USDA-FOREST SERVICE

FS-2500-8 (7/00)

Date of Report: 3/20/01

BURNED-AREA REPORT
(Reference FSH 2509.13)

PART I - TYPE OF REQUEST

A. Type of Report

[x] 1. Funding request for estimated WFSU-SULT funds
[ ] 2. Accomplishment Report
[ ] 3. No Treatment Recommendation

B. Type of Action

[] 1. Initial Request (Best estimate of funds needed to complete eligible rehabilitation measures)

[x] 2. Interim Report
[x] Updating the initial funding request based on more accurate site data or design analysis
[ ] Status of accomplishments to date

[ ] 3. Final Report (Following completion of work)

PART II - BURNED-AREA DESCRIPTION

A. Fire Name: Skalkaho Complex/Valley Complex

B. Fire Number: MT-BRF-11445 and MT-BRF-11449

C. State: Montana

D. County: Ravalli

E. Region: 01 (Northern)

F. Forest: Bitterroot NF

G. District: Darby, Sula and West Fork

H. Date Fire Started: July 31, 2000

I. Date Fire Contained:100% as of 10/31/00

J. Suppression Cost: As of 11/3/2000 $57,642,445 (Includes all non-wilderness Bitterroot Fires)

K. Fire Suppression Damages Repaired with Suppression Funds
1. Fireline rehabbed:152 (miles)
2. being seeded: 136 (miles)
3. Other (identify): None other identified

L. Watershed Numbers: 17010205- 08-01, 08-05, 01-02, 01-03, 01-04, 01-06, 03-03, 03-05, 04-01, 04-05, 05-01, 05-02, 05-03, 05-04, 05-05, 05-06, 5-07 and 05-09,and 1701020509-01 through 04 and 17010205-07-001 through 005

M. Total Acres Burned: 278,360

For Sections N-R, Part III and Part IV Refer to Initial Requests for Valley Phase I, Rye-Burke, Far East, West Fork and Skalkaho Complex BAER Reports.

PART V - SUMMARY OF ANALYSIS

A. Describe Watershed Emergency:

Based on the BAER Teams' field survey and analysis the following emergency exists as a result of the fire:

Threat to life and private property: A total of 9 homes are at risk of increased flooding and debris flows within and directly downstream of the Skalkaho Complex fire. A dam classified as "high hazard" by the State of Montana is located in Little Sleeping Child Drainage. Montana State Highway 38 is at risk of flooding and debris flows. County Road 273 (Sleeping Child Road) is at risk of increased flooding with debris deposited on the road. 5 miles of private roads are also at risk.

In the Valley Phase I fire area there are 19 homes and 13 outbuildings considered at risk from high runoff and/or sediment flows events. About 7 miles of private roads and 36 bridges or culverts are considered to be at risk on private lands. There are 7 ponds at risk in the Dickson Creek watershed, as well as Schoolmarm Reservoir in French Basin.

In the Rye-Burke fire area several homes, outbuildings and bridges are considered at risk from high runoff and/or sediment flow events. Increased runoff from fire affected areas in the Rye and Burke Creek watersheds creates the possibility of loss of homes, bridges and culverts being overtopped, the loss of the road prism that supports them and the risk to human life if people are in the vicinity.

In the Far East fire area, several homes, outbuildings and bridges are considered at risk from high runoff and/or sediment flow events. Increased runoff from fire affected areas in the Upper East Fork watershed creates the possibility of bridges and culverts to be overtopped by stream flows, resulting in damage to these structures and the road prism that supports them and risk to human life if people are in the vicinity.

In the West Fork fire area, increased peak flows in Chicken Creek, Slate Creek and Overwhich Creek are possible. Put at risk are several homes and outbuildings, Painted Rock Reservoir as well as property downstream of the reservoir including State Highway 473.

Refer to previous reports (initial as well as interim) for additional and more specific information on the watershed emergencies not directly related to this interim request.

B. Emergency Treatment Objectives:

High priority treatments (those that are an immediate threat to life and property) have been completed throughout the Valley Complex fire area in the Fall of 2000. The remainder of BAER treatments will be completed as weather conditions permit, most likely in late spring and summer of 2001.

This interim report deals with monitoring of the effectiveness of the BAER treatments –or non-treatments, that have been or will be implemented. The purpose of the monitoring of the BAER treatments is to determine whether or not the applied treatments were installed correctly, used in appropriate situations, if treatments were effective or not and if additional treatments are necessary.

Some of the treatments will require more than one year of monitoring to determine effectiveness and/or need for additional work. In this situation, several years will be displayed in the section of the specification sheet that lists costs by fiscal year, however, the cost requested for FY 2001 will be the only cost requested at this time and listed in the total cost section.

C. Cost of No-Action (Including Loss): The cost of no action could be untold amounts of money, spread out over the coming years. Monitoring of treatments or lack of treatments would help to indicate what types of treatments (or non-treatments) should be considered for implementation in fire areas in the coming years. Without the knowledge of effectiveness, it is not responsible to continue to spend taxpayer dollars on activies of unknown success. Monitoring of the many kinds of treatments and sites of treatments in the Valley Complex Fire area would go a long way to indicate effectiveness and usefullness in future areas with watershed risks.

D. Cost of Selected Alternative (Including Loss): $ 282,559

E. Skills Represented on Burned-Area Survey Team:

See separate BAER reports for listing of skills and individuals represented in the planning process. Leaders for the different phases of BAER analysis include Todd J. Ellsworth, Cathleen Thompson, Nick Gerhardt, Marci Gerhardt, Cheryl Mulder, and Carolyn Napper.

This report is being complied by Marilyn Wildey and Gary Decker, Bitterroot National Forest.

F. Treatment Narrative

Proposed emergency treatments for the Skalkaho Complex and Valley Complex fires include many activities not included in this interim report. Please refer to earlier reports (Valley Phase I, Far East, West Fork, Rye-Burke, Skalkaho and the November 3,2000 Interim Monitoring Request) for narratives of these treatments.

The following narrative describes actions designed to monitor the effectiveness of treatments. These treatments were developed based on the BAER objective to determine the effectiveness of treatments, to determine the effects of high severity fire on the landscape and to evaluate the need for additional treatments in these areas.

Monitoring Plan Development and Implementation

Monitoring Coordinator
Objective:
Develop a detailed monitoring plan that is statistically valid. Ensure timely completion of all monitoring associated with BAER treatments and non-treatments. The Coordinator would refine and improve as necessary.

Method:
A Monitoring Coordinator would be hired for the remainder of 2001, for six months in 2002 and for four months in 2003 and would oversee the BAER monitoring program. This person could be a detail from another forest – or from the Bitterroot, a term position or a contractor. Duties would include the organization of the monitoring program, program management, coordination and planning of specific monitoring items, the implementation of the identified monitoring needs, and the completion of an annual written monitoring report. The report would be a portion of the Forest Plan Monitoring Report and could be used regionally in the planning of future treatments in burned areas.

Monitoring Coordinators' Assistant
Objective:
Ensure development of statistically valid sampling schemes for individual monitoring items and assist the Monitoring Coordinator as necessary. Duties would include processing and compilation of data using valid statistical techniques and assist in the preparation of the annual monitoring report.

Method:
Assistant would be funded for six months in 2001, six months in 2002 and four months in 2003 to assist the coordinator. The assistant would have skills in GIS and statistics and would review monitoring plans to ensure than sample frequency and intensity would result in data that would be statistically valid.

BAER Team Review of Treatments and Results
Objective:
BAER team members would return to the locations where they prescribed BAER activities to determine if these were effective, were prescribed appropriately and whether or not these kinds of treatments should be used in similar situations in the future. This will allow team members to hone their expertise.

Method:
Secure funding for the planning of a field review, travel and accommodation of core BAER team members and selected overhead from teams on the Bitterroot Complex of fires for follow up review of the treatment prescriptions. This review could occur following snowmelt, (likely mid-June) to allow for review before the 2001 fire season so that BAER team members can better prescribe BEAR treatments beginning in 2001.

Specialists Support to Monitoring Coordinators

The Monitoring Coordinator will require short term Specialist support in the following areas:

- Noxious Weed Specialists
- Archeologist
- Civil Engineer
- Hydrologist
- Fish Biologist

Hydrologic and Fisheries Monitoring

Fish Passage Culvert Effectiveness

Objective:
To determine if replaced fish barrier culverts resulted in repopulation of fish above site of culvert replacement.

Method:
Conduct presence/absence surveys above and below the culvert site. Identify fish species present above and below the pipe and stream grade through culvert. Compare to population data from prior to culvert replacement. Culverts to be identified by Fish Biologist and information would be used in the design of future culvert installations that allow fish passage. Data will be compiled and included in annual report. The report will be shared with other Forests and Fish Biologists interested in fish passage and culverts.

Soils Monitoring

Hillslope Structure Monitoring

Objective:
To determine effectiveness of log erosion barriers (LEBs) and straw wattle hillslope stabilization structures on various soils in reducing erosion and overland flow of sediment and water. Purchase and install a tipping bucket rain gage at each site to measure rainfall intensity. Measure erosion below treated and untreated areas for three years. An intensive paired watershed study has been installed by Dr. P.Robichaud on this Forest in the Medicine Tree drainage to accurately determine the erosion and sediment rates associated with log erosion barriers versus no treatment. Another of his research projects on this Forest deals with relative effectiveness of three slope treatments in the Waugh Gulch area. The monitoring proposed with this request compliments that research and will provide additional data for sites with conditions different from the research sites, such as grossly different soil textures and vegetation types. This will help Forest staff to determine whether additional treatments might be needed and which types will work best based on local conditions. Depending on the vagaries of weather patterns, the research plots may not get tested over the next couple of years; the monitoring sites proposed in this request will be scattered about the Forest burned areas and will increase the likelihood of capturing storm events that may go undetected in the research sites.

Method:

Install about 50 to 75 feet of silt fence 4 inches deep with ends of fence turned upward at each plot. Locate plots at the bottom of treated (i.e. below a series of log erosion barriers or wattles) and untreated portions of slopes to measure slope erosion. The area delivering overland flow and sediment to the silt fence barriers will be delineated and measured to provide a quantitative estimate of eroded sediment on an area basis. Use natural topographic divides as much as possible to delineate the plot side borders. The top border (and side borders where needed) can consist of 3 inches deep by 3-inch wide trench or a thin rail extending a couple inches above the ground. Targeted plot size is about 0.5 acre. Comparison of erosion rates on treated versus untreated plots will allow the determination of treatment effectiveness. The erosion and sediments delivery rates will be compared to: 1) natural post-fire historic rates as modeled by the WEPP soil erosion model; 2) acceptable soil loss tolerance rates (based on soil characteristics); and 3) acceptable sediment delivery rates to streams, in order to determine treatment effectiveness and if further treatment is needed. Purchase and install a tipping bucket rain gauge at each plot pair to measure rainfall intensity. Technical guidance on study and plot design will be provided by Dr. Pete Robichaud at Rocky Mountain Research Station in Moscow, Idaho.

Sampling will be begin in May 2001 and will occur for the following two field seasons. As soon as practical following major storm events, the eroded soil stored behind the silt fence will be collected, dried and stored for weighing at our watershed laboratory. Each year's results will be summarized and distributed to the public via the annual Forest Monitoring Plan and to the interested research personnel.

Monitoring log erosion barriers. A variety of ecological types will be sampled to represent the major types that had severe burn; these will be scattered about several watersheds. At each sampling area paired sampling will occur; one plot to measure erosion rates on a treated portion of a slope and another similar plot on an untreated site. The plots on the treated slopes will help determine if installed treatments are reducing erosion to acceptable levels or if additional treatments are needed. The plots on the untreated slopes will help determine the effectiveness of the log erosion barriers relative to no treatment, which will be useful information for our Forest regarding future applications of this type treatment and as supportive data for the Robichaud research plots. The ecological units selected for sampling represent:

1. Granitic/gneissic soils on warm, dry sites that historically burned with frequent, low severity burns, but which burned severe this past summer. Selected habitat types will be Douglas-fir/pinegrass or Douglas-fir/snowberry, or equivalent types. The soils will have typical gravelly sandy loam surface textures derived from granitic or gneissic parent materials; slope aspect and gradient of the treated and untreated plots will be similar. Two sites will be sampled with each site having two sets of paired plots (2 sites x 2 pairs/site x 2 plots/pair = 8 plots total) will be located on these sites.

2. Granitic/gneissic soils on moderately cool, moderately dry Douglas-fir/ninebark or Douglas-fir/blue huckleberry habitat types that historically were dominated by relatively frequent, low to moderate severity burns, but which burned severe this past summer. These soils will also have gravelly sandy loam surface textures. As above, two sets of paired plots having similar aspect slope gradient, and

elevation will be sampled on two sites (= 8 plots). Based on soil and micro-climate these types likely had higher full loads than the warm, dry types and therefore would have had greater soil heating and loss of plant propagules. Recovery may be slower and erosion rates higher on these sites.

Site locations (all have burned severe). Two warm, dry plot pairs and two moderately cool, moderately dry plot pairs bill be located in Laird Creek watershed in section 3. The Landtypes (as mapped in the Forest's Landtype Inventory) are 31K56, 31B15, and 30K31; these will meet the soil, landform, and habitat type requirements stated above.

The second area will be in the headwaters of the tributary that drains down to the Sleeping Child Hot Springs Resort. As above two plot pairs for each ecological type will be established. The Landtypes for this area are 31B15 in section 13 and 61B11 in section 24. Both have granitic soils with the appropriate habitat types.

If suitable sites can't be found in these areas, alternate areas to consider are: sections 18 and 19 about 3 miles north of Sula Peak lookout (Landtypes 31B70, 30D16) and sections 8 and 17 (Landtype 61K56) about 1 mile south of this lookout. Both areas have the required ecological conditions.

3. Soils having a volcanic ashcap surface layer at least 5 inches thick. Typically these soils occur on high elevation ridgetops, shoulder slopes, and moderately steep northerly aspects and support lodgepole pine as a fire disclimax cover type. These ecological sites often burned severely historically in stand replacement fires. The volcanic ash surface layers become extremely water repellent under these burn conditions, increasing the likelihood of overland flow and erosion. The Forest's worst single erosion event occurred on these soil types following a wildfire in the Overwhich drainage. Even though these ecological types for the most part burned within their normal historic range, erosion is a concern in several key watersheds. LEBs were installed in these, and two of the watersheds selected for monitoring LEB effectiveness are the tributary draining down to the Sleeping Child Hot Springs Resort, mentioned above (sections 19 and 24 for this type) and the North Fork Rye Creek drainage which are a group of houses near its mouth. Sampling would occur in the headwaters of this watershed in an area where Dr. Robichaud has established 4 sets of erosion microplots to measure potential erosion rates using rainfall simulators. No LEBs were installed immediately near his plots. We feel by locating our LEB monitoring plots near his study area we will be complimenting each other's study and can share this common data to help understand the erosion processes occurring on these soil types. The Landtypes in the Hot Springs tributary sites are 32D43, 33G41, and 36D43- all having more than 5 inches of volcanic ashcaps. Landtypes in the Robichaud research area are 31G15 and 33G41, also having thick volcanic ash surfaces. Lodgepole pine dominates these areas.

An alternative area is nearby in the White Stallion area in sections 29 and 33 along road 1392. Ashcap soils supporting lodgepole pine forest is abundant in that area. All of these areas burned severe this summer.

Monitoring Straw Wattles. One site will be located in Chicken Creek, where similar to LEB monitoring, a pair consisting of a treated and untreated plot will be installed. These will occur on soils derived from quartzite parent materials lacking volcanic ashcap (Landtype 31B39) on warm, dry habitat types.

Vegetation Monitoring

Noxious Weed Monitoring

Objective:
Determine effects of fire on noxious weed populations.

Method:
Noxious weeds will be monitored in nine different areas and will be incorporated with the sensitive plant and vegetative recovery monitoring where appropriate. Areas to be monitored include Gilbert Creek Road for spotted knapweed encroachment into previously forested areas; Bertie Lord Draw for spotted knapweed encroachment into previously forested areas as well as into Lemhi penstemon habitat; North Fork of Rye Creek Road for knapweed encroachment and vegetative recovery; Forest Road 13214 near Blacktail Point for week encroachment and vegetative recovery; open grassland/ponderosa pine forest in the Cow Creek drainage for knapweed encroachment and vegetative recovery; Brennan Gulch for leafy spurge population expansion; Spring Gulch and Reimel Creek for spotted knapweed and sulfur cinquefoil and riparian vegetative recovery; Gibbons Pass Road for spotted knapweed and vegetative recovery. Sampling will use frequency methods and the leafy spurge site will be monitored observationally with photos. Walk through evaluation will occur to determine if new weed populations are occurring in burned areas. The data will be used in the future when identifying appropriate treatments in burned areas. Report on findings will be provided to the monitoring coordinator for inclusion in annual monitoring report.

Herbicide Treatment Monitoring

Objective:
Evaluate effectiveness of upland and roadside herbicide treatments on spread and survival of noxious weeds following fire.

Method:
Monitoring throughout the fire area to determine if spotted knapweed, sulfur cinquefoil and St. John's wort have spread into new areas as a result of ground disturbance related to fire activity and canopy removal.

Monitor leafy spurge sites in Brennan Gulch (Skalkaho drainage), Little Sleeping Child and Sleeping Child Creeks. Monitor for three years as weeds should be sprouting within that time period. Monitor road cut and fill slopes that were sprayed for knapweed in the French Basin area and Medicine Tree drainage. Provide information gathered for annual monitoring report and use information for prescribing treatment in future burned areas.

Hydromulch Success
Objective:
Determine effectiveness of roadside hydromulch and hydroseed areas. Determine success of seed germination, tackifier, fertilizer and mulch in preventing erosion, establishing vegetation and preventing weed enchroachment. Evaluate need for further treatments.

Method:
Visit sites where hydromulch was applied in Laird Creek (slope treatment) and Medicine Tree (roadside treatments). Use photos and vegetative frequency (as discussed in vegetative monitoring section) to document vegetative success and silt fence (as discussed in hillslope monitoring section) to document effect on hydromulch in reducing erosion. On roadside areas, silt fences would be installed at four treated sites and four untreated sites to determine level of effectiveness. Information will be included in annual monitoring report and used in when prescribing treatments in burned areas in the future.

Roads Monitoring

Storm Patrol Monitoring
Objective:
To monitor the effectiveness of upsizing culverts to allow for passage of increased flows and debris and also to monitor to determine needs for additional culvert upsizing.

Method:
Two-person crews to travel roads in high severity burn areas to ensure culvert inlets not being plugged by debris being carried by storm flows. Have crews that complete the storm patrol keep record of culverts where plugging or over-topping occur so that if necessary, upslope surveys of slope conditions can occur and the need for culvert upsizing can be evaluated.

Evaluation of Culvert Replacement, of Erosion Control at Culvert Replacement Sites/Removal and of Revegetation Monitoring

Objective:
To determine if culverts were placed in appropriate locations and installed as designed. To review culverts identified for upsizing for appropriateness for upsizing. To determine if erosion control was placed following culvert removal and if so, whether or not it was effective or additional work is needed. Evaluate revegetation success and determine if additional revegetation efforts are necessary.

Method:
Visit each site where culverts were replaced, removed or where culvert replacement is proposed (some of this can likely be accomplished while completing other work in the area of the culverts). Review and evaluate the installation of culverts for completeness and appropriateness. Determine whether or not the installation of proposed culverts is appropriate given upslope and channel conditions. At sites where culverts have been replaced or removed, document the application of erosion control work such as erosion control mat, seeding and/or straw mulch and the effectiveness of it. Refer to Bitterroot National Forest BMP 11.02 for desired erosion control and install erosion control where needed. Assess revegetation and reseed as needed. Direct hand crews to culverts in need of erosion control work for implementation. Provide information on culvert

treatments in annual monitoring report. Use data to improve culvert installation in BAER Rehab environments in the future.

Other Monitoring

Heritage Site Monitoring
Objective:
To reduce risk of destruction of known heritage sites by erosion, watershed degradation and other deterioration.

Method:
All unsurveyed medium-to-high probability areas within the burn perimeter be monitored to determine the nature and extent of fire damage to unknown/unrecorded sites. More than two dozen recorded sites within the fire perimeter will require monitoring. Some sites beyond the burn perimeter are at risk due to erosion and debris flows, which will also require monitoring. Any ground disturbing activities associated with treatments for other resource protection will require monitoring by heritage specialists. For each site, the monitoring would consist of site visits, photography, and description of current conditions and completion of a site monitoring form. Consult Skalkaho Complex Heritage Resource Site Tracking Sheet and Forest Heritage Program Manager to determine those cultural resource sites and traditional cultural properties in need of monitoring. Information will be shared with State Historical Preservation Organization, the Native American Tribes and kept in the Heritage Resource files. It will also be included in the annual monitoring report.

Continuation of Photo Point Monitoring
Objective:
To document, using photos, fire effects, ecosystem recovery and the effectiveness of BAER treatments on 100 different photo points established in fall of 2000 and spring of 2001. This would be Year 2 of the monitoring.

Method:
Revisit the 100 sites and photograph using the same parameters as previously used. File photographs in manner consistent with the initial Forest contract.

PART VI - Emergency Rehabilitation Treatments and Source of Funds by Land Ownership
(see attached spreadsheet)

Part VI – Emergency Rehabilitation Treatments

Line Items	Units	Unit Cost $	NFS Lands # of units	NFS Lands cost $
Monitoring:				
BAER Effectiveness Monitoring				
BAER Team Review (15 people @ 6 days)	Day	$525	90	$47,250
Monitoring Coordinator	year	$46,490	1	$46,490
Monitoring Coordinator Assistant	year	$23,200	1	$23,200
Hydrology and Fisheries Monitoring (short term specialist support)				
Fish Pasage Culvert Effectiveness	day	$250	10	$2,500
Hillslope Structure Monitoring	study	$12,500	1	$12,500
Vegetative Monitoring (short term specialist support)				
Sensitive Plant, Noxious Weeds, and Post Fire Vegetative Monitoring				
Herbicide Treatment Monitoring	day	$250	25	$6,250
Hydromulch Success Monitoring	day	$250	10	$2,500
Roads Monitoring (short term specialist support)				
Roads and Storm Patrol	day	$250	10	$2,500
Evaluation of Culverts, Erosion Control and Revegetation at Culvert Replacement Sites	day	$250	25	$6,250
Other (short term specialist support)				
Heritage Resource Monitoring	day	$250	25	$6,250
Photo Point Monitoring	day	$250	10	$2,500
Total Monitoring				**$158,190**

PART VII - APPROVALS

Recommended by:

/s/ Jeff Amoss, Resourse Staff

Forest Supervisor (signature) — 3/20/2001 Date

Regional Forester (signature) — Date