

Section 15. Drought

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Why Drought Is a Threat

According to the Texas Parks and Wildlife Department, “Drought is one of the most complex, and least understood, of all natural hazards, affecting more people than do other natural hazards, but differing from them in important ways. Unlike earthquakes, hurricanes and tornadoes, drought unfolds at an almost imperceptible pace with beginning and ending times that are difficult to determine, and with effects that often are spread over vast regions. Drought is the most costly of all natural disasters, and because of the famines it causes, it is the most deadly.¹”

Drought is a period of time without substantial rainfall that persists from one year to the next. Drought is a normal part of virtually all climatic regimes, including areas with high and low average rainfall. Drought is the consequence of a natural reduction in the amount of precipitation expected over an extended period of time, usually a season or more in length. Droughts can be classified as meteorological, hydrologic, agricultural and socioeconomic. Table 15-1 defines these different perspectives on drought.



¹ July 2000, Todd H. Votteler, Ph.D, Texas Department of Parks and Wildlife.



Table 15-1. Drought Classification Definitions

Meteorological Drought	The degree of dryness or departure of actual precipitation from an expected average or normal amount based on monthly, seasonal, or annual time scales.
Hydrologic Drought	The effects of precipitation shortfalls on stream flows and reservoir, lake and groundwater levels.
Agricultural Drought	Soil moisture deficiencies relative to water demands of plant life, usually crops.
Socioeconomic Drought	The effect of demands for water exceeding the supply as a result of a weather-related supply shortfall.

Source: *Multi-Hazard Identification and Risk Assessment: A Cornerstone of the National Mitigation Strategy*, FEMA

Over time, droughts can have very damaging effects on crops, municipal water supplies, recreational uses, and wildlife. If droughts extend over a number of years, the direct and indirect economic impact can be significant.

Droughts can affect a large area and range in size from a couple of counties to several states. Their impact on wildlife and area farming is enormous. Droughts can kill crops, grazing grasses, edible plants and, in severe cases, trees. Agricultural losses in Texas from the 1996 drought are estimated at \$2 billion, and losses from the 1998 drought are estimated at \$2.1 billion, with some estimates much higher². Estimates of overall state losses from both droughts exceed \$11 billion. Dying vegetation also serves as a prime ignition source for wildland fires.

A heat wave combined with a drought is a very dangerous situation. Although drought can occur in any season, when extreme heat combines with drought conditions, the result can be a community disaster.

Droughts occur regularly in Texas and are a normal condition. They can vary greatly, however, in their intensity and duration. On average, a year-long drought takes place somewhere in Texas once every three years and a major drought every 20 years. Major droughts can last for years.

² Todd H. Votteler, Ph.D., Texas Department of Parks and Wildlife



Hazard Profile

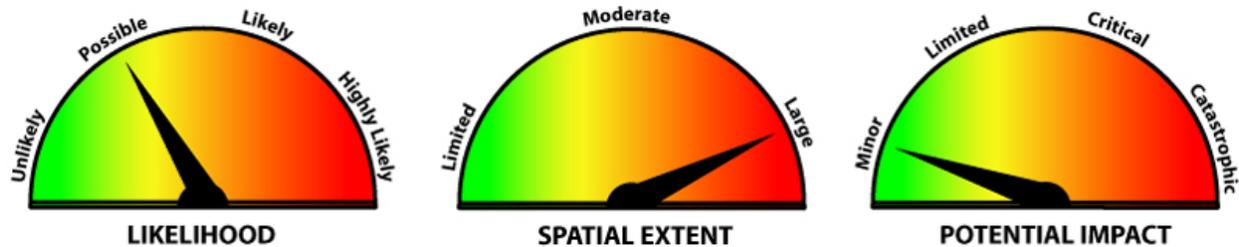


Figure 15-1. Drought Hazard Profile Summary for the City of Plano

The frequency, or likelihood, of a drought in the City of Plano is “Possible”, with an event possible in the next four to five years.

The spatial extent of drought is “Large,” expected to affect more than fifty percent of property in the City of Plano. The potential impact of drought is “Minor” resulting in few, if any, injuries. There is only minor property damage and minimal disruption to the quality of life. Any shutdown of facilities is temporary.

Droughts are slow onset hazards. Warning time for drought is long, since drought events take place over long periods of time. Drought warnings are issued by the State Drought Preparedness Council, as directed by H.B. 2660, based upon input from NOAA, the Office of the State Climatologist, the U.S. Geological Service, the Texas Water Development Board, Texas Commission on Environmental Quality and the Texas Agricultural Statistics Service. Warnings utilize five “levels of concern” and take into account assessments of climatology, agriculture, and water availability for each of ten climatic regions of the State.

Location of Hazardous Areas

There is no distinct geographic boundary to drought. Drought can occur in every area of the City and of the North Central Texas region equally.



History of Drought

Figure 15-2 shows historical drought events in the Texas Gulf Basin, which includes the City of Plano.

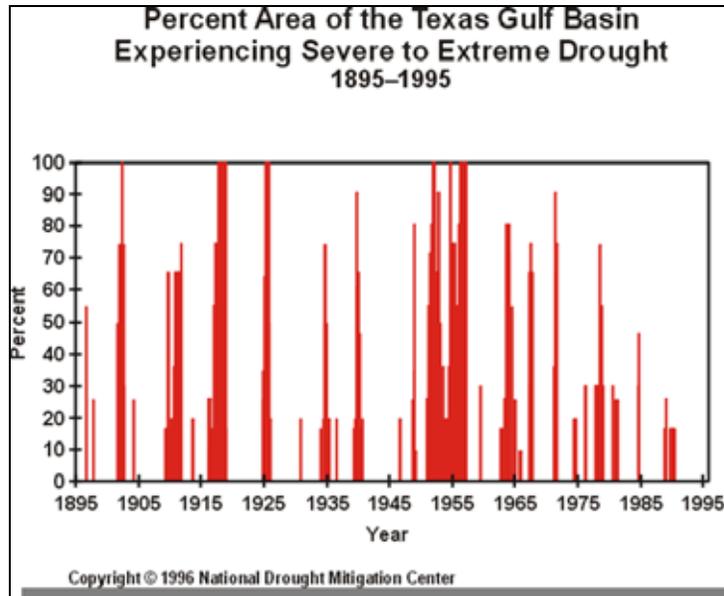


Figure 15-2.

There have been 13 drought events reported in Collin County, Texas January 1, 1950 and April 30, 2005. While these droughts have not affected buildings in Collin County, there has been some crop damage.

Table 15-1. Reported Drought Events in Collin County, according to the National Oceanic and Atmospheric Administration, January 1, 1950 to April 30, 2005

Event	Location	Date	Crop Damage
Collin County			
Drought	Collin Co.	04/01/1996	25.0M
Drought	Collin Co.	05/01/1996	25.0M
Drought	Collin Co.	08/01/1996	0
Drought	Collin Co.	07/01/1998	0K
Drought	Collin Co.	08/01/1998	0



Event	Location	Date	Crop Damage
Drought	Collin Co.	09/01/1998	0
Drought	Collin Co.	10/01/1998	135.0M
Drought	Collin Co.	07/01/2000	0
Drought	Collin Co.	08/01/2000	0
Drought	Collin Co.	08/01/2000	0
Drought	Collin Co.	09/01/2000	0
Drought	Collin Co.	09/01/2000	0
Drought	Collin Co.	10/01/2000	64.0M

People and Property at Risk

There is no defined geographic boundary for drought events. All population, buildings, critical facilities, infrastructure and lifelines, and hazardous materials facilities are considered exposed to the drought hazard and could potentially be impacted. As a result, drought deserves mitigation consideration by the City of Plano.

