

Prepared By:

Lloyd R. Fuller, PhD
Inventory & Planning Forester
Bureau of Indian Affairs
Fort Apache Agency
Whiteriver, Arizona

Response of the Rock Creek Fire to Prescribed Fire

"As you may know by now, the Rock Creek Fire has been contained. That fire had the potential to run up through Mount Baldy and Sunrise Ski Park on through the reservation, judging from the wind directions. However, we got lucky. A previous prescribe burn slowed the fire's momentum where firefighters were able to gain control. ... God bless all who helped out!"

Ronnie Lupe – White Mountain Apache Tribal Chairman (Fort Apache Scout June 28, 2013)

Response of the Rock Creek Fire to Prescribed Fire Hazardous Fuel Reduction Treatments on the Fort Apache Indian Reservation

The Rock Creek Fire (2013-AZFTA-000067, PAHLHO) was reported at 9:45 a.m. on June 21, 2013 (human caused and still under investigation) along the East Fork of the White River drainage (Fig. 1) at the base of Mount Baldy. This wind driven fire was considered High Risk in the Wildland Fire Decision Support System (WFDSS) (<http://www.wfdss.usgs.gov>). At the end of day one at 5:30 pm the active crown fire intersected a set of prescribed fires completed in the fall 2011 & 2012. John Philbin (Incident Commander) commented that it was like a baseball going into a catcher's glove, and the fire became a slow moving surface fire.

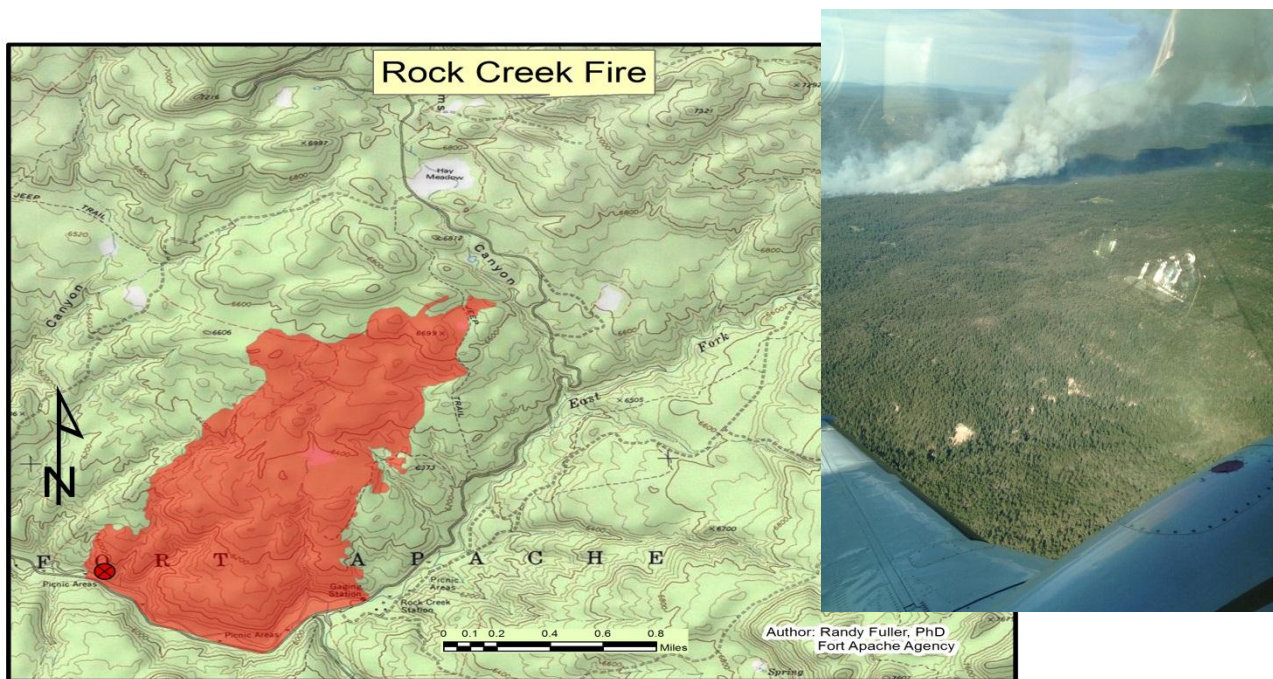


Figure 1: Rock Creek Fire Point of Origin (left) and aerial of wind driven plume (right).

Locally, Fort Apache fire management personnel understand that the surface fuels and topography that drives fires near the base of Mount Baldy, and its associated drainages, have tremendous potentials to severely damage water quality, timbered resources, wildlife habitat, and environmental services on the southwest and western slopes of Mount Baldy: the headwaters for unfiltered water for the White Mountain Apache Tribe.

Initial attack on the Rock Creek fire was handled by local IA crews. The fire was burning in ponderosa pine forests with pine litter and brush/grass understory. The winds were out of the southwest variable from 8-15 mph and gusting to 35 mph over most of the fire. Relative humidity was in the single digits while the daytime temperatures were in the 90's. The fire had active and sustained crown fire behavior for most of the first day, and was intensifying as it progressed to the northeast as indicated on the BARC map (Burned Area Reflectance Classification) (<http://www.fs.fed.us/eng/rsac/baer/barc.html>) (Fig. 2). Dozer lines were not established early because of the difficult terrain. Handline was dug up the left flank to restrict the northward movement of the fire and contain it west of the R-30 and R-30P road. Air attack with SEAT'S (Single Engine Air Tankers) and helicopters were used near the head and flanks of the fire to control lateral spread and spotting (up to ½ mile) when winds permitted.

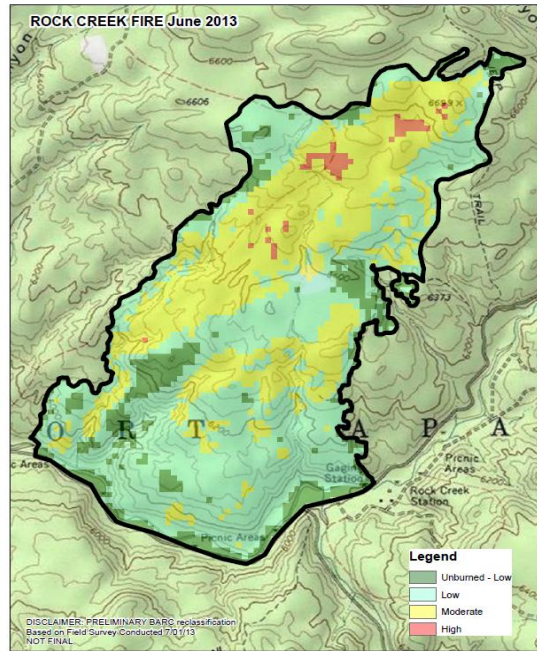


Figure 2: BARC map shows increased intensity to the NE

John Philbin's Eastern Arizona Type 2 Incident Management Team was called in on day two because of the complex nature and potential dangers of the fire spotting over the prescribed burns and burning into either Deep Creek or the East Fork of the White River and running all the way up the drainage to Mt. Baldy.

The prescribed fires restricted the northwest, north and northeastern movement of the fire and contained the fire to 795 acres. Losses of timber (timber loss is being appraised now) and watershed damage appear minor because of early containment of the fire. Suppression efforts included 486 personnel (including 6 type 1 and 5 Type 2 crews), 19 engines, 1 heavy helicopter, 2 light helicopters, 1 dozer, 3 water tenders and 95 overhead. Cost of suppression as of 6/27/2013 is \$2,043,290 with another week of mop up efforts and the development of a Burned Area Emergency Rehabilitation (ES) plan still being evaluated.

The prescribed fires completed in the fall of 2010 (FY 2011) and 2012 (FY 2013), to reinforce an established fuel break designed to protect the Deep Creek and East Fork of the White River drainages, Sunrise Ski Resort, and Mount Baldy, did exactly what they were designed to accomplish. The fire progressed into the treated areas with their reduced fuels and slowed, ceased being a crown fire and became a surface fire. The fire only encroached into the prescribed fire by 39.6 acres (Fig. 3). Figure 5 shows the distribution of dollars for the fire and the prescribed burns and reinforces the enormous suppression costs savings realized for very low investments in hazardous fuels reductions.

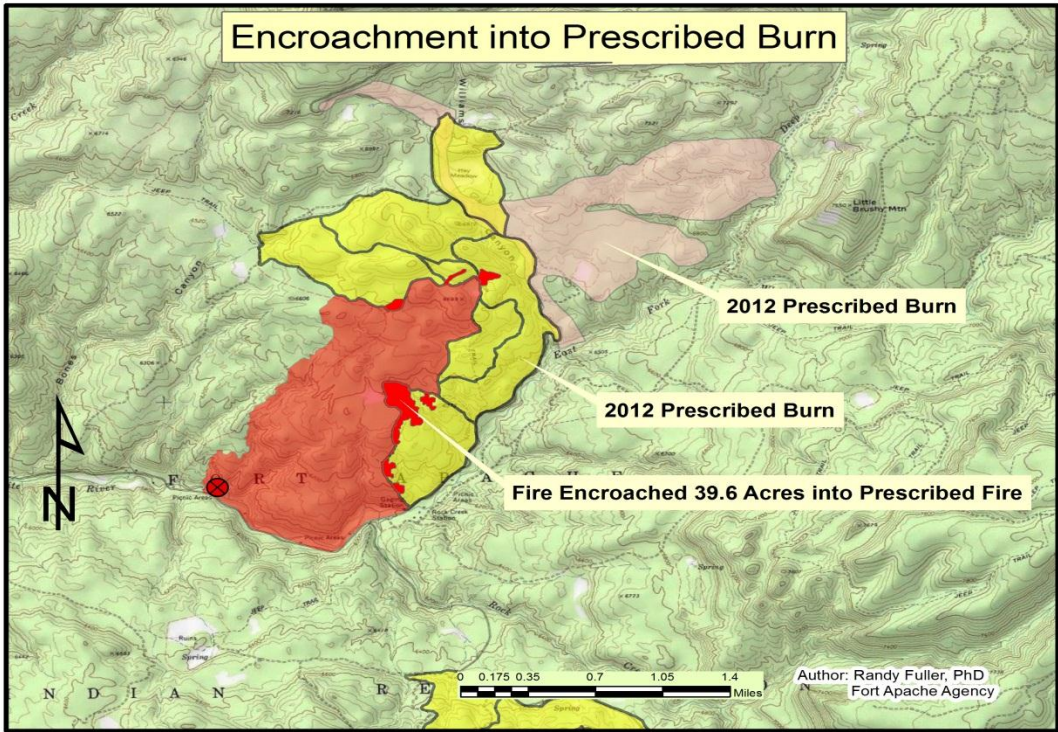


Figure 3: Fire only encroached 77.5 Acres

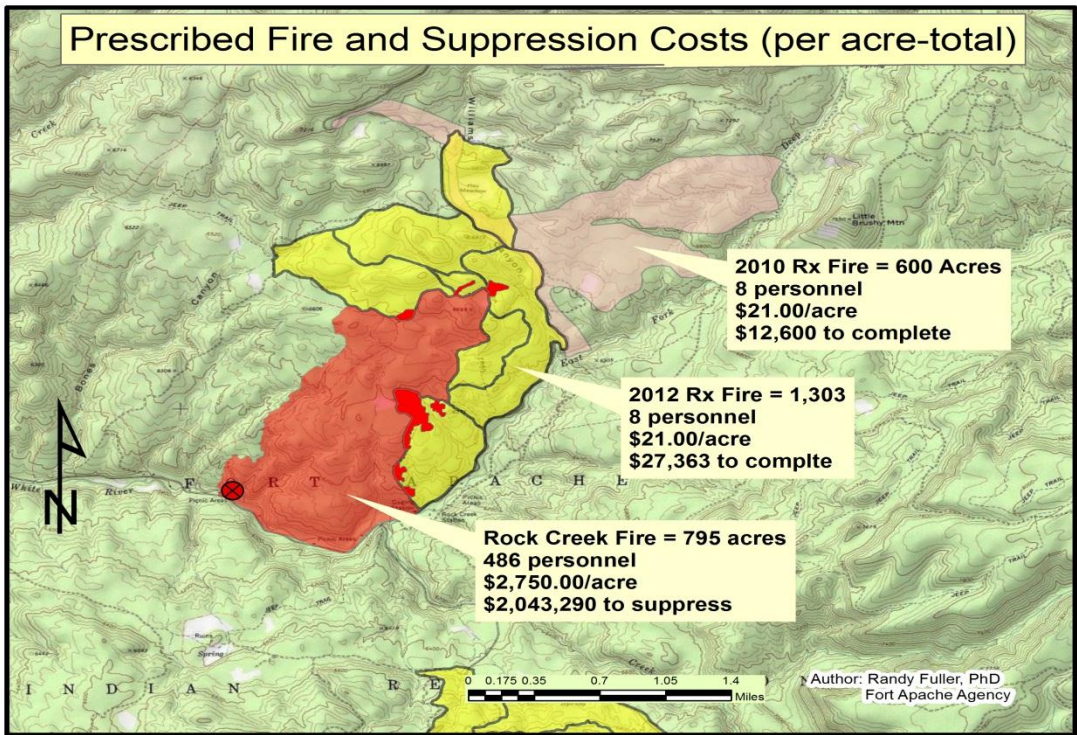


Figure 4: Cost Comparison of Rx to Suppression

VALUE OF HAZARDOUS FUELS REDUCTION TREATMENTS

One way to value prescribed fire treatments is to establish what the fire could have done in the absence of treatments. Using fire models within the WFSS, Bil Grauel, Fire Ecologist with BIA-NIFC, prepared runs projecting both a simulation of the actual fire conditions (Fig. 5), as a way to calibrate the program,

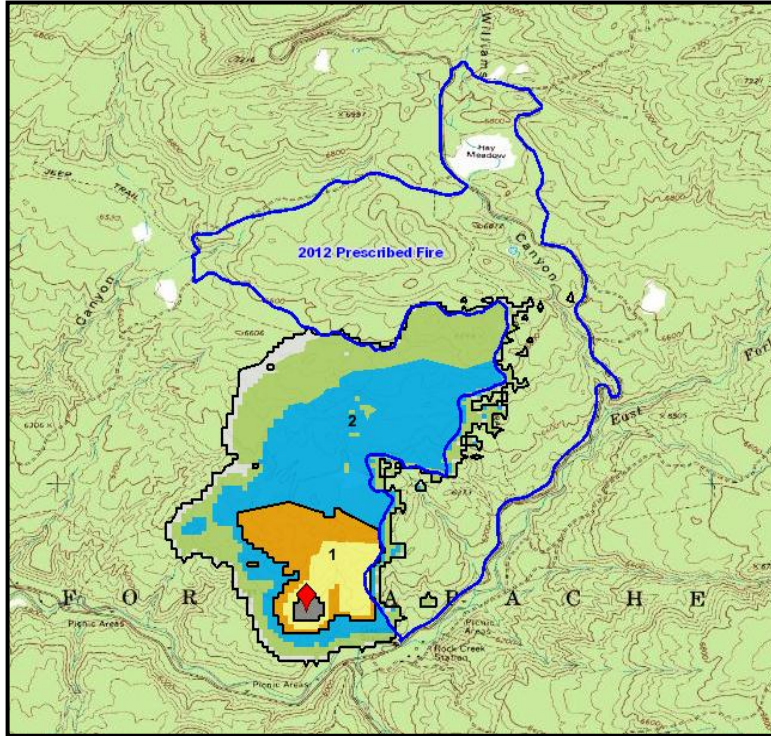


Figure 5: Calibration run to match actual fire boundary

and a projection of what the fire could have done had there been no prescribed fire treatments (Fig. 6).

The Near Term Fire Behavior (NTFB) model was used to project the possible fire spread had the 2012 prescribed fire not been implemented. The 2012 prescribed fire reduced the amount of downed woody fuels to the extent that the Rock Creek Fire could only spread minimally though the recent needlecast on the forest floor.

Landscape and weather inputs to the model were adjusted with local knowledge and local observations. Fuel model layers were modified for recent logged areas and the 2012 prescribed burn.

Using the same weather and landscape inputs as the first simulation, the 2012 prescribed fire was removed from the model. Under the assumption of no suppression action, the NTFB model of the Rock Creek fire spots over the R55 road (green line) and covers 20,039 acres from June 21 – June 26 (Fig. 6). The potential severe nature of this fire is reinforced by the modeling run. The potential for active crown fire over large contiguous acreages was high. This danger put firefighters at high risk, increased the damages to timber resources, wildlife and fisheries habitat, threatened and endangered species, and other environmental services. While no monetary values were placed on the potential environmental services losses listed it can be assured that they were substantial and would have continued well into the future. These costs were all avoided by the intelligent placement of these hazardous fuels reduction prescribed burns (Table 1).

	Rock Creek Fire Costs			
	Acres	Personnel	Cost/Acre	Total Cost
Actual	795	491	2,750	\$2,043,290
Projected without Rx Burn	20,039	650	1,375	\$23,708,589
2012 Rx Burn	1,303	8	21	\$27,363
2010 Rx Burn	600	8	21	\$12,600

Table 1: Cost Associated with treatments and suppression

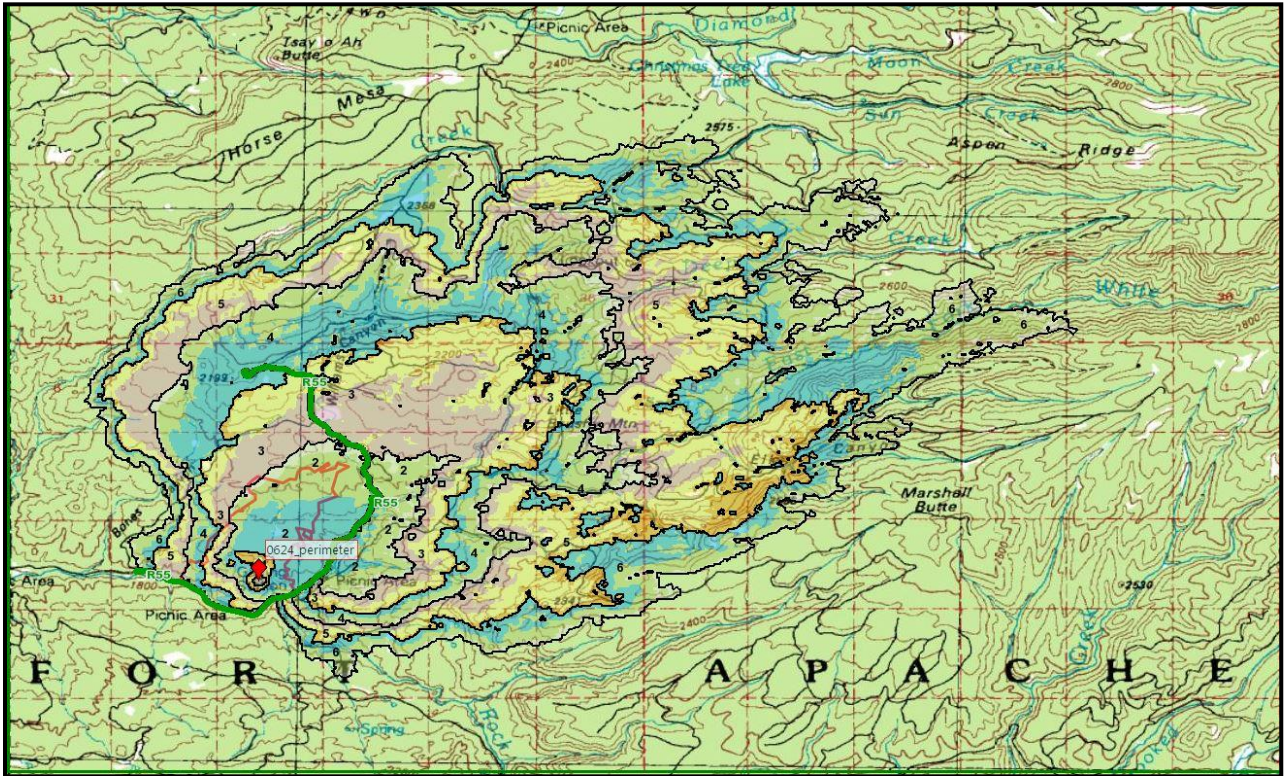


Figure 6: Six day NTFB model of a simulated free-burning Rock Creek fire, had the 2012 prescribed burn not been in its path. Note the outline of the actual final Rock Creek perimeter in red, 795 acres.

Conclusion

The Rock Creek Fire clearly shows the benefits of a well-planned and timely executed Hazardous Fuels Reduction program using prescribed fire. The analysis shows that for an investment of \$2,070,653 in suppression and treatment costs you can protect over 20,039 acres of irreplaceable resources and reduce potential suppression costs by \$21,637,936: a benefit/cost ratio of over 11:1 (Table 1).

Hazardous fuels reduction by prescribed fire has many benefits:

- Increased firefighter safety margins because of reduced fire intensities
- Increased public safety by intelligent planning of prescribed burning
- Reduced exposure of public/private infrastructure through reduced fire behavior
- Increased suppression management options by slowing and constraining the fire
- Reduced damage to natural resources, watershed, wildlife habitat, and environmental services
- Reduced costs associated with emergency stabilization and rehabilitation (BAER & BAR projects)
- Reduced cost of suppression
- Increased utilization of suppression forces and equipment for deployment in other areas

Acknowledgements:

John Philbin, IC2 (Regional Forester)
Eastern Arizona Incident Management Team
Western Regional Office

William Grauel, PhD
Bureau of Indian Affairs
National Interagency Fire Center
Boise, Idaho
Bil Grauel, PhD

Richard R. Johnson
Fire Ecologist
Bureau of Indian Affairs
Western Regional Office

Darryl Martinez
Bureau of Indian Affairs
National B.A.E.R. Team Leader
NIFC

Rachael Endfield
GIS Specialist
White Mountain Apache Tribe

Robb Beery, FBAN

Kelly Allen, FBAN
Eastern Arizona Incident Management Team

*"Thankfully we had people
who were actually planning
the prescribed fires."
Clinton Kessay, White
Mountain Apache Tribal
Council Member*
