

# Visitor Guide to the Medicine Lake Highlands Volcanic Area

McCloud Ranger Station - Shasta-Trinity National Forest



## History and Background

The 1981 eruption of Mt. St. Helens in Washington focused national attention on the Cascades as a geologically active volcanic mountain range. It came as a surprise to many that active volcanoes actually exist in the United States.

In California alone, geologists know of at least five volcanic centers that have been active in historic times. They include: Mt. Shasta, Mt. Lassen, the Mono Basin-Long Valley area, CIMA volcanic Field, and the Medicine Lake Highlands.

The most diverse and least visited of these is the Medicine Lake Highlands Volcanic Area, a portion of which is right here on the Shasta-Trinity National Forest where there are hundreds of unique volcanic features and formations.

Medicine Lake Highlands is the largest identified volcano (in total area) within California, and is one of the most unique geologic features in North America. Because this subrange of the Cascades is somewhat remote, the fascinating nature of this area is largely unappreciated.

The great Medicine Lake shield volcano's broad, gently sloping profile (stretching some 15 miles from east to west and nearly 25 miles north and south) belies the fact that it is actually larger in mass than nearby Mt. Shasta. The Medicine Lake Highlands Volcanic Area exceeds 200 square miles and takes in portions of three National Forests; the Modoc, Klamath and Shasta-Trinity in Modoc and Siskiyou Counties. On the Shasta-Trinity the area lies within the boundaries of the McCloud Ranger District. It rises east of Mt. Shasta near the south end of the string of Cascade volcanoes that stretch northward from Mt. Lassen into British Columbia.

Approximately 100,000 years ago the great volcano underwent a series of eruptions which undermined the center of the mountain and the crest subsided to create a huge crater or caldera. Around the margins of this subsidence, new, smaller volcanoes arose; they are called rampart volcanoes. Medicine Lake now partially fills the crater.

Geologists speculate over what events took place that caused the unusual shapes and features to form and how

a series of eruptions changed the face of the countryside in the area. One thing is clear, however; more than a million years of volcanic activity have produced a landscape that is perhaps California's most diverse volcanic field. Furthermore, volcanic eruptions that produced geological features within the Medicine Lake Highlands were no less dramatic than the volcanic eruptions which took place on Mt. St. Helens.

## Scenic Attractions

Volcanic formations, such as glass and lava flows, pumice deposits, lava tubes, cinder cones, craters, and faults are found throughout the Medicine Lake Highlands Volcanic Area.

## Lava Flows

Lava flows off the flanks of the Medicine Lake shield volcano extend in every direction for over 30 miles. The jumbled, rugged plains of broken rock are interspersed with timbered hills and buttes. The Giant Crater, Tilted Rocks, and Burnt Lava Flows are examples of very recent flows, presenting a vast panorama or stark, unvegetated lava fields.

## Glass mountains (flows) and pumice deposits

The most recent major volcanic activity yet identified in the area occurred about 300 years ago at Little Glass Mountain. These eruptions first spread white pumice for miles around. A nearby cinder cone, Pumice Stone Mountain, was completely covered with pumice and a startling, smooth, white dome remains. These pumice eruptions were followed by flows of black volcanic glass, called obsidian. There are other obsidian flows in the Highlands area, some of which are over 1,000 acres in size. Prehistoric people used this material to make arrowheads and spearpoints. Many archaeological sites have been identified, and some artifacts indicate that the Highlands have been inhabited for at least 4,500 years.

## Craters

Three types of craters exist in the Medicine Lake Highlands Volcanic Area. In addition to cinder craters, there are explosion and subsidence craters. Explosion craters are usually recognized by the large fragments or



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bombs strewn around the crater. Subsidence craters are formed by underground lava flows which deplete a magma chamber causing the cone to fall in upon itself. Consequently, subsidence craters are characterized by steep walled rims, while explosion craters are usually more funnel-like.

Giant and Double-Hole Craters, located upon the Giant Crater Lava Flow, are examples of subsidence craters; while Deep Crater, near the Burnt Lava Flow, is an explosion crater.

## Lava tubes and ice caves

The lava flows in this area feature literally hundreds of “caves” called lava tubes. Many are relatively unexplored and probably more are yet undiscovered. These features were formed when molten lava flows cooled and solidified on the surface while the fluid interior continued to flow, forming a cave-like tube. They are often multitiered and may extend for miles. The Giant Crater lava tube, though partially collapsed, extends for almost 18 miles and forms the longest known tube system in the world. Many lava tubes and other depressions on the lava flow landscape such as Jot Dean Ice Cave, tend to collect cold air, and large ice formations which form during the winter may persist through the summer.

## Natural bridges

Natural bridges, formed when tubes collapsed on either side, can be seen throughout the area.

## Spatter cones

These miniature “volcanoes” are formed by hot gasses mixed with molten lava which escaped up through a fissure in the earth’s surface. A handful of these chimney-like spatter cones appear in a neat row at one site in the Highlands, probably marking the path of an underground lava tube.

## Cinder cones

There are over 100 cinder cones throughout the Medicine Lake Highlands. Oso and Porcupine Buttes, Pumice Stone Mountain, and Paint Pot Crater are examples of this type of volcano which forms when cinders pile up around a central vent. The internal structure of a cone can be examined at Oso Butte near Harris Springs Campground.

## Faults

Many north-south oriented faults cross the Highland area. These faults are especially apparent along Highway 89, giving it that “rolling” character where the ground has been raised along a fault. A 50 foot high fault headwall (scarp) is strikingly seen near Julia Glover Flat. This north-south fault pattern continues eastward to the

Colorado Plateau, forming what geologists call the Basin Range Province.

## See it for yourself

Hopefully, we have given you an awareness and perhaps an appreciation of the Medicine Lake Highlands Volcanic Area and what it has to offer a curious sightseer.

Most of these features are easily visited. The Geologic Special Interest Area near Giant Crater is accessible on Forest Road #43N11 just two miles off the Medicine Lake Road (49). This area features spatter cones, lava flows and lava tubes. While the features described here are the most unique, there are countless other points of interest within the Medicine Lake Highlands Volcanic Area.

If spectacular scenery is what you want to see, visit the area for yourself. The land ranges from rugged lava flows, barren of most vegetation, to thickly timbered mountain peaks. Small lakes, such as little Medicine Lake, Bullseye, and Blanche, are set among the trees and the view from the higher peaks and cinder cones is breathtaking. One word of caution however... the roads are good, but there are **NO** services after you leave Highway 89.

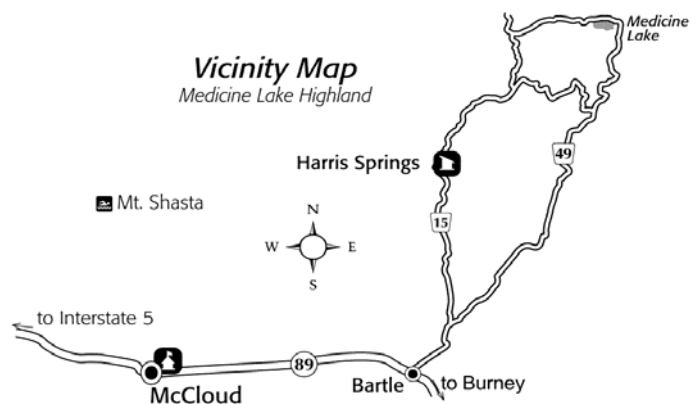
## Remember

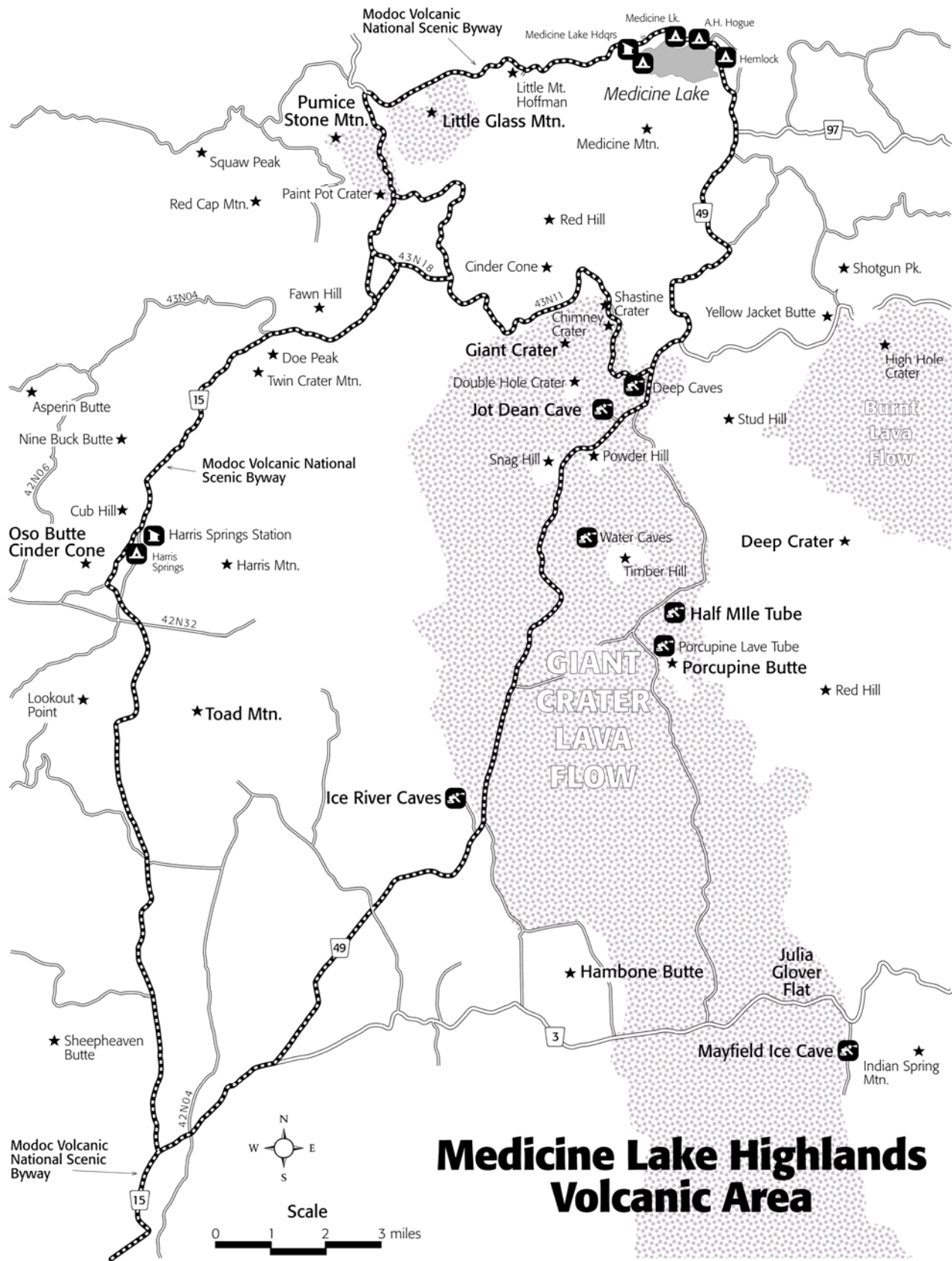
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## For more information, contact the McCloud Ranger Station

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Call: (530) 964-2184 (voice)  
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# Medicine Lake Highlands Volcanic Area

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