



MONTHLY WATER INVENTORY REPORT FOR OHIO

July 2011

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PRECIPITATION during July varied greatly across the state. Generally, precipitation was below normal throughout much of the state, but above normal in areas of north-central, northeastern, central and other scattered locations across Ohio. The state average was 3.86 inches, 0.22 inch below normal. Regional averages ranged from 5.38 inches, 1.64 inches above normal, for the North Central Region to 2.66 inches, 1.44 inches below normal, for the Southwest Region. Tiffin (Seneca County) reported the greatest amount of July precipitation, 9.64 inches. Van Wert (Van Wert County) reported the least amount, 0.80 inch.

Precipitation during July fell in a typical summer fashion as scattered showers and thunderstorms. Locally severe storms with heavy rain were reported in many areas, resulting in some urban and small stream flooding. Noticeably above normal temperatures also occurred during July. Most of the state received rain during the first week of the month. Showers and thunderstorms during July 2-3 brought 0.25-0.50 inch of rain across much of the state and an isolated strong storm on July 4 brought 2-3 inches of rain to areas of Athens, Perry and Morgan counties. Scattered storms on July 7 and 8 were most numerous in southern Ohio with 0.50-1.50 inch common. However, areas of northwestern Ohio received little or no rain during the first 10 days of July, continuing a dry trend that began last month across this area of the state. The entire state received rain on July 11 with 0.50-1.50 inch common. Storms were frequent, but often widely scattered, during July 18-24. Most areas of the state received 1-2 inches of rain during this period. However, rainfall totals for this period ranged from less than 0.25 inch across areas of southwestern and west-central Ohio, to more than 5 inches at several locations. The most notable storm during this period occurred during July 18-19 when heavy rain fell over portions of Medina, Summit and Stark counties. Many areas in these counties received between 4 and 5 inches of rain with unofficial readings of more than 7 inches reported. Small stream and urban flooding closed roads and forced many people to evacuate their homes. Other strong storms during July 23-24 produced heavy rain, especially across areas of north-central and central Ohio where 4-6 inches of rain was reported at many locations. Some localized flooding was observed as a result of these heavy rains. Scattered storms during July 29-30 crossed the state with some areas reporting more than 2 inches of rain.

Precipitation for the 2011 water year is above normal statewide. The average for the state is 40.82 inches, 9.19 inches above normal. Regional averages range from 45.51 inches, 11.62 inches above normal, for the South Central Region to 33.97 inches, 5.64 inches above normal, for the Northwest Region.

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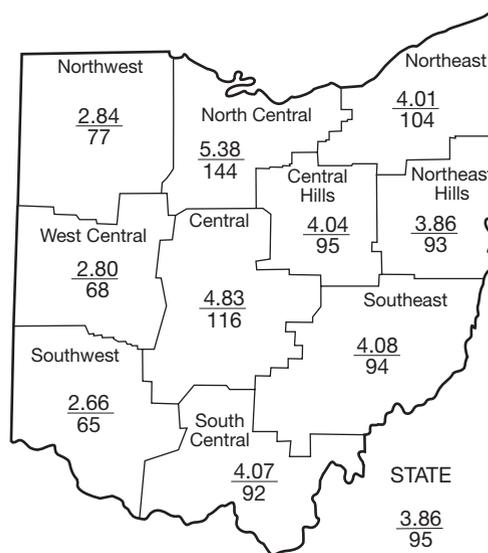
PRECIPITATION

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	-0.83	+1.86	+7.71	+3.43	+5.23	-1.9
North Central	+1.64	+4.39	+10.98	+9.57	+8.54	+2.0
Northeast	+0.17	+4.20	+11.88	+11.34	+11.05	+0.4
West Central	-1.31	+1.01	+9.70	+7.38	+5.85	-0.3
Central	+0.68	+3.05	+10.94	+8.43	+9.62	+0.1
Central Hills	-0.21	+1.80	+7.91	+5.42	+6.52	-0.1
Northeast Hills	-0.27	+2.43	+9.18	+7.25	+6.70	-1.0
Southwest	-1.44	+0.81	+11.00	+5.75	+4.95	+0.2
South Central	-0.34	+2.80	+13.07	+10.87	+13.98	+0.7
Southeast	-0.27	+1.46	+9.42	+7.63	+5.99	+0.3
State	-0.22	+2.39	+10.19	+7.73	+7.88	

*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 JULY



Average (in)
Percent of normal

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	74	37	175	182	134
Great Miami River at Hamilton	3,630	1,677	90	196	229	161
Huron River at Milan	371	138	129	238	236	177
Killbuck Creek at Killbuck	464	257	132	192	176	130
Little Beaver Creek near East Liverpool	496	160	69	149	169	127
Maumee River at Waterville	6,330	1,007	36	207	171	121
Muskingum River at McConnellsville	7,422	4,190	85	241	229	110
Scioto River near Prospect	567	333	209	231	229	164
Scioto River at Higby	5,131	4,296	157	230	209	148
Stillwater River at Pleasant Hill	503	98	60	168	209	143

STREAMFLOW during July was generally below normal in eastern and western Ohio, and above normal in the central one-third of the state. Flows were low enough to be considered deficient in a few basins in west-central and northwestern Ohio. Flows during July declined seasonally from the flows recorded during June throughout most of the state.

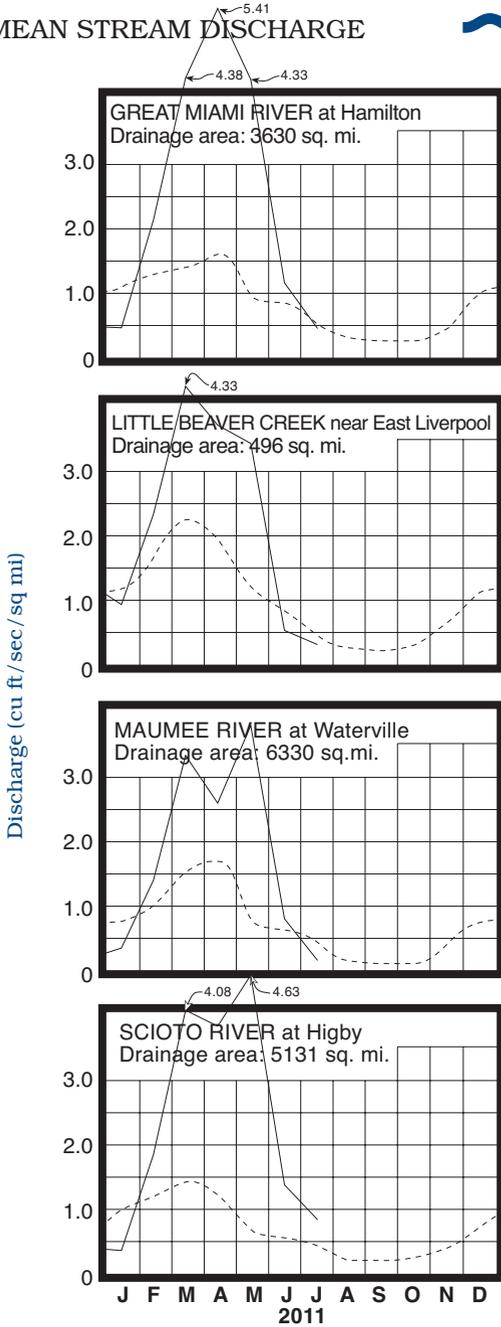
Streamflow at the beginning of the month was above normal across much of Ohio, but below normal in most northeastern Ohio drainage basins. Flows during the month varied greatly, but the general trend was a steady decline during the first 18 days of the month across much of the state. Lowest flows were observed around July 18 throughout much of the state. An exception was in basins in west-central Ohio where flows declined through the

end of the month and were the lowest for July at that time. Greatest flows generally occurred at the beginning of the month in west-central Ohio, around July 8 in southwestern Ohio and between July 24 and 28 across most of the remainder of the state. Streamflow at the end of July was below normal statewide except in south-central areas of Ohio where flows were above normal.

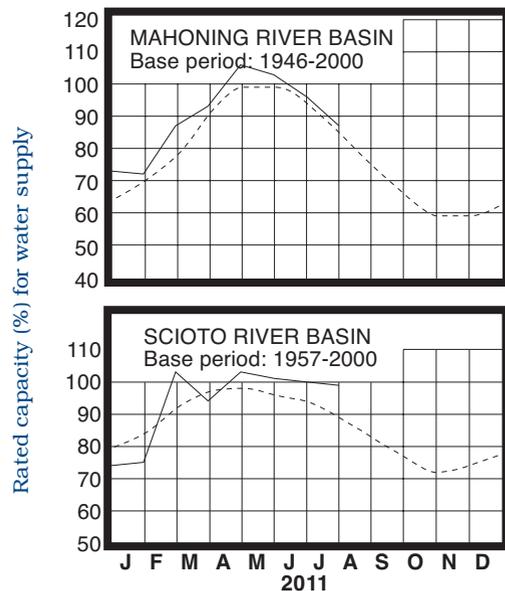
RESERVOIR STORAGE for water supply during July decreased in both the Mahoning and Scioto river basins. Storage remained above normal in both basins.

Reservoir storage at the end of July in the Mahoning basin index reservoirs was 87 percent of rated capacity for water supply compared with 96 percent for last month and 90 percent for July 2010. Month-end storage in the Scioto basin index reservoirs was 99 percent of rated capacity for water supply compared with 100 percent for last month and 92 percent for July 2010. Surface water supplies remain adequate throughout the state.

MEAN STREAM DISCHARGE



RESERVOIR STORAGE FOR WATER SUPPLY



GROUND-WATER LEVELS

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

GROUND WATER levels during July declined seasonally in most aquifers throughout the state. Net declines during July from June's levels were greater than usually observed in most aquifers. Generally, levels declined steadily throughout the month. A few exceptions were noted in some shallow aquifers, especially those adjacent to streams, where levels rose slightly during the last week of the month in response to abundant rainfall.

Following the below normal precipitation across much of the state and above normal temperatures during July, ground water levels have fallen to slightly below normal across much of Ohio. Only a few consolidated aquifers in eastern Ohio remained above normal at the end of July. However, ground water storage continues to be favorable throughout the state. Also, current levels continue to remain higher than the levels observed last year across most of the state. Even though ground water levels can be expected to continue to decline during the next several months, with near-normal precipitation during this period ground water supplies should remain adequate throughout the state. The Ohio Agricultural Statistics Service reports that at the end of July, soil moisture was rated as short or very short in 35 percent of the state, adequate in 61 percent of the state and surplus in 4 percent of the state.

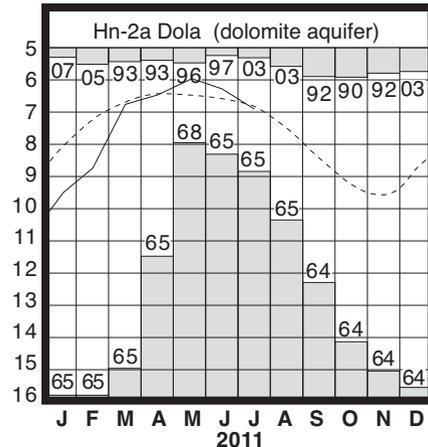
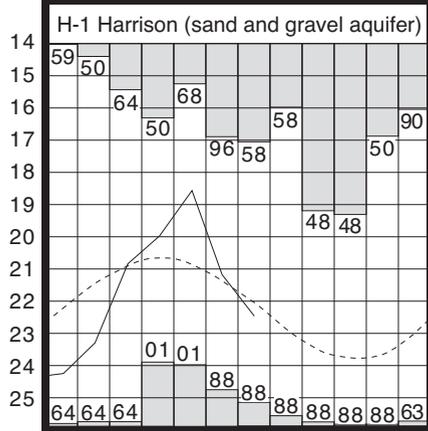
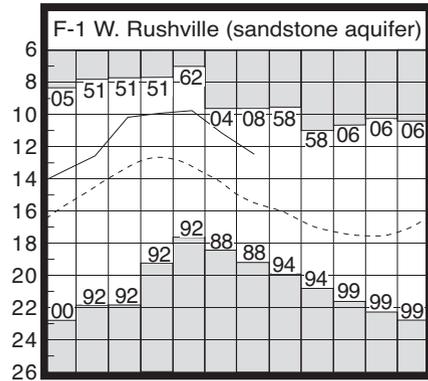
LAKE ERIE level declined during July. The mean level was 572.44 feet (IGLD-1985), 0.33 foot lower than last month's mean level and 0.52 foot above normal. This month's mean level is 0.69 foot above the July 2010 level and 3.24 feet above Low Water Datum.

The U.S. Army Corps of Engineers (USACE) reports that precipitation in the Lake Erie basin during July averaged 4.02 inches, 0.63 inch above normal. For the entire Great Lakes basin, July precipitation averaged 3.29 inches, 0.14 inch above normal. For calendar year 2011 through July the Lake Erie basin has averaged 28.42 inches, 7.73 inches above normal, while the entire Great Lakes basin has averaged 21.23 inches, 3.16 inches 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 above normal for the foreseeable future. Deviations from the anticipated weather patterns could result in the level of Lake Erie ranging from around 9 inches above to as much as 10 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	12.49	+2.93	-1.32	+1.10
Fa-1	Jasper Mill, Fayette Co.	Limestone	8.89	-1.07	-0.66	-0.41
Fr-10	Columbus, Franklin Co.	Gravel	43.36	-0.08	-0.86	+0.91
H-1	Harrison, Hamilton Co.	Gravel	22.46	-0.41	-1.29	+0.01
Hn-2a	Dola, Hardin Co.	Dolomite	6.90	-0.07	-0.62	+0.04
Po-124	Freedom, Portage Co.	Sandstone	76.47	+1.27	-0.31	-0.11
Tu-1	Strasburg, Tuscarawas Co.	Gravel	13.45	-0.71	-1.44	+0.16

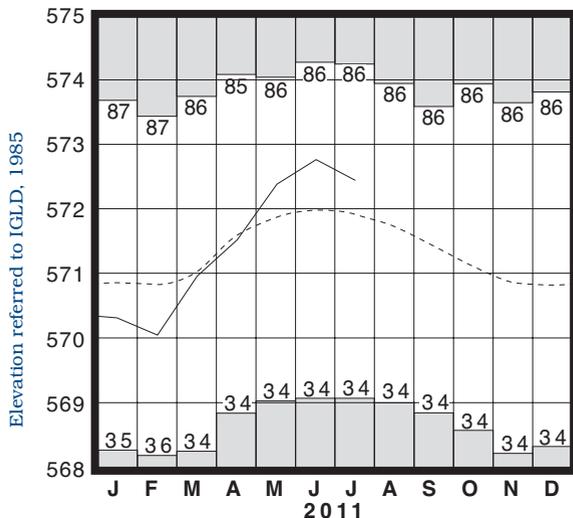
GROUND-WATER LEVELS



Base periods: F-1, 1947-2000 H-1, 1951-2000.

Hn-2a, 1955-2000 ■ Record high and low, year of occurrence

LAKE ERIE LEVELS



Base period: 1918-2000

■ Record high and low, year of occurrence

Normal - - - - Current ———

(Precipitation continued from front)

Precipitation for the 2011 calendar year is also above normal statewide. The state average is 32.58 inches, 9.16 inches above normal. Regional averages range from 37.34 inches, 11.86 inches above normal, for the South Central Region to 27.89 inches, 7.15 inches above normal, for the Northwest Region.

SUMMARY

Precipitation during July was generally below normal throughout much of the state, but above normal in areas of north-central, northeastern and central Ohio. Streamflow was below normal in eastern and western Ohio, but above normal in the central one-third. Reservoir storage decreased in the Mahoning and Scioto river basins, but remained above normal in both basins. Ground water levels declined in most aquifers throughout the state. Lake Erie level declined 0.33 foot and was 0.52 foot above the long-term July average.

NOTES AND COMMENTS

Long-Time Division Employees Retire

Three long-time Division of Soil and Water Resources employees retired near the end of July. David Hanselmann, Sue Phelps and Loretta Recor combined for 94 years of service to the Ohio Department of Natural Resources (ODNR).

David began his career at ODNR in August 1976 with the Division of Water as a Coastal Resources Management Planner. He moved to the Division of Soil and Water Conservation in 1979 as an Urban Specialist. There he assisted cities, counties and Soil and Water Conservation Districts (SWCD's) in developing and implementing programs to help control sediment and stormwater runoff resulting from urban development. David also co-authored the Ohio Stormwater Control Guidebook. In 1982, he became the Assistant Chief of the Division of Soil and Water Conservation. After 20 years as Assistant Chief, David was named the Chief of the Division. He served as Chief for 11 years and oversaw the smooth merger between the Divisions of Water and Soil and Water Conservation into the newly formed Division of Soil and Water Resources. David also served as Chief for the Division of Recycling and Litter Prevention from July 2009.

Sue began her career at ODNR in July 1980 as a Purchasing Assistant with the Office of Business and Finance. The last 17 years of her career she served as an Administrative Assistant with the former Division of Water and the current Division of Soil and Water Resources. Among her many duties were coordination of fiscal matters, human resources and administrative support.

Loretta began her career at ODNR in August, 1982 as an Account Clerk for the Division of Parks and Recreation. She moved to the Office of Business and Finance and then to the Division of Wildlife as an Account Clerk supervisor. The last 8 years of Loretta's career at ODNR were with the Division of Soil and Water Conservation (later Soil and Water Resources) as an Administrative Assistant. Among Loretta's many duties were also coordination of fiscal matters and human resources.

All three of these colleagues will be greatly missed by the people who work in the Division of Soil and Water Resources. Their professionalism and dedication served the division well and their knowledge and expertise will definitely be missed. The entire Division of Soil and Water Resources staff wishes David, Sue and Loretta the best in their retirement.

Spring Storms Result In Federal Disaster Declaration

At the request of Governor John Kasich, President Obama has issued a federal disaster declaration for 21 Ohio counties as a result of the flooding and storm damage that took place from April 4-May 15, 2011. The counties are: Adams, Athens, Belmont, Brown, Clermont, Gallia, Guernsey, Hamilton, Hocking, Jackson, Jefferson, Lawrence, Meigs, Monroe, Morgan, Noble, Pike, Ross, Scioto, Vinton and Washington. The federal disaster declaration makes people and businesses affected by flooding or other storm damage in these counties eligible for a wide range of federal disaster assistance.

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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