



# MONTHLY WATER INVENTORY REPORT FOR OHIO

December 2007

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

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**PRECIPITATION** during December was noticeably above normal statewide. The state average was 4.70 inches, 1.94 inches above normal. This was the 4th wettest December for the state as a whole during the past 125 years. Regional averages ranged from 6.14 inches, 3.10 inches above normal, for the South Central Region to 4.00 inches, 1.46 inches above normal, for the North Central Region. All 10 climatic regions in the state ranked in their top 10 wettest Decembers of record, including the 3rd wettest for the Northeast and Northeast Hills regions. Racine Locks and Dam (Meigs County) reported the greatest amount of December precipitation, 8.58 inches. Fredericktown (Knox County) reported the least amount, 2.58 inches.

Precipitation during December fell as both rain and snow. The greatest amount of precipitation for the month fell across southern and eastern Ohio. The first week had several days with precipitation including the first significant snowfall for the season for much of the state. Precipitation amounts during this period ranged from around 0.50 inch in northwestern Ohio to between 1.0 and 1.5 inches elsewhere. Some precipitation fell on nearly every day from December 8-16. Generally, 2-4 inches of precipitation fell across most of the state with even higher amounts recorded at some locations, most notably along the Ohio River in southeastern Ohio. Most of the precipitation during this period fell as rain, but the precipitation during December 15-16 fell as a mix of rain and snow. The remainder of the month was drier. Light showers on December 23 and again on December 28 brought 0.50-1.0 inch of precipitation across the state, but most of the other days were dry.

Precipitation for the 2008 water year is above normal statewide. The average for the state as a whole is 11.28 inches, 3.08 inches above normal. Regional averages range from 12.84 inches, 3.61 inches above normal, for the Northeast Region to 9.94 inches, 2.35 inches above normal, for the Northwest Region.

Precipitation for the 2007 calendar year was above normal throughout most of the state, but below normal in the South Central Region. The average for the state as a whole was 42.05 inches, 4.03 inches above normal. Regional averages ranged from 44.07 inches, 5.56 inches above normal, for the Northeast Region to 37.58 inches, 3.04 inches below normal for the South Central Region (see Precipitation table, departure from normal, past 12 months column). Chardon (Geauga County) reported the greatest amount of precipitation for the year, 58.38 inches. Portsmouth (Scioto County) reported the least amount, 27.62 inches. An isohyetal map and regional averages with percentages of normal for the 2007 calendar year appear on the last page of this report.

Precipitation during the first 3 months of the 2007 calendar year was above normal across most of Ohio with only the South Central Region having below normal precipitation. Precipitation during the next 4 months was below normal

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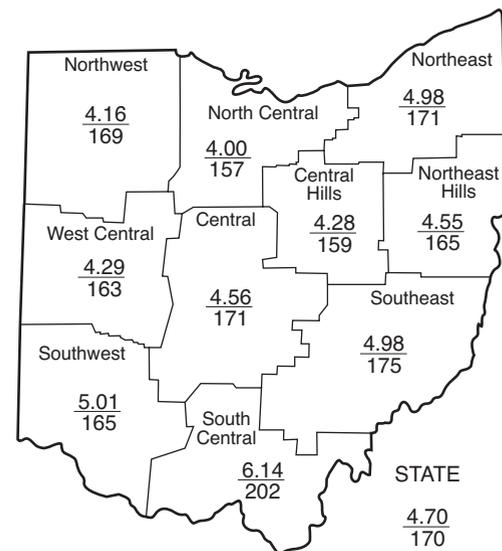
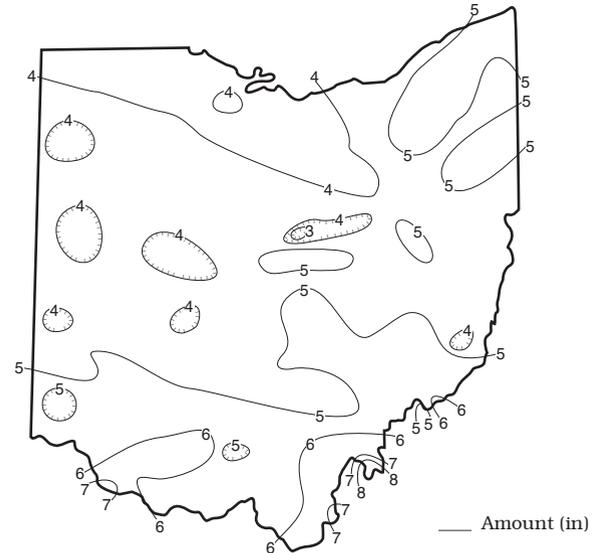
## PRECIPITATION

Region	This Month	DEPARTURE FROM NORMAL (IN.) Base period 1951-2000				Palmer Drought Severity Index*
		Past				
		3 Mos.	6 Mos.	12 Mos.	24 Mos.	
Northwest	+1.70	+2.35	+8.03	+7.70	+14.28	+4.1
North Central	+1.46	+2.41	+7.68	+7.90	+15.74	+4.7
Northeast	+2.07	+3.61	+5.46	+5.56	+15.55	+4.2
West Central	+1.65	+2.36	+3.88	+6.62	+13.74	+1.9
Central	+1.89	+3.17	+4.23	+4.81	+11.61	+2.0
Central Hills	+1.59	+3.41	+5.69	+5.52	+11.08	+3.0
Northeast Hills	+1.80	+2.51	+4.79	+5.06	+10.24	+2.4
Southwest	+1.98	+3.97	+1.89	+0.43	+5.93	+1.8
South Central	+3.10	+4.33	+1.69	-3.04	+0.86	+1.8
Southeast	+2.14	+2.63	+1.90	-0.14	+2.73	+2.3
State	+1.94	+3.08	+4.52	+4.03	+10.15	

\*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 DECEMBER



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	2,650	193	133	120	118
Great Miami River at Hamilton	3,630	7,693	209	131	98	129
Huron River at Milan	371	1,085	445	226	226	172
Killbuck Creek at Killbuck	464	1,027	246	144	131	112
Little Beaver Creek near East Liverpool	496	1,255	223	127	124	114
Maumee River at Waterville	6,330	16,510	348	195	209	149
Muskingum River at McConnelsville	7,422	15,815	145	194	176	102
Scioto River near Prospect	567	1,536	575	199	162	151
Scioto River at Higby	5,131	10,840	236	128	94	112
Stillwater River at Pleasant Hill	503	1,252	337	159	112	136

**STREAMFLOW** during December was above normal statewide. Flows during December were greater than those observed during November across Ohio and were high enough to be considered excessive throughout most of the state.

Flows at the beginning of December were below normal across much of Ohio. Southwestern and east-central drainage basins had their lowest flows for the month on December 1 or 2, while drainage basins across the remainder of the state had their lowest flows on December 8 or 9. Flows increased noticeably during the middle of December following the month's greatest precipitation that fell during the December 8-16 period. Greatest flows for the month occurred during or just after this period throughout Ohio, generally from December 12-17. Minor flooding was reported during this period from several areas across the state. Flows declined the last 2 weeks of the month except for some temporary increases noted following local precipitation.

Streamflow at the end of December remained above normal across most of the state, but had fallen to below normal in southeastern Ohio.

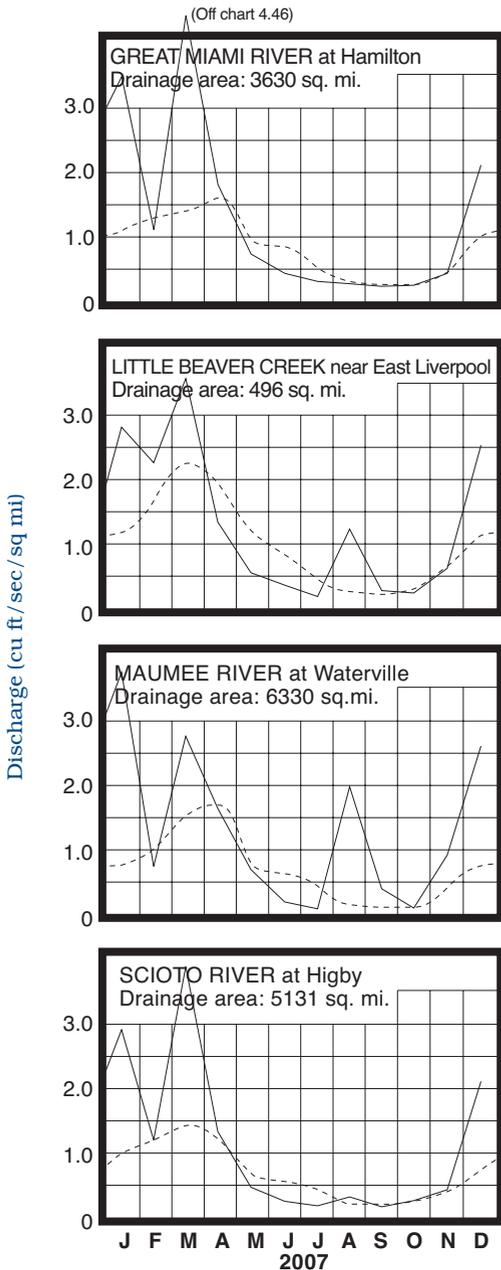
Streamflow during the 2007 calendar year was generally above normal statewide (see Mean Stream Discharge table, percent of normal, past 12 months column). Flows during the first 3 months of the year were above normal statewide. Minor flooding was reported across many areas of Ohio during January and March. During March, several gauging stations throughout the state recorded their highest March flows on record. Flows were below normal during the next 4 months as below normal precipitation fell statewide. Flows during August and September were above normal in northern Ohio and below normal in southern Ohio. Torrential rain fell in northern Ohio during August 19-22 resulting in significant flooding across the region. An area from Van Wert County east to Summit and Holmes counties was especially hard hit, resulting in a Presidential Disaster Declaration for 8 counties. The Maumee River at Waterville gauging station recorded its highest August flow on record. Streamflow during the last 3 months of 2007 was above normal statewide, reflecting the above normal precipitation the state received during this period.

**RESERVOIR STORAGE** during December decreased slightly in the Mahoning River basin and increased in the Scioto River basin. At the end of the calendar year, reservoir storage was above normal in both basins.

Reservoir storage at the end of December in the Mahoning basin index reservoirs was 78 percent of rated capacity for water supply compared with 79 percent for last month and 78 percent for December 2006. Month-end storage in the Scioto basin index reservoirs was 89 percent of rated capacity for water supply compared with 70 percent for last month and 96 percent for December 2006.

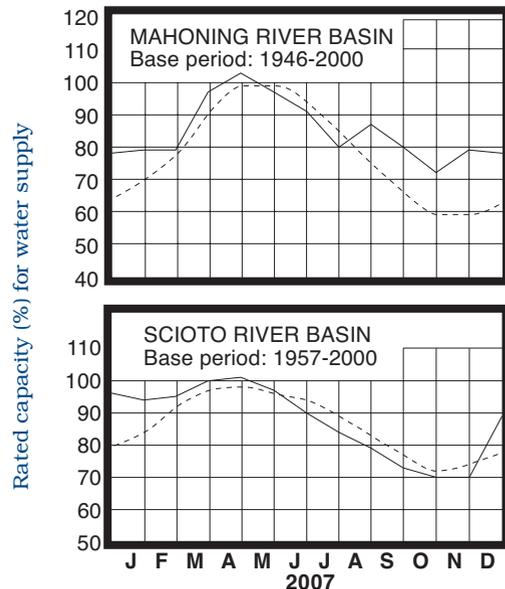
Surface water supplies were adequate during the 2007 calendar year, even during the dry period experienced during the late spring and summer months. Reservoir storage began the year above normal in both the Mahoning and Scioto river basins. Storage dropped to below normal in the Mahoning River basin during May-July, then increased to above normal following the noticeably above normal precipitation northern Ohio received during August. Storage in the Scioto River basin dropped to below normal during June-November, then increased to above normal during December. Storage at the end of the year was above normal in both basins.

## MEAN STREAM DISCHARGE



Base period for all streams: 1971-2000

## RESERVOIR STORAGE FOR WATER SUPPLY



Normal - - - - Current ———

**GROUND WATER** levels during December rose in aquifers across the state. Levels in the majority of aquifers in Ohio rose steadily throughout the month, but in some unconsolidated aquifers levels had begun to decline during the last week of December, reflecting the drier conditions that prevailed during the second half of the month.

Ground water supplies were adequate during the 2007 calendar year. From January through April ground water levels were near or above normal across most of the state. Index observation well PO-1 near Windham (Portage County) established record-high monthly levels throughout this period. In addition, index observation well HN-2A near Dola (Hardin County) reached a record-high monthly level during January. With below normal precipitation across much of the state during April and statewide during May and June, ground water levels declined at a faster rate than usually observed. Precipitation was again below normal throughout most of the state during July. Ground water levels responded to the dry conditions, dropping below normal nearly statewide. Much above normal precipitation during August in northern Ohio helped ease the stress on ground water supplies in northern Ohio, but southern Ohio continued to receive below normal precipitation for the next 2 months, offering little relief for ground water supplies in southern Ohio. Above normal precipitation during the last 3 months of the year improved the ground water situation throughout Ohio. At the end of the year, ground water levels have rebounded to above normal in most consolidated aquifers but remain slightly below normal in most unconsolidated aquifers. Of note, however, is that current levels are lower than last year's levels throughout the state, ranging from about 0.5 foot to more than 5 feet below the December 2006 levels.

**LAKE ERIE** level rose during December. The mean level was 570.60 feet (IGLD-1985), 0.36 foot higher than last month's mean level and 0.23 foot below normal. This month's mean level is 0.82 foot lower than the December 2006 level and 1.40 feet above Low Water Datum.

The U.S. Army Corps of Engineers (USACE) reports that precipitation in the Lake Erie basin during December averaged 4.15 inches, 1.55 inches above normal. For the entire Great Lakes basin, December averaged 2.95 inches of precipitation, which is 0.62 inch above normal. For calendar year 2007, the Lake Erie basin averaged 35.84 inches, 0.82 inch above normal, while the entire Great Lakes basin averaged 31.36 inches, 1.02 inches below normal.

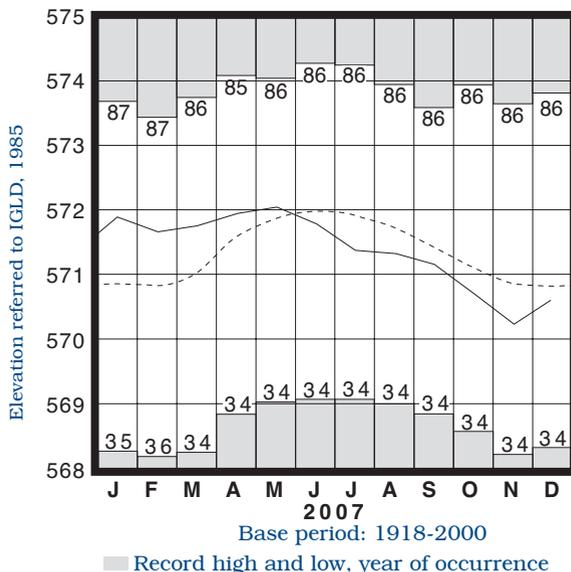
Lake Erie mean level was above normal during the first 5 months of 2007 then fell to below normal during late spring where it remained throughout the duration of the year. The USACE reports that based on the current condition of the Great Lakes basin and anticipated weather conditions, the level of Lake Erie should remain below normal for the foreseeable future. Deviations from the anticipated weather patterns could result in the level of Lake Erie ranging from near-normal to as much as 23 inches below the normal seasonal average.

## GROUND-WATER LEVELS

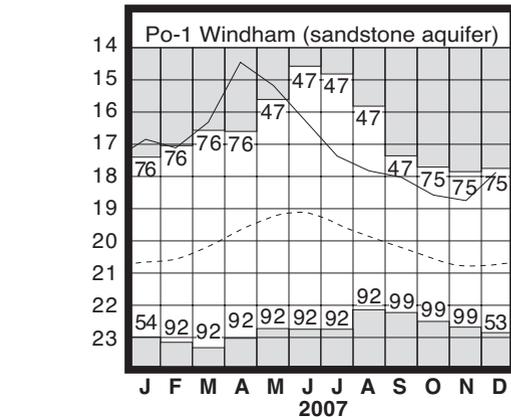
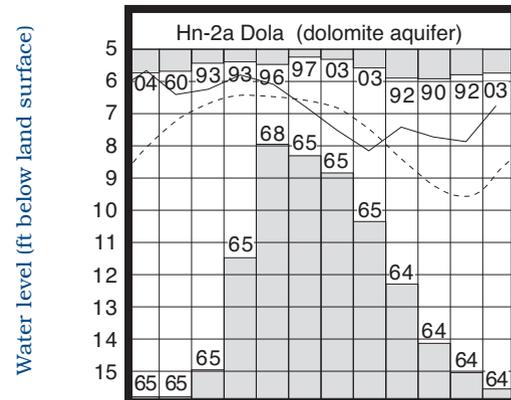
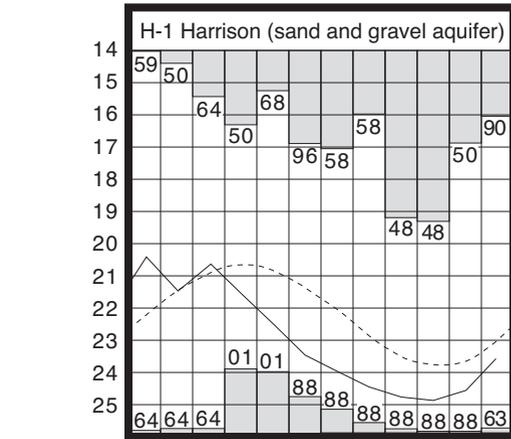
Based on daily lowest level in feet below land-surface datum

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	16.49	+0.60	+1.66	-5.32
Fa-1	Jasper Mill, Fayette Co.	Limestone	10.85	-2.66	+1.85	-3.25
Fr-10	Columbus, Franklin Co.	Gravel	44.96	-1.01	+0.53	-0.68
H-1	Harrison, Hamilton Co.	Gravel	23.58	-0.54	+0.97	-1.63
Hn-2a	Dola, Hardin Co.	Dolomite	6.77	+2.11	+1.11	-0.46
Po-1	Windham, Portage Co.	Sandstone	17.89	+2.85	+0.86	-0.41
Tu-1	Strasburg, Tuscarawas Co.	Gravel	13.55	-0.06	+1.56	-0.90

### LAKE ERIE LEVELS



### GROUND-WATER LEVELS



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

(Precipitation continued from front)  
 across the state. Conditions were extremely dry during May with many locations in the southern one-third of the state receiving less than 1 inch of rain for the month. Much above normal precipitation fell during August across northern Ohio, but dry conditions lingered in southern Ohio. Below normal precipitation again impacted most of the state during September with just a few locations in southwestern Ohio receiving slightly above normal rainfall. Precipitation during the last 3 months of the year was above normal statewide.

### SUMMARY

Precipitation during December was noticeably above normal throughout Ohio. Streamflow was above normal statewide and high enough to be considered excessive throughout most of the state. Reservoir storage decreased slightly in the Mahoning basin index reservoirs and increased in the Scioto basin index reservoirs. Storage was above normal in both basins. Ground water levels rose statewide and were generally above normal in consolidated aquifers and slightly below normal in unconsolidated aquifers. Lake Erie level rose 0.36 foot and was 0.23 foot below the long-term December average.

Precipitation for the 2007 calendar year was above normal throughout most of the state, but below normal in the South Central Region. Streamflow was above normal statewide. Both surface and ground water supplies were adequate throughout the year. Lake Erie level was above normal the first 5 months and below normal the last 7 months of the year. Calendar year 2007 was adequate for water supplies, but the dry conditions during the late spring and summer months had a negative impact on agriculture, especially in southern Ohio. Heavy rain during August led to devastating flooding across many areas of northern Ohio.

### ACKNOWLEDGMENTS

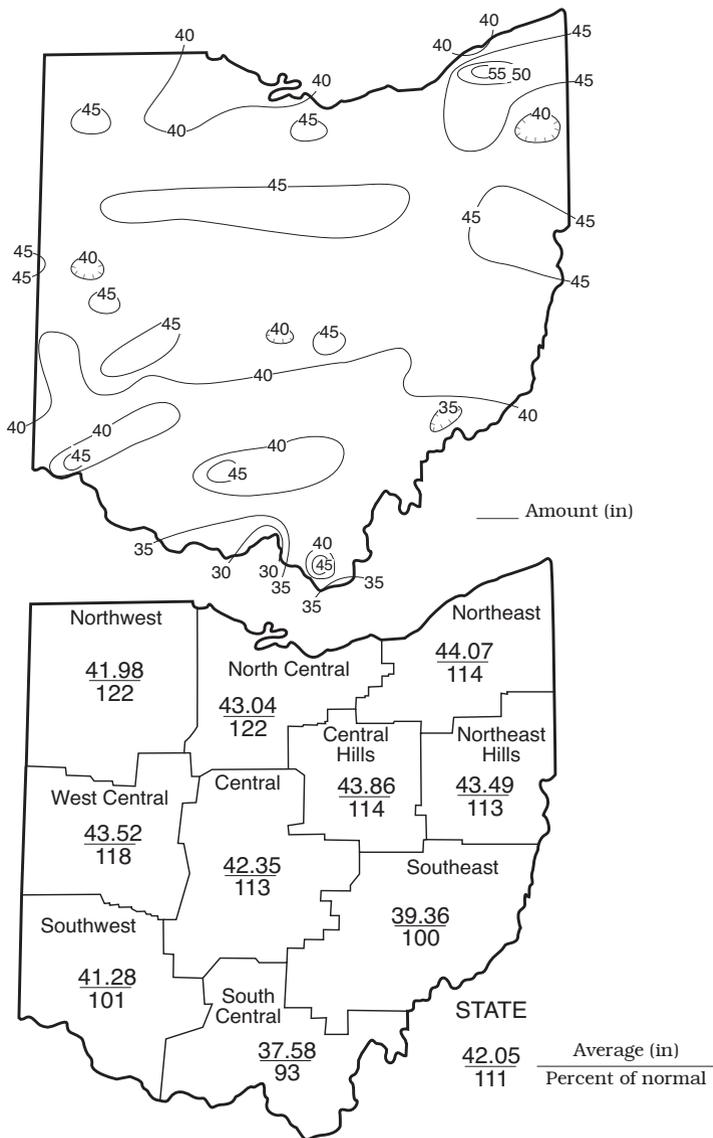
This report has been compiled from Division of Water data and from information supplied by the following:

- 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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### PRECIPITATION 2007 CALENDAR YEAR



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