



Modelling sulphide in ICM to identify corrosion potential

Manu Ward, HAL Consulting

ABSTRACT

A number of biochemical processes occur in wastewater collection systems that result in a build-up of sulphide that is responsible for odour and corrosion problems in the network. Corrosion can seriously impact the lifespan of sewer assets and increase the need to bring forward expenditure on replacement or renewal of network assets. Historically odour and corrosion issues have been managed in a reactive manner, sometimes resulting in unexpected pipe failures.

Hydraulic Analysis Ltd (HAL) worked with Wellington Water to investigate the use of ICM as a tool to identify pipe segments with high risk of corrosion damage. This supports Wellington Water in their effort to develop a strategy on prioritisation of wastewater network renewals.

This presentation will cover:

- A simple introduction to the corrosive process due to hydrogen sulphide.
- The use of Pomeroy's equation in ICM's water quality module to predict dissolved sulphide concentrations.
- Sensitivity of results to input wastewater quality parameters.
- The use of other network model features to screen for high-risk locations, such as rising main outlets or hydraulic turbulence.
- Sensibility checks against collected data and hand calculations.

There is significant uncertainty in predicting corrosion, and the tools available in ICM are limited to only one of several aspects of the corrosive process. However, there is potential for these results to provide a theoretical basis to produce preliminary "heat maps" of corrosion potential throughout the network.

In combination with other data, such as odour complaints, CCTV survey and operator knowledge, this can provide a tool to prioritise inspection strategies and network planning to assist in minimising unexpected failure.



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