File Code: 1940 Monitoring **Date:** 5/15/2013

To: Yellowstone District Ranger

Subject: Boones Peak Prescribed Burn Implementation Monitoring Review

IMPLEMENTATION REVIEW DATE AND PARTICIPANTS

On October 18, 2012 an Implementation Monitoring Review was held to evaluate the Boones Peak Prescribed Burn implementation on the Yellowstone Ranger District. The burn was accomplished in a prescription burn window on September 20th through 25th of 2011. Monitoring Review attendees included Alex Sienkiewicz, Ashley Sites, Chauntelle Rock, Karen Tuscano, Domo Woodham, Dave Day, and Dale White.

OBJECTIVES

The purpose was to review the Boones Peak Burn objective accomplishment and mitigation measures and provide conclusions and recommendations for future GNF prescribe burn projects. The burn was authorized in the Long Mountain Fuels Management and Prescribed Burning Project Decision Memo on July 9, 2004. Overall project objectives included the following:

1. reduce conifer encroachment on native grass and sagebrush meadows and aspen stands;
2. restore/maintain fire regime condition class 1 areas;
3. increase public and firefighter safety during wildfire events; and,
4. respond to hazardous fuels reduction and restoration elements of the National Fire Plan.

Additional goals and objectives listed in the Long Mountain Hazardous Fuels Reduction – Boones Peak Prescribed Fire Plan included:

5. provide and/or maintain existing defensible spaces within the drainage to facilitate fire suppression tactic and staging areas during wildfire events;
6. reduce current fuel loadings of grass and shrubs, ground surface fuel, and/or smaller trees, particularly under forest canopies;
7. reduce the amount of understory vegetation and the available natural fuel loading in the 0-3” size class;
8. utilize mixed intensity burning to produce a mosaic pattern of burned and unburned areas; and,
9. retain patches of healthy sagebrush by excluding fire in those areas.

APPLIED TREATMENTS

The Boones Peak unit of the Elk Creek project area included 27 treatment stands totaling approximately 892 acres on the north side of Long Mountain (T3S, R13E, Sections 25-29, 33-36). Approximately 170 acres within 10 stands of conifer and aspen were treated by prescribed burning only. Approximately 157 acres within 2 units of conifer and aspen were treated by slashing of both conifers and aspen. Approximately 426 acres in 12 stands were treated by slashing of small-diameter conifer (1/2 to 8 inches

in diameter) followed by prescribed burning. Other treatments included the cutting down (slashing) of small-diameter conifer trees (1/2 to 8 inches in diameter) encroaching on 3 grass and shrub habitat habitats prior to broadcast burning on approximately 139 acres. All treatment stands were treated with prescribed fire.

EVALUATION PROTOCOL

This review consisted of the following actions.

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 units
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

Project Objectives and Mitigation Measures were evaluated in terms of implementation and effectiveness using a modified form of the Forestry Best Management Practice (BMP) review protocol developed by the Montana DNRC. The application and effectiveness rating system consisted of the following scoring system:

Application	**4 points**. Operation meets requirements of objective or measure
	3 points. Minor departure from objective or measure, requirements mostly met
	2 points. Major departure from objective or measure, requirements marginally/barely met
	1 point. Gross neglect of objective or measure, requirements not met at all

Effectiveness	**4 points**. Objective: Completely met Mitigation Measure: Adequate Protection of resources, effective
	3 points: Objective: Substantially met Mitigation Measure: Minor & temporary impacts on resources, moderately effective
	2 points: Objective: Partially or minimally met Mitigation Measure: Major & temporary or minor & prolonged impacts on resources, slightly effective
	1 point: Objective: Not met at all Mitigation Measure: Major and prolonged impacts on resources, not effective

Project Monitoring Activities were presented in the Decision Memo as non-mandatory project components. The Decision Memo stated that: "the following monitoring activities *could be* applied by the Forest Service as part of my decision." Since the monitoring activities were introduced in this manner, the review team did not rate them in the same fashion as the required project objectives and goals discussed above. Instead, the monitoring activities were listed and it was documented whether or not, and to what extent, the activities were completed.

EVALUATION WORKSHEET

Evaluation Items - BMP's	Source	Applic	Effect	Comments
Prescribed Fire Plan Resource Management Goals				
1) Reduce conifer encroachment on grass and sagebrush meadows and aspen stands	Boones Peak Prescribed Fire Plan p.7	4	4	
2) Provide and/or maintain existing defensible spaces within the drainage to facilitate tactic and staging areas during wildfire events	Boones Peak Prescribed Fire Plan p.7	4	3	Item applies primarily to FS land along private land boundary. Effectiveness rated at 3 because a more compete buffer was desired.
3) Reduce current fuel loadings of grass and shrubs, ground surface fuel, and/or smaller trees, particularly under mature forest canopies	Boones Peak Prescribed Fire Plan p.7	4	4	
4) Restore/maintain fire regime condition class 1 area	Boones Peak Prescribed Fire Plan p.7	4	4	
5) Reduce the amount of understory vegetation and available natural fuel loading in the 0-3" size class	Boones Peak Prescribed Fire Plan p.8	4	4	
6) Allow an opportunity for wildland fire in a natural role in the upper portions of the Elk Creek drainage, thus reducing the threat to private land developments located in the lower portion of the drainage	Boones Peak Prescribed Fire Plan p.8	4	4	
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.	Boones Peak Prescribed Fire Plan p.8	4	4	
8) Retain patches of healthy sagebrush by excluding fire in those areas	Boones Peak Prescribed Fire Plan p.8	NA	NA	No identified healthy patches of sagebrush
Prescribed Fire Plan Resource Management Goals				
1) Meet the following Fuels Treatment goal in designated stands: "Remove <8" DF and LP"	Long Mountain Decision Memo pages 5, 8-9	4	4	
2) Meet the following Fuels Treatment goal in designated stands: "Underburn Only"	Long Mountain Decision Memo pages 6-7	4	4	

Prescribed Burn Plan Fire Management Goals				
1) Make firefighter and public safety the highest priority in every fire management activity	Boones Peak Prescribed Fire Plan p.7	4	4	
2) Reduce fuels adjacent to private property and affect behavior of future wildland fires allowing for firefighter and public safety, less resistance to control efforts, lowere overall fire risk, and restoration of more natural ecosystem processes in the landscape.	Boones Peak Prescribed Fire Plan p.7	4	4	
3) Meet or exceed air quality standards developed by the State of Montana's Air Quality Bureau for all fuel treatment activities	Boones Peak Prescribed Fire Plan p.7	4	4	
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.	Boones Peak Prescribed Fire Plan p.22	4	3	Received one complaint from nearby landowner regarding smoke
5) Notify the public prior to implementing any fuel treatments via a news release(s) in local newspaper(s)	Boones Peak Prescribed Fire Plan p.7	4	4	
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.	Boones Peak Prescribed Fire Plan p.7	4	4	
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	NA	NA	Not done

2) Livestock grazing would be restricted within a pasture the year prior to burning and the year after burning. The second year after burning pastures will remain ungrazed until after seed maturity and seed shatter.	Long Mountain Decision Memo p. 11	2	4	It was decided by range specialist that resting the pastures for a year prior to, and a year after, burning was not necessary. This decision was based on field assessment and on implementation reviews of past prescribed burns. <u>Recommendation for future projects</u>: revise NEPA requirements to allow for decision space.
3) Weed mitigation: - No new roads or ATV trails. - In areas where ATV use is not authorized off of designated routes, motorcycles or ATVs will not be used off county or designated Forest system routes - 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	4	4	
4) Burn plan prescriptions reviewed by an archeologist and necessary adjustments made prior to implementation. Necessary adjustments would be made prior to and/or during ignition activities to minimize potential effects to those sites.	Long Mountain Decision Memo p. 12	4	4	Forest Acheologist was consulted in 2008. He had no concerns with the Elk Creek area. There was a old Cabin foundation in Dry Fork that was excluded from the burn.
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	

6) The project area will be surveyed by the district wildlife biologist for goshawks prior to any activities that may occur during the nesting and post-fledging perion. If a goshawk nest is located, the project boundary would be adjusted to avoid the nest area. A buffer of a minimum of 30 meters (100 feet) around the nest area would be established.	Long Mountain Decision Memo p. 13	4	4	
7) 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	There were no piles created
8) Burning directly around range improvements (e.g., fences and stock tanks) will be avoided: and in those situations where avoidance is difficult, appropriate protective measures would be taken to protect these improvements.	Long Mountain Decision Memo p. 37	4	4	
Coordination with Partners				
Local landowners		4	4	Involved working with just one adjacent landowner. Went well.
Other Agencies		4	4	Included Sweetgrass County, Park Service

Project Monitoring		
Evaluation Item	**Source**	**Comments**
1) The following monitoring activities *could be* applied by the FS as part of my decision: Photographic reference points established throughout the project areas prior to burning to provide baseline information w.r.t. effectiveness of fuel treatments, vegetative recovery, and post burn effects.	Long Mountain Decision Memo p. 13	Both pre and post treatment photos were taken. As part of the monitoring, post treatment will be taken one year following implementation and then on a three year interval.
2) The following monitoring activities *could be* applied by the FS as part of my decision: The range specialist would map existing noxious weed areas prior to burning	Long Mountain Decision Memo p. 13	Existing noxious weed areas were mapped
3) The following monitoring activities *could be* applied by the FS as part of my decision: During ignition activities temperature, relative humidity, and fire intensity will be continuously measured.	Long Mountain Decision Memo p. 13	This was required in the Burn Plan – it was done.
4) The following monitoring activities *could be* applied by the FS as part of my decision: Immediately after burning/slashing activities have ceased, photos will be taken from established reference points to record fuel consumption/reduction in the various vegetative habitats and encroachment tree mortality in aspen stands and grass/shrub habitats.	Long Mountain Decision Memo p. 14	This work was completed

5) The following monitoring activities *could be* applied by the FS as part of my decision: Pre-determined plot locations would be monitored after burning to determine the re-establishment of native grasses and shrubs in grass, shrub, and aspen habitats. Treated aspen stands would be surveyed to determine regeneration success and effects of big game herbivory. The growth response of sagebrush will be monitored in areas where encroaching trees were cut/burned.	Long Mountain Decision Memo p. 14	Pre-determined plot locations were not established. Treated aspen stands were surveyed to to determine regeneration success and effects of big game herbivory. The growth response of sagebrush was not monitored.
6) The following monitoring activities *could be* applied by the FS as part of my decision: The range specialist would monitor known noxious weed locations after burning to determine if infestations are spreading due to the burning. Surveys would occur for the first 3 years after burning. Post-fire treatment may be necessary in accordance with the GNF Noxious Weeds EIS.	Long Mountain Decision Memo p. 14	The district plans to survey for noxious weeds and spray as necessary for 3 years post-project
7) The following monitoring activities *could be* applied by the FS as part of my decision: In accordance with SHPO, burned areas would be reviewed by the archeologist for evidence of new cultural sites or artifacts.	Long Mountain Decision Memo p. 14	Not done
8) The following monitoring activities *could be* applied by the FS as part of my decision: Treated aspen stands in would be monitored by the district wildlife biologist and silviculturist to determine protection needs against excessive browsing, particularly by elk. Measures such as fencing or felling of conifers (over aspen patches) would be monitored for effectiveness in preventing excessive browsing.	Long Mountain Decision Memo p. 14	This was completed.

PHOTOGRAPHS

Low/Moderate Intensity Burn on south-facing slope

Low intensity burn on north facing slope, in relatively dense timber.

Moderate/High intensity burn near interface with private land

Moderate/High intensity burn adjacent to aspen stand.

Burned aspen stand showing conifer mortality

Landscape view showing mosaic pattern of burn intensity and burned/unburned areas.

Conifer mortality adjacent to aspen stand

CONCLUSIONS

1. The review team consensus is that the project work reviewed was successful in meeting the following project objectives.

   - reducing conifer encroachment on native grass and sagebrush meadows and aspen stands(through low and low/moderate burning in these areas);
   - restoring/maintaining fire regime condition class 1 areas (through burning of grass and shrubs, ground-surface fuels, and smaller size trees);
   - responding to hazardous fuels reduction and restoration elements of the National Fire Plan and increasing public and firefighter safety during wildfire events (through general reduction of fuels and creating fuel breaks adjacent to private lands).
   - providing and/or maintaining existing defensible spaces within the drainage to facilitate fire suppression tactic and staging areas during wildfire events (through significant fuel reduction adjacent to private land);
   - reducing current fuel loadings of grass and shrubs, ground surface fuel, and/or smaller trees, (through underburning and in mixed intensity burn areas); and,
   - utilizing mixed intensity burning to produce a mosaic pattern of burned and unburned areas over the landscape.

2. Several items were rated as only moderately successful or not rated at all with respect to application and/or effectiveness. These items, and the reasons for their ratings, include the

following:

- *requirements associated with defensible spaces*: effectiveness rating was lowered because the fire burned hotter than planned/expected in the area inspected;
- *requirements regarding smoke concentration and dispersion*: effectiveness rating was lowered because a complaint was received from one local landowner;
- *retention of healthy sagebrush patches*: was not rated because such patches were not present or identified; and
- *livestock grazing restrictions*: application rating was lowered because prescribed pasture rest requirements were not adhered to. However, prior to project implementation, based on field assessment and on implementation reviews of past prescribed burns, it was decided that resting the pastures as precribed in the Decision Memo was necessary.

3. Significant difficulties were experienced in the procurement of perishable materials (e.g., food) for project implementation. The FS procurement system apparently does not have provisions to accommodate quick procurement of materials for "non-emergency" actions such as prescribed burning. However, the date of implementation of such projects is uncertain due to unpredictability of weather conditions, forecast, and condition of the vegetation.

4. Most of the potential Project Monitoring activities listed in the Decision Memo were completed either in whole or part.

RECOMMENDATIONS

1. In future prescribed burn project NEPA consider modifying the requirements regarding pasture rest and protection of areas of special concern (e.g., healthy sagebrush patches) to allow for "decision space" based on new information obtained prior to project implementation.

2. Attempt to work out a procedure with procurement services which will allow rapid procurement of supplies for a "non-emergency" procedure (like prescribed burning) that has an unavoidably flexible implementation date.

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