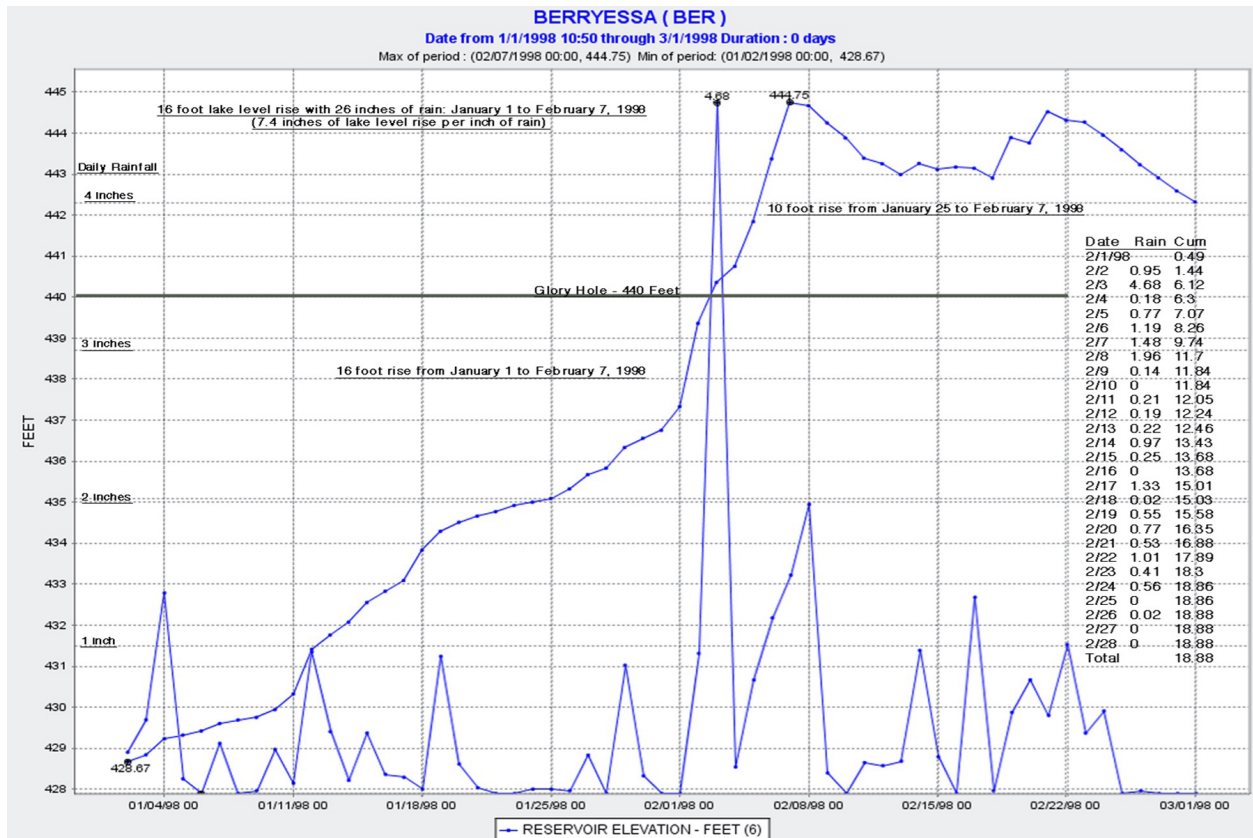


How Much Water Does Lake Berryessa Hold?

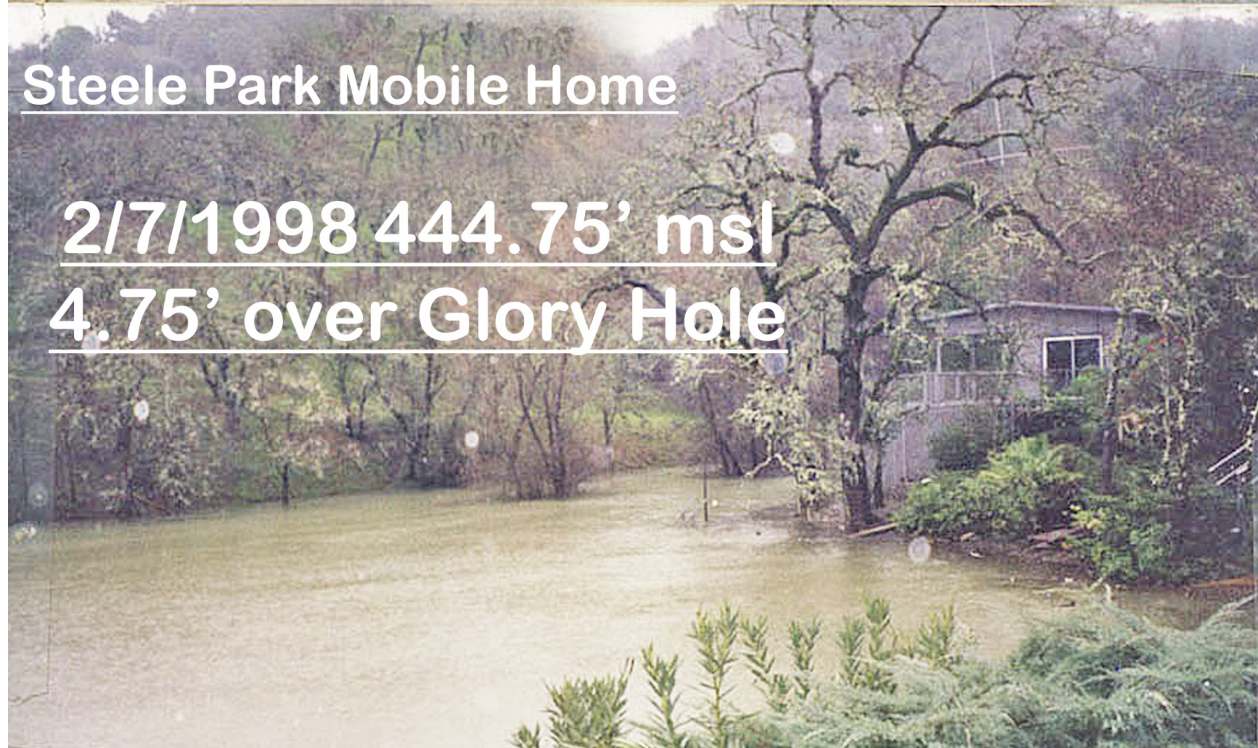
Heights are usually shown on maps by contour lines which give the height above Mean Sea Level (msl). The volume of water is a function of the difference in depth between two successive depth contours where the area of the lake within the outer depth contour is compared to the area of the lake within the inner contour line under consideration. The procedure consists of determining the volumes of successive layers of water, and then summing these volumes to obtain the total volume of the lake. Making these calculations over an area the size and shape of the Berryessa Valley before the dam was built clearly includes a lot of uncertainty in the final volume determination. The chart below of rainfall versus lake level for the first three months of 1998 shows that the lake rose 16 feet with 26 inches of rain – or 7.4 inches of level per inch of rain.



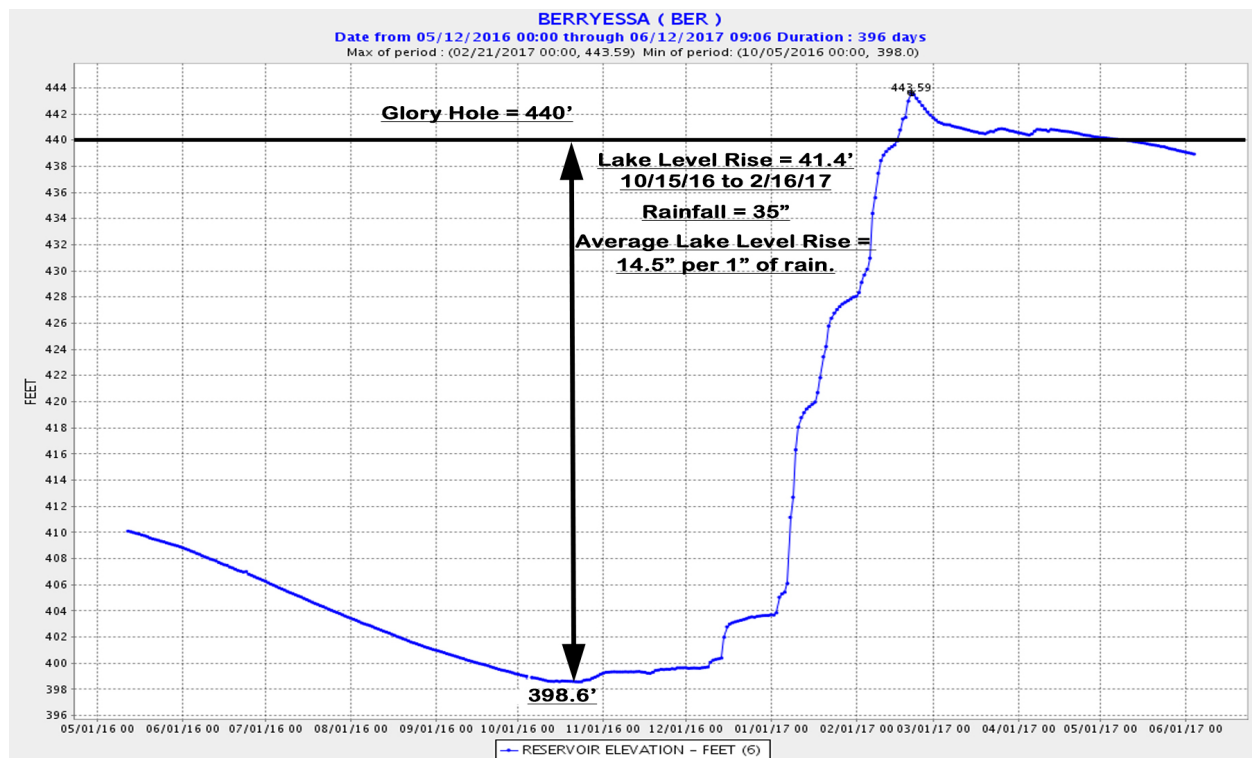
2/9/98: Lake level is 444.75' msl
or 4.75' above Glory Hole



Steele Park Launch Ramp



However, the unexpectedly rapid rise of the lake in 2017 provided data that showed the rise was twice as great as the normal average. The published data defines the surface area of Lake Berryessa when it is at a lake level of 440' msl (the Glory Hole spillway height) as 20,700 acres with a total volume of 1,602,000 Acre-Feet. However, the world-wide attention focused on Lake Berryessa's Glory Hole Spillway overflowing in 2017 for the first time in a decade raised some questions about these numbers from sharp-eyed observers.



Using the published standard capacity of 1,602,000 acre-feet (AF), they noticed that as the level approached the 440-foot mark (100%), the capacity was less than that figure. In fact, at 440 feet (100%) the official storage value was only 96.2% of capacity - a 3.2% discrepancy.

The 1,602,000 AF is a number that was derived from the original Area-Capacity curve developed from surveys of the empty lakebed when the project was being built. In 2007 the Solano County Water Agency (SCWA) hired a consultant to survey the bathymetry (bottom surface) of Lake Berryessa and determine if the lake had experienced significant sedimentation as well as create new capacity curves based upon the new survey data. In general, the sedimentation was found to be minimal, but the new capacity curves did show a reduction in Lake Berryessa capacity due to more precise measurements.

Another goal was to verify the accuracy of the Area-Capacity curve. The sedimentation in the lake was determined to be less than expected - minimal considering the 50-year life of the project. A new dataset was developed that can be compared to any future bathymetric study to accurately determine the actual sedimentation rate. Scuba divers who went down to the old Putah Creek Stone Bridge found only a few inches of fine silt on the bridge surface.

During this study a new Area-Capacity curve was developed that was slightly lower than the previous curve. This new lake level versus capacity was officially adopted by Reclamation and SCWA in 2009. The new curve has a lake capacity of 1,551,292 AF at a level of 440 feet - 50,708 AF less than previously calculated. The difference between the present and former AC curves is a combination of some sedimentation and the difference in technology used to derive the new curve. Obviously, another traditional survey of the dry lakebed will not be possible. The bathymetric survey was the only option that could be used to provide a dataset that could be compared in future studies.