

The Great Bonneville Flood

And the effect on

The Snake River Canyon

White man's history near here is recent, but Native American Peoples and perhaps ancient Asian ancestors have been here at least 10,500 years. Volcanic activity has deposited lava rock 900 feet thick in the Magic Valley. The Snake River has cut about half way through this rock. 13,000-15,000 years ago a large event occurred on the Snake River. Today we know it as the Great Bonneville Flood.

The Snake River canyon at Twin Falls and the sediment and rocks washed down river to Hagerman, Bliss and King Hill are evidence of a colossal flood. Lake Bonneville covered 20,000 square miles including much of northern Utah and reached into eastern Nevada and southeast Idaho, an area nearly the size of Lake Michigan. The Great Salt Lake is the remnant of this huge inland fresh water sea. The water level of this lake may be observed several hundred feet up the Wasatch Mountains on the east side of Salt Lake City. The water levels are distinct horizontal lines that can be seen as you travel north to south along Utah's Wasatch Front. This lake had no outlet to the sea. Eventually rainfall and snowmelt raised the level of the lake until it overflowed at present day Red Rock Pass near Preston, Idaho.

Explorer Captain John C. Fremont in 1843 recognized shoreline evidence on the western slope of the Wasatch that a succession of deep lakes had once existed in the Great Salt Lake Basin. G. K. Gilbert led a U.S. Geological Survey team in 1878 and was the first to study these prehistoric lake features and describe the major features of Lake Bonneville. He so named the lake to honor Captain B.L.E. Bonneville an earlier western explorer. Gilbert also discovered the washout at Red Rock Pass. For the next half century very little was added to the understanding of the lake developed by Gilbert. In 1954 Mr. Powers discovered there had been an immense flow of water down stream. In 1962 and again in 1965, Harold Malde presented his Great Flood theory in engineering conferences. His flow and sedimentation studies have been verified in great detail. The time of the flood was originally estimated at 18,000 years ago with subsequent theories of between 15,000 and 30,000 years ago. It is now generally agreed by many scientists to have been very near 13,000 years ago, and we know from the discovery of a human skeleton (Buhla, near Buhl, Idaho) that is about the age, that human inhabitants indeed may have watched the spectacle of the Great Bonneville Flood unfold.

The study of the sediment washed down, from 6-ft. diameter rocks to the sand and gravel along the river downstream, has established the origin of the rocks and the flow of water required to put these rocks where they are today. These "melon rocks" can be clearly seen in the Buhl/Hagerman area and along I-84 near Glens Ferry.

The washout at Red Rock Pass caused a flood that lasted for 6 weeks, but continued to flow for a year. In that time 380 cubic miles of water flowed down the Snake River. The maximum flow was one third of a cubic mile of water per hour. From Pocatello to Rupert 300 square miles were flooded 50 ft deep. The river overflowed its banks and scrubbed the earth off of the rock above Twin Falls and also in the lands north of the canyon. This water flowed back into the canyon at Blue Lakes Country Club below the deepest canyon. These lands are essentially bare today.

Another study set the maximum flow at 33 million ft/sec, and a discharge of 17 million cubic feet per sec or 0.4 cu miles per hour. That would be over 1,000 times the normal peak flow normally seen and 550 times the flow seen in the spring of 1997, the highest flow recorded in the Snake River Canyon since 1911 when nearly 50,000 second feet was running. The flood flow was 6 times the size of the Mississippi River and slightly more than the maximum of the Amazon River.

In Melon Valley near Buhl, the rocks and sand are poorly sorted, indicating deep, rapid flowing water. Big rocks deposited 100 ft above the present river indicate a water level about 150 ft deep. Wide valleys at Melon Valley, Hagerman, King Hill, Glenns Ferry and Hammett to Crane Falls deposited about 0.6 cubic miles of sediment of which 1/3 to 1/2 cubic miles came from the Twin Falls area. At the same time the wider valley at Grand View lost about 150 square miles of soil 325 ft deep. The 7 billion cubic feet of melon gravel (small gravel up to 1 to 3 ft) at Bliss and Hagerman is from talus material from the canyon at Twin Falls. (Talus is the rock at the base of a cliff that has broken off and accumulated over several thousand years.)

To get a perspective on the flood, at the Twin Falls Perrine Bridge the canyon is about 480 ft deep. At the beginning of the flood the river bottom was at the thin dirt layer visible on the north canyon wall about half way down near the bottom bridge support. Rock and dirt cascading down stream chiseled out the lower part of the canyon in a few weeks. The bridge would have been under about 10 ft of water. No flooding occurred above this on the south side of the river as evidenced by the topsoil in the farm fields. On the north side of the river the water that overflowed the canyon several miles east of there and scoured the earth off of the rock for a mile or so north flowed back into the canyon just east of the bridge at Blue Lakes Country Club. At this point an eddy created by the confluence of the river and the flooding water coming from the north gouged the canyon wider. This created a perfect spot for I.B. Perrine to create the region's first farm over 125 years ago and for two golf courses and three trout farms to prosper today. The rocky land on the north side of the canyon is still without topsoil.

From the talus material now in the canyon it was determined that the canyon has been changed little by glacial flows and floods since this event. The flow patterns in the rock and land formation of southern Idaho are especially impressive when viewed from the air.

In Montana the Lake Missoula flood(s) coming many years earlier were far more violent than Lake Bonneville and dealt their wrath also on northern Idaho and eastern Washington before reaching the Columbia River Gorge. When a glacial ice dam broke, the total volume was about the same as the Bonneville, but the flow rate was about 50 times greater than the flow from Lake Bonneville. These flood events, Bonneville and Missoula, the largest ever recorded in the history of North America, have had huge effects on the Idaho landscape. This is a brief summary of several reports. For more information on the Bonneville Flood, search the Internet by writing Bonneville Flood in a search engine.