

Lake Tahoe water clarity improved in 2011

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(PhysOrg.com) -- Lake Tahoe clarity improved in 2011, but overall has remained nearly stable since 2000, according to UC Davis scientists who study the lake.

Data released today by the UC Davis Tahoe Environmental Research Center and the Tahoe Regional Planning Agency reported the average annual clarity level for 2011 at 68.9 feet, a 4.5-foot improvement over 2010, when average clarity levels were the second-worst on record.

Winter clarity last year continued a decade-long pattern of improvement, while summer clarity continued to decline at the same rate that it has since the late 1960s, when monitoring began.

Average annual clarity in the past decade has been better than in recent

decades. In 1997-98, annual clarity reached an all-time average low of 65.1 feet. From 2001-11 the average clarity was 70.6 feet.

Yet this year's value is still more than two dozen feet away from the clarity restoration target of 97.4 feet set by federal and state regulators.

Geoffrey Schladow, director of the UC Davis Tahoe Environmental Research Center, said it is important to remember that long-term trends are a better indication of [Lake](#) Tahoe clarity than year-to-year comparisons.

"The factors that contribute to lake clarity are complex, and are not necessarily linked to factors occurring in the current year," said Schladow. "For example, the 2011 clarity improvement followed a winter that was one of the wettest in recent years, something that is usually associated with clarity declines. Understanding what controls the long-term trends is at the heart of what we are attempting to do."

Researchers provided measurements for both winter (December-March) and summer (June-September) months. The winter average of 84.9 feet in 2011 was well above the worst point seen in 1997 and a 12-foot improvement over 2010.

Urban stormwater runoff has long been one contributor to reduced clarity at the lake. Most of that runoff occurs during the winter and spring, when rain and snowmelt carry small, inorganic particles from the land into the lake.

Yet despite a wet winter during 2011, clarity improved. Researchers say this could indicate that efforts led by TRPA, other management agencies, local jurisdictions and private property owners to reduce urban stormwater runoff are having an impact. However, they emphasize that they need more data on stormwater to make definitive conclusions.

Summer clarity levels continued to show a decline. The 2011 value of 51.5 feet was the second worst on record, which the UC Davis data suggest may be due to the large and late spring snowmelt, which carried enormous amounts of fine sediment and nutrients from the watersheds surrounding the lake.

The Tahoe Regional Planning Agency is leading a collaborative Environmental Improvement Program that sets thresholds for various environmental indicators at the lake, with clarity being among the most important.

"We're encouraged that lake clarity is improving and seems to be responding to the substantial restoration investments we've collectively made through the Environmental Improvement Program," said Joanne S. Marchetta, executive director of the Tahoe Regional Planning Agency.

John Reuter, associate director of the UC Davis Tahoe Environmental Research Center, said environmental improvement efforts in the Lake Tahoe Basin related to water quality, forest health and watershed condition have been significant.

However, Reuter noted that "ecosystem restoration is seen over a time scale of decades and is difficult under the best of conditions. Sustaining the pollutant reduction to any lake that has an urban population and infrastructure like Lake Tahoe is challenging, especially in a faltering economy. In my opinion, the federal, state and public partners at Lake Tahoe are facing this restoration challenge with considerable insight, coordination and determination."

Clarity is measured by the depth at which a 10-inch white disk, called a Secchi disk, remains visible when lowered beneath the water's surface. The measurements have been taken since 1968, when the Secchi disk could be seen down to 102.4 feet.

For a complete list of Annual Secchi Depth Data since 1968, visit terc.ucdavis.edu/research/SecchiData.pdf .

Graphs showing the various clarity measurements for summer months, winter months, and the yearly averages, are available at the UC Davis Tahoe Environmental Research Center website at terc.ucdavis.edu .

More information about environmental factors affecting [Lake Tahoe](#) will be included in the 2012 State of the Lake Report, expected this summer.

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