

# Hamilton Township Fire Rescue

## Dry Hydrant Information

### What is a Dry Hydrant?

A dry hydrant is a non-pressurized pipe system permanently installed in existing lakes, ponds and streams that provides a suction supply of water to a fire department tank truck.

In rural areas, a lack of water mains and pressurized fire hydrants can sometimes impair a fire department's ability to do its job quickly and efficiently. The success of a fire departments operation hinges on the distance a truck must travel to fill-up and return to the fire. In many cases these fill-up points are often long distances from the fire and the firefighters are unable to maintain an uninterrupted water source at the scene.

The instillation of a non-pressurized pipe system into local water sources provides a ready means of supplying water to fire engines.

Planning for dry hydrants involves several considerations and should involve all those affected so a coordinated effort can take place. Some factors to consider are:

- Current and future population and building trends.
- Property values protected.
- Potential for loss.
- Fire history of the area protected.
- Current water supply systems.
- Other potential water sources.

A dry Hydrant is more than a collection of "hardware." In any area without water mains and domestic fire hydrants, the dry hydrant concept can provide a simple cost-effective solution to the need for access to water sources without delay.

### Dry Hydrant Location and Design

The location of individual dry hydrants is also influenced by several factors.

**Maximum distance of travel between dry hydrants.** This can vary for several reasons, but one target distance could be one dry hydrant every 3 square miles. This would produce a travel time of about 6 minutes between the water and the fire, assuming an average safe constant speed for a loaded truck of 35 mph.

**Ownership of the land.** The fire department or other authority should contact the legal property owner to secure written permission to use the water source. If a possible dry hydrant site is along a road right of way, you will need town, county or state approval. In some cases Corps of Engineers approval may also be needed. Obtaining written permission is an important requirement that may take some time.

**Depth of water at the source.** Careful note should be made about the useful depth of a lake or pond, which is from the minimum foreseeable low-water surface level to the top of the suctionstrainer (not the bottom of the lake). The low-water mark considers tides, drought, freezing and other effects, such as where the water level is lowered to generate power. The absolute lowest level must be not less than 2 feet, to prevent a vortex or whirlpool, which could allow air to enter the pump and cause loss of pump prime. You may need a minimum of 4 to 5 feet of water over the suction screen and pipe during low water to prevent a freeze-up of the screen.

Making a rough estimate of the water volume in a pond when exact dimensions are not known: If you can visualize the relative size of a football field, use that area as a starting point. A football

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field contains roughly an acre. Every foot of water would provide about 325,000 gallons. This pond should contain about 600,000 gallons per foot of water.

**Composition of the bottom material.** For long-term useful hydrant operation, the best composition for the bottom of a lake, stream or pond is sand, gravel or rock or a combination of these. Decaying vegetative matter could clog the suction screen.

**Ease of digging.** A backhoe will need to get close enough to the water's edge to reach out and dig at least 5 feet below the surface of the water to start the trench.

**Protection the connection.** A location that is conveniently accessible to fire apparatus may also be exposed to accidents from other passing vehicles. An impact barrier constructed of partially buried posts may be needed to prevent a vehicle from destroying a dry hydrant in a heavily traveled area. Special markings may be necessary to avoid damage from snow plows.

**Beware of other utilities in the digging area.** You must carefully check for the presence of buried lines and pipes and notify utility companies before you start digging.

### **Dry Hydrant Advantages**

Knowing about a quantity of available water in area streams, ponds and lakes gives an advantage to a fire department only if the water is readily accessible. Soft or obstructed ground certainly limits access. Or, the needed water may be located so far away from where it is needed that a fire department's ability to do its job of fire control is impaired.

Mobile water supply vehicles can move water from distant sources, but the critical factor is whether or not the fire department can maintain an uninterrupted supply of a predictable rate of water at the fire scene.

Installation of dry hydrants into numerous nearby and developed water supplies eliminates the inefficiency and complexity of long-distance water shuttle operations. This arrangement also allows access to water sources from a roadway instead of having to work on soft ground immediately adjacent to the pond or stream.