14 Mile Water Main Break Board Briefing

March 14, 2018

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Agenda

- Event Timeline
- January 9th Member Debrief
- Technical Findings
- Board Questions
- Next Steps

EVENT TIMELINE

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Initiation of Event – Monday October 23

Pre-event operations

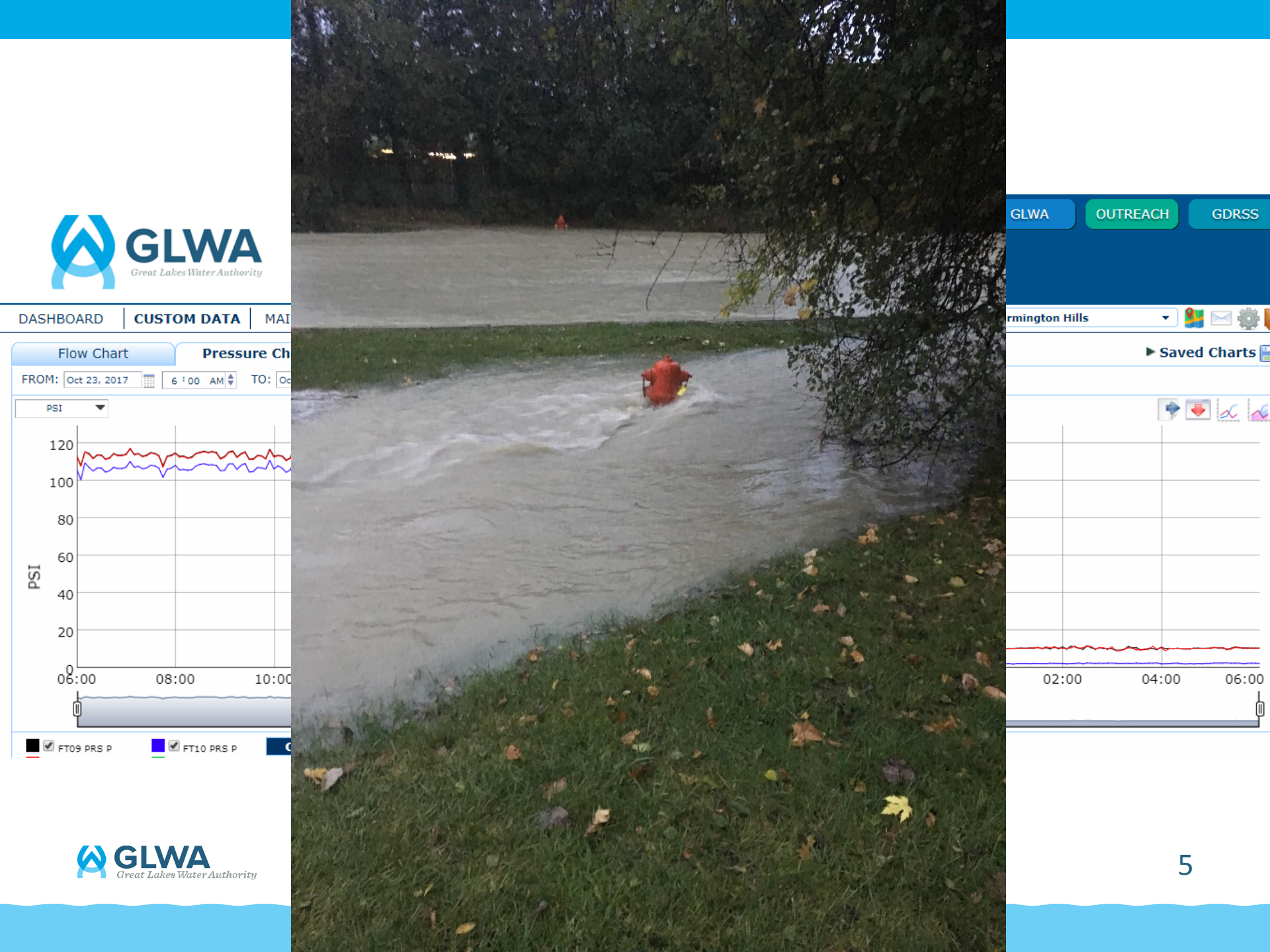
1. West Service Center (WSC) operating line pump L5
2. Franklin Station (FRK) operating one line pump L3 at 91% speed
3. Haggerty Station (HAG) had full reservoir and no pumps running
4. Normal system pressures at all 14 Mile Road master meters

Initiation 5:40 PM

1. WSC L5 stops due to power interruption
2. WSC L4 turned on
3. FRK L3 automatically increases speed from 818 to 900 RPM
4. WSC L5 turned on

Failure 5:47 PM

1. Dramatic loss in pressure on 14 Mile Road master meters
2. Unexplained 70 psi drop in pressure for City of Rochester meters RC02 and RC03
3. HAG reservoir used to feed portions of Novi and Commerce Twp plus all of Walled Lake and Wixom


GLWA
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DASHBOARD
CUSTOM DATA
Flow Chart
Pressure Ch
FROM: Oct 23, 2017
6 : 00 AM
TO:
PSI
120
100
80
60
40
20
0
08:00
10:00
FT09 PRS P
FT10 PRS P
GLWA
OUTREACH
GDRSS
rmington Hills
Saved Charts
02:00
04:00
06:00
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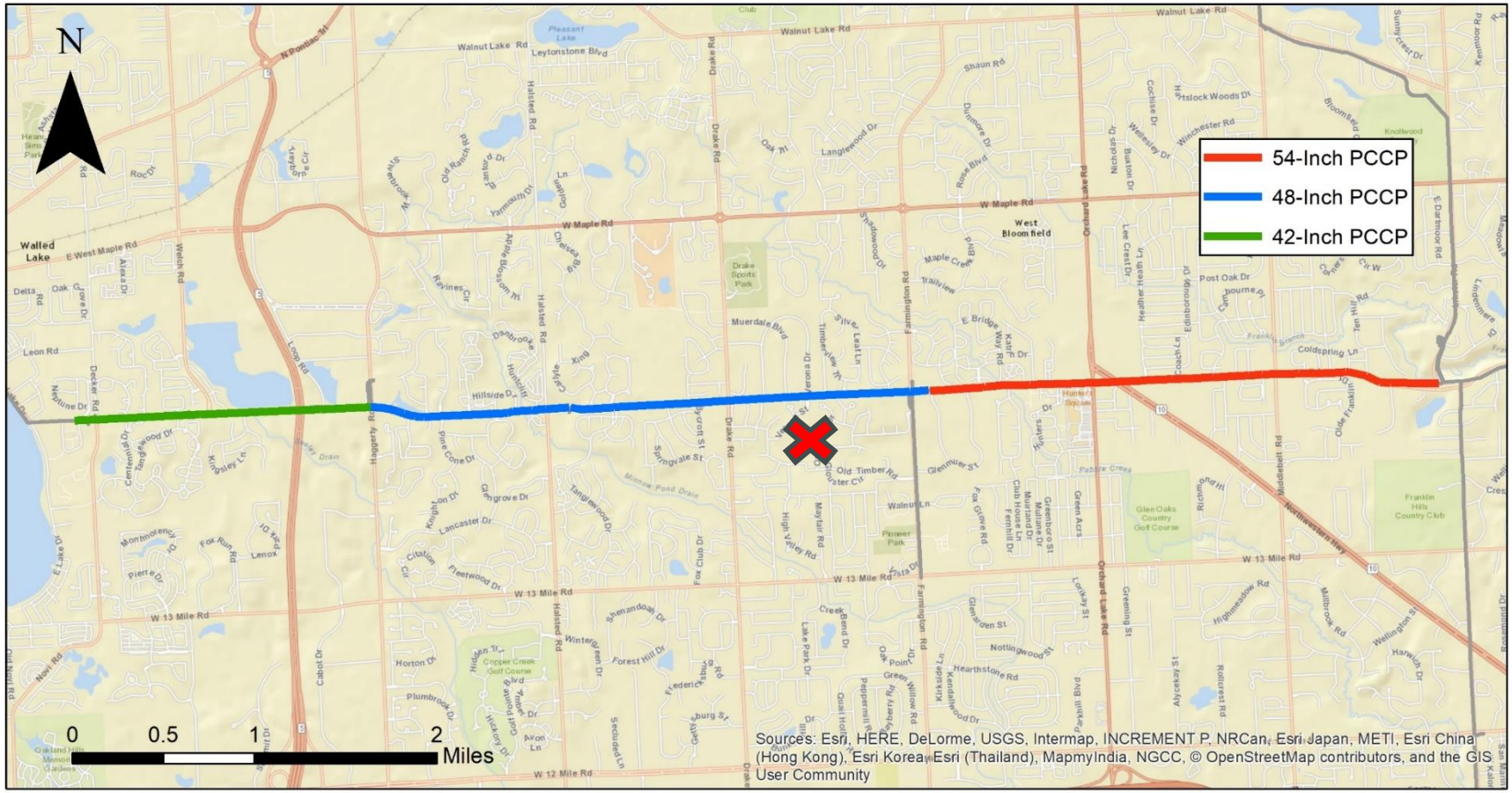
14 Mile Transmission Main



42” – 2.5 miles • 48” – 2.0 miles • 54” – 3.3 miles

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Response

Isolation – 16 hours

1. Upstream isolation valve buried in traffic circle and actuator broken
2. Downstream isolation valve stem operator gate broken
3. Isolation achieved following morning at FRK upstream and confined space entry downstream

Excavation and Preparation – 24 hours

1. Equipment mobilized to break overnight
2. Began pumping and excavation at daybreak
3. Repair piece and piping ordered
4. Worked through night to prepare hole for following morning

Repair -24 hours

1. Repair pieces arrive onsight in the morning
2. Installed repair device
3. Rolled gasket found and replaced
4. Began filling pipe overnight
5. Returned 14 Mile main to service following day

Communications

Boil Water Advisories (BWAs)

1. Mon 9:50 PM – BWA for Commerce Twp, Farming Hills, Novi, Oakland Twp, Rochester Hills, Walled Lake, West Bloomfield Twp, Wixom
2. Mon 11:30 PM – BWA adds Keego Harbor, Bloomfield Twp, Keego Harbor, Orchard Lake

Emergency Operations Center (EOC) and Press

1. Mon 11:00 PM Oakland County activates EOC
2. Nine GLWA press releases issued during event
3. Formal press conference held
4. Full news coverage

Lifting of BWAs

1. Thu 4:00 PM – BWA lifted for Rochester Hills and Oakland Twp
2. Sunday – All BWAs lifted except for a portion of Farmington Hills (PRV failure)
3. Monday – Farmington Hills BWA lifted

January 9th and February 8th Member Debriefs

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January 9th Desired Outcomes

- For GLWA to listen and learn from members' feedback regarding the incident.
  - What worked well?
  - What did no work well?
  - Lessons learned

- To share with members GLWA's initial findings and next steps.

February 8th

- Report to non-impacted communities

How Things Worked and Lessons Learned

What Worked Well

- Frequent communication between/among GLWA and member communities
- Rapid response and speedy repair
- Oakland County's EOC; effective liaising with the public

What Did Not Work Well

- Inaccurate contact lists, unclear protocols for communicating
- Slowness and inaccuracy of initial response
- GLWA did not always close the communication loop

Lessons Learned

- Have only one, comprehensive EOC as the source for all communication
- Leverage tools to improve the timeliness with which communications reach all members
- Make needed investments in the system
- Create and implement a plan for redundancy among staff

Technical Findings

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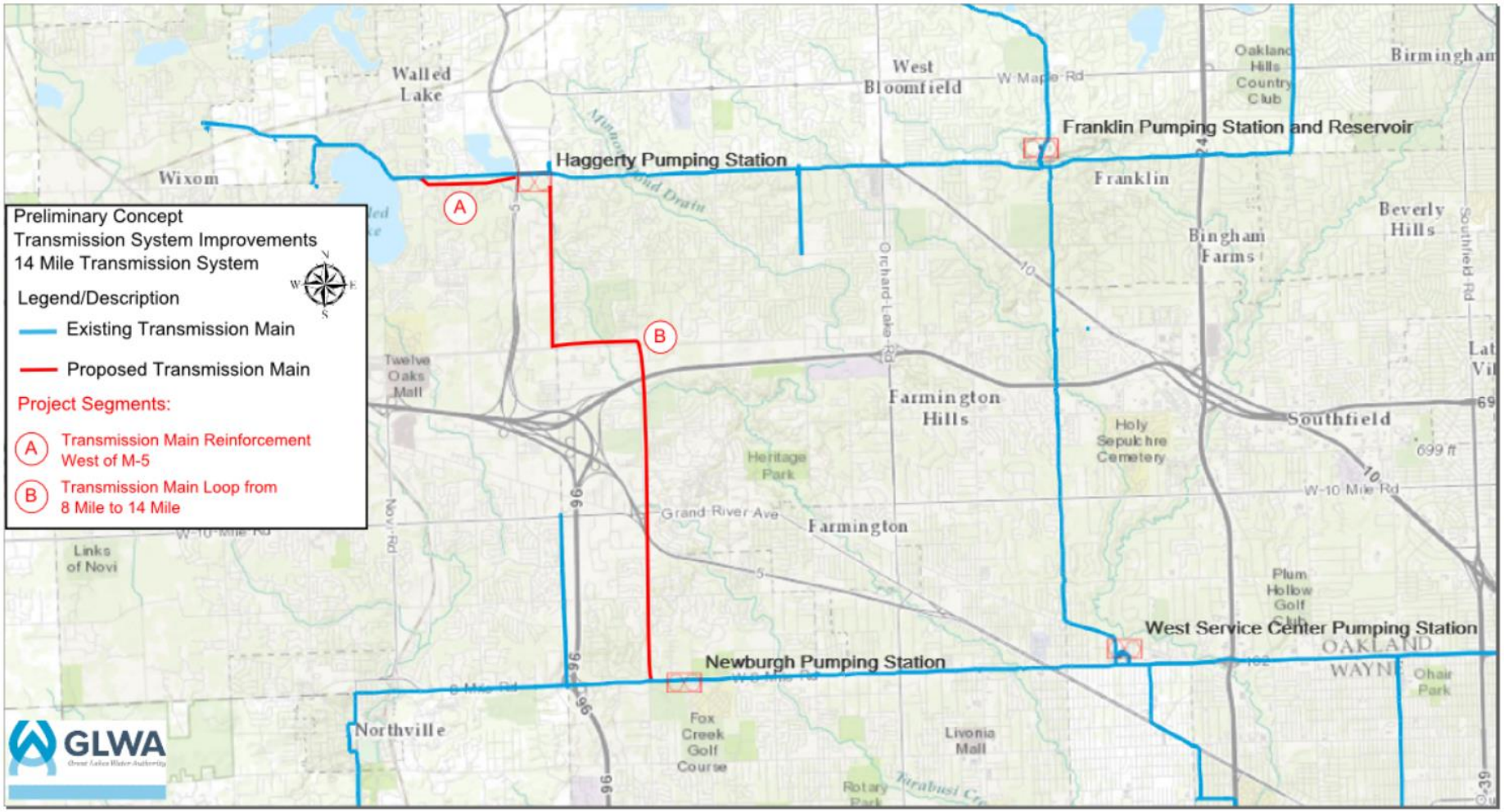
Technical Conclusions

1. External power interruption resulted in a pump trip and loss of pressure at WSC.
2. Automated systems and Systems Control Center staff responded to restore normal pressures and the main break occurred.
3. There was no evidence that the design pressure of the main (150 psi) was exceeded.
4. Forensic inspection of the pipe showed evidence of hydrogen embrittlement of prestressed wires.

Recommendations

1. Pilot study to evaluate the 8-mile length of the 14 Mile Road transmission main will be submitted for board approval as a single source contract.
2. The valve program recently approved by the Board (GLWA-WS-695C) will improve GLWA ability to isolate mains in the event of a break.
3. GLWA has conducted a systematic review of the two least redundant portions of the transmission system (14 Mile Road and Downriver) and is working with customers to identify emergency connections and contingencies.
4. A Halstead/Haggerty loop project is being developed to increase the resiliency of service to western Oakland County customers (CIP # 122013 proposed)
5. GLWA is developing a comprehensive condition assessment and risk-based prioritization of the entire transmission system. This program will be used to focus efforts to improve redundancy and resiliency for all critical transmission mains.

4. Proposed Haggerty/Halsted Corridor Loop



- 24-inch main west of Haggerty Station (1 mile) ≈ $3 million
- 48-inch loop transmission main between 8 Mile and 14 Mile (6-7 miles) ≈ $45 million

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Discussion and Questions