



Linear System Integrity Program (LSIP) Update

11/17/22 | Jody Caldwell, Chief Planning Officer

LINEAR SYSTEM INTEGRITY PROGRAM (LSIP) AGENDA

- 💧 LSIP Background
- 💧 14 Mile Road Renewals Update
- 💧 120-inch Transmission Main Emergency Response & Condition Assessment Planning
- 💧 Next Steps
- 💧 Key Take Aways

Key Take Aways

- ◆ GLWA has expedited renewals of deteriorated pipe segments on the 14 Mile Road transmission main
- ◆ GLWA is planning for additional condition assessment on the 120-inch transmission main
- ◆ Condition assessment of water transmission main is challenging because:
 - ◆ The pipe is under pressure and access is challenging
 - ◆ Delivery of water in many cases cannot be interrupted
 - ◆ Planning, design, and implementation of condition assessments on more than 800 miles of transmission main requires decades to complete and substantial funding

LSIP Background

Key Objectives



Successful Linear System Management

Successful management, continuing to be affordable and sustainable



Pipeline Risk Management

Scientifically defensible approach to pipeline risk management



Lowest Lifecycle Cost

Use data to drive decision making to manage pipeline risk and optimize maintenance & renewal budgets

Linear System Program Goals

- 💧 Develop framework to proactively manage linear assets
- 💧 Increase reliability to meet service levels
- 💧 Limit failures on high-consequence assets
- 💧 Reduce the overall risk of pipeline failures
- 💧 Maximize the useful life of GLWA's linear assets
- 💧 Implement consistent and effective data management protocols



How Will GLWA Meet These Goals & Objectives?

- With programmatic consultant (HDR) assistance to:
 - Standardize process and framework
 - Plan each pipeline condition assessment based on consequence of failure
 - Select technologies
 - Issue task order
 - Perform pipe condition assessment
 - Identify renewal needs at the pipe segment level



Successful Linear System Management

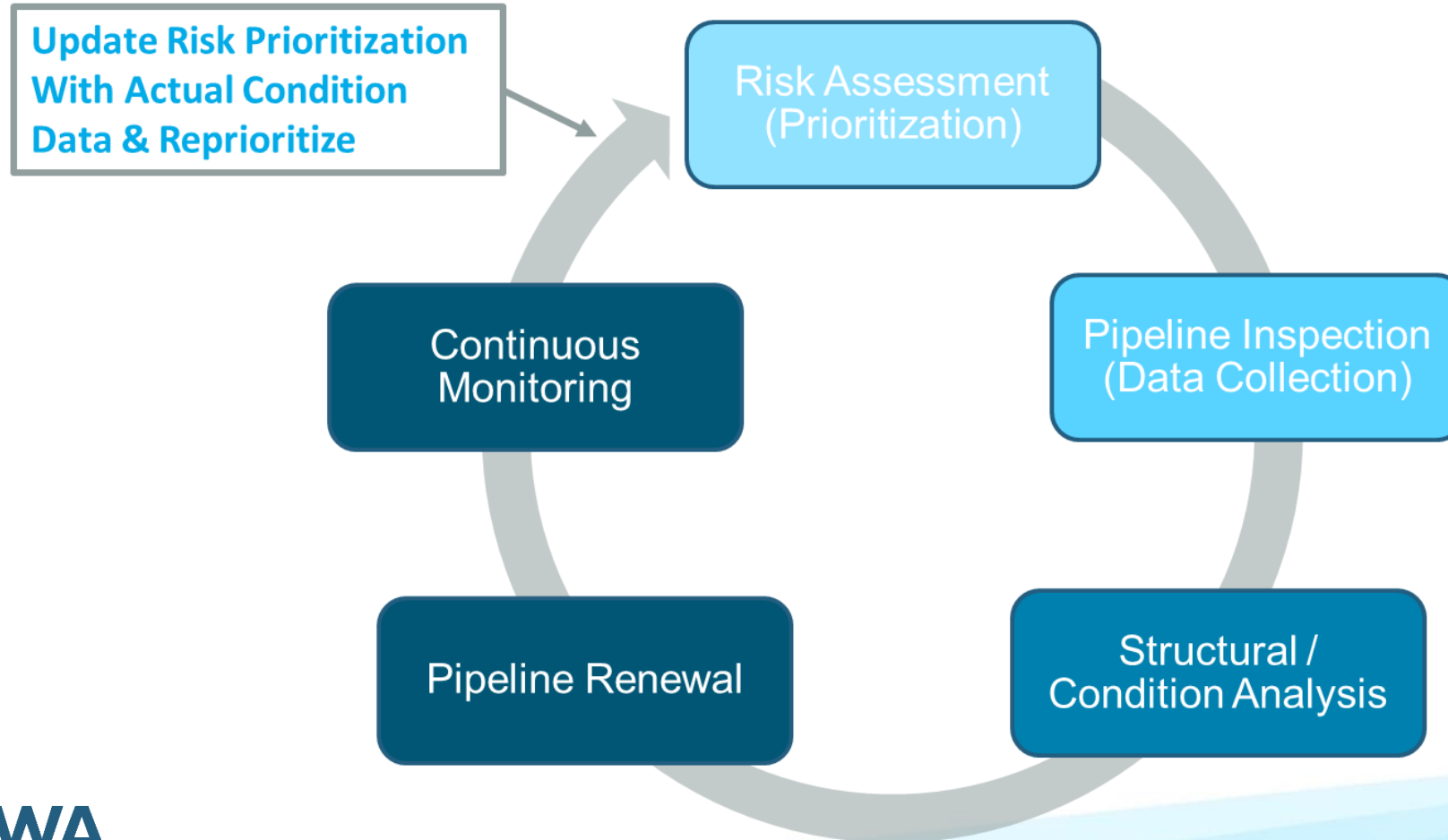


Pipeline Risk Management

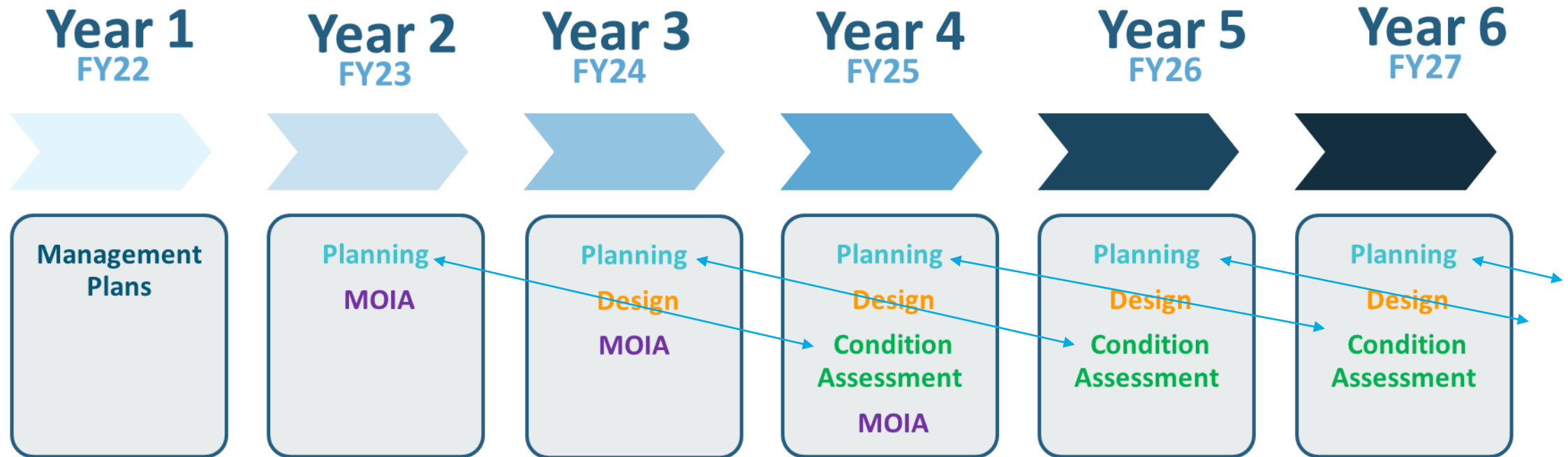


Lowest Lifecycle Cost

Transmission System Program Cycle



Phased Approach to Condition Assessment

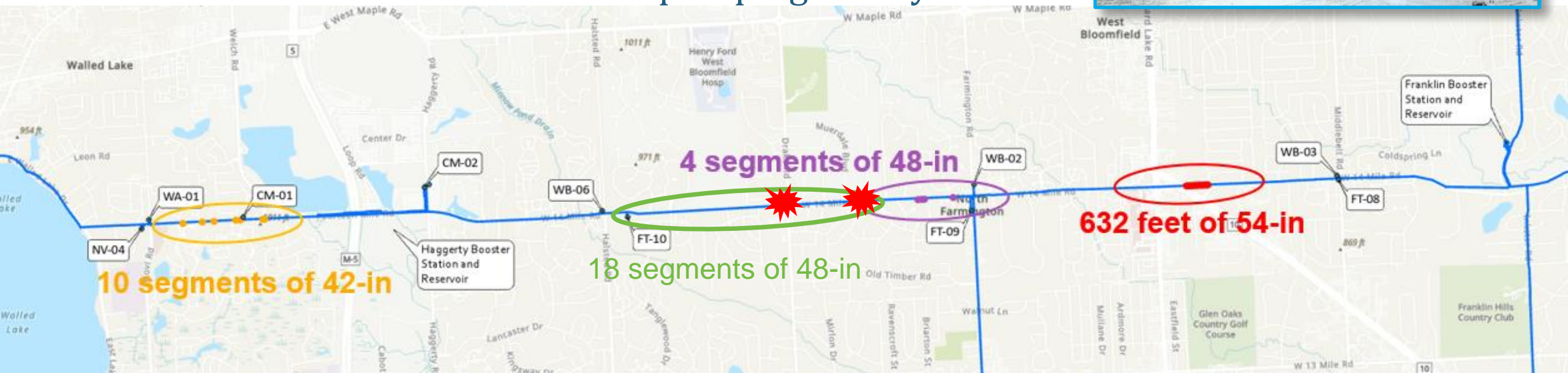


MOIA – Minimal Operational Impact Assessments, or small activities that do not disrupt operations (outside the pipe) and provide condition information

14 Mile Road Transmission Main Renewal Update

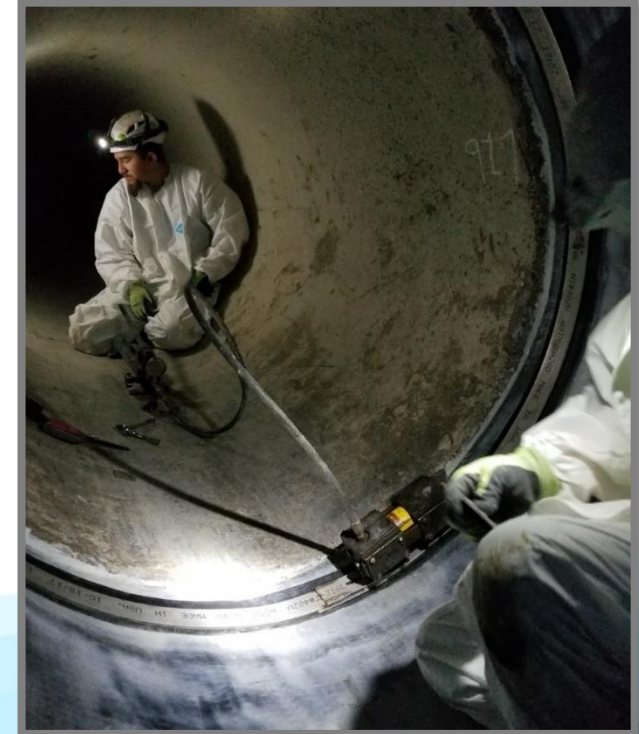
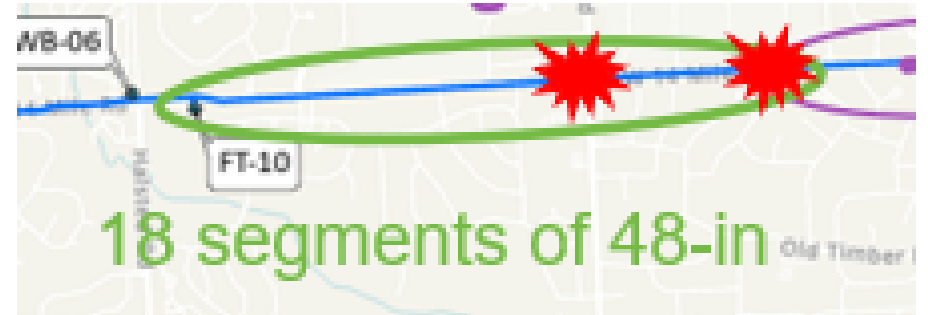
14 Mile Completed & Planned Renewals

- 💧 Complete - 18 segments of 48-inch
- 💧 In Progress – 10 segments of 42-inch
- 💧 Future Planned – January 2023
 - 💧 4 segments of 48-inch
 - 💧 632 feet of 54-inch at DTE pumping facility



14 Mile Opportunistic Renewal Completed

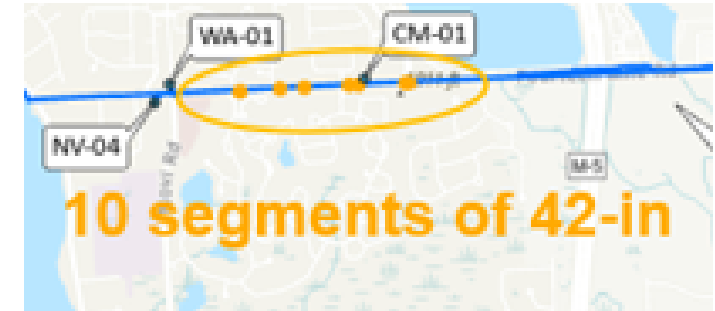
- Completed in Fall 2021
 - 18 segments of 48-inch Renewed
- Completed during the pipeline disruption in fall of 2021
- Renewal using Carbon Fiber Reinforced Polymer (CFRP)



14 Mile Coordinated Renewal In Progress

💧 In Progress:

- 💧 10 segments renewed using Carbon Fiber Reinforced Polymer (CFRP)
- 💧 Coordinated effort with the completion of the 14 Mile Phase 1 Looping Project
 - 💧 42-inch pipeline required closure for several valve repairs
- 💧 Planned completion by Thanksgiving



Future Planned Renewals Along 14 Mile Road

Future Planned:

- 4 segments of 48-inch and
- 632 feet of 54-inch renewed
- Using Carbon Fiber Reinforced Polymer (CFRP)



- Transmission main is planned to be taken out of service from Franklin Road Booster Pump Station to west of Farmington Road
- Permitting and coordination with member partners is underway
- Requires:
 - Modification of GLWA and member partner operations (emergency connections and redistricting)
 - Temporary booster pump station within Farmington Hills



120-inch Emergency Response & Condition Assessment Planning

120-inch Transmission Main Emergency Response & Condition Assessment Planning

Tasks completed:

- Electromagnetic and visual inspection of 4.5 miles
- Forensic analysis and repair of failed pipe section
- Repair of 4 pipe sections
- Preliminary electromagnetic inspection findings

Tasks in progress:

- Laboratory analysis of pipe materials (wire, mortar, soils)
- Data analysis & condition assessment report
- PipeDiver electromagnetic condition assessment inspection planning



Tentative Schedule

- Draft condition assessment report – *November 18, 2022*
 - Visual & sounding results
 - Electromagnetic results
 - PCCP wire and mortar condition results
 - Soil testing results
- Future condition assessment planning is underway



Next Steps

Next Steps

- ◆ 14 Mile Road Renewals
- ◆ Expedite 120-inch full transmission main inspection and possible Acoustic Fiber Optic (AFO) installation
- ◆ 2024 Complete 14 Mile Road Loop
- ◆ Continue program framework development
- ◆ Condition assessment planning, design and assessment for next high risk transmission mains
- ◆ Look for opportunities for “Minimal Operational Impact Assessments” on other high consequence of failure mains

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Thank You For Your Time!



Questions & Comments