Introduction

The objective of this report is to present a preliminary emergency assessment of the potential for debris-flow generation from basins burned by the Rice Fire in San Diego County, southern California, in 2007. Debris flows are among the most hazardous geologic phenomena (Turner and Schuster, 1996); debris flows that followed wildfires in southern California are one of the major causes of injury or death. The information produced in this report is intended for use by emergency managers, planners, and land use decision makers who may be responsible for issuing debris-flow warnings, designing mitigation structures, and guiding evacuation decisions for communities at risk.

Results

Of the 53 basins evaluated in this assessment, 43 were identified as having the potential to produce debris flows with volumes less than 1,000 m$^3$ in response to the 10-year recurrence, 3-hour rainfall. These are primarily the small (0.01 to 1.3 km$^2$) basins that drain into Rainbow Creek, the Santa Margarita River, and Stewart Canyon. The remaining 10 basins showed the potential to produce debris flows with volumes greater than 1,000 m$^3$. These are basins with areas between 0.08 and 2.3 km$^2$ that drain into the Santa Margarita River, Rainbow Creek, the Interior 15 corridor, and Stewart Canyon. Debris flows issuing from these basins can impact highways and roads in the area. In addition, neighborhoods, buildings, and people within, or immediately below, any of these basins can be impacted by debris flows.

Use and Limitations of the Map

This map shows potential hazards posed by debris flows as estimates of the median volume of material that can be expected from a recently burned basin as a function of the area burned at high and moderate severity. The map is intended to be used by emergency managers, planners, and land use decision makers who may be responsible for issuing debris-flow warnings, designing mitigation structures, and guiding evacuation decisions for communities at risk. The map is not intended to be used for flood insurance rating purposes under the National Flood Insurance Program. For insurance rating purposes, please refer to the currently effective Flood Insurance Rate Map (FIRM) published by the Federal Emergency Management Agency (FEMA). To obtain a copy of the FIRM, please call 1-888-ASK-USGS.

EMERGENCY ASSESSMENT OF DEBRIS-FLOW HAZARDS FROM BASINS BURNED BY THE 2007 RICE FIRE, SAN DIEGO COUNTY, SOUTHERN CALIFORNIA

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