

BURNED-AREA REPORT
(Reference FSH 2509.13)**PART I - TYPE OF REQUEST****A. Type of Report**

- ☒ 1. Funding request for estimated emergency stabilization funds
☐ 2. Accomplishment Report
☐ 3. No Treatment Recommendation

B. Type of Action

- ☐ 1. Initial Request (Best estimate of funds needed to complete eligible stabilization measures)
☒ 2. Interim Report # 4 (in orange below)
☒ 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 DESCRIPTIONA. Fire Name: SchultzB. Fire Number: AZ-COF-000181C. State: ArizonaD. County: CoconinoE. Region: Southwestern (3)F. Forest: CoconinoG. District: PeaksH. Fire Incident Job Code: P3FGF9-0304I. Date Fire Started: 6/20/2010J. Date Fire Contained: 7/1/2010K. Suppression Cost: \$9,400,000 (estimate)

L. Fire Suppression Damages Repaired with Suppression Funds

1. Fireline waterbarred (miles): 25
2. Fireline seeded (miles): 0
3. Other (identify): Helispot, Medivac site

M. Watershed Number: 150200160201, 150200160203, 150200150103N. Total Acres Burned: 15,051

NFS Acres (15,051) Other Federal (0) State (0) Private (0)

O. Vegetation Types: Ponderosa pine/Arizona fescue; Mixed conifer (White fir/Douglas-fir, Englemann spruce/Whitefir/Douglas-fir), Spruce-Fir)P. Dominant Soils: Mollic Eutroboralfs, loamy-skeletal, mixed, deep cobbly (15-35% surface rocks from 3" to 10") sandy loams; Eutric Glossoboralfs, loamy-skeletal, moderately deep and deep, very stony (35-60% surface, 10-24 inches in diameter) and very boulder (35-60% surface rocks, >24 inches) sandy loams

Q. Geologic Types: Holocene to Middle Pliocene volcanic rocks; Holocene to Middle Pliocene basaltic rocks; Quaternary surficial deposits

R. Miles of Stream Channels by Order or Class: (0) Perennial (56) Intermittent

S. Transportation System: Trails: 17 miles Roads: 76 miles

PART III - WATERSHED CONDITION

A. Burn Severity (acres): 1,222 (unburned) 3,825 (low) 4,128 (moderate) 5,876 (high)

B. Water-Repellent Soil (acres): 5,137

C. Soil Erosion Hazard Rating (acres):
7,016 (low) 2,984 (moderate) 5,051 (high)

D. Erosion Potential: 5 tons/acre (weighted average)

E. Sediment Potential: 266 cubic yards / square mile

PART IV - HYDROLOGIC DESIGN FACTORS

A. Estimated Vegetative Recovery Period, (years): 5

B. Design Chance of Success, (percent): 60

C. Equivalent Design Recurrence Interval, (years): 10

D. Design Storm Duration, (hours): 1

E. Design Storm Magnitude, (inches): 1.6

F. Design Flow, (cubic feet / second/ square mile): 13 (for priority watersheds)

G. Estimated Reduction in Infiltration, (percent): 80

H. Adjusted Design Flow, (cfs per square mile): 125 (for priority watersheds)

PART V - SUMMARY OF ANALYSIS

A. Describe Critical Values/Resources and Threats:

The Critical Values/Resources and threats can be found in a previously submitted 2500-8 Interim #1, Interim #2, and Interim #3 and apply here. Please see Schultz Fire 2500-8 dated 07/07/2010, 08/19/2010 and 10/6/2010.

The original BAER request was followed by Interim #1 requesting seeding and additional straw mulching where mulch was removed from the July 20th major storm event and several others thereafter. On July 20th there was a significant rainfall event that fell on the burned area of the Schultz fire. It is estimated that from 2 to 4 inches of rain fell on the burned area in a period of between 45 minutes to 1 hour. This rain event caused considerable flood damage to many homes located on private property in several housing subdivisions located approximately 1 mile east and south east of the fire. Overland flow also affected a subdivision on the east side

of Highway 89 approximately 4 mile southeast of the burn. One fatality also occurred due to flooding and debris torrents that occurred as a result of the rain event on the fire.

As of July 20th, approximately 70 percent of the 2,600 acres proposed in the original BAER request to be mulched had been treated. The remaining 800 acres were helimulched in the following 2 days. An assessment of the mulching treatment and the pipeline treatment was conducted on July 23rd through July 25, 2010 to see how they withstood the intense rain event that occurred the afternoon of the 20th. The assessment was conducted by a combination of on the ground investigations and a helicopter flight.

The results of the assessment conclude that a majority of the straw mulched in the original BAER request on the gentler 15 to 35 percent slopes stayed in place and is being effective in providing ground cover. Areas on steeper slopes ranging from 35 to 65 percent did have down slope straw movement associated with the treated areas. The steeper country within the burn area experienced extremely high levels of soil loss and gulying. Many drainages located within the steep country of the burned area had eroded down to bedrock. The riprap treatments associated with the Flagstaff water pipeline on the pipeline road had all failed. The pipeline road was accessed by ATV from both ends and was impassable at approximately 1.5 miles on either end. Two breaks in the pipeline were observed during the helicopter flight. During the flight many log debris dams were noted in two drainages located on the southern end of the fire that could lead to breached hydrology and cause further flooding to subdivisions adjacent to the fire.

The burned area has lost a majority of its protective ground cover and has experienced complete loss of control of water, resulting in extreme flooding potential to subdivisions located to the east of the fire. There are approximately 30 miles of roads in the burned area that are contributing to sedimentation and high flows to off site private property.

Interim #1 requested, was approved and implemented seeding on about 5600 acres and additional mulching on about 900 acres on steeper slopes ranging from about 35 – 80 % slopes. Field assessments and observations were made on four days assessing seeding and mulching success between September 1 and September 28th, 2010. Similar to the original BAER mulch application described above, the mulch remained on slopes less than about 35% but was partially removed on slopes greater than about 35% from water runoff and wind. As of September 27th, seeding had not germinated and had remained on slopes gentler than about 40% slopes. Slopes greater than about 40% were generally void of seeds indicating those seeds had either washed off or blown away.

Interim #2 was approved and implemented for diversion construction and maintenance and treatment monitoring. Interim #3 was approved and implemented for seeding on 1146 acres and agricultural straw mulching 1007 acres.

This request (Interim #4) seeks woodstrand mulching, construction of additional diversion berms, maintenance of formerly BAER constructed berms, maintenance of BAER constructed water bars and several gates to prevent entry into administratively closed roads within the fire perimeter.

B. Emergency Treatment Objectives:

Protection of life and property, primarily the public water supply, homes, and private and county roads, from floods is the primary objective, which due to their juxtaposition with the high burn severity acreage, is critical. A secondary objective is to retain soil on-site to preserve long-term soil productivity, which is a foundation for restoring and sustaining the health of the burned watersheds. Other objectives include protection of archeological resources, forest roads, and control of noxious and invasive weeds. Seeding a blend of natives and non-persistent serial quickguard is recommended to provide watershed cover and protection in years 2-5. Quickguard is recommended since some of the area to seed is located within the Wilderness Area and introducing persistent non-native serial grasses would not maintain the integrity of the Wilderness Area.

C. Probability of Completing Treatment Prior to Damaging Storm or Event:

Land 70 % Channel N/A % Roads/Trails 70 % Protection/Safety 70 %

D. Probability of Treatment Success

| | Years after Treatment | | |
|-------------------|-----------------------|-----|-----|
| | 1 | 3 | 5 |
| Land | 70 | 85 | 90 |
| Channel | N/A | N/A | N/A |
| Roads/Trails | 70 | 85 | 90 |
| Protection/Safety | 85 | 95 | 95 |

E. Cost of No-Action (Including Loss): See attached cost-risk assessment

F. Cost of Selected Alternative (Including Loss): See attached cost-risk assessment

G. Skills Represented on Burned-Area Survey Team:

| | | | | |
|---|---|--|---|--------------------------|
| <input checked="" type="checkbox"/> Hydrology | <input checked="" type="checkbox"/> Soils | <input type="checkbox"/> Geology | <input type="checkbox"/> Range | <input type="checkbox"/> |
| <input type="checkbox"/> Forestry | <input type="checkbox"/> Wildlife | <input type="checkbox"/> Fire Mgmt. | <input type="checkbox"/> Engineering | <input type="checkbox"/> |
| <input checked="" type="checkbox"/> Contracting | <input type="checkbox"/> Ecology | <input checked="" type="checkbox"/> Botany | <input type="checkbox"/> Archaeology | <input type="checkbox"/> |
| <input type="checkbox"/> Fisheries | <input type="checkbox"/> Research | <input type="checkbox"/> Landscape Arch | <input checked="" type="checkbox"/> GIS | |

Team Leader: Rapid assessment personel Michael Natharius

Email: mnatharius@fs.fed.us

Phone: 575-388-8246

H. Treatment Narrative:

8/19/2010 Update:

A 2-4 inch storm fell within 1 hour on 7/20 removing steep mulched areas and washing our FR 146 treatments. The design of the treatments was for 1.6"/hour storm at 60% estimated success. The 2-4 inch storm far exceeded treatment design resulting in some failure of treatments. An additional interim BAER request was made and approved in full on July 29, 2010 by the WO for an additional \$969,000 for 4 treatments: aerial seeding, mulching, debris jam removal and water barring of road. The seeding and debris jam removal has been completed and the additional mulching and water barring is in progress and should be completed by 8/20/2010.

As a result of actual contracting costs for aerial mulching coming in less than originally estimated, there is a cost savings of approximately \$400, 000. This savings is reported in Part VI.

10/6/2010 Interim #3 Update: Interim #2 requested BAER treatments for diversions and sediment basins, was approved and implemented before 9/1/2010. All seeding and mulching was accomplished as described in Section VA above. Accomplishments from the original BAER request and BAER interim #1 were previously described. Basically, all approved seeding and mulching, road drainage work, heritage site stabilization and monitoring plots were accomplished.

Interim #3 received approval and was fully implemented for seeding 1146 acres and agricultural straw mulching 1007 acres in the fall of 2010 before major snowstorms in areas of high burn severity connected to the same downstream values at risk listed in the original BAER report. Most of the seeding and mulching was done on areas that had already been treated but had blown or washed away on these steep slopes. New

mulching on the Lenoux, Peaceful Way and Siesta-Paintbrush subwatersheds (about 447 acres out of 1007 acres) was implemented since downstream Forest roads, crossings and private properties had received substantial mudflows and flooding and treatment was expected to reduce risks to these values. About 660 acres and all of the 1146 acres seeded are located within the Kachina Peaks Wilderness Area and required Regional Office approval for aerial application. The rationale for seeding and mulching in the fall is experience and research indicated snowpack could hold and moisten down seeds and mulch on steeper slopes allowing vital soil protection to be in place throughout fall, winter and spring and before next seasons monsoon.

Interim #4 (5/3/2011) Treatment Narrative:

To date, approximately \$2,875,000 has been spent and \$4,160,550 has been approved. As a result of actual contracting costs for aerial mulching and other approved activities coming in less than originally estimated, there is a cost savings of approximately \$1,285,000.

Interim #4 Mulching Assessment: An assessment of vegetative recovery and need to mulch was made on April 27th and 28th with an interdisciplinary team to determine actual acres requiring strand mulch. The entire waterline road was assessed and current vegetative recovery documented and areas requiring additional mulch mapped and digitized in GIS. Findings indicated that vegetative recovery is slow and very sparse on steep slopes at higher elevations. Southern aspects are subject to higher wind intensities that resulted in near complete removal of agricultural straw over the winter. Northern aspects are not exposed to as much wind as southern aspects retained more agricultural straw, had moister and deeper soils and a little better vegetative recovery. Since there were no major rain storms or rain on snow events over the winter and spring, the team concluded that the previously applied ag straw must have been removed from wind. Slopes greater than about 65% have higher amounts of rock cover (generally more than 50%), and are not recommended for mulch treatment. Altogether, about 331 acres were mapped as high priority areas requiring woodstrand mulch on slopes ranging from about 35-60% and almost entirely on northern aspects. Minor areas of NE aspects were included in polygons to mulch since they appeared to be more exposed to wind and simplified the polygon for aerial contract application.

Additionally, research shows that agricultural straw is effective up to about 65% slope and woodstrand holds in place better through wind and rain events than agricultural straw and up to about 65% slopes as determined during the Ridgeline to Rio Summit in Flagstaff, AZ, and discussions with Pete Robicheaud from the USFS Research Station in Moscow, Idaho during the week of 9/19 – 9/24/2010. Slopes above 65% were not generally tested by research and the team does not recommend mulching those steepest slopes since they are not proven effective and generally contain high amounts of rock fragments anyway.

Field assessment and monitoring plots were read to validate the need to mulch on flat slopes, moderate and steep slopes. In general, slopes below about 35% still retained ag straw but prior seeding was either absent or sparse except barley was prevalent at lower, warmer elevations. Volunteer wheatgrass from ag straw application last year did not appear to be regenerating with high success. Primary succession was well underway with a prevalence of forbs, shrubs and a few perennial grass species. Treatment details are described below under Interim #4 Land Treatments.

Mulching Treatment: Aerial application of woodstrand is proposed on 331 acres of high severity burn on slopes generally from 35-60%. These acres had previously been treated above the waterline Road (FR 146) but due to steep slopes, high winds on south aspects during the fall and spring, these acres need to be retreated to maintain soil productivity onsite, reduce further erosion of the waterline road and water pipeline buried in the road and reduce water runoff and downstream floodwater risk to subdivisions below.

Road Treatments: An assessment of previously approved and implemented road drainage work was ongoing and observations conclude additional maintenance of water bars is necessary to divert water off of road and into energy dissipating forest areas. It is estimated that the same 23 miles of road could use additional maintenance and will result in reduction of concentrated water flow in road, maintenance of road footprint and less water delivered downstream into subdivision areas. Treatment details are described below under Interim #4 Roads and Trails.

Channel Treatments: During the last several months, coordination continued between the City of Flagstaff and the Forest. Last summers storms deposited sediment and water within feet of the City Landfill. Coordinating team members recommend additional berm construction and maintenance (listed in tabular format under Interim #4 channel treatments below). Additional berms are necessary to reduce the risk of water runoff into the City Landfill and downstream floodwaters into Doney Park subdivision below. The objective is to prevent sediment and water deposition into the Landfill that could otherwise risk pollution of the regional groundwater with heavy metals, hazardous materials and other pollutants and surface water quality into the Rio de Flag as well as Doney Park subdivision flooding and well contamination.

Protection/Safety Gates: The last requested treatment are to to install protective road barriers on 3 Forest roads to prevent unauthorized access into administratively closed areas within the burn. Signage, wooden barriers and law enforcement have not prevented some unauthorized entry. Gates are needed to protect the public safety during flood events and to protect Forest system roads from vehicular damage. Gates will allow administrative access for road maintenance. Treatment details are described below under Interim #4 Protection/Safety (Gates).

Land Treatments:

Interim #1 (7/30/2010)

Aerial Seeding:Aerial application of certified weed-free wheat straw is proposed on 700 acres of high severity burn that had previously been treated but due to steep slopes and the severe rain event need to be retreated. These extremely steep slopes will be retreated at a rate of 1.5 tons per acre. There is an additional 200 acres that had not previously been treated but is contributing to flooding at the Lenox subdivision. This acreage is within six watersheds of concern that drain directly toward homes and county and private roads. Slopes to be treated range between 35-65 percent. The mulch will be applied by experienced contractors to achieve close to 100 percent ground cover. The treatment is expected to significantly reduce overland flow, assist in grass seeding establishment, assist in maintaining long-term soil productivity to provide favorable soil conditions for grass, forbs, and tree regeneration, and protect heritage sites.

Aerial seed certified weed free seed with fixed wing airplanes, 5600 acres of of high severity burn in the burned area at an application rate of 25 PLS/sqft. Item listed in table VI includes cost of both seed and flight treatment). This seeding is also proposed for the extremely steep high severity burn in the Kachina Peaks Wilderness. Though this treatment will not provide immediate protective vegetative cover for the remainder of this monsoon season it is expected to provide protective vegetative ground cover for the following year. This treatment is expected to assist in reducing future erosion associated with the burn and assist in maintaining long term soil productivity. The seed mix will consist of QuickGuard (a sterile *tritium* sp) a hardy nonreseeding annual, it will also have a percent of native species including arizona fescue, mountain brome, june grass and squirrel tail to assist in jumpstarting native species regeneration within the burned area.

| Species | Lbs/acre | % by Wgt. | Seeds/sq ft. | Cost |
|------------|----------|-----------|--------------|--------------------|
| Quickguard | 20 | 86 | 5.9 | \$153,400 |
| BRMA | 2 | 8.6 | 2.9 | 17,700 |
| FEAR | .3 | 1.3 | 3.8 | 11,505 |
| SIHY | .7 | 3.02 | 3.1 | 37,170 |
| KOCR | .15 | .65 | 7.9 | 15,930 |
| Total Cost | | | | \$250,437 with tax |

Interim #3 (10/6/2010)

Aerial Seeding:

Aerial seed certified weed free seed with fixed wing airplanes, 1146 acres of of high severity burn in the burned area at an application rate of 25 PLS/sqft. Item listed in table VI includes cost of both seed and

flight treatment). This seeding is also proposed for the extremely steep high severity burn in the Kachina Peaks Wilderness. Though this treatment will not provide immediate protective vegetative cover for the remainder of this monsoon season it is expected to provide protective vegetative ground cover for the following year and years 2-5. This treatment is expected to assist in reducing future erosion associated with the burn and assist in maintaining long term soil productivity. The seed mix will consist of cereal barley and will also have a percent of native species including arizona mountain brome, and squirreltail to assist in jumpstarting native species regeneration within the burned area. The following table is the cost estimate of seed only. Request in Table VI includes cost of seed, aerial application and estimated cost of contracting and site inspection during implementation.

| Species | Lbs/acre PLS | Seeds/sq ft. | Cost |
|---|-----------------|--------------|----------|
| Barley (<i>Hordeum vulgare</i>) | 22.3 | 8 | |
| Mountain Brome (<i>Bromus marginatus</i>) | 2 | 2.9 | |
| Squirreltail (<i>Elymus elymoides</i>) | .7 | 3.1 | |
| Total Planting Rate | 25.0 | 14 | |
| Total Cost | | | \$25,560 |

Aerial Helimulching: Aerial application of certified weed-free wheat straw is proposed on 1007 acres of high severity burn on slopes generally from 35-60%. About 560 acres had previously been treated above the waterline Road (FR 146) but due to steep slopes and the severe rain event need to be retreated. Request in Table VI includes estimated cost of straw, aerial application, contracting and site inspection during implementation.

These steep slopes will be treated or retreated at a rate of about 1.5 tons per acre. This acreage is within six watersheds of concern that drain directly toward homes and Forest, county and private roads. Slopes to be treated range between 35-65 percent except about 75 acres in the Paintbrush-Siesta subbasin where slopes range from about 15- 35%. The mulch will be applied by experienced contractors to achieve close to 70 percent ground cover and generally amounts to about ½ - 1 inch in depth. The treatment is expected to significantly reduce overland flow, assist in grass seeding establishment, hold straw in place, assist in maintaining long-term soil productivity to provide favorable soil conditions for grass, forbs, and tree regeneration, and protect heritage sites.

Interim #4 (5/3/2011)

Land Treatments

Aerial Woodstrand Helimulching: Aerial application of woodstrand is proposed on 331 acres of high severity burn on slopes generally from 35-60%. These acres had previously been treated above the waterline Road (FR 146) but due to steep slopes, high winds on south aspects during the fall and spring, these acres need to be retreated to maintain soil productivity onsite, reduce further erosion of the waterline road and water pipeline buried in the road and reduce water runoff and downstream floodwater risk to subdivisions below. Request in Table VI includes estimated cost of woodstrand mulch, aerial application, contracting and site inspection during implementation.

These slopes require woodstrand mulch in areas of high burn severity where identified values at risk exist and where straw has been removed primarily by wind but also by water. The vast majority of acres occur on southern aspects since the assessment revealed southern aspects were exposed to wind much more than the northern aspects. This acreage are within the subwatersheds of concern that drain directly toward homes and Forest, county and private roads.

These steep slopes will be retreated at a rate of about 5 tons per acre. Slopes to be treated range between 35-65 percent. The mulch will be applied by experienced contractors to achieve close to 50 percent ground cover and generally amounts to about ½ - 1 inch in depth. The treatment is expected to significantly reduce overland flow, assist in grass seeding establishment, assist in maintaining long-term

soil productivity to provide favorable soil conditions for grass, forbs, and tree regeneration, and protect heritage sites.

Interim #1 (7/30/2010)

Channel Treatments:

Removal of log debris jams in channels. This treatment is proposed to reduce the risk of breach hydrology in channels and consequent negative effects to downstream homes and property. This treatment would consist of bucking up log jams and removal of bucked up material from channels. This would consist of a sawyer certified crew at a cost of 3,500/day for 2 days.

Interim #2 (8/19/2010)

Diversions and sediment basins were constructed at 4 areas during the July 20 flood event. The objective is to divert water and sediment and trap it in safe highly permeable soils at locations where sediment can be trapped and water infiltrate away from the North Doney Park residential area. This protective measure is necessary to protect dozens of homes from floodwater and sediment damage. This treatment also diverts water away from the City landfill site and avoids contamination of local water from harmful hazardous materials found in the landfill and detected pathogens associated with upland septic tanks. In addition, one site safely diverts water away from Highway 89 protecting the road infrastructure and downstream residential homes in North Doney Park.

The Forest and outside agency cooperators visited each site, assessed the existing condition and recommended appropriate treatments along with archaeological clearance. The diversions are ditches constructed which carry water and sediment at low gradient and become sediment basins at the lower ends. The sediment basins are actually a series of ditches that trap water and sediment in areas with highly permeable soils. Due to the urgent need to construct these diversions while flooding was occurring and no lead time to request BAER approval, we utilized regular program funds. However, we feel these treatments meet BAER objectives and are requesting BAER authority to cover the costs (\$20,000).

Additional maintenance is required to scarify the soil in these sediment basins to allow infiltration of the otherwise sealed soil surface that results from the sealing of volcanic cinders from mudflows. We anticipate up to 3 events of maintenance may be needed (\$5,000 per event).

Interim #4 (5/3/2011)

Channel Treatments

Narrative of treatments is described in narrative under Interim #4 Channel Treatments above. The treatment and objectives are similar to what is described above under Interim #2. The table below details Interim #4 requested channel treatments and objective of each treatment. The table in Part VI summarizes treatment types into new diversion construction (d, e, f, g) and maintenance (b, c) and scarification of forest land (a). A map is being processed and can be provided as requested.

Coconino County/City Requested Additions

| | Item | Quantity | Unit | Unit Cost | Total |
|-------|---|----------|------|-----------|-----------|
| a. | Scarification of Forest land adjacent to landfill | 27 | AC | \$1000 | \$27,000 |
| b. | Girls Ranch Diversion Berm Reinforcement/Enhancement | 2400 | LF | \$6 | \$14,400 |
| c. | Reinforce Berms South of Landfill | 7700 | LF | \$6 | \$46,200 |
| d. | East Campbell Berm Construction | 7500 | LF | \$40 | \$300,000 |
| e. | New Berms Between East Campbell Berm and Landfill Road | 2400 | LF | \$31 | \$74,400 |
| f. | New Berm at East End of Copeland Canal | 300 | LF | \$31 | \$9,300 |
| g. | New berm at/near COF Landfill west property line. (COF Request) | 1000 | LF | \$31 | \$61,000 |
| Total | | | | | \$532,300 |

- Scarification is needed prior to start of 2011 monsoon season for the areas above the Landfill Berms to break up deposited sediment and enhance infiltration.
- The berm constructed during the 2010 emergency response will require enhancement and reinforcement at key locations in preparation for the 2011 monsoon season.
- The four berms constructed during the 2010 emergency response on the south side of the COF Landfill will require enhancement and reinforcement in preparation of the 2011 monsoon season.
- This is a new berm that will divert flows from the Campbell Avenue drainage to the Copeland Canal and the Cinder Lake drainage field. Anticipated berm size is 6' high, 10' top and 3:1 side slopes.
- Two additional berms for infiltration are proposed between E. Campbell Berm and Landfill Road to provide additional layers of protection.
- This berm is proposed on the south side of the Copeland Ditch spoils berm near the end of the ditch. Surface topography and experience from the 2010 monsoon season indicates that in larger events, runoff from the Copeland Canal can begin to migrate south and will flow toward the Landfill. This additional berm will stop the water from flowing that direction and allow it to infiltrate into the cinders.
- This berm is proposed on the Forest Service property directly west of the Landfill's west property line (request by City of Flagstaff) to prevent flows from entering the landfill in the event that Items d., e. and f. fail or are overwhelmed by runoff. Similar berm configuration at (d) above.

Interim #4 (5/3/2011)

Road Treatments

Narrative of treatments is described in narrative under Interim #4 Road Treatments above. Up to 23 miles of previously implemented BAER waterbar treatments will be maintained and improved within and immediately adjacent to the burned area. These roads are currently contributing a large source of

concentrated flow and a source of sediment to subdivisions and private land located east of the burned area.

Interim #4 (5/3/2011)

Protection/Safety (Gates) Treatments

Interim #4 (5/3/2011)

Narrative of treatments is described in narrative under Interim #4 Protection/Safety (Gates) Treatments above.

2 Forest system roads will have barrier gates installed including the following; gate at the end of Sunset Dr. for public safety during flood events along the Copeland ditch, gate at the Hwy 89/FR776 junction for public safety during flood events that compromise FR776.

In addition, The Forest used its personal and last 4 gates cached to install at both ends of FR 420 last year. Although there are only 2 gates, they are double gates due to the width of FR420 necessitating 2 gates at each end. 4 gates are included in this BAER request to replace the Forest cache and have them accessible for the future.

I. Monitoring Narrative:

Both implementation and effectiveness monitoring will occur.

Implementation Monitoring: This monitoring will occur as the treatments are installed and applied. CORs and Inspectors will monitor all contracted treatments to ensure proper implementation. In particular the following will occur:

Aerial Mulching and Seeding: a COR and/or inspectors will monitor to ensure: 1) proper application rates of seed and straw; 2) that all identified treatment units are covered; 3) that the treatment is applied as designed; and 3) the proper guidelines are followed regarding effective soil coverage.

Cost: The cost of the implementation monitoring is included in the treatment costs.

Effectiveness Monitoring:

8/19/2010: This Interim #2 report requests monitoring funding to determine treatment effectiveness. The outline below details the monitoring plan and costs.

Schultz Fire BAER Treatment Effectiveness Monitoring Plan Outline

1. Monitoring questions

- Did these treatments increase soil cover?
- On what slopes were the mulching and seeding remain intact and effective?
- Did these treatments provide for soil stabilization and reduce erosion?
- Was seeding more effective, less effective or similar to mulched versus non mulched locations?
- Was seeding more effective, less effective or similar in plant response where applied over previously mulched areas compared to seeding first followed by mulching.

2. Measurable indicators

- a) Determine location and extent based on the BAER treatment plan.
- b) Measurable indicators for the seeding/mulching treatments include:
 - Mulch cover and depth

- Presence and percent cover of germinating seed, grass and forbs
- Visual signs of soil erosion

3. Data collection techniques (consistent with appropriate protocols)

Treatment sites will need to reflect similar vegetation habitat types, soil types as recognized by Terrestrial Ecosystem Survey map units, slope, aspect, and elevation. Data collection will include:

- Soil mulch cover will include litter (cover of mulch and depth of mulch)
- Plant cover and frequency of seeded species, native species and invasive species.
- Geo-referenced photo points

4. Analysis, evaluation, and reporting techniques

If we have an adequate number of samples and meet assumptions, we will statistically compare various response variables among treatments using analysis of covariance, using data on environmental parameters such as slope or first year post-treatment response variables as potential covariates. Otherwise, non-parametric approaches will be used, in combination with repeat photographs and GPS locations.

5. Monitoring and report timeframes

Initial plots will be installed in August or early September, 2010 to measure percent mulch cover and depth and capture response of seeded species to monsoonal moisture. These plots will be revisited following major storm events and in the spring of 2011 to assess treatment effectiveness, then again following the onset of monsoonal moisture in 2011. An initial monitoring report will then be prepared.

Estimated Costs

Personnel – 2 GS-09s for 10 days each = \$12,000.

Vehicle = \$3,000 for 6 months of FOR and mileage.

Total estimate = \$15,000.00

Interim #4 (5/1/2011) Monitoring:

None is requested for Interim #4 since the one year BAER timeframe ends the first week of July and would not give ample time to monitor treatment effectiveness with BAER funds. It is probable that the Forest and Rocky Mountain or Intermountain Research Station will implement effectiveness monitoring of woodstrand treatments.

Part VI – Emergency Stabilization Treatments and Source of Funds

Interim # 4

| Line Items | Units | Unit Cost | NFS Lands | | Other \$ | Other Lands | | | | All Total \$ |
|--|----------|-----------|------------|-------------|----------|-------------|--------|------------|------------|--------------|
| | | | # of Units | BAER \$ | | # of units | Fed \$ | # of Units | Non Fed \$ | |
| A. Land Treatments | | | | | | | | | | |
| Wheat Straw Mulch | Acres | 1000 | 2571 | \$2,571,000 | \$0 | | \$0 | | \$0 | \$2,571,000 |
| Wheat Straw Mulch | Acres | 600 | 900 | \$540,000 | | | \$0 | | \$0 | \$540,000 |
| Aerial Seeding | Acres | 65 | 5600 | \$364,000 | | | \$0 | | \$0 | \$364,000 |
| Wheat Straw Mulch | Acres | 750 | 1007 | \$755,250 | | | \$0 | | \$0 | \$755,250 |
| Aerial Seeding | Acres | 50 | 1146 | \$57,300 | | | \$0 | | \$0 | \$57,300 |
| Invasive Plants | Acres | 2.60 | 10000 | \$26,000 | \$0 | | \$0 | | \$0 | \$26,000 |
| Woodshred Mulching | Acres | 1700.00 | 331 | \$562,700 | | | \$0 | | \$0 | \$562,700 |
| Subtotal Land Treatments | | | | \$4,876,250 | \$0 | | \$0 | | \$0 | \$4,876,250 |
| B. Channel Treatments | | | | | | | | | | |
| Debris Jam Removal | Crew | 3500 | 2 | \$7,000 | \$0 | | \$0 | | \$0 | \$7,000 |
| Diversion construct. | job | 20,000 | 1 | \$20,000 | \$0 | | \$0 | | \$0 | \$20,000 |
| Diversion mtce | job | 5000 | 3 | \$15,000 | \$0 | | \$0 | | \$0 | \$15,000 |
| Diversion construct. | Lin. Ft. | 40 | 11200 | \$444,700 | | | \$0 | | \$0 | \$444,700 |
| Diversion mtce | Acres | 27 | 1000 | \$27,000 | | | \$0 | | \$0 | \$27,000 |
| Diversion mtce | Lin. Ft. | 6 | 10100 | \$60,600 | | | \$0 | | \$0 | \$60,600 |
| Subtotal Channel Treat. | | | | \$574,300 | \$0 | | \$0 | | \$0 | \$574,300 |
| C. Road and Trails | | | | | | | | | | |
| FDR 420 culvert removal | Miles | 666.67 | 30 | \$20,000 | \$0 | | \$0 | | \$0 | \$20,000 |
| FDR 146 storm proofing | Miles | 6571.42 | 7 | \$46,000 | \$0 | | \$0 | | \$0 | \$46,000 |
| Water bar/culverts | Miles | 2527.73 | 23 | \$58,000 | | | \$0 | | \$0 | \$58,000 |
| Water bar/culv. Mtc. | Miles | 1264.00 | 23 | \$29,000 | | | \$0 | | \$0 | \$29,000 |
| Storm patrol | Trips | 900 | 10 | \$9,000 | \$0 | | \$0 | | \$0 | \$9,000 |
| Subtotal Road & Trails | | | | \$162,000 | \$0 | | \$0 | | \$0 | \$162,000 |
| D. Protection/Safety | | | | | | | | | | |
| Warnings | Each | 5000 | 1 | \$5,000 | \$0 | | \$0 | | \$0 | \$5,000 |
| Barriers/Gates | Each | 1000 | 6 | \$6,000 | | | \$0 | | \$0 | \$6,000 |
| Heritage Sites | Sites | 833.33 | 6 | \$5,000 | \$0 | | \$0 | | \$0 | \$5,000 |
| Implementation Team | Each | 47000 | 1 | \$47,000 | \$0 | | \$0 | | \$0 | \$47,000 |
| Subtotal Structures | | | | \$63,000 | \$0 | | \$0 | | \$0 | \$63,000 |
| E. BAER Evaluation | | | | | | | | | | |
| | | 66000 | 1 | | \$66,000 | | \$0 | | \$0 | \$66,000 |
| Subtotal Evaluation | | | | --- | \$66,000 | | \$0 | | \$0 | \$66,000 |
| F. Monitoring | | | | | | | | | | |
| Effective. Monitoring | Days | 750 | 20 | \$15,000 | \$0 | | \$0 | | \$0 | \$15,000 |
| <i>Insert new items above this line!</i> | | | | \$0 | \$0 | | \$0 | | \$0 | \$0 |
| Subtotal Monitoring | | | | \$15,000 | \$0 | | \$0 | | \$0 | \$15,000 |
| G. Totals | | | | \$5,690,550 | \$66,000 | | \$0 | | \$0 | \$5,756,550 |
| Previously approved | | | | \$4,160,550 | | | | | | |
| Confirmed savings | | | | \$400,000 | | | | | | |
| Total for this request | | | | \$1,130,000 | | | | | | |

5/4/2011--To date, approximately \$2,875,000 has been spent and \$4,160,550 has been approved. As a result of actual contracting costs for aerial mulching and other approved activities coming in less than originally estimated, there is a cost savings of approximately \$1,285,000.

PART VII - APPROVALS

1. /s/ M. Earl Stewart May 4, 2011
Forest Supervisor (signature) Date

2. _____
Regional Forester (signature) _____
Date