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FIELD AND LABORATORY STUDY ON POTABLE WATER RENEWAL USING CEMENT MORTAR LINING

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ABSTRACT: Many cities in North America are faced with the problem of aging and deteriorating water distribution networks. A symptom of this problem is an increased number of coloured water (red water) complaints resulting from internal pipe corrosion. During the past decade, the placement of 3 to 5mm thick cement mortar linings on the interior surface of unlined iron water pipelines has proven to be an excellent and cost effective method to stop internal pipe corrosion and to improve water quality.

The City of Toronto annually spends between twenty to twenty-two million dollars on cement mortar lining contracts. To help to justify this annual expenditure a field and laboratory study was undertaken by the Centre for the Advancement of Trenchless Technology (CATT), located at the University of Waterloo, in Canada. The objective of the study was to determine if the cement mortar industry claim that cement has the ability to bridge corrosion pinholes can be substantiated.

The paper presents unique field and laboratory testing procedures and test results. Test results show that cement mortar can bridge pinholes and iron pipe corrosion measurement challenges. It also provides a method for estimating the size of pinhole that can be bridged by cement mortar.