



Loveland Fire Rescue Authority
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WATER SUPPLY OPERATIONS – RURAL (2.1)

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- **NFPA – 1142 Standard on Water Supplies for Suburban and Rural Fire Fighting.**

TASK SKILL DESCRIPTION AND DETAIL

Having a consistent water supply in place is essential to support fire attack ground operations. In a rural setting acquiring a sustainable water supply can be very challenging due to the lack of available hydrants. In this environment, water tender shuttles, dump sites, fill sites, and nursing operations are common tactics used to create a water supply in a rural environment.

Water Tender Shuttle – Using apparatus to continually retrieve water from a remote location and drive it to the fire ground using onboard tanks.

Dump Site - The dump site will be in the area of where the fire operation will commence. This is where the attack engine will be positioned and the port-a-tank operation will be set up.

Fill Site – The fill site will be located at the closest water source. When a hydrant is not available, a static water source such as a lake, pond, river, stream, or ditch is utilized to create a water supply for the operation. If this is the case, it is important to consider using a dedicated engine to set up a drafting operation to fill water tenders.

Nursing Ops- Positioning a water tender or fire engine immediately adjacent to the attack engine and serving as a portable water reservoir rather than as a shuttle tanker. Water from the nurse engine/ tender will be pumped into the attack engine's intake.



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Dump Site

Equipment used to set up for a single port-a- tank drafting operation at the dump site.

For this manual we will be using the 5" appliances in photos.



Low level strainers, hard suction hose



Removing the port-a-tank 1

The tools and appliances needed for a dump site include:

- 1) One to two sections of 2 ½" or 5" hard suction hose.
- 2) 2 ½" or 5" low level strainer.
- 3) One port-a-tank. Note: Removal of the port-a-tank is a minimum two person operation.
- 4) One basketball – The purpose of the basketball is to float in the port-a-tank and keep air from being introduced into the low level strainer when a whirlpool occurs.



Low level strainer and hard suction hose



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Connect the hard suction hose to the intake on the driver's side of the pump panel.



Hard suction hose into intake on driver's side.

Make certain the connections are tight. If they are not secured tightly, air will be introduced into the system and in turn will disrupt the drafting process. The end result should look like the picture below.



Hard suction hose and strainer secured tightly to intake.



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Set-up and positioning the port-a-tank for operation

When positioning the port-a-tank for operation the initial set-up is critical because it significantly impacts the incident. There are a few things you will want to keep in mind while setting up the tank such as water tender access to the tank, avoiding obstructing access to and from the incident, and incident operations. Position the port-a-tanks so they can be easily accessed by water tenders dumping water. It is favorable for port-a-tanks to be set up so that they can have multiple access points for tenders.

Tank Placement Options



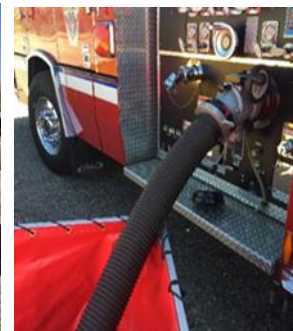
Tank on DO side



Tank in front



Double tank



Tank Corner



Double Diamond



If you are on a slope, position one of the drain chutes on the downward slope.



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Setting up double porta-tanks for operation

Setting up a second porta-tank will follow the same steps as in Task 1 to include a second port-a-tank and a jet siphon. The jet siphon will move water from one tank to another. Additional tools and appliances needed for the double tank include:

- 1) A second port-a-tank.
- 2) A second low level strainer.
- 3) A second 10' - 5" section of hard suction.
- 4) At least one section of 1 $\frac{3}{4}$ " hose.
- 5) A second basketball.
- 6) Two straps or pieces of webbing.

Set up the second port-a-tank

Choose a configuration which allows best access by tenders off-loading water. Below are shown double-diamond and a side-by-side arrangements.

Double Diamond



Side-by-Side



Jet Siphon



Hard Suction Hose



Low Level Strainer



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Set up jet siphon



Connect the 1 3/4" hose to a discharge on the engine and then connect it to the low level strainer. Once the connection is made you will then attach the second piece of 5" hard suction to the low level strainer.

Set the second piece of hard suction into the second port-a-tank

When setting the second piece of hard suction, the side with the low level strainer should be placed in the second port-a-tank and the other half of the hard suction should be placed above the first port-a-tank. Keeping the hose above the will prevent a backflow siphon from occurring when transfer has stopped.

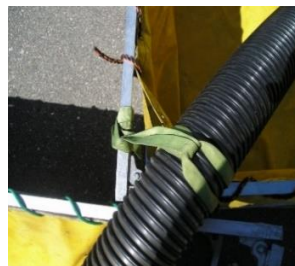


Strainer in 2nd tank.



End of siphon hose above 1st tank.

Tie off the hard suction and the 1 3/4" hose lines



Be sure to tie both of these hose lines down. These are tied down because this part of the system will be charged and this will prevent them from moving out of place and possibly injuring someone.



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Charge the jet siphon system



Once everything is set up and there is water in the second port-a-tank you can now charge the jet siphon system. This will be done by the engineer charging the 1 3/4" line.

Off-loading of water from a tender into the port-a-tank

The water supply officer, or someone who has been designated by them, will be the one directing the water tenders into place at the dump site.



The operator will have controls inside the cab for operating the chutes and will usually be the ones who will control this process. If not, there are typically controls on the outside of the apparatus as well.



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Fill Site

The fill site should be at the closest *suitable* water source. It is important to be aware that the closest water source may have some problems associated with it such as:

- 1) Traffic issues or unsuitable road conditions.
- 2) Water flow requirements.
- 3) Access to the water source (can the fill site engine position close enough).
- 4) Can other apparatus position and maneuver around easily within the site.

NFPA 1901 recommends that tenders be filled at the rate of 1,000 GPM so keep this in mind when choosing a fill site.

Utilizing a fire hydrant as a fill site:

When hooking up to a hydrant, follow the instructions that you have seen in the municipal water supply portion of the training manual. With using the hydrant as a fill site however there will be a few items you will need keep in mind.

- 1) Make sure there will be plenty of room for apparatus to maneuver.
- 2) Make sure you use 5" hose when filling apparatus to cut down on the fill time.
- 3) Connect a 2 ½" gate valve to the hydrant in order to quickly relieve pressure when filling is complete.
- 4) A double hose setup can be used from the hydrant for faster filling.
- 5) If there is not a dedicated engine at the hydrant fill site, tools and appliances needed for the fill operation may be left in place. This will save time as each tender will not have to set up the system.



Hydrant with 5" hose and 2.5" gate.



Hydrant with double 5" hose for fast filling.



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Using an Engine at the fill site to refill the Water Tenders.

- Choose a 5" piece of hose to insure maximum transfer rate.
- Connect the 5" fill hose to a discharge on the fill engine.
- Connect the other end to an intake on the tender needing filled and open the valve.
- Signal the engineer that the fill operation can commence.
- Once the tank is full you can close the valve on the tender and disconnect the hose.



Static water source for your fill site:

When a static water source, such as a stream, ditch, or lake has been chosen, you will have to set up for drafting operations. If streamflow is low, you can create more depth by creating a small dam with rocks or using a tarp over a ladder to create water backup.



Stream as water source.



Pond as water source.



Tarp and ladder to dam water.



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Set up a drafting operation at a fill site

At a static water source, you need to set up drafting operations and dedicate an engine to the fill site operation. Once that engine has set up a draft, it will stay there for the remainder of the incident.

Step # 1 – Locate tools and appliances needed for operation

- 1) 10' – 20' of hard suction hose.
- 2) Barrel strainer.
- 3) Attic ladder or roof ladder.

Step # 2 – Connect the barrel strainer to the hard suction hose



When making the connection, ensure the connection is tight. The barrel strainer will prevent large debris from being introduced into the pump.

Step # 3 – Connect hard suction hose to the intake



Verify all drains on the pump panel are in the closed position. As mentioned earlier, if air is introduced into the system, the draft will be disrupted and the engineer will have to spend valuable time regaining the draft.



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Step # 4 – Place a ladder in the static water source

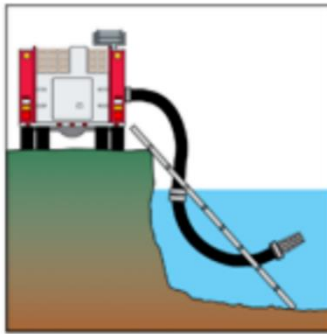


Figure 11.4 Driver/operators should take precautions so that intake strainers do not come in contact with the bottom of the water source.



Placing a ladder in the static water source will ensure two things:

- 1) The ladder will prevent the barrel strainer from falling to the bottom of your static source keeping out debris that could slip by the strainer out of the pump.
- 2) There should be 24" of water space around the strainer, which is optimum when using a barrel strainer for drafting.



Once this is done, the engineer will be the one actually obtaining the draft. Your water supply is now limited to the size of your static water source and size of the apparatus pump.



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Nursing Operations



A nursing operation is a water supply that involve water being fed from one apparatus (typically the water tender) to the other (typically the fire attack engine). A 5" or 2.5" hoseline is normally connected from the discharge on the Water Tender to the intake on the Attack Engine. Nursing operations are typically fast to set up and require minimal personnel, but water supply is limited by the size of the onboard water tanks.

REFERENCE INFORMATION

The following material was used for reference:

- NFPA 1142 – Standard on Water Supplies for Urban and Rural Fire Fighting.
- IFSTA Pumping Apparatus Driver/Operator Handbook, First edition 1999
- Jones and Bartlett Publishers, IAFC and NFPA Fundamentals of Fire Fighting Skills First Edition 2004.
- IFSTA Pumping Apparatus Driver/ Operator Handbook, Third Edition 2015