

folder for routing of the road from U.S. 89.) The road from a point about 6 miles east of Tonalea to Rainbow Lodge and Navajo Mountain Trading Post is not paved.

You can make reservations for the horseback trip by writing to Myles Headrick, Rainbow Lodge, or to Ralph Cameron, Navajo Mountain Trading Post, both at Tonalea, Ariz.

To get to Aztec Creek, you can take a guided boat trip from Wahweap, Ariz., or from Hite, Utah. You can obtain details of these trips for the 1963 season by writing to the following:

For boat trips from Wahweap: Canyon Tours, Inc., P.O. Box 1356, Page, Ariz.

For boat trips from Hite: Harry L. Aleson, Richfield, Utah; Ellingson & Quist, 968 James Court, Salt Lake City, Utah; Hatch River Expeditions, 411 East 2d Street North,

Vernal, Utah; Ken Sleight, 6575 South Main Street, Bountiful, Utah; Gaylord Staveley, Mexican Hat, Utah; J. Frank Wright, Blanding, Utah.

Facilities

There are no accommodations or facilities within monument boundaries. Lodging and meals are available, however, at Rainbow Lodge and Navajo Mountain Trading Post from about April 1 through November 15, and at Wahweap Lodge near Page and in Page proper throughout the year.

Scenic flights over Rainbow Bridge may be arranged by contacting Page Aviation at the Page municipal airport.

Camping is permitted, but there are no designated campsites or facilities. Campers should pack in equipment and fuel for cooking. Firewood is not available, and the

cutting of trees, dead or alive, is prohibited. A small spring under the bridge provides water. Campers should pack out tin cans and other refuse when leaving.

Regulations

As all National Parks and Monuments, Rainbow Bridge National Monument is a sanctuary for wildlife. Hunting and the carrying of firearms are prohibited. Your cooperation is also requested in the observance of regulations that prohibit (1) destruction, cutting, or removal of plantlife, other natural features, or Indian artifacts; (2) defacing of native sandstone with names, dates, or any other marks.

Administration

Rainbow Bridge National Monument, established on May 30, 1910, and containing 160 acres, is administered by the National Park Service, U.S. Department of the Interior.

The National Park System, of which this area is a unit, is dedicated to conserving the scenic, scientific, and historic heritage of the United States for the benefit and enjoyment of its people.

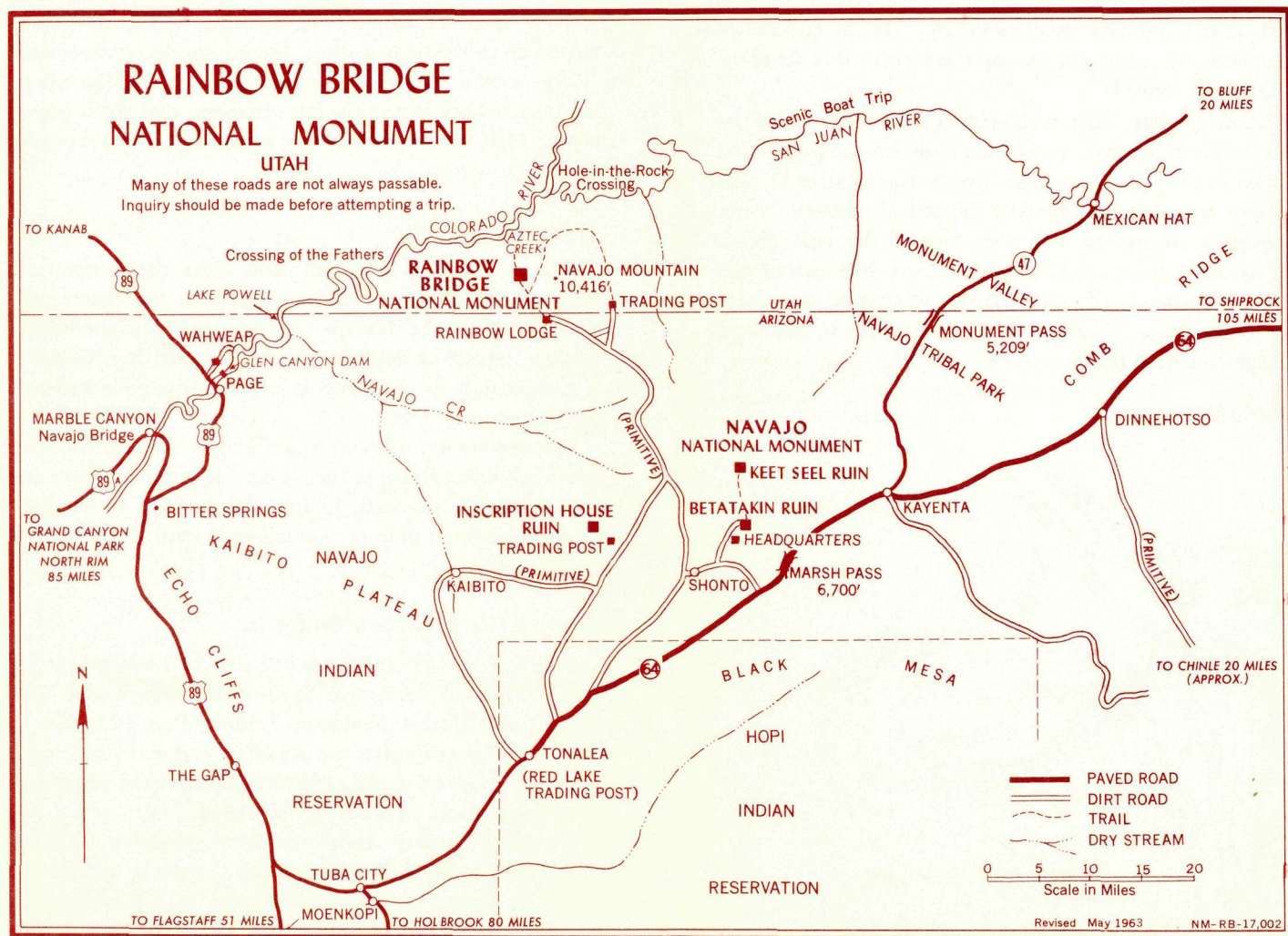
The development of this area is part of MISSION 66, a 10-year program to develop and staff the areas of the National Park System so that they can be used and enjoyed by both present and future generations.

The superintendent of Navajo National Monument, whose address is Tonalea, Ariz., is in immediate charge of the area.

America's Natural Resources

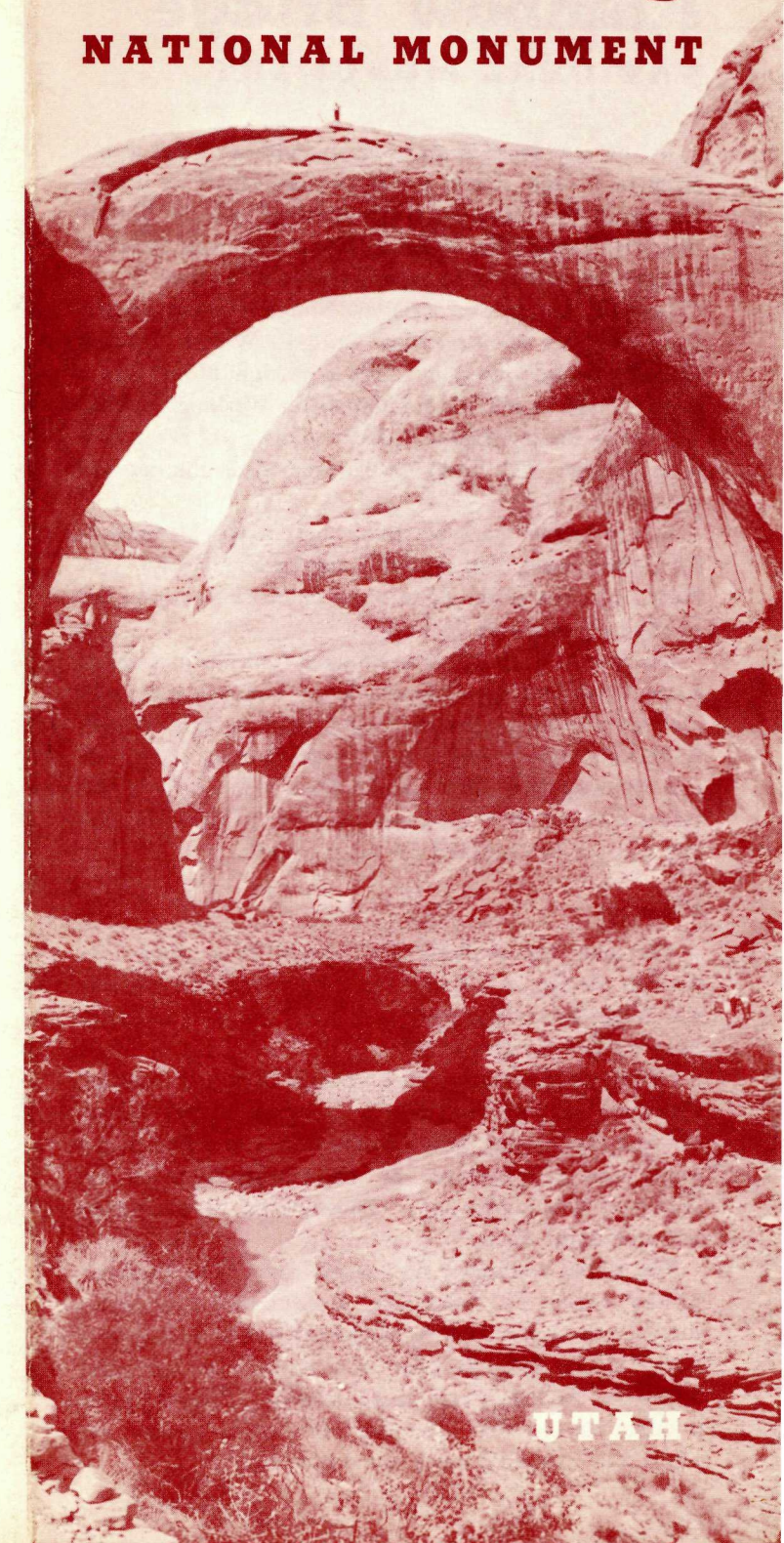
Created in 1849, the Department of the Interior—America's Department of Natural Resources—is concerned with the management, conservation, and development of the Nation's water, wildlife, mineral, forest, and park and recreational resources. It also has major responsibilities for Indian and territorial affairs.

As the Nation's principal conservation agency, the Department works to assure that nonrenewable resources are developed and used wisely, that park and recreational resources are conserved, and that renewable resources make their full contribution to the progress, prosperity, and security of the United States—now and in the future.



Rainbow Bridge

NATIONAL MONUMENT



UNITED STATES
DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE



Revised 1963

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UTAH

Rainbow Bridge

NATIONAL MONUMENT

In the semidesert country of southeastern Utah stands Rainbow Bridge, nestled among canyons carved by streams that wind their way from the northern side of Navajo Mountain toward the Colorado River. It spans Rainbow Bridge Canyon and the tiny streamlet in its bottom.

Colorful, symmetrical Rainbow Bridge is greater in size than any other known natural bridge. With a 278-foot span, the bridge gracefully arches to a height of 309 feet—large enough to straddle the Capitol in Washington, D.C. Thicker at the top than a 3-story building (42 feet), it is wide enough (33 feet) to accommodate the average highway.

It is in one of the most remote and inaccessible areas in the United States. So rugged is the surrounding Rainbow Plateau that few of the Navajo and Paiute Indians who live nearby have ever seen the bridge.

One way to reach Rainbow Bridge is from the junction of Aztec Creek and the Colorado River, and this route will soon be affected by the deepening water of Lake Powell. As this publication goes to press, water is rising behind the recently completed Glen Canyon Dam. The map in this folder does not show the increased extent of the lake, since this will not be stabilized for many months.

Discovery

The arch was probably first viewed by a white man through the eyes of a wandering prospector. No publicity was forthcoming, however, until the Douglass-Cummings party reached the area in 1909.

Dr. Byron Cummings, then dean of Arts and Sciences, University of Utah, and W. B. Douglass, a Government surveyor, had set out with separate parties in search of the great stone arch rumored by the Indians to be in the vicinity of Navajo Mountain. Subsequently, the two parties met and joined forces.

The search continued for several days. The explorers crossed canyons and "slick-rock" surfaces where the horses slipped and skidded. Frequently they had to retrace their steps because their progress was blocked by "rimrock" ledges that the horses were unable to cross. They struggled through canyons that were dry and boulder-choked and others that contained water and dense brush.

Across a scrub juniper (cedar) flat and down into the last canyon they went. This was Nonnezoshi Biko, the Indian name for the canyon of the great stone arch, since named Rainbow Bridge Canyon.

Men and horses were exhausted, but they trudged onward. In the late afternoon of August 14, 1909, the party rounded a bend in the canyon and beheld the largest and most beautiful of all known stone arches, Rainbow Bridge.

How Was It Formed?

At the time of the formation of the rocks from which Rainbow Bridge was later carved, geologists tell us, the topography of that area might not have differed greatly from the topography of the present Southwest—there were broad valleys surrounded by highlands.

Runoff from rainfall in the highlands brought great quantities of gravel, sand, and mud, which were spread as horizontal sheets over the floors of the valleys. Locally there were shallow lakes.

Mud and sand were deposited in the lakes, and evaporation of the water produced limy and gypsum-filled muds. These sediments were compressed by being deeply buried to form the layers belonging to the Kayenta formation, part of which is the thin-bedded stratum exposed in the canyon beneath Rainbow Bridge.

Following this period of deposition, there was a changed environment during which sand accumulated until it was several hundred feet thick. It was deposited in curved crossbedded layers in dunes, later to be blown away and redeposited again and again. This produced a complex system of crossbedding throughout the entire formation.

In time, a blanket of other rock materials was deposited by wind and water over the shifting sand. Percolating water, with lime and gypsum in solution, aided in making the material firm and hard, to form what has been named the Navajo sandstone.

Then followed a general uplift of the entire region. Drainage courses traversed the newly formed rocks, and the principal streams carved broad valleys with sweeping curves, or meanders. The wind and other forces of weather chiseled away at the rocks to form "slick-rock" surfaces and the dome-shaped hills called whalebacks and baldheads.

A large mass of molten rock pushed outward from the interior of the earth, arching the earth's crust to form Navajo Mountain. This local uplift caused small streams to furrow canyons across the soft crossbedded Navajo sandstone. It also caused the large streams to deepen their channels; those with broad valleys followed the former meandering courses.

Deepening of the meanders left some blocks of solid rock, called fins and necks, standing between entrenched meanders. It was from one of these necks that Rainbow Bridge was formed.

Running water, laden with cobbles and sand, scoured the sides of the neck; frost action and expansion and contraction related to temperature changes loosened great slabs of rock as well as particles. Gravity helped to remove them. Eventually an opening was worn through the neck, giving the stream a direct course through, rather than around, the neck. Continuing erosion enlarged the opening and deepened the gorge. Thus, the canyon spanned by Rainbow Bridge came into being.

Nature used the less severe forces of weathering for shaping and polishing the outline of Rainbow Bridge. For example, when moisture freezes within a crevice it exerts pressure on the surface of a rock and causes the outer part to shell off, forming a relatively smooth surface. Navajo sandstone is particularly subject to this type of weathering. It is porous and the curved layers of the crossbeds are held together with weak, natural cement that is easily removed by percolating water.

Dissolving of the cementing materials and prying action by frost are the chief agents for carving the rock. The crossbedding is important in controlling the shape. Thus, the combination of several factors, over a long period of time, developed the arch as we now see it.

Salmon-pink is the predominant color of the sandstone from which the arch is carved. This color is modified by streaks of red extending down the sides of the structure. These stains are due to iron oxide, or hematite, which is soluble in water. As rain fell on the upper part of the arch, it dissolved some of the hematite, and as the water moved down the sides, it dried, leaving streaks of variegated colors—mostly reds and browns. The fact that the coloring becomes brilliant in the late afternoon sunlight is possibly the basis for the Indian legend that the arch is a rainbow changed to stone.

Springs and Plants

Water dripping into the pools near the bottom of Rainbow Bridge Canyon is from rainwater that has seeped down through the Navajo sandstone. When the water reaches impervious rock layers in the underlying Kayenta, it accumulates, but eventually it seeps out along the walls of the canyon as springs.

Plants grow in profusion near springs. Maidenhair fern and wild orchid thrive in the shade. In addition, there are Indian paintbrush, loco, lupine, daisy, aster, yucca, sunflower, evening-primrose, columbine, scarlet-bugler, and mariposa-lily.

How To Reach Rainbow Bridge

Rainbow Bridge can be reached only by horseback or by foot. Trails to the bridge begin at Rainbow Lodge (14 miles) and Navajo Mountain Trading Post (24 miles), where guides and horses are available, and at Aztec Creek, where there are no guides or horses but where the beginning of a 4.6-mile trail to the bridge is well marked.

To get to Rainbow Lodge or Navajo Mountain Trading Post, take U.S. 89 south from Marble Canyon or north from Cameron to the turnoff, northeasterly, to Tuba City and Tonalea (Red Lake Trading Post). (See the map in this

HOW A NATURAL BRIDGE IS FORMED.

