



NFPA 291

Recommended Practice for Fire Flow
Testing and Marking of Hydrants

Today's Purpose

Thank you for the opportunity to present our case for modifying NFPA 291 recommendations related to the flow testing of hydrants.

Scope, Purpose, Application

The Scope, Purpose and Application of NFPA 291 is flow testing and marking of hydrants. To determine rate of flow at various locations for fire-fighting purposes and to indicate deficiencies, such as tuberculation and closed valves.

Members of the fire service,
waterworks and fire sprinkler
contractors look to this document
for guidance.

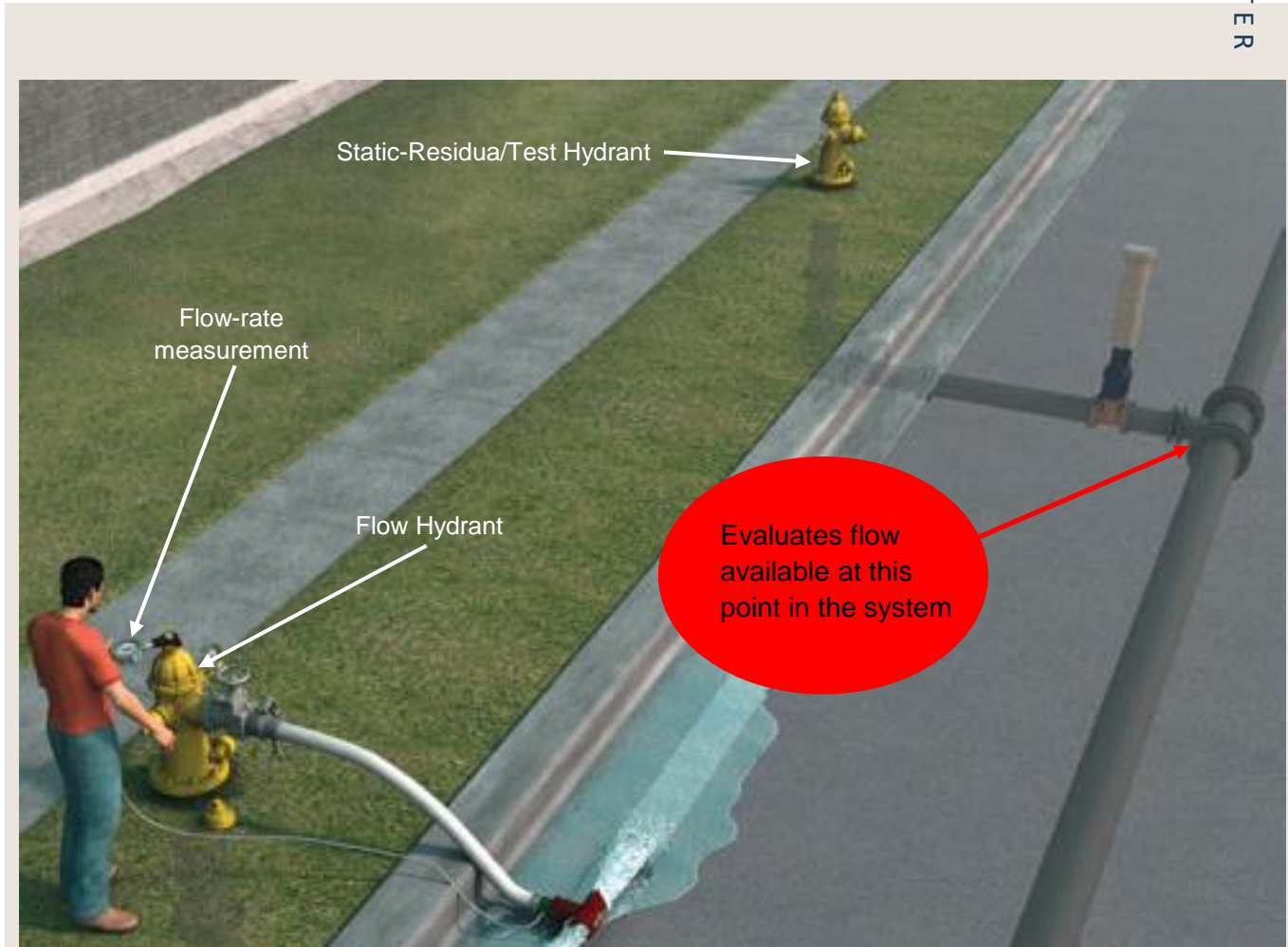
There's more than one way to evaluate a water supply

Main Capacity Flow Test

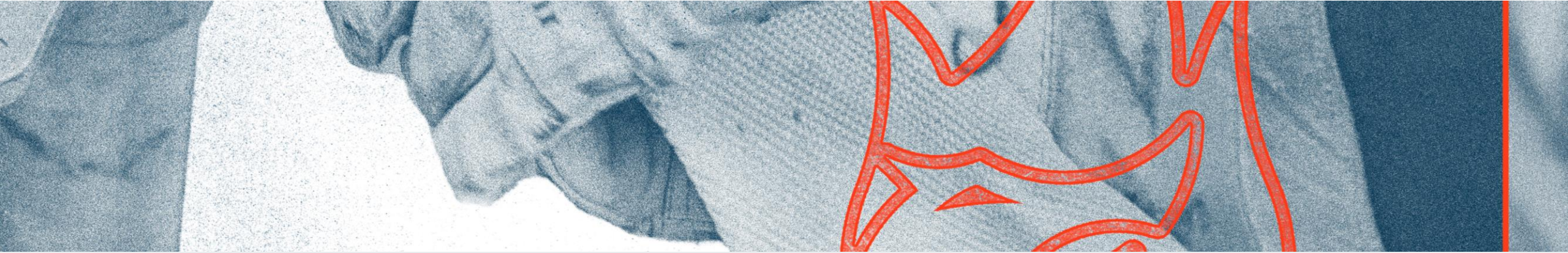
Hydrant Capacity Flow Test

Today

Presently NFPA 291 recommends the **Main Capacity Flow Test** utilizing a test hydrant and one or more flow hydrants to identify the water supply available in the underground main closest to the test hydrant.



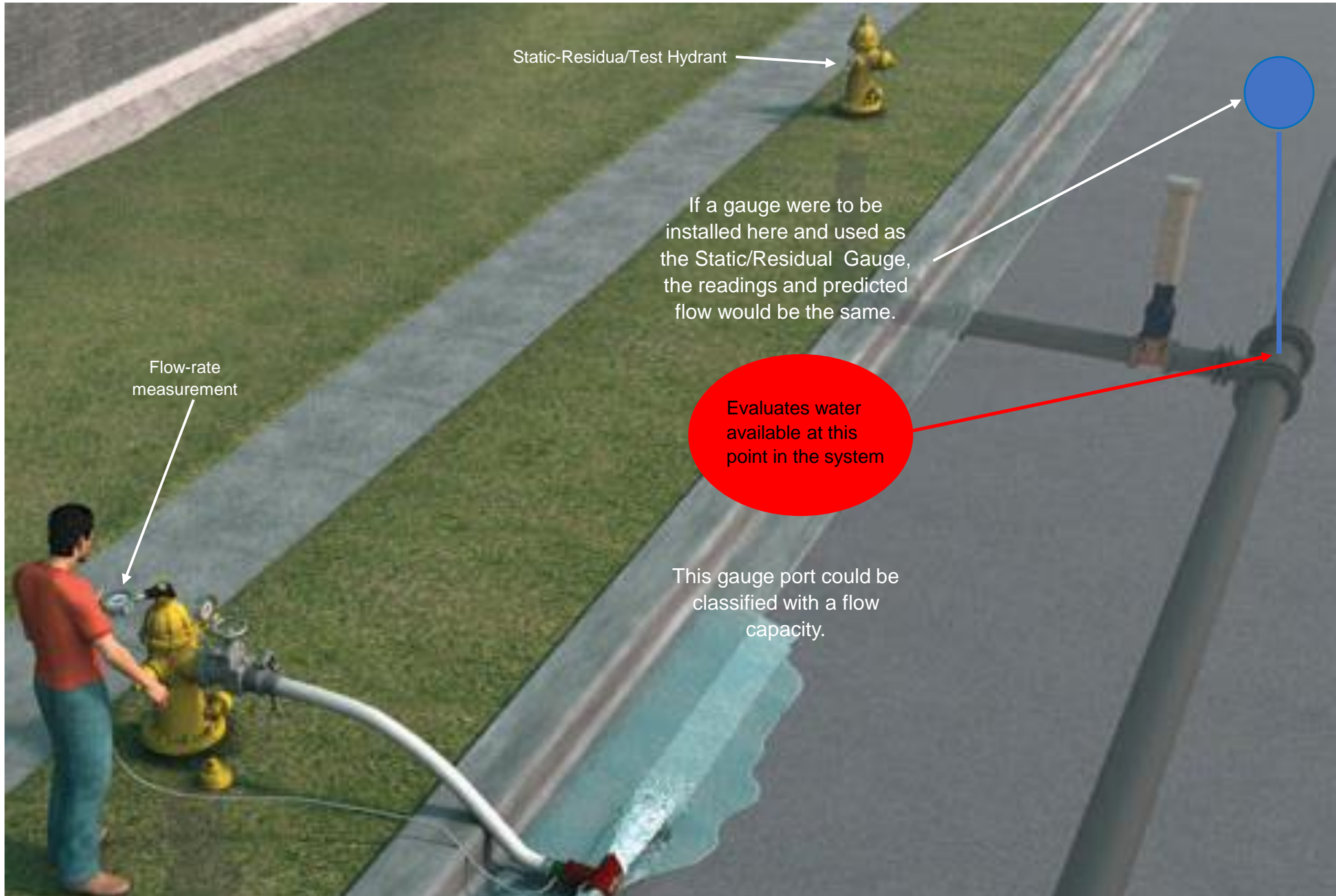
Main Capacity Flow Test



The main capacity flow test is important for fire sprinkler engineers as a starting point to begin designing water-based fire protection systems and for measuring friction loss in piping leading to the most remote sprinkler head.

However

- Does not hydraulically include the piping between the main and the hydrant, where the fire department will connect
- Water supply value is overstated by the friction loss between the main and the hydrant cap, where the fire department connects
- Does not verify the functionality of the Test Hydrant. The only use of this Hydrant is to measure static and residual pressures. **The Test Hydrant in this test never flows water.**



Static-Residua/Test Hydrant

If a gauge were to be installed here and used as the Static/Residual Gauge, the readings and predicted flow would be the same.

Flow-rate measurement

Evaluates water available at this point in the system

This gauge port could be classified with a flow capacity.

The Solution

When firefighters respond to an alarm, they expect the hydrants to work. How can it be known that a hydrant will open when needed and has the flow-rate capacity needed to fight a fire? The answer is to evaluate the water supply at the hydrant nozzle where the fire department is going to connect.

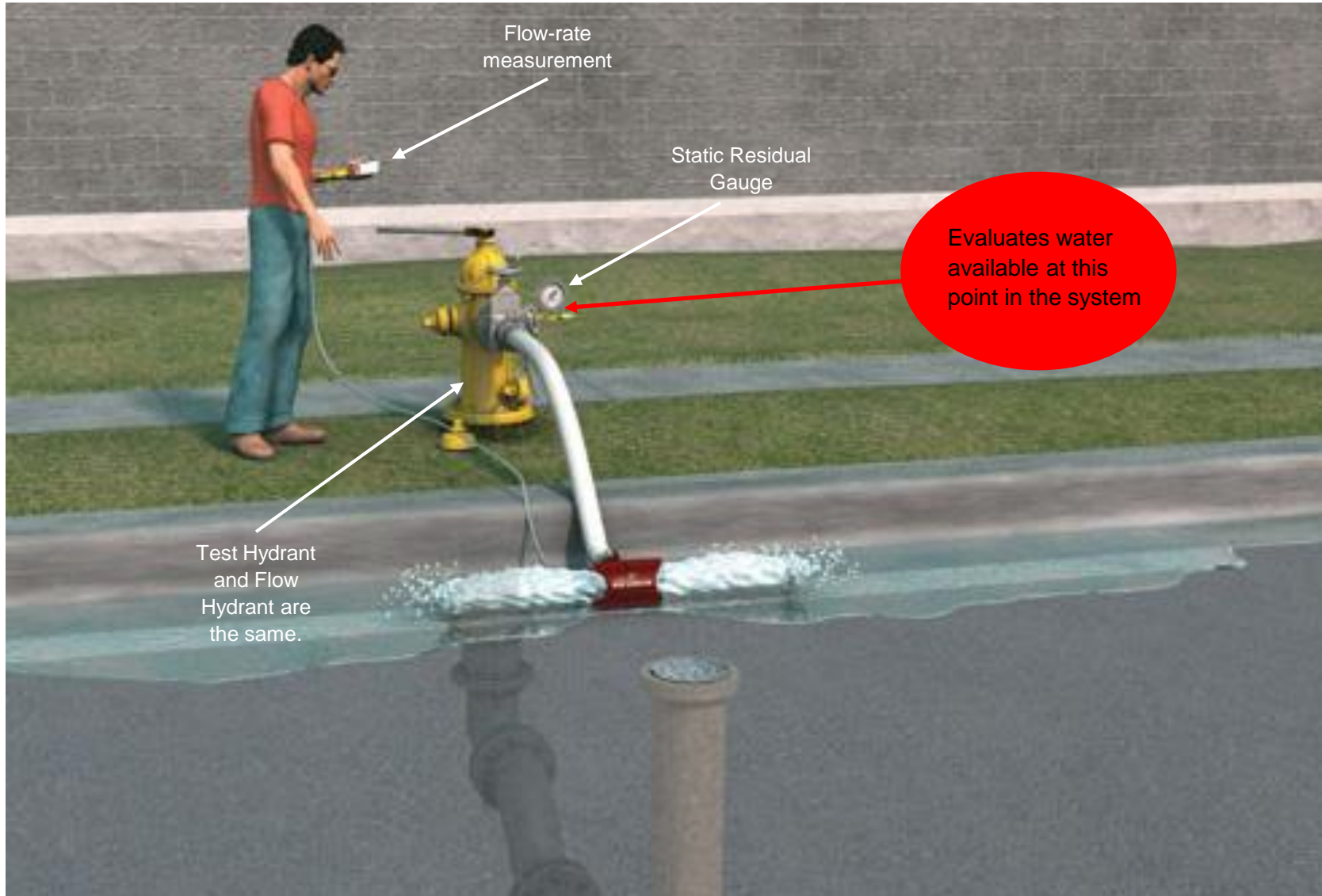
Hydrant Capacity Flow Test

There is a simple flow test that accurately evaluates the water supply available through the hydrant. **The hydrant capacity fire flow test** (single hydrant flow test) automatically measures the friction loss and identifies inoperative hydrants and other deficiencies.

We propose language that identifies the Main Capacity Flow Test and Hydrant Capacity Flow Test; and a procedure for performing the Hydrant Capacity test.



Hydrant Capacity Fire Flow Test



The Tests

Both tests are valuable, and correct or incorrect depending on the purpose of the test. If a fire sprinkler contractor needs the capacity of the water supply to design a sprinkler system, then the Fire Main Capacity Flow Test is the correct test. If a firefighter needs to know that a hydrant works and the capacity of that fire hydrant, then the Hydrant Capacity Fire Flow Test is correct. **The test needs to be properly matched with the information desired.**

	Hydrant Capacity Test	Fire Main Capacity Test
Number of Hydrants	1	2 or more
Water Flow Capacity is predicted for	Test Hydrant	Underground main
Verifies Mechanical Operation of Test Hydrant	Yes	No, only the flow hydrant
Verifies the operation of the valves and piping that provide water to the Test Hydrant	Yes	No, only the flow hydrant

Other Benefit

- Because it simple and requires fewer man-hour resources, it will be more likely to be done.
- Deficient hydrants will be found so they can be repaired.

Conclude

In summary, the goal of NFPA 291 is to provide guidance for those whose job it is to determine available water supply and to identify deficiencies. The Hydrant Capacity flow test would be a valuable addition to the Fire Main Capacity Test in accomplishing this mission. NFPA 291 should be modified to define and include both procedures and their respective applications



THANK YOU!

www.HoseMonster.com

The Problem

It is not uncommon for a fire department to respond to a fire with millions of dollars of apparatus and ready and able firefighters only to find that the hydrant doesn't work. The result being loss of life and property.



**DOES ANYBODY KNOW
IF THIS HYDRANT WORKS?**

IT WON'T COST MUCH TO FIND OUT.

...OR WILL IT?



How does this happen?

- Hydrant components fuse together from non-use
- Hydrant stems break
- Hydrants are vandalized
- Maintenance closes valves but fails to reopen them
- Piping system tuberculated
- Frozen water in the hydrant barrel