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Updated Extreme Rainfall Study Enhances Public Safety

The Department of Water Resources (DWR) is excited to announce the release of the updated Probable Maximum Precipitation (PMP) study. This new study provides valuable extreme precipitation data, analysis techniques, and hydrology information that will help with review and design of dams in North Dakota in support of smart, efficient infrastructure and public safety.

Probable Maximum Precipitation is the maximum amount of precipitation that is meteorologically possible at a location at a given time of year, for a given duration. The updated PMP values help dam designers review critical dams in the state with a public safety-first mindset by leveraging standards necessary to evaluate performance under the most extreme rainfall the atmosphere may produce. Critical dams in North Dakota are those medium and high hazard dams that pose the greatest risk to public safety and infrastructure in the event of dam failure.

The PMP study was undertaken to update a statewide data set that was originally developed in the 1970s and 1980s by the National Oceanic and Atmospheric Administration (NOAA). The PMP study implements upgraded storm and snowpack data compiled over the last 40 years and was collaboratively developed by a team of private, state, and federal partners. The project was conducted by Applied Weather Associates (AWA) under a contract with the DWR, which was approved and funded by the North Dakota State Water Commission.

“The newly revised PMP information is the basis for making informed, technically sound engineering decisions necessary for the proper design and construction of dams in the State of North Dakota. It is imperative to have the most up-to-date data available to ensure the integrity of these structures for the safety of the public,” said State Engineer John Paczkowski.

The PMP study was managed by a review board to provide guidance, maintain analysis integrity, and help review deliverables and final products. The review board consisted of the DWR, National Weather Service, the Natural Resources Conservation Service, North Dakota Climatologist at North Dakota State University, and the U.S. Army Corps of Engineers Omaha District.

“The modernized PMP study was a collaborative effort by both state and federal agencies that have direct knowledge of the science and methods utilized in previous PMP analyses,” noted DWR Director Andrea Travnicek. “The updated study provides information that is central to the design and modification of dams throughout North Dakota. With a more complete picture of the potential risk posed by extreme precipitation events, those looking to either modify an existing structure or design a new dam could do so in a more cost-effective manner while still ensuring the structural integrity of the dam.”

Additionally, a new geographic information system (GIS) tool, along with interim guidance for dam design professionals to utilize the PMP information are available online from the DWR’s Dam Safety Program.

For more information or to view the PMP study, visit the DWR website at www.dwr.nd.gov.

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