

## Application of ArcGIS 10 for Identification of Hazards to Water Distribution System

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### Abstract

Water distribution systems (WDS) are generally designed to supply 24/7 good quality drinking water to the consumers. However, water supplies in developing countries are often made intermittent due to deteriorated network condition and various hazards to the underground system. This is a major cause for contaminant ingress into the pipes and waterborne epidemics at local scale. The World Health Organization has reported 2.0 million deaths every year due to water borne diseases. The paper presents application ArcGIS10 to identify the hazards to the water distribution network in a pilot study area of Nagpur city, India, as a part of the Water Safety Plan (WSP). Maps of water distribution network, sewer network, soil, and open drains in the study area are generated using ArcGIS10. Overlay analysis is used to identify the crossings of water supply lines and sewers i.e. the hazards for WDS. Water supply lines close to open drains that are likely to contaminate the water supply are also delineated. Mapping and overlay analysis identified the critical locations in the network for regular monitoring and water quality assessment. A field verification programme undertaken to support GIS analysis confirmed the critical locations to suggest a replacement plan for the pipes in bad condition.

Keywords: WSP, Water Distribution System, Hazards, Water Borne Diseases, ArcGIS 10.