**CAAP Quarterly Report**

Date of Report: 1/15/2024

Prepared for: *U.S. DOT Pipeline and Hazardous Materials Safety Administration*

Contract Number: 693JK32050008CAAP

Project Title: Effectiveness Assessment of Pipeline Cathodic Protection System Using Remote Sensing, Advanced Modeling, and Data Analytics

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For quarterly period ending: 12/31/2023

**Business and Activity Section**

# Contract Activity

The internal project account at Rutgers University was created. The subaward to University of Akron is being processed.

A new graduate student will be recruited at both Rutgers University and University of Akron in fall 2024 to work on this project.

# Status Update of Past Quarter Activities

The project kickoff meeting was held on Nov. 30 remotely. The meeting attendees include Dr. Hao Wang (PI), Dr. Nenad Gucunski (Co-PI), Jay Shah (Postdoc), Xiao Chen (PhD student) from Rutgers University, Dr. Qixin Zhou (Co-PI) from University of Akron, Nusnin Aker, Zaid Obeidi from PHMSA, and Len Krissa from Enbridge. Dr. Wang presented an overview of project background, objectives, research tasks, and expected outcome. After that, Zaid and Nusin provide comments on technical work and project administration on behalf of PHMSA and Len offered the help that could be provided by Enbridge.

The project team conducted comprehensive literature review on the project topic by searching the relevant publications in journals, conference proceedings, government reports, and national and international standards. It is noted that full texts of selected papers from The National Association of Corrosion Engineers were obtained through the help of Len Krissa.

# Cost Share Activity

Cost share is provided by Rutgers University during this quarterly period as budgeted in the proposal.

# Technical Approach

Task 1 Literature Review, Information Collection, and Refinement of Work Plan

The literature review includes but not limit to the following topics: 1) pipe CP system design, survey, and effectiveness assessment; 2) remote sensing of pipe corrosion and the related soil properties; 3) modeling and simulation of CP system and corrosion rate; and 4) data analytics of CP survey and pipe inspection data.

Based on the literature review, a review paper is currently being prepared with the following sections.

* Basics of CP for pipeline
* CP surveying practices
* CP effectiveness assessment using laboratory tests
* CP effectiveness assessment using remote sensing
* Numerical modeling of CP
* Role of data analytics
* Conclusion and recommendations