

Wildland Firefighting

Wildland Firefighting is seasonal certainty at Pendleton Fire Department. Knowing the basic tools and principles of wildland firefighting is necessary for the summer months in Pendleton.

This chapter will be broken down into the following sections:

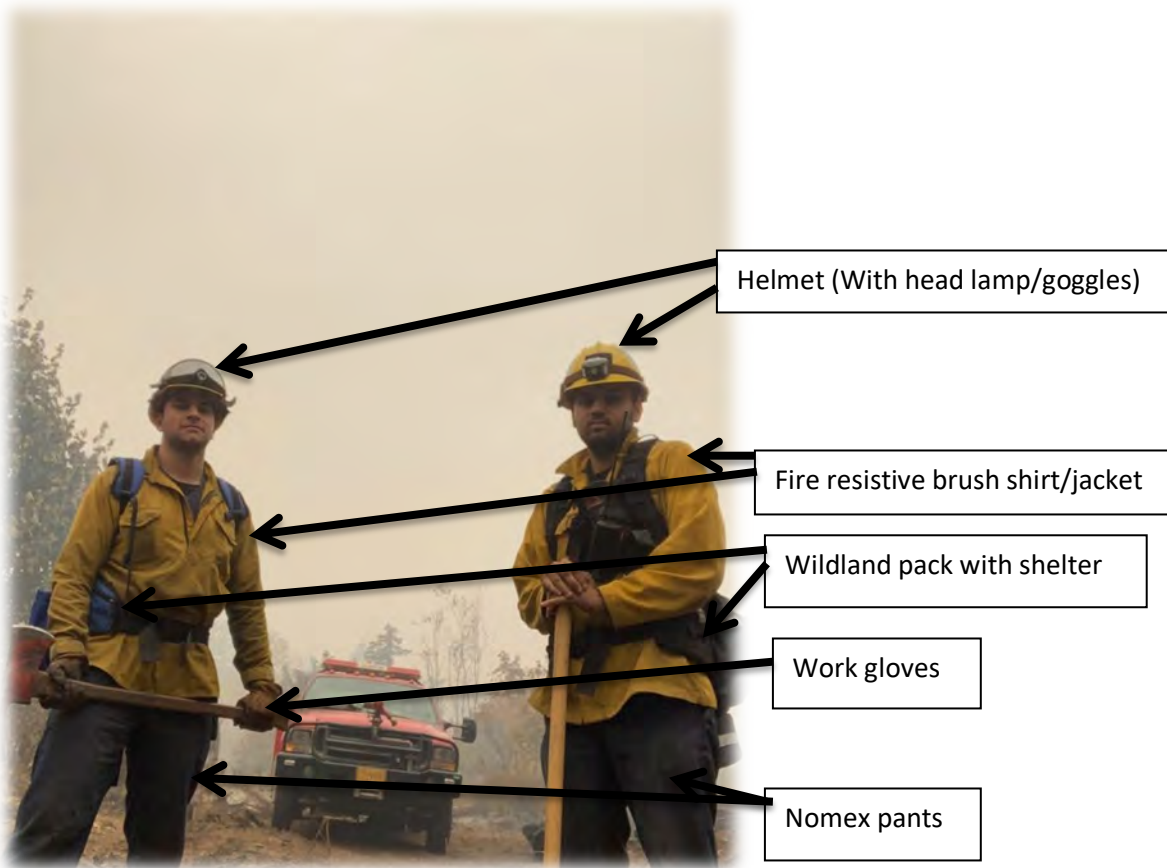
- 12.1 Wildland Firefighting PPE**
- 12.2 Wildland Firefighting Hose**
- 12.3 Wildland Firefighting Tools**
- 12.4 Wildland Firefighting Common Terms**
- 12.5 Wildland Firefighting Strategies**
- 12.6 Wildland Firefighting Hand Signals**
- 12.7 Wildland Firefighting Evolutions**



Section 12.1

Wildland Firefighting PPE

- Helmet with neck shroud
- Fire resistive brush shirt/jacket
- Fire resistive brush pants and/or **Nomex duty pants**
- Eye and hearing protection
- Work gloves and 8-inch-high leather boots
- Fire shelter will be worn if greater than 200' away from the truck on an uncontrolled fire line.
- Fire Line Packs will be worn if greater than 200' away from the truck on an uncontrolled fire line.
- Optional equipment should include headlamp, flashlights, etc.



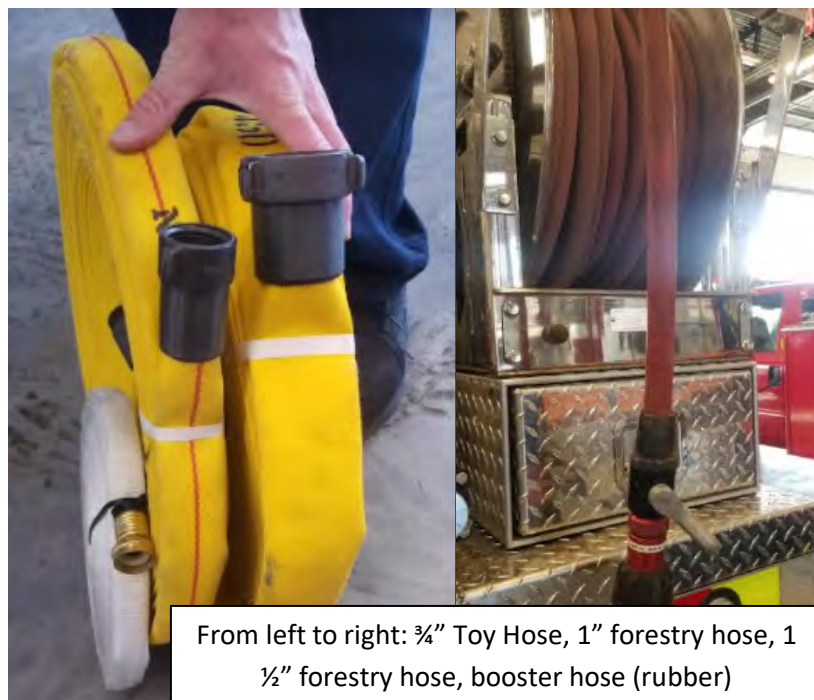
Section 12.2

Wildland Firefighting Hose

Wildland fire fighting hose differs slightly from structure firefighting hose mainly in that it is often of small diameter and is more maneuverable. Most hose used for wildland firefighting is a woven jacket synthetic hose that is lightweight and comes in 50' and 100' lengths. There is also a hard rubber booster hose mounted to a reel on all wildland apparatus at Pendleton Fire Department. These hose vary from the woven jacket hose in that they are rigid and often supported by an inner coil system. Wildland apparatus also carries some larger structure size woven jacket hose which is often used for tank fill/water supply needs. Sometimes larger hose such as on the larger brush apparatus may be adequate for structure protection (such as the 1 ¾" hose on Brush 2).

Types of Hose:

- **¾" "Toy Hose"**- Toy hose is a small diameter, lightweight, compact, single jacket forestry fire hose with a polyurethane lining and polyester Jacket. It has ¾" couplings and is useful for mop up and water conservation.
- **1" Forestry Hose**- 1" Wildland Hose is used to fight fires in grass, brush, and trees where a lightweight hose is needed by firefighters to maneuver it over steep or rough terrain.
- **1 ½" Forestry Hose**- This size of forestry hose is most often used in combination with 1" hose to create "progressive" hose packs. In this form they are used for a trunk line.
- **Booster Hose**- Booster hose comes in ¾" and 1" sizes and is often used when work is being done close to the wildland engine such as mop up and making wet lines. Booster hose can become heavy and less maneuverable than single jacket 1" forestry hose over long lays.
- **1 ¾" hose**- On the larger type 3 wildland engine, there are pre-connected trays with 1 ¾" hose that may be useful for structure protection in the urban interface setting.



From left to right: ¾" Toy Hose, 1" forestry hose, 1 ½" forestry hose, booster hose (rubber)

Hose Fittings:

Hose Fittings for wildland hose varies slightly from those used for structure firefighting. Besides the obvious difference in sizes of some of the fittings, one of the most notable differences is that of thread pitch. The thread pitch (coarse or fine) is either **NH** or **NPSH**. **BE AWARE OF DIFFERENT THREAD PITCHES AND DO NOT CROSSTHREAD INCOMPATIBLE THREADS.** Pendleton Fire uses NH style fittings, but may carry adapters to be able to use/connect to NPSH fittings due to NPSH fittings being the primary thread pitch for other local agencies such as Oregon Department of Forestry and/or other mutual aid agencies.



Nozzles: Wildland nozzles come in many forms and have different applications and purposes. The most common style of wildland nozzle at Pendleton Fire Department is the adjustable fog nozzle. Most wildland nozzles do not have a bale and are operated by twisting the nozzle to open, close, or adjust the stream shape. Most of these nozzles are small and lightweight and may be made of aluminum, brass, plastic, etc.



Progressive hose packs (Smokey Hose Packs) LOADING- the Smokey Hose Packs carried on the engines at Pendleton Fire are progressive hose packs that are loaded in a specific manner. The pack consist of 100' of 1 ½" forestry hose, 100' of 1" forestry hose, 1 gated wye, 1 ½" to 1" reducer, and a 1" nozzle. They are created by laying out the 100' of 1 ½" hose and then connecting the gated wye to the male end of the hose. On one discharge of the wye, a reducer is placed and 100' 1" forestry hose with nozzle is attached. This section of hose will be folded in the middle, make a 50' long bight that will be laid on top of the 100' of 1 ½" hose. This hose will then be secured to the 1 ½" hose by taping it down with a thin clear medical tape about every 3-5 ft. When the 1" hose is secured to the 1 ½" hose, the hose is then loaded in the progressive hose pack by placing the gated wye/nozzle end of the bundle into the bottom of the pack. The pack will then be loaded in an accordion style. The pack is finished with the Female end of the 1 ½" hose on top of the pack, which is to be connected to a discharge when deploying.







Smokey Hose Pack DEPLOYMENT- the Smokey hose pack is deployed by first attaching the female 1 ½" coupling on the top of the pack to the discharge of choice on the apparatus or trunk line to be used. The firefighter shall then proceed forward, letting the hose pay out of the pack while fighting fire with a charged booster line or similar maneuverable hose. Once the firefighter has reached a point where the hose is out of the pack completely, he/she will call for water and prepare to charge the 1" hose that is doubled back on the 1 ½" hose connected the discharge. At this time, the subsequent firefighter with a Smokey pack will attach his/her 1 ½" female coupling at the top of their pack to the wye and proceed as the first firefighter did, using the 1" hose from the first deployment along the way as the pack is deployed (hence the name "progressive" hose pack). This process can be repeated as many times as packs and resources allow.



Section 12.3

Wildland Firefighting Tools

Backpack Pump- Backpack pumps are a form of portable fire extinguisher. They can carry plain water or a foam and water solution. You'll use backpack pumps to attack small fires and hot spots, perform mop-up, and to overhaul areas that are beyond reach of hose lines.



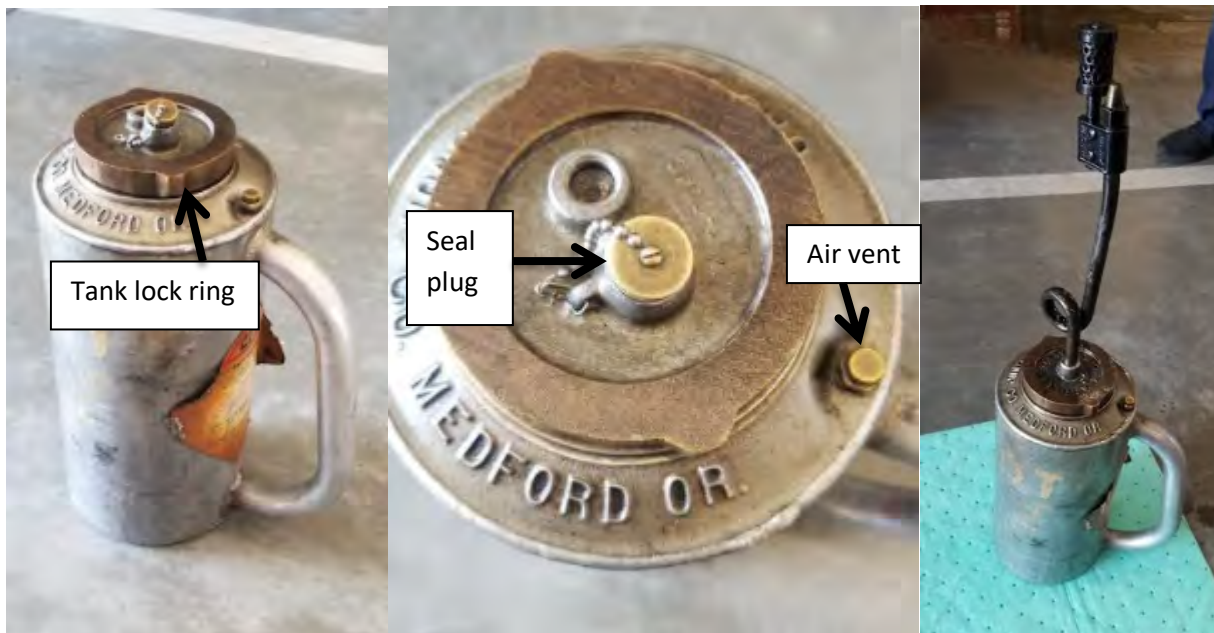
Bolt/Fence Cutters- Bolt cutters used for entering areas that may be blocked by fence/gates, etc.



Chainsaw- Chainsaw used for cutting away timber, brush, etc. Uses a wood cutting chain.



Drip Torch- the drip torch is used for the intentional ignition of fires is a common firefighting tactic. A burnout (also called a firing operation, or firing out) is a smaller fire ignited along a control line ahead of the main fire. The intent is to consume fuel ahead of the main fire, strengthening the control line. When assembling, be sure to open the seal plug and stow it in the threaded dimple next to the opening. Remove the lock ring and pull the spout from the tank. Secure the spout with the lock ring in as shown below. Open the air vent to control drip rate. When mixing fuel in drip torches, use 50% diesel fuel to 50% gasoline, in average (mild) temperatures. When temperatures are hotter, bump up the ratio to 60:40 or in very hot conditions, 70:30.



Fuel Cans- Fuel cans for pump fuel, mixed fuel for chainsaw, and drip torch fuel. Always check that fuel cans are full.



Fusees- wildland firefighters use fusees to light fires, often when burning fuel inside fire lines.



Hose clamp- hose clamps may be used to extend existing charged hose lines without shutting down the hose line.



McLeod Tool- A McLeod tool is a two-sided blade with one side being a rake with coarse tines, one a flat sharpened hoe on a long, wooden handle. It is a standard tool during wildfire suppression and trail restoration. The combination tool was created in 1905 by Malcolm McLeod, a United States Forest Service ranger at the Sierra National Forest

Pulaski- the Pulaski is a special hand tool used in fighting wildfires which combines an axe and an adze in one head.

Shovel- the Forestry Shovel is a great tool for removing debris from forest fires. The blade is sharpened on both sides and the angle of the handle allows for maximum scraping area at the edge of the blade.



Section 12.4

Wildland Firefighting Common Terms

- a. **Anchor Point:** An advantageous location, usually a barrier to fire spread from which to start constructing fire line. Used to minimize the chance of being flanked by the fire while the line is being constructed.
- b. **Burning-out:** Setting fire inside a control line to consume fuel between the edge of the fire and the control line.
- c. **Cold trailing:** A method of controlling a partly dead fire edge by carefully inspecting and feeling with hand to detect any fire, digging out every live spot, and trenching any live edge.
- d. **Containment:** When a fire is encircled by a fireline but not under control.
- e. **Control line:** An inclusive term for all constructed or natural fire barriers and treated fire edge used to control the fire.
- f. **Creeping:** Fire burning with a low flame and spreading slowly.
- g. **Division:** A unit established to divide an incident into geographical areas of operations.
- h. **Fire Line-** The part of a containment or control line that is scraped or dug to mineral soil. A fire line is defined as the area within or adjacent to the perimeter of an uncontrolled wildfire of any size in which action is being taken to control fire.
- i. **Flank:** The sides of the fire. Usually they are not burning as hot as the head. The left flank is the left side looking toward the head from the origin or the base of the fire. The right flank is the one on the right side of the fire.
- j. **Group:** Groups are normally established to divide the incident into functional areas of operations. Groups are composed of resources assembled to perform a special function not necessarily within a single geographical division.
- k. **Head of Fire:** A "running edge" of the fire, usually spreading with the greatest speed. It is driven by the wind or topography. It is not uncommon to have two or more heads on a fire.
- l. **LCES (LACES):** Lookouts, Awareness, Communications, Escape routes, and Safety zones.
- m. **Progressive Hose Lay-** A hose lay in which double shutoff wye (Y) valves are inserted in the main line at intervals and lateral lines are run from the wyes to the fire edge, thus permitting continuous application of water during extension of the lay.
- n. **Running fire:** Behavior of a fire spreading rapidly with a well-defined head.
- o. **Spot fire:** Fire burning outside the perimeter of the main fire caused by flying sparks or embers.
- p. **Smokey pack:** Progressive hose lay used at PFD that is deployed from backpacks used to suppress the fire. Lateral hose lines are connected to the main hose line at regular intervals to assist in the fire suppression effort and mop-up.
- q. **Strike team:** Specified combinations of the same kind and type of resources, with common communications and a leader.
- r. **Tandem attack:** Attack method is a flanking attack that involves two or more engines, or other firefighting apparatus. The lead engine takes the heat out of the fire and the second engine is used to follow behind, picking up hotspots and securing the line.
- s. **Trigger Point:** A realistic parameter that is set, usually for safety reasons, that when reached actions are required. Example: When the humidity gets to a certain point we will move to a safety zone.
- t. **Urban Interface-** The wildland-urban interface (WUI), defined as the area where houses are in or near wildland vegetation, is the area where wildfires pose the greatest risk to people due to the proximity of flammable vegetation

Wildland Firefighting Strategies

TACTICS AND STRATEGY

Operations may vary in size but overall priorities will be the same when developing a plan:

- a. Life safety
- b. Property protection
- c. Resource protection
- d. Incident stabilization

OFFENSIVE ACTION

Confine and Control

- **Direct Attack:** Usually conducted on smaller fires, on flanks, or rear of larger fires.
 - Several methods based on resources and fire
 - Crews will use Anchor Points to initiate attack method
 - Tandem attack
- **Indirect Attack:** Used when direct attack is not practical or possible.
 - Based on building fire line away from fire's edge
 - Crew will also use Anchor Point to initiate attack

DEFENSIVE ACTION

- **Minimize exposure damage**

When brush/wildland fires begin to threaten homes, Command must be prepared to readjust and develop a defensive strategy to protect exposures while allowing the fire to burn to a location better suited for control. On large fires Command may conduct both Offensive and Defensive actions.

CHAINSAW OPERATIONS

- Used for fuel reduction and tree felling operations
- When using a chain saw the following PPE must be worn:
 - Helmet
 - Gloves
 - Eye protection
 - Hearing protection
 - Chainsaw chaps

ADDITIONAL RESOURCES

a. Mutual Aid

1. Tribal, Pilot Rock, UCFD1, EUCFD, and Echo. Call for resources early, mutual aid can be requested through dispatch.

b. US Fish and Wildlife Service

1. The Pendleton Fire and Ambulance Service has a Memorandum of Understanding with the US Fish and Wildlife Service that allows the department to request resources or assistance for a fire within the City limits. The Fire Chief or his designate must approve the request prior to contacting the US Fish and Wildlife Services

c. Oregon Fire Service Mobilization Plan flow chart

MOP-UP

Can be done wet or dry.

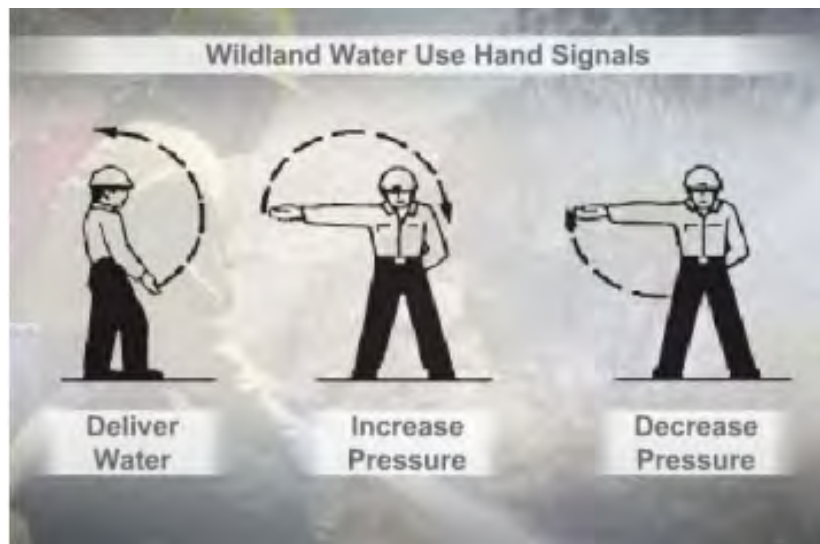
- Start work on the fire line
- Secure and extinguish burning materials
- Reinforce fireline
- Check for spot fires

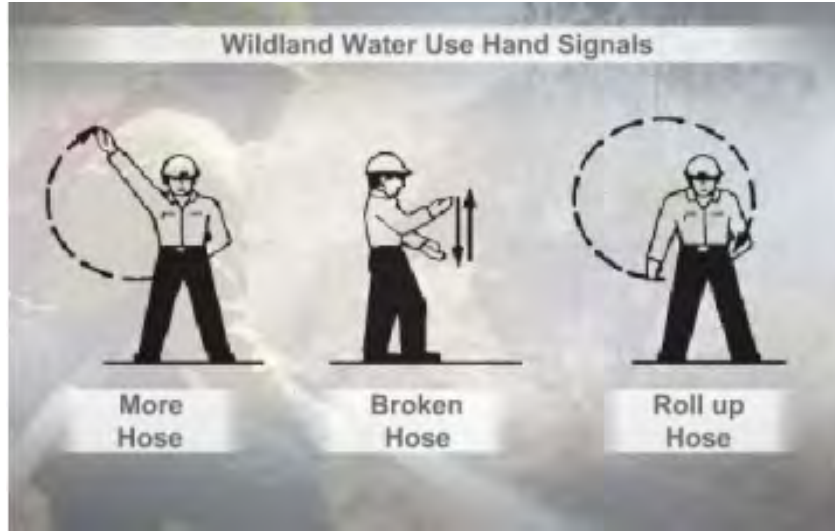
Wet mop up is performed with hose lines and application of water whereas dry mop up is done solely with tools and manipulation of vegetation and soil.

Section 12.6

Wildland Firefighting Hand Signals

Hand signals can be extremely beneficial in the wildland firefighting setting. These are some nationally recognized hand signals pertaining to the use of water in the wildland setting.





Section 12.7

Wildland Firefighting Evolutions

Pack Test- The wildland pack test is typically done once a year in late spring in preparation for the wildland fire season. This test is done with a 45lb weight vest for 3 miles with a time limit of 45 minutes. This qualifies for Red Card Certification.

Shelter Deployments- Practice deployment of fire shelters. The objectives of such should be proper practices in accordance with NWCG guidance.

Progressive Hose Pack Deployments- Practice Progressive hose pack deployments. Practice from each apparatus, from the pump discharge or from a trunk line or threaded nozzle such as 1 ¾" hand line from the structure engine with removable fog tip to simulate urban interface scenarios.

Building Fire Line- Practice building fire line with hand tools in acceptable locations, possibly in conjunction with controlled burns. The objectives should be use of tools per terrain, methods, and placement.

Controlled/Prescribed Burns- Intentional burns that are approved by the Fire Chief and the property owner to allow for removal of high risk fuel areas, etc.

Pump and Roll Operations- NFPA 1906: Standard for Wildland Fire Apparatus, defines pump-and-roll as delivering 20 gpm at 80 psi while traveling 2 mph. Yet, there are several options, and it is important to select the one that's right for the situation at hand. Practicing this skill is vital to developing a safe and cohesive operation.

Structure Triage- Structure triage is the process of inspecting and classifying structures according to their defensibility or non-defensibility, based on fire behavior, location, construction and adjacent fuels. Any change in fire behavior can quickly change the defensibility status of a structure. Practicing this with scenarios in different settings and terrain will help to better prepare if the situation arises. The goal is to thoughtfully and systematically place each structure into one of the following categories: not threatened, threatened defensible or threatened non-defensible. "Ready, Set, and GO" are common terms used to coincide with these categories of triage.