United States Department of Agriculture | Forest Service | Gallatin NF | PO 130 Bozeman, MT 59771

File Code: **5140 Prescribed Fire** **Date: 6/17/09**

Subject: **Lower Big Creek Burn Unit #2 , Implementation Monitoring Review**

To: **Livingston Distict Ranger**

On June 16, 2009 an Implementation Monitoring Review was held for the Lower Big Creek burn. In attendance were Greg Juvan, Rachel Feigley, Scot Shuler, Frank Cifala, Bill Avey, Steve Schacht, Barb Ping, Mark Novak, Thomas Keck, and Mark Story. The purpose was to review the Lower Big Creek Burn Unit #2 objective accomplishment and mitigation measures (implementation and effectiveness) and provide conclusions and recommendations for future GNF prescribe burn projects.

The Big Creek burns were authorized in the Paradise Valley Fuels Management and Prescribed Burning Project DM on 4/7/2003. The 310 acre burn required about 130 acres of juniper slashing in 2007. The burn was accomplished in a prescription burn window on September 14 and 15th of 2008. Overall project objectives, as listed in the Paradise Valley DN, included the following:

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. Allow fire to play its natural role in the Absaroka-Beartooth and HPBH Wilderness Study Areas
5. Provide and/or maintain existing defensible spaces within the drainage to facilitate fire suppression tactics and staging areas during wiodfire events

The Range of Acceptable Results for the Lower Big Creek burn include:

1. Increase the vigor and productivity – Burning in a mosaic pattern in the open grass and shrub land will result in 50% to 75% of area blackened.
2. Increase or maintain early succession – Burning will result in a mosaic pattern and 40% to 60% of area blackened and mainain 95% of the 10-inch diameter and greater trees.
3. Re-establish aspen communities –All encroaching conifers will be cut or burnt within the aspen stands, and 30% to 50% of area will be blackened.
4. Maintain open coniferous habitats – Areas composed primarily of dense pole-sized trees will be burned in their entirety as a stand-replacing burn with 30% to 60% of area blackened and maintain 95% of trees 10 inches in diameter and greater.

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The process for this review consisted of the following:

1. Identification and listing of the prescribed fire plan objectives and the mitigation measures. Source included the Paradise Valley Fuels Management and Presribed Burning Project DM.

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 mitigtion measure and effectiveness definitions included the following:

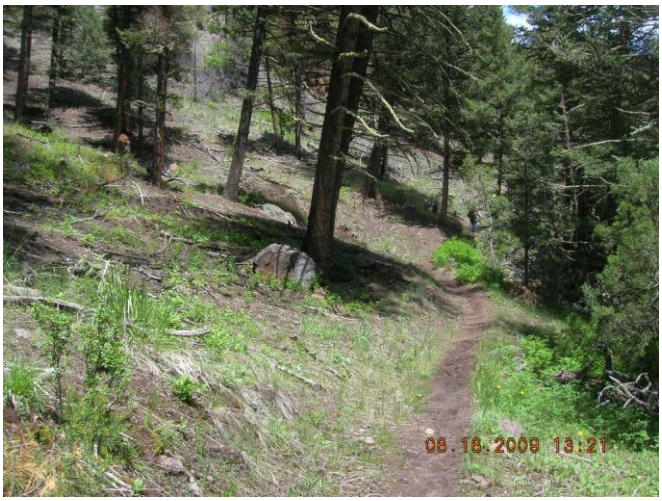
Application
5- operation exceeds requirements of objective or measure
4- operation meets requirements of objective or measure
3- minor departure from measure, objective marginally met
2- major departure from measure, objective sporadically met
1- gross neglect of measure, objective not met

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

Evaluation Items - BMP's	source	Applic	Effect	Comments
Big Creek Prescribed Burn Plan Objectives				
1. Increase the vigor and productivity – Burning in a mosaic pattern in the open grass and shrub land will result in 50% to 75% of area blackened	**Paradise Valey Prescribed Burn Project Lower Big Creek #2 4. Range of Acceptable Results**	**4**	**5**	70-75% of area blackened, increased plant diversity, reduced fuels
2. Increase or maintain early succession – Burning will result in a mosaic pattern and 40% to 60% of area blackened and mainain 95% of the 10-inch diameter and greater trees	**Paradise Valey Prescribed Burn Project Lower Big Creek #2 4. Range of Acceptable Results**	4	4	succession definition in objective arbitrary, early succession objective generally met
3. Re-establish aspen communities –All encroaching conifers will be cut or burnt within the aspen stands, and 30% to 50% of area will be blackened.	**Paradise Valey Prescribed Burn Project Lower Big Creek #2 4. Range of Acceptable Results**	4	4	aspen regeneration extremely robust

4. Maintain open coniferous habitats – Areas composed primarily of dense pole-sized trees will be burned in their entirety as a stand-replacing burn with 30% to 60% of area blackened and maintain 95% of trees 10 inches in diameter and greater.	**Paradise Valey Prescribed Burn Project Lower Big Creek #2 4. Range of Acceptable Results**	na	na	not a realistic goal to blacken area and maintain 95% of >10" dbh trees. remove 95% of >10" dbh objective in future projects
Big Creek Prescribed Burn Project Specific Mitigation Measures				
1. Restrict livestock grazing for 1 year prior to the burn and as much as 3 years after a burn (defer grazing until seed set)	DM pg. 6	4	4	allotment rested 3 years prior to grazing. no grazing planned in 2009
2. Burn plan Rx's reviewed by an archeologist and necessary adjustments made prior to implementation	DM pg. 6	4	4	done but not necessary to include as DN mitigation
3. Weed mitigation - no new roads or ATV trails - for burn vehicles off roads clean undercarriages prior to burn - rest pastures per #1 above	DM pg. 7	4	4	no ATV's, used horses for some equipment access. some pre burn weeds revigorated but no new weed infestations noted
4. In unroaded areas in view of in Forest system trails flush cut stumps and limb/lop and scatter slash.	DM pg. 7	3	4	not done since pre-burn juniper stumps are coved with limb slash. revise to use only in critical seen areas.
5. District Wildlife Biologist survey for goshawks prior to any activities that may occur prior to the nesting period. 30 meter buffer around nest areas. Restrictions 3/1 to 8/15	DM pg. 7	na	na	analysis indicated that the Lower Big Creek burn not a likely area for goshawk nesting so this mitigation was not necessary
6. Coordinate burning of hand piles with Montana Airshed Group to allow optimum ignition opportunities during periods of acceptable wind dispersion.	DM pg. 7	5	2/3	burn permit granted by DEQ. another burn in airshed on same day resulted in DEQ suggestion to not burn on 9/15. staffed burn with an incident meterologist. most of the smoke dispersed well except for burn areas in Lewis Gulch Gulch which drifted smoke into the adjacent guest ranch.

Implementation monitoring findings will be illustrated in photos.

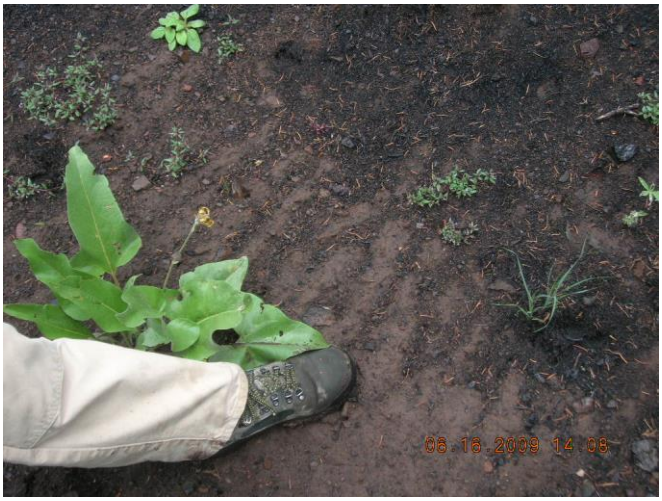


The south boundary of the Lower Big Creek unit #2 burn was the trail along the north side of Big Creek. Most of the burn adjacent to the trail was low intensity with no observable soil erosion. The filtration zone of Big Creek was not included in the burn treatment so no sediment delivery conveyences were observed to Big Creek.

Most of the Lower Big Creek unit #2 burn had low to moderate burn intensity with extensive vegetative response and/or needle cast. Ground cover generally was ample to prevent surface erosion even though the winter of 2008/2009 had above average snowpack with above average April and May precipitation and average June precipitation.

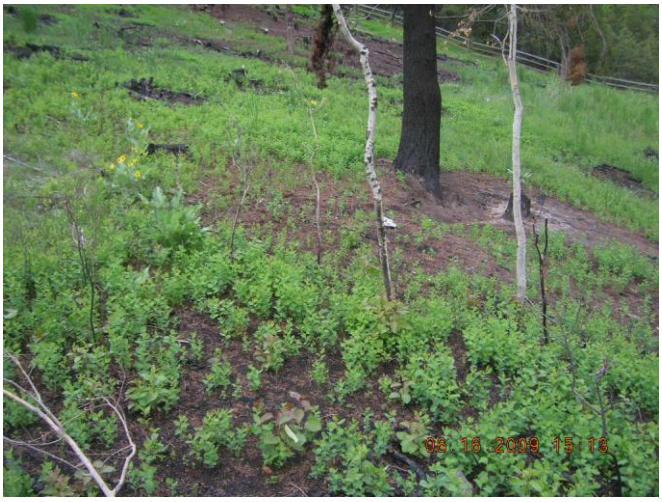
About 130 acres of the burn had pre-burn juniper slashing done in 2007. The 2008 burn was successful in consumption of most of the juniper slash and replacement with robust grass and forb revegetation.

The northeast part of the Lower Big Creek unit #2 burn was intended to result in high consumption in order to provide a “blackened” area for fire perimeter control in the prevailing downwind area of the fire. Burn intensity was on the low end of high. This area was examined thoroughly for evidence of duff consumption and sheet or rill erosion.



The only soil movement observed was at the top of the slope in the northeast part of the fire where localized areas of 100% duff consumption showed some evidence of shallow rill erosion. These areas were generally about 5-10 square feet in size and too small and few in number to result in soil erosion concern.

Burned meadow area in north central area of Lower Big Creek unit #2 burn. These areas had limited pre-burn fuels with low burn intensity. Vegetation response was robust.



Aspen regeneration response throughougt the Lower Big Creek unit #2 burn was excellent with extensive sprouting. Some of the aspen response areas would be appropriate to temporarily fence off from livestock grazing.

Conclusion

The Lower Big Creek unit #2 burn was successful in achieving most of the Paradise Valley Fuels management objectives with adequate implementation of mitigation measures. The amount of blackened area and fuel reduction objectives were met with extremely limited soil erosion and no sedimentation.

Recommendations

The recommendations consist primarily of objective and mitigation suggestion changes for future GNF burn projects.

1. Future prescribed burn projects objectives should be better defined and measurable. Conflicting objectives should be removed such as % burn objectives with >10" dbh tree retention objective combined with an area blackened objective.

2. Silvicultural prescriptions for all vegetative management projects should be completed and available for the DN and the burn plan preparation. Each unit should have an individual prescription arranged by size class, prefered species designation, and provide for a range of acceptable results.

3. To the extent possible, include a variable range of acceptable results and explain if the range includes the entire burn unit or parts or components of a unit (such as forested and meadow areas).

4. Do not include archeologist burn plan review as a specific DN mitigation measure since the review is part of the burn project preparation process. Signinificant issues and mitigations should be captured during the NEPA process and burning prescriptions developed to meet those mitigations.

5. Stump flush cut mitigation should be applied to high visibility critical seen areas only. In areas with heavy amounts of cut material, which resulted pre-burn preparation, flush cutting of residual

stumps might best be considered as a post burn action if needed.

6. Although the Lower Big Creek unit #2 burn attention to smoke management was generally effective with an incident meterologist, some smoke did impact the adjacent guest ranch. In the future, where possible, avoid burning adjacent residential or facility areas when occupied. Increase communication and coordination with the potentially affected indivduals by providing the maximum amount of notice prior to ignition.

7. Warn adjacent landowners about the possible increase in douglas fir beetles adjacent to prescribe burns since the burn can weaken douglas fir resistance to beetles.

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