



MONTHLY WATER INVENTORY REPORT FOR OHIO

August 1999

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

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PRECIPITATION during August was below normal in most areas of the state, but above normal in south-central and southeastern Ohio. The state average was 3.15 inches, 0.33 inch below normal. Regional averages ranged from 4.77 inches, 0.88 inch above normal, for the South Central Region to 2.22 inches, 0.71 inch below normal, for the Northwest Region. McArthur (Vinton County) reported the greatest amount of rain for August, 6.74 inches. Maumee State Forest (Fulton County) reported the least amount for the month, 0.95 inch.

The first week of August was rather dry across most of the state. Light showers crossed the state during August 7-9 with the greatest amounts of rain being reported in the northern half of Ohio. Some areas in north-central Ohio received in excess of 1 inch of rain while many areas in southern Ohio received little or no rain during this period. Spotty showers during August 11-13 produced 0.25-0.50 inch rains across some areas of the state, mainly in northern Ohio. The next 10 days were rather dry across most of Ohio with light, scattered showers affecting only small areas of the state. The heaviest and most widespread rain of the month occurred on August 24-25 as showers and thunderstorms advanced from the southwest into Ohio. Generally, 1.0 inch of rain was recorded across most of the state with many areas in the southeastern quarter of Ohio receiving significantly heavier rainfall. Reports of from 2 to as much as 5 inches of rain was received from this area of the state. The month ended as it began with little or no rain occurring in the state during the last week of August.

Precipitation for the 1999 calendar year is below normal statewide except in the Northwest Region where it is slightly above normal. The average for the state as a whole is 24.20 inches, 2.80 inches below normal. Regional averages range from 26.20 inches, 1.18 inches below normal, for the Northeast Hills Region to 22.31 inches, 5.12 inches below normal, for the Central Region.

Much of the 1999 growing season has been unusually dry across Ohio, especially in the southern half of the state. Precipitation during April was above normal across most of the state, but below normal in many portions of southern Ohio. Since then, rainfall has been generally below normal in most areas of the state during 3 of the past 4 months with some areas of central and southern Ohio receiving below normal rainfall during all 4 months. These drought conditions have had an adverse impact on agriculture across most of the state (see Notes and Comments on the back page of this report). During the 1999 May/August period the state averaged 11.22 inches of precipitation which is 3.89 inches below normal. This ranks as the 9th driest May/August period during the past 117 years. Regional averages during this period ranged from 12.21 inches for both the Northeast and Northeast Hills regions, 2.08 inches and 3.26 inches below normal respectively, to 9.35 inches, 6.06 inches below normal, for the Southwest Region.

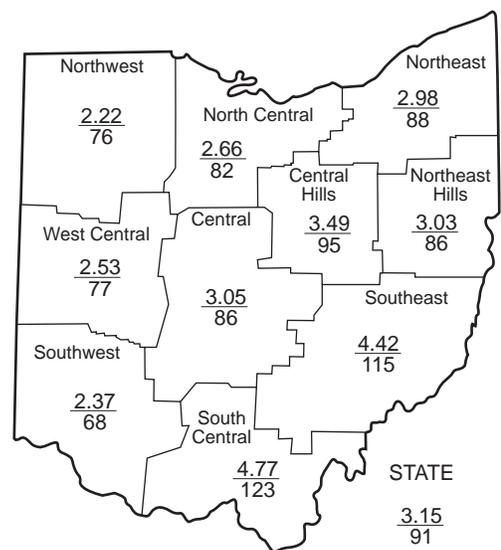
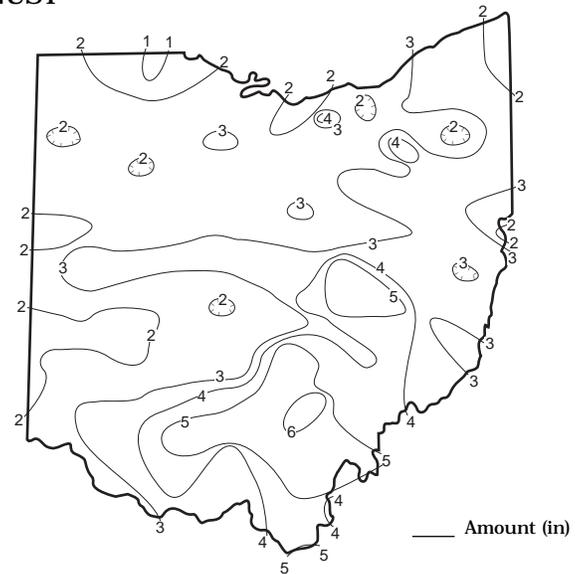
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PRECIPITATION

Region	DEPARTURE FROM NORMAL (IN.)					Palmer Drought Severity Index*
	This Month	Past				
		3 Mos.	6 Mos.	12 Mos.	24 Mos.	
Northwest	-0.71	-1.33	-1.34	-3.97	+4.18	-2.9
North Central	-0.57	-0.95	-2.34	-5.80	+1.40	-3.1
Northeast	-0.42	-0.97	-2.24	-4.14	-3.26	-2.7
West Central	-0.77	-1.66	-4.45	-4.71	-1.66	-3.7
Central	-0.50	-3.58	-6.52	-6.38	-6.87	-4.0
Central Hills	-0.17	-2.40	-4.18	-4.18	-2.44	-2.9
Northeast Hills	-0.49	-2.84	-4.02	-2.74	+1.62	-2.8
Southwest	-1.10	-3.71	-8.63	-8.48	-6.23	-3.5
South Central	+0.88	-3.12	-7.49	-8.17	-5.29	-3.0
Southeast	+0.58	-3.10	-5.61	-4.36	-1.02	-3.2
State	-0.33	-2.37	-4.69	-5.31	-1.98	

*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 AUGUST



Average (in)
Percent of normal

MEAN STREAM DISCHARGE

River and Location	Drainage Area (Sq. Mi.)	Mean Discharge (CFS)	% of Normal	This Month		
				% of Normal Past		
				3 Mos.	6 Mos.	12 Mos.
Grand River near Painesville	685	55	49	18	55	49
Great Miami River at Hamilton	3,630	536	58	57	61	80
Huron River at Milan	371	25	52	61	82	81
Killbuck Creek at Killbuck	464	79	62	43	67	85
Little Beaver Creek near East Liverpool	496	74	71	51	56	85
Maumee River at Waterville	6,330	395	59	88	99	91
Muskingum River at McConnelsville	7,422	1,627	62	41	66	90
Scioto River near Prospect	567	22	54	34	66	76
Scioto River at Higby	5,131	656	56	36	54	70
Stillwater River at Pleasant Hill	503	26	44	59	53	77

STREAMFLOW during August was below normal throughout most of Ohio. Flows were low enough to be considered deficient in nearly every area of the state. Flows for the month were less than the July flows statewide.

Streamflow at the beginning of August was below normal throughout most of the state except in some northern Ohio basins where flows were slightly above normal. Greatest flows for the month were established in the central third of the state on August 1 as a result of the rainfall which occurred at the end of July. Flows generally declined throughout the state during the first 24 days of the month except for some slight increases around August 8-10 and again around August 15 in response to light precipitation during those periods. Low flows for the month were established sporadically during this period occurring around August 7 in basins in northwestern Ohio and around August 16 in southwestern Ohio.

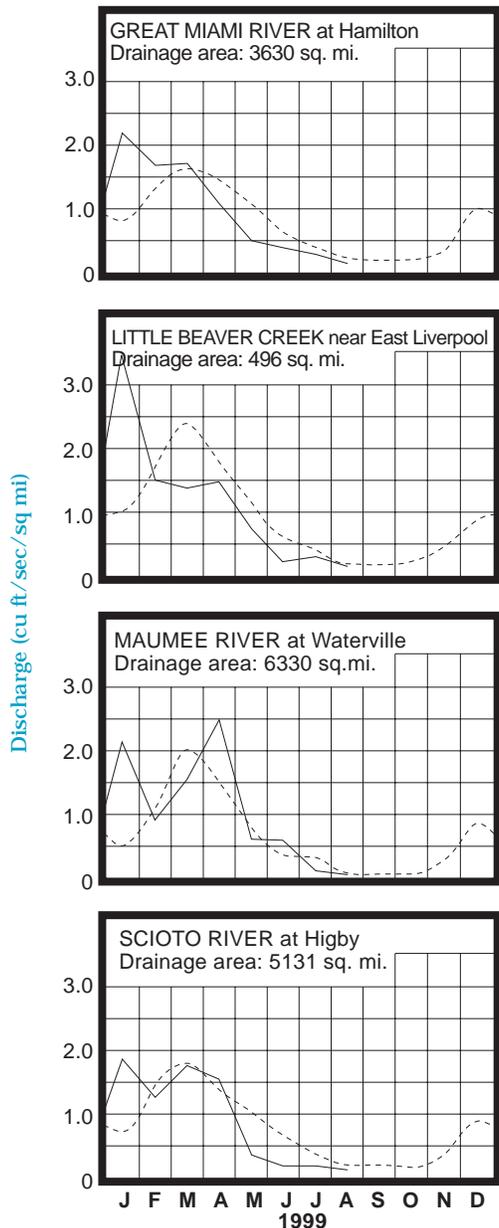
Low flows in the eastern half of the state occurred during August 24-25, just prior to responding to the most widespread and heaviest rain of the month. Flows increased in all drainage basins statewide following this rain and as a result, the greatest flows for the month were established on or around August 26 across the northern third and the southern third of Ohio. Flows declined during the last few days of August and were below normal statewide by the end of the month. Low flows for the month were observed on August 31 in west-central and central Ohio drainage basins.

RESERVOIR STORAGE for water supply during August declined in both the Mahoning and Scioto river basins. Storage remained below normal in both basins.

Reservoir storage at the end of August in the Mahoning basin index reservoirs was 70 percent of rated capacity for water supply compared with 80 percent for last month and 82 percent for August 1998. Month-end storage in the Scioto basin index reservoirs was 67 percent of rated capacity for water supply compared with 77 percent for last month and 87 percent for August 1998.

Although at below-normal seasonal levels, surface water supplies remain adequate in most areas of the state. Water supply managers with surface-water sources should continue to monitor their respective situations closely.

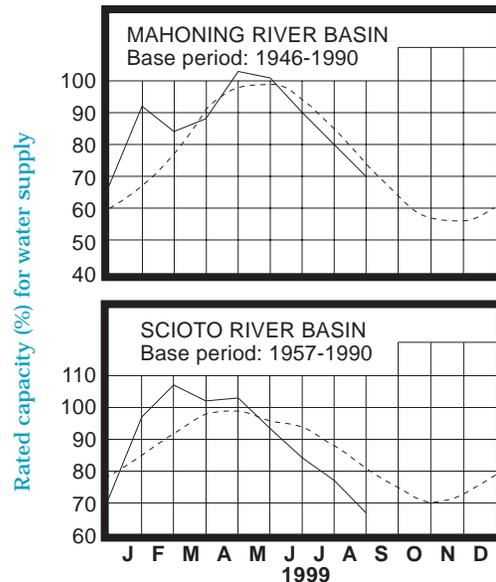
MEAN STREAM DISCHARGE



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 August declined throughout the state. In most aquifers the declines were greater than normally observed for August. Levels in most aquifers declined steadily throughout the month with only some slight increases noted around August 24-25 in a few aquifers as a result of widespread rain during that time.

Ground water levels are below normal statewide with levels generally ranging from about 1 foot to slightly more than 3.5 feet below the long-term seasonal average. Current levels are also lower than they were at this time last year ranging from 1.5 to nearly 3 feet below the August 1998 levels. Levels in most aquifers are currently higher than they were in August 1988 and 1992; however, levels in some aquifers in the central, south-central and the eastern areas of the state are lower than they were during this period, the most recent benchmark years for drought in Ohio. Observation wells Fa-1 near Washington Court House (Fayette County), representing limestone aquifers in south-central and southwestern Ohio and Tu-1 near Strasburg (Tuscarawas County), representing sand and gravel aquifers in eastern and northeastern Ohio, reached record-low August levels. Even with near-normal precipitation during the next couple of months, little recharge can be expected. The Ohio Agricultural Statistics Service reports that near the end of August soil moisture was rated as being short or very short in 73 percent of the state and adequate in 27 percent of the state.

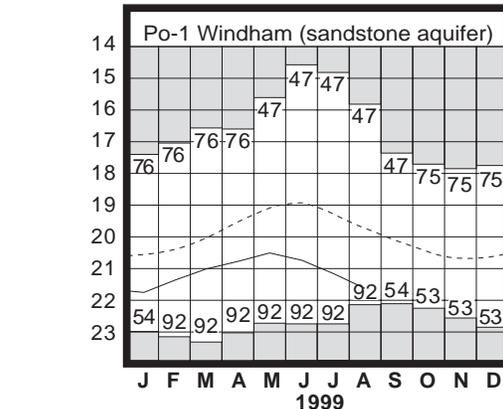
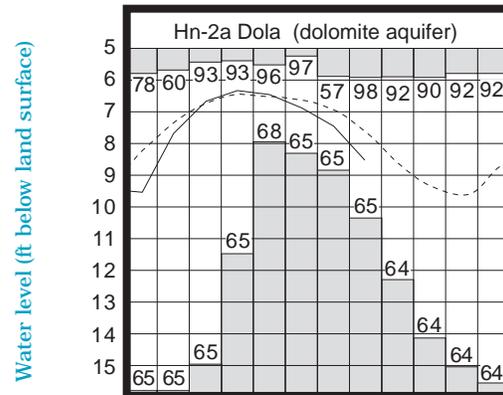
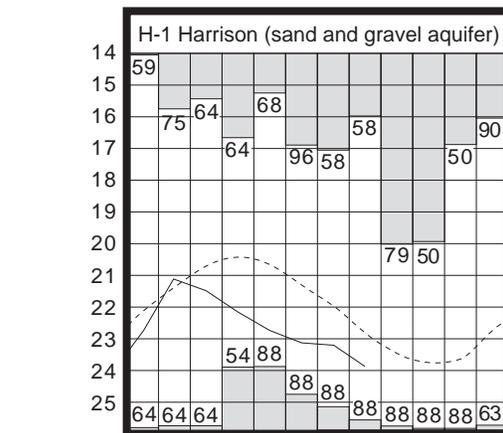
Although ground water levels are below normal statewide, supplies generally remain adequate throughout most of the state. However, ground water levels are expected to continue their seasonal decline through mid or late autumn. Water supply managers with ground water sources are urged to monitor their respective situations closely.

LAKE ERIE level declined during August. The mean level was 571.42 feet (IGLD-1985) which is 0.27 foot lower than last month's mean level and 0.14 foot below normal. This month's level is 1.48 feet lower than the August 1998 level and 2.22 feet above Low Water Datum.

The U. S. Army Corps of Engineers reports that precipitation in the Lake Erie Basin during August averaged 2.1 inches which is 1.1 inches below normal. The entire Great Lakes basin averaged 2.9 inches of precipitation during August which is 0.2 inch below normal. For calendar year 1999 through August, the Lake Erie basin has averaged 21.5 inches of precipitation, 2.1 inches below normal, and the entire Great Lakes basin has averaged 21.9 inches, 0.9 inch above normal.

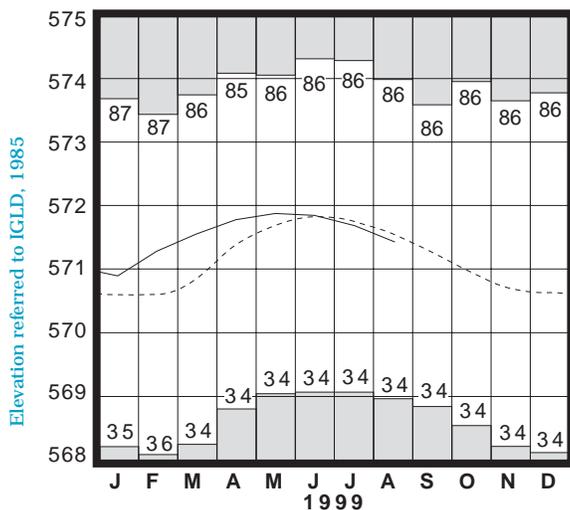
Index Well	Location	Aquifer	Mean This Month	Departure From Normal	Change in feet from:	
					Last Month	Year Ago
F-1	W. Rushville, Fairfield Co.	Sandstone	19.39	-3.60	-0.93	-2.47
Fa-1	Jasper Mill, Fayette Co.	Limestone	10.35	-2.07	-1.13	-1.81
Fr-10	Columbus, Franklin Co.	Gravel	46.50	-2.48	-0.74	-2.69
H-1	Harrison, Hamilton Co.	Gravel	23.87	-1.06	-0.67	-1.54
Hn-2a	Dola, Hardin Co.	Dolomite	8.51	-0.85	-1.06	-2.17
Po-1	Windham, Portage Co.	Sandstone	21.62	-1.90	-0.46	-1.46
Tu-1	Strasburg, Tuscarawas Co.	Gravel	15.55	-2.46	-0.66	-2.46

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



Base period: 1900-1991
Record high and low, year of occurrence

Normal - - - - Current - - - -

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This was the 3rd driest May/August period of record for the Southwest Region, the 4th driest for the Central Region and the 5th driest for the South Central Region. Four other regions (Central Hills, Northeast Hills, Southeast and West Central) rank in the top 15 driest. Circleville (Pickaway County), one of the driest areas in the state, reported 6.68 inches of rain during May/August which is 9.29 inches below normal.

Precipitation for the 1999 water year is below normal statewide. The state average is 30.95 inches, 3.62 inches below normal. Regional averages range from 33.99 inches, 1.10 inches below normal, for the Northeast Hills Region to 27.22 inches, 3.93 inches below normal, for the North Central Region.

SUMMARY

Precipitation was below normal throughout most of the state, but above normal in south-central and southeastern Ohio. Streamflow was below normal in most drainage basins. Reservoir storage declined and remains below normal statewide. Ground water levels declined and are below normal throughout the state. Lake Erie level declined 0.27 foot and was 0.14 foot below normal. Although drought conditions continue to worsen across the state, water supplies at this time remain adequate statewide.

NOTES AND COMMENTS

GOVERNOR TAFT ELEVATES OHIO DROUGHT STATUS

In early August, Governor Taft upgraded Ohio's drought status from a Phase II Drought Alert to a modified Phase III, a Conservation Phase. This elevated status, among other things, activates state drought impact task forces if needed. Those task forces are: Agriculture, Public and Private Water Supplies, Economic Impacts, Wildlife, Fish and Wildlife, and Recreation and Tourism. These task forces focus their attention on specific drought issues and can determine appropriate measures in response to drought-related problems.

Governor Taft has also asked Ohioans, especially those living in central, southern and eastern Ohio, to voluntarily curb water usage if and whenever possible. Several water-saving tips have been made available through the Ohio Department of Natural Resources Division of Water and the Ohio Environmental Protection Agency Division of Drinking and Ground Waters. The ODNR Division of Water has a new web page that contains links to Division of Water materials and information and also to other state and federal agencies. The address is: www.dnr.state.oh.us/odnr/water/temp/drought99.html.

The declaration of a drought conservation phase is a result of specific steps established in the Ohio Drought Response Plan. This plan was completed in 1989 and updated in 1994. The plan in part establishes different phases for the state's response in relation to increasing severity of drought conditions, identifies specific responsibilities of all pertinent state agencies, and identifies guidelines and recommendations that local governments may consider following during various phases of a worsening drought. Drought Assessment and Drought Executive Committees are activated to assess the situation and make recommendations to policy and decision makers.

The agricultural sector of Ohio has been severely impacted by the drought conditions of the past several months. An agricultural disaster declaration has been approved for 66 counties, thereby making farmers in nearly all of Ohio's counties eligible for loan assistance (see Notes and Comments in the July 1999 issue of this report). Although at below-normal seasonal levels, water supplies have remained adequate in most areas of the state. However, both voluntary and mandatory water-use restrictions have been imposed in many areas. Water supply managers are urged to closely monitor their respective situations throughout the upcoming recharge season.

ODNR Celebrates Its 50th Anniversary

To mark the Ohio Department of Natural Resources' 50th anniversary, Governor Bob Taft proclaimed August 11, 1999 to be "Ohio Department of Natural Resources Day" in Ohio.

The Governor's proclamation recognizes "the important contributions of ODNR employees, volunteers and partner organizations over the past half-century, calling on all Ohioans to join ODNR in its mission to ensure a balance between the wise use and protection of our natural resources for the benefit of all."

The proclamation was presented to ODNR Director Sam Speck by First Lady Hope Taft at an outdoor ceremony held at Fountain Square on August 11. Director Speck noted the outstanding contributions and accomplishments the department has made in many areas of natural resources including wildlife, recreation, and resource protection and management. A special commemorative poster was designed to mark the anniversary.

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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