

# Guidance

## Fire Weather Watches and Warnings

National Weather Service offices issue daily fire weather forecasts that state and federal natural resource agencies use to plan deployment of wildfire detection and firefighting resources. NWS offices also issue fire weather watches and red flag warnings when weather and fuel conditions are expected to occur that significantly increase the risks of dangerous wildfires. Typically, these are short duration events. The Texas Forest Service will also publicize the existence of dangerous fire conditions as they occur, to increase public awareness of the danger and encourage increased attention to outdoor fire safety.

The National Weather Service will issue a "Fire Weather Watch" to alert fire control officials and the public to the possible development of Red Flag conditions in a particular area or region in the near future (up to 72 hours in advance). Red Flag Warnings are issued when expected fuel (vegetation) and weather conditions will increase the likelihood of escaped control fires and rapid rates of spread of existing wildfires.

For a Red Flag Warning to be issued, predicted afternoon and evening relative humidity levels are expected to fall to 25

percent or lower, and sustained winds at 20 feet above the ground are expected to exceed 15 miles per hour for at least two hours. Also, the moisture content of dead fuels – primarily branches, twigs and other round wood from ¼ inch to 1 inch in size – must be at 8 percent moisture content or less and expected to remain at



## Keetch-Byram Drought Index

### What It Measures and Means For Firefighters

The Keetch-Byram Drought Index (KBDI) is a stand-alone index that can be used to measure the effects of seasonal drought on fire potential. The numeric value of the index is an estimate of the precipitation amount (in hundredths of inches) needed to bring the soil back to saturation. A value of "0" reflects complete saturation of the soil. The index deals with only the top 8 inches of the soil profile, so the maximum KBDI value is 800 or 8.0 inches of precipitation that would be needed to bring soil back to saturation.

As KBDI value increases, the vegetation is subjected to increased stress due to moisture deficiency. At higher values, desiccation (or wilting) occurs, and live plant material is added to the dead fuel loading on the site. Also, an increasing portion of the duff/litter layer becomes available fuel at higher KBDI index values.

KBDI values are more closely tied to fire danger during the active growing season than during the winter months,

so low dormant season KBDI values do not necessarily correspond to low fire danger. Soil moisture can be abundant during the winter, but dormant vegetation gets its moisture largely from the humidity in the air, not from the soil. Dormant grass and weeds will dry rapidly during periods of dry, windy winter weather and can become highly fire-prone, even while the underlying soil remains damp or very wet.

For an indication of how KBDI values correlate with potential fire behavior, go to the following Internet website: <http://www.tamu.edu/ticc/> and then to Predictive Services. A wealth of other fire-related information is also available.

Wildfire risk assessment personnel and fire behavior analysts look at many other fire-related factors besides KBDI – particularly during the dormant season – to determine the expected risks of wildfire ignitions and difficulty of control. Fire control leaders then have a more comprehensive picture of potential wildfire activity and behavior on which to base decisions on resource staffing and placement.

## Fire Prevention Can Cut Wildfire Load

Prevention of human-caused fires holds the key to a significant reduction in the number of wildfires. People and their actions cause over 90 percent of all wildfires in Texas.

Successful fire prevention efforts aimed at reducing fires caused by careless debris burning will pay the biggest dividends in reducing wildfire occurrence. Unattended burning of household trash and brush piles, with poor or no fire-breaks, accounts for a majority of debris fires. Burning leaves and other yard debris and burning off garden spots and pastures also contribute significantly to the wildfire load.

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