

GRAND CANYON FLOOD!

Throughout the centuries, floods in the Colorado River eroded through layers of rock in the Colorado Plateau. The river carved the Grand Canyon, one of the seven natural wonders of the world.

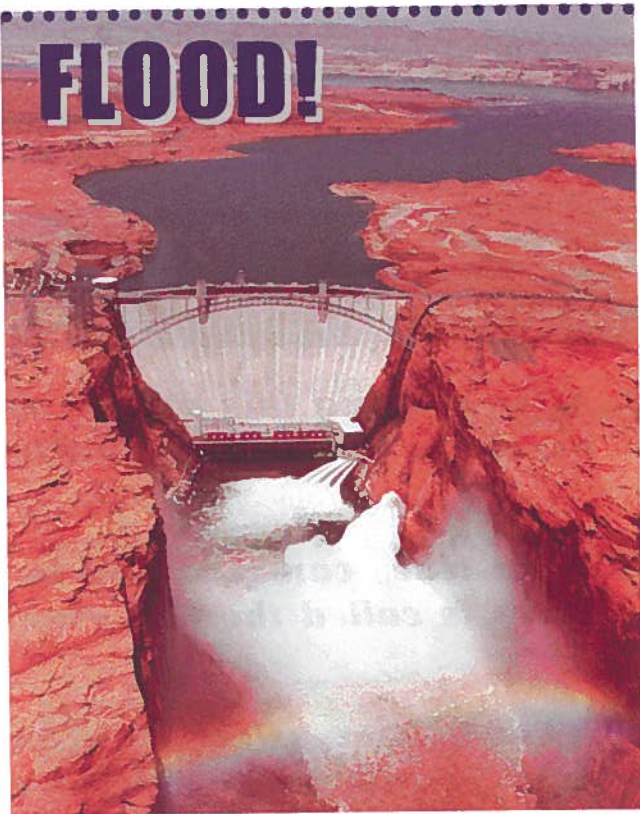
The natural flow of the Colorado River changed with the construction of the Glen Canyon Dam, which was completed in 1963. The dam now controls the natural surge of flood waters. Controlled releases of water from the dam produce a fairly steady flow into the Grand Canyon. As a result, the river's ecosystem changed. Some native species of animals and plants were stressed by these changes, and some introduced species thrived in the new conditions.

Scientists put their heads together to consider these changes. They decided to create an experimental flood. Engineers would allow water to pour out of the Glen Canyon Dam as fast as possible for 7 days. This "flood" started on March 26, 1996. In a way, the Grand Canyon became a gigantic stream table for the scientists to study. Through their research, scientists hoped to figure out how to better manage the river's resources in the future.

PLANNING THE FLOOD

Before 1963, melting snow in the upper Colorado River basin produced tremendous flows of water that raced through the Grand Canyon each spring. An average peak flow could reach 93,400 cubic feet of water roaring past any given point on the river each second. That's enough water to fill 40 backyard swimming pools! The raging water scoured large quantities of sediment from the river bottom.

During the summer months less water flowed through the river. Sediments picked up by the floodwater were deposited in various places along the channel. This annual cycle of flooding and deposition maintained large sandbars along the riverbanks. Floods kept the sandbars free of vegetation and removed debris fans (deposits of cobbles and boulders at the



mouths of side canyons), which might dam or constrict the river.

When Glen Canyon Dam slowed the flow of water and cut down on flooding, several things happened.

- Sandbars got smaller.
- Vegetation began to grow into the river channel.
- Debris fans built up.
- Habitat for native fish, like the endangered humpback chub, declined.

Scientists found that periodic floods in the Colorado River help keep sand in the canyon. They know that sand on the river bottom doesn't stay put, but moves slowly downstream. Floods provide the energy needed to lift the sand from the river bottom. This sand is then deposited on riverbanks to form sandbars high up on the banks. There the sandbars are less likely to erode away. Quiet waters, or backwaters, can form behind the sandbars and create habitats for the native fishes.