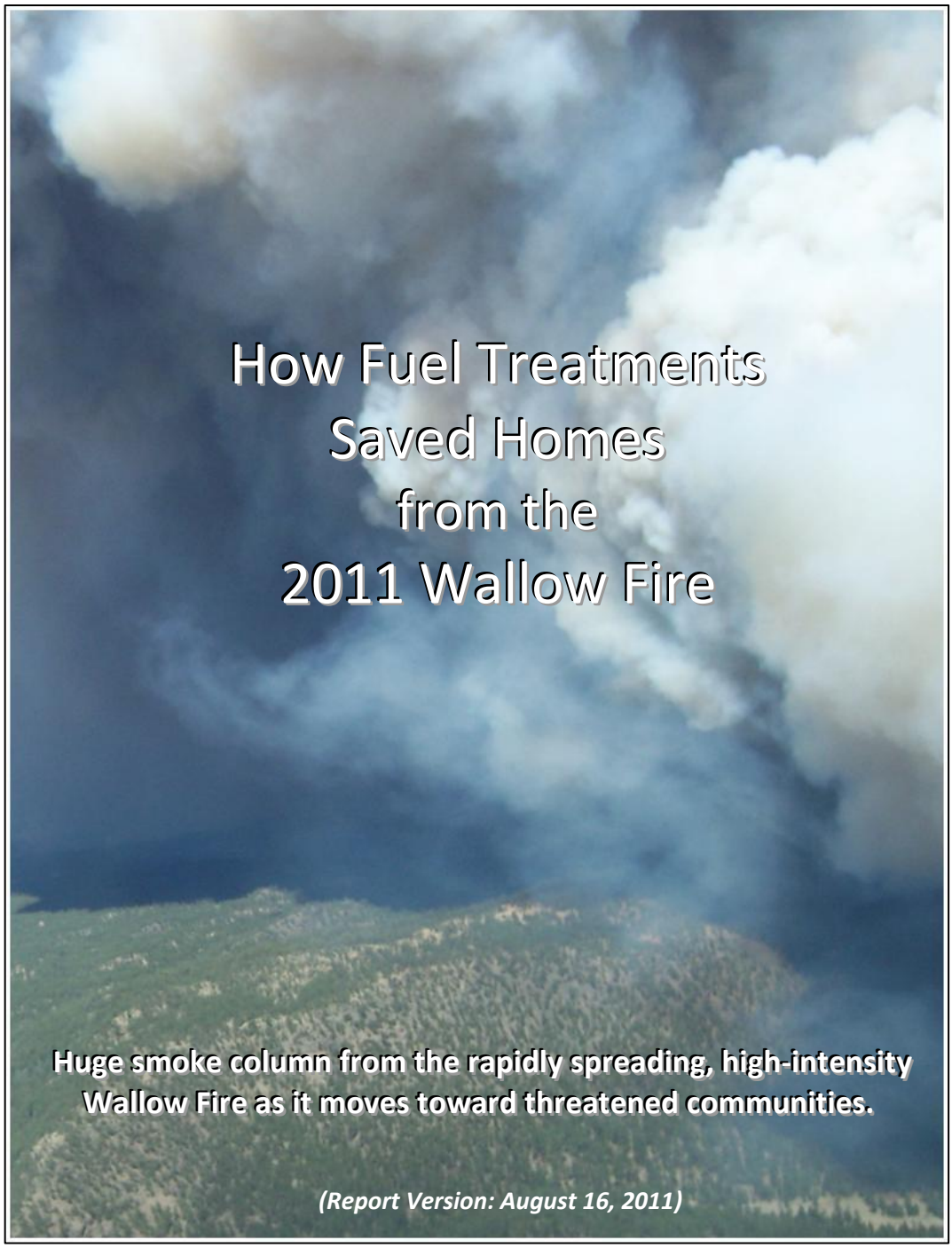
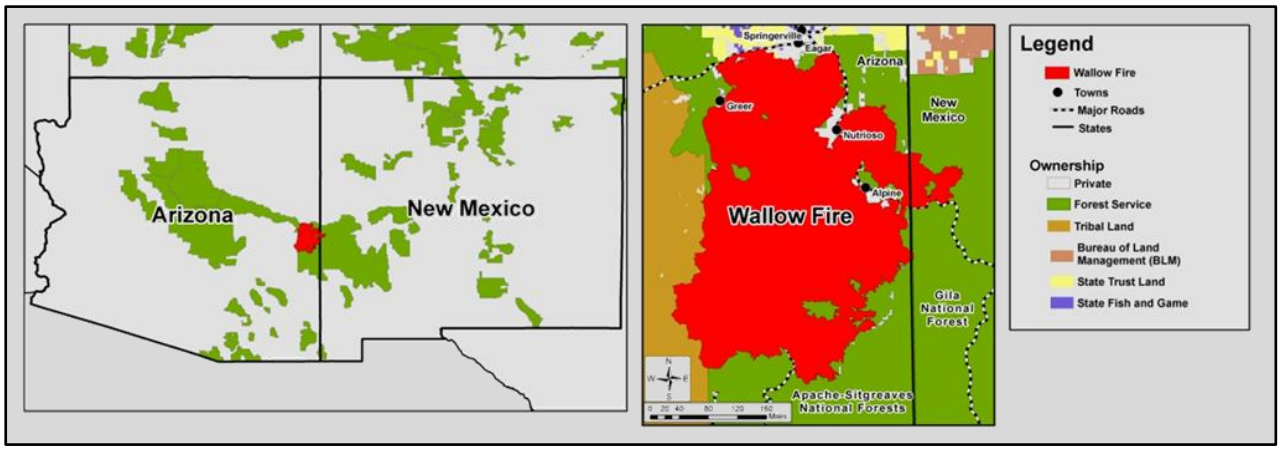
How Fuel Treatments Saved Homes from the 2011 Wallow Fire



Huge smoke column from the rapidly spreading, high-intensity Wallow Fire as it moves toward threatened communities.

(Report Version: August 16, 2011)



Influenced by strong winds and low humidity, the high-intensity Wallow Fire burns toward communities.

Without Fuel Treatments: *'Many of the Houses Would Have Caught Fire and Burned to the Ground'*

The **Wallow Fire** starts on Sunday, May 29, 2011. On the fire's first and second day—and for three of the next five days—"Red Flag" (windy and dry) conditions thrive. By the morning of the fire's sixth day—June 2—the Wallow Fire has burned 40,000 acres—almost 63 square miles. The fire has now moved north to the junction of Forest Roads 26 and 24. Adding to the severe intensity of the fire's spread, the winds have increased and relative humidity has decreased.

By noon on June 2, fire behavior becomes even more intense as the Wallow Fire makes an extended "crown fire" charge toward the community of Alpine, Arizona. Within three hours, this crown fire crests the ridge above Alpine. The blaze quickly moves downslope toward numerous homes located along the southwest outskirts of town.

Soon, this crown fire threatening these Alpine homes starts showering embers as far as one mile downwind—igniting numerous spot fires out ahead of the main fire.

Fuel Treatment Units Slow the Wallow Fire– Allow Firefighters to Safely Attack

As the main fire enters the ½ mile-wide White Mountain Stewardship Fuel Treatment units located above Alpine, the blaze drops from up in the tree crowns down to the surface level. The fire's rate-of-spread dramatically slows. Thanks to the influence of these previously developed treatment units—implemented beginning in 2004—flame lengths are now low enough to allow firefighters to safely attack the fire and protect homes and property.

"When the fire came over the ridge toward Alpine it sounded like a freight train. The smoke column was bent over making it difficult to see. Without the fuel treatment effects of reducing flame lengths and defensible space around most houses, we would have had to pull back our firefighters. Many of the houses would have caught fire and burned to the ground."

Jim Aylor, Fire Management Officer
Alpine Fire District

Engines and crews successfully extinguish the spot fires. To further protect residents' houses, these firefighters also conduct low-intensity "firing operations" from roadways and other fuel breaks. These aggressive firefighting suppression actions continue throughout the evening—successfully halting the spread of the Wallow Fire into the community of Alpine. In fact, all of this community's structures—but one—are saved from the fire's attack. (Actually, this single structure burned several days later when an ember—most likely transported downwind during the June 2 crown fire run—smoldered for several days before flaring up.)

Even though they experienced ember showers and low-intensity surface fires, many of the other Alpine structures that survived the Wallow Fire did so because of these prior fuel treatments, as well as "Firewise" construction and landscaping completed by the land owners. There's no question that these previous fuel reduction actions allowed the firefighters to safely and aggressively fight the Wallow Fire.

The Colors Tell the Success Story

The black, bottom area in this photo shows where the Wallow Fire moved downslope toward the community of Alpine and various homes on the outskirts of town (the green tree area in this photo) when it entered the White Mountain Stewardship Fuel Treatment Area's Alpine Wildland-Urban Interface Unit 2. Here, the fire transitioned from a crown fire to a surface fire—exhibiting far less burning intensity as it moved on downslope. Notice how the blackened tree crowns (totally consumed by the fire) diminish and turn to brown (fire singed) and then to green (unburned)—where the homes are located—as the fire moved through the protective fuel treatment unit area with its wider spacing of tree crowns and less "ladder fuels" in the timber stand's understory.

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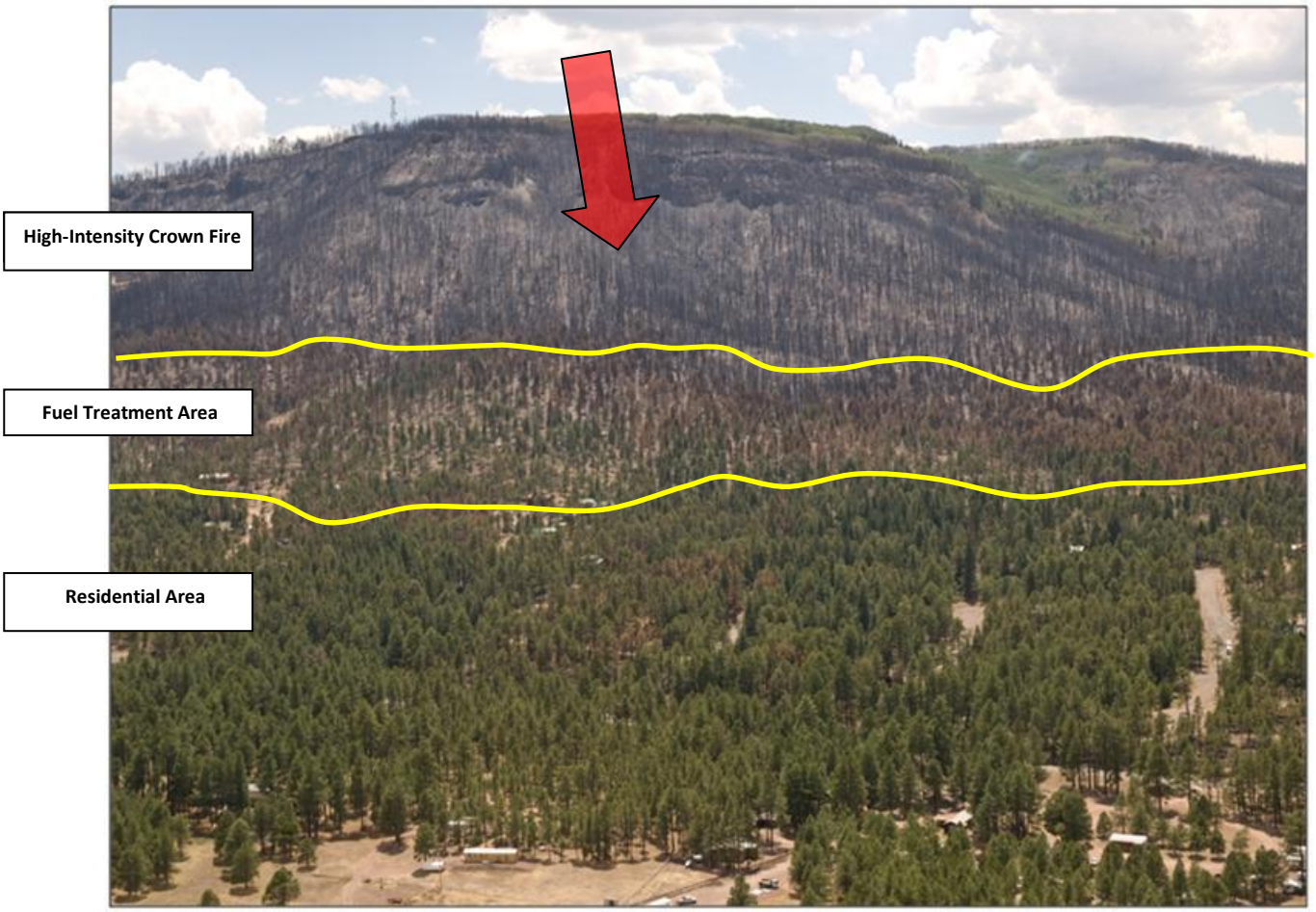


Homes Saved

Red arrow indicates the direction of the crown fire's spread toward the Alpine community's homes. Yellow lines delineate the approximate location of the Alpine Wildland-Urban Interface Unit 2 Fuel Treatment Area. As the fire raced downslope, numerous Alpine houses were at risk from the crown fire. (While only a few of the house roofs can be seen in this photo, approximately 40 homes are located in this area—and a total of 100 homes were threatened in south Alpine.) Just as was illustrated in the photo on the previous page, this photo also shows how the fuel treatment area slowed and diminished the Wallow Fire's intensity, helping to save these homes.

Defensible Space Defends House

Note the open space around this Alpine community house as well as the space between tree crowns in the fuel treatment unit upslope (to the left) of the house—toward the crown fire area. The Wallow Fire burned to within about 20 feet of this house. (See the black—fire burned—surface upslope and to left of the house.)

"The White Mountain Stewardship has been a really good thinning project. The Forest Service did a good job getting everything cleaned up. When fire comes, you need something that creates an opportunity for protection. We all knew that it was not a matter of 'if', but 'when' fire was going to come and threaten our homes."

Wink Crigler, rancher and lifelong resident
of the X Diamond Ranch, located northeast of Greer

Success Story:

Fuel Treatment Work and Firefighters Combine to Save Homes From Intensive Crown Fire

Due to the prior fuel treatments, firefighters are able to stay and fight the Wallow Fire and successfully protect homes. This photo illustrates how, as the crown fire (blackened area on the slope in the background) entered the Alpine Wildland-Urban Interface Unit 2 Fuel Treatment Area, the tree crowns were too widely spaced for the blaze to continue moving from treetop to treetop. As a result, the fire lost its power and intensity and dropped to the ground.

This fuel treatment area can be clearly seen—where trees are widely spaced and many tree crowns remain green.

The background shows the untreated areas on the steeper slopes where the fire burned intensely as a crown fire.

On June 8, the Wallow Fire enters the community of Greer.

'Without Fuel Treatments, I Would Never Have Had a Firefighter There'

On June 8, the 11th day of the Wallow Fire—with dry and windy conditions continuing to fuel this inferno—the blaze approaches the community of Greer (about 21 miles WNW of Alpine). Greer weather station observations that afternoon include a temperature of 73 degrees F., 7 percent relative humidity, and winds from the southwest blowing 19 mph at 20 feet above treetops.

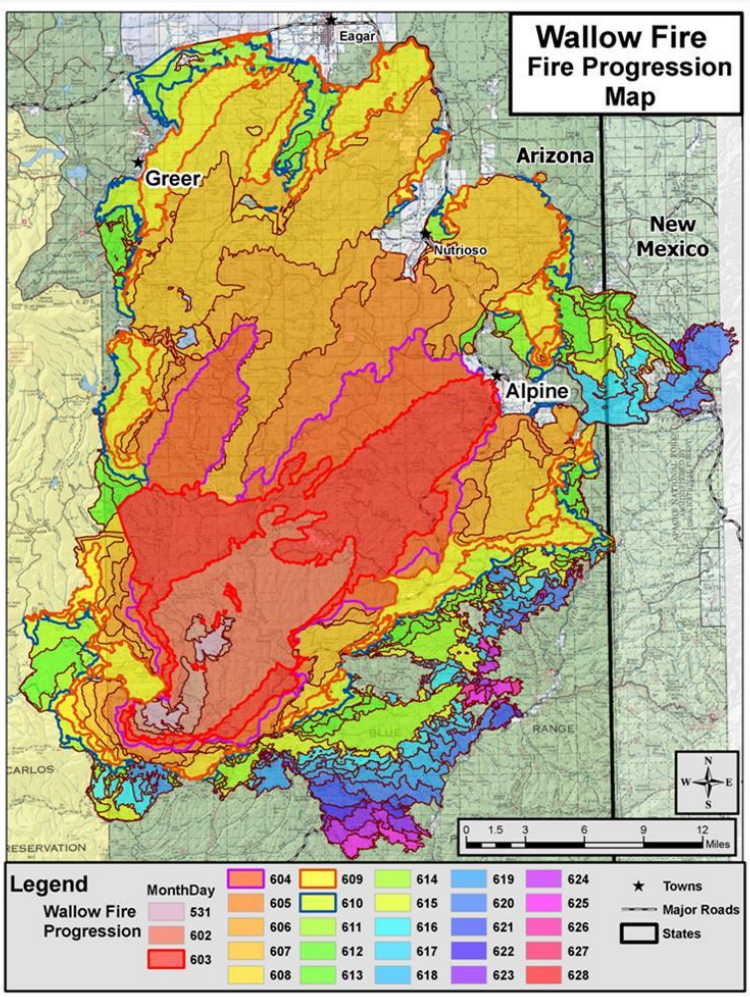
As the fire activity increases on the fire's north and west flanks, a crown fire run moves directly toward both the communities of Greer and Eagar.

The main fire is burning in Butler Canyon's mixed conifer and ponderosa pine forest along the southeast side of Greer. By 12:30 p.m., spot fires—flaring up out ahead of the main fire—ignite on the northeast side of Greer.

Photo taken on June 8 at 12:39 p.m. (by the U.S. Forest Service Region 3 Air Tactical Group Supervisor), shows the smoke from two spot fires (on far left) burning out in front of the main Wallow Fire as the fires approach the northeast side of Greer.

Fire progression map shows how the Wallow Fire charged toward Alpine—moving eight miles in one afternoon. Fuel treatment areas allowed firefighters to hold the fire at Alpine's wildland perimeter as the fire burned around the community. Likewise, at Greer, thanks to the prior fuel treatments, firefighters are able to contain the spreading Wallow Fire at the community's wildland boundary.

(The fire progression map is based on nightly flights of infra red imagery and might not reflect actual dates burned).



Firefighters Suppress Wallow Fire from Pivotal Fuel Treatment Area

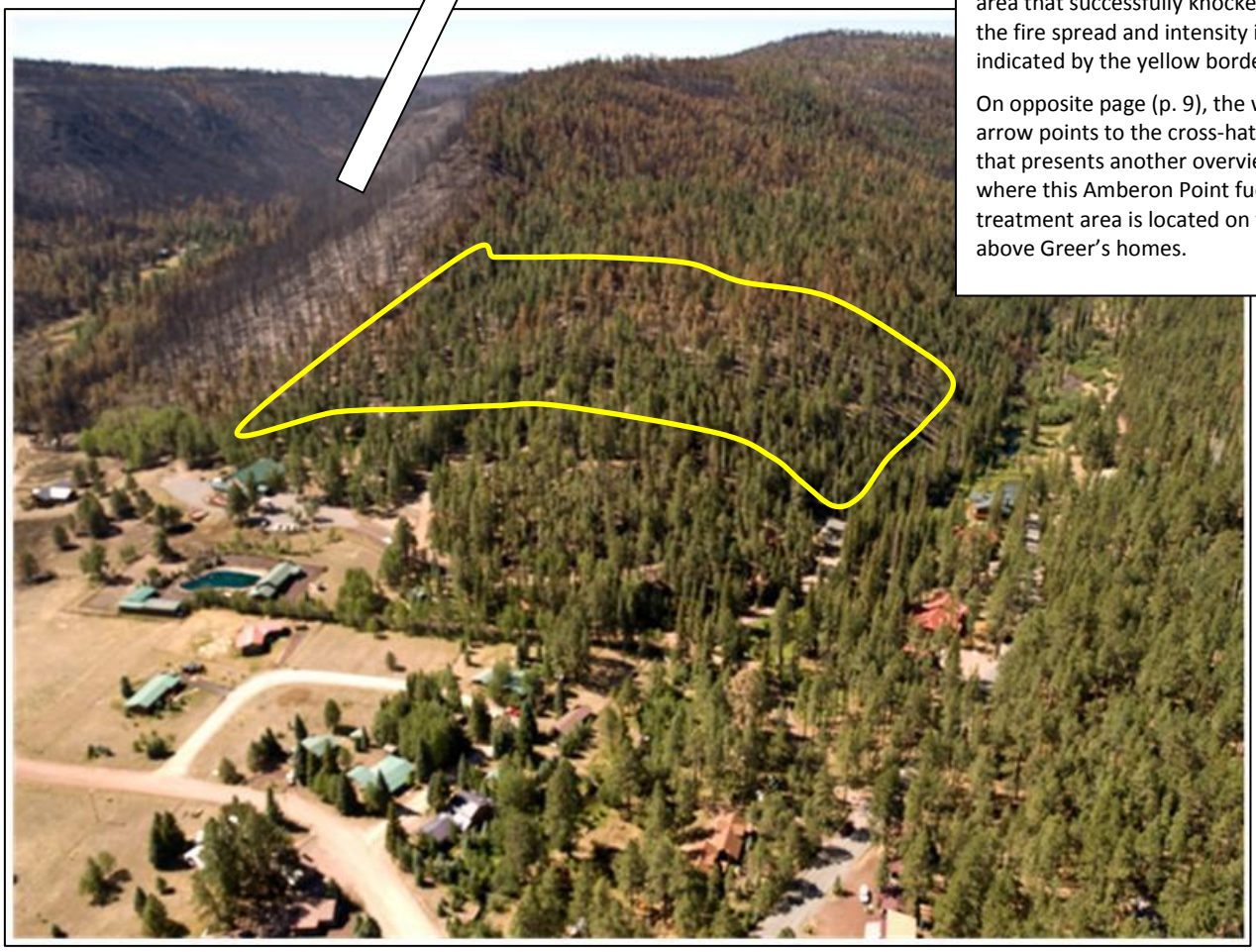
As the afternoon progressed, the main fire moves to the eastern ridge above Greer. A small, strategically placed fuel treatment on the south side of Greer at Amberon Point serves as a successful and effective "anchor point" to protect many structures in this community. Rob Lever, Springerville District Fire Management Officer, confirms that this and other completed fuel treatments allowed firefighters to actively suppress the fire in this pivotal area. *"Without the fuel treatments,"* Lever says, *"I would never have had a firefighter there."*

"Without the fuel treatments, I would never have had a firefighter there."

Rob Lever
Springerville District
Fire Management Officer

The trigger point to evacuate for Greer residents occurred earlier than it had for Alpine residents. This provided more time for Greer homeowners to prepare their houses. Just as importantly, this extra time allowed firefighters to prepare and conduct more burnout operations prior to the Wallow Fire's arrival.

The fire continues moving along the canyon, burning down into the saddles—where more "fuel loading" existed—then flanks along the hillsides above Greer. Firefighters begin conducting burnout operations in the adjacent fuel treatment areas. These fire suppression actions enable the firefighters to move out in front of the head of the fire—successfully protecting multiple homes and various structures.



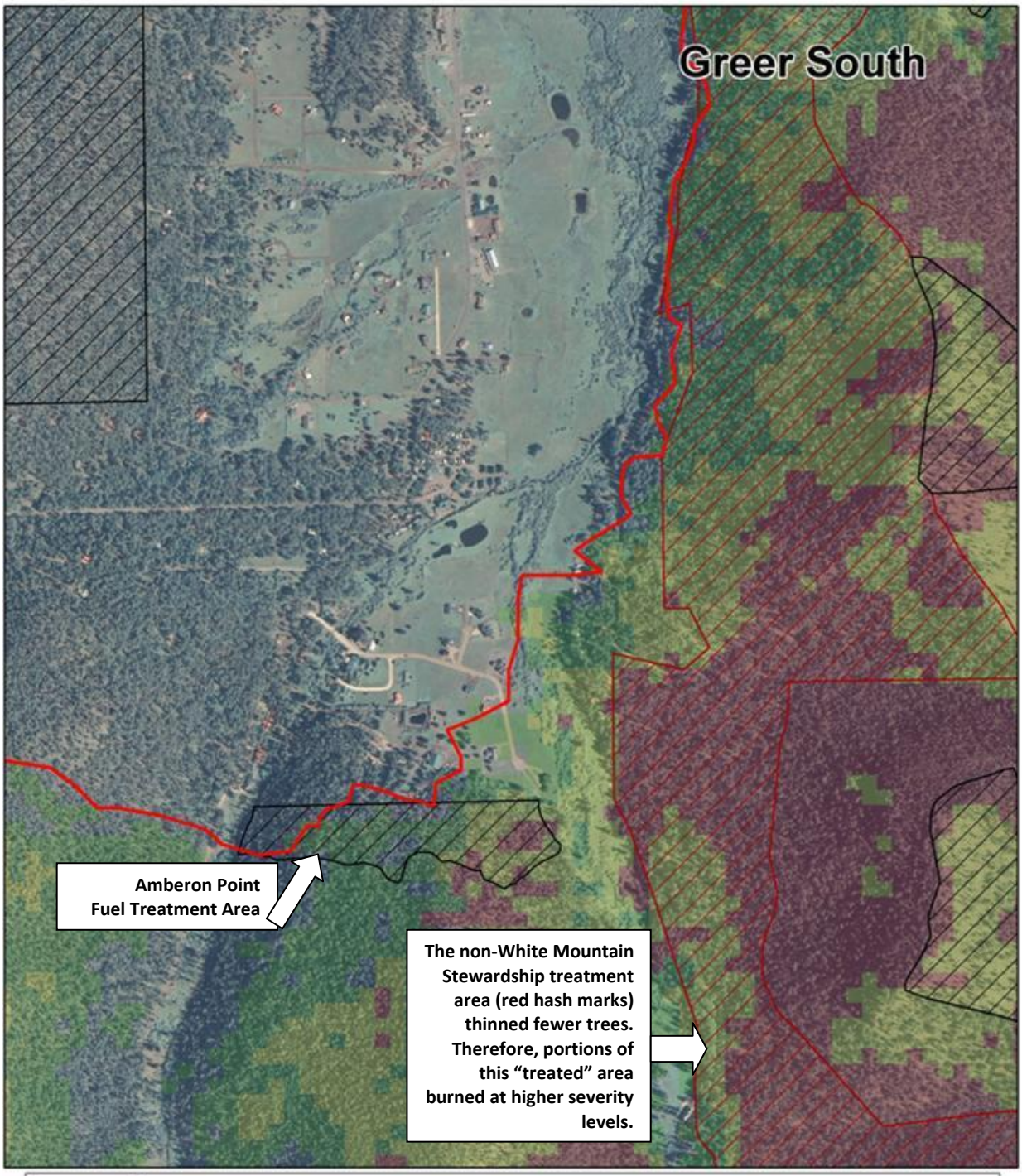
Crown Fire at Amberon Point

Before/After – White arrow extends from the post-fire location to the upper photo that was taken when the crown fire was consuming the hillside in this same area.

Fuel Treatment Area Slows Fire

The Amberon Point fuel treatment area that successfully knocked down the fire spread and intensity is indicated by the yellow border.

On opposite page (p. 9), the white arrow points to the cross-hatching that presents another overview of where this Amberon Point fuel treatment area is located on the slope above Greer's homes.



Legend

Wallow Fire (June 23, 2011)

Burned Area Reflectance Classification (BARC)* (6/23/11)

- Low Severity
- Mixed Severity
- High Severity

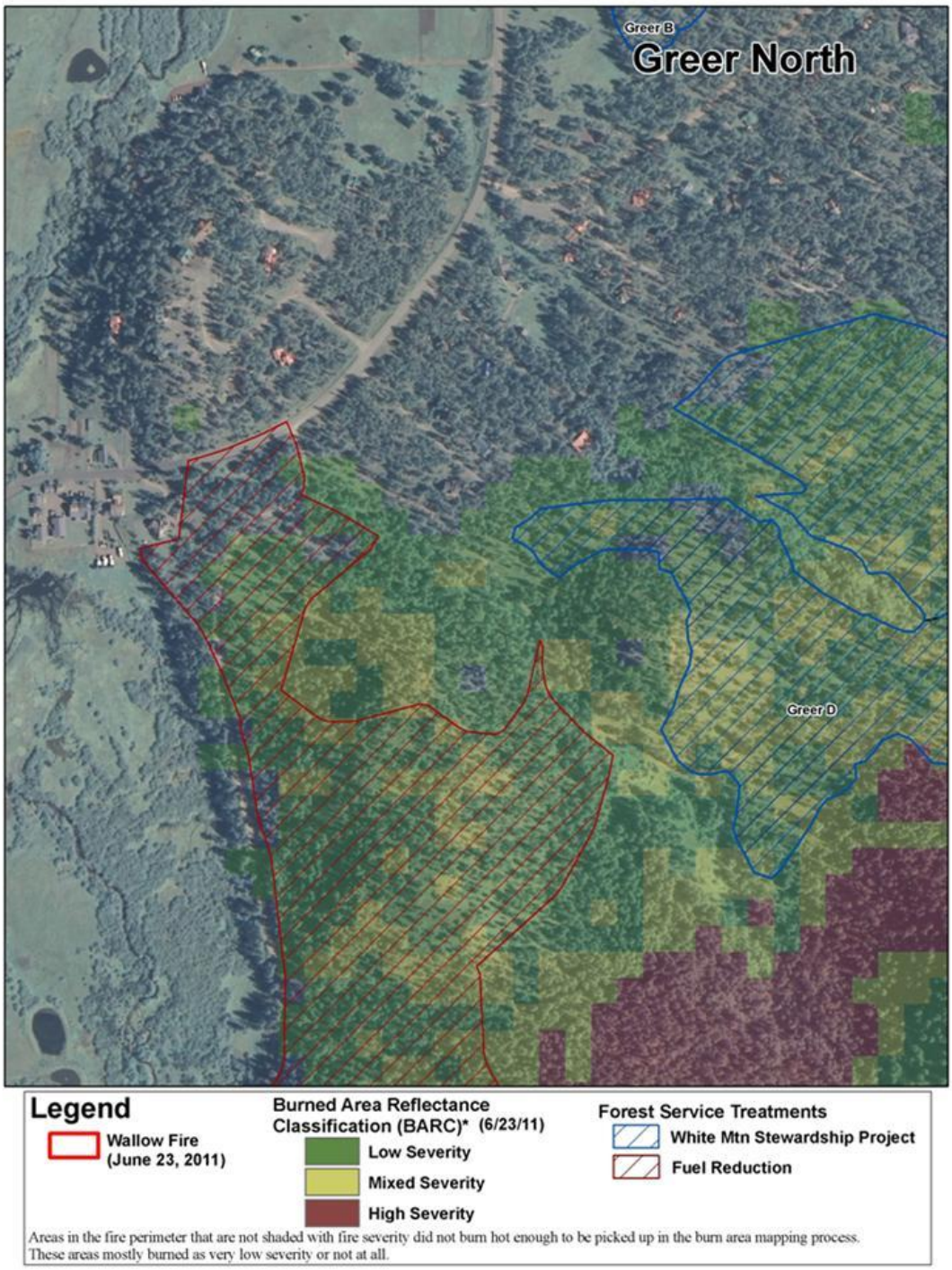
Forest Service Treatments

- Fuel Reduction
- Precommerical Thin

Areas in the fire perimeter that are not shaded with fire severity did not burn hot enough to be picked up in the burn area mapping process. These areas mostly burned as very low severity or not at all.

Saving Greer

The White Mountain Stewardship Project fuel treatment area is displayed in blue slashes. Note how the high-severity fire (shaded red on map) did not reach treatment area. This was due to "firing operations" that firefighters were able to accomplish by utilizing these treated areas—applying low-intensity fire here that then burned back toward main fire, depriving it of fuel. In fact, the main fire was crowning until it ran into this backfire—where it halted. At the same time, crews continued to successfully extinguish spot fires—ignited by embers that had carried up and over the backfire and fuel treatment area—around houses.



Anchor Point

Yellow line shows the boundary of the U.S. Forest Service North Greer Fuel Treatment Area. When the high-intensity crown fire burned downhill into this treatment area, the flames reduced and diminished to a surface fire—enabling firefighters to actively engage in fire suppression operations. In addition, some of the area above the line was treated by private landowners, often with grants from state and local government.

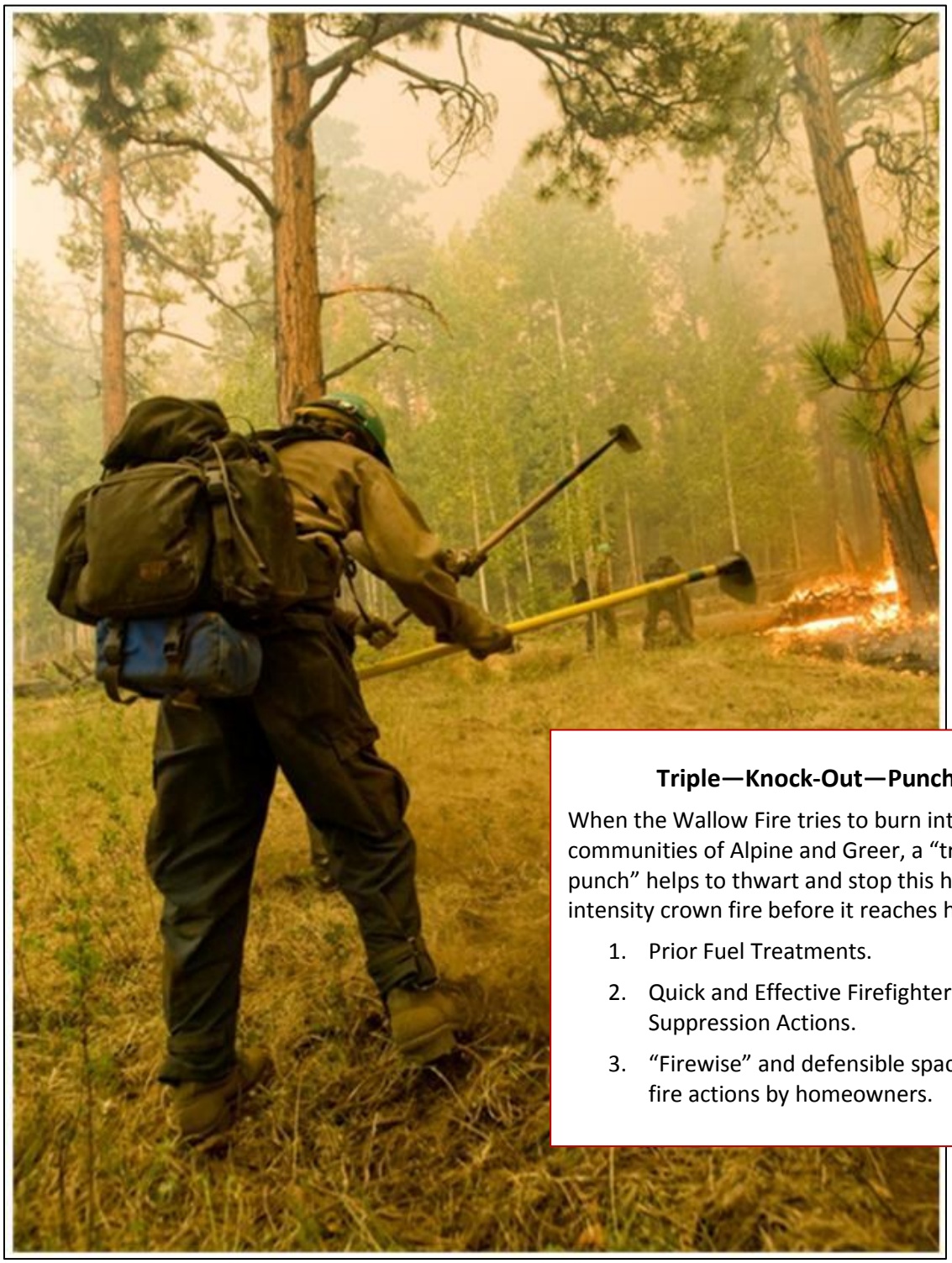
Firefighters Able to Stay and Protect Houses

Just as when the Wallow Fire threatens the community of Alpine, when it burns into Greer, firefighters are able to stay and protect houses adjacent to prior fuel treatments—as well as where these homes were also protected by "defensible space".

"We do appreciate what the Forest Service is trying to do, both to protect and to utilize this amazing natural resource. And we appreciate the assistance offered to us to help protect our land and the adjoining community."

Russell Crosby
Springerville resident

Ground firefighting resources include interagency hotshot crews, hand crews, wildland and structural fire engines, and bulldozers. Aviation resources include numerous air tankers and heavy helicopters.



Triple—Knock-Out—Punch

When the Wallow Fire tries to burn into the communities of Alpine and Greer, a "triple punch" helps to thwart and stop this high-intensity crown fire before it reaches homes:

1. Prior Fuel Treatments.
2. Quick and Effective Firefighter Suppression Actions.
3. "Firewise" and defensible space pre-fire actions by homeowners.

How Fuel Treatments Saved Homes from the Wallow Fire

To learn more
about the fuel treatments
that successfully saved homes and communities
from the 2011 Wallow Fire, please contact:

Judy Palmer, Forest Fuels Specialist,
Apache-Sitgreaves National Forest
Telephone – 928-333-6320

This fuel treatment effectiveness assessment was developed by:

Pam Bostwick, Fuels Specialist, U.S. Forest Service, Southwest Region, Albuquerque, N.M.
Jim Menakis, Fire Ecologist, U.S. Forest Service, National Headquarters detached, Missoula, Mont.
Tim Sexton, District Ranger, U.S. Forest Service, Superior National Forest, Cook, Minn.

Report edited and designed by:

Paul Keller, Technical Writer-Editor, Wildland Fire Lessons Learned Center

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