TECHNICAL SPECIALIST'S REPORT – BURNED AREA EMERGENCY RESPONSE

Resource: Roads
Fire Name: Waldo Canyon **Month/Year:** 7/2012

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I. Potential Values at Risk

Potential values at risk identified and addressed in this report include: Forest Service system roads, Forest Service administrative roads with special use permits (Colorado Springs Utilities), and private utilities on Forest Service. Forest Service system trails, Meadow Ridge and Thunder Ridge Campgrounds, and Promontory Picnic Area are addressed in the Trails and Recreation Facilities Report.

II. Resource Condition Assessment

A. Resource Setting

Roads:

The GIS Specialist for the BAER team provided a map of all Forest Service system and non-system roads in the burn area. Thirteen system roads totaling approximately 20.5 miles and four administrative roads (closed but under special use permit to Colorado Springs Utility) totaling 4.86 miles were identified within the burn area. A number of non-system (user created) roads were also identified.

System Roads:

- FSR 300 Rampart Range Road, 300.M, 300.P, 300.Q, 300.S
- FSR 301
- FSR 302
- FSR 303
- FSR 305
- FSR 306, 306.A, 306.B, 306.C

Administrative Roads (closed to the public):

- FSR 300.N
- Lower portion of FSR 303
- FSR 303.A
- FSR 304

Non-system roads:

- Spurs leading east from FSR 305 into Sand Gulch

Forest Service Roads 306, 306.A, 306.B, 306.C are Maintenance Level (ML) 5 roads (high degree of user comfort) leading to Rampart Reservoir, two campgrounds, and a picnic area which are all heavily used recreation facilities. FSR 300, also called Rampart Range Road, is a heavily used ML 3 road (suitable for passenger cars) providing direct forest access from both Colorado Springs and Woodland Park. Other system roads within the burn area receive moderate use and are ML 2 (suitable for high

clearance 4wd vehicles) and ML 3. Administrative roads are closed to public use and are permitted for use and maintained by Colorado Springs Utilities. Non-system roads are user created routes that are not included in the Forest road maintenance plan.

B. Findings of the On-The-Ground Survey

1. System roads with resource condition resulting from the fire:

    a. FSR 300 (Rampart Range Road): North of FSR 303, FSR 300 is generally located on a ridge line with minimal potential impact from the burned area other than hazard trees which are addressed in a separate specialist report. There are 12 miles of ML 3 roadway which have been impacted by burned area.
    b. FSR 300.M, 300.P, 300.Q, 300.S: These roads are short spur roads from FSR 300 providing dispersed camping access and has little to no impact due to burned area.
    c. FSR 301: This road is under a special use permit and is a short segment providing access to a gated private in-holding, Eagle Lake Camp. This segment was observed to have minimal impact from burned areas.
    d. FSR 302: This road provides recreational access from FSR 303. There are 2.5 miles of ML 2 roadway which have been impacted by burned area.
    e. FSR 303: This road provides recreational access from FSR 300 and also utility access to Northfield Reservoir. Approximately the upper 2.6 miles is open to public access, the lower road is gated and access is limited to Colorado Springs Utility. There are 2.5 miles of ML 3 roadway which have been impacted by burned area, ending just above the gate closure.
    f. FSR 305: FSR 305 is located on a ridge line on the edge of the burn and no impact was observed. There are numerous non-system roads off FSR 305 that access the burned area, we recommend these be barricaded to prevent vehicle access to the steep burned slopes of Sand Gulch.
    g. FSR 306 and 306.A, 306.B, 306.C: Theses are paved roads providing access to developed recreational sites and to the dam at Rampart Reservoir. The areas immediately adjacent to the roads do not have significant burned area; however the drainages up-gradient from the roads have significant burned area and there is a potential to impact drainage crossings at the roads. There are 4 miles of ML 5 roadway which have been impacted by burned area.

Administrative Roads with resource condition resulting from the fire:

    a. FSR 300.N: This is a gated road for utility access and is not drivable. Burned areas may impact runoff at the upper 0.3 mile section of this road, the road below this section is steep and in poor condition, potential for impact due to burned area is minimal.
    b. Lower portion of FSR 303: This road is gated and provides access to Northfield Reservoir and FSR 303.A. Areas immediately adjacent to the road have limited burned area however the drainage above this road has significant burned area that may impact flows adjacent to the road, drainage structures located along the road, and Colorado Springs Utilities structures located adjacent to the road.
    c. FSR 303.A: This road is below Northfield Reservoir and provides access to utility infrastructure. The road is located adjacent to the Monument Creek drainage channel. This road is outside the burned area; however large burned drainages are located above the road (south) and there is significant potential for increased runoff and sediment from these areas that will impact road culverts and the roadway prism. This resource condition has been addressed with the special use permittee (Colorado Springs Utilities).
    d. FSR 304: This is a gated road with minimal existing maintenance and appears to be unused but would provide access for power line maintenance. Burned areas were observed along the road corridor and will impact road drainage. Damaged power poles were observed at the end of this road and brought to the attention of the BAER liaison officer for communication to the utility owner.

Non-system Roads with resource condition resulting from the fire:

a. FSR 305 spurs: A number of user created non-system routes running east from FSR 305 into Sand Gulch within the burn area. These roads are not maintained and there is no plan to incorporate them into the forest road system. Treatment for these non-system roads is addressed in the Closure Report.

2. Consequences of the fire on values at risk

The Values at Risk for roads subject to increased runoff, sediment, and debris flows are:

a. Threat to infrastructure:
Damage to road prism and associated drainage facilities resulting from increased runoff, sediment, and debris from burned areas. No specific risk to human life was identified in the assessment of roads however road failure can have a potential risk to life.

The following conditions describe in detail the consequences of the fire on Values at Risk:

a. There is an immediate risk of hazard trees adjacent to the roads posing life and safety threat to BAER implementation members and other personnel working on or around roads, this threat is addressed in a separate specialist report. Hazard trees also pose a threat to infrastructure creating the potential for damage to the roadway prism and drainage structures.
b. Burned area slopes pose a risk to road infrastructure due to potentially high runoff, and sediment and ash laden flows. Increased flows may cause capacity of drainage features to be exceeded; transported sediment may cause plugging of culverts and other drainage facilities. These impacts may cause uncontrolled overflow and damage to road prism with potential for structural failure of roads.

III. Emergency Determination

The BAER team has concluded these risks pose an emergency due to:

- Risk to infrastructure

An emergency determination for threat to property was made on Forest Service system and administrative roads listed below due to the risk of increased flooding, sediment and debris flow.

FSR 300 (south of FSR 303 junction), FSR 302, FSR 303, FSR 303.A, FSR 304, FSR 306, FSR 306.A, FSR 306.B, FSR 306.C.

IV. Treatments to Mitigate the Emergency

A. Treatment Type:

Treatment Objectives: Minimize risk of road failure in the burn area through the placement and maintenance of effective water control measures. These treatments are primarily designed to prevent the channeling of water on roads and transport of sediment and ash into existing drainage features. These treatments are also designed to reduce erosion and further watershed degradation by ensuring the control of drainage within the road prism. Minimize risk of damage to roadway prism and drainage structures through hazard tree removal.

Road Treatments Description: An emergency determination was made that the following BAER treatments are required on segments of Forest Service system roads and administrative roads to protect infrastructure.

- Cleaning of culverts
- Removal sediment at culvert entrances
- Erosion control measures at culvert inlets
- Hazard tree removal
- Installation of new culverts
- Improvement of existing culverts
- Improved road ditching and cross-slope grading
- Improvement of existing rolling dips
- Addition of rolling dips where spacing is inadequate

Where culverts have significant steep burned slopes immediately above the culvert entrance, additional treatment is proposed though use of erosion control logs on contours.

Refer to attached map for locations of road treatments.

V. Discussion/Summary/Recommendations

In summary, the prescribed treatments for roads are designed to help preserve infrastructure while protecting the integrity of the Forest system roads. Road treatments are designed to minimize damage caused by hazard trees, increased runoff and sediment transport across steep slopes, blowouts/roadway failures and erosion from drainage channels. Installation of the prescribed road treatment will help to mitigate potential risk and further road damage.

The risk assessment for roads showed a very likely probability of damage with risk of moderate consequences resulting in a very high risk.

References:

Burned Area Emergency Response Treatments Catalog
Chapter 2 – Land Treatments
Chapter 4 – Road and Trail Treatments

Forest Service Handbook
FSH 2509.13 – Burned Area Emergency Rehabilitation Handbook
Consulted Forest Service Technical Specialists
David Young, BAER Soil Scientist
Brad Rust, BAER Soil Scientist
Clint Dalton, BAER Cultural Heritage Specialist

Appendices:

1 Treatment Location Photos

APPENDIX 1: TREATMENT LOCATION PHOTOS

FSR 300 – Install 24” CMP

FSR 306 – Improve existing 48” CMP (Profile View)

FSR 306 – Install Erosion Control Measures at Culvert Inlet

FSR 303 – Recondition Road