

**Burned Area Emergency Response  
Roads/Engineering Report  
Angora Fire  
Lake Tahoe Basin Management Unit  
July 7, 2007**



Submitted by: \_\_\_\_\_ / s /  
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**Angora Fire  
Roads  
BAER SPECIALIST REPORT**

Lake Tahoe Basin Management Unit  
Region - 5  
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I. Resource Condition Assessment

- A. Figure A-1 shows an overview and the burn severity for the Angora Fire.
- B. There are approximately 3.3 miles of National Forest System Roads (NFSR) within the Angora Fire burn, of which 2.5 miles are proposed for treatments. There is approximately 5.5 miles of decommissioned roads with no treatments proposed other than the installation of drainage armor on the 48"x72" culvert in section 12. The maintenance level breakdown for system and decommissioned roads is shown in the table below:

Maintenance Level	Approximate Length, Miles
3	0.9
2	1.3
1	1.1
0	5.5

- C. The dominant road features on the landscape are Angora Ridge Road (1214), and Tahoe Mountain Road (12N19). Boulder Mountain Dr. (no number assigned) is located in the neighborhood between Lake Tahoe Blvd. and Cone Rd.
- D. Other roads inside the burned are identified by number in the INFRA data base and listed as decommissioned, maintenance level-0, not maintained, not needed. Further assessment of these roads needs to be conducted at the local level to determine any restoration needs and long term management strategies.

- E. All roads surveyed are within the burn area, located on government lands and under the jurisdiction of the Lake Tahoe Basin Management Unit.
- F. There is also approximately 3.5 miles of system and 1.7 miles of non-system foot and bike trails within the burn. On the ground reconnaissance was not possible. Further assessment of the trails, needs to be conducted at the local level. To determine any restoration needs.
- G. Findings of the On-The-Ground Survey:
  - 1. The Angora Fire burned approximately 3,100 acres. Of which 34 percent is determined to be of high intensity. The affects of the fire were, diminished ground cover and vegetation. The condition is expected to result in increased, flashy runoff; down slope movement of fine ash and sediment; and rock fall, until vegetation is reestablished.
  - 2. On the ground and map reconnaissance of roads within the burn were conducted on those roads that were accessible and drivable with high clearance vehicle. Forest Service system roads with the exception of Angora Ridge road (1214) and Boulder Mountain Dr. are native surface designed low on the slope constructed outsloped with rolling dips and run outs, with small cut and fill slopes and limited drainage structures.
  - 3. The majority of the decommissioned roads are located on the sandy soils in the flats adjacent to the neighborhoods, these roads have been blocked with gates and natural barriers, many of these roads were opened and driven on during the fire suppression effort.
  - 4. Threats to life and property affects on water quality and soil productivity and the Forest Service Infrastructure (roads) are considered the values at risk. The proposed road treatments could reduce these risks. See appendix C for road treatments specifications.
  - 5. There is a potential for roadside hazard trees along the Angora Ridge road (1214) and Tahoe Mountain road (12N19). The threat is to the life and safety of road users, interference with the proper function of drainage facilities, as well as “denial of access” until roads can be cleared.

6. The placement of rock in roadway drainage features such as liner roadway ditches, rolling dips and associated run-outs, fill slopes, relief dips near culvert crossings and culvert inlets and outlets will help to armor the road features for the increased post burn run off, and serve as energy dissipaters for the transported sediment.

## II. Emergency Determination for Road System

This assessment identifies an emergency related to the road system based on the following threats:

- A. Life and Safety—flash flooding, rock fall, roadside hazard trees.
- B. Loss of Control of Water—blocked or plugged drainage features.
- C. Water Quality both on and off site.

## III. Treatments to Mitigate the Emergency

The following treatments were identified as BAER treatments for the Angora Fire burned area:

- A. Restore Drainage Function.
- B. Install Drainage Armor
- C. Hazard Tree Mitigation
- D. Baer Warning and Information Signs

These proposed treatments will be implemented on the Angora Ridge road (1214) and include Roadway Hazard Tree Mitigation, and one Baer Warning / Information sign. Boulder Mountain Dr. Install Drainage Armor (rock) in liner roadway ditches or install rock check dams in liner roadway ditches. And install rock at culvert outlet mile post .03 Tahoe Mountain road (12N19) and spur road (12N19A) includes Restoring Drainage Function, Installing Drainage Armor, Hazard Tree Mitigation, and two Baer Warning / Information signs. Road (12N27) includes Restoring Drainage Function, and Installing Drainage Armor. Road (12N20) includes Restoring Drainage Function. Drainage Armor will also be installed at two locations in section 12 on Angora Creek and it's tributary, where they are crossed by a decommissioned road segment.

Estimated cost of the propose treatments is approximately **\$345,033.00** or **\$138,013.00** per mile. See appendix B for treatment cost breakdown.

More detailed treatment descriptions are included in Appendix C, Treatment Prescriptions. The treatments proposed will help protect life and property, the affects on water quality, infrastructure investments, adjacent resource values and assure future availability.

#### IV. Discussion/Summary/Recommendations

- A. Implement treatments as shown on the treatment map and as recommended above.
- B. Conduct further assessments at the local level of decommissioned roads within the Angora burn to determine any restoration needs and long term management strategies.
- C. Conduct further assessments at the local level of system and non-system trails within the Angora burn to determine any restoration needs and long term management strategies.

#### V. References and Contacts

- A. INFRA Travel Routes Inventory.
- B. BAER Team meetings and discussions.
- C. Richard Vacirca (Resource Advisor Angora Fire).
- D. Garrett Villanueva (Trails Coordinator LTBMU).
- E. Bob Slater (County of El Dorado DOT).

#### VI. Appendices

- A. Fire Burn and Treatment Maps
- B. Treatment Cost
- C. Treatment Prescriptions