

Daily Camera

Guest column: The flood next time

By Roger Pielke Jr.

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Along the Front Range we are mourning those lost and rebuilding is underway. But as we recover from the recent floods it is not too early to begin thinking about our future floods.

It may be hard to believe but in Boulder we have had an extended period of unusually good luck with respect to flooding. Boulder saw eight serious floods between 1894 and 1969, averaging about one every decade, with at least the 1894 and 1938 floods reaching a higher magnitude than that which we just experienced.

The run of good luck over more than 40 years did not prevent our community from taking a wide range of actions to prepare for the inevitable. To the extent that these actions contributed to mitigating our losses we should be thankful.

The late Gilbert White, long-time CU geography professor whose memorial sits in the Boulder Creek floodplain next to the Broadway bridge, warned for decades that Boulder had a serious flood risk. In a widely known assessment of natural hazards published in 1975, White and colleagues warned that Boulder represented not only a major flood threat in the state of Colorado, but should also be considered a risk of national concern.

One of the first steps that Boulder should take in the near term is a rigorous evaluation of how we did in the flood. What actions did we take in recent decades that worked? Where can we do better?

The city has seen an enormous amount of development since 1969, and the floods of 2013 tell us where the water in a flood actually goes. Infrastructure -- including especially in our mountain communities and our city storm sewer systems -- needs a hard look. Improving that infrastructure will require investments that won't be cheap, and which will need to be evaluated against competing, worthwhile priorities.

A second step that Boulder should take in the near term is to openly debate and discuss options that might make our community more robust to future floods. Fortunately, Boulder is home to one of the world's greatest concentrations of hydrological and meteorological expertise, which should be drawn upon by the city to help create a suite of options for near-term action.

Unfortunately, Time magazine set in motion an urban legend when it called our disaster a 1000-year flood, suggesting that it was an incredibly rare event, on with only 0.1 percent chance of

occurring in any year. The claim subsequently has been repeated often across social and mainstream media.

We cannot afford to get caught up in such hyperbole. What we know so far is that the flood event experienced by the city of Boulder, despite the record extent and magnitude of rainfall, is actually probably more accurately described under standard methods of flood frequency analysis as a 25-year flood, or one with a 4 percent chance of occurring in any year.

Consider that the 1894 flood peaked at a flow of more than 11,000 cubic feet per second on Boulder Creek, whereas our recent flood peaked at just over 5,000 cubic feet per second. This fact does not minimize our recent experience, but it does put it into a larger context. Things could be, and indeed have been, much worse. A repeat of the 1894 event is a future we must consider in our planning.

Adding more incentive to our planning imperative, some argue that we should expect greater chances for flooding in the future, as many in the climate research community have predicted an intensification of the hydrological cycle, including more extreme precipitation. Boulder does not appear to have yet experienced such an intensification, having experienced 24 days with 2 inches or more of rainfall from 1897-1955 and 21 days from 1955 to present, representing very little change.

Regardless of how our local climate evolves in coming years and decades, we must prepare for a future that is uncertain, and which might include a greater frequency of high water flowing through our community. However, there is one fact of which we can be completely certain -- we have seen higher water in Boulder before and we will no doubt see it again. Now is the time to take actions that shape how we experience the flood next time.

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