

SWPTF Drought Assessment – November 8, 2011

Summary

State Water Plan Task Force (SWPTF) members provided agency reports on the current drought conditions. The U.S. Drought Monitor as of data collected to November 1 shows 25.41 percent of the State experiencing dry conditions, of which 19.51 percent of the state is experiencing a moderate drought and 9.38 percent of the state is experiencing a severe drought. There has been a considerable reduction in the geographical area experiencing dry and drought conditions since the last SWPTF report on October 12. The recent rains on November 7 and 8 have further reduced the level and areas of drought. The drought area is mostly confined to the west and central portions of the State with departures of 2 to 4 inches below the mean during the last 90 days. Since July 1, the deficits are 4 to 7 inches in that same area. The hydrologic impacts have been minimal as we entered this dry period (early July) with above normal precipitation and above normal storage in shallow groundwater.

The November 6, 2011 USDA Illinois Weather and Crops report shows that 94% of the corn and 97% of the soybeans have been harvested. In addition, 95% of the winter wheat has been seeded with 78% having emerged. Winter wheat conditions are 1 percent poor, 23 percent fair, 68 percent good, and 8 percent excellent. The IEPA Division of Public Water Supplies reports that the only area of concern at this time remains Decatur. Decatur received about an inch of rain on November 3 that brought the lake level up one inch to 611.32, which is 1.18 feet below the normal winter level. Otherwise, the lake level is normally between 613.5 and 614 feet. Decatur reported that the use of their DeWitt County wellfield is negatively impacting nearby wells. The Department of Public Health continues to hear and notice considerable activity in the hauling of water for shallow wells at least for the central and eastern areas of the state. The Illinois State Water Survey reported shallow groundwater levels below normal mostly limited to the central portion of the State, with the greatest deviation from normal (-3.12 feet) observed in Pike County. An ISWS report on streams and reservoirs follows.

In summary, while the current hydrologic impacts have been minimal, the impacts may quickly elevate if the deficits continue across central Illinois. The current weather forecast provided by the NWS Climate Prediction Center calls for an increased chance of warmer and drier than normal conditions this fall across Illinois. However, their forecast for January-March calls for an increased chance of above-normal precipitation with near-normal temperatures across the state. The SWPTF will continue to monitor the drought conditions and will provide another assessment report at the next SWPTF meeting on December 15.

The following detailed water and climate data was provided by the Illinois State Water Survey:

Precipitation

The statewide average precipitation for October in Illinois was 1.79 inches, 1.12 inches below average, or 61 percent of average. That makes it the 21st driest October on record back to 1895. November is already off to a wet start as two systems have moved through the state. Western Illinois has received 2 to 3 inches through November 8 with more forecasted in the next 24

hours. See map below. As shown in Table 1, many sites in the driest area have already received as much precipitation in the first 8 days of November as they did in all of October.

The forecasts from the National Weather Service indicate above normal rainfall for Illinois in their 6-10 day and 8-14 day outlooks. Their outlook for the entire month of November is for an increased chance of above-normal precipitation across Illinois. As temperatures continue to cool, the harvest is complete, and vegetation goes into dormancy, very little of this precipitation will be lost to evaporation and transpiration. Therefore, soil moisture is expected to continue its recovery over the next several weeks before the ground freezes.

Table 1. Precipitation totals for selected sites in October and November (through morning 11-8).

	October	November
Quincy	1.57	2.79
Peoria	0.67	2.57
Galesburg	0.68	3.51
Springfield	1.17	1.79
Decatur	1.97	1.33
Champaign-Urbana	2.46	1.64

Soil Moisture

The Illinois State Water Survey has soil moisture measurements at 19 sites around the state. In the driest areas, we have soil moisture measurements under sod at Monmouth, Perry, and Springfield. Looking at the top 50 cm at 5 p.m. on November 7,

- Monmouth was at 27 percent;
- Peoria was at 30 percent;
- Perry was at 27 percent;
- Springfield was at 29 percent water by volume of soil.

These soil moisture observations do not include the effect of the additional rains after 5 pm on November 7. Those sites had percent water by volume values in the mid-teens at the end of August. Field capacity is somewhere around 35-45 percent of water by volume, depending on the soil. In general, soil moisture has shown strong signs of recovery thanks to the recent rains.

Hydrologic Conditions (Streams and Reservoirs)

The attached table gives provisional values of the October average streamflow as recorded at selected gaging stations operated by the U.S. Geological Survey. Conditions continue to be dry in a swath through central Illinois. Several major rivers of the region, including the Sangamon, LaMoine, Vermilion, and Embarras Rivers, experienced “below normal” flows during the month of October. However, only the upper Sangamon River at Monticello experienced flows that were “much below normal.” Typically, during a drought condition we would expect to see a number of streams in this “much below normal” category.

In the central part of the State, there are a number of water supply reservoirs that have below normal pool levels for this time of year, including at Canton, Carlinville, Danville, Decatur, Hillsboro, Highland, Mt. Olive, and Springfield – reservoirs for which the ISWS maintains monthly lake level records. For most of these reservoirs, the end-of-month October levels were typical of dry conditions that might be expected to occur on average once in 4 to 6 years. Low water levels at Decatur, however, are typical of a 1-in-10-year dry condition, producing water supply concerns for the community.

On November 7, the water level in Lake Decatur was recorded at an elevation of 611.2 feet, over 3 feet below the full pool level of 614.4 feet. The lake level has fallen roughly 0.6 feet over the past 30 days, and storage in the lake is now roughly 30 percent below full capacity. Decatur has been implementing mandatory water restrictions since October 3 and has been pumping water from two auxiliary supply sources. As of late October, one of those sources (a City-owned former gravel pit) is no longer available, as it has been pumped nearly dry. Pumping continues at the DeWitt well field, the second auxiliary source; however, it is expected that these wells will be turned off in the near future because of impacts to nearby wells. An additional upcoming action, identified in the City's drought response plan, is that ADM will install a temporary low flow dam in Lake Decatur at the Reas Bridge to maintain a minimum lake level (610.0 ft) at its intake.

If dry weather persists, the Lake Decatur water level could potentially fall to an elevation of 610.0 feet (roughly 50% capacity) in the next two months, which would be its lowest lake level since the 1988 drought. Although runoff in the Sangamon River from the recent 0.5" storm event was not great, it was sufficient to indicate that moisture in the watershed's soils is being replenished, increasing the likelihood that greater runoff will be produced by similar rainfall events in the upcoming months. The Sangamon River's response to rains in the next few days (November 7th and 8th) and over next week will provide additional information as to the likelihood of reservoir replenishment in the near-term. As mentioned in prior updates, extraordinarily dry (record-breaking) conditions would be needed over the winter and early spring months to prevent the reservoir from being replenished by spring runoff. But until Lake Decatur begins to refill, the potential for diminishing lake levels could cause the situation to be increasingly uncomfortable for the City.

Provisional Mean Flows, October 2011

Station	Drainage area (sq mi)	Years of record	2011 mean flow (cfs)	<u>Long-term flows</u>		Flow condition	Percent chance of exceedence	Days of data this month
				Mean*	Median			
Rock River at Rockton	6363	75	3378	3171	2769	normal	39	31
Rock River near Joslin	9549	67	4720	4631	4110	normal	39	31
Pecatonica River at Freeport	1326	91	1000	712	607	above normal	17	31
Green River near Geneseo	1003	72	213	389	215	normal	51	31
Edwards River near New Boston	445	72	20	142	48	below normal	81	31
Kankakee River at Momence	2294	93	1569	1235	922	above normal	22	31
Iroquois River near Chebanse	2091	86	172	737	193	normal	52	31
Fox River at Dayton	2642	91	1183	1162	832	normal	38	31
Vermilion River at Pontiac	579	66	6.7	152	24	below normal	84	31
Spoon River at Seville	1636	93	107	527	183	normal	68	31
LaMoine River at Ripley	1293	87	36	435	115	below normal	79	31
Bear Creek near Marceline	349	66	2.2	123	13	below normal	76	31
Mackinaw River near Congerville	767	61	23	203	30	normal	61	31
Salt Creek near Greenview	1804	68	149	544	218	below normal	73	31
Sangamon River at Monticello	550	98	6.2	175	35	much below normal	92	31
South Fork Sangamon near Rochester	867	61	4.0	199	26	below normal	83	31
Illinois River at Valley City	26,743	71	7893	12,920	8067	normal	52	31
Macoupin Creek near Kane	868	81	27	242	47	normal	58	31
Vermilion River near Danville	1290	88	61	363	104	below normal	80	31
Kaskaskia River at Vandalia	1940	40	135	618	210	normal	52	31
Shoal Creek near Breese	735	66	28	186	45	normal	57	31
Embarras River at Ste. Marie	1516	96	54	443	111	below normal	72	31
Skillet Fork at Wayne City	464	90	8.7	107	12	normal	53	31
Little Wabash below Clay City	1131	95	25	232	51	normal	67	31
Big Muddy at Plumfield	794	39	212	144	60	above normal	17	31
Cache River at Forman	244	86	11	64	17	normal	58	31

Notes:

Source streamflow data are obtained from the U.S. Geological Survey.

N/A = not available (due to ice or equipment problems).

Much below normal flow = 90-100% chance of exceedence.

Below normal flow = 70-90% chance of exceedence.

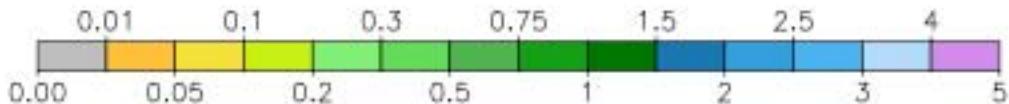
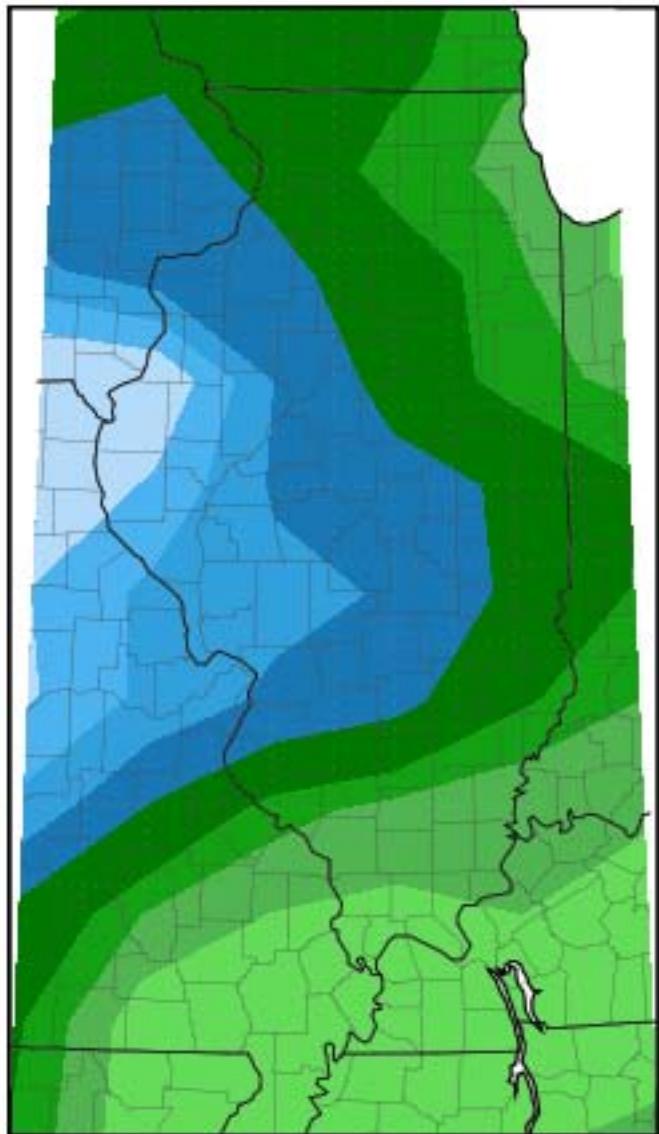
Normal flow = 30-70% chance of exceedence.

Above normal flow = 10-30% chance of exceedence.

Much above normal flow = 0-10% chance of exceedence.

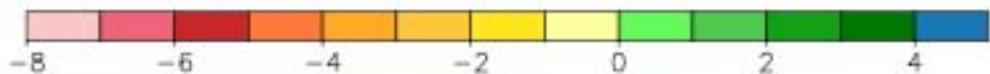
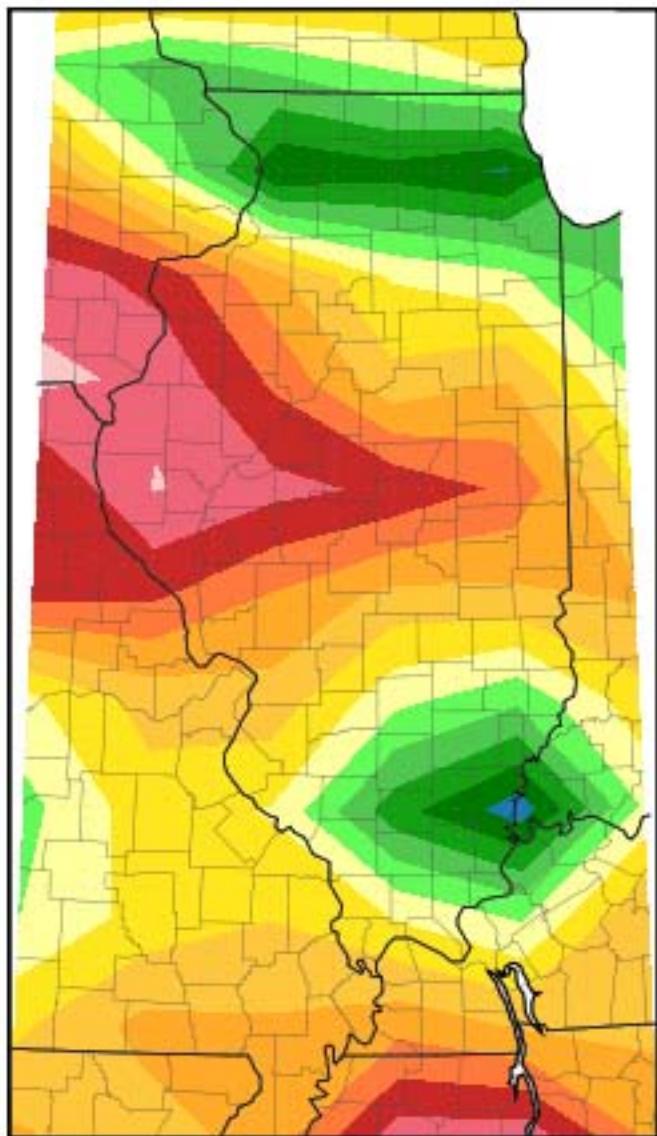
*As reported in U.S. Geological Survey (USGS) Water Resources Data, Illinois, Water Year 2010.

Total Precipitation (inches)
November 1, 2011 to November 8, 2011



Midwestern Regional Climate Center
Illinois State Water Survey
University of Illinois at Urbana-Champaign

Total Precipitation (inches): Departure from Mean
July 1, 2011 to November 8, 2011



Midwestern Regional Climate Center
Illinois State Water Survey
University of Illinois at Urbana-Champaign