Coffee Break Training - Fire Protection Series

Access and Water Supplies: Static Water Supply Calculations

No. FP-2009-19 May 12, 2009

Learning Objective: *The student shall be able to calculate the total water volume of a static source.*

In many parts of the country, a static water supply like this quarry pond might serve as a community's major fire protection water source.

There may be times, though, that an urban area fire department may have to draft from a pond or lake in the local public park if its regular water supply is disturbed by an earthquake, power loss, or other service interruption. To prepare for that contingency, the fire department should do a preincident survey to determine the amount of available water.

Determining the volume in a symmetrical container such as a square swimming pool or round tank is simple: there are mathematical formulas in almost every fire protection hydraulics handbook to do the calculations. For example, to determine volume of a square swimming pool, use the formula:

L x W x D x 7.48 = total gallons

Where,

L = the pool length
W = the pool's width
D = equals the pool's depth
(For metric equivalents, measure the dimension in meters, and multiply times 1,000 to obtain total liters.)

This serene site may be a community's major fire protection water supply during a disaster.

For an asymmetrical source, though, one has to use a little imagination to keep it uncomplicated. For this quarry pond, one could overlay imaginary lines to square the surface and obtain distances to compute a simple area estimate (L x W). If the depth is known, the formula can be completed. Remember that depending upon conditions, the effective lift for drafting should not exceed 10 feet (3 m).

In the pond that is illustrated, a local fire department performed this quick calculation and learned it has more than 10,000,000 gallons (37,850,000 liters) ready for an emergency.