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Abstract

**Water Storage Tanks:
Design and Siting Considerations, Issues and Solutions**

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Elevated water storage tanks are an integral and vital component in a viable water distribution system. They optimize water service to a pressure zone, equalize water pressure throughout the zone, balance storage for zone and stabilize water system operation. In the past, localities would generally construct the largest tank they could afford and construct the tanks at the most desirable engineering location, i.e. on the highest available property. This is no longer the preferred or accepted method for designing or selecting a site for an elevated water storage tank. The tank size now is governed by domestic storage, fire protection requirements and distribution system residence time. Since the tanks are the largest components in the distribution system the turnover time in a tank is a very important factor affecting the residence time in the distribution system. In addition to the changes in how tank size is determined, tank site selection has also changed. Tank locations now depend on a variety of factors including distribution system hydraulics, land availability, aesthetics and most of all public and hence political acceptance. Tank designs now require detailed hydraulic modeling to confirm the optimum tank volume that provides domestic and fire storage required and provide sufficient turn over to minimize residence time in the tank and the distribution system. Once the tank size is determined the next step is to select a site that meets the engineering criteria of preferred location in the pressure zone, adequate elevation to meet the hydraulic grade line of the zone, and is acceptable to the residents of the area. The intent of this presentation is to review the design and site selection procedures and discuss procedures for designing tanks, selecting alternative sites, and working with the locality and the residents to select a site that is acceptable to all.

