

Date of Report: 3/16/2006

**BURNED-AREA REPORT**  
(Reference FSH 2509.13)**PART I - TYPE OF REQUEST**

## A. Type of Report

- ☐ 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)
- ☐ 2. Interim Report
  - ☐ Updating the initial funding request based on more accurate site data or design analysis
  - ☐ Status of accomplishments to date
- ☒ 3. Final Report (No Treatment is Planned)

**PART II - BURNED-AREA DESCRIPTION**A. Fire Name: Quarry FireB. Fire Number: VA-VAF-060028C. State: VirginiaD. County: Botetourt and BedfordE. Region: 08F. Forest: George Washington and Jefferson NFsG. District: Glenwood PedlarH. Date Fire Started: March 4, 2006I. Date Fire Contained: March 9, 2006J. Suppression Cost: \$600,000

K. Fire Suppression Damages Repaired with Suppression Funds

- 1. Fireline waterbarred (miles): 2
- 2. Fireline seeded (miles): 2
- 3. Other (identify): FDR186-2 (2.2), 3078 (300 feet).

L. Watershed Number: 030101011101 (89%); 030101010403 (6%); 020802011403 (5%)M. Total Acres Burned: 1156

NFS Acres(815) Other Federal (135) State ( ) Private (206)

N. Vegetation Types: 85% Mixed oak, 15% mixed yellow pine and oak, mountain laurel shrub.O. Dominant Soils: Typic Hapludults, Typic Dystrudepts, Typic FragiudultsP. Geologic Types: Metasedimentary bedrock (metaconglomerate, metasandstone, quartzite, metasilstone, phyllite) and talus and Quaternary alluvial fans.

Q. Miles of Stream Channels by Order or Class: 0.3 miles – perennial; 2.8 miles - intermittent

R. Transportation System

Trails: 2 miles      Roads: 3.2 miles

### **PART III - WATERSHED CONDITION**

A. Burn Severity (acres): 981 (low) 175 (moderate)    (high)

B. Water-Repellent Soil (acres): variable absorption rates, some natural repellancy if mineral soil

C. Soil Erosion Hazard Rating (acres):  
376 (low) 730 (moderate) 50 (high)

D. Erosion Potential: 0.11 tons/acre

E. Sediment Potential: 1.7 cubic yards / square mile

### **PART IV - HYDROLOGIC DESIGN FACTORS**

A. Estimated Vegetative Recovery Period, (years): 1 to 2

B. Design Chance of Success, (percent): n/a

C. Equivalent Design Recurrence Interval, (years): 5

D. Design Storm Duration, (hours): 24

E. Design Storm Magnitude, (inches): 4.8

F. Design Flow, (cubic feet / second/ square mile): 201

G. Estimated Reduction in Infiltration, (percent): 0

H. Adjusted Design Flow, (cfs per square mile): 201

### **PART V - SUMMARY OF ANALYSIS**

A. Describe Watershed Emergency: No watershed emergency exists. The Quarry Fire occurred when the lower duff layer and the soils were moist. This condition resulted in a predominately light to moderate intensity burn where only the upper half or so of the forest duff layer was consumed by the fire. There were a few very limited spots of high intensity burn and some areas did not burn at all. Because the remaining forest floor layer covered nearly 100% of the soil surface, soil water repellancy and infiltration rates were not significantly affected, and erosion, overland flow and stream flows should remain nearly normal. Watershed condition remains sound and any on-site or off-site values at risk have not been impacted beyond natural pre-burn conditions.

**Quarry Fire BAER Assessment Resource Reports follow**

On March 13, Tom Bailey, Carol Croy, Tom Collins, and Richard Patton performed an on-site field assessment of the Quarry Fire. Their assessment included collecting data and making visual observations of the burned area from the upper slopes of the fire (along the Blue Ridge Parkway), the western end (Salt Pond Road), the lower slopes (Quarry Road), and on the eastern end (Day Creek Road). In addition, Fred Huber and Mike Donahue provided the Threatened, Endangered and Sensitive Species portion of this assessment. They had worked on suppressing the Quarry Fire a few days earlier and were already quite familiar with the burned area. Following are their individual reports.

#### Soil Resource Report:

The upper slopes and drainages have soils with large areas of surface rock. Rock outcrops are also common on upper slopes and ridges. Unconsumed pine needles and leaf litter were observed over the majority of the area. Large fuels were not consumed and were only partially burned, resulting in only a moderate burn severity around them (no white ash was observed).

Some small areas burned hot enough to consume shrub layer canopies. This loss of the shrub cover could result in some short term accelerated soil movement. These shrub layers did not appear to be killed, however, and leaf-out is expected to occur within 3-4 weeks. Due to the abundant slope breaks, dead and down trees, high surface rock content and unburned areas, this potential accelerated soil movement is not expected to travel very far down the slope. The higher burn severity areas described above were near ridge tops (or on ridge tops) in the upper parts of the burned watersheds. Large blocks of lower burn severity were between the ridges and the riparian areas and stream channels.

Very little high burn severity was observed in the burned area. Very little white ash was evident and most areas had indications of low burn height and burn duration. Soil hydrophobicity (water repellency) was variable where tested. Blackened organics appeared to absorb water readily. This is the predominate condition for the burned area.

Possible values at risk were Forest Service roads 3078, 186-2, 191, the Blue Ridge Parkway and Forest Trail 3004. Other values considered were private homes along Salt Pond and Quarry roads as well as the roads themselves. The Forest Service has a horse trail parking area and rest rooms about a mile downstream from the burned area along Day Creek. All these were assessed for possible impacts from the fire and suppression activities but were considered to be not at risk due in part to the very limited effects to the soils and overall watershed condition discussed above. In my opinion no watershed emergency exists.

Thomas W. Bailey  
Forest Soil Scientist  
George Washington and Jefferson National Forests  
March 15, 2006

#### Hydrology Report:

Over most of the burn area, there are only small ephemeral and intermittent streams, which are located along the mid and lower slopes. The only perennial stream is Day Creek, which is perennial to a point about 0.3 mile inside the fire line, and then becomes intermittent farther upslope.

The upper layer of leaf litter was burned, but there is unburned organic matter (duff) underneath. Thus there is still protective groundcover over almost all the burn area, and therefore very little erosion is expected. The burn in the vicinity of Days Creek was especially light and spotty.

With the retention of groundcover, there should be no reduction in infiltration. Also, there appeared to be little tree mortality. Thus no increase in overland flow or in storm flows or peaks is anticipated.

The only water resource impact that noted was caused by suppression efforts. A culvert crossing on Day Creek had been badly damaged by a hurricane, and was impassible. To access the fire, a crossing was constructed over the creek at this culvert. After the fire, the crossing (including the damaged culvert) was removed, the channel reshaped and armored, and the banks seeded and mulched. These activities resulted in sediment that was noticeable below the crossing. These effects are minor and short-term.

Richard Patton  
Hydrologist  
March 14, 2006

### Geology Report:

#### **Landslides are threats to human life, safety and property values.**

**Natural landslides:** Landslides are geologic hazards that may be a post-fire threat to human life and safety and property. The Quarry Fire is located in the steep slopes of the Blue Ridge mountains. Landslides are a natural process that occur occasionally and are part of the natural erosion that forms the Blue Ridge mountains. Landslides in the Blue Ridge tend to occur as a result of 1) hurricanes, or 2) intense or prolonged rainfall.

The most common and most dangerous landslides associated with these storms in the Blue Ridge are debris slides/debris flows. Debris slides typically begin on the upper, steep slopes of the Blue Ridge, often in the heads of hollows. The debris slide then slips downslope and gathers more material as it gouges the soil, colluvium, and vegetation. The debris slide transforms into a highly-destructive, rapid-moving debris flow that moves down the hollow to the alluvial fan at the base of the mountain. Debris flows include uprooted trees and large rocks. Human life and property in the path of a debris flow are at risk of destruction. The debris flow's path of destruction can extend far from its point of origin: a debris flow can travel one or two miles from the source area of the debris slide.

The Quarry Fire is located in an area with land ownership typical for this part of the Blue Ridge. The upper slopes of the Blue Ridge where debris slide/debris flows typically originate is mainly in federal ownership (National Forest and National Park Service, Blue Ridge Parkway). The lower slopes of the Blue Ridge where debris flows have highly destructive paths are in private ownership. For example, on June 27, 1995, about 25 miles north of the Quarry Fire, an intense rainstorm triggered more than 30 debris slides/debris flows that originated on the National Forest on the Blue Ridge and flowed onto private land on the alluvial fans at the base of the Blue Ridge between Glasgow and Buena Vista.

No active or recent debris slides were observed in the Quarry Fire area. The forest cover was generally continuous across the landscape. The burn severity over most of the Quarry Fire was generally low and the fire did not significantly reduce the forest cover. It is my opinion that the Quarry Fire did not significantly affect 1) the pre-existing potential for landslides, including debris slides/debris flows and 2) the associated pre-existing risk to human life and property on private land below the National Forest and National Park Service lands.

**Landslides associated with land use:** Construction of roads and other modifications, particularly on steep slopes, can increase the potential for landslides by removing support from natural slopes and in other ways adversely affect existing slope stability conditions. In some geologic settings, road cut-slopes and fill-slopes may be subject to failure. Cut-slope failures or fill-slope failures are landslides (mass movements). Landslides may be a post-fire threat to human life and safety and property.

Fire fighting activities that might adversely affect slope stability include: 1) emergency road construction to provide access to fight fire, 2) a severe burn over a large area above a road cut-slope or fill-slope or road fill crossing of a creek, and 3) fire line (hand or dozer) construction diverting water into a road cut-slope or fill-slope. No such conditions were observed in areas inspected on the Quarry Fire.

The Salt Pond road is along the west and south portions of the Quarry Fire perimeter. The Salt Pond road along the southern perimeter includes the National Forest (burned area) above the road, and private land (unburned area) below the road. The Salt Pond road showed stable cut-slopes in competent geologic formations. No signs of cut-slope or fill-slope failure were observed along the Salt Pond road. The drainages crossed by the Salt Pond road were broad swales, not incised, eroding channels.

The other federal road that forms a major part of the Quarry Fire perimeter is the Blue Ridge Parkway (BRP). The BRP forms the northern perimeter and is located along the top of the Blue Ridge above the National Forest. Because the BRP is located at the top of the Blue Ridge, the failure of a road fill slope would create a debris slide/debris flow similar to a natural debris slide/debris flow. In North Carolina, the September 2004 Hurricanes Frances and Ivan triggered BRP road fill failures. Some BRP road fill failures swept more than one mile downslope through the Pisgah National Forest. Because some Quarry fire or fire-related activities (such as dozed line construction) might potentially affect the stability of the slopes, the BRP road fills were observed for evidence of such activities. The only evidence of activity observed was vegetation on the BRP road fills that was burned as part of the Quarry Fire suppression effort. This burning of vegetation, much of it grass and brush, is not expected to have a significant effect on the stability of the BRP road fills.

In my opinion the Quarry Fire did not significantly affect 1) the pre-existing potential for landslides associated with land use, including road cut-slope and fill-slope failures, and 2) the associated pre-existing risk to human life and property on private land below the National Forest and National Park Service lands.

Thomas K. Collins  
Geologist  
George Washington and Jefferson National Forests  
March 15, 2006

#### Threatened, Endangered and Sensitive Species Report:

Mike Donahue and myself had worked on suppressing the Quarry Fire and are familiar with the burned area. We reviewed our database for threatened, endangered and sensitive (TES) species for possible impacts caused by the Quarry Fire. There are no known locations of any TES species in the area of the fire. Based on this and our knowledge of the area there are no remedial actions that need to be taken.

Fred Huber  
Forest Botanist  
March 14, 2006

#### Wildlife and Fisheries Report:

Wildlife and fish species of public demand include white-tailed deer, black bear, wild turkey, ruffed grouse, and trout.

Over most of the burn area the fire intensity appeared to be low to moderate with only a few areas in pine-dominated slopes that exhibiting moderate to high fire intensity affects. There are only small ephemeral and intermittent streams, located along the mid and lower slopes. The only perennial stream is Day Creek, which is

perennial to a point about 0.3 miles inside the fire line, and then becomes an intermittent stream above (from Hydrology report).

Fire is a natural disturbance event in the Blue Ridge region where this fire occurred. The fire effects observed in the Quarry fire are generally considered beneficial for the ecosystem involved. Low to moderate fire intensity, with patches of higher intensity fire behavior in pine and pine/oak dominated ridges, provides suitable conditions for pine and oak regeneration. In addition, it can result in natural thinning of this mostly mature overstory, and create patches of early successional woody and grassy/herbaceous habitat in an overall forested landscape. All of these conditions provide suitable and/or enhanced habitat conditions for white-tailed deer, black bear, ruffed grouse, and wild turkey. In fact, during our field investigation we observed a flock of wild turkeys in the burn area foraging on dead insects. A male turkey was actively displaying (it is the beginning of their breeding season).

Fire intensity in the vicinity of Day Creek was very light, with a mosaic of unburned areas observed throughout the area and the perennial channel itself not burned. Day Creek is not stocked with trout by the Virginia Department of Game and Inland Fisheries, and such light fire intensity would not affect what native trout species could be there.

The only impact to Day Creek noted was caused by a culvert crossing damaged by a previous hurricane event and used for suppression activities. The damaged culvert and crossing was subsequently removed, the channel reshaped and armored with native stone, and the banks seeded and mulched. These activities caused increased sedimentation to Day Creek that was noticeable below the crossing. However, this sedimentation is minor and with restoration activities already completed, temporary in nature. Thus, any native trout species in Day Creek should not experience long-term negative effects from this activity.

Carol Hardy Croy, Ph.D.  
Forest Wildlife Biologist  
George Washington and Jefferson National Forests  
March 15, 2006

B. Emergency Treatment Objectives: No treatments are planned.

C. Probability of Completing Treatment Prior to First Major Damage-Producing Storm: Not applicable as no treatment is planned.

Land \_\_\_ % Channel \_\_\_ % Roads \_\_\_ % Other \_\_\_ %

D. Probability of Treatment Success

|                       |
|-----------------------|
| Years after Treatment |
|-----------------------|

|         | 1 | 3 | 5 |
|---------|---|---|---|
| Land    |   |   |   |
|         |   |   |   |
| Channel |   |   |   |
|         |   |   |   |
| Roads   |   |   |   |
|         |   |   |   |
| Other   |   |   |   |
|         |   |   |   |

E. Cost of No-Action (Including Loss):

F. Cost of Selected Alternative (Including Loss):

G. Skills Represented on Burned-Area Survey Team:

|   |  |   |                                      |                          |
|---|--|---|--------------------------------------|--------------------------|
| <input checked="" type="checkbox"/> Hydrology | <input checked="" type="checkbox"/> Soils    | <input checked="" type="checkbox"/> Geology | <input type="checkbox"/> Range       | <input type="checkbox"/> |
| <input type="checkbox"/> Forestry             | <input checked="" type="checkbox"/> Wildlife | <input type="checkbox"/> Fire Mgmt.         | <input type="checkbox"/> Engineering | <input type="checkbox"/> |
| <input 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 type="checkbox"/> GIS         |                          |

Team Leader: Ken Luckow

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#### H. Treatment Narrative:

(Describe the emergency treatments, where and how they will be applied, and what they are intended to do. This information helps to determine qualifying treatments for the appropriate funding authorities. For seeding treatments, include species, application rates and species selection rationale.)

Land Treatments: None.

Channel Treatments: None.

Roads and Trail Treatments: None.

Structures: None.

#### I. Monitoring Narrative:

(Describe the monitoring needs, what treatments will be monitored, how they will be monitored, and when monitoring will occur. A detailed monitoring plan must be submitted as a separate document to the Regional BAER coordinator.)

No treatments are being proposed, therefore, no monitoring will be proposed with use of BAER funds.

## **Part VI – Emergency Rehabilitation Treatments and Source of Funds by Land Ownership**

[illegible]

## **PART VII - APPROVALS**

1. /s/ Kenneth G. Langraf  
(for) Forest Supervisor (signature)

3/16/2006  
Date

2. \_\_\_\_\_  
Regional Forester (signature)

Date \_\_\_\_\_