



MONTHLY WATER INVENTORY REPORT FOR OHIO

June 2006

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

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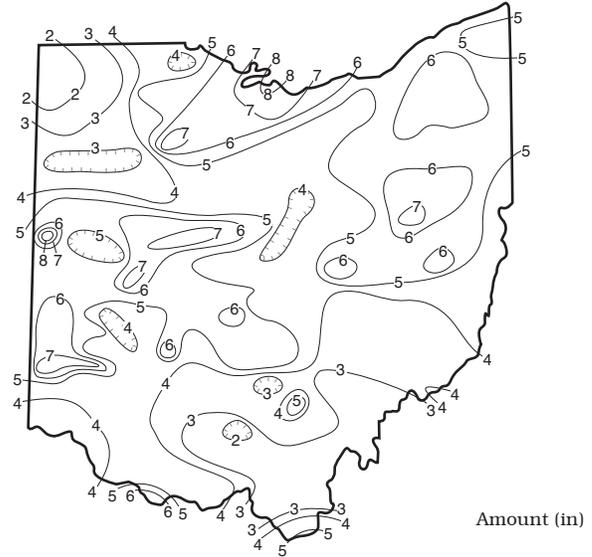
PRECIPITATION during June was above normal across much of the state, but below normal in south-central, southeastern and most of northwestern Ohio. The average for the state as a whole was 4.81 inches, 0.96 inch above normal. Regional averages ranged from 6.20 inches, 2.46 inches above normal, for the North Central Region to 3.22 inches, 0.45 inch below normal, for the Northwest Region. This was the 9th wettest June during the past 112 years for the North Central Region, the 12th wettest for the Northeast Region and the 13th wettest for the Northeast Hills Region. Sandusky (Erie County) reported the greatest amount of June precipitation, 8.28 inches. Hicksville (Defiance County) reported the least amount, 1.16 inches.

Precipitation during June fell as showers and thunderstorms with locally severe weather reported in many areas. Most of Ohio received rain during June 1-4. While much of the state received around 1 inch of precipitation with a few areas reporting more than 2 inches, less than 0.25 inch fell across extreme northern Ohio. The next 2 weeks were rather dry across much of the state with 1.50 inches of rain reported in southern Ohio, decreasing to less than 0.25 inch in northern Ohio. Some areas of northeastern Ohio received no rain at all during this period. Strong storms were common statewide during June 18-23. Most areas of the state received 1-2 inches of precipitation during this period with 3 to 7 inches of rain reported in a large part of the northern third of the state. Severe storms in north central and northeastern Ohio during June 21-22 resulted in flooding of streams and urban areas in areas where 3 to more than 5 inches of rain was reported (see Notes and Comments on the last page of this report). Widely scattered showers and thunderstorms during June 26-28 brought light amounts of precipitation across most of the state, however isolated areas received more than 1 inch of rain from heavier downpours.

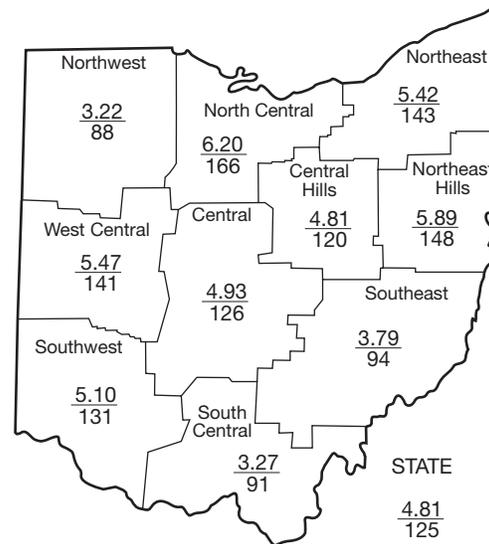
Precipitation for the 2006 calendar year is generally above normal in the northern half of the state and below normal in the southern half. The state average is 19.56 inches, 0.22 inch above normal. Regional averages range from 21.57 inches, 0.04 inch below normal, for the Southwest Region to 17.63 inches, 0.56 inch above normal, for the Northwest Region.

Precipitation for the 2006 water year is also above normal in northern Ohio and below normal in southern Ohio. The average for the state as a whole is 27.74 inches, 0.19 inch above normal. Regional averages range from 29.82 inches, 1.91 inches above normal, for the Northeast Hills Region to 25.13 inches, 0.47 inch above normal, for the Northwest Region.

PRECIPITATION JUNE



Amount (in)



Average (in)
Percent of normal

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	-0.45	+0.21	+0.56	+3.78	+4.31	-0.5
North Central	+2.46	+3.05	+2.42	+7.18	+9.53	+1.6
Northeast	+1.63	+2.51	+2.17	+4.43	+9.62	+2.1
West Central	+1.58	+1.30	+0.85	+5.44	+9.52	+1.8
Central	+1.02	-0.29	-0.65	+2.24	+7.30	-1.2
Central Hills	+0.79	+0.75	+0.61	+2.55	+8.78	+0.4
Northeast Hills	+1.91	+2.10	+1.39	+3.93	+14.39	+0.8
Southwest	+1.21	+0.53	-0.04	-0.07	+0.13	-0.6
South Central	-0.34	-1.81	-3.26	-4.51	-1.10	-2.7
Southeast	-0.23	-0.81	-1.80	-1.20	+11.97	-1.3
State	+0.96	+0.76	+0.23	+2.39	+7.46	

*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

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	520	197	80	99	109
Great Miami River at Hamilton	3,630	5,458	176	102	108	110
Huron River at Milan	371	762	358	129	107	109
Killbuck Creek at Killbuck	464	635	191	88	90	86
Little Beaver Creek near East Liverpool	496	418	99	67	72	70
Maumee River at Waterville	6,330	3,230	81	83	99	97
Muskingum River at McConnelsville	7,422	8,338	140	107	115	74
Scioto River near Prospect	567	733	240	86	96	112
Scioto River at Higby	5,131	5,365	151	64	78	80
Stillwater River at Pleasant Hill	503	861	228	113	109	112

STREAMFLOW during June was above normal in most drainage basins, but below normal in northwestern Ohio. Flows were high enough to be considered excessive in north-central, central and southwestern Ohio. Flows during June declined seasonally from the May flows in the eastern third of the state but increased in many drainage basins in the remainder of the state.

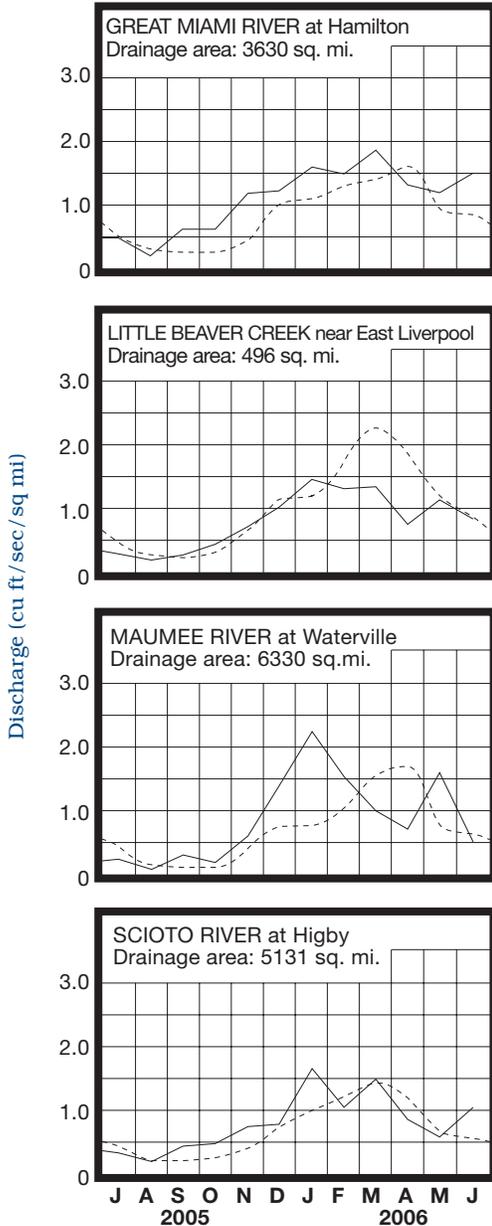
Flows at the beginning of the month were generally below normal in northwestern, east-central and south-central Ohio. Flows increased during the first few days of June as a result of the precipitation that fell early in the month. Greatest flows for the month occurred between June 3 and 5 in the southern two-thirds of the state. Flows declined from these peaks during the next 2 weeks and were at their lowest

monthly flow during June 19-21. A series of storms dumped heavy rain across much of the state during June 18-23. The greatest amount of precipitation fell in the northern third of Ohio where serious flooding occurred in several watersheds. Greatest flows for the month were observed during June 22-24 across much of the northern third of Ohio. Flows at the end of the month had fallen to below normal across the western half of the state but remained above normal in most of the eastern half.

RESERVOIR STORAGE during June increased slightly in the Mahoning River basin and decreased slightly in the Scioto River basin. Storage was above normal in both basins.

Reservoir storage at the end of June in the Mahoning basin index reservoirs was 105 percent of rated capacity for water supply compared with 104 percent for last month and 95 percent for June 2005. Month-end storage in the Scioto basin index reservoirs was 97 percent of rated capacity for water supply compared with 99 percent for last month and 92 percent for June 2005. Surface water supplies remain in good shape across the state.

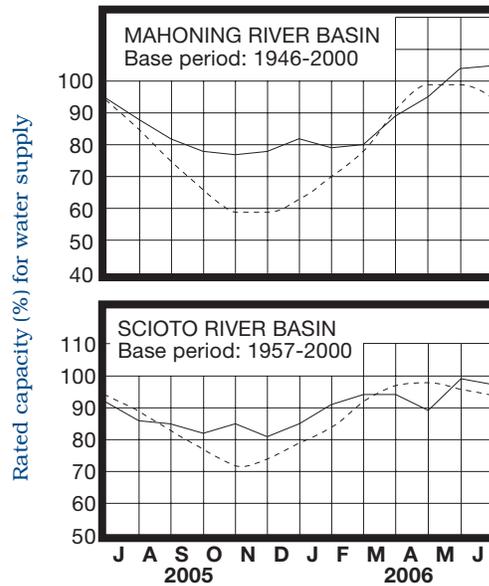
MEAN STREAM DISCHARGE



Base period for all streams: 1971-2000

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 June rose in northern Ohio and declined seasonally in most of southern Ohio. Levels in most aquifers usually show a natural decline during June. Generally, levels rose during the first week of the month, then declined the next 2 weeks before rising in response to widespread precipitation. By months end however, levels were again declining in most aquifers.

The above normal precipitation during the past 2 months in the northern half of the state has been beneficial for ground water supplies there. While precipitation in southern Ohio has been somewhat less, amounts have been sufficient to help keep ground water supplies adequate. Ground water levels are above normal in most consolidated aquifers across the state. Although levels in unconsolidated aquifers continue to be below normal, ground water supplies remain in a favorable position across Ohio. Current levels are generally higher than they were a year ago in western Ohio and lower in eastern Ohio. With near normal precipitation and other climatic conditions during the next few months, ground water storage should remain adequate throughout the state. The Ohio Agricultural Statistics Service reports that soil moisture at the end of June was short or very short in 7 percent of the state, adequate in 69 percent of the state and surplus in 24 percent of the state.

LAKE ERIE level rose during June. The mean level was 571.72 feet (IGLD-1985), 0.20 foot higher than last month's mean level and 0.26 foot below normal. This month's mean level is 0.20 foot lower than the June 2005 level and 2.52 feet above Low Water Datum.

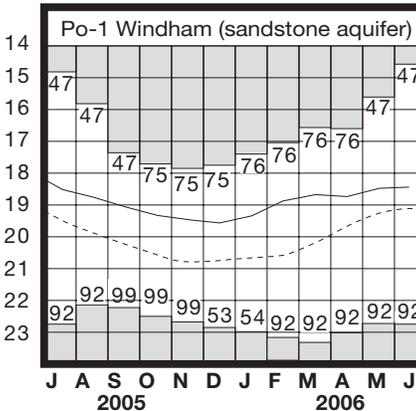
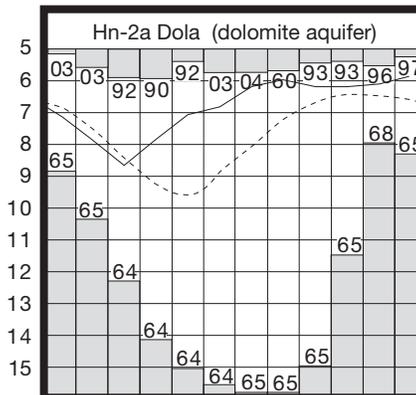
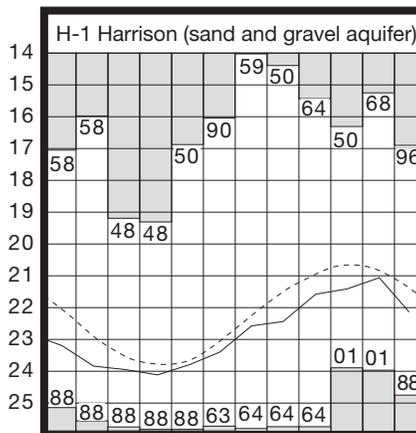
The U.S. Army Corps of Engineers (USACE) reports that precipitation in the Lake Erie basin during June was 3.44 inches, 0.01 inch below normal. For the entire Great Lakes basin, June precipitation averaged 2.40 inches, 0.80 inch below normal. For calendar year 2006 through June, the Lake Erie basin has averaged 18.44 inches, 1.25 inches above normal, while the entire Great Lakes basin has averaged 15.21 inches, 0.40 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 remain below normal for the foreseeable future. Deviations from the anticipated weather patterns could result in the level of Lake Erie ranging from about 4 inches above to as much as 14 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	12.67	+1.56	-0.75	+0.73
Fa-1	Jasper Mill, Fayette Co.	Limestone	8.45	-1.05	+0.01	+0.12
Fr-10	Columbus, Franklin Co.	Gravel	43.73	-0.97	-0.39	-0.65
H-1	Harrison, Hamilton Co.	Gravel	22.14	-0.75	-0.95	+0.67
Hn-2a	Dola, Hardin Co.	Dolomite	5.87	+0.72	+0.23	+0.64
Po-1	Windham, Portage Co.	Sandstone	18.44	+0.67	+0.04	-0.51
Tu-1	Strasburg, Tuscarawas Co.	Gravel	12.73	-0.63	+0.71	+0.62

GROUND-WATER LEVELS

Water level (ft below land surface)





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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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SUMMARY

Precipitation during June was above normal across much of the state, but below normal in south-central, southeastern and most of northwestern Ohio. Streamflow was above normal in most drainage basins, but below normal in northwestern Ohio. Reservoir storage increased slightly in the Mahoning River basin and decreased slightly in the Scioto River basin. Storage was above normal in both basins. Ground water levels rose in northern Ohio and declined in most of southern Ohio. Lake Erie mean level rose 0.20 foot and was 0.26 foot below the long-term June average.

NOTES AND COMMENTS

June Storms Result In Disaster Declaration

At the request of Governor Bob Taft, President George W. Bush has issued a major disaster declaration for 6 counties in northern Ohio that suffered damage from severe storms during June 21-22. The declaration includes Cuyahoga, Erie, Huron, Lucas, Sandusky and Stark counties. The federal declaration enables storm victims in these counties to apply for assistance provided by the federal government.

A slow moving storm system brought severe weather to many areas of the state during June 21-22. The brunt of the severe weather occurred in the northern third of the state where high winds, heavy rainfall and tornadoes were associated with some of these storms. Storms formed along a warm front on June 21 and then again ahead of an approaching cold front associated with this system on June 22, many tracking over the same areas. The heavy rainfall caused widespread flooding in northern Ohio. The storm generally dumped 3-5 inches of rain across this area with greater amounts reported from isolated heavier downpours. Unofficial reports of rainfall amounts ranged up to 10 inches. One of the hardest hit areas was Norwalk (Huron County) where more than 5 inches fell. The excessive rain caused the Huron River and its tributaries to spill out of their banks, flooding much of the Norwalk business district. Parts of Cuyahoga County received 5 inches of rain in about 2 hours. Preliminary indications show the Cuyahoga River at Independence may have set a new record flood level. Data is still being collected and analyzed by hydrologists.

Damage from high winds was also widespread as many trees and power lines were downed and several buildings sustained damage. Tragically, 2 people in northern Ohio were killed as a result of these storms. Preliminary assessments of homes and businesses from the 6 county disaster area indicates that 25 structures were destroyed, 317 received major damage and another 1,064 received minor damage. In addition, agricultural crops in the affected area were negatively impacted by the floodwaters, although it is too early to know the full extent of the damage. At the time of this reports writing, no dollar amount had yet been determined for damages from this storm.

Additional Pollution Potential Maps Available On-Line

The ODNR, Division of Water recently announced the on-line availability of two additional county ground water pollution potential maps. Those two counties are Putnam and Wyandot. This brings to 68 the number of counties in Ohio for which pollution potential maps are available on-line. Pollution potential maps are available for viewing and/or printing from the Division of Water website at: <http://www.dnr.state.oh.us/water/gwppmaps>. Maps can also be purchased for \$10.00 each plus postage and handling (see chart below) from: ODNR Division of Water, Water Resources Section, 2045 Morse Road, Building B-2, Columbus, Ohio, 43229-6693, phone (614) 265-6740. Payment may be made by check or credit card. Please make checks payable to ODNR Division of Water. Additional counties will continue to be added to the website in the future.

Ground water pollution potential maps are designed to determine an area's relative vulnerability to ground water pollution. The maps can be used as a planning and management tool for administrators, commissioners, zoning boards and others to aid in making educated decisions about local development and siting of land use operations or activities that can affect ground water quality. This information can be used to help direct resources and land use activities to appropriate areas, or to assist in protection, monitoring, and clean-up efforts. An important application of the pollution potential maps for many areas will be assisting in county land use planning and resource expenditures related to solid waste disposal. A county may use the map to help identify areas that are suitable for disposal activities. Once these areas have been identified, a county can collect more site-specific information and combine this with other local factors to determine site suitability. For further information, please contact Jim Raab at: jim.raab@dnr.state.oh.us or phone (614) 265-6747.

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