OFS OKLAHOMA FORESTRY SERVICES

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OKLAHOMA WILDLAND

TAILGATE SERIES

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Oklahoma Forestry Services developed this training tool for fire departments as a supplement to formal firefighter training. Watch for a new message quarterly to use in formal safety meetings or in small "tailgate" groups as an effective way to increase preparedness and improve safety. The Tailgate Series is available at www.forestry.ok.gov

MOP-UP THE FINAL ATTACK

Once a control line has been established around the fire perimeter it must be made safe. Mop-up is the term used to describe actions used to secure the control line. Similarly, in structural firefighting the term "overhaul" is used. While the processes may be different, the intent is exactly the same – completion of the fire suppression operation by reducing future threats to control lines. A lot of hard work has gone into stopping the spread your fire and failure to institute proper mop-up standards can negate hours or days of hard work.

MEET OUR FIREFIGHTERS

Roger Wilhite, a Forest Ranger 2 (Crew Chief) with the OFS, is responsible for wildland fire suppression and prevention in the Northeast protection area in eastern Oklahoma. Stationed out of the Bell district, Roger has put in 27 years of service for the OFS. Roger also assists with wildland fire training for new employees and fire departments.

Roger has been on numerous fire and other disaster details in state and on details in 20 other states, including the NASA shuttle recovery in Texas and hurricane Katrina in Louisiana. His wildland fire qualification includes Fire Fighter Type 1, Engine Boss, Heavy Equipment Boss, and Incident Command Type 4 and has worked as the Ground Support Unit Leader for the Southern Type 2 Team.

For questions or comments contact Drew Daily, fire management staff forester, at drew.daily@ag.ok.gov or call 405-522-6158.
To sign up for our email list, suggest topics for future issues or download Oklahoma Wildland Tailgate issues visit forestry.ok.gov/tailgate.

WHAT YOU SHOULD KNOW

Just because mop-up isn't about big flames or fast-moving fires doesn't mean that it is without risk. Mop-up means digging or scraping fire from burning snags, stump holes or deep-seated duff. Personnel must wear all personal protective equipment, especially eye protection. A water stream directed into a stump hole can instantly turn to steam causing burning material to be forcefully expelled outward and upward. Snags or green trees that have had their roots weakened by fire can topple unexpectedly. Mop-up is not a time to let your guard down!

Mop-up can be accomplished with or without the aid of water.

- Dry mop-up is performed without water, retardant or a wetting agent by scraping, digging, stirring, mixing or separating burning material.
- Wet mop-up is performed by exposing burning or smoldering material and then mixing it with water (retardant or wetting agent) and soil. Handtools are utilized to help uncover or expose still burning material and to then mix and cool these materials with the aid of water or soil.

One of the Common Denominators of Fire Behavior on Tragedy Fires has application in mop-up: Number 1: On relatively small fires or on deceptively quiet area of large fires.

Use your four (4) senses to help detect hot materials.

Sight. Look for:

- Smoke. Look up as well as down because snags or live trees may have fire or smoldering material 20+ feet up the bole.
- Heat waves or steam.
- White ash.
- Insects that sometimes congregate around a heat source.

Touch

- Use the back of your bare hand to feel for heat in stump holes, around snags, and underneath of logs. Start at least 1-inch away checking for heat then carefully check using direct contact.

Smell. Use this sense to detect:

- Smoke.
- Burning material or gases

Hearing. Listen for the:

- Crack and pop of burning material.
- Hiss when water touches hot materials

Mop-up Tactics

- Machine piled (dozer or grader piles) or banked fuels must be uncovered, checked and hot spots scraped out and extinguished.
- Limb trees to reduce or eliminate ladder fuels.
- Fell snags and brush that pose a danger to the security of the control line.
- Break apart stumps and remove and extinguish burning materials.
- If water is scarce or there is lots of burning material, consider clearing an area to mineral soil, cool or extinguish these materials and place the materials in a "bone pile". It may be necessary to recheck these areas several times to ensure they are out.
- Remove bark from downed logs or snags near the line.
- Scatter all cut fuels. Do not windrow.
- Move all burned or charred material back inside the control line, scatter and extinguish.
- Establish or reinforce cup trenches down to mineral soil on underslung lines.
- Establish or reinforce water bars to minimize soil movement off site during rain events following the fire.

Aids to Assist Mop-up

- FLIR (Forward Looking Infrared) from aircraft.
- Handheld Infrared devices (thermal imaging cameras).
- Thermal scanners or thermal temperature probes.

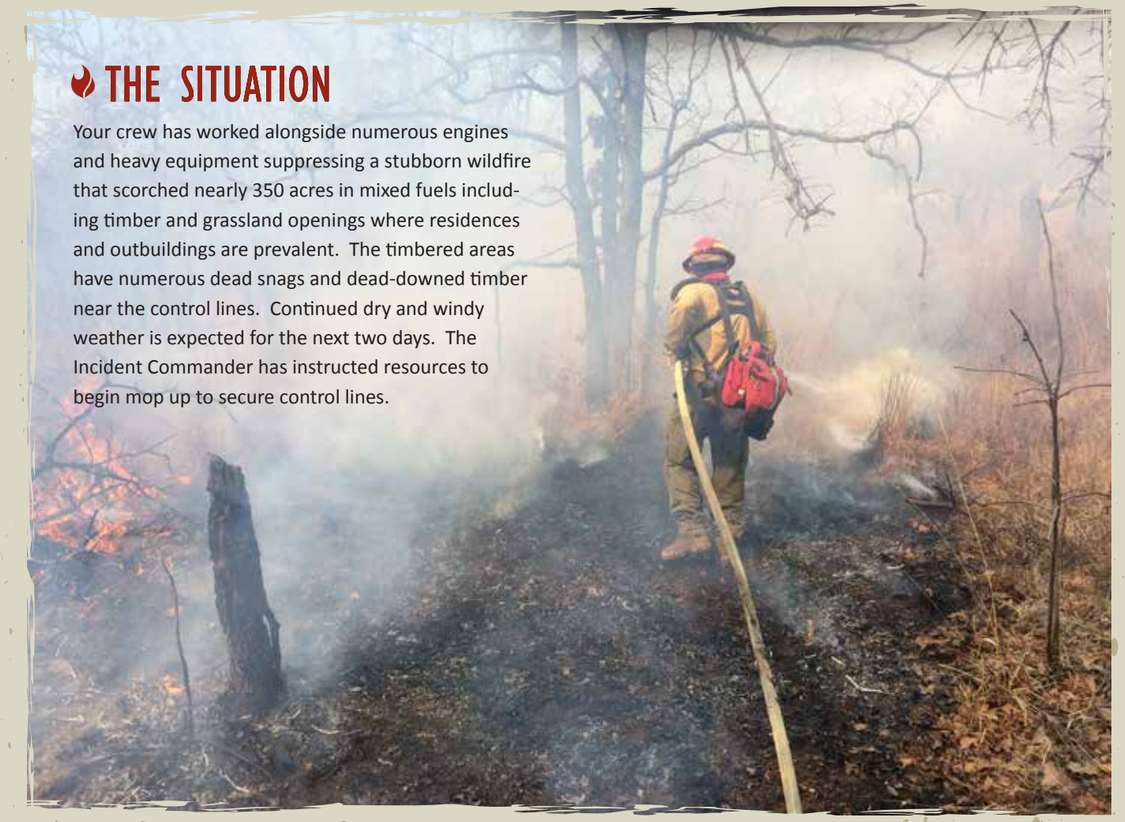
Mop-up Standards

- Generally set by the agency responsible for the fire area.
- May be 100% on small fires.
- May be within a given distance from the fireline (generally measured in chains of feet).
- Generally written in the "turn-back" standards on large fires managed by Incident Management Teams.
- Fire should not be called "Controlled" until mop-up completed.

Mop-up is not glamorous and generally won't make the evening news. It can mean the difference between returning to the station or your real job or the meal that was half eaten when the alarm went off and being toned out a second time on the same fire. Do it right the first time and it will truly be "The Final Attack"!

ON THE FIREGROUND

APPLYING WHAT YOU'VE LEARNED



THE SITUATION

Your crew has worked alongside numerous engines and heavy equipment suppressing a stubborn wildfire that scorched nearly 350 acres in mixed fuels including timber and grassland openings where residences and outbuildings are prevalent. The timbered areas have numerous dead snags and dead-downed timber near the control lines. Continued dry and windy weather is expected for the next two days. The Incident Commander has instructed resources to begin mop up to secure control lines.

Questions:

Q: Given the short scenario above, how would you prioritize mop-up operations for the incident?

A: 1. Improve control lines near the improvements including residences, outbuildings and other values with continuing patrol ensuring containment. 2. Fall dead/burning trees that may threaten control lines by lofting embers into unburned fuels, potentially fall across control lines and/or pose a safety risk to personnel and equipment working the control lines.

Q: This fire is too large to completely mop it up. Describe the mop up specifications that would be required to meet containment requirements.

A: Timber – Extinguish all hot spots and smoke within 2 chains (132 ft.) of the control line. Fall any snags (dead standing trees) that may fall across the control line. Pull in, push in or monitor jackpots of heavy fuels while they burn. Grass – Extinguish all hot spots within 1 chain (66 ft.) of the control line.

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