



Results of Pipeline Study – Phase I

Comprehensive Analysis of Liquids Gathering Pipelines in North Dakota

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Project Prescribed by HB 1358

- Project is focused on conducting analysis of crude oil and produced water (gathering) pipelines.

– Phase I – Study

- ◆ Analyze the existing regulations on construction and monitoring of crude oil and produced water pipelines.
- ◆ Determine the feasibility and cost-effectiveness of requiring leak detection and monitoring technology on new and existing pipeline systems.
- ◆ Provided a report with recommendations to NDIC and EDTC December 1, 2015.

– Phase II – Demonstration

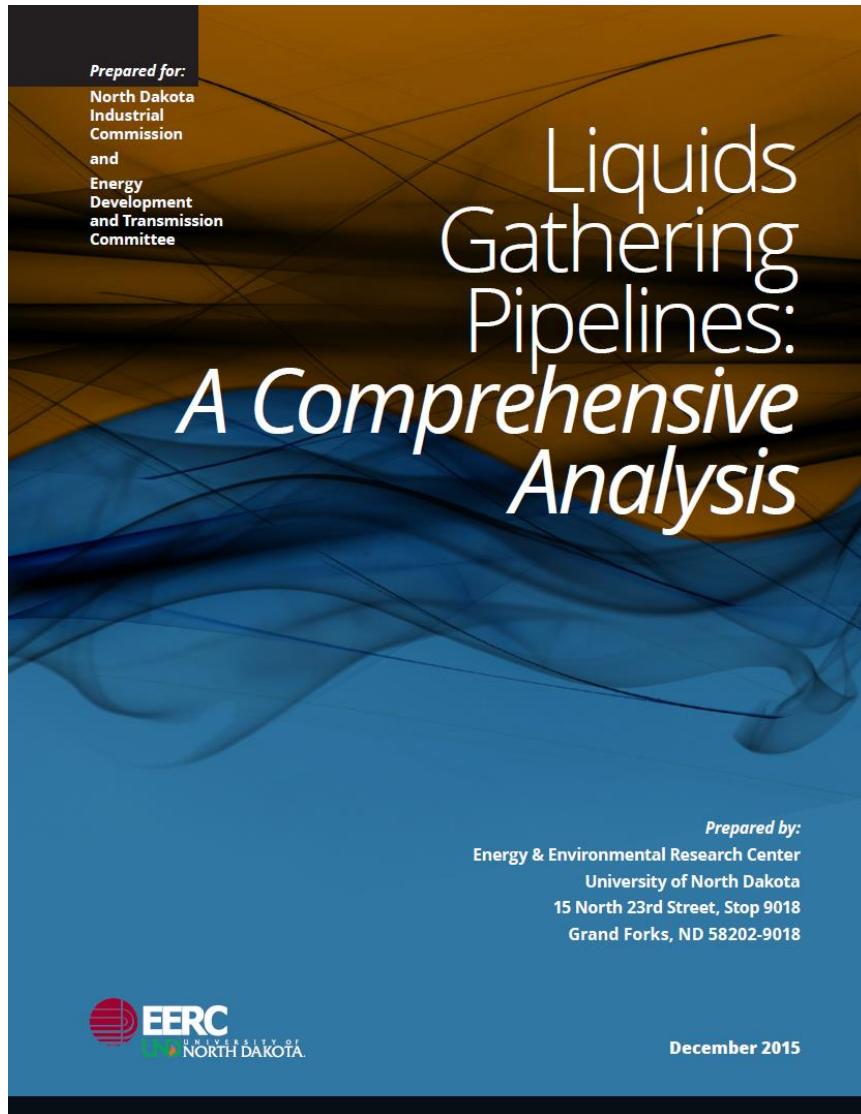
- ◆ Conduct pilot project to evaluate a pipeline leak detection and monitoring system.

Project Schedule – Two Phases

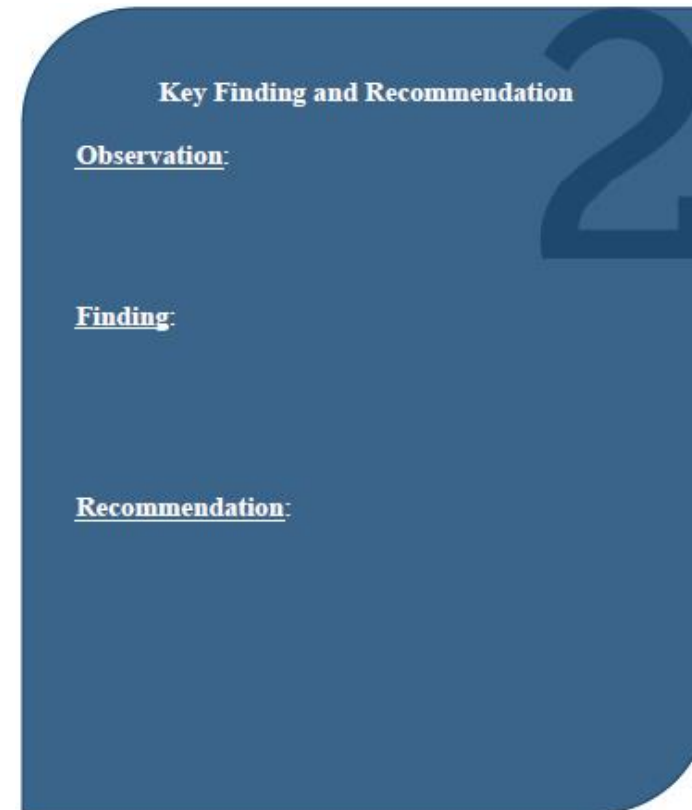
- Project kickoff
- Discovery work
- Economic analysis
- Submitted final report
- Ongoing support to state
- Demonstration project
- Final report on demonstration
- May 2015
- May–August 2015
- September 2015
- December 1, 2015
- All of 2016
- Q1–Q3 2016
- December 2016

*All Schedule Dates Driven by
January 2017 Legislature Start*

Guide to Reading the Document



Key findings and recommendations are highlighted throughout document in nested blue balloons. Text leading up to balloons provides context and foundation for each balloon.





Summary of
23
Key Recommendations

Key Infrastructure Recommendations

- DMR should encourage real-time data sharing among pipeline partners. ①
- Any new regulations should build upon successes from other pipeline sectors but must be tailored to North Dakota-specific operating conditions. ②

Key Leak and Spill Analysis Recommendations

- North Dakota should streamline the ways spill data are reported, processed, and analyzed to facilitate data analysis. 3
- Streamlined data management system should be collaborative among several agencies with complementary reporting jurisdictions to eliminate redundant and misleading data. 4
- DMR should collect and analyze data to determine root causes of pipeline leaks, then continually refine regulations that address root cause determinations. 3
- North Dakota should recognize the impact of minimum reporting thresholds on spill statistics and evaluate accordingly how to interpret and report these data. 5

Key Materials Recommendations

- North Dakota should consider regulations on pipeline material selections, as has been done in other oil-producing states. 6
- Installation crews should be thoroughly trained in all manufacturer-prescribed installation procedures and be contractually bound to use those procedures. Independent inspectors should be responsible for ensuring that manufacturer specifications are precisely followed. 10
- DMR should seek to place its own SME on the API committee studying modifications to API RP 15S. If DMR considers deriving regulations governing installation of reinforced pipe from PHMSA standards, these new regulations should allow for use of reinforced, spoolable pipeline materials not yet included in a standard practice. 11
- Composite pipeline manufacturers with applicable products should develop a collection of test data to support claims that these pipeline materials can assist LDS. DMR should continue to monitor development of this aspect of these pipeline products and carefully consider its impact on future rulemaking. 12

Key Construction Recommendations

- DMR should consider requiring prior notice of intent to install liquid gathering pipelines. 8
- HDD may be the most appropriate construction method near wetlands to reduce surface disturbances. Other measures may be warranted to ensure the impact to these areas are minimized in the case of a leak. 13
- North Dakota may consider regulating to construction standards currently required for transmission pipelines. 14
 - Third-party inspectors would be responsible for ensuring compliance with state construction standards.
 - State inspectors would verify that third-party inspectors maintain adequate oversight of the project.

Key Maintenance and Inspection Recommendations

- North Dakota should consider regulations on maintenance and corrosion control best practices. 7
- DMR should consider requiring assurance of hydrostatic testing according to manufacturer recommendations on all newly installed or newly repaired liquid gathering pipeline segments. 15

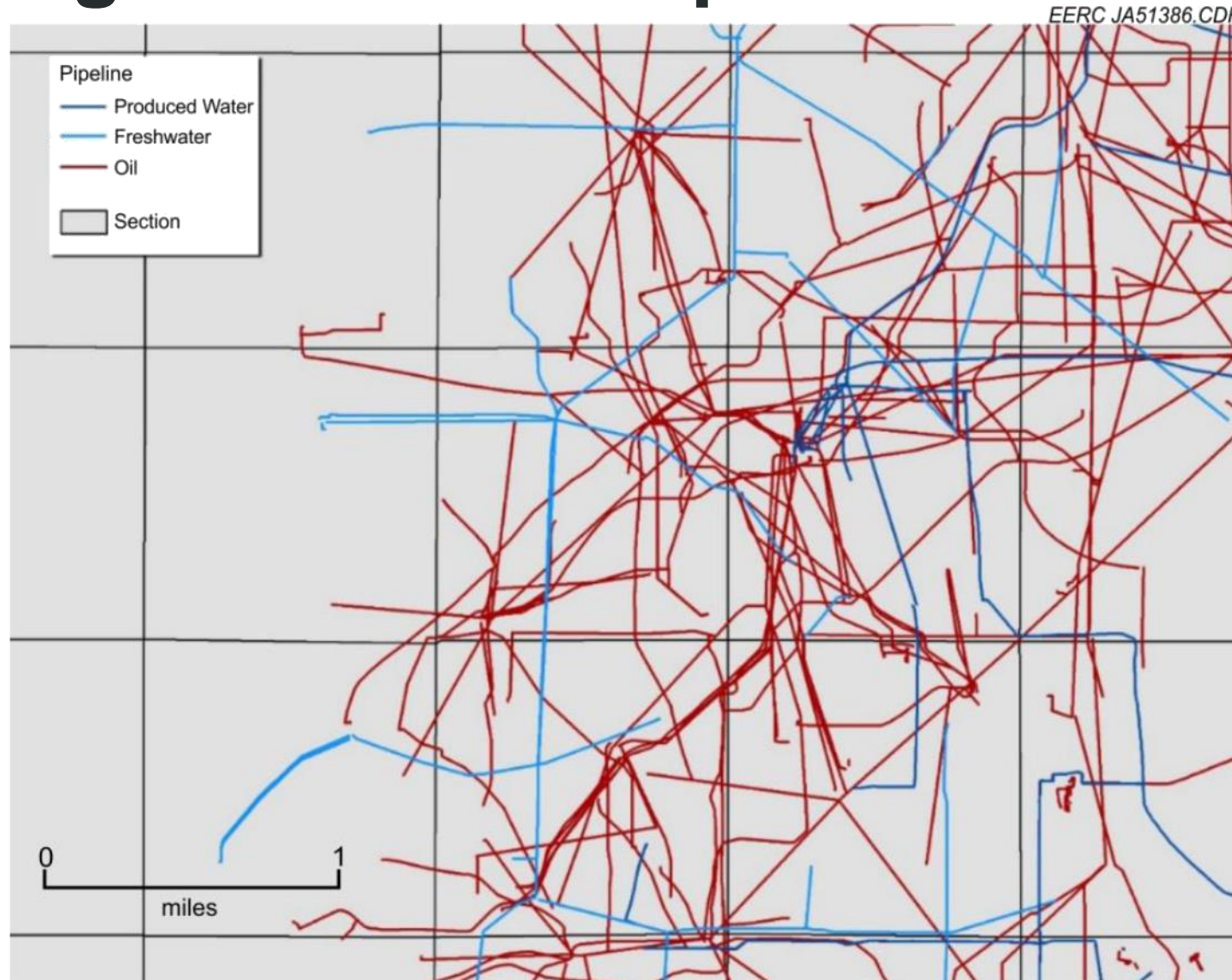
Key Monitoring and Leak Detection Recommendations

- North Dakota should encourage R&D of low-cost external leak detection technologies specific to the needs of produced water gathering lines. 18
- DMR should examine a potential role in the implementation and enforcement of a Pipeline Safety Management System for operators, modeled after API RP 1173. 19
- The state, in cooperation with operators and vendors, could investigate alternate gathering system design features or unit operations that would enable pressurized and/or more consistent flow conditions, thus enabling improved leak detection system performance and accuracy. 20
- Operators should be encouraged to incorporate technologies such as SCADA to improve communication within and between operators. 21
- North Dakota should seek to demonstrate the role of UAS in pipeline monitoring. With its vast rural landscape and challenging climate, we have more to gain from remote sensing than other locations across the nation. 22

Key Abandonment Recommendations

- North Dakota should continue to work with industry stakeholders to:
 - Inventory and catalog existing pipeline locations for pipelines that were installed prior to the new GIS reporting rule. 23
 - Develop a mechanism that allows for rapid acquisition of information about pipelines for use in construction activities. 23

Highlighting the Need for Improved GIS Data



The Bottom Line

- Better installations, more thorough inspections, and increased facilitation of learning from past incidents will do more to prevent future gathering pipeline leaks than any available leak detection system.
- Phase I of this project (the study) provided information that allowed North Dakota DMR and industry to move quickly on actions they could take in 2016 to decrease spills and leaks.
- Phase II of this project (the leak detection pilot demonstration) will provide information on the performance of those technologies with greatest potential to lessen the severity of future spills and leaks.

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