ABSTRACT

This study demonstrates the integration of Geographic Information Systems (GIS) with asset management. There are few existing studies or demonstrations of the integration of GIS technology with asset management systems, especially for vertical assets at water utilities. A model is developed using Otay Water District (OWD) as a case study. The case study expands upon a GIS model that already contains horizontal assets (e.g., pipelines). The new model includes vertical assets (e.g., pump stations). In the past, non-spatial vertical assets, such as pump stations and their components were represented only by a point and could not be plotted against spatial data variables. In the expanded model, spatial and non-spatial asset risk variables are measured and scored for the 79 pumps within the 20 pump stations at the district. Each pump is assigned criticality and probability scores, which are then multiplied to give an overall risk factor score. Model scores were plotted on a point symbology map and expert confirmation was conducted with OWD water operations staff. A sensitivity analysis of the model reveals that manipulating model parameters to increase overall scoring accuracy of some pumps can also have a negative impact on the scoring of others. Further study is needed to plan and implement schemes that allow vertical assets at utilities to inherit asset management scores based on their positions within larger horizontal networks.