



How Big Was the December 31, 2005 Storm?

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The December 31, 2005 storm brought a renewed interest in flood hazards in Contra Costa County. This is partly because it followed Hurricanes Katrina and Rita, the Jones Tract levee failure, and news of the poor levee conditions in the Delta.

The New Years Eve flooding, though not devastating on a grand scale, still resulted in significant property damage to many who live in flood prone areas. Residents throughout the County, including Pinole, San Pablo, Port Costa, Pleasant Hill, Martinez, Alamo, Walnut Creek, Pacheco, Concord, and Brentwood reported flooding or flood damage of some kind. The reports of flood damage are still trickling in.

One common question asked is, "How big was that storm?" or, "How did that storm compare to the last big one?" The answer depends on where you are in the county.

The term "100-year storm" is often used as a yard stick to describe a "big" storm. The number refers to the "return period" and can be misleading. Some take the term "100-year storm" to mean that once it occurs, the 100-year storm will not "return" for 100 years. However, the term really means that a 100-year storm has a 1 in 100, or 1 percent (1%), probability of occurring any year. In fact a 100-year storm event could be experienced or exceeded more than once in any given year. Statistically a 100-year flood has a 26% chance of occurring during the life of a 30-year mortgage for a house in a flood hazard area.

As an example of these statistics, if there was 1 red marble in a pail with 99 white marbles, the chances are 1 in 100 that you would pick the red marble. If you put the red marble back in and mix them up, you would have the same chance of picking the red one the next time. You could also pick the red marble twice in a row or not pick the red one after 1,000 picks. The same 1 in 100 chance exists for the 100-year storm each year.

Other storms that are commonly referred to are the 50 year storm, which has a 2 in 100 (2%) probability of occurring in any year, and the 10 year storm, which has a 10 in 100 (10%) probability of occurring.

The 2005 New Years Eve storm ranged up to a 50-year storm event, as measured at the Flood Control District rain gauges throughout the County. This rare high intensity storm appears to have been centered over Danville where 4.72 inches of rain fell in a 12-hour period. Moraga also got a large amount of rain with an intensity equivalent to 48-year storm event.

The Northwest County area experienced between a 25- and 40-year storm and East County experienced less than a 10-year storm. Sometimes you have to look at the whole watershed to get an accurate picture of the storm. Lower Sand Creek in East County topped its bank and flooded a neighborhood, even though East County experienced less than a 10-year storm. However, looking at the larger picture, the flooding likely occurred because a 40-year storm hit the upper Sand Creek watershed producing the rainfall that flooded the lower watershed.

As a comparison to past storms, Danville had a 33-year storm in 2002 and a 4.5 year storm back in 1996. The Alhambra Creek watershed, on the other hand, had a 26-year storm on New Years Eve, a 10-year storm in 2002 and a 15-year storm in 1996. The New Years Eve 2005 storm was a significant one, depending on where you are in the County.

