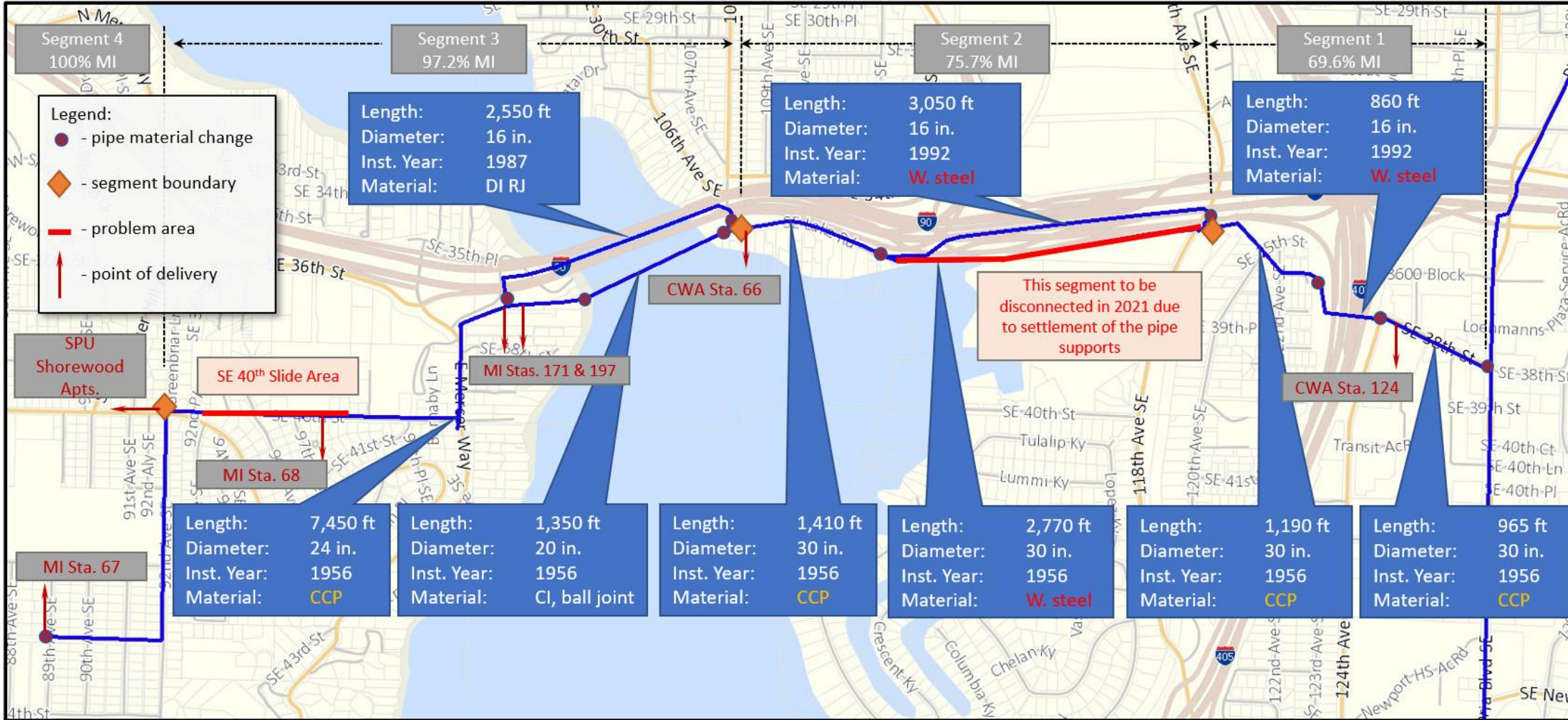
Item 1.

DI RJ = ductile iron restrained
 Typical modern standard pipe for up to about 16 in diameter

W steel = welded steel. Typical modern standard pipe for above about 16-24 in diameter

CCP = concrete cylinder pipe (thin walled steel pipe for watertightness, reinforced with wrapping bars or wire wrap, and surrounded by concrete). Harder to work on or weld to

CI, ball joint = cast iron ball joint pipe (ball joints typically used for flexibility like in river crossings)



Mercer Island Pipelines Subregional System

Item 1.

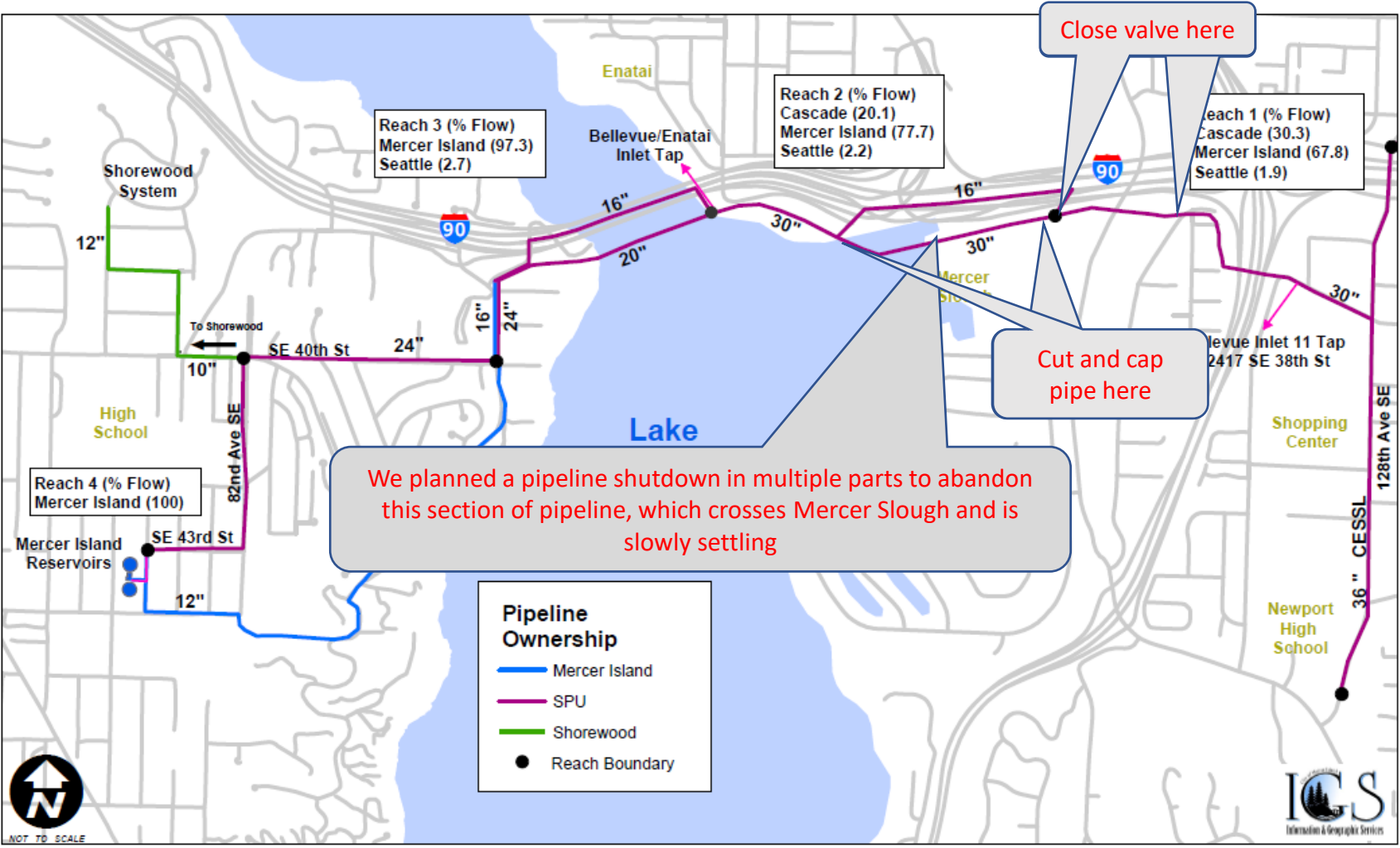
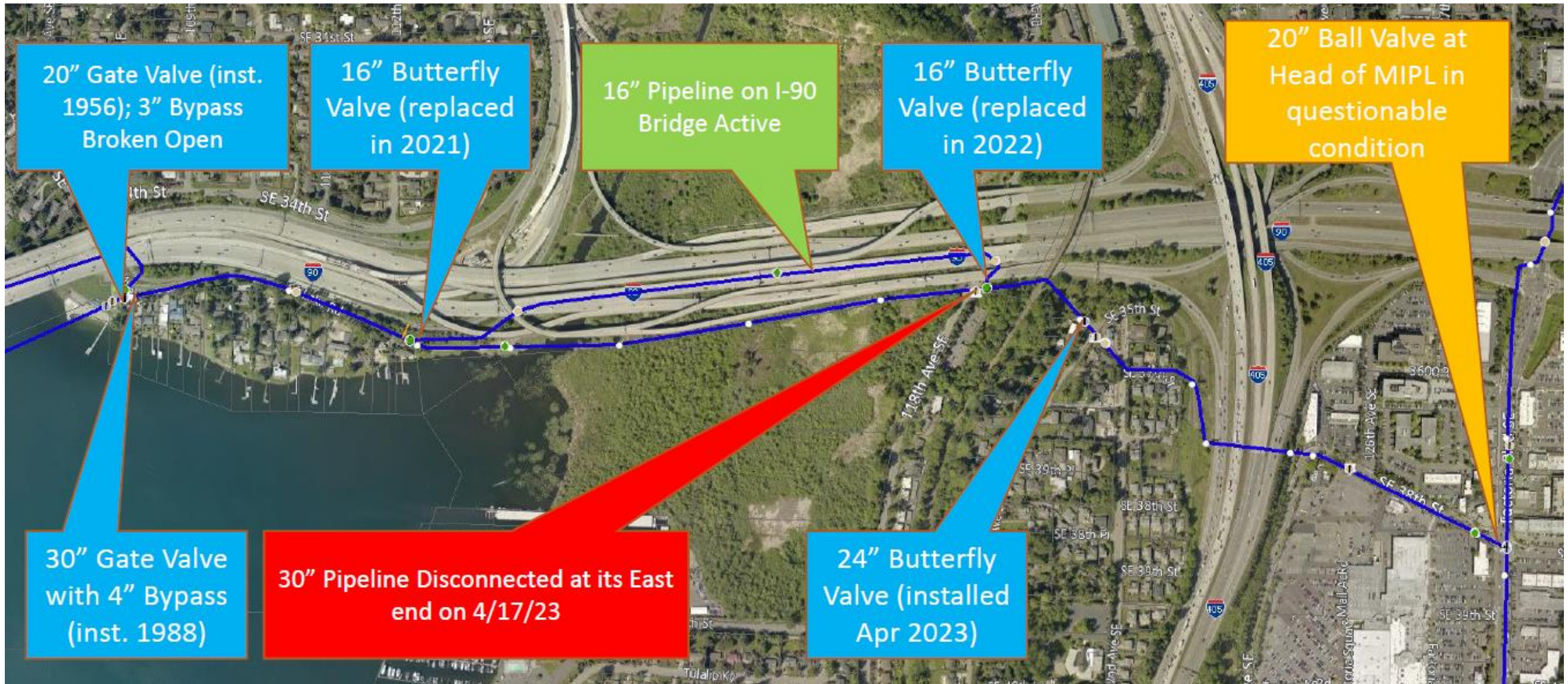


Figure 1-3: Mercer Island Supply Line

Date: 6/1/2015

Mercer Island Pipelines Subregional System - Line Valves

Item 1.



Shutdown sequence

- Close valves Sunday night, April 16
- Perform cut and cap work on east section of Slough pipeline
- Open valves Tuesday morning, April 18

- Mercer Island operates without SPU water using its reservoirs
 - *Can operate using reservoirs for only a few days*



What Went Wrong - Part 1

- Valve at SE 120th Ave did not open on Tuesday morning
- Took crews several hours to diagnose that actuator was OK, gearing was OK – valve body and stem were not moving
- It's a ball valve without a bypass line – no way to provide even a little water around it if it fails
- We had opened and closed that valve twice in 2022, no issues



Response Plans

- Plan A: close upstream valve at Factoria, dig up and remove the vault lids, remove valve, replace with another valve
- Plan B: provide some bypass pumping from Bellevue at Enatai to Mercer Island

Enacted both plans in parallel

Customer Concerns

- Mercer Island was depending on their reservoirs to supply water the entire time
 - Working with their residents and businesses to reduce water usage
 - Preparing to declare a precautionary boil water notice if system pressures got too low (below 20 psi)
- Continuous communication with Mercer Island was very important throughout, on multiple staff levels



Valve vault before excavation



Valve vault after concrete lids removed



24-in ball valve that stuck closed



Removing 24-in ball valve



Vault cleared



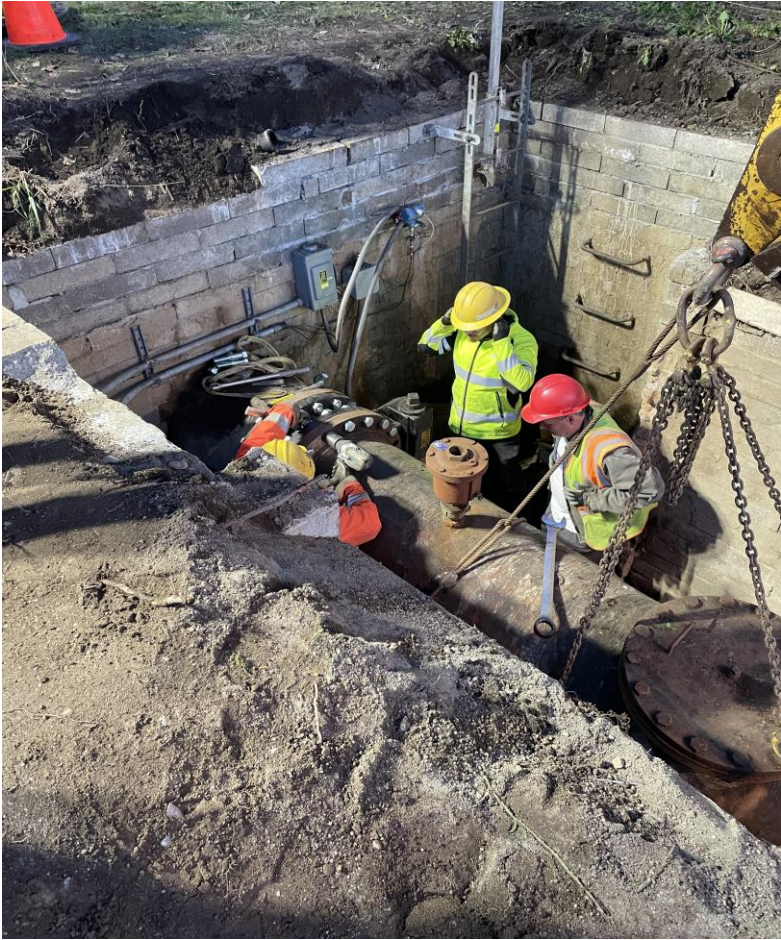
24-in ball valve that stuck closed



Replacement 24-in butterfly valve



Replacement 24-in butterfly valve in place and piping welded back together



Re-assembly with 24-in butterfly valve



Final welding complete

What Went Wrong, Part 2

- The bypass pumping required too much water from Bellevue Enatai – decreased their system pressure too low
- The pumping required higher discharge pressure than the discharge hose could tolerate
 - Required 175 psi; at about 150 psi the discharge hose tends to fail at couplings
- Need to plan a better bypass plan for next time, as a contingency plan



Bypass pumping setup from Bellevue Enatai to Mercer Island

What Went Wrong, Part 3

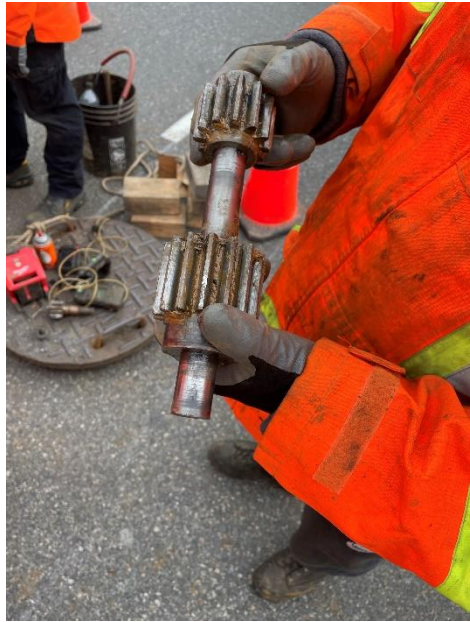
- Opening the valve at Factoria:
 - Valve closed smoothly for shutdown
 - Opened about 30 turns out of about 300 and stopped moving
- Also a ball valve, no bypass line around it
- Crews scrambled to take the valve apart enough to find the piece that had stripped a gear, turn the valve by hand and lock it open in place
- We had opened and closed that valve previously, but only down to 50% closed; last exercised about 10 years ago
- Valve exercising program needs attention



Valve that opened to 10% then froze is in the middle of the intersection in Factoria



Exposed gear at top of valve



Shear pin broke - top shaft gear came loose (by design to protect gears from damage)



Crews manually turning the valve using a t-wrench attached to the top valve gear

Next Steps - Short Term

- DONE: Clean up sites at Factoria (done), SE 120th, (two lower lids back on, top lid off because we'll want to add a bypass line), Enatai bypass



Next Steps - Long Term

- Develop options for long-term improvements to review with Mercer Island and Cascade
 - Consider adding bypasses around valves without them – and upsize to use for minor water supply as well as equalizing pressure around the valves
 - Consider redundancy throughout this pipeline section – one of the few spots in the water system without redundancy
 - Consider what to do about the valve at Factoria – needs replacing; can it be moved out of the intersection?
 - Consider what to do about the valve at SE 120th – OK as is, needs a bypass installed
 - Ball valve with remote control was in case of slough pipeline failing from settlement; that concern has gone away
- Order and stock spare valves, especially for large valves without redundancy
- Look at our valve exercising and maintenance protocols, especially for large valves with no redundancy

Questions?

