



# MONTHLY WATER INVENTORY REPORT FOR OHIO

November 2007

<http://www.dnr.state.oh.us/water/pubs/newsltrs/mwirmain.htm>

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Water Inventory Unit

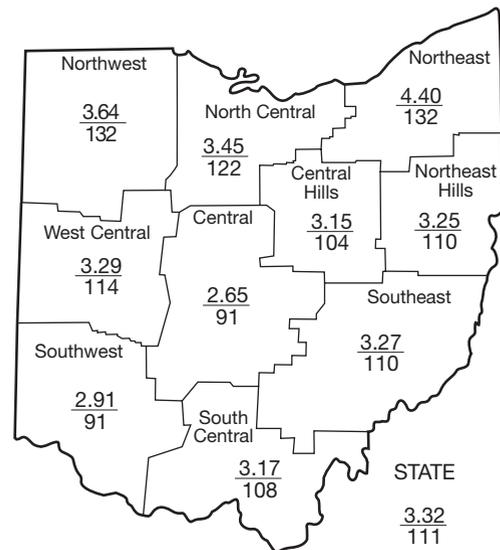
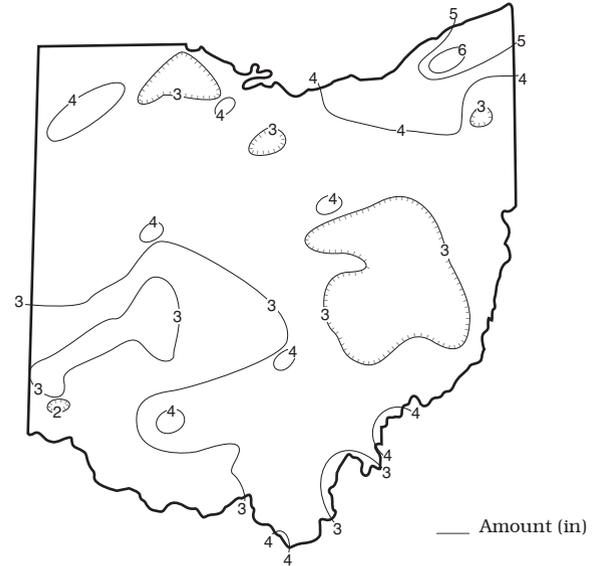
**PRECIPITATION** during November was above normal across most of the state, but slightly below normal in the Central and Southwest regions. The state average was 3.32 inches, 0.34 inch above normal. Regional averages ranged from 4.40 inches, 1.06 inches above normal, for the Northeast Region to 2.65 inches, 0.27 inch below normal, for the Central Region. Chardon (Geauga County) reported the greatest amount of November precipitation, 6.93 inches. Fairfield (Butler County) reported the least amount, 1.46 inches.

Most of the precipitation during November fell as rain with only the snowbelt area east of Cleveland receiving any more than nominal amounts of snowfall. The first 10 days of the month were rather dry across Ohio. Scattered showers and thunderstorms moved through the state on November 5. Precipitation totals were generally less than 0.25 inch while a few locations in extreme southern and eastern Ohio received around 0.50 inch. The remainder of the month was wetter with 3 periods of widespread precipitation. The first period was during November 11-15 when most of the state received between 0.50 and 1.0 inch of precipitation and a few areas in western Ohio received more than 2 inches. Precipitation amounts during November 21-22 were greatest across northwestern Ohio where as much as 2 inches were reported, tapering to 0.25-0.50 inch in southeastern Ohio. The third period was during November 25-26. Precipitation was again widespread, but this time the greatest amount fell across eastern and southeastern Ohio where 1.5-2.5 inches were reported. Precipitation amounts diminished to less than 0.75 inch across northwestern Ohio.

Precipitation for the 2007 calendar year is above normal in the northern two-thirds of the state and below normal in the southern one-third. The average for the state as a whole is 37.36 inches, 2.10 inches above normal. Regional averages range from 39.63 inches, 3.98 inches above normal, for the Central Hills Region to 31.44 inches, 6.14 inches below normal, for the South Central Region.

Precipitation for the 2008 water year is above normal statewide. The average for the state as a whole is 6.60 inches, 1.15 inches above normal. Regional averages range from 7.83 inches, 1.51 inches above normal, for the Northeast Region to 5.78 inches, 0.65 inch above normal, for the Northwest Region.

## PRECIPITATION NOVEMBER



## 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	+0.88	-0.06	+4.57	+7.71	+12.92	+3.2
North Central	+0.62	+0.08	+4.44	+8.14	+13.49	+4.0
Northeast	+1.06	+0.60	+2.39	+4.32	+12.25	+3.2
West Central	+0.40	+0.90	+1.08	+6.76	+11.54	+0.2
Central	-0.27	+1.10	+1.14	+3.43	+8.84	+0.3
Central Hills	+0.13	+1.25	+3.44	+4.27	+8.24	+1.9
Northeast Hills	+0.29	+0.39	+2.91	+2.82	+7.25	+1.2
Southwest	-0.30	+2.12	-1.11	-0.79	+2.85	-0.6
South Central	+0.24	+0.09	-1.68	-7.11	-3.25	-1.3
Southeast	+0.30	-0.43	-1.05	-3.21	-0.45	-0.7
State	+0.34	+0.61	+1.61	+2.63	+7.35	

\*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

Average (in)  
Percent of normal

## MEAN STREAM DISCHARGE

This Month

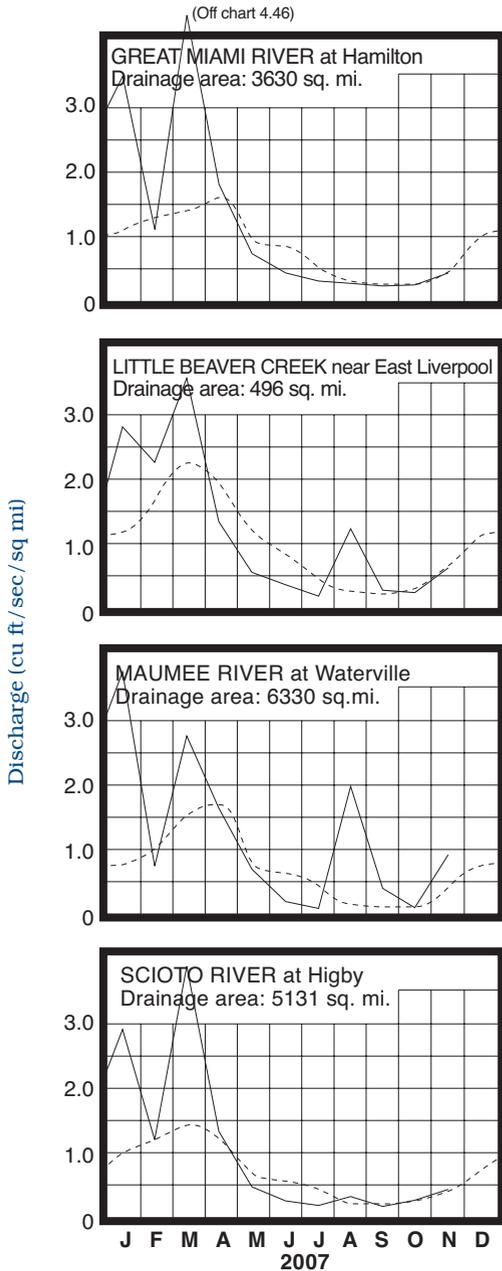
River and Location	Drainage Area (Sq. Mi.)	Mean Discharge (CFS)	% of Normal	% of Normal Past		
				3 Mos.	6 Mos.	12 Mos.
Grand River near Painesville	685	1,387	101	58	58	119
Great Miami River at Hamilton	3,630	1,580	97	66	53	132
Huron River at Milan	371	351	371	147	165	167
Killbuck Creek at Killbuck	464	290	101	87	87	106
Little Beaver Creek near East Liverpool	496	305	92	68	79	103
Maumee River at Waterville	6,330	5,846	223	124	133	147
Muskingum River at McConnelsville	7,422	4,498	80	127	112	96
Scioto River near Prospect	567	453	467	120	78	151
Scioto River at Higby	5,131	2,192	87	61	45	107
Stillwater River at Pleasant Hill	503	313	318	77	45	137

**STREAMFLOW** during November was above normal throughout much of the state, but below normal in some drainage basins in southern and eastern Ohio. Flows during November were seasonally greater than the October flows statewide. A few basins in northwestern Ohio had flows high enough to be considered excessive.

Flows were rather stable or declined slightly during the first 11 days of the month reflecting the lack of precipitation. Lowest flows for the month occurred during this period statewide, generally during November 9-11. Streamflow increased the next 2 weeks of the month as a result of several days with precipitation. Greatest flows for the month occurred during November 27-28 across most of the state following widespread precipitation that fell on November 25 and 26. The last few

days of the month were drier and streamflow declined accordingly, but remained above normal throughout the state at month's end.

## MEAN STREAM DISCHARGE

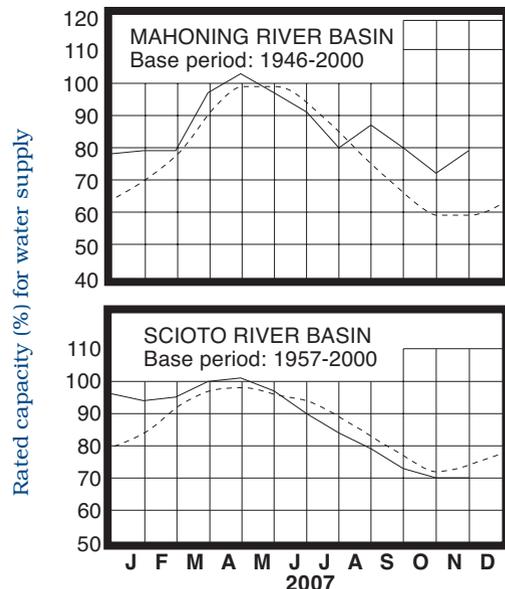


Base period for all streams: 1971-2000

**RESERVOIR STORAGE** during November increased in the Mahoning River basin and was unchanged in the Scioto River basin. Storage remained above normal in the Mahoning basin index reservoirs and below normal in the Scioto basin index reservoirs.

Reservoir storage at the end of November in the Mahoning basin index reservoirs was 79 percent of rated capacity for water supply compared with 72 percent for last month and 79 percent for November 2006. Month-end storage in the Scioto basin index reservoirs was 70 percent of rated capacity for water supply compared with the same for last month and 94 percent for November 2006. Surface water supplies remain in a favorable position throughout most of the state.

## RESERVOIR STORAGE FOR WATER SUPPLY



Normal - - - - Current ———

## GROUND-WATER LEVELS

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

**GROUND WATER** levels during November showed mixed responses throughout the state. Generally, levels rose in unconsolidated aquifers and declined in consolidated aquifers. Most ground water levels in the state were rather steady or declined slightly during the first 3 weeks of the month and then rose during the last week of November. Net changes from October's levels were more favorable than normally expected during November across the state.

Ground water storage continues to remain at below normal levels across much of Ohio. Some consolidated aquifers in southern Ohio are more than 3.5 feet below normal. Conversely, most consolidated aquifers in northern Ohio remain above normal. Current ground water levels are lower than they were a year ago statewide, ranging up to more than 7.5 feet below the November 2006 level in some southern Ohio aquifers. However, conditions appear to be favorable for improvement to the state's ground water storage during the next several months. Recent precipitation has improved soil moisture conditions throughout the state and with the recharge season just beginning, near-normal precipitation during the next several months should provide adequate recharge to the state's ground water supplies.

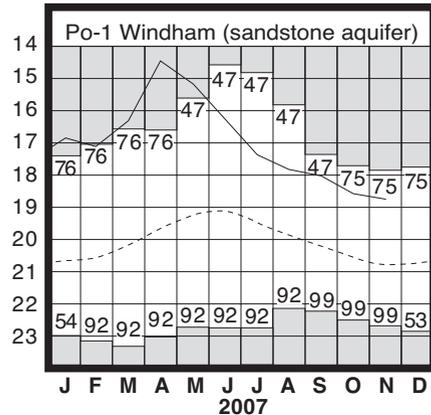
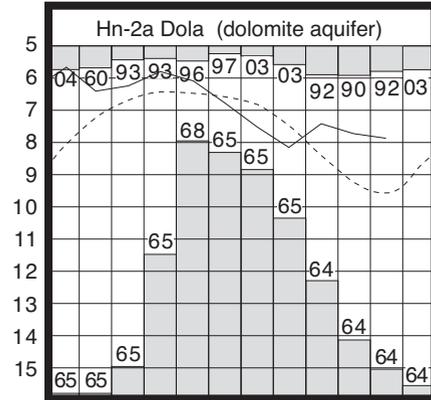
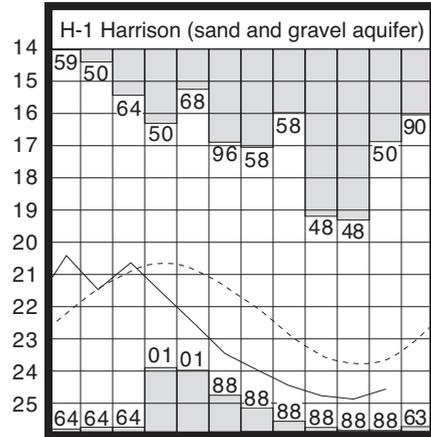
**LAKE ERIE** level declined during November. The mean level was 570.24 feet (IGLD-1985), 0.46 foot lower than last month's mean level and 0.63 foot below normal. This month's mean level is 1.02 feet lower than the November 2006 level and 1.04 feet above Low Water Datum.

The U.S. Army Corps of Engineers (USACE) reports that precipitation in the Lake Erie basin during November averaged 3.47 inches, 0.64 inch above normal. For the entire Great Lakes basin, November precipitation averaged 2.21 inches, 0.53 inch below normal. For calendar year 2007 through November, the Lake Erie basin has averaged 31.69 inches, 0.73 inch below normal, while the entire Great Lakes basin has averaged 28.41 inches, 1.64 inches below normal.

In addition, the USACE reports that based on the current condition of the Great Lakes basin and anticipated weather patterns, the level of Lake Erie should remain below normal for the foreseeable future. Deviations from the anticipated weather patterns could result in the level of Lake Erie ranging from about 3 inches below normal to as much as 24 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	18.15	-0.57	-0.31	-7.57
Fa-1	Jasper Mill, Fayette Co.	Limestone	12.70	-3.67	-0.01	-5.14
Fr-10	Columbus, Franklin Co.	Gravel	45.49	-1.37	+0.47	-0.63
H-1	Harrison, Hamilton Co.	Gravel	24.55	-0.87	+0.32	-1.53
Hn-2a	Dola, Hardin Co.	Dolomite	7.88	+1.69	-0.16	-0.79
Po-1	Windham, Portage Co.	Sandstone	18.75	+2.04	-0.17	-1.00
Tu-1	Strasburg, Tuscarawas Co.	Gravel	15.11	-1.11	+0.17	-2.45

## GROUND-WATER LEVELS



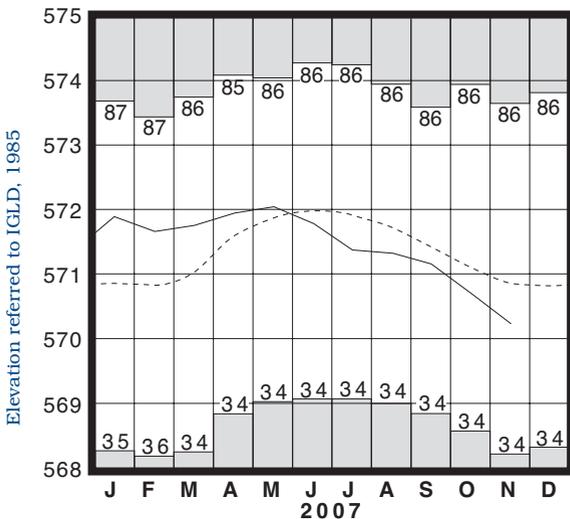
Water level (ft below land surface)

Base periods: H-1, 1951-2000. Hn-2a, 1955-2000.  
Po-1, 1947-2000

Record high and low, year of occurrence

Normal - - - - Current \_\_\_\_\_

## LAKE ERIE LEVELS



Base period: 1918-2000

Record high and low, year of occurrence

## SUMMARY

Precipitation during November was above normal across most of the state, but slightly below normal in the Central and Southwest regions. Streamflow was above normal throughout much of the state, but below normal in some drainage basins in southern and eastern Ohio. Reservoir storage increased in the Mahoning River basin and was unchanged in the Scioto River basin. Storage for November was above normal in the Mahoning basin index reservoirs and below normal in the Scioto basin index reservoirs. Ground water levels rose in unconsolidated aquifers and declined in consolidated aquifers. Lake Erie level declined 0.46 foot and was 0.63 foot below the long-term seasonal average.

## NOTES AND COMMENTS

### Seventy-three Ohio Counties Receive Agricultural Disaster Declaration

At the request of Governor Ted Strickland, U.S. Department of Agriculture Acting Secretary Charles Conner has declared 73 Ohio counties agricultural disaster areas. This declaration will make low-interest loans available to eligible farmers in the declared counties and in the counties contiguous to those receiving the declaration, thus making all 88 of Ohio's counties eligible for assistance.

The disaster declaration was requested based on economic hardships in the agricultural community as a result of abnormally dry conditions and above-normal temperatures that existed across areas of the state during various times of this year's growing season. These conditions placed a great deal of stress on crops and livestock. The low-interest loans are intended to help farmers recover from crop and livestock production losses they suffered.

### Water Withdrawal Atlas By Drainage Basin and County

The Ohio Department of Natural Resources (ODNR), Division of Water, in cooperation with the U.S. Geological Survey and the Natural Resources Conservation Service, has developed a series of water-use atlases for Ohio counties and drainage basins. These atlases show water withdrawals, in both graphical and tabular form for 2005, as well as withdrawal trends from 1991 to 2005. Reported water withdrawals in Ohio are grouped into one of seven categories: Public Supply, Agriculture, Industrial, Power Generation, Mineral Extraction, Golf Course, and Miscellaneous. Withdrawal volumes for both ground water and surface water are reported in the atlases.

Data for the atlas comes from the ODNR Water Withdrawal Facility Registration Program, which started in 1990. Section 1521.16 of the Ohio Revised Code requires any owner of a facility, or combination of facilities, with the capacity to withdraw water at a quantity greater than 100,000 gallons per day to register with the ODNR, Division of Water. Each year registrants report how much water was withdrawn at their facilities.

The atlases are available to view on line at: <http://www.dnr.state.oh.us/water/tabid/18805/Default.aspx> Questions about the atlases or the Water Withdrawal Facility Registration Program should be directed to Mike Hallfrisch at (614) 265-6745 or [mike.hallfrisch@dnr.state.oh.us](mailto:mike.hallfrisch@dnr.state.oh.us).

## ACKNOWLEDGMENTS

This report has been compiled from Division of Water 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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