Layer Name:	Lava Flow Hazard Zones
File Names:	vhzones, volbndbuf, volbounds
Layer Type:	Polygon, Line
Status:	Complete
Geog. Extent:	Island of Hawaii
Projection:	Universal Trans Mercator, Zone 4 (Meters) HARN
Description:	Lava Flow Hazard Zone Layers
Source:	U.S. Department of the Interior / Geological Survey
History:	Digitized by Office of Planning for the USGS, Hawaii Volcano Observatory, 1991.

It is strongly recommended that users of this data visit the following website before use:

https://www.usgs.gov/observatories/hawaiian-volcano-observatory/lava-flow-hazards

NOTES: (From original lava flow hazard map publication, 1991)

"This map depicts a lava-flow hazard zonation developed for the five volcanoes on the Island of Hawaii. Volcano boundaries are shown as broad black bands, reflecting the interleaving of lava flows from adjacent volcanoes along their common boundary. Hazard zone boundaries are drawn as double lines because of the geological uncertainty in their placement. Most boundaries are gradational, and the change in the degree of hazard can occur over a distance of a mile or more.

The general principles used to place hazard zone boundaries are discussed by Mullineaux and others (1987) and Heliker (1990). The difference between the boundaries presented here and in Heliker (1990) reflects the completion of the geologic map of the Island of Hawaii (Wolfe and Morris, in prep.).

"The primary source of information for volcano boundaries and generalized ages of lava flows for all five volcanoes on the Island of Hawaii is the geologic map of Hawaii (Wolfe and Morris, in press). More detailed information is available for the three active volcanoes: for Hualalai see Moore and others ((1987); for Mauna Loa see Lockwood and Lipman (1987); for Kilauea see Holcomb (1987) and Moore and Trusdell (1991).

"Lava flow hazard maps are based on:

1. Location of past eruptive events
2. Past lava coverage
3. Topography

"Hazard zone boundaries are approximate and gradational. These boundaries are not specific enough to determine the absolute degree of danger at any particular site. Lava flow hazard maps are designed to show relative hazard across the Island of Hawaii and are meant to beused for general planning purposes only."

Attributes:

HZONE	Lava Hazard Zone Number
MZONE	Mountain / Volcano Code

HZONE Definition

Note: (Hazard Zones are ranked from 1 (highest) to 9 (lowest)

1 Summits and rift zones of Kilauea and Mauna Loa, where vents have been repeatedly active in historical time.

2 Areas adjacent to and downslope of Zone 1. Fifteen to twenty-five percent of Zone 2 has been covered by lava since 1800, and 25-75 percent has been covered within the last 750 years. The relative hazard within Zone 2 decreases gradually as one moves away from Zone 1.

3 Areas gradationally less hazardous than Zone 2 because of greater distance from recently active vents and/or because of topography. One to five percent of Zone 3 has been covered since 1800, and 15 to 75 percent has been covered within the last 750 years.

4 Includes all of Hualalai, where the frequency of eruptions is lower than that for Kilauea or Mauna Loa. Lava coverage is proportionally smaller, about 5 percent since 1800, and less than 15 percent within the last 750 years.

5 An area on Kilauea currently protected by topography.

6 Two areas on Mauna Loa, both protected by topography.

7 The younger part of the dormant volcano Mauna Kea. Twenty percent of this area was covered by lava in the past 10,000 years.

8 The remaining part of Mauna Kea. Only a few percent of this area has been covered by lava in the last 10,000 years.

9 Kohala Volcano, which last erupted over 60,000 years ago.

MZONE Definition

1	Hualalai
2	Kilauea
3	Kohala
4	Mauna Kea
5	Mauna Loa

Volbounds (Boundaries between Hawaii Island):

BOUN	Type of boundary line

BOUN	Definition
0	Coastline boundary
1	Volcano Boundary
2	Zone 2 - 9 Boundary
3	Zone 1 Boundary

There is another layer, volbndbuf, which, along with volbounds, can be used to symbolize boundary polygons between hazard zones.

IMPORTANT NOTE:

USGS would like the volcano hazards plotted at scales no larger than 1:250,000. In addition, lines should be plotted at the following widths:

Boundaries between volcanoes:	1 mile
Boundaries between Zone 1:	1/4 mile
Boundaries between Zones 2-9:	1/2 mile

Note: For more complete information/documentation, please contact the Hawaii Volcanoes Observatory, Volcano, Hawaii.

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