

# Optimizing Water Quality Monitoring Stations Using Genetic Algorithms

Al-Zahrani, MA; Moied, K

KING FAHD UNIV PETROLEUM MINERALS, ARABIAN JOURNAL FOR SCIENCE  
AND ENGINEERING; pp: 57-75; Vol: 28

King Fahd University of Petroleum & Minerals

<http://www.kfupm.edu.sa>

## Summary

Monitoring of drinking water transported by a water distribution network is an essential step to ensure the safeguard of human health and the compliance of drinking water quality with local and international standards. The Safe Drinking Water Act requires that water quality in a water distribution network be sampled at locations which are representative of the whole network system. Different tools based on optimization techniques can be employed for identifying water quality monitoring stations in a water distribution network. In this paper, a Genetic Algorithm (GA) is applied for this purpose. The steps involved in the developed methodology are presented with an application on hypothetical networks. Then its validity was tested against two cases presented in the literature and gave similar results.

## References:

1. BOULOS PF, 1993, J CIVIL ENG SYSTEMS, V10, P187
2. GOLDBERG DE, 1989, GENETIC ALGORITHMS S
3. KESSLER A, 1998, J WATER RES PL-ASCE, V124, P192
4. KUMAR A, 1997, J ENVIRON ENG-ASCE, V123, P746
5. LEE BH, 1990, THESIS U MICHIGAN
6. LEE BH, 1992, J ENVIRON ENG-ASCE, V118, P4
7. MEIER RW, 2000, J WATER RES PL-ASCE, V126, P245
8. PONTIUS FW, 1990, WATER QUALITY TREATM
9. REIS LFR, 1997, J WATER RES PL-ASCE, V123, P314
10. ROSSMAN LA, 2000, EPANET USERS MANUAL
11. SAVIC DA, 1997, J WATER RES PL-ASCE, V123, P67
12. TATE DM, 1993, P 5 INT C GEN ALG, P31

For pre-prints please write to: [mzahrani@kfupm.edu.sa](mailto:mzahrani@kfupm.edu.sa)