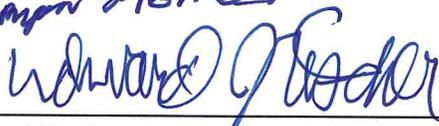
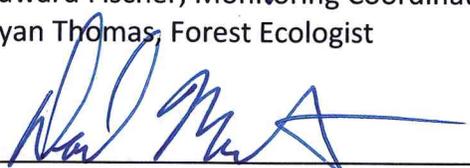
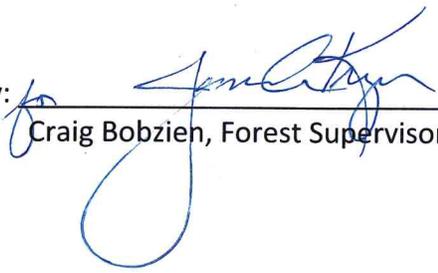


FY2015 MONITORING REPORT
MOUNTAIN PINE BEETLE RESPONSE PROJECT

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INTRODUCTION

On December 10, 2012, Black Hills National Forest Supervisor Craig Bobzien signed the Record of Decision (ROD) approving the Mountain Pine Beetle Response Project (PBR, or the Project). The decision approved commercial and non-commercial landscape-scale actions on up to 122,000 acres of the Forest to reduce the threat to ecosystem components, including forest resources, from the existing mountain pine beetle (MPB) epidemic and help protect local communities and resources from large scale, severe wildfire.

The Project was conducted under the authority of the Healthy Forests Restoration Act (HFRA) of 2003. An integral part of the decision includes adaptive design features intended to more quickly address beetle populations and reduce hazardous fuels. The ROD included a commitment to produce and issue an annual monitoring report, to provide feedback on which design features were implemented, the degree to which they were effective, and whether adaptations are needed to treatment design to make them more effective. Specifically, the ROD required that ten percent of the sites for each type of treatment activity would be monitored each year. (ROD, pg. 20).

This Fiscal Year 2015 monitoring report details the monitoring conducted in 2015, and the results of that monitoring. Implementation monitoring measures whether applicable design criteria, best management practices, and Forest Plan standards and guidelines were correctly implemented. Effectiveness monitoring measures the degree to which treatments were effective at protecting resources as well as reducing risk of further MPB infestation.

SUMMARY OF EVALUATIONS AND ADAPTIVE MANAGEMENT RECOMMENDATIONS

This report is organized by resource area. Specialist evaluations involved both pre-field and field reviews. Pre-field reviews were conducted by resource area and consisted of the review of unit summaries, marking guidelines, and other implementation notes along with applicable design criteria, Best Management Practices and Forest Plan standards and guidelines. The timing of these pre-field and field reviews varied by activity and resource area. More specific information on the timing of reviews is contained in the Resource Area Highlights section.

In 2015, the Star Academy and Fox Ridge timber sales on the Hell Canyon Ranger District were completed. The Viento timber sale on the Northern Hills District was also completed. While the Deer Spring Add-on project has not been closed out, no more logging will take place. The Buck Mountain timber sale for the Mystic Ranger District is still under contract. These were the focus of most monitoring by specialists. See the table, "Status of Activities", later in this report for more information.

Monitoring protocols are not presented here, but may be found in individual reports and other sources. This section summarizes recommendations, including any that are common between

resources and any that may conflict. Recommendations for change, based on observations, are presented at the end of each resource section.

Implementation Monitoring

Resource specialists evaluated the implementation of the projects. The timber sales implemented commercial thinning prescriptions reducing basal area as needed to reduce the probability of attack by mountain pine beetle. The same was done in the Deer Spring add-on units. Cut-and-chunk treatments were implemented primarily in the Buck Mountain Timber Sale area. Design criteria were applied as prescribed. (Botany, Fire/Fuels, Cultural Resources, Silviculture). Activity fuels were whole-tree yarded and piled. (Fire/Fuels). Field survey was completed as required. (Cultural resources). The downed log requirement appears to have been met, but it could not be determined if any existing snags had been cut for safety reasons. (Silviculture, Wildlife).

Whole-tree yarding was the preferred method expressed in several resource reports to address infested forest stands. It was found that an abundance of woody material was left after harvest operations. (Wildlife). In areas that were infested by beetles before treatment, however, the presence of too many downed trees may compromise scenic integrity goals. (Scenery).

The botany field guide was revised to incorporate direction for *Rhodiola integrifolia ssp. leedyi*, a Federally Threatened plant species on the Black Hills National Forest. Meadow conservation documentation was removed. Snail direction in the wildlife field guide was modified to allow more flexibility while continuing to be consistent with Forest Plan Standard 3103.

The road-stream crossing of Forest System Road (FSR) 166.1F on Bogus Jim Creek was found not to have been effective in meeting Forest Plan Standard 1203 to provide for fish passage. (Hydrology/Fish). The culvert did not simulate stream conditions well, possibly resulting in shallow water, high velocity, and a small waterfall, each of which can impede upstream fish passage. The culvert collapsed shortly after initial use, but was fixed and now complies with design criteria.

Implementation Adaptations The Forest made several adaptations in FY2015 to how this project is implemented. First, the Record of Decision (ROD) for this project provided that sanitation harvest to remove infested trees and reduce stand densities could be conducted in areas near or adjacent to potential treatment areas (PTAs) identified in the EIS. (ROD, pg. 11). In 2015 the Forest Supervisor allowed district rangers some limited discretion on implementation of this provision. Within sale area boundaries, non-PTA areas are now more seriously considered for appropriate treatments. Add-ons to existing sales, and harvest outside of PTAs in new sales, have accomplished greater treatment effectiveness by further reducing infestation levels and susceptibility of stands to insects.

Second, it was felt that the specialist review process as originally envisioned was taking too much time and delaying timely design and award of new timber sales. Specialists have now been requested to reduce the use of field guides and simply provide maps and briefer

descriptions of resource concerns. It is believed this will reduce the time required to design timber sales while still incorporating design criteria and specialist concerns.

Effectiveness Monitoring

Resource specialists evaluated the effectiveness of project implementation. Timber sales reduced stand basal area to decrease the likelihood of beetle attack. Some trees in the area were attacked and killed by beetles before treatments could be implemented. (Scenery, Silviculture). Mitigations were found to have been effective in avoiding road damage. (Transportation). The Moderate Scenic Integrity Objective for the foreground view along County Road 313 – Carroll Creek Road, and the middleground view from U.S. Highway 385, management activities have maintained a natural appearing vegetated landscape. (Scenery). Soil disturbance was within prescribed limits. (Soils). Cut-and-chunk treatments were found to have been most effective when conducted in October and November, rather than in later winter months. (Timber). These treatments were most effective in smaller areas with fewer trees. (Fire/Fuels, Silviculture, Timber). Follow up treatments in these areas were also recommended.

Recommendations

In areas where whole tree yarding is not used, follow-up treatments such as machine piling and burning or mastication of fuels should be considered. (Fire/Fuels). The culvert and fill material at the FSR 166.1F –Bogus Jim Creek road-stream crossing should be removed after the completion of harvest activity to allow for passage of high flows, debris and aquatic organisms. In the future, stream structures installed should meet stream simulation design concepts. (Hydrology/Fisheries). Due to safety and transportation concerns, rapid removal of beetle infested trees along roadways should be a priority. (Silviculture). Large-scale commercial thinning operations remain the most effective means of reducing pine beetle related mortality. (Silviculture, Timber). Most resource specialists did not recommend changes to the Field Guide or design criteria at this time.

Status of Activities Subject to Monitoring by All Resources.

Year Begun	Project Name	District*	Treatment Type and Acreage Completed**	Remarks
2013	Fox Ridge	HC	GBL – 215 acres total	Completed
2013	Deer Springs Add-on	HC	GBL – 62 acres	Under Contract 2014 – 157 acres total
2013	Dry Beaver Add-on	HC	GBL – 383 acres	Completed
2013	McInerney Add-on	HC	GBL – 306 acres	Under Contract 2014 – 321 acres total
2014	Buck Mountain	My	GBL – 566 acres	Under Contract 2014 – 1276 acres total
2014	Custer Gap	My	GBL – 0 acres	Under Contract 2014 – 779 acres total
2014	Viento	NH	GBL – 60 acres	Completed
2014	Lager POL Stewardship	NH	GBL – 0 acres	Under Contract 2014 – 114 acres total
2014	STAR Academy	HC	GBL – 298 acres	Completed
2015	Canyon Hills Stewardship	My	0 acres	Under Contract 2015 – 1202 acres total
2015	Limestone Ridge	NH	Logging ongoing	Under Contract 2015 – 1697 acres total
2015	Polo	NH	0 acres	Under Contract 2015 – 2765 acres total
2015	Two Gun	HC	0 acres	Under Contract 2015 – 2539 acres total
2015	Tree spraying	Forestwide	Tree spraying with carbaryl – 3700 trees	Activity locations include campgrounds, rec sites and legacy trees

* District – BL=Bearlodge; HC=Hell Canyon; My=Mystic; NH=Northern Hills

** Treatments – GBL=ground-based logging under timber sale contract; Cut/chunk= cut-and-chunk;

*** Tree spraying activities in 2015 were accomplished under service contracts. Contracts included specifications deriving from design criteria, and were administered to specification. FY2015 monitoring was conducted by contract administration personnel accompanied by a silviculturist and hydrologist.

RESOURCE AREA HIGHLIGHTS

BOTANY

The Deer Spring Add-on Project on Hell Canyon Ranger District was visited with the intent of monitoring on October 1, 2015. A site monitoring report was completed. In summary, though the timber sale had not yet been closed, the harvest was complete. The design criteria that apply to botanical resources were met. This site should be visited in 2016 in order to gather some longer-term monitoring data.

The field guide was updated in 2015 due to the discovery of *Rhodiola integrifolia ssp. leedyi*, a Federally Threatened plant species, on the Black Hills National Forest. The guide was also updated to remove the meadow conservation documentation. It is noted that other specialists included meadow design criteria in their guides. If this process works for a particular district, the matrix can continue to be used, but otherwise it is no longer a requirement but merely an option.

FIRE/FUELS

The mountain pine beetle impacts on timber have created a complex fuels situation that varies greatly across the Forest. We continue to see recently hit green trees, red-needled trees, trees that no longer have needles attached and are breaking off 10-15 feet above the ground, and whole trees falling to the ground. Different levels of fuel moisture exist in each level of tree decomposition. Wildfires and prescribed fires have yet to occur in the various distributions of fuel. Documentation of observed fire behavior and fuel moisture conditions is recommended when those events do take place to continue validating design criteria.

Sites were monitored in 2015 in the Star Academy, Buck Mountain, and Viento timber sale areas. In the Star Academy and Viento TS areas commercial thinning was utilized, followed by whole tree yarding with piles created and left to be burned at a later date. There was little activity fuel left on the ground. In these areas the level of activity fuels met design criteria and management evaluation points were not exceeded.

In Buck Mountain the only activity evaluated was cut-and-chunk. The cut-and-chunk sites were small and the resulting fuel loading met design criteria requirements.

No changes to the Field Guide or design criteria are needed at this time.

Recommendations

As was mentioned in last year's report commercial treatment, including whole tree yarding, continues to be the preferred method for addressing mountain pine beetle spread. It is recommended that cut-and-chunk be utilized as a last resort when commercial treatment is not an option. Employ this method on a small scale to keep residual fuel loading to a minimum. If

the trees in the pocket to be cut are 8" DBH or larger, keep patch size to 30 trees or less. If the trees are less than 8" keep the patch size to 50-75 trees, the size that has been documented by Kurt Allen, USFS, and John Ball, SD Department of Agriculture, to be most effective at making a difference in the beetle population. If the activity results in a fuel loading that exceeds 20 tons/acre or doesn't meet design criteria, follow-up treatment utilizing methods such as machine piling and burning or mastication of fuels should be considered. If it is estimated that design criteria will not be met or management evaluation point limits will be exceeded, due to the number of trees to be cut or the size of the patch, it is recommended that this type of method not be used unless funding for follow up treatment is available.

PBR Sales to monitor in FY16

Two Gun Timber Sale -- No active logging at this time; Custer Gap Timber Sale -- No active logging at this time; Lager POL -- No active logging at this time; McInerny Add-On -- Active logging.

HERITAGE

The monitoring strategy for cultural resources identified within the boundaries of MPBR projects focuses primarily on those historic properties (as defined in 36 CFR §800.16.l) that the Forest has identified as a Priority Heritage Asset ("PHA" as defined in USDA Forest Service Manual 2360.5).

Three timber sales were completed in FY15 under the authority of the 2012 MPBRP Record of Decision: Fox Ridge, STAR, and Viento. Cultural resource analysis and consultation was completed for each of the three projects pursuant to stipulations in a programmatic agreement developed for MPBR projects and designed to comply with mandates in Section 106 of the National Historic Preservation Act (1966 and amendments) and the implementing regulations found at 36 CFR §800. No historic properties were identified in the areas of potential effect (as defined in 36 CFR §800.16.d) in any of the three timber sales. As a result, there were no known historic properties to monitor in FY15 for MPBR projects.

Recommendations: No changes to the Field Guide or design criteria appear to be necessary at this time.

HYDROLOGY/FISHERIES

Two Best Management Practices (BMP) evaluations occurred during Fiscal Year 2015 for MPBRP activities, one for a road-stream crossing and the second for preventative tree spraying activities that occurred near water.

Road Stream Crossing BMP Evaluation (FSR 116.1F) - On July 22, 2015, an interdisciplinary team reviewed BMP implementation and effectiveness on the Buck Mountain Timber Sale specific to road-stream crossings. The review evaluated the road-stream crossing of Forest System Road

(FSR) 166.1F on Bogus Jim Creek. FSR 166.1F is a Level 1 (closed) road that was used temporarily to complete timber sale activities. The monitoring was consistent with the PBR Soil/Water/Fisheries Monitoring Guide and followed the Forest Service National BMP Program direction. Specifically, the protocol and form from the USFS Completed Road or Waterbody Crossing Construction or Reconstruction (Roads Management; Roads B) were used. Based on that evaluation, the road-stream crossing installation was consistent with the seasonal instream timing restriction to protect fall-spawning trout, but was not effective in meeting Forest Plan Standard 1203 to provide for fish passage. The culvert did not meet the Forest Service design concept of “stream simulation”, meaning the culvert was not sized equal to or greater than bankful width and natural substrate was not present throughout the structure (i.e., the culvert bottom was not buried; photo 1). This can result in shallow water depths and increased water velocity within the culvert. Also, the outlet was “perched”, resulting in a small waterfall. All of these conditions are likely to impede upstream fish passage under certain conditions.

The culvert collapsed shortly after its initial use (photo 1), but it was quickly fixed. Subsequently, the crossing withstood high flows during May-June 2015 (photo 2) and passed debris/sediment consistent with Standard 1203 and other design criteria.



Photo 1.



Photo 2.

Bark Beetle Tree Spraying BMP Evaluation (Horsethief Lake Campground) - On April 28, 2015, an interdisciplinary team reviewed implementation of the tree spraying that occurred there and if BMPs were implemented and effective. BMPs were implemented and effective. Based on this review, no corrective or adaptive actions were identified as needed.

Recommendations: Remove the culvert and fill material at the FSR 166.1F –Bogus Jim Creek road-stream crossing once vegetation management activities have been completed in that unit. This would restore the crossing to a low-water ford which would insure the passage of high flows, sediment/debris and fish/other aquatic organisms. The removal of the culvert and fill material should occur consistent with the seasonal inwater work restriction (avoid Oct 15- April 1, if practicable). The road should revert to closed status, but would remain available for administrative use.

In the future, install instream structures at road-stream crossings to meet the “stream simulation” design concept to allow for aquatic organism passage. i.e., 1) the structure width is equal to or greater than the stream width and 2) the culvert bottom is buried to avoid perched outlets and to provide natural stream substrate throughout the length of the culvert for the design life of the crossing.

RANGE/WEEDS

Fiscal Year 2015 monitoring was conducted on the Rose Petal Timber Sale in November 2014. Results and recommendations were documented in the FY2014 monitoring report. No further monitoring was conducted in FY2015. Recommendations remain the same.

RECREATION

A Recreation/Special Uses Implementation Guide was developed to assist with the implementation of PBR activities.

No monitoring was reported in FY2015. No recommendations were received regarding the Implementation Guide or Field Guide.

SCENERY

Fox Ridge Timber Sale – This mechanized, ground disturbing activity was completed in Fiscal Year 2015. Field monitoring occurred in October 2015. Initial findings showed minimal ground disturbance resulting in soil color contrasts from mechanical harvest /tree removal systems, spaced across the landscape. Scattered residual slash is at natural levels.

Although the slash was placed in piles out at the edge of the treatment area, trees were killed by mountain pine beetle prior to the vegetation management activity. These trees were not removed as part of this treatment and have since decayed to the point where they are falling to the ground. The down material and slash evident in portions of the cutting unit, above natural levels, appear to be the result of mountain pine beetle (MPB) activity prior to treatment.

The difference between the areas where mountain pine beetle activity had not killed the trees prior to this treatment, and areas where there were killed trees (and not removed) is apparent. The Moderate Scenic Integrity Objective for the foreground view along County Road 313 – Carrol Creek Road, and the middleground view from U.S. Highway 385, management activities have maintained a natural appearing vegetated landscape.

Implementation Guide and Monitoring Guide Adjustments

No adjustments to the Implementation or Monitoring Guide were identified.

Recommendations:

- ❖ Continue to monitor projects to determine if findings are in fact valid across the Forest.
- ❖ Continue to use the Design Guide, as the dialog it is fostering appears to be having positive results on the Scenic Resource.
- ❖ There are no recommendations for changes to the field guide, or monitoring, at this time.

SILVICULTURE

The status of MPBRP implementation at the end of FY2015 is displayed in a chart in the Silviculture Report, Appendix A. Items of special interest include:

- EIS analysis – 248,000 acres
- Treatment acres selected in the decision – 122,000
- Timber sale acres sold to date - 9,975
- Acres eliminated by field review to date – 111,585
- Acres remaining to be field reviewed - 114,744

Below is picture of STAR Academy area south of Custer, South Dakota. Timber sale activities were implemented around this facility under the PBR NEPA decision.



Land treatments for fy2015 include timber harvest and cut-and-chunk activities. The Timber section summary elsewhere in this report addresses the timber sale status on PBR sales.

Post-harvest stand conditions achieved commercial thinning prescriptions reducing basal area to minimize the likelihood of mountain pine beetle attack. Follow-up stand improvement of pre-commercial thinning or POL (products other than logs) thinning will rely upon appropriated funds to further improve stand structure. Timber sale preparation and logging operations were not implemented quickly enough to harvest all trees prescribed to be thinned, and some standing dead trees killed earlier by beetle attack were left on the site as unmerchantable. Cut-and-chunk activity has primarily been implemented in the Buck Mountain Timber Sale area. Forest Health Service Center entomologist Kurt Allen, and South Dakota State University forest health specialist John Ball representing the South Dakota Department of Agriculture Forestry Division, documented their findings on cut-and-chunk activity on the Forest in a report cited in last year's monitoring report. They concluded that the "use of cut-and-chunk works best when it is done in conjunction with other treatments that reduce stand density." When this treatment is used alone, pockets of 50-75 trees are about the extent for which it can be effectively applied. This is for isolated pockets. If there are other groups of trees in the surrounding area, the treatments may still not be effective. If this treatment is applied in conjunction with timber sales, it should be used as mop up and should not precede sale activities. Below is a picture of a cut-and-chunk activity area from which mountain pine beetles emerged and flew to infest adjacent trees the following year. Please refer to the Silviculture report, Appendixes C and D, for further information.



Recommendations: No changes to silvicultural design criteria are recommended. However, several recommendations are offered regarding treatments.

One of the highest-priority treatments should be removal of standing dead (including green infested trees) trees from along heavily used roads. Presently, many of the areas that have been attacked over the past 10 years are starting to break up and trees are coming down.

Trees are falling and are blocking many high use gravel roads. Clearing the dead trees from along roadways would avoid potential conflicts with roads being blocked or even a tree potentially falling and hitting a passing vehicle.

Large-scale forest treatments through timber sales is the most effective strategy for reducing beetle caused mortality. The timber sales completed, active and planned are implementing that strategy. Add-on volume on awarded timber sales also reduces the stand density and susceptibility to mountain pine beetle. Add-on acres are mutually agreed upon logging operations between the US Forest Service and the timber sale purchaser. Sanitation efforts also harvest recently hit trees.

Cut-and-chunk activity on National Forest System lands should be implemented only within 300 feet of private lands where land owners are permitted to cut green-hit trees and preferably the chunks are utilized for firewood. Cut-and-chunk activity should be conducted on areas of less than 30 trees per acre to accommodate concerns of entomologists for beetle spread, and to address desires of US Forest Service fuels specialists to minimize fuel loading. Continue cooperative non-USFS efforts along forested private land areas, roads and recreation areas implementing timber sales to reduce stand density and treating lands.

The MPBRP decision included adaptive design features intended to more quickly address beetle populations and reduce hazardous fuels. Three years have elapsed since that decision and to date 609 acres of timber harvest have been completed. This would appear to be somewhat short of what was predicted to be completed at this point in time. Reasons for the slower pace include:

- time -- resource surveys and clearance taking longer than predicted
- too late -- stands already hit by mountain pine beetle and/or trees are already dead
- some PBR polygons are not in the suitable timber lands base hence are not lands for timber sale harvest
- some PBR polygons were excluded from timber harvest on previous environmental analyses and subsequently excluded again for the same reasons like legal access, rocky ground, steep slopes and low volume per acre

Given the demonstrated pace of project implementation it is apparent that keeping the Timber Sale Schedule with two years of approved NEPA decision acres ahead of timber sale preparation will be difficult. In efforts to sustain the present 5-Year Timber Sale Schedule, it is recommended that future planning be initiated immediately.

SOILS

Forest Service Manual direction addressing soil resources has changed. Rather than focusing on quantification of disturbed soil, the new national direction focuses on observations taken in an area. Substantial soil impairment is now described as detrimental changes in soil properties

resulting in the loss of the inherent ecological capacity or hydrologic function of the soil resource that lasts beyond the scope, scale or duration of the project causing the change. The visual indicators focus on attributes of the forest floor, soil surface and sub-surface (Napper et al. 2009). The national protocol uses a soil disturbance continuum that extends from undisturbed conditions (Soil Disturbance Class 0) to increased levels of disturbance, with Soil Disturbance Class 3 being highly disturbed. Soil disturbances at sample points assigned a Class 0 or 1 were generally considered to not be at detrimental levels. Transect points with a soil disturbance assigned a Class 3 were considered to be at a detrimental level. For the purposes of this monitoring report, any soil sample points assigned a visual Class 2 were also included as indicating detrimental disturbance.

On August 24, 2015, a soil disturbance assessment was completed on Viento Timber Sale, Unit #1. The majority of Viento Unit #1 transect observation points were assigned a soil disturbance class of undisturbed (Class 0). Disturbance Class 1 was assigned to six transect observation points (also not considered a detrimental level). Disturbance category classifications of Class 2 or Class 3 were not assigned to any of the Viento unit transect points. Therefore, the soil disturbance assessment information collected for Viento Unit #1 indicated that the activity area conditions are within those specified in the Forest Service Manual, the Watershed Conservation Practices Handbook and the direction in the Forest Plan.

Recommendations: Monitoring information from Viento Unit #1 did not result in any additional recommendations for monitoring adjustments.

TIMBER

The Timber Sale Preparation Implementation Field Guide, also known as the “Black Hills National Forest Sale Preparation User’s Guide (SPUG)”, has been in effect since April of 2009. The Timber Sale Preparation Implementation Field Guide for the Mountain Pine Beetle Response Project incorporated the SPUG in full to keep years of successful implementation guidance intact to ensure proven successful timber sale preparation efficiencies were kept for this project. All districts have successfully prepared and implemented a number of timber sales for years following this guidance in agency directives.

Ongoing projects and status:

- Fox Ridge Timber Sale – Sale has been completed.
- McInerney Add-On - Units completed to date include 29A, 30A, and 40A. Active logging in 6A as of 8/15/2015.
- Dry Beaver Add-On – Units completed to date include 100A, 32A, 31A, 33A, and 34A.
- Deer Springs Add-On – Unit 19A is completed. Active logging on 22A, 26A, 28A and 29A as of 8/27/2015.

- Buck Mountain Timber Sale – Sale not yet completed as per sale administer notes dated 04/3/15. Units completed to date are 1, 5, 8, 4 and 20. Actively logging in Units 7, 16, 14, 2, 3, 13 and 6.
- Limestone Ridge – Sale sold 1/27/2015. Sale not yet completed as per sale administrators notes dated 7/30/2015. Actively logging in Units 1-4 and 6.
- Star – Sale completed.

Timber sale preparation implementation field guide protocols have been successfully followed to date on all of the above projects.

New projects:

- Custer Gap Timber Sale – Sale sold August 4 of 2014. No active logging as of September 11, 2015.
- Lager POL – Sale sold September 3 of 2014. No active logging to date.
- Two Gun – Sale sold 5/11/2015. No active logging to date.
- Canyon Hills Stewardship – Sale was awarded 8/18/2015. No active logging to date.
- Polo – Sale sold 7/27/2015. No active logging to date.

Recommendations: No changes to timber treatment or mitigations are recommended. Timber sales located over large landscapes are the most effective strategy for reducing beetle caused mortality. Also, the addition of recently beetle hit trees to existing timber sales (add-on volume) is also very effective in reducing the spread of beetle infestations. Cut-and-chunk activity is only effective on a limited basis and should not be used to cover vast landscapes. The most effective cut-and-chunk treatments to date have been done in October and November within small areas where the infestations were less than ½ acre and had less than 100 trees.

TRANSPORTATION

The Fox Ridge, Star Academy and Viento Timber Sale areas were visited on November 20, 2015. Monitoring revealed that existing roads were used for the project, that no changes were made to the transportation system to implement the sale, and that no road damage occurred as a result of sale implementation. Fox Ridge PBR; to use Temporary road # U360083 only during dry or frozen periods was effective. No damage was evident from use. Temporary road # 1, 2, 3, and 4 were used during the timber sale and effectively closed after sale.

Star Academy PBR; Temporary roads appear obviously closed for motorized travel to the public at open travel road/motorized trail intersections.

Viento PBR; mitigations were followed to completion. Very small sale with only 0.2 miles of Maintenance only. U070076 Existing Temporary Road remains open for access to Private Land. All other temporary roads closed and Seeded.

Maintenance activities prior to, during use and after the timber sale kept the road drainage structures and road surface intact. There was no evidence of damage from logging; any damaged that may have occurred due to moisture in the summer of 2015 was fixed during post maintenance. During and Post maintenance were done correctly and on time. Roads were left in good condition.

Recommendations: No changes to the Field Guide or design criteria appear to be necessary at this time.

WILDLIFE

A Wildlife Implementation Field Guide was developed in coordination with district biologists to facilitate transfer of information from the Final EIS to treatment design, layout and administration. The field guide allows district biologists to identify which design criteria from the EIS apply to the activities throughout the implementation process.

The Wildlife Field Guide was used on several MPBR activities in 2015. The Field guide worked well for most projects. However, when designing treatments in the Luhtasaari area on the Hell Canyon Ranger District, the direction in the design criteria related to snails was discussed. As part of the discussion, the design criteria for snails were changed.

The original design criteria read as follows:

- Known snail sites with R2 Sensitive Species or Species of Local Concern will be avoided with ground disturbing activities (i.e., no vegetation treatments, no heavy equipment use, and no skid trails, landings, temporary roads or any other activity that may compact soils or alter ground cover, moisture regimes or litter composition) except in Spearfish Canyon MA 4.2A (Alternative C).
- Sanitation treatments that remove MPB infested trees without heavy equipment (cut/chunk, cut/chip, cut/handpile/burn, helicopter yarding) would be allowed in snail colonies.

The above design criteria were replaced with the following design criteria:

- Vegetation management activities will be consistent with Forest Plan Standard 3103 on R2 Sensitive Species or Species of Local Concern snail sites, except in Spearfish Canyon MA 4.2A (Alternative C).

Sensitive and SOLC snails are often found on calcareous soils and often found in areas with a secondary deciduous tree and/or shrub component. Cooper's mountain snail (*Oreohelix strigosa cooperi*), in particular, continues to be discovered at sites visited by field crews. They appear to be fairly easy to find in suitable habitat which includes spruce and pine sites with calcareous soils, often with a secondary deciduous tree or shrub component. The change is consistent with the analysis in the MPBRP EIS. The MPBRP EIS (pg. 214) effects analysis for

Alternatives B and C states that “known snail colonies would be conserved according to Forest Plan direction (Standard 3103)” except in Spearfish Canyon (Alternative C).

The original design criteria imply that all vegetation treatments and associated activities are inconsistent with Standard 3013. Silviculturists have indicated that activities can possibly be designed that meet Standard 3103, such as operating on frozen or snow covered ground or lop-and-scatter slash treatments. Treatments for MPB may actually result in more canopy cover than no treatment where MPB remove the canopy. The design criteria and associated field guide was revised to allow more flexibility for possible treatments while maintaining consistency with Standard 3103.

The following MPBRP projects were monitored in FY2015.

- Fox Ridge
- Star Academy
- Viento

A wildlife field monitoring form was developed to facilitate monitoring of wildlife design criteria implantation and effectiveness. The form allows for easy identification of applicable design criteria and gives the purpose or objective of the design criteria to facilitate evaluation of effectiveness.

Fox Ridge

No raptor nests, snail colonies or other wildlife issues were discovered during project implementation.

There is an abundance of snags in some areas from MPB killed trees. Some areas have few snags. Unable to determine if any were cut for safety reasons. No aspen or aspen snags occur in the units. Unable to determine if any were cut for safety reasons.

Several MPB killed trees have already fallen in some areas. Units have few downed logs in some other areas. Where MPB killed trees have fallen there is an abundance of downed logs. Some old logs likely present prior to treatment were pushed to the side of skid trails, but are still in place. Cut and Chunk sanitation on MPB infested trees were apparently done before the timber sale and these chunks are still on the ground providing abundant downed wood in some places. The downed log requirement appears to have been met.

There were no other requirements in the Wildlife Field Guide.

Star Academy

No raptor nests, snail colonies or other wildlife issues were discovered during project implementation.

There is an abundance of snags in some areas from MPB killed trees. Some areas have few snags. Unable to determine if any were cut for safety reasons. There is limited aspen in the units. No hardwood snags were found, no evidence of cutting hardwood snags.

Several MPB killed trees have already fallen. Units are very clean in some places. Where MPB killed trees have fallen there is an abundance of downed logs. Some old logs likely present prior to treatment were pushed to the side of skid trails, but is still in place.

Turkey roost areas were identified within the units. They were retained during operations and have yet to be impacted by MPB. There was no evidence of landings or skid trails near turkey roost sites.

There were several optional items identified in the Field Guide. No squirrel caches were found during monitoring. Harvest occurred around aspen patches, but protected the aspen during harvest. There was not much slash in the limited hardwood stands, but not much treatment in those monitored. There may not have been much slash to leave with the limited treatments in the aspen patches.

Viento

No raptor nests, snail colonies or bald eagles were discovered during project implementation. There is an abundance of snags in most of the unit from MPB killed trees. Unable to determine if any were cut for safety reasons. There are some small patches of aspen and oak in the unit.

No hardwood snags were found and no evidence of any being cut.

There is abundant downed wood throughout the unit. Several MPB killed trees have already fallen. MPB killed trees have fallen creating an abundance of downed logs. Some old logs likely present prior to treatment were pushed to the side of skid trails, but is still in place.

Recommendations: The Wildlife Field Guide snail direction was modified to allow more flexibility while continuing to be consistent with Forest Plan Standard 3103. No additional modifications are recommended at this time.