



MONTHLY WATER INVENTORY REPORT FOR OHIO

November 2011

<http://www.ohiodnr.gov/tabid/4191/Default.aspx>

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PRECIPITATION during November was noticeably above normal state-wide. The state average was 5.47 inches, 2.49 inches above normal. This was the fifth wettest November during the past 129 years for the state as a whole. Regional averages ranged from 6.84 inches, 3.63 inches above normal, for the Southwest Region to 4.63 inches, 1.67 inches above normal, for the Northeast Hills Region. All 10 of the state's climatic regions ranked in their top 11 wettest November of record including second wettest for the Northwest Region and fourth wettest for the Southwest Region. Montpelier (Williams County) reported the greatest amount of November precipitation, 8.57 inches. Warren (Trumbull County) reported the least amount, 3.58 inches.

The bulk of the November precipitation fell as rain. The first two weeks of the month were rather dry with most areas of Ohio receiving less than 0.25 inch of precipitation. An exception was on November 3 when a storm brought around 2 inches of rain to extreme southwestern Ohio. Precipitation amounts diminished rapidly to the north and east. Light snow showers brought the first measurable snow of the season to northeastern Ohio on November 11. The second half of the month was wet with three periods of widespread precipitation. The first storm system occurred during November 14-16 with most of the state receiving more than 1 inch of precipitation, and some areas in west-central, north-central and south-central Ohio receiving more than 3 inches. Some of these storms were strong with damaging winds and large hail. The second storm system crossed Ohio during November 20-23 with 1-2 inches of rain falling across most of the state and areas in northwestern and south-central Ohio receiving more than 2 inches. The next period of precipitation fell over the last four days of the month. The eastern half of Ohio reported 1-2 inches of precipitation during this period while the western half of the state reported more than 2 inches. The Toledo area reported nearly 4 inches of precipitation with about 3 inches falling on November 29. The rain changed to snow during November 29 with 1-4 inches falling across portions of western Ohio. Small stream and urban flooding occurred on several days during the second half of November. Snow totals for the month were below normal throughout most of the state.

Precipitation during the 2011 calendar year is markedly above normal statewide. The average for the state is 52.38 inches, 17.12 inches above normal. This already exceeds the previous record high annual state precipitation total of 51.36 inches established in 1990. Regional averages range from 57.08 inches, 19.50 inches above normal, for the South Central Region to 48.90 inches, 17.08 inches above normal, for the Northwest Region.

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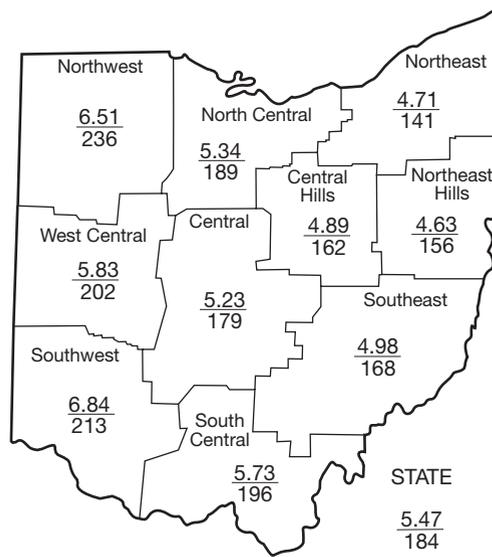
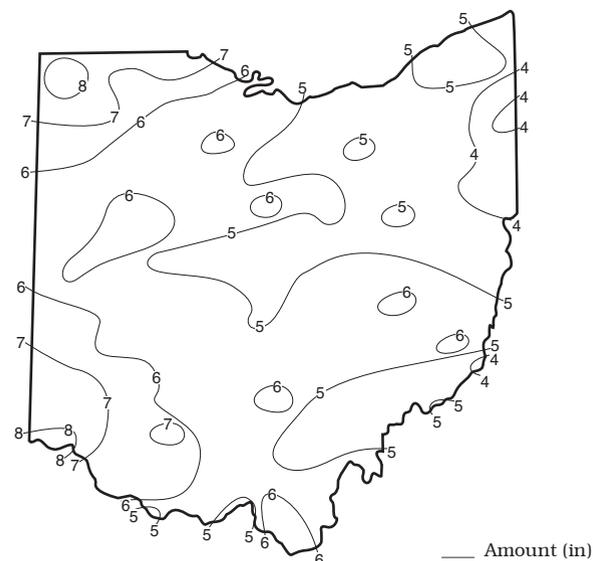
PRECIPITATION

Region	DEPARTURE FROM NORMAL (IN.) Base period 1951-2000					Palmer Drought Severity Index*
	This Month	Past				
		3 Mos.	6 Mos.	12 Mos.	24 Mos.	
Northwest	+3.75	+9.21	+7.55	+15.69	+16.01	+4.5
North Central	+2.51	+8.29	+9.67	+18.17	+20.26	+6.0
Northeast	+1.37	+7.40	+9.42	+20.83	+21.84	+5.2
West Central	+2.94	+9.17	+6.69	+15.68	+15.24	+3.9
Central	+2.31	+6.28	+7.39	+15.06	+14.88	+3.1
Central Hills	+1.87	+5.97	+6.60	+12.79	+12.76	+3.1
Northeast Hills	+1.67	+6.03	+8.11	+14.68	+15.00	+1.9
Southwest	+3.63	+8.50	+6.43	+16.07	+12.54	+3.7
South Central	+2.80	+7.72	+7.76	+19.20	+22.31	+4.2
Southeast	+2.01	+7.04	+8.26	+16.04	+16.00	+4.2
State	+2.49	+7.56	+7.79	+16.43	16.72	

*Above +4 = Extreme Moist Spell
3.0 To 3.9 = Very Moist Spell
2.0 To 2.9 = Unusual Moist Spell
1.0 To 1.9 = Moist Spell
0.5 To 0.9 = Incipient Moist Spell
0.4 To 0.4 = Near Normal

-0.5 To -0.9 = Incipient Drought
-1.0 To -1.9 = Mild Drought
-2.0 To -2.9 = Moderate Drought
-3.0 To -3.9 = Severe Drought
Below -4.0 = Extreme Drought

PRECIPITATION NOVEMBER



Average (in)
Percent of normal

MEAN STREAM DISCHARGE

This Month

River and Location	Drainage Area (Sq. Mi.)	Mean Discharge (CFS)	% of Normal	% of Normal Past		
				3 Mos.	6 Mos.	12 Mos.
Grand River near Painesville	685	1,710	156	233	180	169
Great Miami River at Hamilton	3,630	8,037	495	270	156	186
Huron River at Milan	371	950	1,003	437	220	212
Killbuck Creek at Killbuck	464	644	225	174	147	147
Little Beaver Creek near East Liverpool	496	572	173	136	91	138
Maumee River at Waterville	6,330	12,740	487	328	176	154
Muskingum River at McConnelsville	7,422	12,110	215	305	219	126
Scioto River near Prospect	567	1,435	1,481	677	332	229
Scioto River at Higby	5,131	9,083	362	221	166	174
Stillwater River at Pleasant Hill	503	1,000	1,017	204	121	160

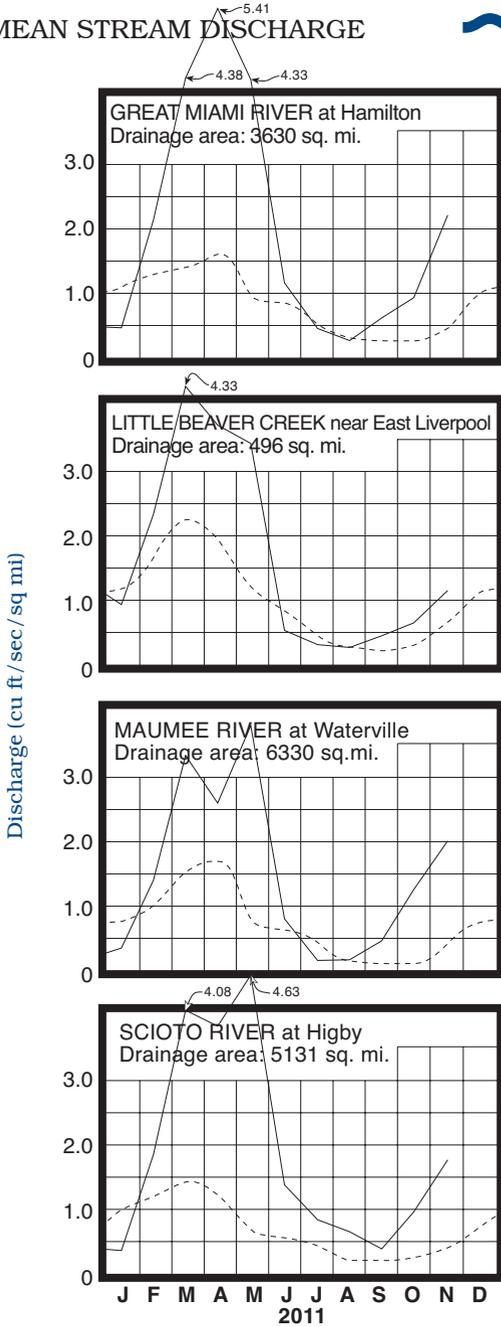
STREAMFLOW during November was noticeably above normal throughout Ohio. Flows during the month were greater than the flows observed during October across nearly the entire state. Also, November flows were high enough to be considered excessive throughout most of the state. Preliminary data indicates that the Great Miami River at Hamilton gauging station recorded its second greatest November mean flow and the Huron River at Milan, Maumee River at Waterville, Scioto River near Prospect and the Scioto River at Higby gauging stations recorded their third greatest November mean flow.

Streamflow at the beginning of the month was above normal throughout most of Ohio. Flows declined during the first two weeks of November across most of the state as little precipitation was recorded. Lowest flows for the month occurred during the second week, generally between November 10 and 13. Flows increased considerably after mid-month following several days with widespread precipitation. The most significant periods of high flows occurred as a result of precipitation that fell during November 14-16, 20-23 and 27-30. Greatest flows for the month occurred on either November 29 or 30 throughout the state. Small stream and urban flooding was common on several days during the second half of November. Although most of the flooding was minor, some moderate flooding occurred in northwestern Ohio and along the upper Scioto River basin. Streamflow at the end of the month was noticeably above normal throughout the state.

RESERVOIR STORAGE for water supply during November increased in the Mahoning River basin and decreased slightly in the Scioto River basin. Storage at the end of the month remained above normal in both basins.

Reservoir storage in the Mahoning basin index reservoirs was 80 percent of rated capacity for water supply compared with 74 percent for last month and 73 percent for November 2010. Month-end storage in the Scioto basin index reservoirs was 89 percent of rated capacity for water supply compared with 90 percent for last month and 72 percent for November 2010.

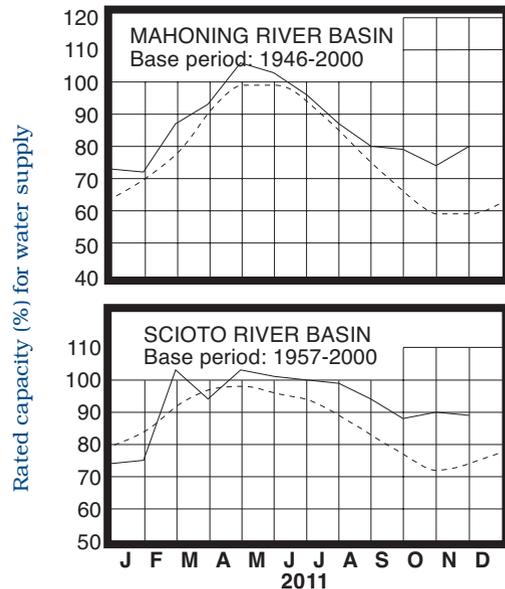
MEAN STREAM DISCHARGE



Base period for all streams: 1971-2000

Normal - - - - Current ———

RESERVOIR STORAGE FOR WATER SUPPLY



GROUND-WATER LEVELS

Based on daily lowest level in feet below land-surface datum

GROUND WATER levels rose throughout the state. The rises were much greater than normally expected. November is usually a month in which ground water levels are rather stable or still declining seasonally. Generally, levels declined or were rather stable during the first half of the month, then rose during the second half in response to the above normal precipitation. Some of the deeper aquifers steadily rose throughout the month, still responding to the precipitation that fell during the second half of October.

The 2012 water year recharge season is off to an excellent start throughout the state. Above normal precipitation and saturated soils during the autumn months resulted in recharge starting as early as October in some aquifers and during November in most other aquifers across Ohio. As a result, ground water storage continues to be near or above normal across the state. Also, current levels are higher than they were at this time last year, ranging from about 1 foot to more than 5 feet above the November 2010 levels. Current conditions are favorable for continued improvement to ground water storage in the next few months. The Ohio Agricultural Statistics Service reports that near the end of November, soil moisture was rated as being adequate in 16 percent of the state and surplus in 84 percent of the state. However, the wet conditions continue to hamper the fall harvest as soils are much too wet for farmers to be able to get into their fields. About 20 percent of Ohio's corn crop remained in the ground at the end of November.

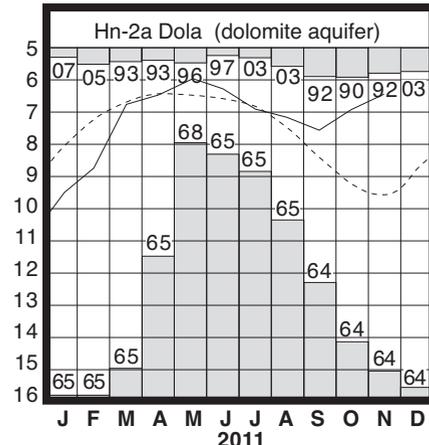
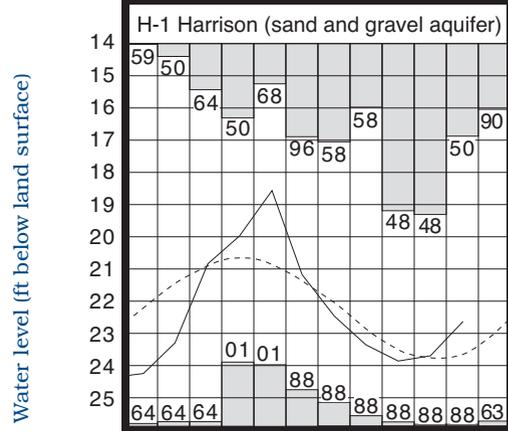
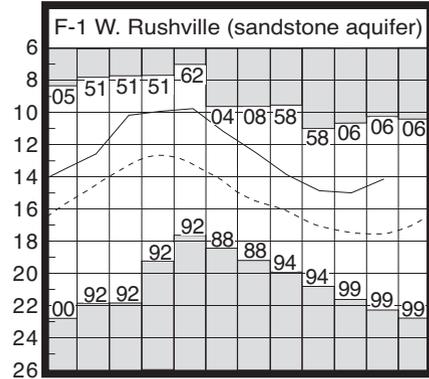
LAKE ERIE level declined seasonally during November. The mean level was 571.56 feet (IGLD-1985), 0.19 foot lower than last month's mean level and 0.69 foot above normal. This month's mean level is 1.09 feet above the November 2010 level and 2.36 feet above Low Water Datum.

The U.S. Army Corps of Engineers (USACE) reports that precipitation in the Lake Erie basin during November averaged 5.31 inches, 2.44 inches above normal. For the entire Great Lakes basin, November precipitation averaged 3.02 inches, 0.26 inch above normal. For calendar year 2011 through November the Lake Erie basin has averaged 47.83 inches, 15.08 inches above normal, while the entire Great Lakes basin has averaged 34.73 inches, 4.48 inches above normal.

In addition, the USACE reports that based on the current condition of the Great Lakes basin and anticipated weather conditions, the level of Lake Erie should remain above normal for the foreseeable future. Deviations from the anticipated weather patterns could result in the level of Lake Erie ranging from as much as 14 inches above normal to around 10 inches below the normal seasonal average.

Index Well	Location	Aquifer	Mean This Month	Departure From Normal	Change in feet from:	
					Last Month	Year Ago
F-1	W. Rushville, Fairfield Co.	Sandstone	14.14	+3.44	+0.86	+1.91
Fa-1	Jasper Mill, Fayette Co.	Limestone	8.43	+0.60	+1.15	+4.02
Fr-10	Columbus, Franklin Co.	Gravel	43.64	+0.48	+0.15	+1.78
H-1	Harrison, Hamilton Co.	Gravel	22.63	+1.05	+1.07	+1.99
Hn-2a	Dola, Hardin Co.	Dolomite	6.46	+3.11	+0.46	+5.39
Po-124	Freedom, Portage Co.	Sandstone	76.60	+1.85	+0.17	+1.25
Tu-1	Strasburg, Tuscarawas Co.	Gravel	14.13	-0.13	+0.60	+1.38

GROUND-WATER LEVELS



(Precipitation continued from front)

Precipitation for the first two months of the 2012 water year is also above normal statewide. The state average is 9.93 inches, 4.48 inches above normal. Regional averages range from 10.45 inches, 5.32 inches above normal, for the Northwest Region to 9.28 inches, 4.07 inches above normal, for the Central Region.

When combined with the September and October precipitation, the current September-November period has been the wettest the state has experienced in the past 129 years. The state average of 15.96 inches surpassed the previous record of 14.49 inches established in 1926. In addition, 6 of the state's 10 climatic regions also ranked as the wettest September-November period of record. This continues a trend of above normal precipitation that has existed throughout most of calendar year 2011. With one month remaining in 2011, several new annual precipitation records have already been established. In addition to the state record mentioned earlier in this report, several climatic regions have established new annual precipitation records. The North Central, Northeast, West Central and South Central regions have surpassed their previous record annual precipitation amounts. Individual stations have surpassed their annual records including Cleveland Hopkins International Airport which surpassed their previous record of 53.83 inches on October 19. The Greater Cincinnati Airport (located in Covington, Kentucky) also established a new record for annual precipitation. Several locations in southwestern Ohio are approaching 70 inches of precipitation for the year. Cheviot (Hamilton County) has received 70.0 inches of precipitation through November, an amazing 28.72 inches above normal.

SUMMARY

Precipitation for the state was noticeably above normal with the 5.47 inches making this the fifth wettest November during the past 129 years of record. Preliminary data indicates that the state average of 52.38 inches of precipitation during calendar year 2011 exceeds the previous state annual precipitation record established in 1990. Streamflow was above normal statewide and high enough to be considered excessive throughout most of Ohio. Small stream and urban flooding occurred on several days during the second half of the month. Reservoir storage remained above normal and ground water levels rose throughout the state and were above normal nearly statewide. Lake Erie level declined 0.19 foot and was 0.69 foot above the long-term November average.

NOTES AND COMMENTS New Director at ODNR

Jim Zehringer was appointed by Governor John Kasich as the new director of the Ohio Department of Natural Resources (ODNR) effective November 15, 2011. He is the 13th person to serve as director since the department was formed in 1949. Mr. Zehringer replaces David Mustine who left ODNR on September 7, 2011 to oversee energy development efforts in Ohio at JobsOhio. Assistant Director Scott Zody served as interim director of ODNR since Mr. Mustine's departure.

Director Zehringer is a graduate of Fort Recovery High School in Mercer County. He is a farmer by trade and the former owner of the Meiring Poultry and Fish farm located in Fort Recovery, Ohio. From 2002 to 2007, Director Zehringer was a Mercer County Commissioner. He served in the Ohio House of Representatives from 2007 to 2011 as a State Representative for the 77th House District which covers Mercer and Preble counties, and portions of Darke County. Prior to his appointment as director of ODNR, he was the director of the Ohio Department of Agriculture.

ACKNOWLEDGMENTS

This report has been compiled from Division data and from information supplied by the following:

Precipitation data:

U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Weather Service; The Miami Conservancy District; U.S. Army Corps of Engineers, Muskingum Area.

Streamflow and reservoir storage data:

U.S. Geological Survey, Water Resources Division.

Lake Erie level data:

U.S. Army Corps of Engineers, Detroit District.

Palmer Drought Severity Index:

U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Weather Service.



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