FLOOD AND DEBRIS-FLOW HAZARDS
ZION NATIONAL PARK GEOLGIC-HAZARD STUDY AREA

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In considering the flood hazard in Zion National Park, the intent of this report is to describe the geologic and geomorphic setting of the park and to show how special engineering studies can be used to determine the best approach for hazard mitigation. The report is devoted to this objective, and the discussion is based on the data collected and analyzed during the field investigations.

The hazard assessment depends on several factors, including (1) the type, nature, and location of the proposed hazard; (2) the frequency and volume of past events; and (3) sediment burial depths (Giraud, 2005). The level of detail for a hazard assessment should determine the active flooding area, the frequency of past events, and the potential for new flooding events.

The stream-flooding hazard is the most significant threat due to the number of visitors and the fact that most come to the park to camp and engage in outdoor activities.

This map provides a basis for conducting site-specific flood and debris-flow hazard investigations. Site-specific investigations can resolve uncertainties inherent in generalized hazard mapping and help ensure safety by identifying the most hazardous areas through detailed mapping, and qualitative assessment of the hazard (Giraud, 2005).

The high flood hazard results from the complex interaction of the area's rugged topography and southwestern climate, which includes intense thunderstorms and heavy showers. The area is subject to flash floods, debris flows, and landslides or rock falls, which are considered to be particularly hazardous, and should be regularly monitored to reduce the hazard.

The drainage system is usually adequate to mitigate the hazard. However, developing areas without adequate flood and erosion control, and poor watershed management practices, can lead to increased flood hazards.

Several existing structures in the park, many historic, are located in flood-hazard areas because of human activities such as placing structures and constrictions in floodplains and erosion-hazard zones. Some sites are also in hazardous areas subject to flooding during cloudburst storms. The area's rugged topography and southwestern climate can lead to increased flood hazards.

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