

APPENDIX E MONITORING PLAN

Introduction

As stated in Chapter 2, monitoring is gathering information and observing management activities to provide a basis for periodic evaluation of Forest Plan goals and objectives. The purpose is to determine how well objectives have been met and how closely management standards have been applied during and after post-fire project implementation. Evaluation of the monitoring results assists in the review of the condition of NFS lands as required by National Forest Management Act regulations. It may result in decisions for further action, such as modifying management practices. The first section describes aquatic and soil monitoring items. Next, vegetation and wildlife habitat monitoring is summarized. Lastly, transportation monitoring is presented.

Several sources of funding exist for resource monitoring. Some items would be funded with Knutson-Vandenberg (KV) funds, while other items would be funded with appropriated funds. No assignment of funding source to the monitoring would be made at this time because future availability of funds is unknown. Priorities for annual monitoring are established and agreed upon by the ID Team and the Responsible Official, and implementation would be based on annual budgets and program direction. All legally required monitoring would be performed.

Aquatics and Soil

There are two primary elements of concern in the post-fire environment that are addressed in this monitoring plan. The first element is detrimental soil disturbance, particularly in units proposed for summer logging. The amount of detrimental soil disturbance is a key consideration in determining relative long term soil productivity. The second element erosion and sediment delivery associated with temporary road construction and summer logging. Post-fire environments are especially vulnerable to erosion and sediment delivery. Accelerated erosion can reduce soil productivity, and sediment delivery can degrade water quality and aquatic habitats. Sheppard Creek is currently impaired and on the State of Montana's 303(d) list. In addition, Upper Sheppard Creek contains genetically pure westslope cutthroat trout. The following monitoring objectives reflect the above elements.

1. Determine the amount of detrimental soil disturbance in priority units that are salvage harvested during the summer.
2. Determine if temporary road construction and summer salvage logging are causing sediment delivery in sensitive areas.
3. Determine whether Best Management Practices (BMPs) were implemented as specified and whether individual BMPs were effective.

4. Determine condition and trend of Sheppard Creek through continued monitoring of channel morphology and aquatic habitat.

Detrimental soil disturbance would be measured in a sample of units that may be close to exceeding the soil quality standard of 15 percent. Temporary roads in sensitive areas would be visually inspected to determine if they are resulting in direct sediment delivery to stream channels. A sample of summer salvage units would be selected for on-site visual inspection. Priority units for review would include those that have a high potential for erosion and/or sediment delivery. Key BMPs would be reviewed on the same units as described above and on 1-2 selected haul routes. Three monitoring sites were established on Sheppard Creek in 2007 prior to the Brush Creek Fire, using the R1 AEUI protocol. Data collection at these sites would be repeated in 2009 and 2010 to determine how the creek is responding to post-fire conditions.

Units selected for detrimental soil disturbance monitoring include three winter only harvest tractor units, four summer optional tractor units with in-woods processing, and cable units using skyline, ground-lead, or excaliner logging systems. The following table lists units for monitoring units with the option to expand monitoring or select different units by the Forest Soil Scientist. Implementation monitoring would be performed within two years of sale closure. Monitoring would follow regional protocol for classifying soil disturbance, describe downed wood, and measure groundcover.

Proposed units for soil implementation monitoring.

Unit	Acres	Logging System	Winter only
13	21	Tractor	Yes
24	14	Tractor	No
78	20	Skyline/Excaliner	No
82	15	Skyline	No
83	40	Tractor	Yes
83A	21	Tractor	No
120	60	Tractor	Yes
121	44	Tractor	No
126	40	Skyline	No
Total	275 acres		

Vegetation and Wildlife Habitat Monitoring

Surveys of the vegetation in the project area were conducted both before and after the fires. The existing surveys are described in detail in the Vegetation, Bark Beetle, and Wildlife sections of the EIS.

Timber sale contract activities would be inspected to ensure contract specifications are followed. A qualified Timber Sale Contract Administration team, including Sale Administrators, Harvest Inspectors, and others will monitor leave tree and downed wood retention, protection of residual trees, erosion control and soil effects, log utilization, and other contract requirements. In addition, timber sale administration personnel will assist in monitoring for bark beetle activity, timber quality deterioration over time, and fuel treatment and reforestation needs.

Bark beetle surveys are scheduled in 2008 to estimate the amounts and locations of bark beetle and wood boring beetle activity throughout the fires. Results of these surveys will help determine if and where additional beetle treatments may be applied. They may also indicate the effects of salvage on reducing populations. If treatments, such as funnel traps and/or pheromones are used, they will be monitored and maintained which will provide estimates of relative abundance of beetles from site to site.

Post-harvest surveys would be scheduled in each salvage unit to determine how well the prescriptions were met through salvage activities or what modifications are needed to meet various resource objectives such as wildlife habitat. Monitoring items in the post-harvest exams include estimates of fuel loading, downed wood habitat, snag and live tree retention, reforestation needs, bark beetle activity, and soil conditions. Additional, more intensive surveys for snags and downed wood habitat will be included in a subset of the units to monitor compliance with Forest Plan standards.

Reforestation stocking surveys will be scheduled in every unit to monitor seedling stocking, survival, and growth following standard procedures outlined in Forest Service Handbooks.

Noxious weeds would be surveyed and monitored in all ground-disturbed areas in treatment units (slash piles, exposed soil from excavator tracks, skid trails), roads, and temporary roads. Monitoring would occur for at least three years following proposed action. Surveys and monitoring would be conducted by the Forest Botanist, Botany Crew, Noxious Weed Specialist, Weed Crew, or Silviculture Crew.

Roads would be monitored for at least three years and future treatments would be prioritized and scheduled based on funding by the Forest Weeds Coordinator.

Vegetation and Wildlife Habitat Monitoring Funding Sources

Funds for timber sale administration and noxious weed monitoring are derived from the annual agency budget appropriation. Post-harvest and reforestation surveys are funded by timber sale proceeds and/or annual budget appropriations. Insect and disease surveys are funded by appropriated and specifically allocated forest health management funds.

Transportation Monitoring

All road construction and road maintenance would be monitored to ensure compliance with specifications and to meet the intent of management practices. Specifications would be designed to meet objectives and management practices. The Forest Service would monitor the work performed by the contractor to ensure that their methods of operation and work are in compliance with the specifications that were designed to meet the intent of the management practices. If the designed work is not meeting the objectives and management practices, a modification may have to be made by the Forest Service to change the work to meet the objectives and management practices.

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