



Association of State Dam Safety Officials

National Policy Position 1-2020

The Need for a Federal Leadership Role in Updated Extreme Rainfall National Standards for the 21st Century

National extreme rainfall (Probable Maximum Precipitation [PMP]) standards have long been used for regulation and design of high-hazard potential infrastructure including dams and nuclear power facilities. Those standards are used to bring consistency between Federal Agencies, State Agencies, and the private sector professional design community. Federal leadership is again needed to update these standards.

The US National Oceanic and Atmospheric Administration (NOAA), National Weather Service (NWS) first developed methodologies for estimating probable maximum precipitation (PMP) in the 1940s and, using historic data available at that time, applied them across the US through hydro and hydrometeorological studies and reports between 1961 and 1999. State dam safety programs have developed statutes, rules and guidance documents for design of safe facilities that are typically based on these federally sanctioned NWS studies.

Decades of storm event data (the basis for calculating the standards) have been recorded since the existing standards were published. These reports, however, have never been officially updated to include new methods, technologies, or decades of more recent storm data libraries.

These outdated reports continue to be used by many. Some state dam safety programs have changed their statutes to allow use of available new methodologies provided by entities outside the federal government and others find it too difficult to attempt. Inconsistencies between minimum design criteria of adjacent states and between federal and state design / performance expectations within states are increasing.

It has recently been reported that there are nearly 1700 high-hazard potential dams currently in need of repair across the country. It is reasonable to assume a percentage of those dams need spillway system improvements. Consistent and standardized modern methodologies for repair of spillways at high-hazard potential dams rated unsatisfactory are needed in order to ensure the highest level of public safety.

One recent study demonstrated possible approaches to updating extreme precipitation estimates at a national scale. The Colorado-New Mexico Regional Extreme Precipitation Study (REPS) included state-of-the-practice updates to existing methodologies and included use of NOAA research and high-resolution operational tools for prediction of extreme rainfall. The REPS study—reviewed by a board of subject matter experts from numerous federal agencies—also included research and recommendations for climate change considerations.

The Association of State Dam Safety Officials, therefore, recommends that NOAA resume a leadership role toward developing 21st century national standards for estimating extreme rainfall (probable maximum precipitation) in order to ensure consistent public safety in the U.S.

Furthermore, we recommend a National Academies of Science, Engineering and Medicine (NASEM) study be commissioned to study current state of the practice options for extreme rainfall estimation, including the REPS study in order to provide NOAA clear direction toward development of 21st century national standards for estimating extreme rainfall (including PMP).

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