

KANSAS DROUGHT REPORT

June 5, 2007

Compiled by the Kansas Water Office from various federal, state, local and academic sources

Governor Lifts Remaining County Drought Declarations

Governor Kathleen Sebelius has lifted the Drought Warning declared for Barber, Harper and Sumner counties on March 6th. She also rescinded the Drought Watch declared for 57 additional counties at that time. These actions were made via Executive Order 07-13, signed on May 14, 2007.

Snowstorms in western Kansas this winter, coupled with recent heavy rains in the central and eastern portions of the state have increased stream flows and resulted in a dramatic increase in water levels in many reservoirs.

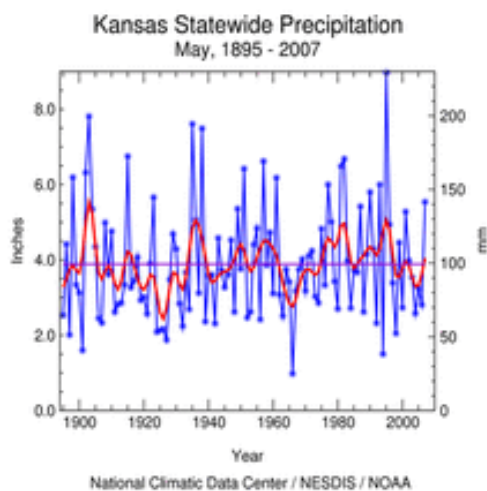
Current County Drought Stages

There are no county drought stage declarations currently in effect in Kansas. The U.S. Drought Monitor has not shown any areas with abnormally dry or drought conditions anywhere in the state since April 17th.

This table summarizes [historic drought declarations](#) made by the Governor from 2000 through 2007.

Drought Monitoring and Indices

Precipitation



May 2007 ranks as the 17th wettest on record (1895-2007) with a statewide average total precipitation of approximately 5.6 inches. The graph at the left shows May precipitation in this long-term perspective.

Most locations east of an Oberlin – Meade line saw above normal rainfall. The month was exceptionally wet in central Kansas where Salina recorded 15.96 inches and Hutchinson collected 13.70 inches. In contrast, some western locations received less than an inch including Goodland where the May tally was 0.81 inches, only 23 percent of normal.

Annual precipitation totals are running near to above normal in most areas. So far, 2007 (January – May) also ranks as the 17th

wettest on record. Monthly statewide [moisture status](#) graphs and rankings are available from the National Climatic Data Center.

Radar-based [precipitation estimate maps](#) covering multiple time periods are available from the National Weather Service. These maps are updated daily. Monthly and annual individual station and county average [precipitation data](#) is available from the Weather Data Library at Kansas State University.

Table 1 summarizes May and Year 2007 precipitation received at several major reporting stations in and adjacent to Kansas.

Table 1 Kansas Precipitation Summary						
Station	May 2007			Calendar Year 2007		
	Total (inches)	Departure (inches)	Percent of Normal	Total (inches)	Departure (inches)	Percent of Normal
Goodland	0.81	-2.65	23	6.46	-0.58	92
Hill City	3.57	-0.06	98	8.09	-0.87	90
Garden City (Airport)	2.65	-0.43	86	7.77	0.20	103
Dodge City	2.35	-0.65	78	7.75	-0.62	93
Russell	5.74	1.72	143	12.29	1.62	115
Concordia	6.29	2.09	150	11.89	1.50	114
Medicine Lodge	6.18	2.19	157	13.75	2.93	127
Wichita (International Airport)	4.11	-0.05	99	14.09	2.79	125
Topeka (Billard Airport)	10.25	5.39	211	19.25	6.56	152
St. Joseph, MO	6.46	1.51	131	13.50	0.95	108
Kansas City (International Airport)	5.94	0.55	110	14.12	0.45	103
Olathe (New Century Air Center)	6.88	1.47	127	17.92	3.46	124
Chanute	6.28	0.99	119	15.84	0.07	100
Joplin, MO	5.10	0.03	101	17.42	0.32	102

Source: National Weather Service Daily and Monthly Climate Summaries

U.S. Drought Monitor

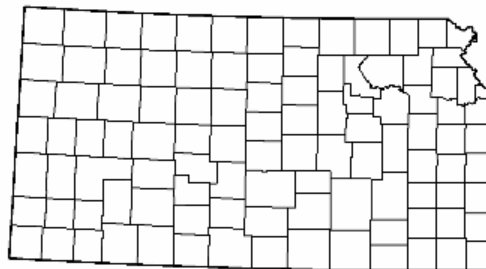
The Monitor ([current map](#)) is a composite of several observed weather variables and drought indices that is updated weekly. The May 29th map (see below) and accompanying table indicate that none of Kansas is currently depicted as being abnormally dry or experiencing drought. By way of contrast, 65 percent of the state was considered abnormally dry or in drought three months ago, while 79 percent of the state was experiencing abnormally dry-drought conditions at this time last year.

In the Kansas county drought stage scheme, a Drought Watch equates to moderate drought in the U.S. Drought Monitor, while a Drought Warning is the equivalent of severe drought. A Drought Emergency is reserved for extreme or exceptional drought.

U.S. Drought Monitor Kansas

May 29, 2007
Valid 7 a.m. EST

	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	100.0	0.0	0.0	0.0	0.0	0.0
Last Week (05/22/2007 map)	100.0	0.0	0.0	0.0	0.0	0.0
3 Months Ago (03/06/2007 map)	64.7	35.3	17.1	1.2	0.0	0.0
Start of Calendar Year (01/02/2007 map)	44.5	55.5	34.8	6.0	3.6	0.0
Start of Water Year (10/03/2006 map)	19.8	80.2	38.4	2.0	0.0	0.0
One Year Ago (05/30/2006 map)	21.5	78.5	44.8	30.1	1.7	0.0



Intensity:

- D0 Abnormally Dry
- D1 Drought - Moderate
- D2 Drought - Severe
- D3 Drought - Extreme
- D4 Drought - Exceptional

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements

<http://drought.unl.edu/dm>



Released Thursday, May 31, 2007
Author: Ned Guttman, NOAA/NESDIS/NCDC

The Palmer Drought Severity Index

The [Palmer Index](#) (PDSI) is an indicator used in the U.S. Drought Monitor. The statewide average PDSI for the week ending June 2nd was 3.69 (very moist), compared to 3.04 (very moist) on April 28th, and

-1.54 (mild drought) on June 3, 2006. Current divisional PDSI values range from 6.53 (extremely moist) in the southwest to 1.90 (moist spell) in the northwest. The 3.69 statewide average PDSI is the second highest such weekly value dating back to 1996. The highest was 3.71 for the week ending August 7, 1999.

Drought Impacts and Response

Fire

The National Weather Service began providing its full range of fire weather products and services in Kansas beginning in October 2006. Included are the Rangeland Fire Danger Index, Fire Weather Forecasts, Red Flag Watches/Warnings, and Spot Forecasts. Also, when county burning bans are issued, the NWS will issue a Special Weather Statement for that county.

Each NWS office serving Kansas has these products available on its website. These websites may be accessed from this [county warning and forecast area](#) map. Clicking on one of these areas takes you to that NWS Office's home page. Look for "Fire Weather" in the menu on the left margin of the page.

Agriculture

The [Kansas Crop and Weather Report](#) is updated weekly during the growing season. Included is information about crop conditions and progress, soil moisture conditions, range and pasture conditions, hay and pasture supplies and stock water supplies.

The June 4th Report for the preceding week showed that topsoil moisture was rated 11 percent short – very short, 65 percent adequate and 24 percent surplus, statewide. This contrasts with the 43 percent short – very short reported for the same week in 2006. Subsoil moisture was rated 9 percent short, 75 percent adequate and 16 percent surplus, statewide, as compared to 54 percent short-very short last year at this time. Hay and forage supplies were rated 34 percent short-very short, 65 percent adequate and 1 percent surplus on June 4th. Statewide stock water supplies were rated 4 percent short, 77 percent adequate and 19 percent surplus.

Public Water Systems

The Kansas Water Office has developed draft Municipal Water Conservation Plan Guidelines that would update the current guidelines which date to 1990. These guidelines cover drought response in addition to long-term water conservation. On April 4th, the Kansas Water Authority released the Draft Guidelines for public review; approval will be sought at the KWA's June 2007 meeting.

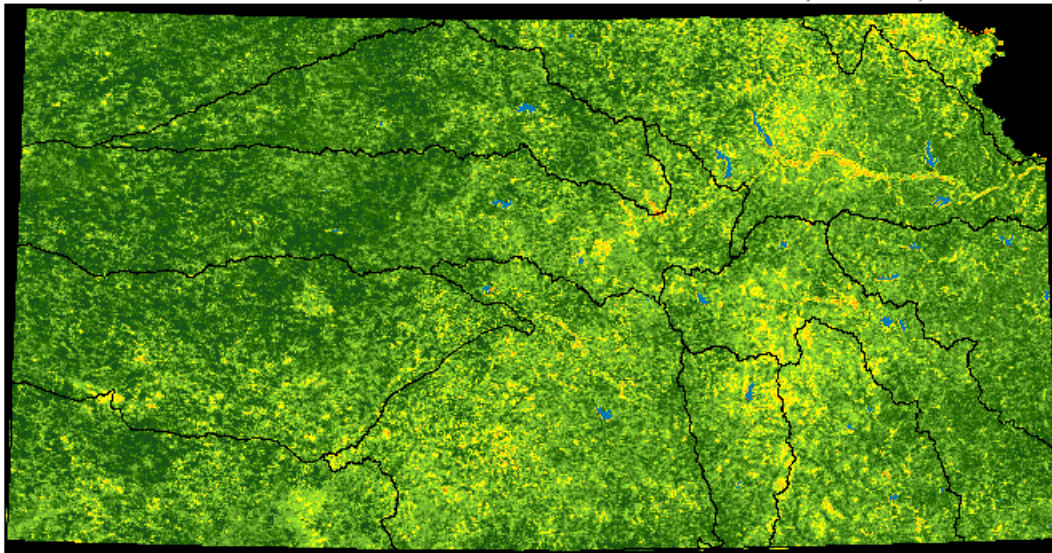
The Kansas Department of Health and Environment and the Kansas Water Office have updated the state's drought vulnerable public water systems list. This list identifies those systems most likely to first be impacted by drought and the reason for their vulnerability. The [Drought Vulnerability Assessment Report](#) includes the list and an explanation of the methodology used in the update.

In August 2006 the Governor's Drought Response Team released [Responding to Drought: A Guide for City, County and Water System Officials](#). This guidance provides an overview of Kansas county drought stages, local planning and coordination, disaster declarations, and available state and federal assistance.

Vegetation Conditions

The Kansas Applied Remote Sensing Program (KARS) at the University of Kansas produces a [Kansas Green Report](#) each week during the growing season. This report consists of a set of five interactive maps derived from satellite and historic data that illustrate vegetation conditions and crop progress across the state.

A Vegetation Condition Index Map, included in the Green Report, illustrates vegetation health and levels of plant stress based on current and historic vegetation greenness and surface temperatures. The most recent map (see below) for the period ending May 28th reflects improved conditions in eastern Kansas from a month previously. This is associated with recovery from the severe freeze of April 7-8.



Kansas Water
Office

KARS

Kansas Applied Remote Sensing Program

Streamflow and Reservoir Conditions

The U.S. Geological Survey [Kansas Drought Watch](#) provides information on 7-day average streamflow conditions at long-term gaging stations and how they compare to normal flows. Most of these gages are located in central and eastern Kansas. A map (click on National Drought Map and then on Kansas) identifies river basins experiencing below normal flows and hydrologic drought.

Seven-day average streamflow was below normal at approximately 10 percent of Kansas' long-term gaging stations (most in southwest Kansas) on June 1, 2007, as compared with 18 percent below normal on May 1st. Normally, about 25 percent of gages are below normal at any given time. The percentage of gages with below normal flows has remained near 10 percent during the past month.

The U.S. Geological Survey reported below normal (10th -24th percentile) 7-day average flows in the Cimarron Basin on June 3rd; the Cimarron is the only Kansas river basin currently experiencing below normal flows.

As of May 30, 2007, minimum desirable streamflow (MDS) administration by the Division of Water Resources continued at only two gaging stations; the Republican River at Concordia and the Republican River at Clay Center.

Table 2 summarizes federal reservoir pool elevations on June 1, 2007 in terms of departure from the top of the conservation/multipurpose pool and pool elevation change since May 1, 2007. The pool level on June 1st was higher than that of May 1st in 22 of the 24 federal reservoirs. The greatest rise during this period was 21.6 feet at Tuttle Creek Lake. Pool levels at Norton, Cedar Bluff, Kirwin, Waconda, Wilson and Webster reservoirs remain below the top of the conservation/multipurpose pool. Webster Lake is 21.2 feet down.

U.S. Seasonal Drought Outlook

The [Seasonal Drought Outlook](#), developed by the NOAA Climate Prediction Center, assesses the likelihood for improvement, persistence or deterioration in drought conditions for areas currently experiencing drought as identified by the U.S. Drought Monitor. The Outlook released May 17th for the period June through August 2007 indicates that re-development of drought in Kansas and adjacent areas is not likely. The Outlook calls for drought to persist or intensify in the Southwest, with the exception of

Arizona where the summer thunderstorm season is expected to provide some relief. Improvement is expected in the drought areas of the Southeast and Upper Midwest, while drought development is likely in eastern Oregon and southern Idaho. Beginning on June 7th, the Drought Outlook will be updated on the first and third Thursday's of each month.

Table 2 Kansas Federal Reservoir Pool Elevation Summary					
Reservoir	Top MP/C Pool	Pool Elevation (Feet MSL)		06/01/07	
		05/01/07	06/01/07	Departure from Top	Change from 05/01/07
Kansas River Basin					
Norton	2304.3	2290.3	2290.5	-13.8	0.2
Lovewell	1582.6	1583.0	1584.4	1.8	1.4
Milford	1144.4	1141.5	1151.6	7.2	10.1
Cedar Bluff	2144.0	2129.1	2129.2	-14.8	0.1
Kanopolis	1463.0	1465.6	1477.5	14.5	11.9
Wilson	1516.0	1511.3	1512.2	-3.8	0.9
Kirwin	1729.3	1711.6	1711.9	-17.4	0.3
Webster	1892.5	1870.7	1871.3	-21.2	0.6
Waconda	1455.6	1447.4	1447.6	-8.0	0.2
Tuttle Creek	1075.0	1077.6	1099.2	24.2	21.6
Perry	891.5	893.1	900.5	9.0	7.4
Clinton	875.5	877.5	882.1	6.6	4.6
Pomona	974.0	974.2	977.1	3.1	2.9
Melvorn	1036.0	1036.9	1037.8	1.8	0.9
Hillsdale	917.0	917.9	919.5	2.5	1.6
Arkansas River Basin					
Cheney	1421.6	1421.8	1425.1	3.5	3.3
El Dorado	1339.0	1335.6	1339.6	0.6	4.0
Toronto	901.5	901.5	905.3	3.8	3.8
Fall River	948.5	948.9	951.1	2.6	2.2
Elk City	794.0	794.5	794.9	0.9	0.4
Big Hill	858.0	858.4	858.3	0.3	-0.1
Council Grove	1274.0	1274.2	1274.2	0.2	0.0
Marion	1350.5	1348.7	1351.2	0.7	2.5
J. Redmond	1039.0	1041.3	1052.3	13.3	11.0
All values are in feet. Negative departures or changes are shown in red. Source: U.S. Army Corps of Engineers					

Additional Information

The Kansas Water Office web site, [KWO Drought](#), contains additional drought information including links to other agencies with drought information and past issues of the Kansas Drought Report. The Operations Plan for the Governor's Drought Response Team is also available here.

Please contact Tom Lowe at the KWO (785/296-0874) or tlowe@kwo.state.ks.us, should you have any questions.