

LAKE TAHOE FACTS

How did Lake Tahoe form?

Three to five million years ago, the valley that would become the Tahoe Basin sank between parallel fractures in the Earth's crust as the mountains on either side continued to rise. A shallow lake began to form in the resulting valley. Two to three million years ago, erupting volcanoes blocked the outlet, forcing the lake to rise hundreds of feet above its current elevation, and eventually eroding down to near its current outlet. Between one million and 20,000 years ago, large masses of glacial ice covered the west side of the Tahoe Basin. An earthen dam left by a receding glacier near Squaw Valley caused the lake level to rise and then draw down rapidly when the dam catastrophically failed. Between 7-15 thousand years ago, a portion of the West Shore collapsed into the Lake causing a submerged landslide, widening the Lake by three miles, and creating McKinney Bay.

How high is the Tahoe Basin?

The surface of the Lake is at an elevation of 6,225 ft. above historical sea level. The surrounding mountain peaks vary from 9,000 to nearly 11,000 ft. Only 15 other large lakes in the world are higher.

How pure is the Lake and why?

The water is 99.994% pure, making it one of the purest large lakes in the world. The Lake owes its extraordinary purity to the relatively small watershed, the large amount of precipitation falling directly on the lake's surface, the dilution effect of the massive volume of water it contains and purification of runoff by adjacent wetlands.

Why is the Lake so blue?

The lake water appears blue in color as other colors in the light spectrum are absorbed and blue light is scattered back. In addition, under the right conditions, the Lake surface can reflect the color of the sky.

How clear is the water?

Clarity is determined by measuring the water depth at which a 10-inch diameter white disk disappears from view. In 2007, clarity averaged 70.1 ft., far less than the maximum 105 ft. of clarity measured in 1968.

How large and deep is the Lake?

The Lake's surface is 22 mi. long by 12 mi wide and 191 sq. mi. (122,200 acres) in area. The shoreline length is 75 mi. The average depth is 1,000 ft. A maximum depth of 1,645 ft. makes Tahoe the second deepest lake in the USA, third deepest in North America and 11th deepest in the world.

How much water is in the Lake?

The Lake holds 39 trillion gallons of water, enough to cover the state of California to a depth of 14 ½ in. Tahoe is the largest lake above 600 ft. elevation in the USA.

Where does the water come from?

Snowmelt from 63 tributaries in the 315 sq. mi. watershed adds 65% of the water. Another 35% falls as precipitation directly on the Lake. Typically, 212 billion gallons of water enter the Lake this way each year.

Where does all the water go?

About one-third of the water flows into the Truckee River through the dam at Tahoe City for downstream use with any remaining water flowing to the river terminus at Pyramid Lake. The remaining two-thirds of water evaporate from the lake surface at an annual average rate of 0.1 inch per day. In a typical year, Lake Tahoe will see a net rise of 15 in. from spring runoff.

What is the weather like?

Average high temperature is moderate, ranging from the high 20's in winter to high 60's in summer. At least seven months per year, daily maximum temperatures reach the outdoor comfort zone. Sunshine occurs over 75% of the time during daylight hours each year. From November through March, 78% of the yearly precipitation occurs, mostly as snowfall. Typically, at lake level in Tahoe City, 14 ft. of snow falls over winter and accumulates to a maximum snowpack depth of 2.8 ft.

How cold is the Lake?

Below an average depth of 600 ft, water temperature is a constant 39°F. During July and August, surface temperature can reach 68°F. Along the shoreline, shallow enclosed areas can warm even further. In the coldest months, the lake surface temperature drops as low as 40°F, but usually hovers near 41°F.

Does the Lake ever freeze?

The main body of Lake Tahoe does not freeze. The stored heat in the Lake's massive amount of water compared to its relative surface area prevents the Lake from reaching freezing temperature under the prevailing climatic conditions. On rare occasions, Emerald Bay has developed full or partial ice cover and thin ice sheets can form on shallow near shore waters under very cold and calm conditions.

Does pollution endanger Lake Tahoe?

Tahoe has lost about one-third of its world-renowned clarity since 1968. The major component of clarity loss is fine particles, with nearly three-quarters originating from development-impacted watersheds. Another important pollutant is nitrogen, over one-half of which comes

from atmospheric fallout created by vehicle exhaust and pollution blown in from surrounding urban areas. A third critical pollutant is phosphorus, with disturbed and natural watersheds contributing two-thirds of the load. All wastewater is treated and exported from the Basin.

Interesting Factoids

- Nearly 80% of yearly precipitation occurs during the five months of November through March
- The chance of getting more than 0.1 in. of precipitation between the May 1 and October 15 is 10% or less.
- The name Tahoe comes from a mispronunciation of the Washoe name for Lake Tahoe, *da ow a ga*, which means, “edge of the lake.”
- The sun shines on average 75% of the time during daylight hours.
- There are about 270 sunny and partly sunny days each year.
- Lake Tahoe water is 99.994% pure.
- The Lake Tahoe water surface averages 6,225 ft. above historical sea level.
- The Lake water appears blue due to absorption of all other colors in the light spectrum and backscattering of the remaining blue light back to an observer.
- On average, an observer can see a submerged 10 in. white disk at 70 ft. depth.
- At Tahoe City, an average of 14 ft. of snow falls, accumulating to a snowpack depth of 2.8 ft.
- A maximum depth of 1,645 ft. makes Lake Tahoe the second deepest lake in the USA, third deepest lake in North America and 11th deepest in the world.
- The elevation of Carson City, Nevada is 85 ft. higher than the deepest part of Lake Tahoe.
- If dropped into Lake Tahoe at its deepest point, the tallest building in the USA, Sears Tower at 1,451 ft. high, would still be covered by 194 ft. of water.
- Lake Tahoe is the sixth largest natural lake in the USA, the largest lake over 600 ft. in elevation in the USA and the 16th largest lake in the world at or above this elevation.
- The average daily evaporation of water from the lake surface would serve the daily needs of 3.3 million Americans.

- Lake Tahoe is nominally 22 miles long and 12 miles wide with 75 miles of shoreline and a surface area of 191 square miles.
- Lake Tahoe does not freeze due to its volume, surface area and prevailing climate.
- At the surface, Lake Tahoe water temperature varies between 68°F in summer to 41°F in winter.
- Over a 40-year period, loggers clear-cut 95% of the forest to supply lumber for Virginia City, Nevada mines and the transcontinental railroad.
- The Lake contains 39 trillion gallons of water – enough to cover the State of California to a depth of at least 14 in.
- Ancestral Native Americans began inhabiting the Tahoe region as far back as 10,000 years ago. The Washoe Tribe occupied the Tahoe Basin for 1300 years preceding the 20th Century.
- Lake Tahoe is 3-5 million years old and is the result of faulting and volcanism.
- The Truckee River at Tahoe City, California is the only outlet of Lake Tahoe and flows 140 miles to its terminus at Pyramid Lake in Nevada.
- Mark Twain hiked 12 miles to Lake Tahoe in 1861, camped on the North Shore and accidentally started a wildfire.
- The first recorded sighting of Lake Tahoe was by Brevet Captain John Fremont and his topographer, Henry Preuss, on February 14, 1844 from Red Lake Peak near Carson Pass.
- Each year, Lake Tahoe fills with 212 billion gallons of water from 63 streams and direct precipitation on the surface of the lake.
- Tsunamis up to 300 ft. high have occurred on Lake Tahoe in the past 15,000 years.
- Due to global warming, Lake Tahoe surface water temperature has increased an average of 1.6°F since 1968.

David C. Antonucci is an environmental engineer and 33-year Tahoe resident. He is available for paid professional speaking engagements on Lake Tahoe natural history, Mark Twain at Lake Tahoe and the 1960 Winter Olympics. For more information and booking arrangements, contact him at 530-525-5410.