



File Code: **5140 Prescribed Fire**

Date: **6/29/10**

Subject: **Dry Fork Prescribed Burn, Implementation Monitoring Review**

To: **Yellowstone District Ranger**



On June 23, 2010 an Implementation Monitoring Review was held for the Dry Fork burn. In attendance were Steve Schacht, Rachel Feigley, Chauntelle Rock, Mike Gagan, Julie Shea, Barb Ping, Scott Raznoff, and Mark Story. The purpose was to review the Dry Fork Burn objective accomplishment and mitigation measures (implementation and effectiveness) and provide conclusions and recommendations for future GNF prescribe burn projects.

The Dry Fork burn was authorized in the Long Mountain Fuels Management and Prescribed Burning Project Decision Memo on July 9, 2004. The burn was accomplished in a prescription burn window on September 16 through 18th of 2009. Overall project objectives, as listed in the Long Mountain Burn Plan (approved April 15, 2009), included the following purpose and need:

- 1) reduce conifer encroachment on native grass and sagebrush meadows and aspen stands
- 2) reduce the density of understory conifers within forested stands
- 3) restore/maintain fire regime condition class 1 areas.

Dry Fork prescribed burn goals in the Decision Memo:

1. Reduce conifer encroachment on grass and sagebrush meadows and aspen stands
2. Maintain condition class 1 areas
3. Public and firefighter safety during wildfire events



4. Responsive to hazardous fuels reduction and restoration treatments of the National Fire Plan in terms of: *“hazardous fuels reduction to communities at risk,. (readily) accessible watersheds,.. and/or other important local features, where current conditions favor uncharacteristically intense fires.”*

The Dry Fork project area included 66 treatment stands, totaling up to approximately 2,400 acres, in the Dry Fork area (T4S, R13E, Sections 1 & 12; T3S, R14E, Sections 30 & 31, and T4S, R14E, Sections 6-9). The project proposal included approximately 1,584 acres within 47 stands of conifer and aspen for prescribed burned only. Approximately 235 acres within 8 stands of conifer and aspen, were slated for slashing of small-diameter conifer and aspen trees (1/2 to 8 inches in diameter) prior to prescribed burning. Two units totaling 59 acres, for slashing only of small-diameter conifer trees (1/2 to 8 inches in diameter). Other treatments proposed include the cutting down (slashing) of small-diameter conifer trees (1/2 to 8 inches in diameter) in 9 stands encroaching on grass and shrub land habitats prior to broadcast burning on approximately 506 acres. The intention was to burn in a mosaic pattern and retaining healthy, productive sagebrush as seed sources for adjacent burned areas. Light tree encroachment areas (< 10 trees/acre) cut down with limbs and slash debris scattered.

The process for this review consisted of the following:

1. Identification and listing of the prescribed fire plan objectives and the mitigation measures. Sources included the Long Mountain Burn Project Decision Memo and Burn Plan
2. Field review of the burn unit
3. Team ratings (consensus) for application and effectiveness of BMP's observed at the reviewed units, using the Gallatin NF implementation monitoring format
4. Team recommendations for future GNF prescribed burn projects

Objective or mitigation measure and effectiveness definitions included the following:

Application

- 5- operation exceeds requirements of objective or measure
- 4- operation meets requirements of objective or measure
- 3- minor departure from measure, objective marginally met
- 2- major departure from measure, objective sporadically met
- 1- gross neglect of measure, objective not met
- na – not applicable

Effectiveness

- 5- improved conditions over pre-project condition
- 4- adequate protection of resources, effective
- 3- minor and temporary impacts on resources, moderately effective
- 2- major and temporary or minor and prolonged impacts on resources or only slightly effective
- 1- major and prolonged impacts on resources or not effective
- na – not applicable

Evaluation Items - BMP's	source	Applic	Effect	Comments
Dry Creek Prescribed Burn Plan Resource Management Goals				
1) Reduce conifer encroachment on grass and sagebrush meadows and aspen stands	Long Mountain Burn plan p. 9	4	4	
2) Provide and/or maintain existing defensible spaces within the drainage to facilitate tactic and staging areas during wildfire events	Burn plan p. 9	na	na	not a hazardous fuels project in Dry Fork
3) Reduce current fuel loadings of grass and shrubs, ground surface fuel, and/or smaller trees, particularly under mature forest canopies	Burn plan p. 9	4	4	
4) Restore/maintain fire regime condition class 1 area	Burn plan p. 9	4	4	condition class 1 is a normal fire regimen cycle
5) Reduce the amount of understory vegetation and available natural fuel loading in the 0-3" size class	Burn plan p. 9	4	4	
6) Allow an opportunity for wildland in a natural role in the upper portions of the Dry Fork drainage, thus reducing the threat to private land developments located in the lower portion of the drainage	Burn plan p. 9	4	4	this goal was met in the units treated. several north facing slopes on the south side of Dry Fork retain heavy fuels
7) Mixed intensity fires of a combination of underburning and small isolated pockets of torching trees to create a mosaic pattern of burned and unburned areas.	Burn plan p. 9	4	4	
8) Retain patches of healthy sagebrush by excluding fire in those areas	Burn plan p. 9	4	4	goal more appropriate for Elk Creek part of the project - most of the Dry Fork sagebrush was retained
Dry Creek Prescribed Burn Plan Fire Management Goals				
1) Make firefighter and public safety the highest priority in every fire management activity	Burn plan p. 9	4	na	no implementation crew injuries
2) Reduce fuels adjacent to private property and affect behavior of future wildland fires allowing	Burn plan p. 9	4	4	goal more appropriate for Elk Creek part of the project
3) Meet or exceed air quality standards developed by the State of Montana's Air Quality Bureau for all fuel treatment activities	Burn plan p. 9	4	4	east winds on lower slopes then north winds at upper slopes dispersed smoke up and away from lower Dry Fork and the East Boulder Mine

4) Burn will be scheduled when the forecast indicates smoke will not accumulate in unacceptable concentrations in smoke sensitive locations. A smoke dispersion forecast of moderate or better is required before ignition can occur.	Burn plan p. 27	4	4	followed standard Montana Smoke Management Group standards. permit via RAZU process. No airshed restrictions during time of burn
5) Notify the public prior to implementing any fuel treatments via a news release(s) in local newspaper(s)	Burn plan p. 9	4	4	pre implementation notifications in local news paper, notified county commissioners. No adverse to the projects comments received before, during, after the Dry Fork burn.
6) Ensure all management ignited prescribed fires are conducted according to the established Gallatin National Forest standards and in a consistent manner in terms of the decision process, personnel qualifications, complexity designation and mopped-up appropriately.	Burn plan p. 9	4	4	mop up helped by late September snow

Dry Creek Prescribed Burn Record of Decision Conditions

1) Aspen stands determined to benefit from a prescribed burning treatment may be fenced or have conifers felled in them, either before or after burning, in order to provide protection against big game browsing.	Long Mountain Decision Memo p. 11	4	4	some conifer felling occurred in aspen stands prior to burning. Aspen regeneration response has been very robust.
2) Livestock grazing would be restricted within a particular pasture for at least one year (the year prior to burning) and as much as three years (one year prior to burning, and two years after burning).	Long Mountain Decision Memo p. 11	4	4	no grazing in 2009 or 2010
3) Weed mitigation: - No new roads or ATV trails. Motorcycles or ATVs will not be used off county or Forest system roads to access the Dry Fork units (GNF) Travel Plan travel plan - For travel off of established Forest system roads, undercarriages and wheels of fire vehicles cleaned prior to entering the project area	Long Mountain Decision Memo p. 12	3	na	FS vehicles not washed prior to fire and no washing equipment available on the fire. Need to monitor the Dry Creek burn later in 2010 for possible new weeds.
4) Burn plan prescriptions reviewed by an archeologist and necessary adjustments made prior to	Long Mountain Decision Memo p. 12	4	4	Forest Archeologist signed off on burn plan. Pre-historic sites

implementation. Necessary adjustments would be made prior to and/or during ignition activities to minimize potential effects to those sites.				most vulnerable to off road driving. burn allows better identification of pre-historic cultural resource features
5) Visuals: flush cut stumps, and limb/lop and scatter slash within sight of Forest system trails. To prevent mechanical treatment (cutting of encroaching trees) from appearing visually dominant, and to avoid intense local deeper soil burns where slash accumulates, the slash would not be piled along designated trails	Long Mountain Decision Memo p. 12	4	4	all stumps cut low and visuals not an issue. This mitigation measure is overkill in Dry Creek project.
6) Coordinate the burning of hand piles with the Montana State Airshed Group to allow ignition opportunities during periods of acceptable wind dispersion	Long Mountain Decision Memo p. 13	na	na	some hand piling is likely in the Elk Creek burn

Findings will be shown in photos:



Spring burn unit in May 2009 in SW portion of the Dry Fork Burn. This spring burn was done with a helitorch and resulted in only spotty mosaic burning. The upper end of the burn was constrained by snow cover. Revegetation has been robust. No soil movement and erosion was found.



Aspen was treated in September 2009 with drip torch ignition. Some conifer trees were previously slashed to increase treatment effectiveness. This photo is in a previously decadent aspen stand which had root stimulation from the burn. For the Dry Fork Burn aspen resprouting was very dense and needed no fence protection.



In many areas the Dry Fork burn only singed the edges of conifer stands. This resulted in encroachment reduction and rejuvenation of meadow forbs and grasses with mosaic reduction in douglas fir stands.



In the 9/09 burn area a few ephemeral streams were burned in a spots to near the stream channel. No evidence of erosion or sediment delivery was observed. All of these areas had full retention of all duff and most of the surface organic layer.

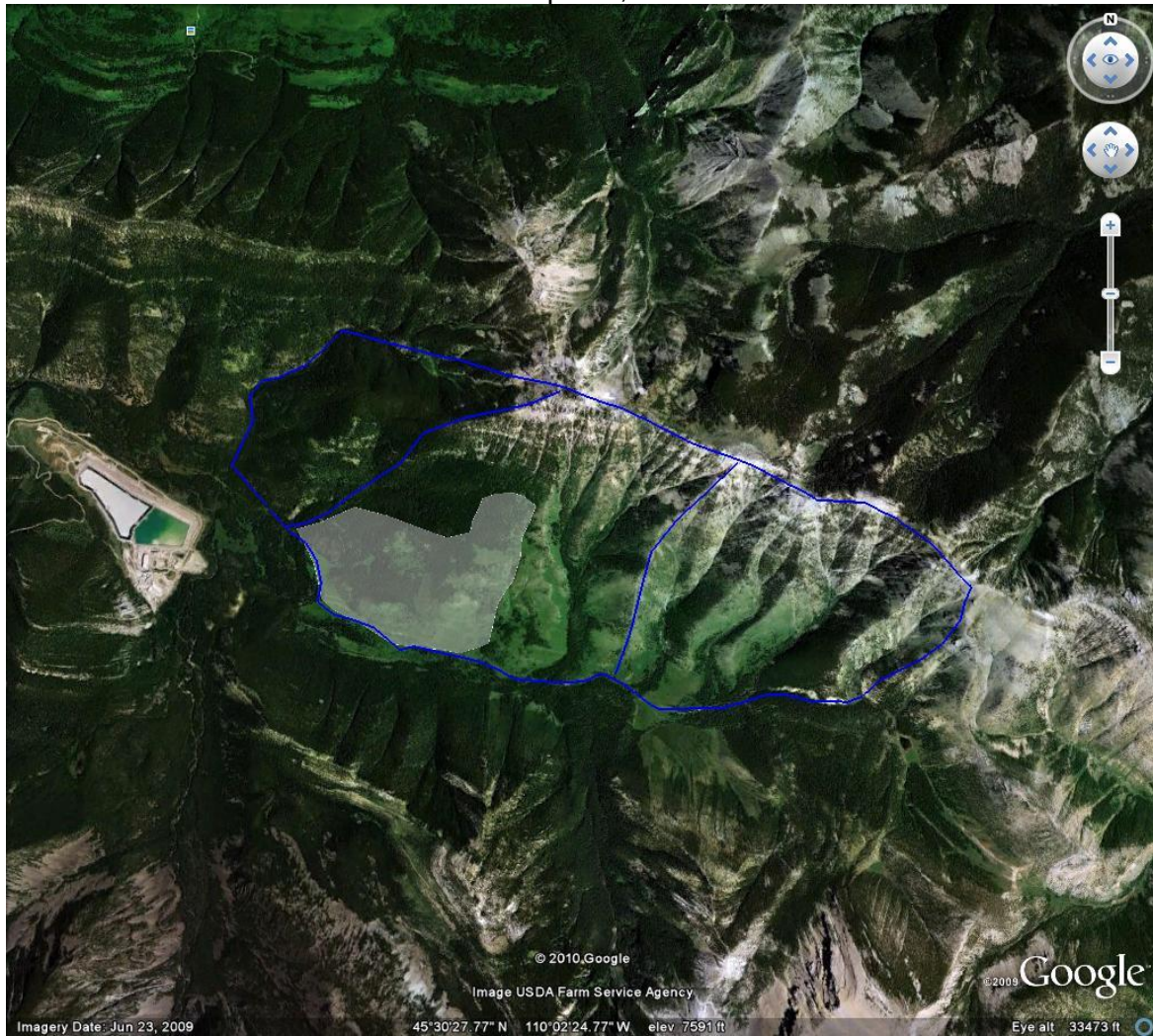


The review team walked through several areas of the September 2009 burn which was ignited by helicopter dispersion of “ping pong” fire balls. The review team focused on the most accessible hottest part of the burn. On some upper slopes the Dry Fork burn was robust with moderate burn intensity and pockets of high burn intensity. These areas were examined carefully for evidence of surface erosion. No sheet, rill, or gully erosion was found. In all of these areas surface litter was partially burned and the duff layer was unburned. No actual soil burning was observed. These areas would be rated as low burn severity due to the shallow nature of the burn. The shallow burn and duff retention would primarily account for the non-erosion response in spite of the approximately 6” of rain in the burn area during May/June of 2010.



Sagebrush burn area near Dry Fork (9/09). A mosaic of burned sagebrush was achieved with some conifer encroachment mortality. Forb and grass revegetation was quite vigorous.

Dry Fork Burn. The shaded area in the SW part of the burn is the May 2009 spring burn. The East Boulder Mine is in the left side of the photo, west of the burn.



Conclusions

The Dry Fork burn met all of the decision notice and burn plan objectives including conifer encroachment reduction, density reduction of understory conifers, maintenance of fire regimen condition as class 1, grass and shrub fuel load reductions, and providing a mosaic pattern of various degrees of burn pattern and unburned areas.

The review team discussed and concluded that all wildlife, recreation, fire, and watershed objectives and mitigation measures were achieved.

The watershed response to the Dry Fork burn was thoroughly tested with about 6" of rain during May and June 2010 just prior to the review with no evidence of erosion even in the most intensely burned areas. The Dry Fork burn area up to the time of the 6/23/2010 review has resulted in no evident ash movement or sediment delivery to Dry Fork or ephemeral tributaries.

Mitigation measures for implementation team safety, smoke dispersion/air quality and coordination with the Montana DEQ, public notification, before and after burn grazing allotment rest, archeology review were applied thoroughly and effectively.

The only mitigation measure which was not implemented was for weed spread precaution of undercarriage cleaning of vehicles prior to entering the project area.

Recommendations

- 1) In future prescribed burning apply more emphasis of compliance with weed mitigation. The most common is understory spraying of vehicles before entering the project area.
- 2) Flush cutting of stumps in a light public use like Dry Fork for visual mitigation purposes is not needed since recreation visitation is low. The flush cutting visual mitigation is appropriate for heavily used road and trail corridors or around heavily used recreations facilities like campgrounds or trailheads.
- 3) The Gallatin National Forest stream buffering of 50' for perennial streams is supported by findings in the Dry Creek burn which has no perennial streams and therefore stream burn buffers. No stream sediment impacts were observed in any of the intermittent stream areas or the main channel of Dry Fork.
- 4) In the future, stated percentage range of goals of burn such as % of a project area blackened (i.e. 20-40%) blackened is more appropriate than a specific % number. Except for grass burns, % blackened is useless. Measurable mortality objectives in ranges for the project area, not smaller specific areas, is more useful.
- 5) Provide more logistical support for future project implementation of large burn projects such as the Dry Fork burn where implementation staff can spend several days camped out in the project area.

Mark Story
Forest Hydrologist