

EXPLANATION

The Henry's Lake quadrangle is wholly within seismic risk zone 3, defined on the Seismic Map of the United States (Algermissen, 1969) as an area in which "major destructive earthquakes may occur."

If there were renewed movement along one of the active faults in the quadrangle, and an earthquake resulted, parts of the area would be more or less severely marred in one way or another. Manmade structures within these areas would be damaged to varying degrees. Some parts of the area would be inundated by oscillatory waves (seiches) set up in Henry's Lake and Hebgan Lake; ground breakage of varying degrees of intensity would occur in other parts of the area; and rockslides, rockfalls, and earthflows would be triggered locally. Two other maps, (1) Seiche, rockslide, rockfall, and earthflow hazards, Map I-781-C, and (2) Faults and ground-breakage hazards, Map I-781-D, depict the possible extent of these various geologic hazards. This map, derived from these other maps, divides the quadrangle into four zones of earthquake hazard. It shows those specific areas likely to be damaged by several of the geologic hazards listed above; in a sense it emphasizes the potential cumulative damage which may occur in any one locality.

Although some parts of the quadrangle may be unaffected during a major local earthquake, other parts may be severely marred as a result of the cumulative effects of several kinds of geologic events. Thus, in places the floor of the Henry's Lake basin may be practically undamaged, being broken here and there only by minor fractures. By contrast, some of the nearby mountainous parts of the area may be severely damaged by major ground breakage as well as by rockslides, rockfalls, and earthflows. Obviously, some parts of the area are much more hazardous than others. This map arbitrarily divides the quadrangle into four zones of earthquake hazard based in part on the kinds of geologic hazards likely to be triggered in any one area, and in part on the differing intensity or certainty of these events.

- EARTHQUAKE HAZARD ZONE A** - Double major hazard. Areas in which two kinds of major hazard are present. For example, includes areas most likely to undergo major ground breakage and inundation by a seiche.
- EARTHQUAKE HAZARD ZONE B** - Single major hazard. Areas in which two kinds of hazard are present, one of which is major. For example, includes areas in which rockslides, rockfalls, or earthflows are very likely but in which only minor ground breakage is likely.
- EARTHQUAKE HAZARD ZONE C** - Moderate hazard. Areas in which moderate or lesser hazards are likely to be present. For example, includes areas in which both moderate ground breakage and rockslides, rockfalls, or earthflows may occur.
- EARTHQUAKE HAZARD ZONE D** - Low hazard. Areas in which one or more lesser hazards are likely to be present. For example, includes areas in which only minor ground breakage is likely.

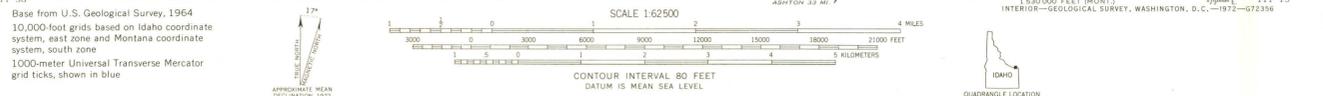
For most of the area the selected zones represent possible rather than certain damage. But, locally, a few areas are almost sure to be damaged; for example, the broad low flats which flank Henry's Lake. These lowlands are virtually certain to be repeatedly inundated by the back and forth sloshing of the lake that will occur during a major local earthquake. What is uncertain is the amount and degree of damage that will result from such oscillations.

VIBRATION DAMAGE - It has long been known that manmade structures built on unconsolidated or semiconsolidated materials are more likely to be damaged by the vibrations set up during an earthquake than comparable structures built on bedrock. Such damage can occur far from the epicenter¹; what is important is the type of material on which the structures are built. Bedrock is preferable to unconsolidated detritus.

¹ An imaginary point on the earth's surface directly above the focus point (the position where the rocks first ruptured) of the earthquake.

REFERENCE

Algermissen, S. T., 1969, Seismic risk studies in the United States: World Conference on Earthquake Engineering, 4th, Santiago, Chile.



EARTHQUAKE HAZARD MAP OF THE HENRY'S LAKE QUADRANGLE, IDAHO AND MONTANA

By Irving J. Witkind
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