

File Code: 1940 Monitoring

Date: 7/10/14

To: Hebgen Lake District Ranger

Subject: Hebgen Basin Fuels Reduction Project Implementation Monitoring Review

On July 18, 2013 an Implementation Monitoring Review was held to evaluate the Hebgen Basin Fuels Reduction Project on the Hebgen Lake Ranger District. The project was nearly complete at the time of the review, and the review examined units under harvest as well as units that had been harvested up to six years previously. Monitoring Review attendees included Cavan Fitzsimmons, Anna Anderson, Tom Keck, DeWayne Thorneburg, Scott Barndt, Steve Martell, and Dale White.

The objectives of the review were to:

1. Evaluate the implementation and effectiveness of project goals, objectives, standards, and guidelines in the form of EA mitigation measures, contract clauses, BMP's, or other applicable sources.
2. Provide recommendations for future projects concerning appropriateness and effectiveness of standards, guidelines, and contract provisions.

The purpose of the Hebgen Basin Fuels Reduction Project was to reduce the threat to life and property in the wildland urban interface by reducing the risk of crown fire and wildland fire spread. Project activities included removal of dead and down fuels by understory thin/pile/burning (800 acres), mechanical thin/pile/burning (560 acres), prescribed burn (90 acres), and clean-up of dead and down material (160 acres).

The process for this review consisted of the following:

1. Identification and listing of project Best Management Practices (BMP's), including those pertaining to soil and water, wildlife, timber harvest practices, noxious weeds, air quality, visual impacts, and aquatic habitat protection. Sources included the Decision Notice, Environmental Assessment, and timber sale contract.
2. Field review of units 20A, 20B, 2B, and 2A.
3. Team ratings (consensus) for application and effectiveness of BMP's observed at the reviewed harvest units.
4. Team recommendations for future timber sales.

BMP implementation and effectiveness was evaluated using a modified form of the Forestry 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. Adequate Protection of resources, effective
	3 points: Minor & temporary impacts on resources, moderately effective
	2 points: Major & temporary or minor & prolonged impacts on resources, slightly effective
	1 point: Major and prolonged impacts on resources, not effective

EVALUATION WORKSHEET

Evaluation Items - BMP's	Source	Applic	Effect	Comments
Timber Harvesting BMP's				
1) Whole trees shall be skidded to landings. Logs shall be tractor skidded with leading edge free of the ground.	Special Provisions for Hebgen Basin Fuels Reduction	4	4	
2) Operations shall not result in detrimental soil conditions in excess of 15% within the sale area.	Special Provisions for Hebgen Basin Fuels Reduction	4	4	
3) FS will monitor soil conditions within each cutting unit during harvest activities using currently approved Regional soil monitoring protocols.	Special Provisions for Hebgen Basin Fuels Reduction	3	4	Not every unit was monitored. Unit 1, the most heavily impacted unit, was monitored and it was determined that the detrimental soil conditions constraints were being met. Subsequent monitoring carried out <i>after</i> harvest activities on other units confirmed that the detrimental soil conditions constraints were being met.
4) Use ground-based systems only on slopes having sustained grades for less than 30 percent	DN Appendix B – Soil and Water BMP's	4	4	
5) Locate and construct temporary roads so as to minimize investment, earth moving, and disturbance.	DN page 15	4	4	

6) Tree designated for cutting and/or logs shall be left as rub trees along skid trails as needed to protect young growth and leave trees	Special Provisions for Hebgen Basin Fuels Reduction	4	4	Left 4-ft tall stumps as rub trees initially, then cut them short later
7) Require systematic skid trail pattern. Maintain an average of at least 75 ft between skid trails.	DN Appendix B – Soil and Water BMP's	4	4	Note: contract stated that skid trails shall be no less than 100 feet apart
8) Where possible, mechanical equipment (ex. Skidders, harvesters) should stay on established skid trails at all times, unless operating over soil that is frozen or snow covered (see Soils BMP in the DN, page B-1 to B-2).	Letter to project file from District Ranger dated 8/21/06	4	4	Harvester has to go off trail to complete work. Skidder stayed on trail whenever possible. <u>Note</u> : the requirement to stay on skid trails at all times would require very high skid trail density.
9) Mechanical harvesters operating off approved skid trails must have static ground pressure rating of 8 psi or less, as defined by the manufacturer's specifications.	Special Provisions for Hebgen Basin Fuels Reduction	4	4	
10) If mechanical equipment is used off of designated skid trails, monitoring by the FS will be required as follows: A soil specialist will oversee monitoring of soil disturbance following mechanical operations in approximately 50-acre increments for timely feedback on soil conditions.	Letter to project file from District Ranger dated 8/21/06	3	4	Soil specialist did not monitor soil disturbance for every 50-acre increment in treatment. (See Evaluation Item 3)
11) Scarify all skid trails with 3-4 tooth scarifier to 6" depth (tooth spacing approx 12"). No scarification required if logging on 8" snow or ground frozen to 4" depth.	DN Appendix B – Soil and Water BMP's	3	4	Tooth spacing >12" promotes better revegetation success. Soil scientist changed tooth spacing to 24" to promote better revegetation and ensure entire skid trail width was treated.
12) Following completion of skidding and yarding in an area, purchaser shall seed and fertilize all exposed areas of raw soil on skid trails, landings, firebreaks, slides, slumps, temp roads, and traveled ways scheduled for closure	Special Provisions for Hebgen Basin Fuels Reduction	4	3	Can improve seed mix. Could get better results by decreasing the prescribed seeding rate (the project was over-seeded) The need for fertilizer should be determined – in some cases fertilizer can have a detrimental effect on native species establishment.

13) Site preparation shall include fuels and cone preparation only. Fuels site prep shall consist of broadcast burn, hand lop and scatter, trample over dry soil (only when there is sufficient slash to protect soil), or other similar measures that minimize soil disturbance. Burning shall be the preferred site prep treatment.	DN Appendix B – Soil and Water BMP's	4	4	Site prep was limited to hand lop and scatter
14) Units 9, 19, and west ¼ of Unit 20 harvest will be limited to understory thinning, hand piling, and pile burning (no machinery)	DN page 17	4	4	This measure was met with the exception of units 19B & 20A, which were mechanically harvested in order to allow a university study to take place on those units
Fuels				
15) Dead and down fuel/slash created from treatments shall be machine or hand piled immediately during fire season (approx July-Sept). During Oct-June dead and down fuel/slash shall be piled within 30 days of cutting.	DN page 14	4	4	Although these time constraints (stated in the DN) were not incorporated in the contract, project implementation met the constraints.
Noxious Weeds				
16) Leave 200-ft buffer (no disturbance to canopy cover) around perimeter of all weed populations. Buffer shall be 100-ft in Units 4 and 9 along west side of the Madison Addition and Lionhead Homesite subdivisions	DN page 12	3	3	Unit 1 had only 100 ft buffer along highway and no buffering within the unit. "Weed populations" should be better defined (e.g., known infestations?, single weeds encountered during implementation?...)
17) Within buffers in Units 1, 2, 3, 4, 5B ,6, and 9 along highways and adjacent subdivisions: Limb ladder fuels + handpile dead and down surface fuels. Burn handpiles outside of buffers. Retain 10-15 tons per acre of dead and down material.	DN page 12	3	3	Buffers were maintained as required in units but burn piles were within buffers. There was too much brush to move burn piles outside of buffers. Burn bays created larger-than-anticipated holes in the canopy.
18) Wash and inspect all off-road vehicles before entering each unit.	DN page 12	4	4	Vehicles were washed between units

19) Monitor all treatment units for early detection of newly established weeds. Monitor annually for 5 yrs after disturbance by walk-through examination of Units.	DN page 12	3	3	Units are being monitored for new weeds bi-annually. Existing weeds are being treated with KV funding.
Air Quality				
20) Pile burning will occur in October/November when wildfire potential is low and snow is on the ground	DN page 13	3	4	Lack of snow in October precluded burning in that month and required some burning in December, with a variance obtained from R.O. and MT/ID airshed group. Future contracts should allow December burning (with variance)
21) Broadcast burning will be attempted in spring when north slopes are still moist from snowmelt and wildfire potential is very low	DN page 13	NA	NA	No broadcast burning was done
22) Burns will be coordinated with Montana/Idaho State Airshed Group	DN page 13	4	4	
23) Pile burning is Units 3, 4, and 5 will be done in coordination with Montana/Idaho Airshed Group on days of good-excellent stability and with a maximum of 20 piles burned per day.	DN page 13	4	4	
Amphibian Protection				
24) In Unit 15 adjacent to Denny Creek maintain no-treatment buffers from the high water mark across the extent of riparian vegetation (minimum 100 foot buffer width)	DN page 13	NA	NA	Unit 15 was not yet treated at the time of the review
25) Maintain 50-ft buffer around all wetlands or seeps	DN page 13	4	4	At the time of the review this requirement had only been relevant (and applied) in Unit 15B.
Aquatic Habitat and Water Quality				
26) Comply with Montana Streamside Management Zone (SMZ) Rules	DN page 14	NA	NA	Only applies to Unit 15 which was not yet treated at the time of the review
27) No burning within 50 ft of the perennial stream in Unit 11	DN page 14	4	4	

28) In Unit 15, temp road shall be constructed after July 15 (unless dry conditions allow earlier entry). Minimize blading depth. Close and slash immediately after use.	DN page 14	NA	NA	Unit 15 was not yet treated at the time of the review
Wildlife				
29) No motorized use (including administrative) of temporary roads or Road #1720 during general deer and elk season	DN page 17	4	4	
30) Treatments within 50' of the Hebgen Lake shoreline will be limited to understory thinning, hand piling, and pile burning.	DN page 18	4	4	
31) Standards for protection of raptor nesting trees: <ul style="list-style-type: none"> • No harvest of trees with raptor nests, whether occupied or not • For non-goshawk raptors: leave minimum 50' buffer around trees with nests • For goshawk nests: no activity permitted within ¼ mile of nest March 1 – August 15 and 100' buffer thereafter 	DN page 18	NA	NA	No nests were identified
32) Retain 3 snags per acre or 30 per 10 acres	DN page 18	4	4	
Scenery				
33) A variety of individual trees, tree groupings, and vegetation clumps will be retained. Avoid uniform spacing or linear arrangement. Leave larger-crowned trees where available.	DN page 16	4	4	Larger crown trees tended to blow down. Leaving a clump of smaller trees around the larger trees appear to help stabilize them.
34) Leave 6" stumps in mechanically harvested units	DN page 16	4	4	
35) In Units 18-19 minimize cutting trees between Lonesomehurst CG and Rec residences. Maintain a visual buffer between Lakeshore Summer Home Road and the Stoddard Point Road.	DN page 16	4	4	

36) No thinning in Unit 20 between the Madison Arm storage and the road.	DN page 16	4	4	
37) In areas adjacent to homes and rec residences, leave some down tree trunks to prevent establishment of new unauthorized trails	DN page 16	4	4	In future projects: consider laying out skid trails so as not to promote user trail establishment
38) Near HWY 191, HWY 20, subdivisions, rec residences, and rec sites, locate slash piles behind trees or other vegetation that breaks up the view of the piles.	DN page 17	4	4	

PHOTOGRAPHS



Photo 1. Monitoring team in Unit 20A (harvested in 2007)



Photo 2. Burn pile in Unit 20B (harvested in 2011)



Photo 3. Portion of Unit 20B being harvested in 2013



Photo 4. Burn pile in Unit 2B (harvested in 2011)

CONCLUSIONS

The review team consensus was that the project was an overall success and met stated project objectives including resource protection. Frequent District involvement at all levels during implementation contributed greatly to the success of this project. If the project had been located in a more remote location where such involvement was more sporadic the overall outcome may have been different.

Some deviations from the contract requirements were noted which resulted in minor departures from requirements and/or minor & temporary impacts on resources. These are discussed below.

1. Several important BMP's were modified during project implementation in order to more effectively and efficiently meet resource protection objectives. These included the following.
 - In non-commercial units, new Gallatin NF soil BMP's were appended to the project file to replace the original project soil BMP's. The new BMP's, which were based on studies of soil effects associated with ground based timber harvest on the Beaverhead-Deerlodge NF, were less restrictive than the original BMP's but were predicted to have no difference in impacts to the land.
 - The original contract requirement to have a soil specialist monitor soil disturbance in 50-acre increments when mechanical equipment was used off of skid trails was relaxed. Based on soil monitoring on the first few units harvested it was determined that soil BMP's were providing adequate protection to soil and that monitoring every 50-acre increment was not required due to relative homogeneity of soil types, terrain, and harvest techniques. Subsequent soil monitoring was carried out only when changed conditions such as variation in soil type, terrain, or moisture levels were encountered.
 - During skid trail rehabilitation, spacing between ripper teeth was changed from the original 12" spacing to 24" spacing. The wider spacing provided adequate compaction reduction with less surface disturbance.
 - Evenly spaced leave trees were found to be highly susceptible to blow down. A strategy was adopted wherein leave trees were left in clumps, with shorter trees around the clump perimeter where possible, in order to provide a more wind-resistant grouping of trees. This clump configuration was found to be less susceptible to blow down and, since there was little or no mechanical traffic within the clump, had the added advantage of generally lower soil disturbance near leave tree roots.
2. The requirement to leave a 200-ft buffer around the perimeter of all weed populations was difficult to interpret and implement. This was due to the lack of a stated definitions for "all weed populations" (e.g., all *known* infestations, or all weeds encountered and identified in the course of project implementation?) and "population" (e.g., a single plant, more than one plant, or more than a defined number of plants?).
3. Despite project requirements to burn handpiles outside of established buffers along highways and subdivisions, some piles were burned within buffers because thick brush prevented moving burn piles outside of buffers.
4. Due to budget constraints, treated units have been monitored for new weeds bi-annually rather

than annually as stated in the Decision Notice.

5. Some pile burning occurred in December, which is outside the stated burn window of October-November, because of lack of snow in October. Appropriate variances were obtained from the Regional Office and the MT/ID airshed group.

RECOMMENDATIONS

The following recommendations are made for future timber harvest projects.

1. On projects with relative homogeneity of soil types, terrain, and harvest techniques consider requiring soil monitoring only on the first few units harvested and when changed conditions such as variation in soil type, terrain, or moisture levels are encountered.
2. During skid trail rehabilitation, space ripper teeth at 24." This spacing will provide adequate compaction reduction with less surface disturbance.
3. Where blow down of leave trees is a concern establish clumps, with shorter trees around the clump perimeter where possible, in order to provide a more wind-resistant grouping of trees.
4. If buffers are to be required around noxious weed populations, clearly define what constitutes a "population" and when, how, and by whom the population is to be identified and delineated. Ground truth the prescribed BMP in advance to ensure that the project can be effectively carried out within the stated constraints.
5. Ground truth in advance project requirements such as *burning handpiles outside of established buffers* to ensure that the project can be effectively carried out within the stated constraints.
6. Commitments to post-project monitoring and actions (e.g., annual weed treatments) should reflect current and anticipated capacity to complete those actions.
7. Consider extending the time window for pile burning (with appropriate variances obtained from the Regional Office and the MT/ID airshed group) to account for unpredictable weather conditions such as late snow.

Dale White
Forest Hydrologist