InFRM (Interagency Flood Risk Management)

Neches River Basin Overview

ANRA Steering Committee

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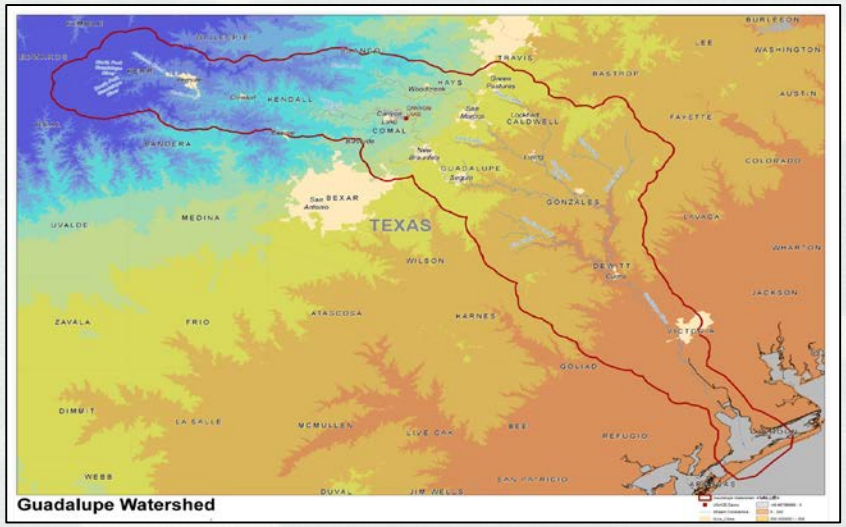
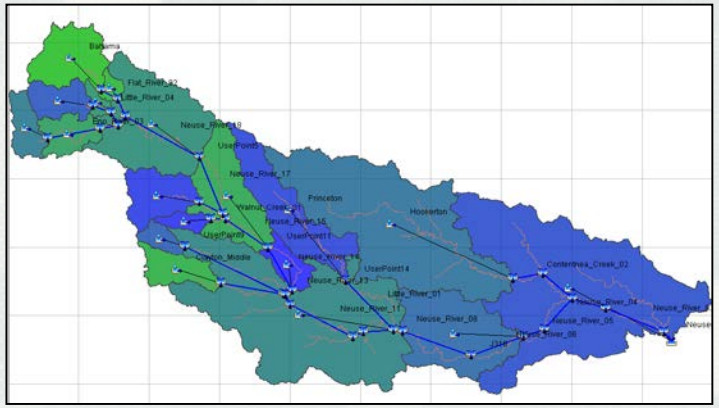
Objectives

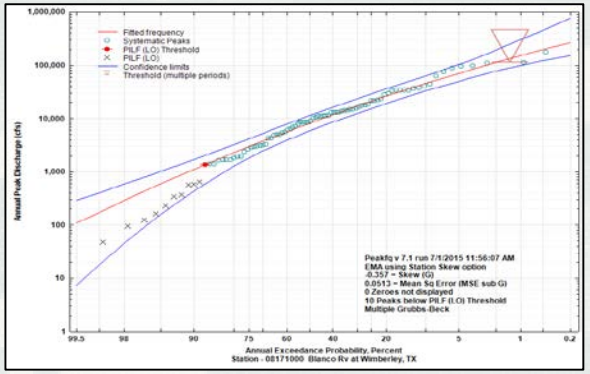
- Consistent flood risk assessments for entire watersheds within FEMA Region 6
- Utilize various hydrologic analysis techniques
- Examine and account for non-stationary trends
  - Land use changes
  - Climate variability
  - Regulation
- Watershed report
  - 0.2%, 1%, 2%, 4% and 10% exceedance probability events
- Modeling tools to easily increase granularity
- Interagency partnership



Methodology

- Statistical hydrology
- Rainfall-runoff modeling
  - Existing conditions
  - Future conditions
  - Ultimate development conditions
- Period of record (POR) simulations
  - Regulated
  - Unregulated watershed conditions
- Reservoir studies
- Stochastic methods in hydrology
- Comparison and convergence of methods



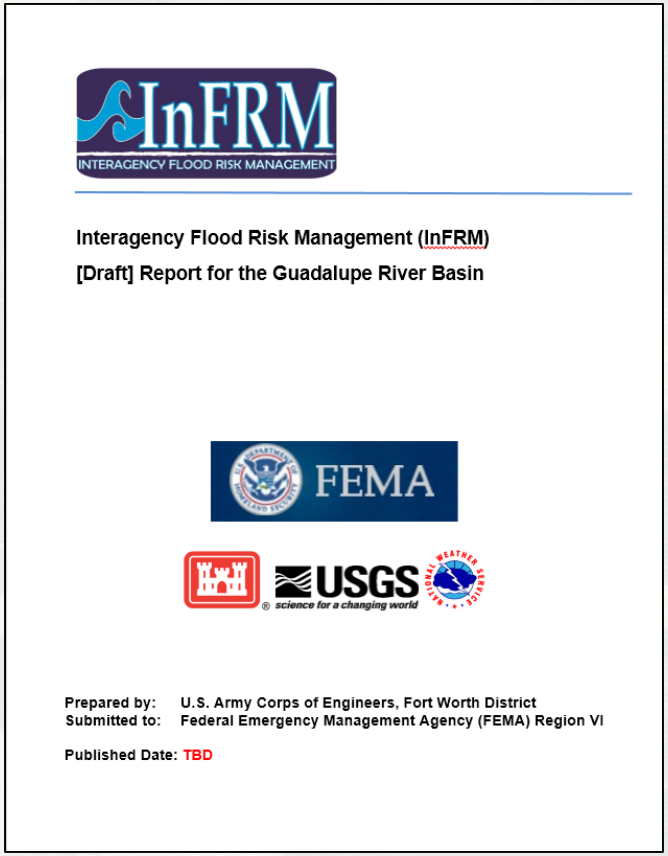


Advantages

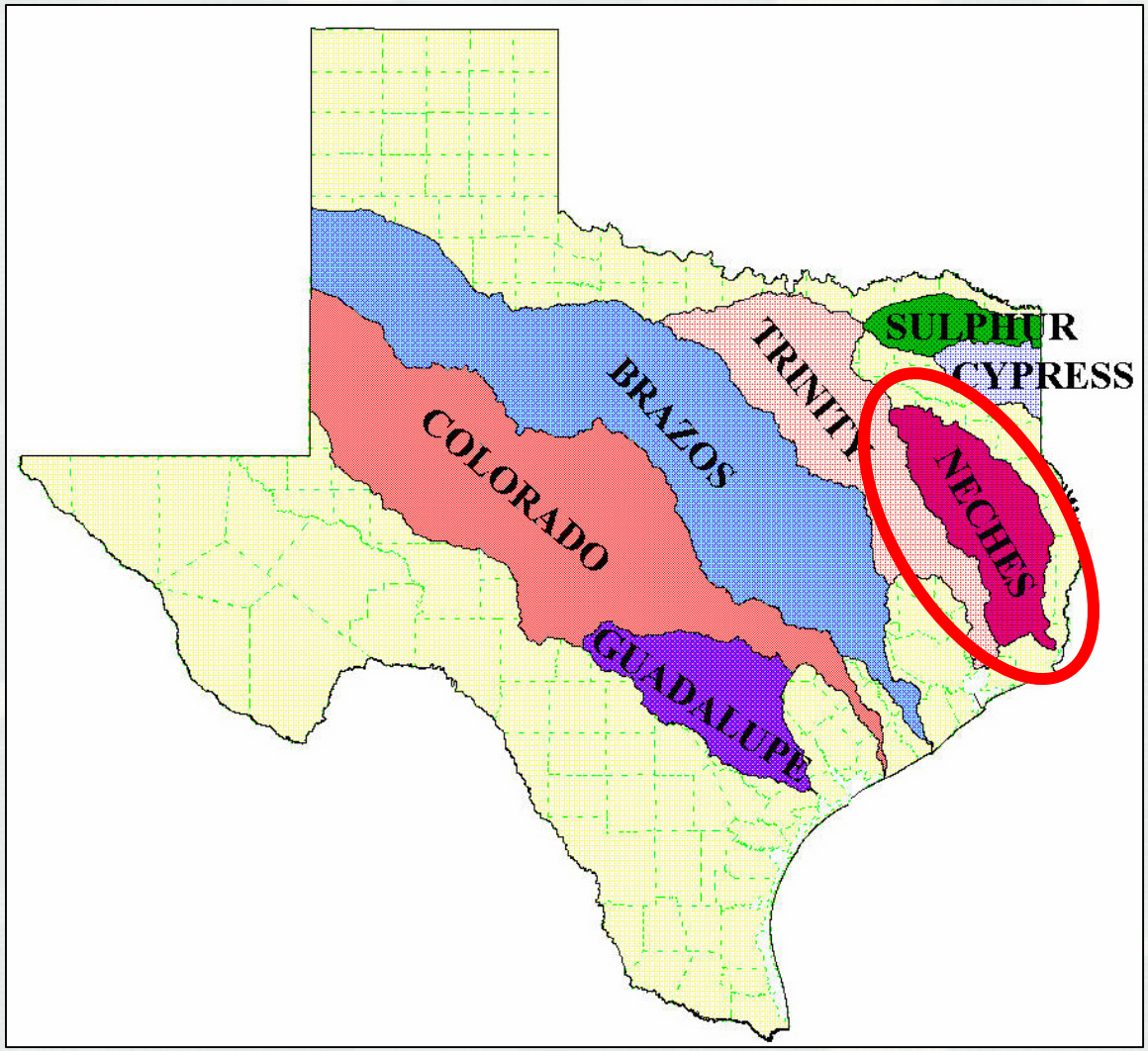
- Multi-Agency approach
  - Advanced scientific team
  - Leverage knowledge within each agency
  - Leverage previous flood risk studies
  - Leverage newly developed USACE CWMS models
  - Represents multiple federal agencies working to support FEMA and their flood risk program
  - Complements USACE flood risk programs
- Various hydrologic analysis techniques
- Look at impacts of non-stationary watershed trends on flood risk
- Consistent results across the entire watershed
- Toolset for use in more detailed studies

Products

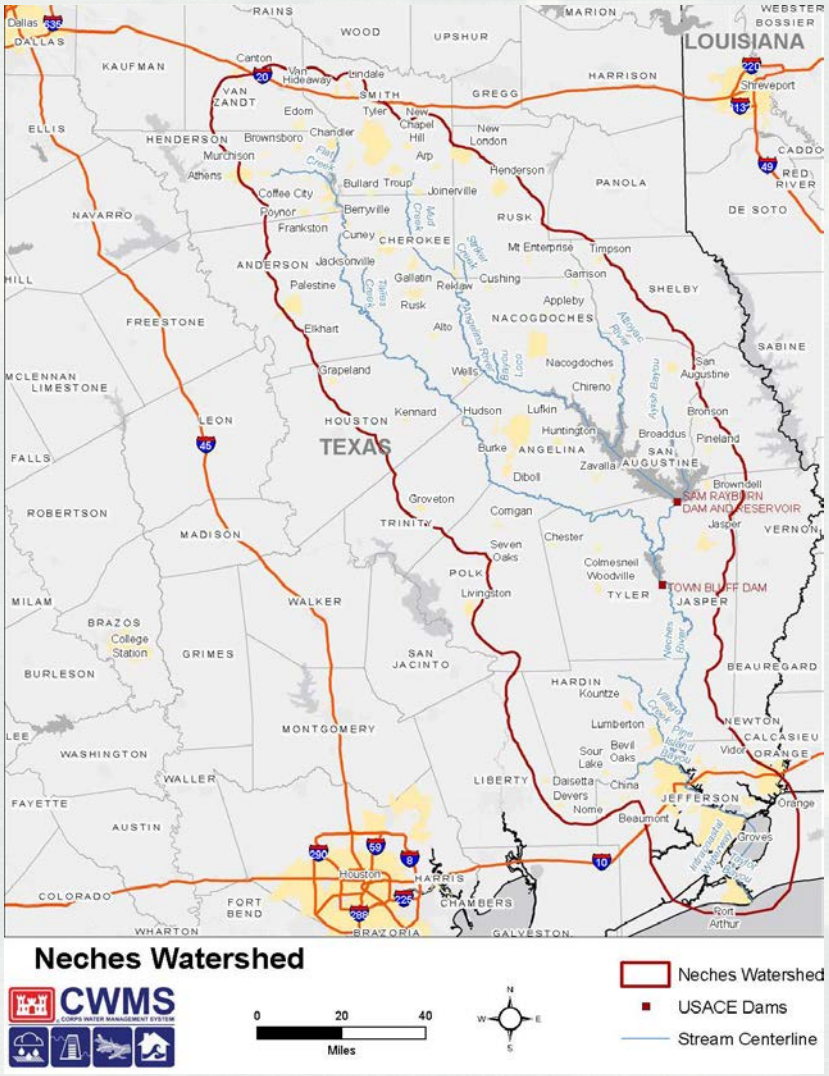
- Watershed report
- Results from various hydrologic methods
- Recommended results
- Modeling tools which can be used to increase granularity
- Comparison to previous flood risk studies within the watershed



General Location

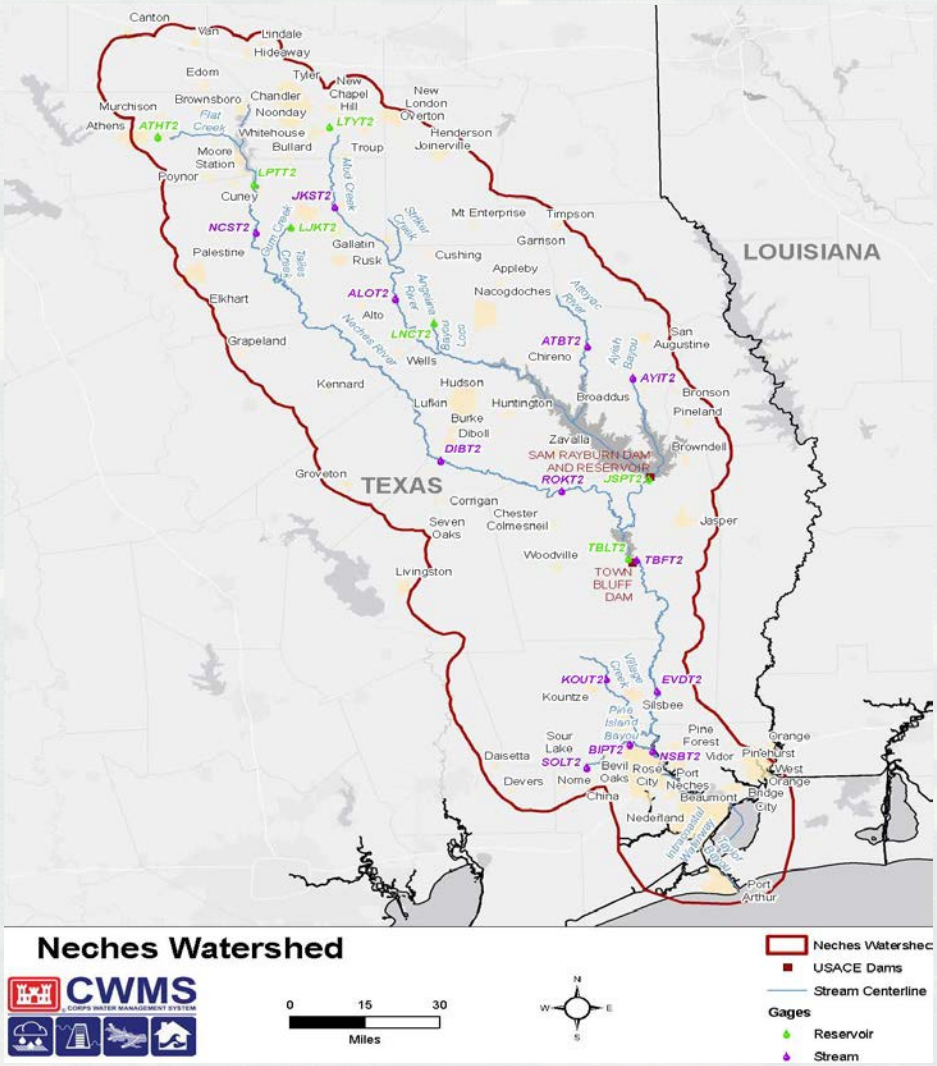


Neches River Basin



- 10,129 Square Miles
- 1.2 feet per mile Slope from Canton to Gulf
- 8 Large Dams

Stream and Reservoir Gages



- 20 Stream and Reservoir Gages

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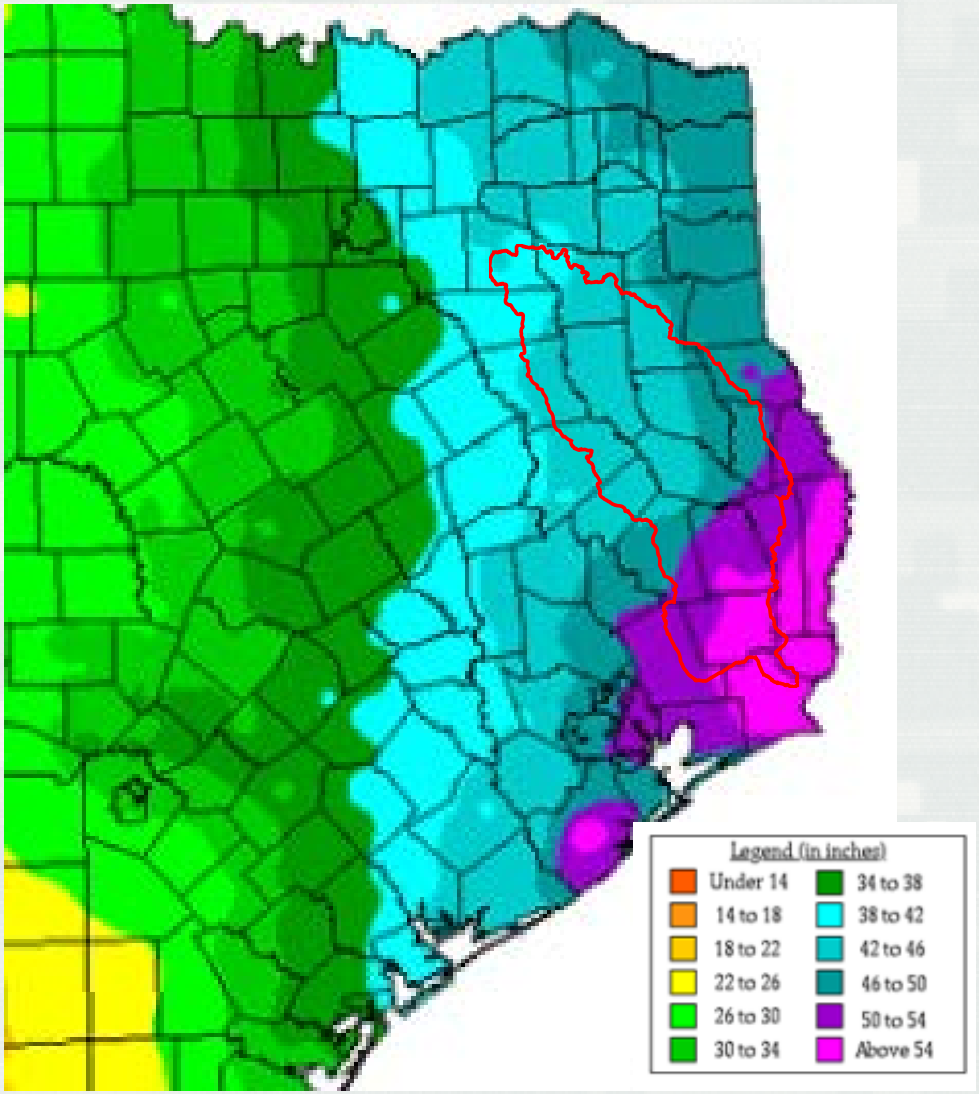
Average Annual Precipitation

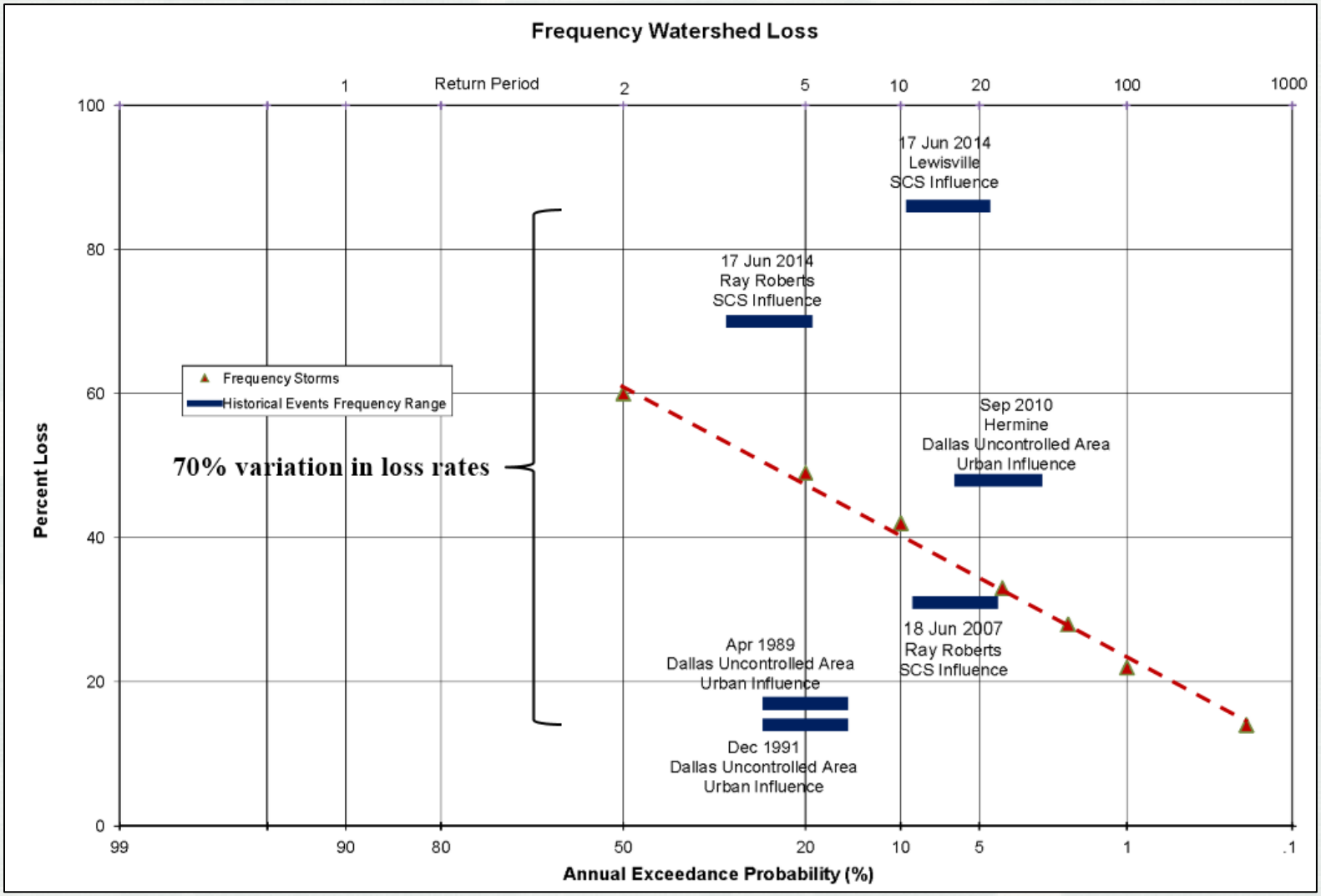


- Ranges from 38 to 54+ inches per year

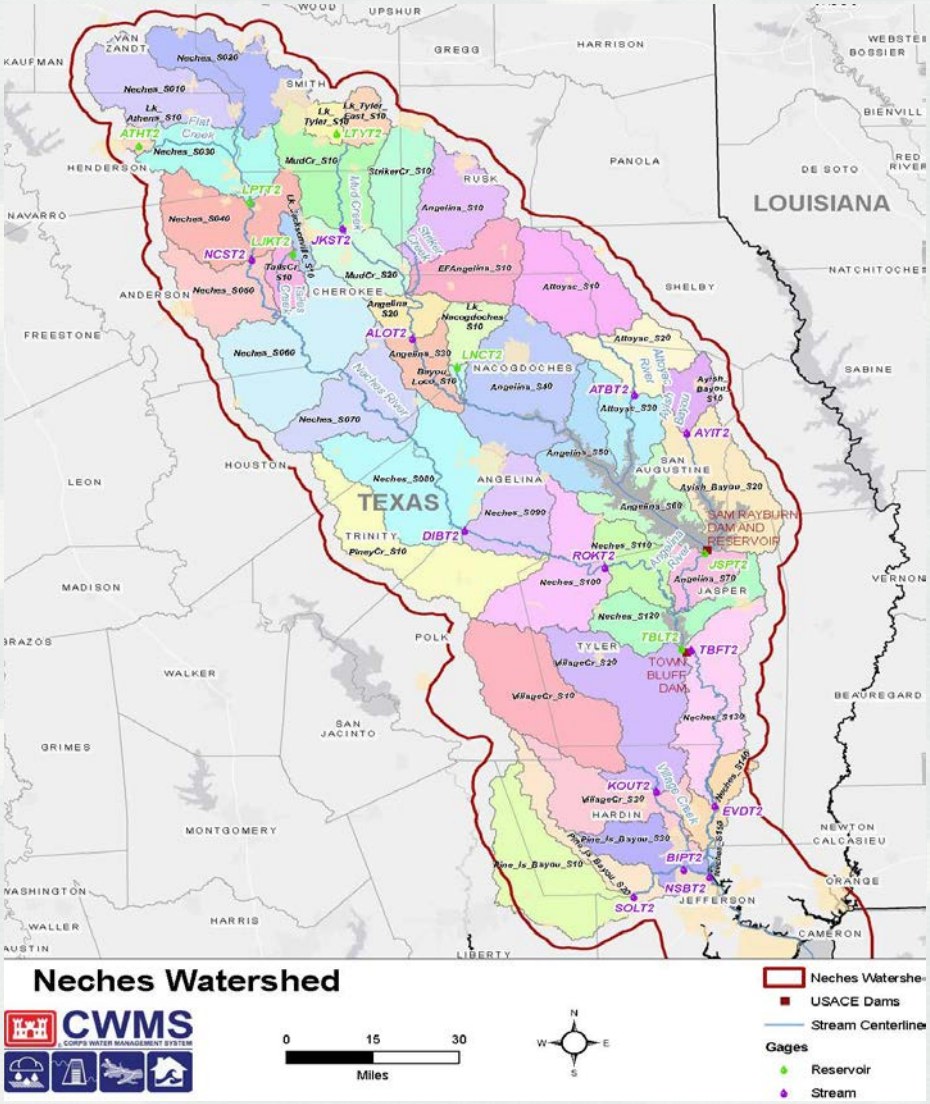
Sam Rayburn

- 2014 – 49 in
- 2015 – 68 in
- 2016 – 61 in

Climate Variability



CWMS Model



- 9,900 square miles
- 46 Subbasins
- 211 square miles (Median)

- Existing Model
  - Previous USACE HEC-1 Initial-Constant Loss, Snyder's Transform, and Recession Baseflow
  - CWMS Neches Model – Deficit-Constant Loss with Specified Evapotransipration, Clark/Mod-Clark Transform, Recession Baseflow

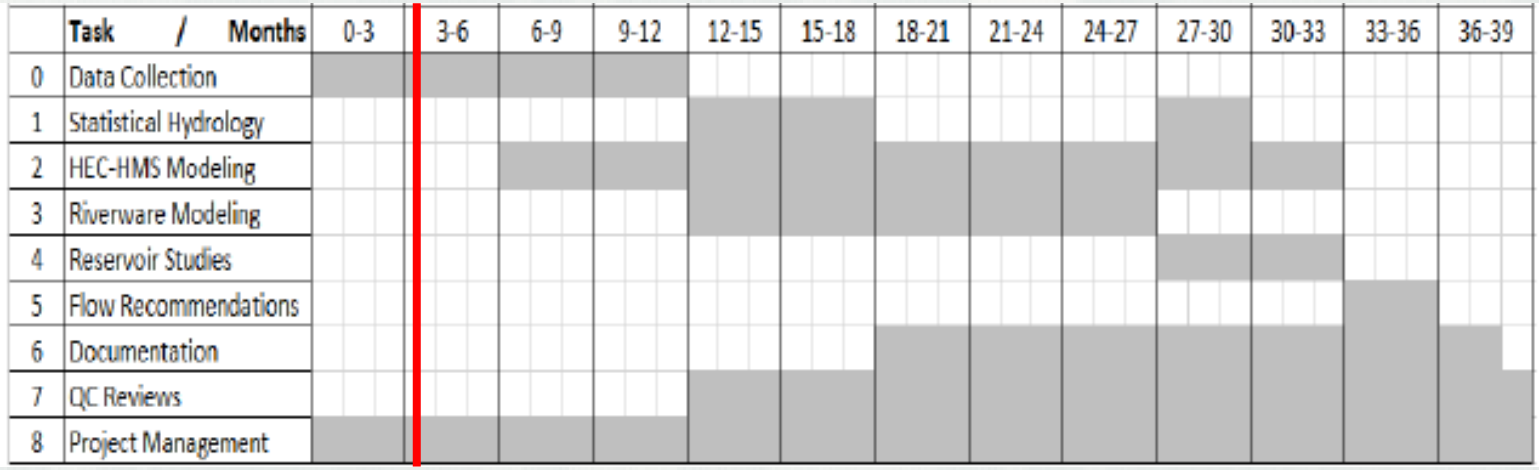
Historical Events

- Neches River
  - Neches Rv nr Rockland, TX Max – 17,200 cfs in 1968
  - Town Bluff Reservoir Max Elev – 85.21 in May 1953
  - Neches Rv nr Town Bluff, TX Max – 20,500 cfs in 1995
  - Neches Rv Saltwater Barrier Max – 21,500 cfs in 2015

Historical Events

- Angelina River
  - Angelina Rv nr Alto, TX Max – 5,450 cfs in 1969
  - Sam Rayburn Reservoir Max Elev – 173.75 in June 2015

Neches River Basin Project Schedule



	Task / Months	0-3	3-6	6-9	9-12	12-15	15-18	18-21	21-24	24-27	27-30	30-33	33-36	36-39
0	Data Collection													
1	Statistical Hydrology													
2	HEC-HMS Modeling													
3	Riverware Modeling													
4	Reservoir Studies													
5	Flow Recommendations													
6	Documentation													
7	QC Reviews													
8	Project Management													

- April 2017 - Kickoff Meeting
- Next Step - Data Collection
- Study Completion - April 2020

QUESTIONS?

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