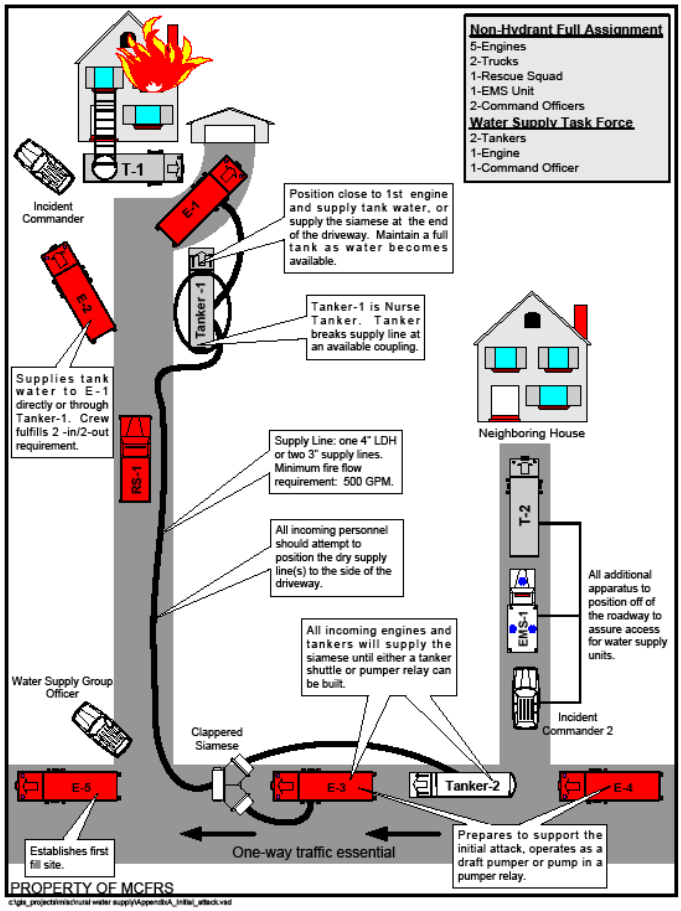
Rural Water Supply & Drafting Operations

Purpose: To establish procedures to provide water supply from a static source at a fill site or dump site to support required minimum fire flow of 500gpm at the scene of a fire.

Background: Water supply is a tactical operation, not a support operation. The deployment of at least three hand lines on working fires is to be expected: primary, back-up, and rapid intervention lines. Assuming that the typical MCFRS hand line flows at least 150gpm, then a minimum 500gpm water supply is needed to safely support an offensive fire attack. In non-hydrant areas, drafting operations will be needed to help deliver that water supply. Drafting operations may be used at the fireground, in conjunction with a relay operation, or during tanker shuttle operations.

The initial rural water supply tactic for rural water supply operations is referred to as attack tanker operations. This tactic requires the first or second due engine to initiate a water supply by laying a supply line attached to a clappered siamese into the scene. The first due engine, second due engine and first due tanker (attack tanker) then co-locate to initiate operations with all their combined water resources. All subsequent water carrying apparatus must pump the siamese to support fire attack. This deployment allows sufficient water for support of initial search operations and fire attack.

Appendix A: Initial Attack Operations



Attack tanker operations are limited to a 500gpm fire flow. When the needed fire flow is expected to exceed 500gpm the Incident Commander should consider enhancing the water supply using either an on site water source, dump tank operations, or relay operations.

While implementation of the nurse tanker concept as a primary water supply for non-hydrant areas reduces the initial need for drafting, operators must still be able to draft to support secondary or backup water supplies. When a tanker shuttle is implemented, it is not unusual for both the Dump Site Engine and Fill Site Engine to perform drafting operations.

Static water sources where drafting may occur include natural bodies of water (rivers, ponds, etc.), portable folding tanks, and dry hydrants connected to natural water sources or manmade cisterns.

Key Operational Considerations

- Static water supply sources should be preplanned and clearly identified on response area maps.
- When positioning the engine to draft, consider the stability of the ground surface, the vertical lift, and horizontal distance from water to pump.
- Vertical lifts over 10-feet significantly reduce pumping capacity. At a 20-foot lift, an engine's pumping capacity is reduced by 40%. Therefore, a 1500gpm engine can only pump 900gpm when drafting at a 20-foot lift.
- Horizontal distance has little effect on pumping capacity. Up to six, 10-foot sections of hard suction hose can used horizontally with little overall effect on the pumping capacity.
- The preferred intake for drafting is always an intake closest to the impeller. For a mid-ship mounted pump, this means the driver or officer side steamer. The driver side is preferred as it is much easier to monitor while obtaining and maintaining a prime.
- Front and rear intakes on mid-ship mounted pumps are less desirable for drafting due to the additional plumbing that must be overcome to obtain a prime.
- When drafting from open top static sources, floating-style strainers are preferred over barrel-type strainers because they remain debris-free longer, do not have a depth requirement, and minimize whirlpools.
- A dump line or deck gun should be used to ensure continuous circulation of water and maintaining the prime. The discharged water should be directed back into the water source. Be cautious that the amount of water being circulated does not reduce the amount of water being sent to the fireground or fill site.

Tanker Shuttle - Dump Sites

Purpose: Develop and operate an efficient dump site with a sustained minimum fire flow of 500gpm.

Operations:

1. Select a location that permits access to the clappered Siamese placed by the 1st or 2nd due engine as well as space for the portable tanks. Tankers must be able to access the tanks to dump their load, preferably without backing.
2. Position the dump site Engine to maximize space for the portable tanks and other apparatus
3. Deploy a supply line from the dump site Engine to the clappered Siamese.
4. Deploy the first available portable tank at the site selected.
5. Connect hard suction hose to the chosen intake on the dump site Engine. Connect a low-level strainer to the open end of the suction hose. Place the strainer into the portable tank.

6. Partially fill the portable tank and ensure the dump site Engine can achieve a prime. This allows the rest of the water to be pumped into the clappered Siamese directly if prime is not achieved.
7. Once prime is achieved open discharge and supply clappered Siamese to the fireground (1st Tanker).
8. Fill the portable tank and use the Tanker shuttle to keep it supplied throughout the operation. The first portable tank is the primary tank.
9. As additional Tankers arrive to dump their water, deploy their portable tanks to augment the primary tank. Consider setting the tanks in a diamond pattern to allow efficient dumping by incoming Tankers.
10. Deploy jet siphoning devices to transfer water from the additional portable tanks to the primary tank where the dump site Engine is drafting water.

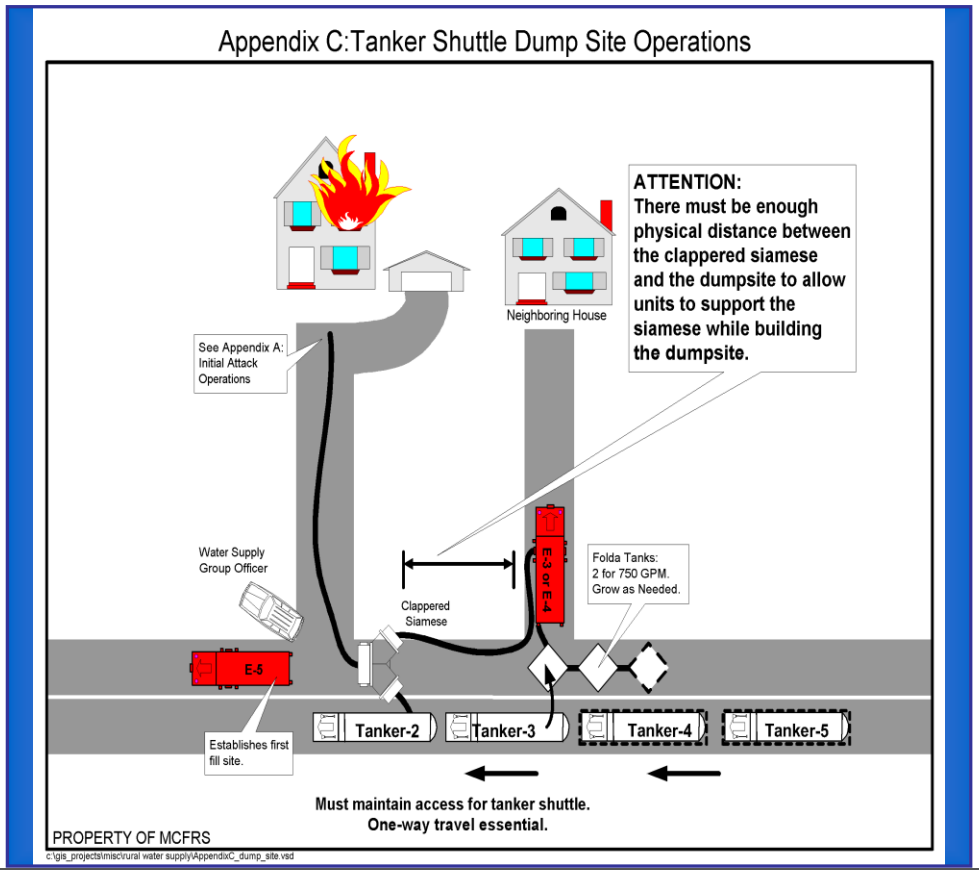
Jet siphoning device

Key Operational Considerations

- The dump site is normally set up by the drivers of the 3rd due Engine and 2nd due Tanker on the assignment.
- The dump site Engine must identify the location of the Siamese supplying the fireground and that the fireground units are ready to receive water. Typically the supply line will terminate in the 1st due Tanker (Attack Tanker) near the fireground.
- Folding tanks at a dump site should be set up in a diamond shape. This as a consideration for Tankers that only dump off the rear. The diamond shape allows for Tankers to back up on the road and not have to get off the road as much or at all to

dump. This shape also makes it less likely for a Tanker wheels to strike the folding tanks while driving up along side to dump their water from a side dump. Folding tanks may bulge out slightly along the side while full and maybe hard to avoid in the dark or on roads with narrow access.

- Desired dump time from a Tanker is two to three minutes.
- Smaller capacity Tankers that are holding up larger Tankers from dumping should be told to stop dumping and go directly back to the fill site. Never leave larger capacity Tankers waiting to dump.
- Jet siphoning devices move water from one folding tank to another at about 800gpm-1,000gpm flow at approximately100psi.
- If possible, the primary portable tank used by the dump site Engine should be the largest volume of the tanks used.
- A Water Supply Group Supervisor is often established during rural water supply operations. A separate operations channel may also be assigned. The dump site Engine operator must remain situationally aware to efficiently communicate and provide situation updates as necessary.
- Tanker Drivers should not get out of their apparatus at the dump site. This slows the shuttle down considerably. Dump site personnel need to manage any adjustments or positioning within the dump site.
- Maintain only one dump site. Multiple dump sites are not recommended.



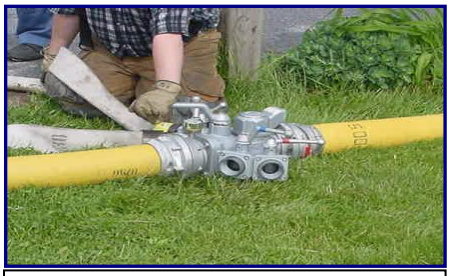
Fill Site Engine

Purpose: To establish an efficient fill site to support a minimum fire flow of 500gpm. Fill site Engine will fill Tankers at a rate of 1,000gpm.

Background: The fill site needs to fill Tankers at a rate to provide the dump site with the required water to supply the fire attack at the scene. Unlike a dump site, the use of multiple fill sites is recommended when available. The desired fill rate for apparatus at the fill site is about 1,000gpm, thus filling a Tanker in 3 to 4 minutes. Ideally, Tankers should begin refilling immediately upon arrival at the fill site.

Operations:

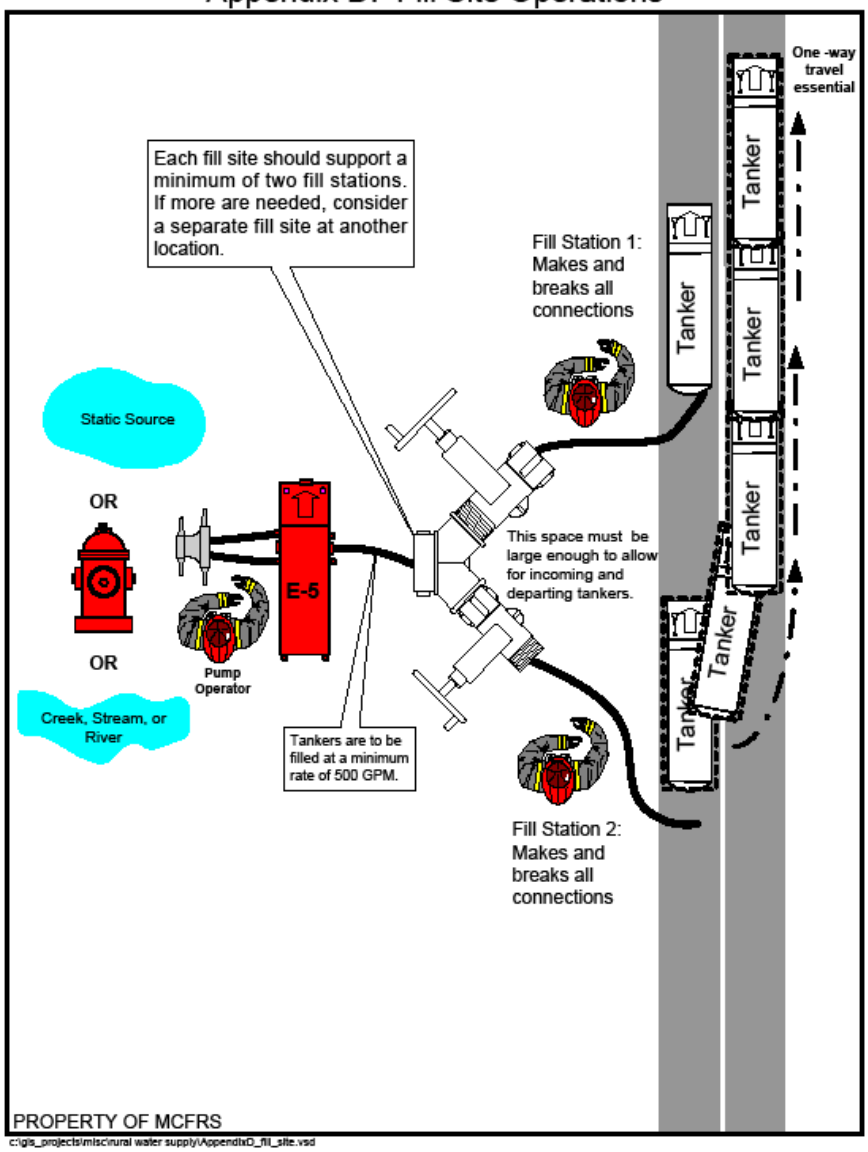
1. Identify suitable fill site that will support 1,000gpm flow. 1st due engine should have announced the location and ECC should have the fill site in the incident notes.
2. Position at the fill site to allow Tanker access to the supply hose and egress from the fill site without backing.
3. Connect hard suction hose to the chosen intake on the fill site Engine. If static water source is not a dry hydrant, select an appropriate strainer for the type of water source. For natural water sources use a floating strainer or a barrel strainer.
    a. Note: some fill sites will be supplied by a hydrant connected to the municipal water system and in those situations the fill site Engine should establish a heavy water hookup for their water supply.
4. Establish a dump line or arrange the deck gun to circulate water back to the water source.
5. Prime the pump and begin water flow.
6. Deploy supply lines from the LDH discharges on the fill site Engine to gated appliances close to the Tanker parking area. An LDH manifold or gated wye with Storz connectors are the preferred appliances. Extend supply line(s) uncharged from the appliances to facilitate filling the arriving Tankers.
    a. A fill site should have at least two fill stations to permit filling one Tanker while a second Tanker is connecting or disconnecting. Where flow is adequate, two Tankers can fill simultaneously.
7. Verify an adequate draft and water supply to fill Tankers at a rate 1,000gpm.



Gated manifold

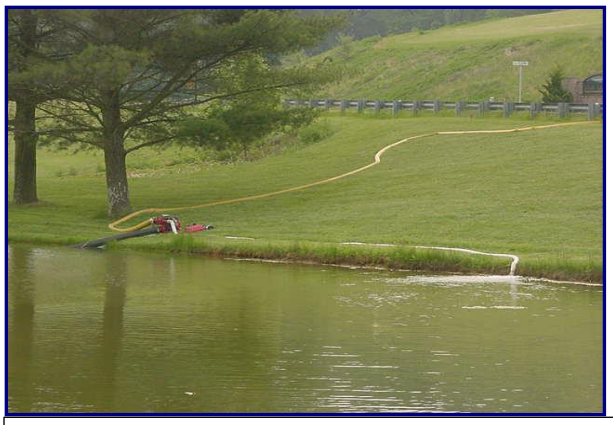
8. Fill Tankers at a rate of 1,000gpm. Some tankers have a maximum fill pressure to avoid damaging the tank. This pressure may be noted at the direct tank fill. Fill site operators must confirm with Tanker operators if a maximum fill pressure is pertinent.

Appendix D: Fill Site Operations



Key Operational Considerations:

- Tanker drivers should remain in their cabs throughout the operation. Filling operations is completed by fill site personnel.
- Establishing additional fill sites or expanding upon the initial fill site increases operational efficiency and provides more options on the fireground.
- Set up two filling stations per fill site from a reliable site capable of supplying the required flow for filling Tankers.
- A standard pump discharge pressure for filling Tankers is:
    - PDP = 35psi + FL (hose) + AL (appliance) ± EL (elevation)
- The fill site should be located as close as possible to the fireground to support greater fire flows. Longer travel times decrease available fire flow.
- Identify the route used between the fireground and fill site. Due to their size and limited maneuverability shuttle routes used by Tankers should be a loop using improved roadways whenever available.
- 5th due Engines on initial assignments are usually tasked to establish a fill site. The water supply task force Engine may also be asked to maintain an additional fill site.



One fill site with 2 fill stations. One Engine company and a portable pump 100ft apart.

Two fill sites using one source