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Dynamic Influences on the Deterioration Rates of Individual Water Mains

Objectives
To develop a statistical model that considers the influence of both static and dynamic factors in the deterioration of individual water mains.

Background
The structural deterioration of water mains and their subsequent failure are complex processes that are affected by many factors, both static (e.g. soil material, pipe material, size and age) and dynamic (e.g. climate, operation and cathodic protection). Existing statistical models can be broadly classified into those that analyze groups of water mains and those that analyze individual water mains. While models dealing with groups are capable of considering both static and dynamic influences on the breakage pattern of water mains, individual pipe models are capable of considering only static influences.

Statement of Work
The research will involve a literature review of existing models, collaboration with water utilities to develop datasets for statistical analysis, a prototype computer program for the application of the proposed model, case histories to demonstrate the use of the model developed, and a workshop with the participation of collaborating utilities and other stakeholders.

Expected Outcomes
This project will produce an accurate, credible individual pipe-deterioration model, and an analytical tool that will enable municipalities to effectively prioritize the renewal of individual water mains.

Partners
American Water Works Association Research Foundation (AwwaRF), and water utilities in Canada and the USA.

Start/Expected Completion Dates
This project began in 2005 and will be completed in 2008.

Project Manager
Dr. Yehuda Kleiner: 613-993-3805; Yehuda.Kleiner@nrc-cnrc.gc.ca

For more information, see http://irc.nrc-cnrc.gc.ca/ui/bu/deterioration_e.html

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Failed cast iron distribution main