INFORMATION OF DOCTORAL DISSERTATION

Research title:

A PROPOSED MODEL FOR PREDICTING THE CONTAMINATION OF WATER DISTRIBUTION SYSTEM

Major: **WATER RESOURCES ENGINEERING**

Code: **62.58.02.12**

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Abstract:

Clean water is one of the most basic needs of human life, especially in developing countries. However, its existing water supply is low because the water contamination is still appearing on the water distribution system. The main reason is the soil environment around the pipe having contaminant combined with the negative pressure inside appears to get it into the pipe through the pipe break. Therefore, it is necessary to have an approach that can predict the risk of contaminant intrusion into water pipes.

Out study is implemented with four goals: (1) evaluating the potential of occurrence of pipe failure on the water distribution system; (2) identifying the contamination source area where its flow can intrusion into the water supply pipeline; (3) determining the range of negative pressure surge value that may occur by closing vavle on water supply pipe; (4) proposal predicting the risk of contaminant intrusion model into the pipe based on the fuzzy logic theory which takes three variables defined in (1) (2) and (3). Then, the outcome from (4) is the potential of pipe which is an intrusion by contaminant.

Our studies are three-fold contributions to the identification the location of contamination and the disease through water supply pipe for the community. First, our results help to

build the framework for identified leaking areas, planning maintenance and replacing water supply pipes. Second, it improves the operation of valve opening and closing on the water distribution system and monitoring the water phenomenon. Finally, our research proposes the new method to protect water supply pipe from the contamination of soil environment which the leakage flow from the wastewater pipe.

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