



MONTHLY WATER INVENTORY REPORT FOR OHIO

June 2015

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<http://soilandwater.ohiodnr.gov/water-use-planning/water-inventory-levels>

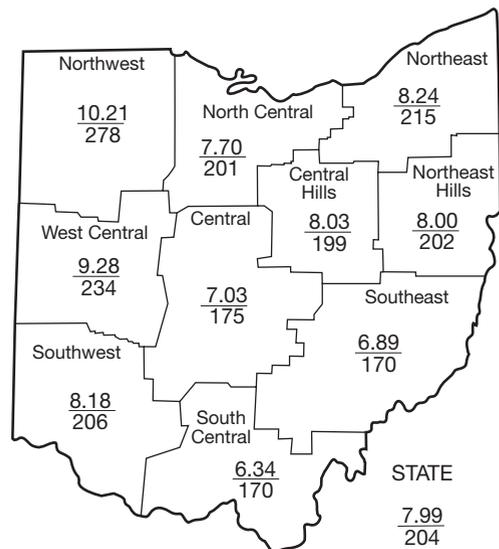
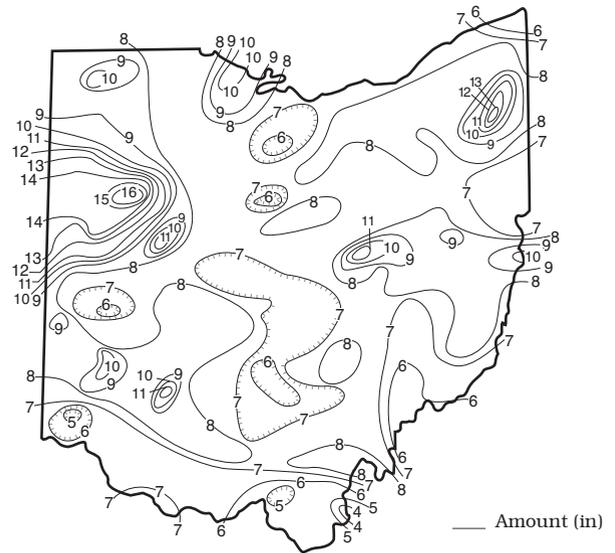
PRECIPITATION during June was noticeably above normal. The state average was 7.99 inches, 4.08 inches above normal. This ranks as the wettest June for the state in the past 133 years. Regional averages ranged from 10.21 inches, 6.54 inches above normal, for the Northwest Region to 6.34 inches, 2.61 inches above normal for the South Central Region. This was the wettest June on record for the Northwest and Northeast regions, and the second wettest for the North Central, Northeast Hills and Southwest regions. Lima Waste Water Treatment Plant (Allen County) reported the greatest amount of June precipitation, 16.64 inches. Gallipolis Locks and Dam (Gallia County) reported the least amount, 3.51 inches. See more on the record June precipitation under the Notes and Comments section on the last page of this report.

Conditions were rather dry across most of the state during the first week of the month. The remainder of the month was extremely wet across Ohio. Showers and thunderstorms continually crossed the state with locally heavy downpours common on several days. Flooding was a problem throughout much of the month, especially across the northern half of the state. Storms during June 8-9 were most numerous across west-central and northwestern Ohio with amounts of 1 to 1.5 inches reported from this area, but much less elsewhere. A front stalled in the region for several days and produced substantial precipitation throughout the state from June 12-18. Much of Ohio received between 2 and 3 inches of rain during this period, but parts of west-central, northwest and northeast Ohio received from 5 to more than 9 inches of rain. Areas in Allen County were hit hard by nearly 5 inches of rain on June 15. Small stream and urban flooding was common throughout Ohio, especially the northern half of the state. The remnants of Tropical Storm Bill passed through the southeastern half of the state on June 20 dropping between 1 and 2 inches across much of this area. The last week of the month continued to be stormy across Ohio. Most of the state received at least 2 inches of rain during this period with locations in northern Ohio reporting more than 4 inches. The strongest storms during this period crossed the state on June 27 and brought more than 3 inches of rain to parts of northern Ohio. Once again, flooding of small streams and urban areas was common, most notably in the northern half of Ohio.

Precipitation for the 2015 water year is above normal statewide. The state average is 30.84 inches, 2.68 inches above normal. Regional averages range from 34.05 inches, 3.92 inches above normal, for the South Central Region to 26.91 inches, 1.26 inches above normal, for the North Central Region.

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PRECIPITATION JUNE



Average (in)
Percent of normal

PRECIPITATION

Region	DEPARTURE FROM NORMAL (IN.) Base period 1961-2010					Palmer Drought Severity Index*
	This Month	Past				
		3 Mos.	6 Mos.	12 Mos.	24 Mos.	
Northwest	+6.54	+7.09	+5.67	+3.55	+6.27	+2.7
North Central	+3.86	+3.65	+3.31	-0.75	+9.04	+1.9
Northeast	+4.41	+5.14	+5.01	+5.83	+15.19	+2.2
West Central	+5.32	+5.08	+4.91	+0.74	+6.50	+0.4
Central	+3.01	+2.79	+2.51	-1.76	+4.70	-0.8
Central Hills	+3.99	+4.54	+4.65	+1.14	+9.30	+0.3
Northeast Hills	+4.04	+4.27	+3.70	+4.26	+9.64	+0.5
Southwest	+4.20	+3.64	+3.34	+0.56	+3.79	+0.4
South Central	+2.61	+3.30	+2.97	+0.84	+3.63	-1.4
Southeast	+2.84	+3.62	+3.69	+1.04	+6.91	-0.4
State	+4.08	+4.31	+3.96	+1.54	+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	2,526	842	138	118	114
Great Miami River at Hamilton	3,630	9,995	285	138	111	100
Huron River at Milan	371	675	221	99	109	100
Killbuck Creek at Killbuck	464	621	183	103	101	93
Little Beaver Creek near East Liverpool	496	1,138	261	133	134	109
Maumee River at Waterville	6,330	31,660	660	187	122	107
Muskingum River at McConnellsville	7,422	14,440	237	124	106	92
Scioto River near Prospect	567	2,563	641	195	131	105
Scioto River at Higby	5,131	11,450	245	118	98	94
Stillwater River at Pleasant Hill	503	1,353	330	131	108	90

STREAMFLOW during June was above normal statewide. Flows across most of Ohio were high enough to be considered excessive. Flows during June were substantially greater than flows observed during May. Preliminary data indicate that flows at several gauging stations, especially in the northern half of Ohio, were at record or near-record June levels. The Maumee River at Waterville and the Scioto River near Prospect recorded their greatest flows for June. Both the Little Beaver Creek near East Liverpool and the Great Miami River at Hamilton recorded their third greatest flows for June.

Flows at the beginning of the month were above normal in northern Ohio and below normal in southern Ohio. Flows during the first week of the month generally declined as

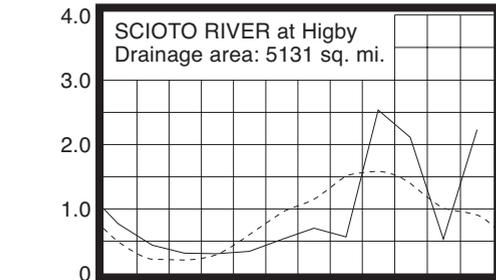
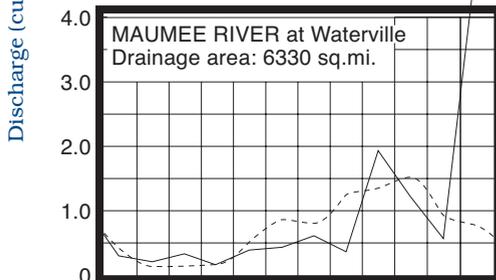
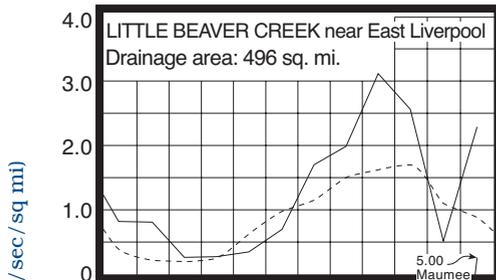
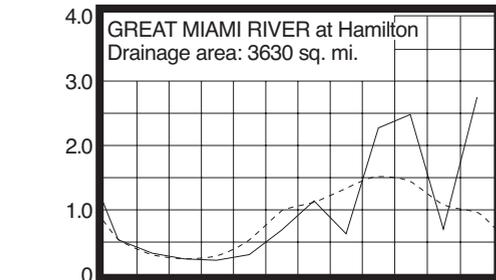
little precipitation fell across the state. Lowest flows for the month occurred around June 7-8 in the western third of Ohio and June 10-12 in the eastern two-thirds. Flows increased rapidly following widespread, heavy precipitation which occurred during June 12-18, resulting in small stream and urban flooding, most notably in the northern half of the state. Additional widespread, heavy rain during the last week of the month led to more flooding across the state. Most of the flooding during the month was minor, confined to small stream, urban and low-lying areas. However, some moderate flooding was reported in areas of northern Ohio. The flooding resulted in some roads being closed for several days and many basements being flooded. Greatest flows for the month generally occurred during June 19-21 in central and southeastern Ohio, and near or at the end of the month in western and northern Ohio. Streamflow at the end of June was above normal statewide and excessive throughout most of the state.

RESERVOIR STORAGE for water supply during June increased in both the Mahoning and Scioto river basins. Storage at the end of the month was above normal in both basins.

Reservoir storage at the end of June in the Mahoning basin index reservoirs was 112 percent of rated capacity for water supply compared with 97 percent for last month and 103 percent for June 2014. Month-end storage in the Scioto basin index reservoirs was 103 percent of rated capacity for water supply compared with 100 percent for last month and 103 percent for June 2014.

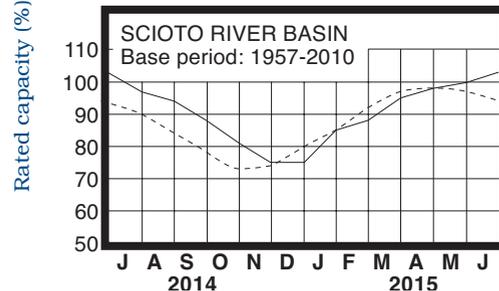
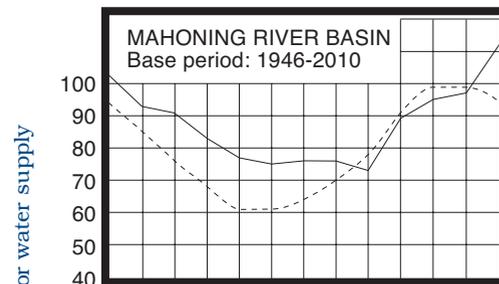
Due to the much above normal rainfall and excessive streamflow, many flood control and recreational reservoirs utilized available storage to minimize potential flooding downstream. As a result, several beaches and recreational areas had to be closed during June due to high water.

MEAN STREAM DISCHARGE



Base period for all streams: 1981-2010

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 June either rose slightly or declined much less than usually observed from May levels. An exception was in the carbonate aquifers of northwestern Ohio where water levels rose substantially as a result of the much above normal precipitation the region received during June. Levels in most aquifers declined during the first week of the month and then generally rose through the remainder of June.

Ground water levels are near to above normal across most of the state. However, aquifers in the southwestern quarter of the state remain around 1 foot below normal. In addition, even though the above normal precipitation during June benefitted ground water storage, current levels are below last year's levels throughout most of the state; only some aquifers in northwestern Ohio are currently above the levels of last year. Ground water supplies are in a favorable position across the state for this time of the year. The wet conditions during June not only improved soil moisture, but also helped reduce the overall demand on ground water resources. The Ohio Agricultural Statistics Service reports that near the end of June, soil moisture was rated as being short in 1 percent of the state, adequate in 38 percent of the state and surplus in 61 percent of Ohio. However, due to the wet conditions, farmers have been unable to get into their fields to perform any field activities.

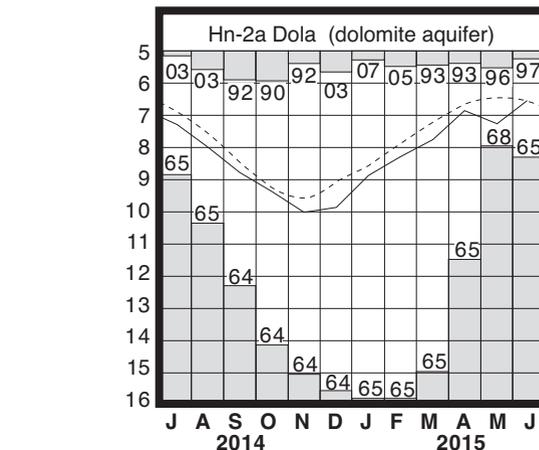
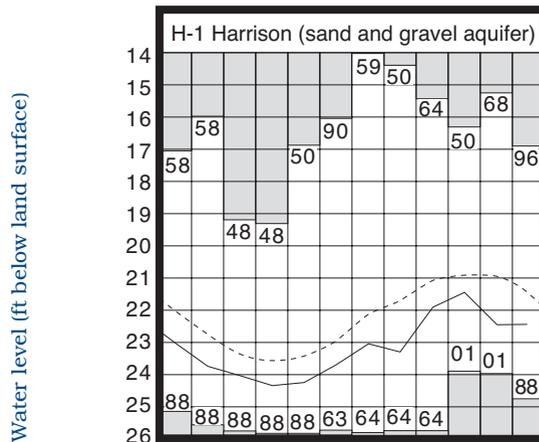
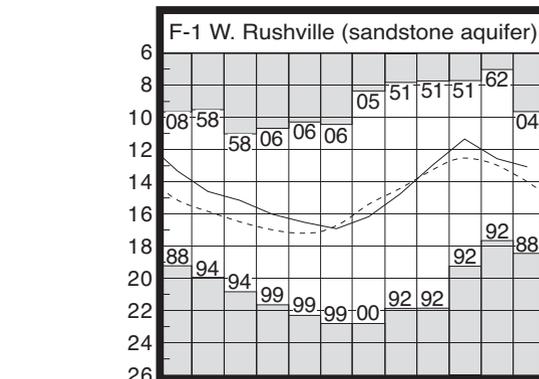
LAKE ERIE level rose during June. The mean level was 572.60 feet (IGLD-1985), 0.72 foot above last month's mean level and 0.65 foot above normal. This month's level is 0.42 foot above the June 2014 level and 3.40 feet above Low Water Datum.

The U.S. Army Corps of Engineers (USACE) reports that precipitation in the Lake Erie basin during June averaged a very wet 6.75 inches, 3.29 inches above normal. For the entire Great Lakes basin, June precipitation averaged 4.10 inches, 0.87 inch above normal. For calendar year 2015 through June, precipitation in the Lake Erie basin has averaged 17.41 inches, 0.03 inch above normal, while the entire Great Lakes basin has averaged 12.95 inches, 2.01 inches below normal.

In addition, the USACE reports that based on the current condition of the Great Lakes basin and anticipated weather patterns, the level of Lake Erie should remain above normal for the foreseeable future. Deviations from the anticipated weather patterns could result in the level of Lake Erie ranging from near normal to 20 inches above the normal seasonal average.

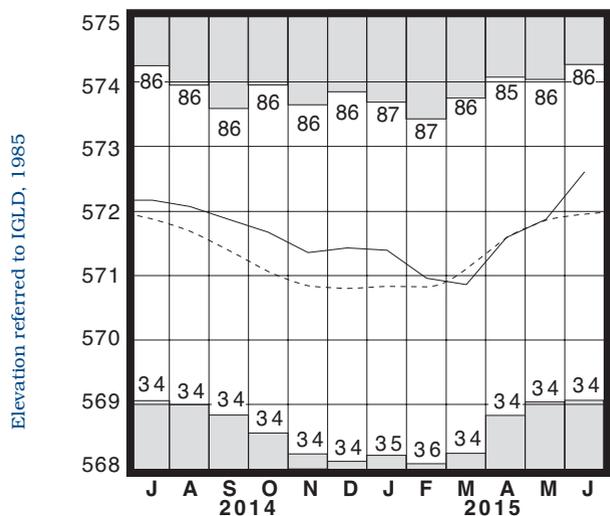
Index Well	Location	Aquifer	Mean This Month	Departure From Normal	Change in feet from:	
					Last Month	Year Ago
F-1	W. Rushville, Fairfield Co.	Sandstone	13.07	+0.93	-0.50	-1.20
Fa-1	Jasper Mill, Fayette Co.	Limestone	8.83	-1.26	-0.06	-0.22
Fr-10	Columbus, Franklin Co.	Gravel	41.91	+1.07	-0.10	-0.09
H-1	Harrison, Hamilton Co.	Gravel	22.43	-0.99	+0.01	-0.11
Hn-2a	Dola, Hardin Co.	Dolomite	6.55	+0.02	+0.72	+0.27
Po-124	Freedom, Portage Co.	Sandstone	76.35	-0.12	+0.02	-0.12
Tu-1	Strasburg, Tuscarawas Co.	Gravel	12.82	-0.48	-0.59	-1.01

GROUND-WATER LEVELS



Base periods: F-1, 1947-2010; H-1 1951-2010.
Hn-2a, 1955-2010

LAKE ERIE LEVELS



Base period: 1918-2010

■ Record high and low, year of occurrence

Normal - - - - Current ———

(Precipitation continued from front)

Precipitation for the first half of the 2015 calendar year is also above normal statewide. The state average is 23.49 inches, 3.96 inches above normal. Regional averages range from 25.20 inches, 3.34 inches above normal, for the Southwest Region to 20.91 inches, 3.31 inches above normal, for the North Central Region (see Precipitation table, departure from normal, past six months column).

SUMMARY

Precipitation during June was noticeably above normal. The state average of 7.99 inches was the wettest for June in the past 133 years of record. This was the wettest June on record for both the Northwest and Northeast regions. Streamflow was above normal statewide and excessive throughout most of the state. Reservoir storage increased and was above normal. Ground water levels either rose slightly or declined less than normally observed for June. Lake Erie level rose 0.72 foot and was 0.65 foot above the long-term June average.

NOTES AND COMMENTS

June Storms Result In Record Precipitation

Much of the state experienced rather dry conditions during the first week of June; however, conditions changed beginning on June 12 as showers and thunderstorms continually crossed the state through the remainder of the month. Several locations in Ohio received measurable precipitation on 15 of the last 19 days of June. When the month was over, preliminary data indicated the state averaged 7.99 inches of precipitation, surpassing the previous June record set back in 1902. All ten of the state's climatic regions ranked in the top eight wettest June's on record. The Northwest Region's 10.21 inches for the month broke the old record of 9.02 inches set in 1981. This was the second wettest month on record for the Northwest Region behind only the August 2007 average of 10.24 inches. In addition, this past May-June period has been the wettest on record for the Northwest Region. Unfortunately, severe weather and record rainfall amounts caused substantial damage in many areas of Ohio.

Heavy rain in excess of 1 inch fell at various locations in the state each day from June 12-18. Some of the heaviest rain fell in the northern half of Ohio. Reports of 5-9 inches were received from this area during this seven day period, which caused widespread small stream and urban flooding. Some of the hardest hit areas were in Mercer, Auglaize, Allen and Marion counties. While most of the flooding was minor, some moderate flooding was reported. At one point approximately 31 roads were closed in Mercer County.

Showers and thunderstorms continued to be common the remainder of the month. The last week in particular was extremely wet. Most of the state received at least 2 inches of rain during this period. Areas in west-central and northwestern Ohio received the greatest amount of rain with some places getting nearly 5 inches during the week. The most notable storm occurred on June 27 with more than 3 inches falling across areas of northwestern Ohio. Defiance (Defiance County) reported 3.78 inches of rain on June 27 and Toledo Express Airport (Lucas County) reported 3.33 inches. Flooding was widespread in this region with numerous roads closed.

Lima Waste Water Treatment Plant (Allen County) received 16.64 inches of precipitation for June, 12.81 inches above normal. Several other locations reported impressive amounts of rain for the month as well including Van Wert (Van Wert County), 14.72 inches; St. Mary's (Mercer County), 14.43 inches; Fort Recovery (Mercer County), 13.99 inches; Grover Hill (Paulding County), 13.68 inches; Warren (Trumbull County), 13.27 inches; Celina (Mercer County) 12.99 inches. Since April 1, 2015 Lima WWTP has received 26.24 inches of precipitation, 14.73 inches above normal.

The above normal precipitation during June has caused considerable delays in many agricultural activities. Several areas have had flooding problems and low lying fields have had standing water for several days at a time. Especially hard hit have been agricultural fields in parts of west-central, northwest and north-central Ohio. Farmers have been unable to get into their fields to harvest the winter wheat crop and perform other field activities. Crop loss in many fields will be significant.

ACKNOWLEDGMENTS

This report has been compiled from Division 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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