Exhibit 23

LEWIS COUNTY
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Public Health & Social Services

360 NW North Street
Chehalis WA 98532

MEMO

Date: November 05, 2024

To: Karen Witherspoon, Sr. Planner, Lewis County Community Development

From: Jeff Landrum, Lewis County Environmental Health- Water Program

RE: LP24-00001 Riverside LCC 16.05.090 Review: Draft vs Pump system

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This memo is in response to a November 1, 2024, email from the subdivision applicant. As part of the adequate facilities requirement, the applicant is installing a dedicated 2000-gallon reservoir to fill fire tender trucks from a hydrant near the pump house and requests relief from the local fire district's additional request that the water system provide pressurized flow from the reservoir to a filling hydrant. The applicant asked Lewis County to consider the viability of using a drafting system which utilizes the pump on the tender truck to fill the tender. The local fire chief asserts that the tender must be filled by a dedicated pump with a backup generator.

A drafting system may be designed that substantially satisfies the public health code requirements for Group B public water systems (LCC 8.55). However, that code also directs the water system design engineer to work with the local fire authority on any fire suppression needs. It is our opinion that the drafting system should be designed in coordination with the specific needs of the local fire district's equipment to minimizes risks of fire suppression equipment damage.

The Fire District 10 Fire Chief, Mr. Lonnie Goble, contends that the drafting pumps on his water tenders are not designed to safely withdraw water from a vented reservoir and that the reservoir must supply pressurized flow to the tenders. Chief Goble contends that Fire District 10's water tender pump is designed to only draft from "open-water" (ponds and pools), and not from reservoirs. Lewis County Environmental Health has no information available to support or contradict this claim.

The applicant, Chris Merrit, contends that drafting systems substantially similar to his proposal are commonplace in other jurisdictions, and that installation of a pressurized fill system would be unnecessary and cost prohibitive. The applicant provided a technical justification from a water system engineer, Todd Krauss, PE, addressing the risk of potential pipe and reservoir collapse due to rapid drawdown by drafting. The pumps draw at 1,500 gallons per minute. The justification indicates that an 8-inch reservoir vent would be sufficiently protective of the reservoir, and that pipe collapse between the fill hydrant and the reservoir would not be possible under pumping conditions. It is my opinion that the justification satisfactorily addresses these two issues (venting requirements and pipe collapse due to negative pressure) but does not address Chief Goble's other concerns about equipment damage and intended use.

The applicant provided a reference titled "Developing Water Supplies For Fire Protection," (attached). This guidance pamphlet includes a diagram for a reservoir with a filling hydrant, substantially consistent with the applicant's proposal. The guidance pamphlet specifies that a water system designed for fire protection should be designed in consultation with the local fire department. It indicates that water tender trucks can be filled by a variety of methods. These are listed below.

1) Dry hydrant draft systems- These systems require suction pressure from the tender to draft or pull water from a below ground source. Guidance documents provided by the applicant indicate that these systems can be "extremely problematic".

2)Flooded hydrant draft systems- These systems have hydrants that contain low pressure water already because the water source is located at a higher elevation than the hydrant. They still require drafting pumps, but do not require suction to obtain water.

3) Gravity pressurized system- These systems provide water pressure by placing the reservoir at an elevation much higher than the hydrant.

4) Portable pump pressurized system- These systems rely on small portable pumps pre-fitted with adequate fittings to supply water pressure from the hydrant.

5) Dedicated pump pressurized systems- These systems provide water pressure by use of a dedicated pump in-line with the water system.

Considering the technical justification provided, a drafting system could be designed to meet Group B public water system standards. Specifically, the water system must be able to meet domestic demand and fill the reservoir while maintaining 20 PSI pressure throughout the distribution system; and the system must be protected from cross connection with stagnant water in the reservoir. However, the fire suppression storage equipment must be designed to meet the standards of the local

fire authority per LCC 8.55.150(6)(a). Therefore, the fire suppression storage delivery system should meet the local fire district's equipment standards.

Finally, the applicant expressed concerns that withdrawal from the reservoir may exceed the water right permit exempt daily withdrawal limit of 5,000 gallons per day. Water Rights are the jurisdiction of the Department of Ecology, and we recommend directing this concern there. Ecology did publish a Policy in 2008, (POL-2015, attached) titled "WATER RIGHT PERMITS FOR FIRE FIGHTING OR PROTECTION". It states: "the diversion or withdrawal and use of water for containing, suppressing and extinguishing a fire is essential to the public welfare and does not require a water use authorization from the Department of Ecology." The policy appears to draw a distinction between firefighting and fire protection, the former does not require additional water rights, but the later does. Lewis County cannot provide a legal interpretation or official opinion on this policy. We would recommend installing a meter on the reservoir fill port so that the purveyor may differentiate between fire suppression withdrawal and domestic use withdrawal.

In summary, the fire suppression storage system must deliver water in way that meets the local fire district's equipment standards per LCC 8.55.150(6)(a), and should be designed in conjunction with the local fire district. A water meter should be installed at the storage reservoir fill port to document fire suppression use and assess for any Water Right requirements.

POL-2015

DEPARTMENT OF ECOLOGY WATER RESOURCES PROGRAM
POLICY AND INTERPRETIVE STATEMENT

WATER RIGHT PERMITS FOR FIRE FIGHTING OR PROTECTION

Effective Date:	03/14/2008
Contact:	Policy and Planning Section
References:	*Statute:* Chapters 43.21A, 43.27A, 76.04, 90.03, and 90.44 RCW
	Policy: POL-1045
Purpose:	To guide program staff in defining water uses related to firefighting and fire protection, and to provide guidance as to when a water right permit is required.
Application:	This policy is applicable statewide for:

- Determining permitting requirements for water uses associated with firefighting arid fire protection.
- Providing general guidance to interpret existing water right records.

Nothing in this policy is intended to restrict access to water sources in emergency situations where loss of life or property is imminent.

This policy supersedes any previous policy statement with which it conflicts.

Definitions

Firefighting Facility: Any building or place that provides firefighting service and is used primarily for storing and maintaining firefighting equipment and/or housing firefighting personnel. Water may be used within the facility for training firefighting personnel, and testing and maintaining firefighting equipment.

Firefighting Water Use: The use of water to contain, suppress, and extinguish a fire which is an immediate threat to persons or property. It also includes the temporary use of water for drinking and sanitation by firefighting personnel as needed during the act of fire suppression and extinguishment.

Fire Protection: A beneficial water use associated with the ongoing use of water to reduce fire risks. It includes irrigating buffer areas, storing water for fire use, and supplying fire hydrants within developments. Fire protection water use also includes the use of water within a firefighting facility for training firefighting personnel, and testing and maintaining firefighting equipment.

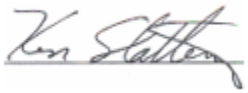
Policy

The diversion or withdrawal and use of water for containing, suppressing and extinguishing a fire is essential to the public welfare and does not require a water use authorization from the Department of Ecology. This includes the use of water from hydrants for firefighting purposes, although the water system maintaining the hydrant may require a permit for other water use purposes.

The use of water for fire protection requires a water right.

- Groundwater withdrawals of not more than 5,000 gallons per day, as authorized under the groundwater permit exemption, may be used to serve a firefighting facility, or up to ½ acre of lawn or noncommercial garden may be irrigated as a buffer area for fire protection purposes (90.44.050 RCW).
- Water use for firefighting facilities and for fire protection purposes, if not a permit exempt use of water, require a water right. Any water right will be issued for "fire protection" as the beneficial use.

The use of water within a federal firefighting facility located on federal land does not require a water right from the state if covered by a federal reserved water right associated with the federal land reservation.



Ken Slattery
Program Manager
Water Resources Program

Note: These policies and procedures are used to guide and ensure consistency among water resources program staff in the administration of laws and regulations. These policies and procedures are not formal administrative regulations that have been adopted through a rule-making process. In some cases, the policies may not reflect subsequent changes in statutory law or judicial findings, but they are indicative of the department's practices and interpretations of laws and regulations at the time they are adopted. If you have any questions regarding a policy or procedure, please contact the department.

From: Jeffrey Landrum
To: Gallagher, Mike (ECY)
Cc: Barron, Jamie (ECY)
Subject: RE: Fire suppression reservoir Water Right question
Date: Tuesday, November 5, 2024 2:17:00 PM
Attachments: image001.png

Thanks for the response, Mike and Jeff. The reservoir is only 2000 gallons and it will be filled prior to construction of any residential connections, so they should be able to maintain under 5000 gallons per day unless they are actively fighting fire, in which case they may request a temporary water right for fire prevention.

The potable water system design does not include any storage (it's a VFD sub pump and a high capacity well), so the fire suppression storage will be isolated from the rest of the system anyway (likely air gapped) and will only be accessed by a single water tender hydrant, so metering flow may not be that difficult.

I'll pass the information along and let you know if we have any more questions.

Jeff

From: Gallagher, Mike (ECY) <MGAL461@ECY.WA.GOV>
Sent: Tuesday, November 5, 2024 1:51 PM
To: Jeffrey Landrum <Jeffrey.Landrum@lewiscountywa.gov>
Cc: Barron, Jamie (ECY) <barj461@ECY.WA.GOV>
Subject: FW: Fire suppression reservoir Water Right question

Jeff

Our thoughts on your question are as follows:

While fire prevention requires a water right, true. But….if this is a class B system and they can manage to **fill a storage reservoir and supply domestic needs while remaining under 5,000 gpd, it seems reasonable to us to let them store exempt water in a storage reservoir for domestic purposes and, if there is ever a fire, let them use it fire suppression.**

The key thing is they stay under 5,000 gpd. An alternative approach would be to issue them a short term permit to let them do an initial fill of the reservoir and call that fire protection water.

We could stipulate that the reservoir had to be kept separate from the domestic supply, but at that point we think it starts getting into the overkill arena.

We think the most pragmatic, common sense approach is to let them draw upon their

domestic supply to fight a fire if necessary.

From Jeff Marti and Mike Gallagher

From: Barron, Jamie (ECY) <barj461@ECY.WA.GOV>
Sent: Tuesday, November 5, 2024 8:22 AM
To: Jeffrey Landrum <Jeffrey.Landrum@lewiscountywa.gov>
Cc: Marti, Jeff (ECY) <jema461@ECY.WA.GOV>; Gallagher, Mike (ECY) <MGAL461@ECY.WA.GOV>
Subject: RE: Fire suppression reservoir Water Right question

Hello Jeffrey,

Thanks for reaching out about this. Unfortunately, I am not sure I can give you a definitive answer on this topic, but instead will defer to wiser colleagues who are much better at these interpretations. I have included Jeff Marti the technical unit lead in SW WR and Mike Gallagher the section manager of SW WR who would ultimately make this interpretation for you.

Jeff and Mike, See the below email I received from Jeffrey Landrum from Lewis County regarding a Packwood developer wanting to use a permit exempt well to supply a reservoir for dedicated fire suppression. Please respond to him with help on this interpretation and whether he needs to direct the developer to obtain a water right for this purpose.

Thanks

Jamie Barron
Statewide Permitting Coordinator
Department of Ecology – Water Resources Program
Barj461@ecy.a.gov
360-791-6877

From: Jeffrey Landrum <Jeffrey.Landrum@lewiscountywa.gov>
Sent: Tuesday, November 5, 2024 7:40 AM
To: Barron, Jamie (ECY) <barj461@ECY.WA.GOV>
Subject: Fire suppression reservoir Water Right question

External Email

Hi Jamie,

A developer in Packwood is proposing a permit exempt Group B water system to serve a proposed subdivision there. The local fire authority (Chief Goble, FD10) has requested that the water system include a dedicated storage reservoir so that they may be able to fill a fire tender truck form the pump house. The developer had concerns about water right requirements for fire suppression use.

His question:
"Lastly, as you know, our project is limited to 5,000 gpd of water withdrawal. I have concerns that we may exceed that rate when the storage tank is emptied. Lonnie mentioned that he would let us know when he pulls water from the tank but I think it may be better to install a flow meter to keep track of the fire suppression usage so we have documentation to provide to Ecology, if needed. Do you have any thoughts on this?"

I found an Ecology policy suggesting that withdrawal of water for fire suppression does not require a water right, but withdrawal of groundwater for fire protection does require a water right. It looks to me that suppression of an active fire may be exempt from a water right, but fire prevention/protection (such as wetting roofs?) may require a water right. Am I correct that Ecology is drawing a distinction between fire fighting and fire protection? IT makes sense, I just want to be sure I'm interpreting the policy correctly.

So can you help me clarify Ecology's position as it relates to 1) installation of a dedicated meter to account for reservoir filling and fire suppression/protection. 2) use of a permit exempt well for such purposes.

I need to respond in a day or two, so if I don't hear back from you by then I will recommend installation of the fire suppression meter, provide a copy of POL-2015, and recommend he reach out to Department of Ecology for interpretation of water right requirements for fire fighting or fire protection.

Thanks,
Jeff

Jeff Landrum RS, LG
Environmental Health Specialist

125 NW Chehalis Ave
Chehalis, WA 98532
Phone: 360-740-1249
Jeffrey.Landrum@lewiscountywa.gov

From: Jeffrey Landrum
To: Karen Witherspoon; Doyle Sanford; LCFD #10 Packwood Lonnie Goble
Subject: High Valley Water System & fire truck filling
Date: Tuesday, November 5, 2024 2:50:00 PM

Karen, Doyle, and Lonnie,

For context, and for my own curiosity, I just spoke with Elwin Snodgrass who manages the High Valley Country Club water system. He said that the HVCC water system has multiple pressurized hydrants painted red throughout the HVCC development. These are supplied with potable water pressurized by the well pump (which is a high capacity VFD) with a backup generator. FD#10 opens a valve in ground and high pressure water is made available on demand. The system just asks that FD10 record any usage so that it can be accounted for correctly.

This is an alternate design relative to what is being proposed at Riverside, but the key point is that pressurized flow is available even when the power is out. I can see the rationale for having consistency amongst systems so that the fire fighters can follow the same protocol no matter where they are. If a tender drafting pump were turned on while connected to the HVCC I think it would almost certainly do some serious damage.

Lonnie, Elwin said if you need a valve key for the hydrants to let him know, he has extras. His number is 360-494-8432.

Jeff Landrum RS, LG
Environmental Health Specialist

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DEVELOPING WATER SUPPLIES FOR FIRE PROTECTION

Mendocino County Fire Safe Council

In rural areas, water for firefighting is often hard to find. Every year, many homes are lost because water was not available to fire personnel. The homes may have had thousands of gallons of water – but it was in tanks firefighters could not access, because the tanks lacked the correct fittings.

This pamphlet describes how to make your rural water supply accessible for fire protection. It gives general information only. *Any persons developing water supplies for fire protection should consult with their local fire department to ensure they are complying with local standards.*

CAUTION

Fighting wildfires can be very dangerous. Persons planning to defend their own homes must take this fact seriously. They must be in good physical condition, and they must have a place to take shelter if the situation gets beyond their control. The decision to stay and fight a wildfire or to evacuate must be made based on conditions at the time of the fire. If evacuation is required, allow plenty of time to reach safety. Most people who die in wildfires are trying to evacuate, too late.

DRAFT AND PRESSURIZED SYSTEMS

Water systems designed for fire protection come in two basic types: (1) draft only systems, which provide water without pressure, and (2) pressurized systems, with the pressure provided either by a pump or by gravity.

1. Draft Systems

The simplest type of fire protection water system consists of a tank fitted with a standard ***2 1/2" male National Hose pipe thread fitting*** (sometimes called a "fire thread" fitting) controlled by a valve. This system requires the responding fire engine to attach a suction hose to the fitting and to draft, or suck, the water into the engine's pump, where it is pressurized. Because fire engines carry only a short suction hose, the fitting must be located so the engine can park very close to it. CAL FIRE (CDF) requires this to be a maximum of 7 feet. The parking location and the approach to it should be a hard surface capable of supporting a fire engine in any weather.

If it is impossible to park an engine this close, the resident must install some form of hydrant at an accessible, suitable location. We'll discuss this later.

Although a draft system usually meets minimum requirements and is the cheapest, it limits firefighters' options and takes more time to utilize. A draft system must provide unimpeded access between the fire fitting and the water supply. No pumps can be installed on the line, and the line cannot be connected to the domestic (home) water supply. Drafting creates a great deal of suction that could damage a domestic pump. A fire engine might be unable to establish a draft because of drawing air through the pump or domestic supply.

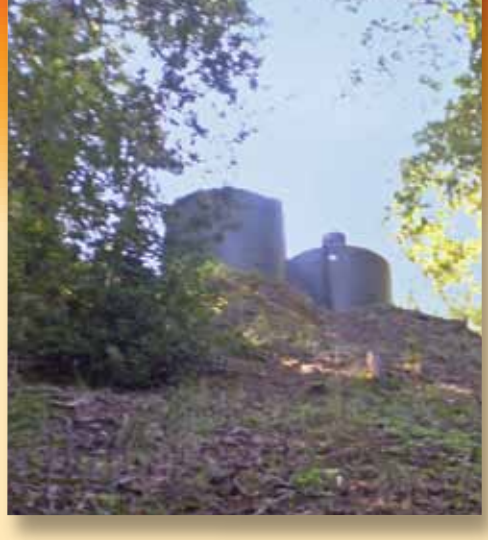
Draft systems sometimes use a "dry" hydrant. A dry hydrant is a pipe connecting a water supply below ground level (such as a tank or pond) to an above-ground hydrant. When opened, the hydrant produces no water – the responding fire engine must lift the water by creating suction. ***Dry hydrants can be extremely problematic and should be avoided if possible.***

Much more dependable is a "flooded" or "wet" hydrant. Such a hydrant already contains water because the water source is located higher than the hydrant. Even though a flooded hydrant may provide no pressure, it is far easier for a fire engine to establish the draft and get water flowing when the water line and hydrant are full or "primed."

A tank slightly lower than is needed can be placed on a platform that raises it to the necessary height. Water weighs about eight pounds per gallon, so any such platform must be strongly constructed.

2. Pressurized Systems

There are two ways to provide pressure to a water system: using gravity, or using a pump.



a) Gravity Systems

Gravity systems are generally the most dependable and desirable for fire protection. The typical domestic system – which pumps water directly from a well to a pressure tank to the home – utilizes small diameter water lines and low volume pumps which are insufficient for fire protection. Further, during fires, electrical service is frequently lost, and pumps fail, just when water is needed the most. Gravity systems may cost more because they require larger pipes and more tanks. But they will not fail when the power goes out!

In a gravity system, water is collected in or pumped to an elevated tank ***before*** it is needed. This tank is kept full and water is brought down to the home through a large diameter pipe. We'll show later that gravity systems can combine both domestic and fire protection water.

Elevating a tank above the point where the water is used provides one pound of pressure for every 2.3 feet in elevation gain. A tank placed 230 feet above the house will provide 100 pounds of static pressure. ***A tank 80 feet above the house will provide 35 pounds of pressure – the approximate minimum needed to protect a home.***

A gravity system intended only for supplying a fire engine could have much less pressure and still be very effective, but only if (1) the water line is at least 2 $^1/_2$" in diameter (preferably 3" or more) and (2) the line is short with no humps or rises that can trap air, making drafting difficult or impossible.

b) Portable Pumps

Small, portable water pumps are another option for providing pressure. They can be used with tanks, in-ground or above-ground pools, ponds, streams, or any available water source. Numerous styles and sizes meet virtually any need. We strongly recommend that water pumps be pre-fitted with fittings with male National Hose thread on the discharge side of the pump. A 1$^1/_2$" fitting is adequate for systems for home fire defense only.

Persons planning to defend their homes themselves should use a 1$^1/_2$" fitting and 1$^1/_2$" hose, as a 2$^1/_2$" hose filled with pressurized water is extremely awkward and too heavy for most persons to pull. Check with your local fire department for their preference.

Portable pumps require a suction hose with compatible fittings and enough length to access the available water source: for example, a 10-foot hose for a swimming pool 8 feet deep.

If water is being drawn from a source where dirt, gravel, or other materials might be sucked in, the pickup/intake end of the suction hose should be equipped with a strainer. Small particles may pass through a pump without a problem, but they will almost certainly clog your fire nozzle at an inopportune time! The pickup must be protected by suspending it above the bottom of the water source or placing a shovel or similar object under it.

Some strainers come with a built-in "foot valve" that prevents water from flowing

backwards out of the hose. This is very helpful in initially establishing flow through the pump and maintaining flow if you need to stop and re-start the pump. The discharge should be compatible with your fire department's fittings.

WATER TANK SELECTION, INSTALLATION, AND PLUMBING

Tank Selection

Water tanks come in a wide variety of sizes, shapes, and materials. The tank you select will depend on your intended use, your budget, and where it will be installed. The green plastic free-standing tanks seen in rural areas are the most common for both domestic and fire protection purposes. The cheapest storage per gallon we found was a 3,000-gallon plastic tank about eight feet wide and eight feet tall. Most of these come with a standard (non-fire) 2" discharge fitting. Larger discharge fittings can be installed, and two or more tanks can be plumbed together and merged into a larger diameter pipe if needed.

The size and number of tanks needed depends on a few factors. When building a new home, you may be required by CAL FIRE or your local fire department to provide water for fire protection, generally 2,500 gallons. You may be allowed to use the same tank for both domestic and firefighting purposes ***IF*** you place the domestic discharge high enough on the tank that the water below it meets the fire requirement. For example, a 5,000-gallon tank could have the domestic water discharge/outlet halfway up the tank. The fire discharge comes off the bottom of the tank so it can utilize all water in the tank at any time. For most rural residential properties, 2,500 gallons is plenty for fire protection – ***IF*** you have done adequate clearing of vegetation around your buildings. Contact CAL FIRE, your local fire department, or the Mendocino County Fire Safe Council for information about this aspect of wildfire safety.

Tank Installation

Where and how to install tank(s) depends on the system's use. A single tank from which a fire engine can draft water must be located as described on page 1. Tanks for a gravity system, the better choice, should be located between 80 and 230 feet above the home. Typical desired home water pressure is 40 to 60 pounds, which a 90 to 140 feet elevation will provide. The 100 pounds of pressure provided by a 230 rise is too much for most home systems, but is excellent for fire protection.

If more than one tank is used, the tops of all tanks must be at the same elevation. If one tank is higher than another, the high tank will overfill the low one, causing it to discharge water from the overflow. When tanks are plumbed or manifolded together, each should have its own shutoff valve so if one tank develops a leak it can be isolated. A single 2½" draft fitting can utilize all the tanks; and if installed at the same elevation, all tanks will draw down equally as water is used.

Plastic tanks should be protected from fire by clearing around them just as you clear around your buildings. Any adjacent burnable material must be reduced so the tank can survive when that material burns. Even full plastic tanks will melt when exposed to enough heat.

Tank Plumbing

The most common problem with adapting existing systems for fire protection is the size of the water pipe. Most domestic systems use either $^3/_4$" or 1" pipe. This is enough to supply a garden

hose – but not a fire hose. ***We recommend a minimum of 2" pipe for systems supplying 1 1/2" fire discharges and 3" pipe for 2 1/2" discharges.*** Systems with multiple fire discharges may require larger pipes if more than one discharge might be used at the same time.

HYDRANTS

PVC pipe is normally used to bring water to the hydrant; and PVC or galvanized iron pipe is often used for the riser/hydrant.

Various fittings can be used for the valve and discharge of your Fire Department Connection (FDC). We recommend using a "***Wharf Valve***," also called a "***Fire Valve***," which comes in 1 1/2" and 2 1/2" sizes. The inlet fitting on the valve's bottom is standard pipe thread, either male or female. The discharge/outlet is 1 1/2" or 2 1/2" male National Hose thread. A round wheel on the top controls the valve. These valves are somewhat expensive but are quality products and relatively trouble free. Standard PVC ball valves also work well, but they are more easily damaged and have a shorter working life, particularly when exposed to sunlight. ***All valves and FDCs should be painted red.***

Hydrants should be set in a bed of concrete, especially draft hydrants. The suction hose required to use draft hydrants is very heavy and awkward, making it easy to damage or break a PVC pipe even if the riser is galvanized. Another problem is "water hammer," which occurs when a large volume of moving water is suddenly stopped when the valve is closed. Setting the hydrant in a substantial concrete base provides stabilization to protect against both these situations.

If a PVC riser is used, a strong support must be provided, because a firefighter pulling on a hose can easily snap PVC. Support can be provided as follows. Put a sleeve of 6" PVC over the riser and set it into the concrete base as an outer shell. Then fill the space between the riser and the shell with concrete. When the concrete sets, a solid, durable 6" barrel of concrete is set into the base or thrust block as one unit. Be sure to check thoroughly for leaks before you pour the concrete! Mark the riser with blue reflectors. Consult your local fire department for their specific requirements.

Hydrants should be located a short distance away from the house. CAL FIRE requires 50 feet. At this distance, if the house is on fire you can likely still access the hydrant. The ideal location will allow firefighters to park near the hydrant and reach a fire anywhere inside the home with their pre-connected, 150-foot-long hose.

Some homes may require more than one hydrant. Outbuildings may require their own. One option is multiple 1 1/2" hydrants with a 100-foot-long single 1 1/2" fire hose and nozzle available to each hydrant. Inexpensive plastic fire nozzles will flow about 60 gallons per minute.

We strongly recommend storing fire hose in an elevated cabinet next to the hydrant, to protect it from sunshine and the elements. We also recommend using synthetic hose, as cotton hose can rot quickly. Nozzles should be pre-connected to the hoses, and fire hose cabinets should be clearly marked and easy to access.

Hydrants should be 18 to 24 inches high. State law requires that they be placed 4 to 12 feet from any road. Be sure to keep grass and brush at least 8 feet away, so hydrants can be found and accessed during a fire.

If hydrants could be hit by vehicles, protect them with barriers such as large rounds of firewood or concrete filled tubes. Hydrant discharges should be covered with screwed-on metal caps that prevent objects or creatures from getting into the pipes and being drawn into a fire engine or hose when the water is pumped.

MODIFYING EXISTING WATER SYSTEMS

In summary, if your current system can deliver at least 40 gallons per minute, it can be easily adapted for firefighting by simply providing a 1½" or 2 1/2" male National Hose pipe thread fitting where a fire engine can access it.

- If a fire engine can park within 7 feet of the tank, put the fitting and valve at the base of the tank.
- If an engine cannot get that close, install a pipe from the tank to a location the engine can reach, generally next to the driveway or parking area, and build your hydrant there.

Building a Siphon

If your tank doesn't have a large enough discharge port and it isn't practical to install one, consider building a siphon using 2 1/2" or 3" PVC pipe and elbows, as shown in the diagram on the back of this pamphlet.

1) Cut a length of PVC pipe that is 6 inches shorter than the height of your tank.

2) Cut a length of pipe 12 inches shorter than the height of your tank.

3) Cut a 6"-12" length of pipe and connect it to the first long pipe with a 90° elbow.

4) Put this section through the top of the tank, so the long pipe's bottom is 6 inches above the tank's bottom and the short pipe rests on the top edge of the tank.

5) Connect the second long pipe (#2) to the short piece, outside the tank, with another elbow. The bottom of this pipe should be about 12" above ground level.

6) Install either a "wharf valve" or PVC ball valve on the bottom of the pipe.

7) Cut and install another short length of pipe straight below the valve.

8) Cut and install another short length of pipe and connect it with a 90° elbow. This short pipe should be angled slightly away from the tank.

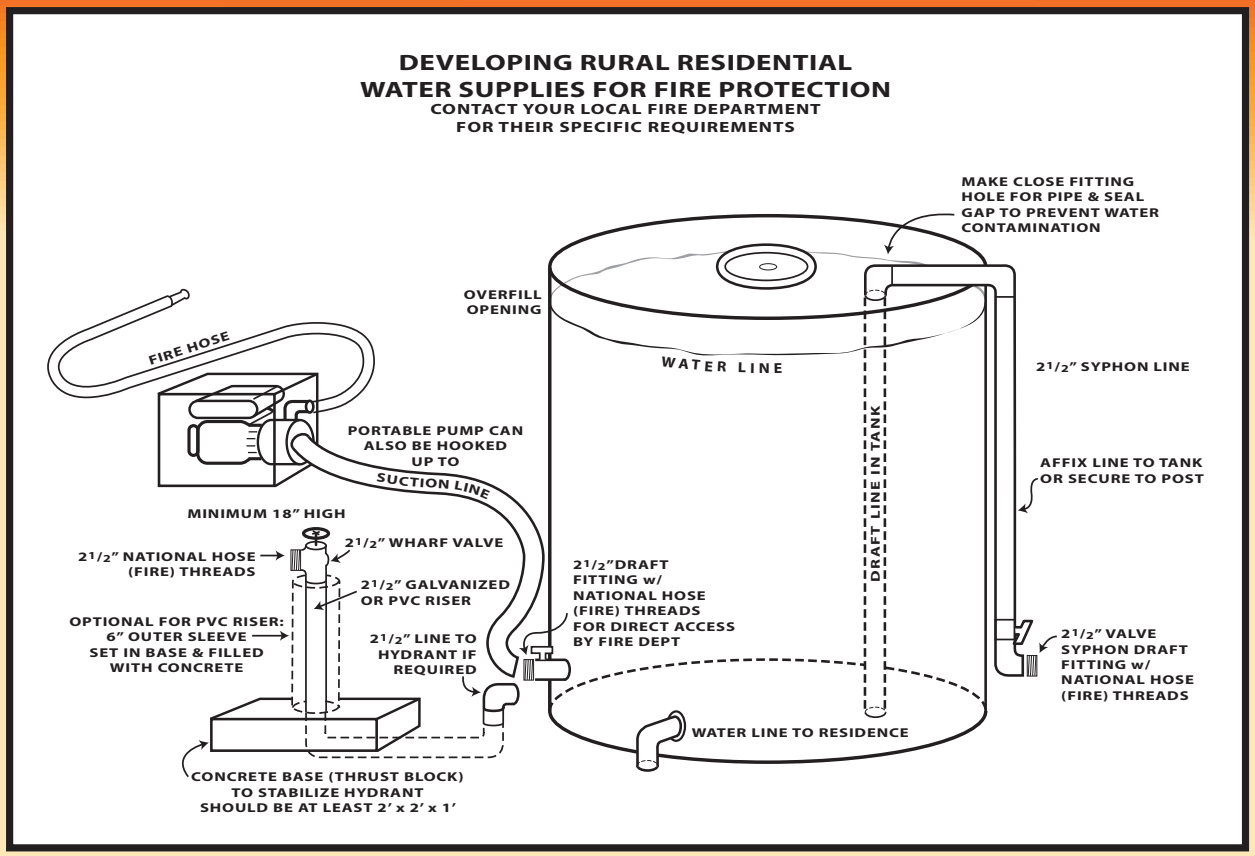
9) Finish the fitting with a 2 1/2" male National Hose thread adaptor.

These instructions may not precisely match your circumstances. See the diagram for details.

The outside siphon pipe should be secured to the tank if possible. If not, set a 4"x4" or larger post next to the tank and secure the pipe to it, being careful not to obstruct the valve or discharge fitting.

The siphon is established by pumping water into the tank through the fire fitting, then closing the valve. Once established, the siphon should take care of itself; it can be easily re-established if necessary.

If your existing system is not sufficient or adaptable, consider purchasing a tank solely for fire protection. Place the tank at least 80 feet above the house, or as high as is practically possible. Use at least a 2" water line, and up to a 3" line if affordable and the size of the water supply justifies the expense.



OTHER WATER SOURCES

Many fire engines carry portable pumps, but some do not. To make sure the fire department can use your swimming pool's water to protect your home, provide access so an engine can park immediately next to the pool and draft water from it.

A year-round creek, pond, or lake within a few hundred feet of your home can also be used for fire protection. It takes only a portable pump and a hose long enough to reach it. The farther the water must be moved, and the higher it must be lifted, the stronger the pump must be. Measure your distances and compare them with a pump's specs before purchasing one.

LABELING WATER FOR FIRE PROTECTION

Water supplies and fittings must be plainly labeled to provide quick access and identification.

1) ***Install round blue reflectors on your address post and wherever necessary to direct firefighters to your water. To a firefighter, a blue reflector means water. DO NOT use blue reflectors for any other purpose – this could lead to confusion and lost time during a fire.***

2) ***Paint or placard the word "Fire" or the abbreviation "FDC" in large letters on your water supply.*** It's helpful to include the number of gallons available. Make sure to keep the tank full!

3) ***Paint fire valves and fittings red, and place arrow(s) pointing to them if necessary.***

ROOF SPRINKLERS

Roof sprinklers should be activated only when the fire is close. Otherwise the water will evaporate and the supply may be gone before it is most critically needed. Sprinklers can be affixed to the eves as a permanent installation or just placed on the roof. Most domestic water systems provide sufficient flow and pressure to supply two large sprinklers to cover moderate-sized houses and adjoining decks.

MAINTAINING YOUR SYSTEM

Whatever water system you select, it must be maintained. Even a simple tank and draft fitting needs to be "exercised" a few times a year. Valves left idle become sticky and hard to use. Pumps need to be used periodically to ensure they start and run properly – and that you remember how to work them. Hoses must be inspected annually to make sure they haven't rotted or been chewed up.

A good way to make sure your system works is to use it to wash your home in late spring. Everything gets inspected and exercised, and your memory is refreshed.

A FINAL WORD OF CAUTION

When it's time to go, it's time to go...

If you have – or intend to build – a water system for fire protection, and you plan to stay and fight the fire, you must first prepare very carefully.

(1) Have a plan in case your water system fails or anything else goes wrong. Have a shelter or place that (a) you're sure you can reach, (b) will not burn, and (c) is so far away from anything flammable that you can survive there without injury. This could be a large paved or rocked parking area, a green lawn, or a swimming pool or pond surrounded by green landscaping. The heat from a fire can burn human skin from 100 feet away, so don't take chances.

(2) Be in good physical shape. If you have ***any*** condition that impairs your ability to do hard physical work in stressful conditions, plan to evacuate.

(3) Make a "risk versus gain" decision based on how well your home is prepared, the tools you have available, and the fire conditions. Hot dry weather, low humidity, high winds, and vegetation that has dried for months can make even the best prepared home a death trap. If you don't have an area where you can "shelter" safely, with confidence that you'll survive without injury no matter what happens, plan to evacuate early. Most people who have died in wildland fires waited too long to evacuate.

Don't become a statistic. Prepare to be fire wise and fire safe!

For copies of this pamphlet, or information about other aspects of wildfire safety, contact the **MENDOCINO COUNTY FIRE SAFE COUNCIL** at (707) 462-3662, 151 Laws Avenue #B, Ukiah CA 95482, or firesafe@pacific.net. Our publication "Living with Wildfire in Mendocino County" and much more wildfire safety information is available from our office and at **www.firesafemendocino.org**.