



# MONTHLY WATER INVENTORY REPORT FOR OHIO

January 2005

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

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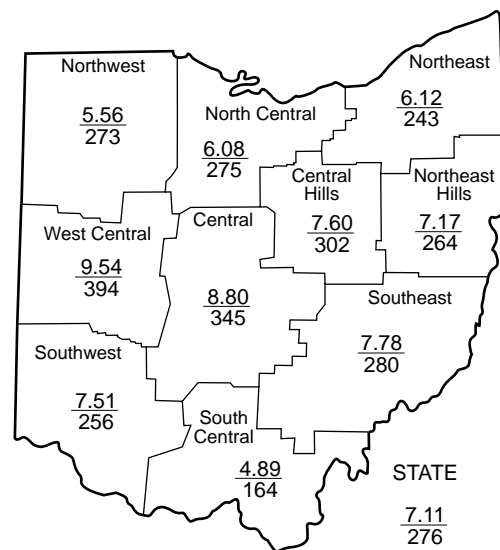
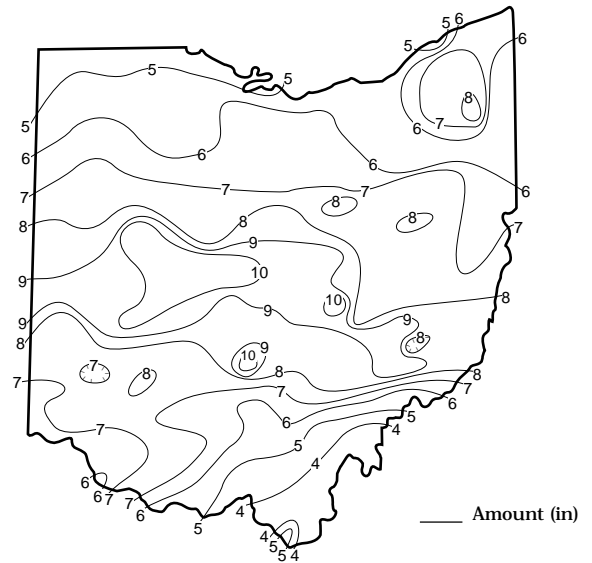
**PRECIPITATION** during January was above normal statewide. The average for the state as a whole was 7.11 inches, 4.54 inches above normal. Regional averages ranged from 9.54 inches, 7.12 inches above normal, for the West Central Region to 4.89 inches, 1.91 inches above normal, for the South Central Region. For the state as a whole this was the 4<sup>th</sup> wettest January during the past 123 years. Regionally, this was the 2<sup>nd</sup> wettest January for the Central and Southeast regions; 3<sup>rd</sup> wettest for the North Central, Northeast, West Central, Central Hills and Northeast Hills regions; 4<sup>th</sup> wettest for the Northwest Region; and the 5<sup>th</sup> wettest for the Southwest Region. Circleville (Pickaway County) reported the greatest amount of January precipitation, 10.97 inches. Chester (Meigs County) reported the least amount, 3.15 inches.

Precipitation during January fell as both rain and snow. Most of the state received from 6 to nearly 11 inches of precipitation, with lesser amounts falling in northwestern and south-central Ohio. The bulk of the month's precipitation occurred during the first 13 days. Nearly all the precipitation during this period fell as rain in the southern two-thirds of Ohio and as a wintry mix in the northern third. Total amounts of precipitation during the first 13 days of January were notable. Generally, 2-3 inches fell across extreme south-central Ohio while 3-5 inches fell across the northern third of the state. The remainder of the state received 5-10 inches of precipitation during this period with the greatest amount of rain falling across the central third of the state (see Notes and Comments on the last page of this report). Unofficial reports indicated that some areas of central Ohio received in excess of 12 inches of precipitation during this period. Although the remainder of the month was considerably drier, there were several days with light precipitation, most falling as snow. Melted precipitation during this period totaled 0.50-1.0 inch across much of Ohio. Snowfall for the month was generally above normal statewide. Ashtabula (Ashtabula County) reported the greatest amount of January snow, 39 inches, which is more than double their January average.

Precipitation for the 2005 calendar year is off to a good start as far as water supplies are concerned. Continued near-normal precipitation during the next several months will be beneficial for water supplies across the state.

Precipitation for the 2005 water year is above normal statewide. The average for the state as a whole is 16.77 inches, 5.99 inches above normal. Regional averages range from 19.15 inches, 8.87 inches above normal, for the West Central Region to 13.72 inches, 4.09 inches above normal, for the Northwest Region.

## PRECIPITATION JANUARY



## 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	+3.52	+4.48	+4.49	+5.32	+13.29	+4.8
North Central	+3.87	+5.44	+5.01	+9.91	+17.65	+5.2
Northeast	+3.60	+5.02	+6.17	+10.98	+22.34	+6.3
West Central	+7.12	+8.93	+7.47	+8.51	+24.18	+4.8
Central	+6.25	+7.22	+8.33	+13.44	+24.06	+5.6
Central Hills	+5.08	+6.58	+9.33	+15.17	+23.64	+6.3
Northeast Hills	+4.45	+5.17	+13.52	+20.11	+31.49	+7.5
Southwest	+4.58	+5.18	+4.67	+5.16	+14.15	+4.0
South Central	+1.91	+3.49	+8.12	+9.67	+21.72	+4.4
Southeast	+5.00	+5.94	+14.65	+19.01	+30.92	+6.5
State	+4.54	+5.75	+8.18	+11.74	+22.29	

\*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

River and Location	Drainage Area (Sq. Mi.)	This Month			% of Normal Past		
		Mean Discharge (CFS)	% of Normal	3 Mos.	6 Mos.	12 Mos.	
Grand River near Painesville	685	4,825	319	186	179	155	
Great Miami River at Hamilton	3,630	23,270	582	257	208	137	
Huron River at Milan	371	2,636	613	330	284	203	
Killbuck Creek at Killbuck	464	2,231	425	214	190	156	
Little Beaver Creek near East Liverpool	496	2,305	391	230	325	196	
Maumee River at Waterville	6,330	24,900	509	232	208	130	
Muskingum River at McConnelsville	7,422	36,790	398	368	424	165	
Scioto River near Prospect	567	3,949	787	319	277	185	
Scioto River at Higby	5,131	34,360	543	289	247	171	
Stillwater River at Pleasant Hill	503	3,804	847	311	246	128	

**STREAMFLOW** during January was noticeably above normal statewide. Flows were high enough to be considered excessive across the entire state. A record-high monthly flow was established at the Scioto River at Prospect gauging station. Widespread, significant flooding occurred across much of the state during the first half of the month (see Notes and Comments on the last page of this report).

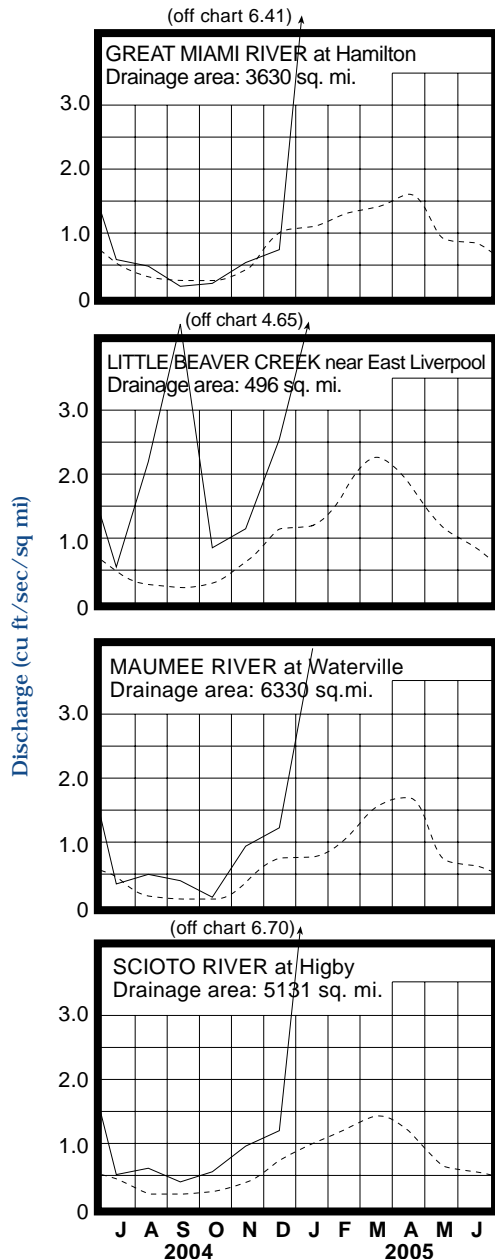
Flows at the beginning of January were above normal across Ohio. Flows increased rapidly from the combination of melting snow and ice near the end of December and heavy rain that fell during the first week of January. Greatest flows for the month occurred during January 6-7 across the southern two-thirds of the state. Flows decreased for a couple of days,

then increased again from the additional precipitation that fell during the following week. Greatest flows for the month occurred during January 12-14 in basins in the northern third of Ohio. Flows steadily decreased the remainder of the month as the combination of colder temperatures and drier conditions reduced the rate of runoff. Low flows for the month occurred at or just prior to the end of January nearly statewide. Flows at the end of the month were below normal throughout much of the state, remaining above normal across only southeastern and north-central Ohio.

**RESERVOIR STORAGE** during January decreased in the Mahoning and Scioto river basins but remained above normal in both basins.

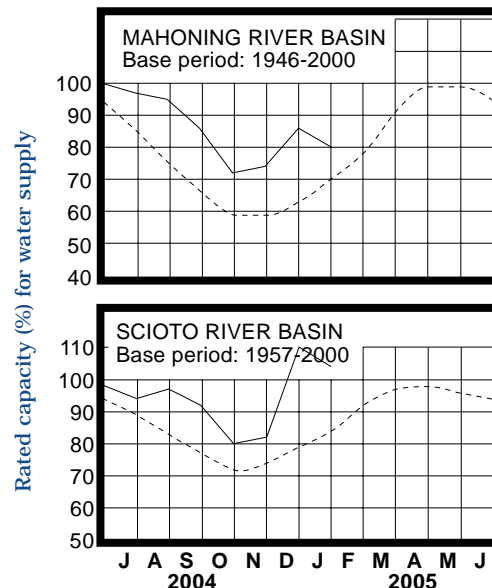
Reservoir storage at the end of January in the Mahoning basin index reservoirs was 80 percent of rated capacity for water supply compared with 86 percent for last year and 77 percent for January 2004. Month-end storage in the Scioto basin index reservoirs was 104 percent of rated capacity for water supply compared with 110 percent for last month and 93 percent for January 2004.

### MEAN STREAM DISCHARGE



Base period for all streams: 1971-2000

### 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 January rose seasonally statewide. Net improvement to ground water storage was greater than normally expected during January across most of the state. Generally, levels in unconsolidated aquifers rose sharply during the first half of the month and then declined during the second half while levels in consolidated aquifers rose throughout the first 3 weeks of January, and then declined during the last week of the month.

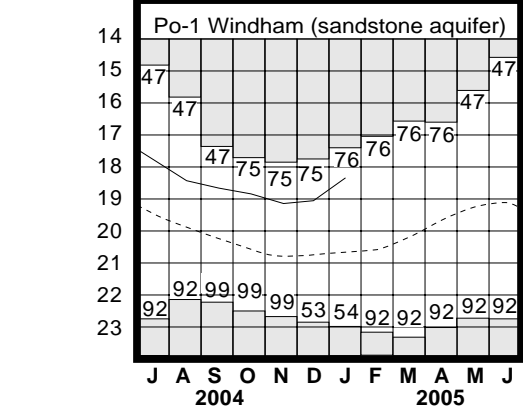
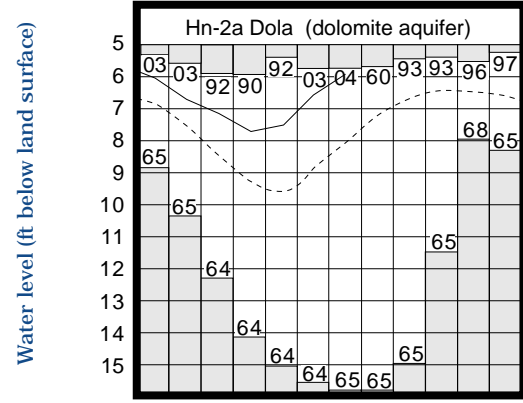
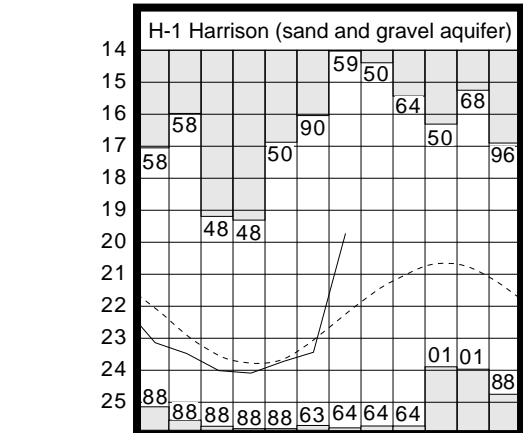
The above normal January precipitation plus the continued recharge from the wet conditions that existed at the end of December have helped improve ground water to above normal levels statewide. New record-high January levels were reached in index observation wells F-1 (Fairfield County), representing sandstone aquifers in eastern and southeastern Ohio and HN-2A (Hardin County), representing the carbonate aquifers of northwestern Ohio. Current levels are also higher than they were a year ago across most of the state. The colder temperatures and drier weather conditions that existed during the second half of January reduced the amount of recharge that occurred during the second half of the month. However, the outlook for continued improvement to ground water storage is favorable, as soils remain nearly saturated across most of the state.

**LAKE ERIE** level rose during January. The mean level was 571.65 feet (IGLD-1985), 0.72 foot higher than last month's mean level and 0.78 foot above normal. This month's mean level is 0.95 foot higher than the January 2004 level and 2.45 feet above Low Water Datum.

The U.S. Army Corps of Engineers (USACE) reports that precipitation in the Lake Erie basin during January averaged 4.30 inches, which is 1.83 inches above normal. For the entire Great Lakes basin, January precipitation averaged 2.73 inches, which is 0.52 inch 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 range from near-normal to as high as 9 inches above normal for the foreseeable future. Deviations from the anticipated weather patterns could result in the level of Lake Erie ranging from as high as 12 inches above normal to as much as 9 inches below the normal seasonal average.

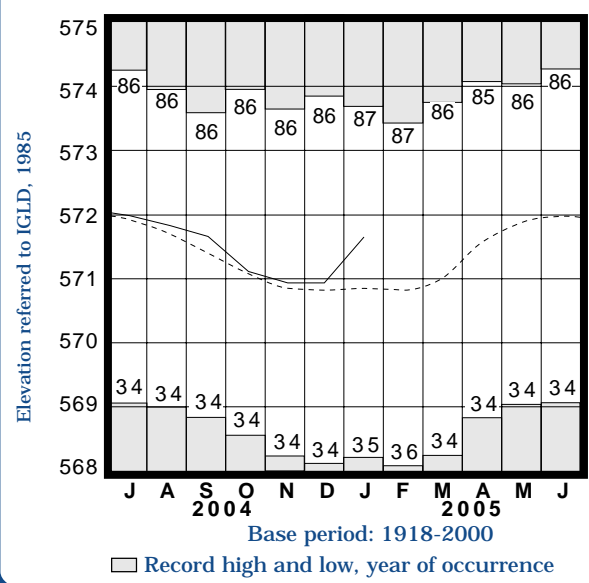
Index Well	Location	Aquifer	Mean This Month	Departure From Normal	Change in feet from:	
					Last Month	Year Ago
F-1	W. Rushville, Fairfield Co.	Sandstone	9.32	+6.47	+1.38	+1.29
Fa-1	Jasper Mill, Fayette Co.	Limestone	7.34	+0.18	+0.36	+0.29
Fr-10	Columbus, Franklin Co.	Gravel	43.32	+0.02	+1.03	+1.03
H-1	Harrison, Hamilton Co.	Gravel	19.71	+2.52	+3.73	+1.19
Hn-2a	Dola, Hardin Co.	Dolomite	5.91	+2.17	+0.65	+0.17
Po-1	Windham, Portage Co.	Sandstone	18.31	+2.36	+0.75	-0.42
Tu-1	Strasburg, Tuscarawas Co.	Gravel	10.42	+2.70	+2.43	+1.19

## GROUND-WATER LEVELS



Base periods: H-1, 1951-2000. Hn-2a, 1955-2000.  
Po-1, 1947-2000 □ Record high and low, year of occurrence

## LAKE ERIE LEVELS



Normal - - - - Current ———

## SUMMARY

Precipitation during January was above normal statewide. Streamflow was above normal and high enough to be considered excessive statewide. Major flooding occurred across much of Ohio during the first half of the month. Reservoir storage decreased but remained above normal in both the Mahoning and Scioto river basins. Ground water levels rose seasonally and are above normal statewide. Lake Erie level rose 0.72 foot and was 0.78 foot above the long-term January average.

## NOTES AND COMMENTS

### January Storms Wreak Havoc In Ohio

Several strong storm systems moved across Ohio during the first 13 days of January producing heavy rain, snow and ice. During this period most of the precipitation fell as rain in the southern two-thirds of the state and as a wintry mix in the northern third. The precipitation fell on saturated ground, resulting in high runoff rates producing the worst flooding some areas of the state have experienced in several years. In some basins, peak flows were the highest recorded since 1964 with a few recording the highest since 1959. There were 2 noteworthy periods of precipitation during the first 13 days of January. The first period occurred during January 3-6. Moderate to locally heavy rain fell on January 3, totaling 1-2 inches of precipitation statewide. Only light, scattered showers fell on January 4, but steady rain returned to the state on January 5-6, resulting in another 1-2 inches across most of northern and southeastern Ohio and 2-4 inches elsewhere. The excessive precipitation caused widespread flooding, closing numerous roads and prompting evacuations. The precipitation turned to snow across northern Ohio and to freezing rain across a large area from west-central through north-central Ohio. This was the second major ice storm to occur in Ohio within a 2-week period. The weight of the ice toppled trees, broke branches and brought down power lines across the affected area, leaving thousands of people without power for several days. The second noteworthy period occurred during January 11-13. Precipitation totals during this period ranged from 0.5-1.0 inch across southern Ohio, 1-2 inches in northern Ohio and another 2-4 inches through much of the central third of the state. Major flooding continued across much of the state as flows increased due to the runoff from this latest precipitation. A cold front pushed through the state on January 13, changing the weather pattern from warm, moist air to colder, drier conditions. However, flooding continued across many areas of the state for a few more days before finally subsiding. In addition, 11 USACE dams in the Muskingum and Scioto basins reached record pool levels, holding floodwaters to reduce the severity of flooding downstream of these dams.

The severe winter storms have prompted Ohio Governor Bob Taft to request that President Bush declare 60 of the state's 88 counties federal disaster areas. A Presidential Disaster declaration would make people and businesses affected by the flooding and other winter storm related damages eligible for a wide range of federal disaster assistance. The disaster declaration would include damages from the ice and snowstorm on December 22, 2004 through the storms and floods of early January. Preliminary assessment of the amount of damages in Ohio from these storms is estimated to be at least 268 million dollars.

## 50-Year Anniversary Highlights

### Notable December and January Events From The Past 50 Years

December 1-2, 1974: Heavy snowstorm occurred statewide with many stations recording record amounts of snow for a 24-hour period for December and a few all-time records. Up to 2 feet of snow fell across northern Ohio while 4-8 inches fell across southern Ohio.

December 1990: This was the wettest December for the state as a whole in 108 years of record keeping. December's precipitation helped make 1990 the wettest year of record for Ohio. The year ended with statewide flooding resulting from snowmelt and 2-3 inches of precipitation that fell during December 28-30.

January 21, 1959: Rapid runoff from 3-6 inches of rain and melting snow produced destructive floods which caused extensive damage and claimed 16 lives.

January 26, 1978: The great blizzard of 1978 was one of the most severe storms ever in the state. Several observation stations throughout Ohio set new weather records including: greatest snow depth, highest wind speed, lowest barometric pressure, and greatest 24-hour snowfall. Motorists were left stranded, several thousand people were without power, and 51 people lost their lives.

## Errata

The initial release of the *December 2004 Monthly Water Inventory Report For Ohio* inadvertently contained incorrect precipitation maps on the last page of the report. A revised edition, which included the correct maps, has been distributed. Please discard (recycle) any issues of the original December 2004 edition and replace them with the revised edition. The revised edition is also available for download from the Division of Water website at: <http://www.dnr.state.oh.us/water/waterinv/mwir.htm>.

## ACKNOWLEDGMENTS



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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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