

Special Report on Problems Related to

GREAT RIFT ZONE NATURAL LANDMARK

Idaho

1. Area to be included in Great Rift Zone Natural Landmark
2. Separate Natural Landmark designation for Crystal Ice Caves
3. Omitting Wapi Lava Field from Great Rift Zone Natural Landmark

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Introduction

A letter dated July 25, 1968, from Charles Gebler of the National Park Service authorized me to determine the area of the Great Rift Zone Natural Landmark and to study the relations between the Great Rift Zone and Crystal Ice Caves and Wapi Lava Field. Discussions between Mr. Gebler, Superintendent Paul Fritz of Craters of the Moon National Monument, and myself led to the suggestion that more than one logical natural landmark might be present in the area.

Following the discussions, I made some further investigations. On the basis of these studies, this report:

1. Describes the area that should be included in the Great Rift Zone Natural Landmark.
2. Proposes that Crystal Ice Caves should have separate designation as a Natural Landmark and describes the area that should be included.
3. Recommends that, for the present, Wapi Lava Field should not be included in the Great Rift Zone Natural Landmark.

Boundaries of Great Rift Zone Natural Landmark

Using air photos on file at the U.S. Bureau of Land Management District Office in Idaho Falls, Idaho, I traced the Great Rift Zone from its disappearance under the Craters of the Moon Lava Field on the north to its disappearance under the Wapi Lava Field on the south. (A list of the air photos that were used is attached.)

My studies, which must be regarded as preliminary, suggest that the Great Rift Zone and the Great Rift of Craters of the Moon National Monument do not directly link up. However, I have included the southeasterly extension of the Craters of the Moon Rift within the Great Rift Zone Natural Landmark.

I believe that Craters of the Moon Lava Field is younger than the Great Rift Zone, and that the Great Rift Zone may be the source of at least part of the Wapi Lava Field. My reasons are that, whereas no vents or cones are present along the trend of the Great Rift Zone after it disappears beneath the Craters of the Moon Lava Field, at least one prominent cone lies along the trend of the Great Rift Zone after it disappears beneath Wapi Lava Field.

I transferred the traces of the Rift Zone from the air photos to USBLM maps at a scale of 2 miles to the inch that show U.S. Public Land subdivisions to the section. I then drew the boundary of the Landmark along section lines so that the boundary is at least one mile from the Rift Zone at all points. The boundary is shown on the attached map which is drawn on Army Map Service sheets at a scale of four miles to the inch that show Public Land subdivisions only to the township. The area included is 185 square miles.

The area that should be included in the Great Rift Zone Natural Landmark is described as follows (all Public Land subdivisions are Boise Baseline and Meridian):

Great Rift Zone Natural Landmarks Area 185 sq. mi.

T.	R.	Sec.
1S	25E	S $\frac{1}{2}$'s of 21, 22, 23, 24 All of 25, 26, 27, 28, 33, 34, 35, <u>36</u>
	26E	10, 11, 13, 14, 15, 25, 26, 27, 34, <u>35</u> , <u>36</u>
	27E	30, 31, 32
2S	25E	1, 2, 3, 10, 11, 12, 13, 14, 23, 24
	26E	1, 2, 3, 10, 11, 12, 13, 14, 15, 22, 23, 24, 25, 26, <u>36</u>
	27E	4, 5, 6, 7, 8, 9, 10, 14, 15, <u>16</u> , 17, 18, 19, 20, 21, <u>22</u> , 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, <u>33</u> , 34, 35, <u>36</u>
3S	26E	1
3S	27E	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, <u>16</u> , 17, 18, 20, 21, 22, 23, 25, 26, 27, 28, 29, 32, 33, 34, 35, <u>36</u>
4S	27E	1, 2, 3, 4, 9, 10, 11, 12, 13, 14, 15, 22, 23, 24, <u>25</u> , 26, 27, 35, <u>36</u>
	28E	7, 18, 19, 20, 29, 30, 31, 32, 33
5S	27E	1, 2, 12, 13, 24, 25
	28E	4, 5, 6, 7, 8, 9, 10, 15, <u>16</u> , 17, 18, 19, 20, 21, 22, 27, 28, 29, 30, 31, 32, 33, 34, <u>35</u>
6S	28E	2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 14, 15, <u>16</u> , 17, 18, 19, 20, 21, 22, 23

(Sections underlined are State of Idaho School Lands; the other sections are public domain)

Separate Landmark Status for Crystal Ice Caves

The natural feature of the Great Rift Zone is the fracture zone itself-- a geologic feature that is not fully understood, but which is most likely the result of the tectonism that is responsible for the volcanic activity on the Snake River Plains. The natural feature of Crystal Ice Caves is very different--the freezing of water as it moves downward in the unsaturated zone above the water table. Idaho has a number of ice caves (Shoshone Ice Caves; several caves at Craters of the Moon National Monument), but nearly all of the other caves are in lava tubes.

Because of this very great difference in basic natural feature, I believe that Crystal Ice Caves should be designated a Natural Landmark separately from the Great Rift Zone Natural Landmark.

Crystal Ice Caves is managed under a U.S. Bureau of Land Management "Small Tract Lease". No separate buffer zone would be needed because the proposed Crystal Ice Caves Natural Landmark is surrounded by the Great Rift Zone Natural Landmark. The description of the area covered by the USBLM lease in their files at Idaho Falls is:

T. 5 S., R. 28 E., B.M.

A portion of the SW $\frac{1}{4}$ of Section 29 and the NW $\frac{1}{4}$ of Section 32 described as follows:

Commencing at the quarter section corner common to Sections 29 and 32; thence N. 11° 30' W. 179.5'; thence S. 78° 30' W. 529.0'; thence N. 13° 30' W. 573.3'; thence S. 78° 30' W. 82.0'; thence S. 11° 30' E. 1530.0'; thence N. 78° 30' E. 82.0'; thence N. 3° 14' 30" E. 157.2'; thence N. 16° 21' 20" W. 427.7'; thence N. 78° 30' E. 549.0'; thence N. 11° 30' W. 154.5' to the place of beginning.

If my recommendation is accepted, the above described area should be omitted from the description of the Great Rift Zone Natural Landmark.

Relation of Wapi Lava Field to Great Rift Zone

Although my preliminary studies suggest that at least part of Wapi Lava Field may have come from the Great Rift Zone, I do not know if all of the field came from the rift. Other vents in Wapi Lava Field do not seem to be related to the Great Rift Zone (see attachment 2). Therefore, I recommend that Wapi Lava Field should not be included in the Great Rift Zone Natural Landmark until the origin of the field has been studied. I will include Wapi Lava Field in the Inventory of possible Natural Landmarks for Idaho. I will attempt to interest a University of Idaho graduate student in doing the Wapi Lava Field for a Master's thesis; however, I cannot estimate when this project can be started.