



MONTHLY WATER INVENTORY REPORT FOR OHIO

June 2011

<http://www.ohiodnr.gov/tabid/4191/Default.aspx>

Compiled By Scott C. Kirk

Hydrologist
Water Inventory Unit

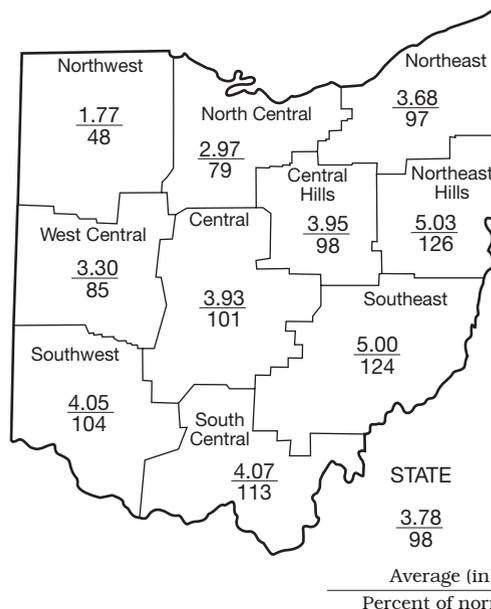
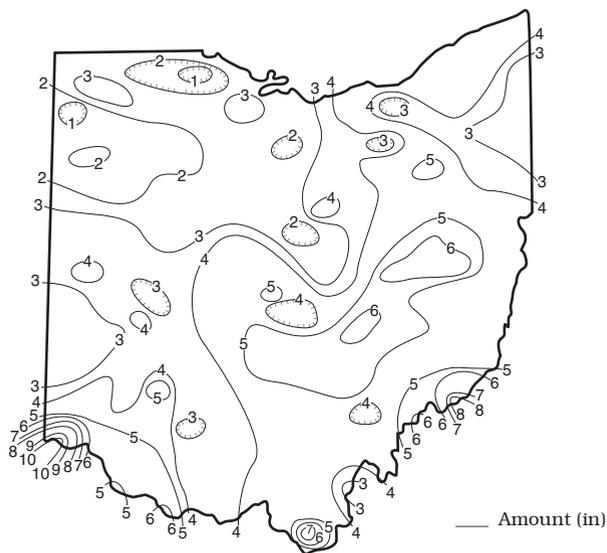
PRECIPITATION during June was generally below normal in the northwestern half of the state and above normal in the southeastern half of Ohio. The state average was 3.78 inches, 0.07 inch below normal. Regional averages ranged from 5.03 inches, 1.05 inches above normal, for the Northeast Hills Region to 1.77 inches, 1.90 inches below normal, for the Northwest Region. This tied for the 8th driest June during the past 129 years of record for the Northwest Region. Cincinnati Fernbank (Hamilton County) reported the greatest amount of June precipitation, 10.08 inches. Toledo Express Airport (Lucas County) reported the least amount, 0.51 inch.

Precipitation during June fell as showers and scattered thunderstorms with locally severe weather reported in some areas. Most areas in the eastern half of the state received at least 0.75 inch during the first week of the month while areas in northwestern and southwestern Ohio received little or no rain during this period. Locally severe storms on June 4 brought more than 3 inches of rain to some areas in eastern Ohio. Urban and small stream flooding was a problem, especially in Fairfield, Hocking, Pickaway and Ross counties. Most of the state received rain during June 10-11. The heaviest rains fell from southwestern to central Ohio, with most locations reporting more than 1 inch of rain. More than 4 inches of rain was reported along the Ohio River in extreme southwestern Ohio. Scattered showers and thunderstorms moved across the state daily from June 15 through June 24. Most of the state received between 1.5 and 3.5 inches of rain during this 10 day period, but areas in northwestern Ohio received lesser amounts, around 0.50 inch. The strongest storms during this period occurred on June 21 with many areas in Ohio reporting more than 1 inch of rain and areas in southwestern Ohio receiving nearly 3 inches. The last week of the month was dry in the northern half of the state. Showers and thunderstorms during June 26-27 brought 0.50-1.0 inch of rain to the southern half of the state. Some of these storms were severe with large hail and damaging winds, including at least 3 confirmed tornadoes.

Precipitation for the 2011 water year is above normal statewide. The average for the state is 36.96 inches, 9.41 inches above normal. Regional averages range from 41.44 inches, 11.96 inches above normal, for the South Central Region to 31.13 inches, 6.47 inches above normal, for the Northwest Region.

Precipitation for the first half of the 2011 calendar year is also above normal statewide. The state average is 28.74 inches, 9.40 inches above normal. Regional averages range from 33.27 inches, 12.20 inches above normal, for the South Central Region to 25.05 inches, 7.98 inches above normal, for the Northwest Region (see Precipitation table, departure from normal, past 6 months column).

PRECIPITATION JUNE



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	-1.90	+5.89	+7.98	+3.24	+4.97	+0.1
North Central	-0.77	+5.74	+8.58	+7.72	+6.64	+2.3
Northeast	-0.11	+6.86	+11.07	+11.55	+11.30	+2.3
West Central	-0.59	+6.30	+9.87	+7.13	+7.39	+1.8
Central	+0.02	+6.55	+8.97	+7.34	+9.02	+0.6
Central Hills	-0.07	+4.26	+7.02	+4.96	+5.59	+1.2
Northeast Hills	+1.05	+5.59	+8.35	+6.49	+6.17	+0.7
Southwest	+0.16	+9.57	+10.98	+6.28	+6.64	+1.9
South Central	+0.46	+10.12	+12.20	+11.03	+16.30	+1.9
Southeast	+0.98	+6.28	+8.83	+7.11	+5.97	+1.5
State	-0.07	+6.73	+9.40	+7.31	+8.03	

*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

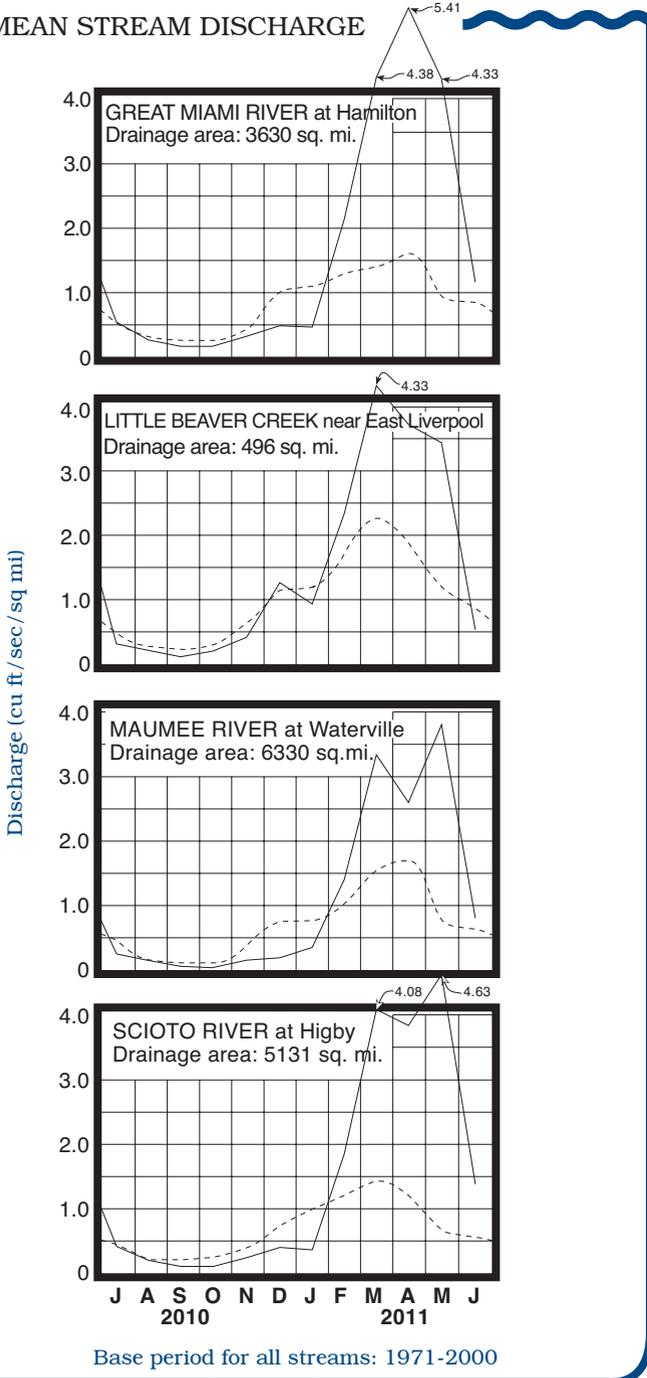
River and Location	Drainage Area (Sq. Mi.)	Mean Discharge (CFS)	% of Normal	% of Normal Past		
				3 Mos.	6 Mos.	12 Mos.
Grand River near Painesville	685	433	164	194	166	135
Great Miami River at Hamilton	3,630	4,211	136	277	217	161
Huron River at Milan	371	245	115	271	215	175
Killbuck Creek at Killbuck	464	750	225	186	163	129
Little Beaver Creek near East Liverpool	496	262	62	187	162	127
Maumee River at Waterville	6,330	5,083	127	213	162	122
Muskingum River at McConnellsville	7,422	9,289	156	261	213	109
Scioto River near Prospect	567	402	131	247	212	162
Scioto River at Higby	5,131	7,070	199	255	190	145
Stillwater River at Pleasant Hill	503	622	165	247	201	145

STREAMFLOW during June was above normal throughout most of the state. Flows were high enough to be considered excessive in a few basins. Flows during June declined substantially from the excessive flows that were recorded during May.

Streamflow at the beginning of June was above normal statewide. Greatest flows for the month occurred at various times, generally at the beginning of the month in northwestern and south-central Ohio drainage basins, on June 5 in southeastern Ohio basins, June 11-12 in basins in central, southwestern and west-central Ohio, and around June 24-25 in basins in northeastern Ohio. Some minor urban and low-land flooding occurred during the month following locally heavy rain. Lowest flows for the month occurred on the last day of

June throughout nearly the entire state. Flows at the end of June were below normal throughout most of Ohio.

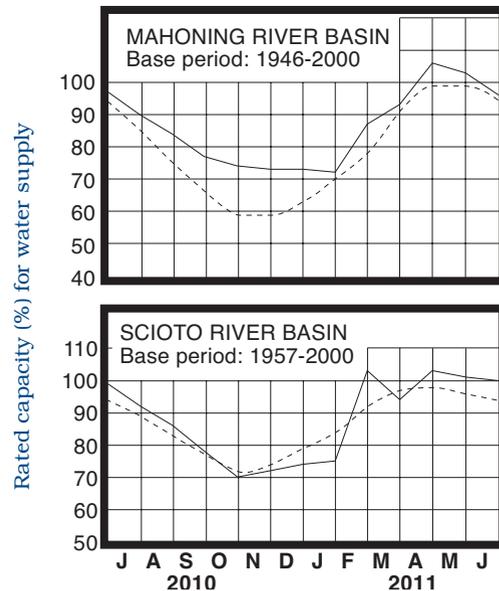
MEAN STREAM DISCHARGE



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

Reservoir storage at the end of June in the Mahoning basin index reservoirs was 96 percent of rated capacity for water supply compared with 103 percent for last month and 97 percent for June 2010. Month-end storage in the Scioto basin index reservoirs was 100 percent of rated capacity for water supply compared with 101 percent for last month and 99 percent for June 2010. Surface water supplies remain in excellent condition throughout the state.

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 declined in most aquifers throughout the state. Net changes during June from May's levels were greater than usually observed. Levels in most aquifers declined steadily throughout the month. However, levels in a few shallow aquifers temporarily stabilized or rose slightly following local precipitation.

It appears the current recharge season has come to a close across most of the state and little if any additional recharge can be expected during the next few months. However, this has been an excellent recharge season for the state's ground water supplies. Ground water levels are above normal throughout most of Ohio with only a few areas having below normal levels. Levels range from about 0.75 foot below to more than 3 feet above normal. Current levels are also higher than last year's levels in most aquifers. Ground water supplies are in good condition throughout the state.

With several days suitable for field activities throughout most of the state during June, farmers were able to catch up on their spring planting. The Ohio Agricultural Statistics Service reports that near the end of June, soil moisture was rated as short or very short in 17 percent of the state, adequate in 75 percent of the state and surplus in 8 percent of the state.

LAKE ERIE level rose during June. The mean level was 572.77 feet (IGLD-1985), 0.39 foot above last month's mean level and 0.79 foot above normal. This month's mean level is 0.89 foot above the June 2010 level and 3.57 feet above Low Water Datum.

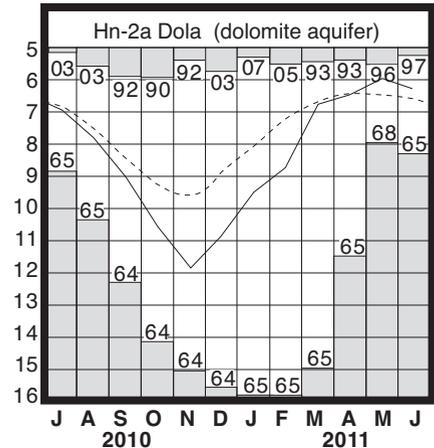
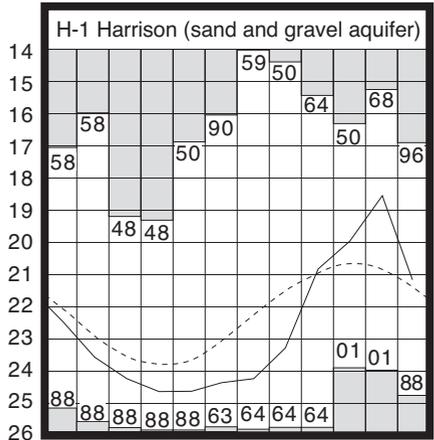
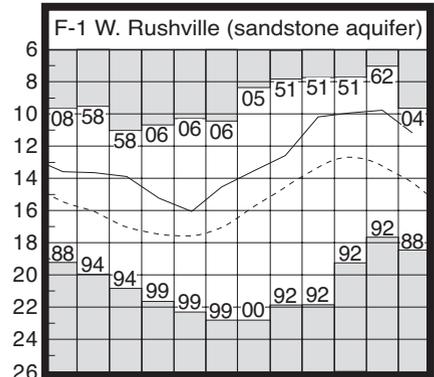
The U.S. Army Corps of Engineers (USACE) reports that precipitation in the Lake Erie basin during June averaged 2.02 inches, 1.43 inches below normal. For the entire Great Lakes basin, June precipitation averaged 3.52 inches, 0.31 inch above normal. For calendar year 2011 through June the Lake Erie basin has averaged 24.40 inches, 7.10 inches above normal, while the entire Great Lakes basin has averaged 17.94 inches, 3.02 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 as much as 10 inches above to about 8 inches below the normal seasonal average.



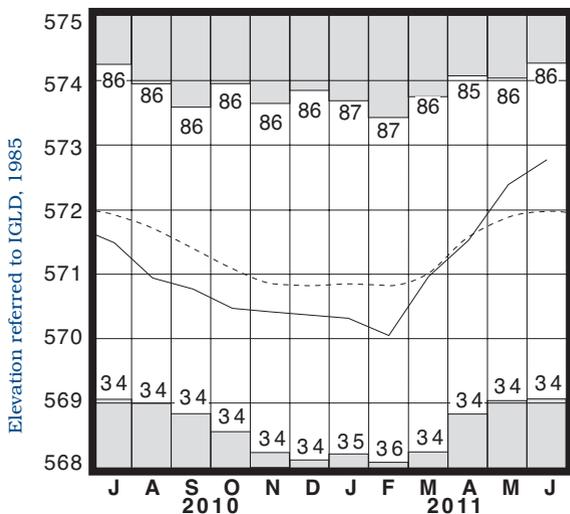
Index Well	Location	Aquifer	Mean This Month	Departure From Normal	Change in feet from:	
					Last Month	Year Ago
F-1	W. Rushville, Fairfield Co.	Sandstone	11.17	+3.06	-1.42	+1.60
Fa-1	Jasper Mill, Fayette Co.	Limestone	8.23	-0.83	-0.52	+0.08
Fr-10	Columbus, Franklin Co.	Gravel	42.50	+0.26	-0.16	+1.06
H-1	Harrison, Hamilton Co.	Gravel	21.17	+0.22	-2.62	+0.28
Hn-2a	Dola, Hardin Co.	Dolomite	6.28	+0.31	-0.30	+0.22
Po-124	Freedom, Portage Co.	Sandstone	76.16	+1.41	+0.11	-0.14
Tu-1	Strasburg, Tuscarawas Co.	Gravel	12.01	+0.09	-1.54	+1.46

GROUND-WATER LEVELS



Water level (ft below land surface)

LAKE ERIE LEVELS



Base period: 1918-2000

■ Record high and low, year of occurrence

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

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

Normal - - - - Current _____

SUMMARY

Precipitation during June was generally below normal in the northwest half of the state and above normal in the southeastern half. Streamflow was above normal across most of the state. Reservoir storage decreased but continued to remain above normal. Ground water levels declined, but remain above normal throughout most of the state. Lake Erie level rose 0.39 foot and was 0.79 foot above the long-term June average.

NOTES AND COMMENTS

New Potentiometric Surface Maps Now Available

Six new ground water potentiometric surface (water table) maps of Defiance, Fulton and Lucas counties are now available and include both consolidated and unconsolidated maps for each county. Also, updates were made to Henry and Williams counties. These maps are available from the ODNR, Division of Soil and Water Resources website at: <http://www.dnr.state.oh.us/tabid/3623/Default.aspx>.

A potentiometric surface map is a contour map that represents the elevation of the top of the ground water surface in an aquifer. The contour lines illustrate the potentiometric surface much like the contour lines of a topographic map represent a visual model of the land surface. Potentiometric surface maps are being created for bedrock (consolidated formations) and sand and gravel (unconsolidated formations) aquifers. County-based maps are available as PDFs and GIS ArcView shapefiles.

Potentiometric surface maps can be used to determine the direction and gradient of ground water flow, to determine ground water recharge and discharge areas, and as input data into ground water modeling programs. These maps can also be used to assist in preparing water resources plans and technical studies, mapping stressed areas, and in possible ground water diversion issues. Since these maps were created using existing data collected over a fifty-year period, field verification of the ground water flow direction should be conducted before the drilling of monitoring wells to satisfy compliance monitoring. If you have any questions concerning these maps, contact Jim Raab at jim.raab@dnr.state.oh.us or (614) 265-6747.

Small Business Administration Disaster Declaration

At the request of Governor John Kasich, the Small Business Administration (SBA) has issued a disaster declaration for Jackson and Lawrence counties as a result of the damages caused by severe storms and flooding on May 10-11, 2011. The SBA disaster declaration enables residents and businesses impacted by the storms in these counties and the contiguous counties of Gallia, Pike, Ross, Scioto and Vinton, to be eligible for long-term low-interest loans for uninsured losses. In addition, Governor Kasich has requested a federal disaster declaration from President Obama for 21 Ohio counties that were impacted by severe storms from April 4-May 15. 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. A federal disaster declaration would make people and businesses affected by flooding and other storm damage eligible for a wide range of federal disaster assistance. Damage estimates to public property and infrastructure total more than \$43 million.

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.



An Equal Opportunity Employer-M/F/H



Ohio Department of Natural Resources

Division of Soil and Water Resources

2045 Morse Road

Columbus, Ohio 43229-6693

John Kasich
Governor

David Mustine
Director

Ted Lozier
Chief

Printed on recycled
paper containing 30%
post consumer waste.

