



# MONTHLY WATER INVENTORY REPORT FOR OHIO

March 2000

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

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Hydrologist  
Water Inventory Unit

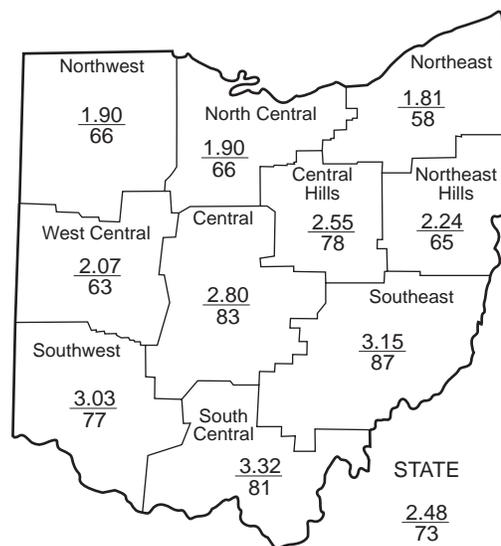
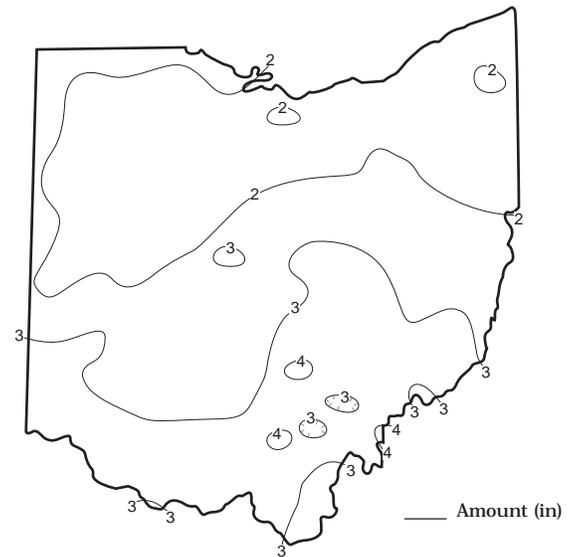
**PRECIPITATION** during March was below normal statewide, with only a few widely scattered locations in southeastern Ohio receiving slightly above normal precipitation. The state average was 2.48 inches, 0.90 inch below normal. Regional averages ranged from 3.32 inches, 0.77 inch below normal, for the South Central Region to 1.81 inches, 1.30 inches below normal, for the Northeast Region. This was the 12<sup>th</sup> driest March of record for the Northeast Region. Jackson (Jackson County) reported the greatest amount of precipitation for March, 4.58 inches. North Georgetown (Columbiana County) reported the least amount for the month, 1.21 inches.

Most of the precipitation during March fell as rain. The first 10 days of the month were rather dry across the state with only light showers reported at a few locations. The first notable precipitation of the month occurred during March 11-12 as a wintry mix of precipitation fell across the state. Amounts of precipitation from this storm ranged from about 0.25 inch in the northern half of the state to as much as 0.75 inch in southern Ohio. The precipitation during this period fell mainly as rain in southern Ohio and as snow in northern Ohio. On March 16, the next weather system crossed the region bringing between 0.50-1.0 inch rains to most of the state, except in northwestern and extreme northeastern Ohio where less than 0.25 inch was reported. After a short drying period, rain returned to the state on March 19-20 as a slow moving frontal system moved through the region. Moderate precipitation with locally heavy downpours occurred during this storm. The western half of Ohio received between 0.50-1.0 inch rain while the eastern half generally received between 1-2 inches of rain, except in parts of northeastern Ohio where lesser amounts of only 0.25-0.50 inch were reported. Conditions dried until March 27-28 when a weather system with light showers produced 0.25-0.50 inch of rain across most of the state.

Precipitation for the 2000 calendar year is generally above normal in the southern half of the state and below normal in the northern half. The average for the state as a whole is 8.29 inches, 0.09 inch below normal. Regional averages range from 11.41 inches, 1.17 inches above normal, for the South Central Region to 5.15 inches, 1.74 inches below normal, for the Northwest Region.

Precipitation for the first half of the 2000 water year is below normal across most of the state, but above normal in much of central and southeastern Ohio. The state average is 15.64 inches, 0.31 inch below normal. Regional averages range from 21.06 inches, 2.85 inches above normal, for the South Central Region to 10.76 inches, 3.16 inches below normal, for the Northwest Region (see Precipitation table, departure from normal, past 6 month's column).

## PRECIPITATION MARCH



## PRECIPITATION

Region	DEPARTURE FROM NORMAL (IN.)					Palmer Drought Severity Index*
	This Month	Past				
		3 Mos.	6 Mos.	12 Mos.	24 Mos.	
Northwest	-0.97	-1.74	-3.16	-4.01	-2.55	-3.3
North Central	-0.96	-0.96	-0.27	-2.01	-0.99	-0.6
Northeast	-1.30	-1.52	-0.63	-0.94	-2.52	-1.4
West Central	-1.19	-0.79	-2.48	-7.12	-2.64	-2.8
Central	-0.57	+1.13	+0.26	-5.72	-4.08	-2.6
Central Hills	-0.71	+0.28	+0.08	-3.55	-0.81	-0.4
Northeast Hills	-1.21	-0.95	-1.26	-4.67	+0.52	-3.3
Southwest	-0.89	+1.63	-0.24	-8.76	-3.26	-1.2
South Central	-0.77	+1.17	+2.85	-5.31	-2.03	+0.4
Southeast	-0.47	+0.79	+1.72	-4.30	+0.29	+0.5
State	-0.90	-0.09	-0.31	-4.65	-1.83	

\*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.)	Mean Discharge (CFS)	% of Normal	% of Normal Past		
				3 Mos.	6 Mos.	12 Mos.
				This Month		
Grand River near Painesville	685	630	33	64	68	61
Great Miami River at Hamilton	3,630	2,731	46	52	42	48
Huron River at Milan	371	355	51	83	88	79
Killbuck Creek at Killbuck	464	490	52	81	80	63
Little Beaver Creek near East Liverpool	496	413	35	65	69	58
Maumee River at Waterville	6,330	3,714	29	39	36	58
Muskingum River at McConnelsville	7,422	8,594	53	76	70	64
Scioto River near Prospect	567	355	37	67	53	54
Scioto River at Higby	5,131	4,577	50	73	63	54
Stillwater River at Pleasant Hill	503	199	24	32	28	37

**STREAMFLOW** during March was below normal statewide. Flows were low enough to be considered deficient across most of the state. The March flows decreased contra-seasonally from the February flows statewide.

Streamflow at the beginning of the month was below normal throughout most of the state. Flows declined during the first two weeks of March as dry conditions prevailed across the state. Lowest flows for the month were recorded between March 11-14 just prior to runoff from precipitation that began to increase flows. During the next week, additional precipitation from a March 16 storm kept streamflow at steady or slightly greater rates. Then, another storm system that produced the most widespread and heaviest precipitation of

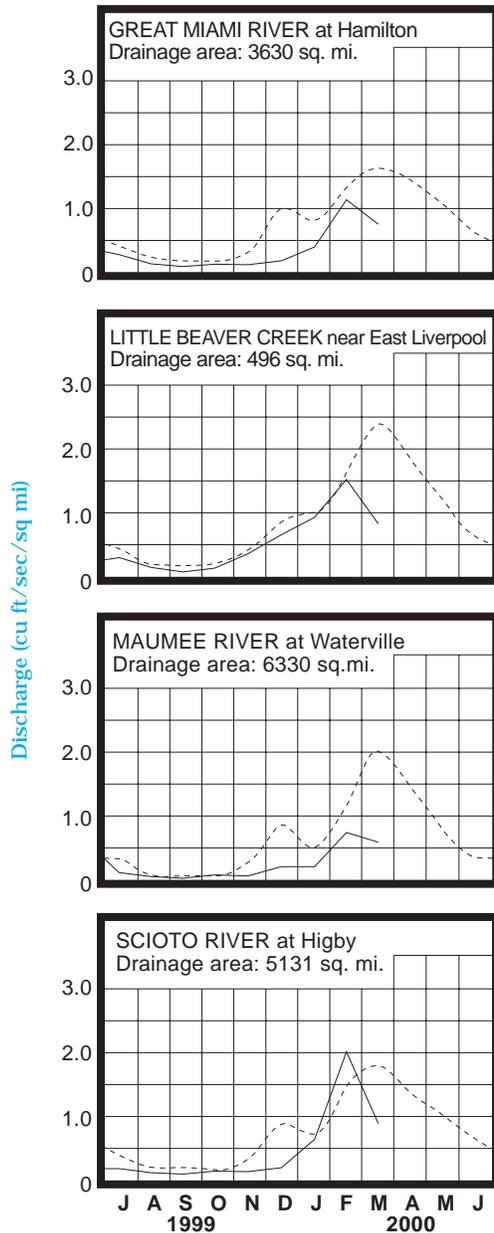
the month increased flows noticeably. Greatest flows for the month occurred on March 21-22 across most of the state just after the passage of this system. Following these peaks, streamflow declined statewide through the end of the month and was below normal throughout Ohio.

**RESERVOIR STORAGE** for water supply during March increased in both the Mahoning and Scioto river basins. Storage was above normal in both basins.

Reservoir storage at the end of March in the Mahoning basin index reservoirs was 92 percent of rated capacity for water supply compared with 86 percent for last month and 88 percent for March 1999. Month-end storage in the Scioto basin index reservoirs was 106 percent of rated capacity for water supply compared with 105 percent for last month and 102 percent for March 1999.

Surface-water supplies have improved nicely during the past couple of months and are currently adequate statewide. With near normal precipitation during the next several months, surface-water supplies in both on- and off-stream reservoirs should remain in good shape as we enter the summer high-use period.

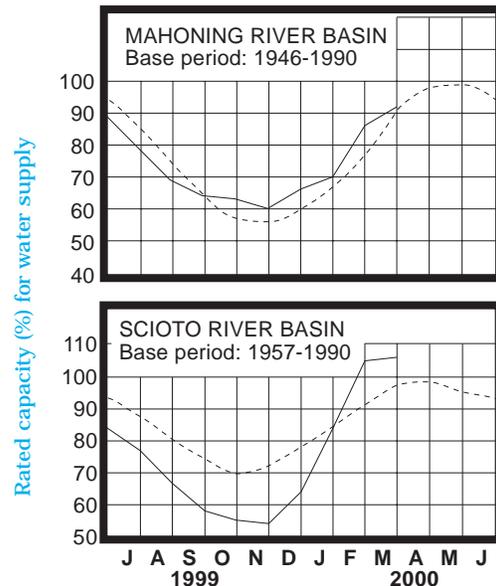
## MEAN STREAM DISCHARGE



Base period for all streams: 1961-1990

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

## RESERVOIR STORAGE FOR WATER SUPPLY



## GROUND-WATER LEVELS

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

**GROUND WATER** levels during March showed net improvement throughout the state. Net changes from February's levels were greater than usually observed in consolidated aquifers while net changes in unconsolidated aquifers were less than usually observed. Generally, levels in most consolidated aquifers rose steadily throughout the entire month. Levels in unconsolidated aquifers were steady or declined slightly during the first half of the month, and then rose the second half of the month.

Ground water levels remain below normal statewide ranging from 1.5 feet to nearly 3.5 feet below the normal seasonal levels. Current levels are also lower than they were at this time last year ranging from 1 foot to 3.5 feet below the March 1999 levels.

Ground water levels have improved considerably during the past few months, but continue to stand at below-normal levels. Current conditions are favorable for continued improvement in ground water storage across much of the state. The Ohio Agricultural Statistics Service reports that at the end of March soil moisture was rated as being short or very short in 27 percent of the state, adequate in 64 percent of the state and surplus in 9 percent of the state. With near normal precipitation and other climatic conditions during the remaining spring months, the prospects for additional recharge are favorable. Water supply managers with ground water sources should continue to monitor their respective situations throughout this recharge season.

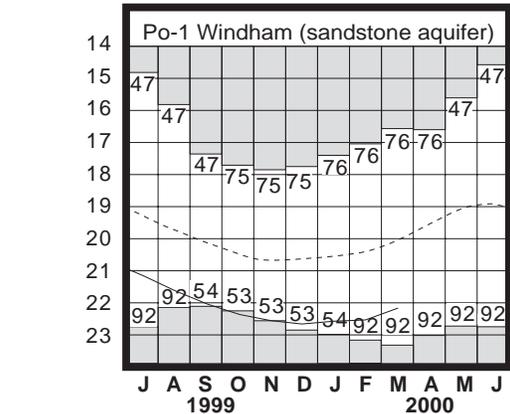
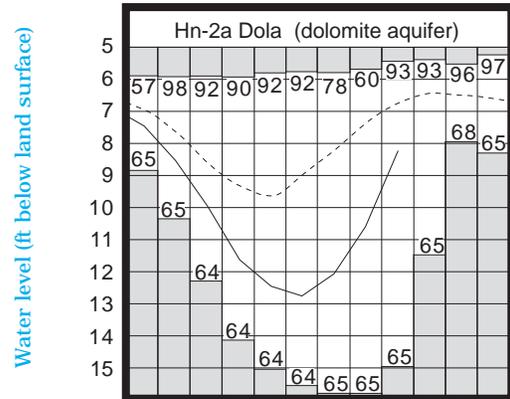
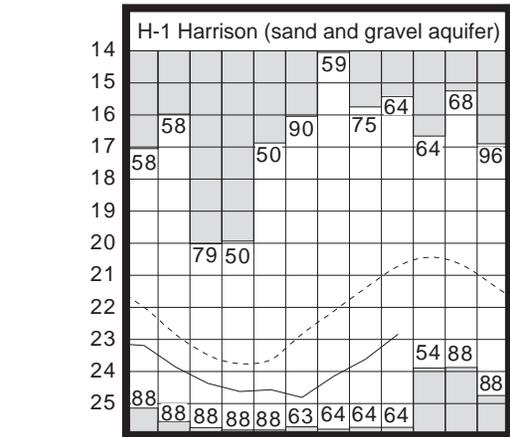
**LAKE ERIE** level rose seasonally during March. The mean level was 570.31 feet (IGLD-1985), 0.20 foot above last month's mean level and 0.56 foot below normal. This month's level is 1.25 feet lower than the March 1999 level and 1.11 feet above Low Water Datum.

The U. S. Army Corps of Engineers (USACE) reports that precipitation in the Lake Erie basin during March averaged 1.81 inches, 0.94 inch below normal. The entire Great Lakes basin averaged 1.72 inches during March, which is 0.44 inch below normal. For calendar year 2000 through March, the Lake Erie basin has averaged 5.33 inches of precipitation which is 1.92 inches below normal, and the entire Great Lakes basin has averaged 5.29 inches, which is 0.79 inch below normal.

In addition, the USACE predicts that, based on the current condition of the Great Lakes basin and anticipated future weather conditions, the level of Lake Erie should remain below the long-term average for the foreseeable future.

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	16.11	-2.80	+4.29	-3.45
Fa-1	Jasper Mill, Fayette Co.	Limestone	8.51	-1.66	+1.35	-1.27
Fr-10	Columbus, Franklin Co.	Gravel	45.04	-2.37	+0.43	-1.93
H-1	Harrison, Hamilton Co.	Gravel	22.84	-2.13	+0.78	-1.35
Hn-2a	Dola, Hardin Co.	Dolomite	8.23	-1.45	+2.37	-1.56
Po-1	Windham, Portage Co.	Sandstone	22.16	-2.13	+0.37	-1.09
Tu-1	Strasburg, Tuscarawas Co.	Gravel	14.70	-3.30	+0.72	-2.80

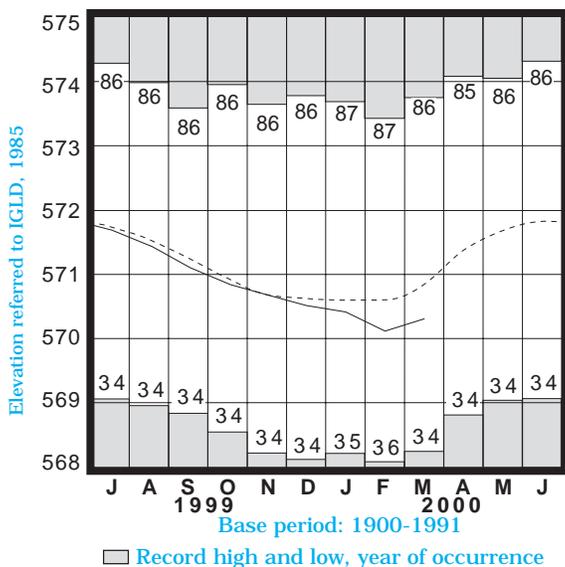
## GROUND-WATER LEVELS



Base periods: H-1, 1951-1990. Hn-2a, 1955-1990.  
Po-1, 1947-1990

Record high and low, year of occurrence

## LAKE ERIE LEVELS at Fairport



Normal - - - - Current - - - -

## SUMMARY

Precipitation was below normal across most of the state. Streamflow was below normal throughout Ohio. Reservoir storage increased statewide and was above normal throughout most of Ohio. Ground water levels showed net improvement but remain below normal statewide. Lake Erie level rose 0.20 foot and was 0.56 foot below the long-term March average.

## NOTES AND COMMENTS LAKE ERIE SHORE PROTECTION PROGRAM TRANSFERRED

The Ohio Department of Natural Resources' (ODNR) Coastal Engineering Program has recently joined the Division of Water. Prior to the transfer, the program was administered through the ODNR, Division of Engineering. This program, housed at the Coastal Services Center in Sandusky (Erie County), regulates the construction of erosion control structures along Lake Erie. Ohio has long recognized the importance of the Lake Erie shore as a natural resource and the need for its protection and management. Since 1955, ODNR has been issuing permits for the construction of shore erosion, wave and flood control structures as one of many efforts to protect and manage this natural resource. The mission of the Coastal Engineering Program is to promote sound decisions with respect to controlling shore erosion, wave action and flooding.

The Division of Water welcomes the three staff members of the Coastal Engineering Program. They are: John Watkins, P.E. and Justin Reinhart, engineers and Joyce Hackett, administrative assistant. They can be contacted at: Coastal Engineering Program, 1630 Sycamore Line Road, Sandusky, Ohio, 44870-4132, phone: (419) 626-7980. For further information on this program please visit the Division of Water web site at: <http://www.dnr.state.oh.us/odnr/water/>.

## WMAO Spring Conference

The Water Management Association of Ohio (WMAO) 2000 Spring Conference is scheduled for May 9, 2000. The focus of the conference will be on fractured glacial tills. Approximately two-thirds of Ohio and much of the Midwestern United States are covered by glacial tills that are presumed to be poorly permeable. Many researchers including soil scientists, hydrologists, and geologists have recognized fractures in soils and glacial tills, but their hydrologic significance has only recently gained international attention. This conference will bring together workers from throughout the United States and Canada to discuss recent developments regarding fractures in glacial tills and their hydrologic significance. An optional field trip to visit four fractured till sites in central Ohio has also been planned. It is scheduled for May 10.

The conference will be held from 8:30 a.m. to 5:00 p.m. at the Marriott Inn North, 6500 Doubletree Avenue, Columbus, Ohio, 43229. The registration fee for the conference is \$100. The optional field trip registration fee is \$40. For more information, please contact:

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## 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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