Loveland Fire Rescue Authority
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# WATER SUPPLY OPERATIONS – MUNICIPAL/SUBURBAN (2.1)

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## TASK SKILL DESCRIPTION AND DETAIL

Properly securing an uninterrupted water supply allows engine companies to actively engage the fire for an extended period of time and support tactical and strategic objectives of the incident including fire attack, ventilation, search and rescue, etc. Firefighters must be proficient at securing a water supply.

LFRA uses five methods to secure an uninterrupted water supply within a municipal and suburban environment:

1) Forward lay
2) Reverse lay
3) Split lay
4) Dry wrap
5) Hand jack

**Method #1 – Forward lay.**

Locate the hydrant bag and free end of LDH including webbing secured to LDH (Fig. 1).

Fig. 1 – Getting the hydrant bag.

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The Firefighter deploys the hydrant bag and LDH from the hose bed and drags it to the hydrant nearby (Fig. 2).

Fig. 2 – Deploying the LDH.

Secure the webbing by throwing it around the hydrant or "wrap" the LDH around the hydrant to allow the apparatus to drive away. Securing the LDH to the hydrant ensures that the hose will be with the firefighter at the hydrant so they can make the connection to the hydrant (Fig. 3 & 4).

Fig. 3 – Wrapping the hydrant.

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Fig. 4 Hydrant with LDH wrapped.

The firefighter that is at the hydrant will either motion to the driver with hand signals or communicate over the radio to start deploying the hose. The attack engine will deploy the supply line by driving away from the hydrant towards the fire (Fig. 5).

Fig. 5 – Engine deploying LDH.

The firefighter at the hydrant should flush the hydrant prior to making the connection to the hydrant (Fig. 6). The apparatus driver will connect to the intake on the engine (Fig. 7) and then will call back to the firefighter at the hydrant and ask for water. The apparatus operator will either use hand signals *(if distance and line of sight allow)* or communicate over the radio asking the firefighter still at the hydrant to "Charge the supply line."

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Fig. 6 – Hydrant ready to be charged.

Fig. 7 – LDH connected to engine intake.

The firefighter will fully open the hydrant in a controlled manner allowing the water to fill the hose at a "walking" pace. Once the water supply has reached the apparatus and the operator has made the change from tank water to the external source, they will announce to command the Benchmark of "Water supply established."

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**Method #2 - Reverse lay.**

This method is often used when the initial attack engine has engaged in a firefight using tank water, and the incoming water supply engine wishes to leave room at the scene for other incoming units.

The water supply engine arrives at the fire scene or at the apparatus needing to be supplied. A firefighter will then locate the free end of the LDH (Fig. 10). The hydrant bag should not be needed since the attack engine will have its own hydrant bag.

Fig. 10 – Getting the LDH.

The firefighter from the water supply engine or the engineer of the attack engine will secure the LDH in a manner that ensures it deploys from the hose bed of the supply engine as it drives away (Figs. 11, 12, 13 show various options). No one should stand directly on to the hose for this deployment.


Fig.11 – LDH under wheel.

Fig.12 – FF pinning LDH to wheel.

Fig.13 – FF kneeling on LDH

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The firefighter or engineer from the attack engine will either motion to the driver with hand signals or communicate over the radio to start deploying the hose. Once at least 100' of LDH has deployed onto the ground, the LDH can be connected to the intake of the attack engine (Fig.14).

Fig. 14 – Making LDH connection.

After the supply engine arrives at the hydrant, the LDH will be "broken" at the nearest coupling and connected to the hydrant (Fig. 15). The Engineer from the supply engine will be responsible for establishing the hydrant connection. The apparatus operator of the attack engine will either use hand signals (if distance and line of sight allow) or communicate over the radio asking the operator at the supply engine to "Charge the supply line."

Fig. 15 – Hydrant ready to be charged.

The hydrant will be fully opened in a controlled manner allowing the water to fill the hose at a "walking" pace. Once the water supply has reached the attack apparatus and the Engineer has made the change from tank water to the external source, they will announce to command the Benchmark of "Water supply established."

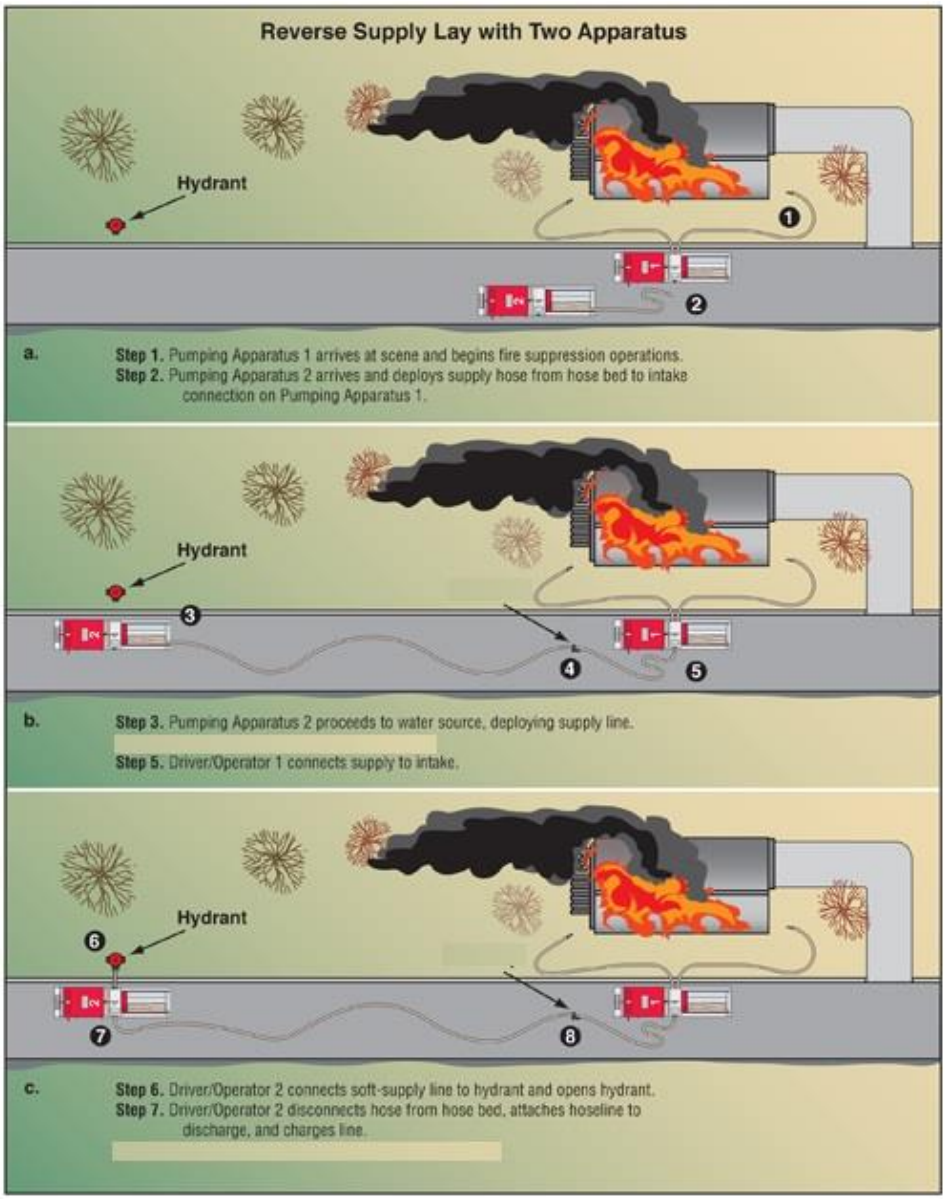


Fig. 16-Reverse Lay, with supply engine performing a relay (Image Courtesy of www.firefighterbasics.com).

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The supply engine may act as a relay pumper if the hydrant is not expected to be capable of supplying the attack engine on its own because of either great distance or insufficient pressure (Fig. 18).


Fig. 18 – Water supply engine relay pumping to attack engine.

In the case of relay pumping, the supply engine now makes a connection to the hydrant using a short section of LDH (Fig. 19).

Fig. 19 – Relay pumping connection.

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**Method #3 - Split Hose Lay**

A "split hose lay" is a combination of a forward lay and reverse lay that is often used at long cul-de-sacs, long driveways, dead-end street, or other situations where a forward or reverse lay is not feasible.

Before proceeding to the fire scene, the attack engine is going to leave its LDH in a location where the water supply engine can access the LDH. The location could be a mailbox, street sign, tree, etc.

The supply engine will leave its LDH in the same location for connection prior to advancing to the hydrant. The two ends of the LDH must be connected prior to the supply engine charging the line. The supply engine will typically establish a water supply from a hydrant.

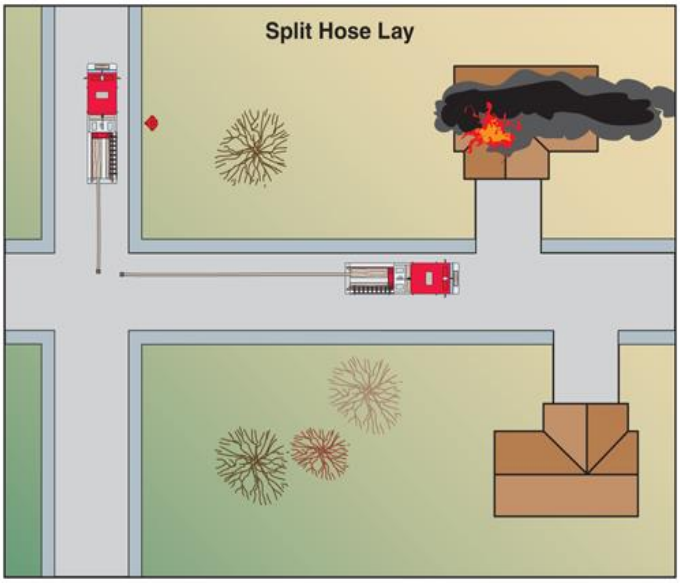


Fig. 20 - Split Hose Lay *(Image Courtesy of Fire Protection Publications/IFSTA)*

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**Method #4 – Dry Wrap**

The "Dry Wrap" method is useful when the firefighter is needed at the scene for initial operations, but there is a need for water supply to be set up quickly once fire attack has started. This method gets the firefighter quickly to the scene while setting up the 2nd due engine for rapidly finishing the water supply.

The firefighter will begin the deployment in the same manner as the Forward Lay by deploying the LDH, wrapping the LDH to the hydrant, and signaling the Engineer to advance.

Fig.21 – deploying the LDH.

Fig. 22 – Wrapping the hydrant and signaling.

After the first 100' of LDH has been deployed, the Firefighter **WILL NOT** charge the LDH or dress the hydrant, but instead will proceed immediately towards the fire scene. As the firefighter moves towards the engine, he or she will move LDH away from the center of the road by picking it up and moving it towards the curb. This allows for easier access for oncoming units. Once the Firefighter is at the attack engine, the firefighter will get their hand tool and proceed onto his or her next assigned task.

Fig. 24 – Moving the LDH to the curb.

Fig. 25 – FF gets ready for initial attack.

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**Method #5 - Hand Jack**

A "hand jack" operation is typically done when an attack engine is parked within 100' of a hydrant and the Engineer can establish his or her own water supply.

The steps are the same as a traditional forward lay, except that the Engineer is solely deploying the LDH, connecting to the hydrant, connecting LDH to the engine's intake, and charging the water supply hose. Once the Engineer has made the change from tank water to the external source, they will announce to command the Benchmark of "Water supply established."

Fig. 26 – Deploy LDH.

Fig 27. Hydrant connection.

Fig 28. Intake connection.

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**Addressing LDH kinks in charged hoseline**

When addressing kinks in LDH, **firefighting personnel should avoid using their hands** due to the risk potential of pinching their hands. As it is depicted in Figures 29- 34, it is recommended that firefighting personnel use a webbing strap girth-hitched around the charged LDH to address kinks.


Fig.29


Fig.30

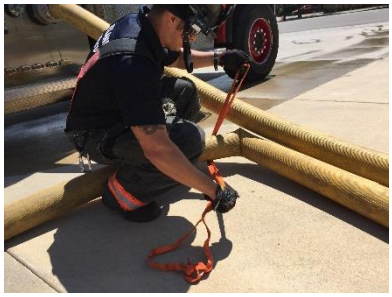
Fig.31


Fig.32


Fig.33


Fig.34

## REFERENCE INFORMATION

This heading includes information about the following:

- NFPA 1002, Standard for Fire Apparatus Driver/ Operator Professional Qualifications (2014).
- Pumping and Aerial Apparatus Driver/ Operator Handbook 3rd Ed., 1st Printing
- NFPA 1142 Standard on Water Supplies for Suburban and Rural Firefighting