www.GotBigWater.com

Jefferson County Fire Chief's Association
Jefferson, Wisconsin

Rural Water Supply Operations Seminar
2-hr Water Supply Drill – 1000 GPM Club
October 23, 2022
Summary Report

The Purpose

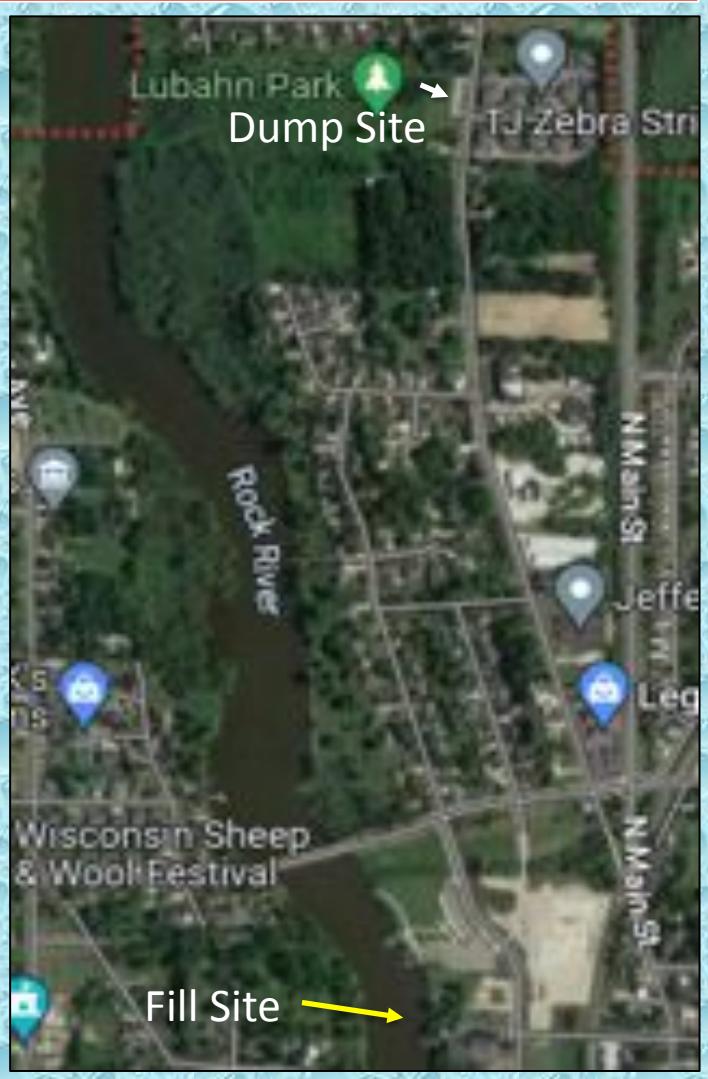
- The purpose of the seminar and drill was to review the basics of rural water supply operations and to practice water supply operations in a non-hydranted setting.
- The drill also allowed mutual aid companies to work together in a real-life training situation.

The Seminar

- The 2-day seminar started with a 4-hour classroom session to review the basics of rural water supply operations.
- The review session was held at the Jefferson, WI FD fire station.
- Once the classroom part was over, the seminar continued with 8 hours of practical work on fill-site and dump site operations.
- The program concluded with the 2-hr ISO tanker shuttle exercise and program review.
- Seminar participants were from Jefferson County, WI and the surrounding area.

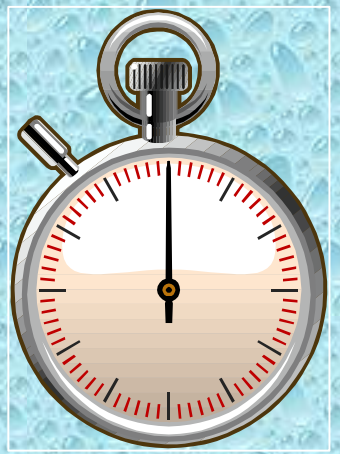
The 2-hour Water Supply Drill

- The tender shuttle drill was held on October 24th at parks along the Rock River in Jefferson, WI
- The drill attempted to replicate the 2-hour Water Supply Delivery Test used by ISO in their evaluation of fire department water supply capabilities.
- While ISO no longer uses the physical demonstration of water supply delivery, the 2-hour test is still a reasonable standard by which fire departments can compare their water supply operations.
- *ISO now uses computer modeling to predict tender shuttle flow capabilities.*



The ISO Test

- The ISO 2-hour Water Supply Delivery Test has three critical time segments:
  - 0:00 to 5:00 minutes
  - 5:01 to 15:00 minutes
  - 15:01 to 120:00 minutes



ISO Test *0:00 to 5:00 Minutes*

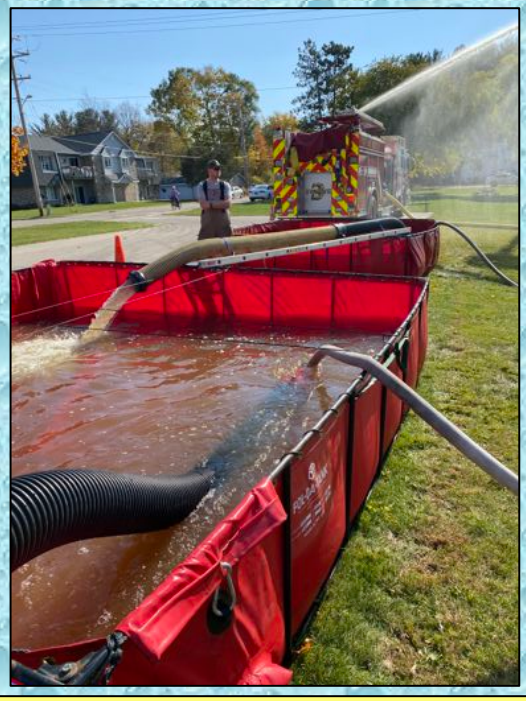
- A drill location is selected and the units due to respond on the first-alarm assignment are dispatched.
- Time starts when the first engine arrives on the scene and comes to a complete stop.
- There is no requirement to flow water during the first 5 minutes, but the crew must be prepared to flow water once the 5-minute mark is reached.

ISO Test *5:01 to 15:00 minutes*

- At the 5-minute mark, a flow of at least 250 gpm must be started - and it must be sustained.
- During the next 10-minutes, crews can work to further develop their water supply and increase their flow, however…
- At the 15-minute mark (5+10), whatever amount of water is flowing at that time must be maintained for the remainder of the 2-hour test.

ISO Test *15:01 to 120:00 minutes*

- Once the 15-minute mark has been reached, the remainder of the 2-hour test is really just about ***sustaining*** the flow.
- The ISO test includes the simulation of automatic mutual aid response and allows additional water supply units to arrive and assist in the delivery process as would happen on a real incident.
- The real advantage of the ISO test is that it gives a fire department the chance to see where improvements can be made in their water supply delivery process.



It is one thing to say that your fire department can deliver 500 gpm for two hours – it is another thing to prove it in a real-life drill scenario!

Water Supply Drill Participants

	Department	Unit
1st Tender	Sullivan	3
Task Force	Hellenville	55
	Jefferson	10
	Jefferson	11
2nd Tender	Rome	8992
Task Force	Ixonia	91
	Palmyra	T7
	Western Lakes	92
	Merton	4492

	Department	Unit
Attack Engine	Jefferson	3
Dump Site Engine	Sullivan	5
Fill Site Engine	Jefferson	2

- *The participants for the drill were from several different fire departments in the Jefferson County region and the water hauling apparatus was representative of the type of water supply support that would respond to a structure fire in the Jefferson area.*

The Drill Begins

Jefferson Engine 3 arrived and set up initially flowing from its deck gun. Sullivan Engine 5 served as the dump site pumper and initially set up with a tank to its front and rear. This later turned into a 3 tank operation.

Dump Site Operations

The first tender task force showed up fairly quickly and the dump site was built out in pretty short order with a 3rd tank added as a secondary tank to the rear of E5. The crews realized that two tanks to the rear of E5 wasn't leaving enough room for tenders to make the turn into the dump site and moved the secondary tank to the front of Engine 5. Note that the tanks are set up so that the pump operator has plenty of room at the pump panel.

Dump Site Operations

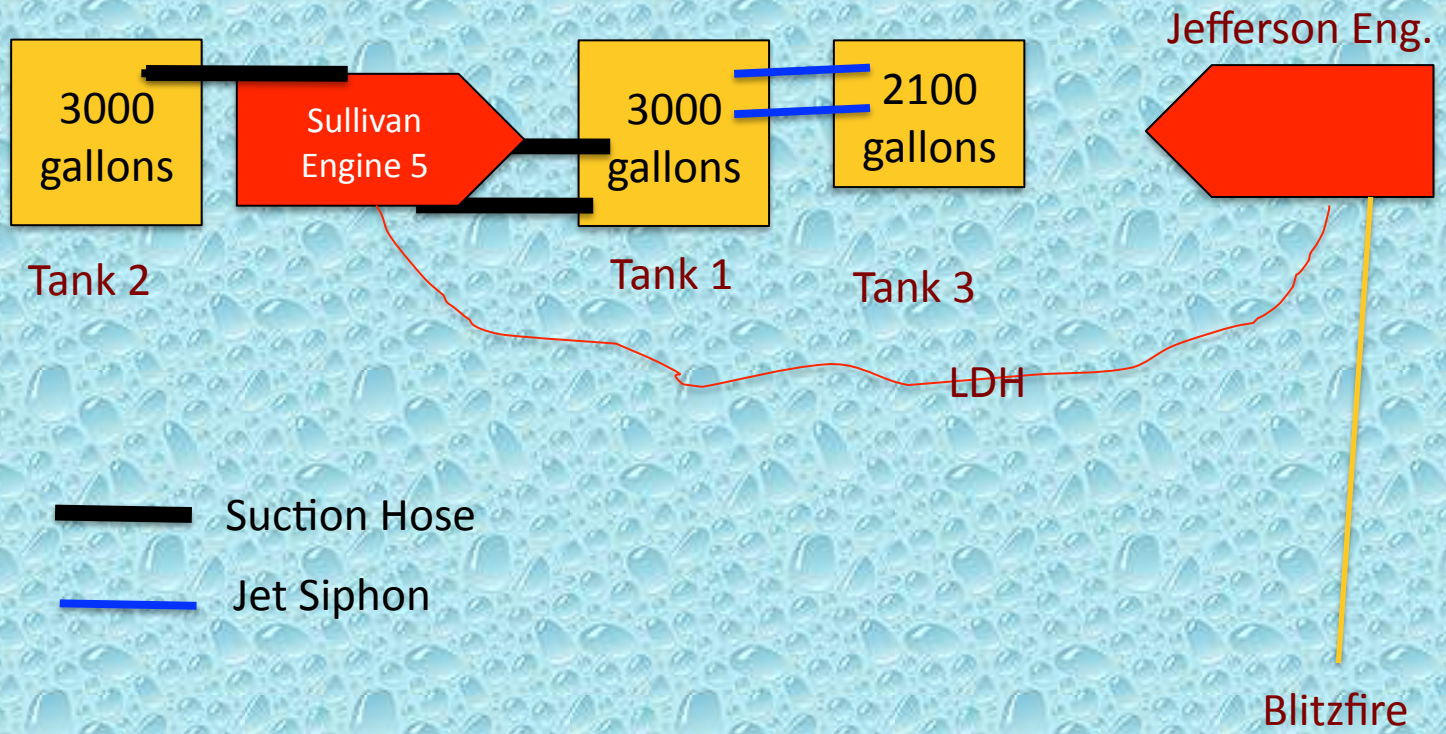
The drill participants wanted to simulate a narrow country road to the extent possible.

Intake control valves and a drafting elbow allowed E5 to efficiently use both side intakes and put tanks on either end of the pumper to make the best use of the limited space. Using both intakes also allowed the crews to seamlessly switch out the strainer in the rear tank when it became apparent that it was a flow restrictor.

Dump Site Operations

A 2nd siphon was added to support higher transfer rates. E5 is a 1250 gpm pumper but ended up supplying 1500 gpm and running two jet siphons (est. 300 additional gpm)….how was this possible? Use of both side intakes, and big flow strainers on the two sets of suction tubes.

Dump Site Layout



The Fill Site

- For this drill – one fill site was used at a boat ramp on the Rock River.
- There was about a 2.0-mile round trip for the units hauling water.
- The river had ample water volume to support the drill and access was not a problem with putting a pumper on the ramp itself.
- Jefferson Engine 3, a 1500 gpm pumper, was used as the fill engine.
- Engine 3 started with a single set of suction tubes from a side intake and ended up also utilizing a rear intake with an additional set of hard sleeves.

The Fill Site

The drill occurred in autumn. Early fill site operations were hampered by having to stop and clear leaves from the single strainer in use. The introduction of another set of sleeves, and making the sets longer, helped mitigate this problem and allowed a minimum of one set of sleeves to be kept in operation at all times.

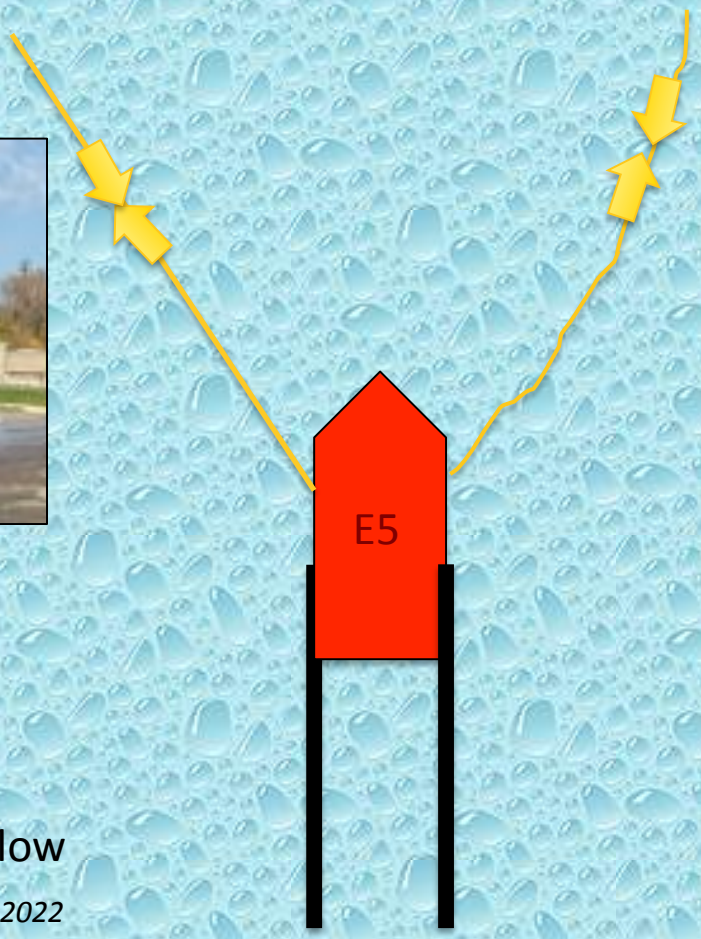
The Fill Site

Two fill lines were placed into operation. Each had two manifolds. The manifold closest to the pumper controlled flow, while the manifold closest to the tender was used to quickly drain the short piece of LDH that was connected to the tender fill valve.

The Fill Site

Two fill lines allowed a second tender to be connected and start filling within a few seconds after the first tender was finished filling. It is best practice to fill one tender at a time (due to pump capacity) but this set-up assured that there was no time wasted in-between tender fills due to having to unconnect and reconnect fill lines. There was plenty of space for tenders to drive in and position.

Fill Site Layout



Suction Hose

LDH fill lines

LDH Manifold showing direction of flow

The Data

Minute mark	Flow (GPM)	Duration	Total
4	500	7	3500
11	800	47	37600
58	1000	13	13000
71	1200	10	12000
81	1300	5	6500
86	1500	34	51000
		Grand Total	123600
	Average flow over 120 minutes		1030
	Round trip		2 miles

It took about 45 minutes for operations to smooth out. After the fill site worked out the kinks, over 1000 gpm was flowed for the last hour.

The Lessons Learned

- At this drill, crews chose to use a dump tank operation from the very beginning. This was aided by an attack tender with a 1000 gallon tank.
- Crews had to hustle to get the tank operation set up – but having intake valves and the ability to set up tanks fore and aft of the pumper made this operation more effective and efficient.
- The use of large flow strainers and multiple intakes / sets of hard sleeves ensured that pump capacity was not an issue at either the fill site or the dump site.
- The performance resulted in the participants being awarded membership in the Got Big Water 1,000 GPM Club!

The Lessons Learned

- This operation needed lots of hard sleeves, strainers and manifolds to work so well. Tenders should carry a standard package of these items….not because the tenders will use them but because the equipment package can be dropped off to support dump site and fill site operations.

The Lessons Learned

- A tender fill-site needs to run like a NASCAR pit stop. Anything that slows down the loading of tenders is going to reduce the efficiency of the tender shuttle. At this drill, having two, alternating, fill lines made the fill site run at peak capacity.
- At this drill, all of the tenders had the same large fill connection which allowed the rigs to get filled and be back on the road in little time.

The Lessons Learned

- The “bundling” of water hauling mutual aid resources has proven successful in many drills. The tender task force concept again proved to be an effective process for requesting and using additional rural water supply resources.
- Static water with vegetation can be problematic to fill site operations…but there are ways to overcome this. Use of multiple intakes with valves allowed for continued operations while cleaning a single strainer at a time.

Drill Videos

Be sure to watch videos from the drill on the GotBigWater YouTube Channel.

Summary

- The drill was a success. For the new folks, they got to see how dump tank operations work.
- For the older, experienced folks, it was a chance to practice their "craft."
- The success of the drill showed the importance of mutual aid response practices and procedures – and the importance of mutual aid interoperability.
- Many thanks to the Jefferson County Fire Chief's Association for sponsoring and hosting the seminar.

www.GotBigWater.com

This program was developed by
GBW Associates, LLC

For more information contact us at
thebigcamel@gotbigwater.com