High-Flow Discharge Flow Tests

Crossville, Alabama
September 25, 2011

www.gotbigwater.com

Overview

- On September 24th and 25th, 2011, GBW Associates, LLC conducted a Rural Water Supply Operations Seminar hosted by the DeKalb County (Alabama) Association of Fire Departments and the Crossville Fire Department.
- Part of the seminar included a review of pumping operations – including the use of high-flow discharges.
- The folks from the Mount Vera VFD had a 1,250 gpm pumper equipped with a high-flow discharge and they were interested in learning just how much water could be moved out of that discharge.
- So…a flow test was arranged at a local pond.

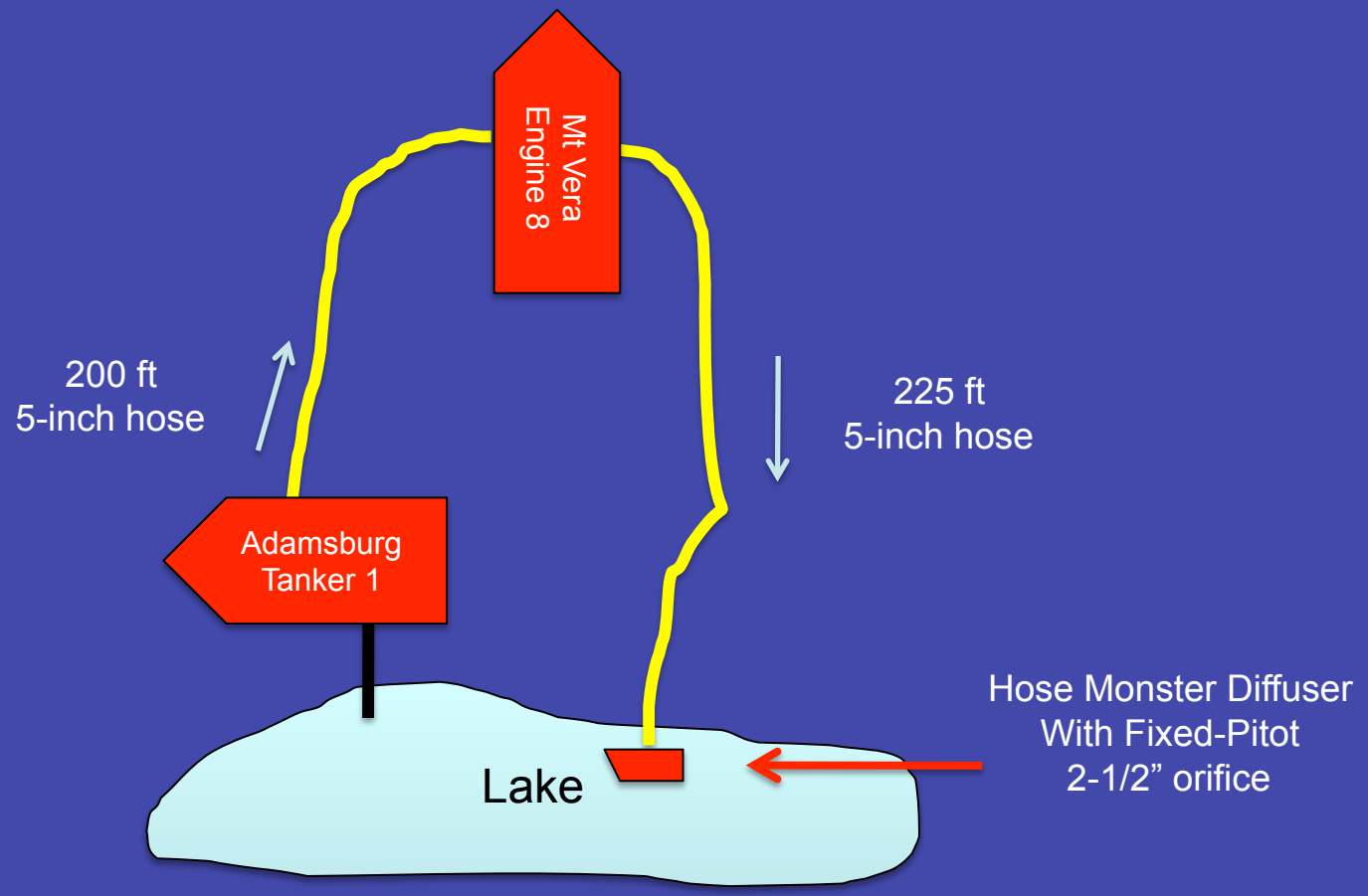
The Process

- The flow test was quite simple – a pumper/tanker from the Adamsburg FD was used to to draft and supply the Mount Vera pumper via a 5-inch hose line.
- The Mount Vera pumper then discharged water into a 5-inch hose line using its 3-inch, high flow discharge.
- The Mount Vera pumper attempted to maximize its flow by pumping to whatever point occurred first:
  - the governed speed of the motor; or,
  - 150 psi net pump pressure; or,
  - 185 psi discharge pressure (working pressure of the LDH)
- A Hose Monster fixed-pitot diffuser device was used to accurately measure the flow.

Test Pumper

Mt Vera VFD Engine 8 – a 1,250 gpm single-stage pumper w/1,000 gallon tank and a 3-inch, high flow discharge.

Flow Test: The Set-Up



Supply Pumper

Supply Intake

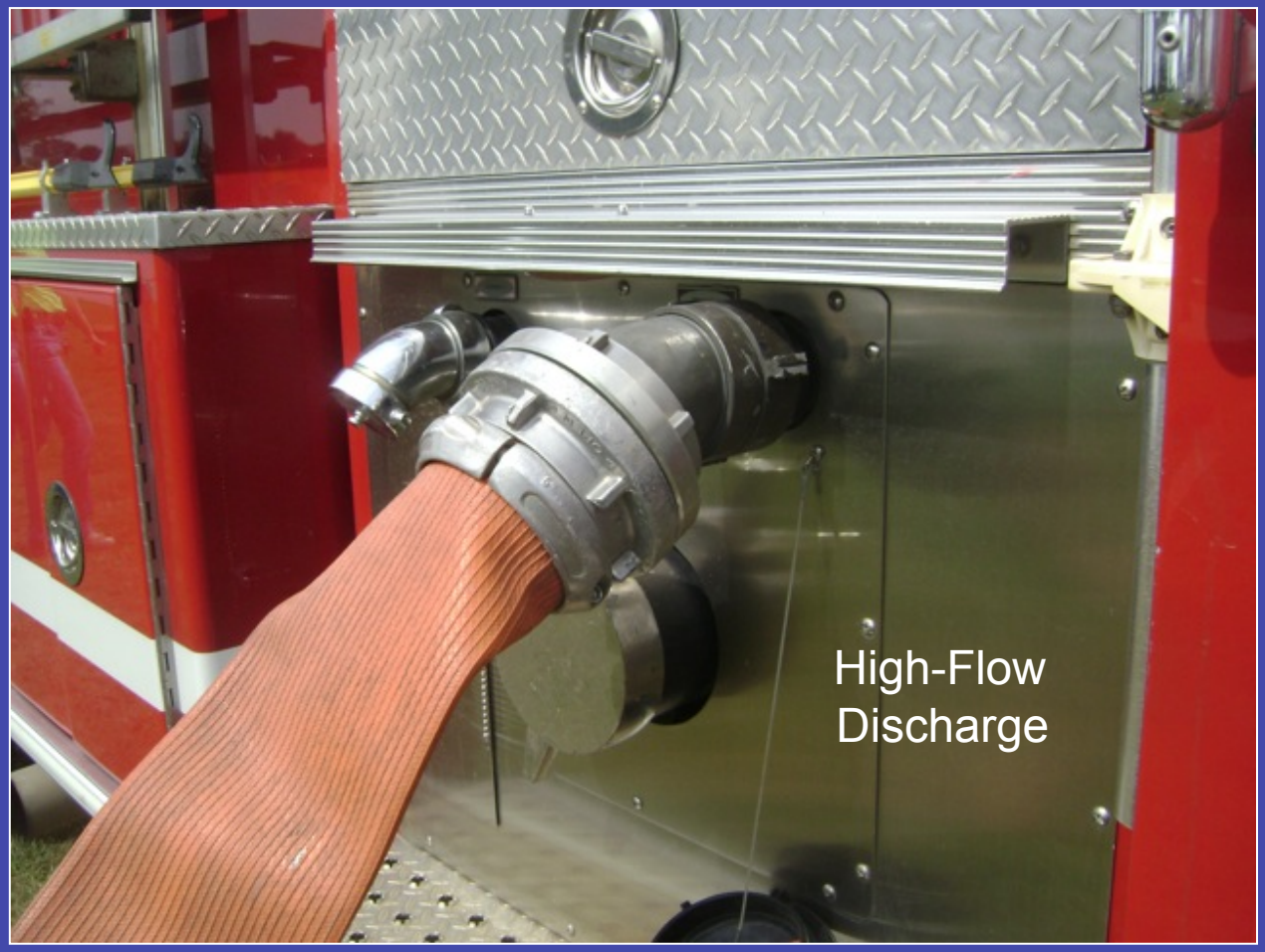
The test pumper is supplied using 200-ft of 5-inch LDH connected to the driver side, 6” suction inlet using a piston intake valve.

 www.gotbigwater.com

Discharge Set-up

For the discharge set-up, 225-ft of 5-inch LDH is connect to the pumper's 3-inch high-flow discharge using an 3" x 5" adaptor.

Discharge Set-Up

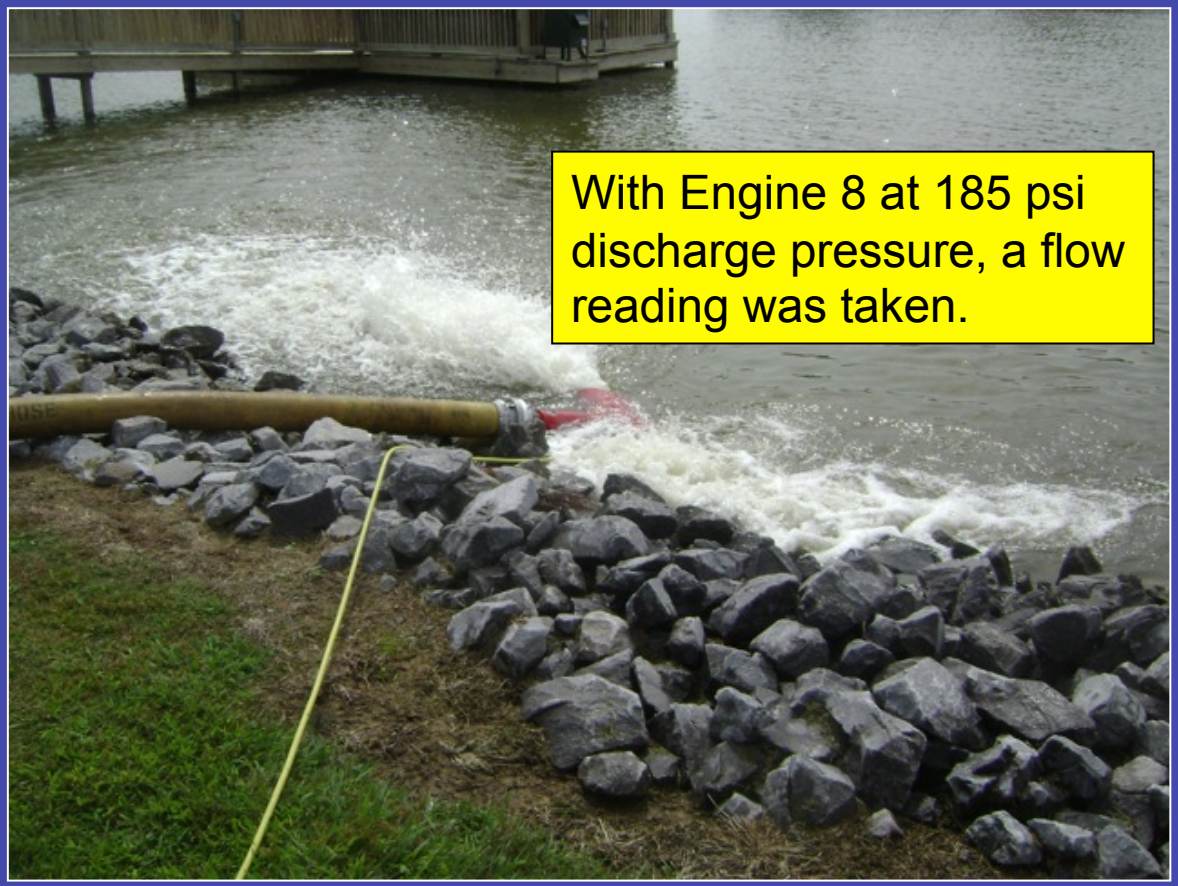


Ready to Test

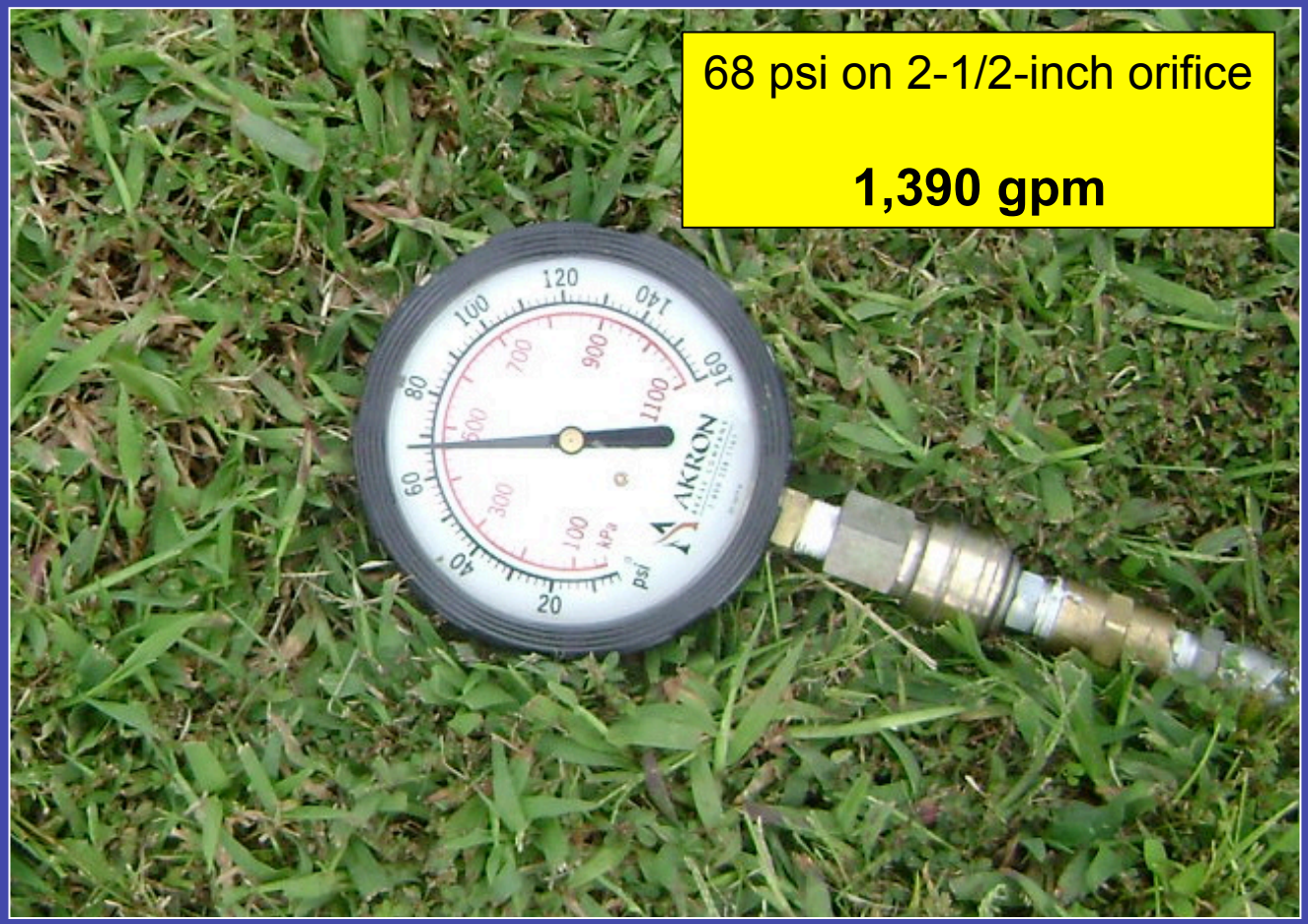
Flow Measurement

A 2-1/2-inch Hose Monster flow diffuser with fixed-pitot tube device was used to measure flow..

Flow Test: The Results



Flow Test: The Results



The Results

- This flow test illustrated a couple of important points.
- First – Engine 8's high-flow discharge was more than capable of flowing the capacity of the pump.
- Second – 5-inch LDH can handle flows over 1,000 gpm with little effort.
- Third – a 1,250 gpm pump at draft pumped almost 1,400 gpm because the lift was very minimal – which reinforces the point of getting a pump as close to a static water source as possible – in terms of lift.
- Fourth – centrifugal pumps can take advantage of incoming pressure to support higher flows.

Summary

- This flow test reaffirmed the importance of using a pumper's high-flow discharge when using LDH.
- The flow test also reaffirmed the flow capability of 5-inch supply hose.
- We thank the folks from Mt Vera and Adamsburg FDs for participating in the test.

www.GotBigWater.com

This program was developed by
GBW Associates, LLC

For more information contact us at
thebigcamel@gotbigwater.com