

Texas Dam Safety Program 2015

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Presentation items

- Dam Failures/Incidents
- PMP Study



Dam Failures/Incidents



Dam Failures/Incidents

- 33 dam failures or incidents in May and June

































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Probable Maximum Precipitation (PMP) Study for Texas



PMP Study

- Started August 2014
- Completion August 2016
- Contractor – Applied Weather Associates,
Bill Kappel, Project Manager
- Peer Review Committee



PMP Study Peer Reviewers

- Dr. William Asquith, USGS and Texas Tech
- Dr. John Nielsen-Gammon, State Climatologist and Texas A&M
- George Bomar, Texas Department of Licensing and Regulation and author of *Texas Weather*



PMP Study Peer Reviewers

- Todd Marek, P. E., NRCS, Temple
- Simeon Benson, USCOE, Fort Worth
- Charles McWilliams, USCOE, Omaha, Neb.
- Debra Rankin, P. E., TCEQ Dam Safety
- Warren Samuelson, P. E., TCEQ Dam Safety



How Do Site-Specific, Statewide, Regional PMP Studies Provide Improved PMP Values?

- More storms considered
- New technologies used
- Problems/Unknowns in the HMRs corrected
- Topographic features addressed
- Updated climatologies used



Method for Computing PMP Values

- Observed extreme rainfall events are used
- Storm based approach
- Identify extreme storms in Texas and regions that are considered transpositionable
- Identify recent extreme storms since publication of the appropriate HMRs
- Review older rainfall data records
- Identify extreme storm types
- Local storms (thunderstorms/Mesoscale Convective Systems (MCS))
- General storms (frontal systems)
- Hurricanes/Tropical Systems



PMP Study for Texas

Background

- PMP values as provided in HMRs are overdue for updating
 - Storm data base grossly out of date (1970s)
 - Procedures used to analyze storms outdated
 - PMP values usually compound conservatism unrealistically
- Provide greater confidence, credibility, and more accurate/reliable values
- Apply updated meteorological understanding and techniques



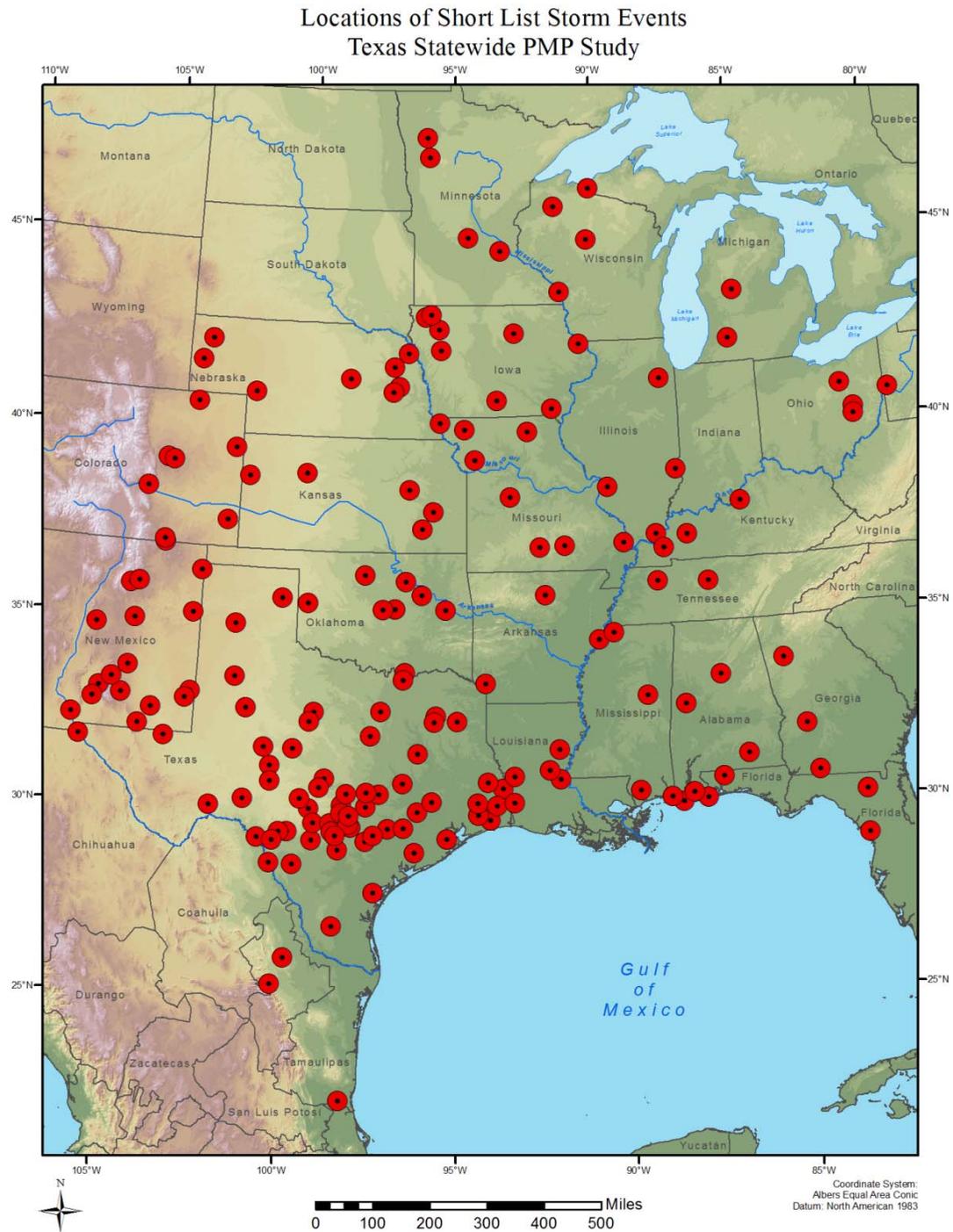
PMP Study for Texas

Procedure

- Update the storm database
 - Produce Depth-Area-Duration (DAD) analyses for all major storm events
- Use updated dew point analyses to maximize storms
 - Storm representative & maximum dew points
- Use of state-of-the-science procedures and tools
 - GIS & Orographic Transposition Factor
- Provide PMP values for all locations within Texas
 - All locations considered in this study
 - All durations and area sizes as required
- Utilize PMP Evaluation Tool to produce PMP on a gridded basis (~2.5sqmi grid)



Intermediate Storm List- All Storms



Example Results

- Alvin storm has been reported to be 43 inches in 24 hours. From handwritten notes, the storm appears to have been more like 45 inches in 24 hours
- Frontal system in Holt, Missouri resulted in a 12 inch rainfall in 42 minutes

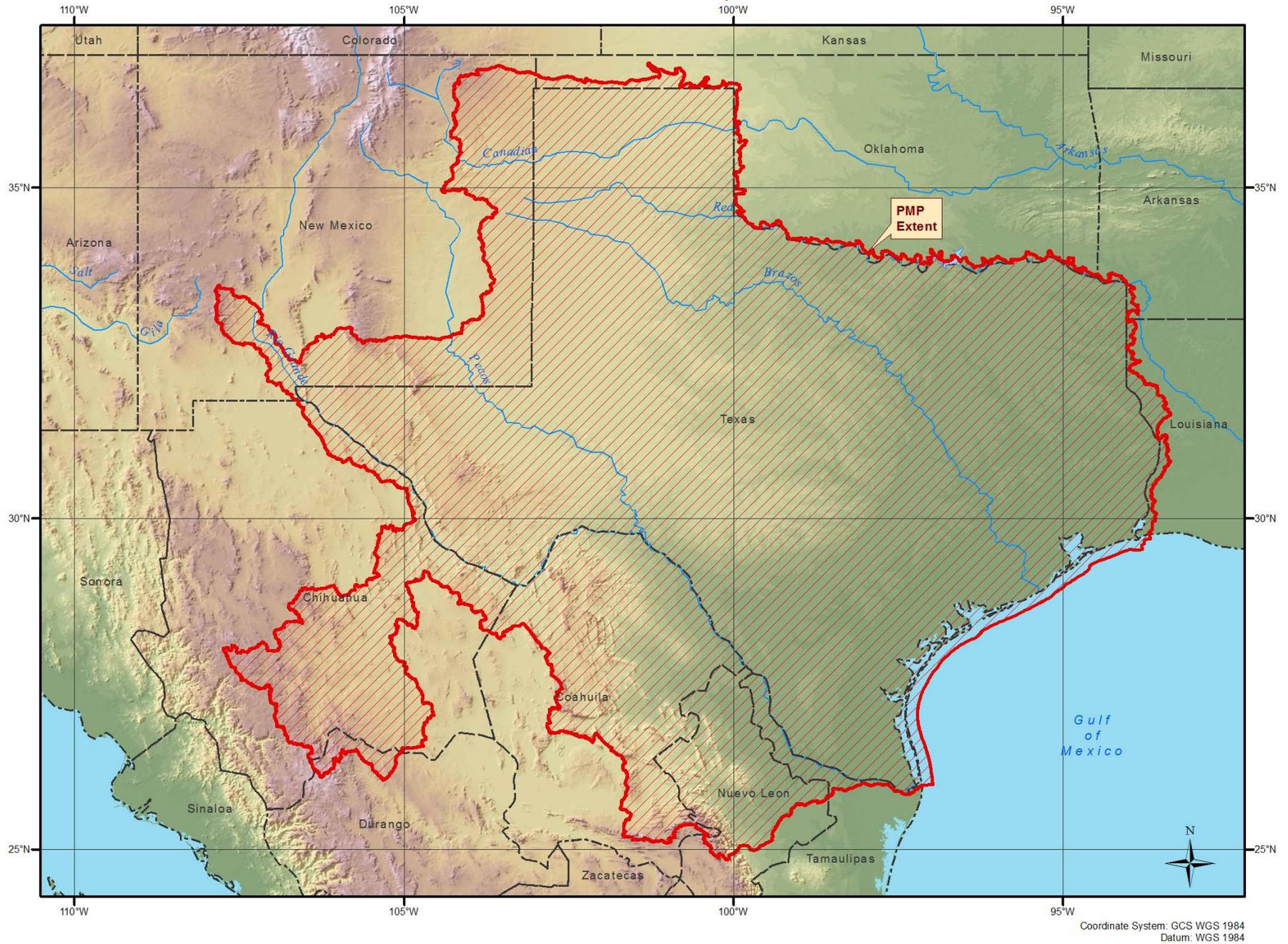


Recent Example

- Tahoka coop station – 9.1 inches in 24 hours. The 2nd highest 24 hour rainfall total recorded in this area of the state.



Proposed PMP Analysis Domain Texas PMP Study



Questions

