



MONTHLY WATER INVENTORY REPORT FOR OHIO

May 2011

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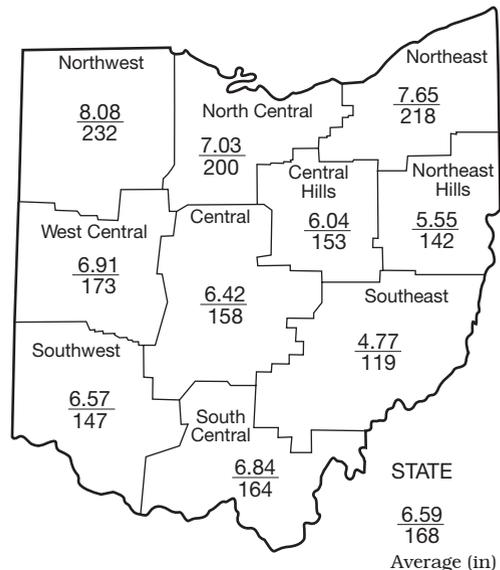
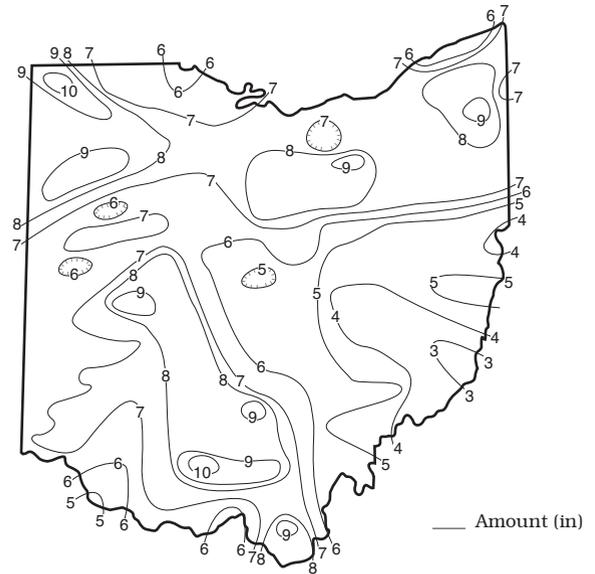
PRECIPITATION during May was noticeably above normal throughout most of the state, but below normal in a few areas of southeastern Ohio. The state average was 6.59 inches, 2.68 inches above normal. This was the 6th wettest May during the past 129 years for the state as a whole. Regional averages ranged from 8.08 inches, 4.59 inches above normal, for the Northwest Region to 4.77 inches, 0.75 inch above normal, for the Southeast Region. This was the wettest May of record for the Northeast Region, the 2nd wettest for the Northwest Region and the 3rd wettest for the North Central Region. Montpelier (Williams County) reported the greatest amount of May precipitation, 10.74 inches. Hannibal Lock and Dam (Monroe County) reported the least amount, 2.87 inches.

Showers and thunderstorms continuously moved across the state during May. Rain fell on more than 18 days of the month at most locations. Locally severe storms with heavy rain were common. The rain fell on soils that were at or near saturation from the excessive precipitation during April. As a result, flooding was a problem throughout much of the month. Storms during May 1-3 produced some minor flooding across Ohio, with some areas receiving more than 2 inches of rain. On May 10, while much of the state was relatively dry, 2-4 inches of rain fell in an area from west-central to south-central Ohio as thunderstorms tracked across the same areas. Several people had to be rescued from their homes and vehicles as rapidly rising waters quickly surrounded them. Many roads were flooded and in some cases washed out completely. Some of the worst flooding occurred in Clark, Jackson, Hocking, Ross, Pike, Lawrence and Scioto counties. May 12-19 was wet across the state with rain falling almost daily during the period. Most of the state received 2-4 inches of rain, with somewhat less falling across much of southwestern Ohio. May 22-27 was another very wet period. Precipitation amounts during this time ranged from around 1 inch in southeastern Ohio to more than 5 inches in areas of northwestern Ohio. The most significant rain from this period fell in the northwestern half of Ohio during May 25-26. Thunderstorms, some severe with heavy rain, moved through the area with amounts of 1-3 inches of rain common. Southern Ohio experienced some much needed drying the last few days of May, but scattered showers and thunderstorms continued to plague northern Ohio during the Memorial Day weekend. Isolated heavy storms brought 1-2 inches of rain to some areas of northern Ohio, causing minor urban and small stream flooding.

Precipitation for the 2011 water year is above normal statewide. The average for the state is 33.18 inches, 9.48 inches above normal. Regional averages range from 37.37 inches, 11.50 inches above normal, for the South Central Region to 29.36 inches, 8.37 inches above normal, for the Northwest Region.

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PRECIPITATION MAY



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	+4.59	+8.08	+8.53	+7.05	+6.49	+3.8
North Central	+3.52	+7.31	+8.13	+11.87	+7.25	+5.2
Northeast	+4.14	+9.09	+11.45	+12.97	+11.78	+4.9
West Central	+2.91	+8.27	+9.13	+10.42	+7.58	+3.9
Central	+2.35	+7.85	+8.16	+9.81	+9.61	+2.6
Central Hills	+2.08	+5.62	+6.19	+8.61	+5.64	+3.2
Northeast Hills	+1.65	+6.29	+7.05	+8.75	+5.66	+2.7
Southwest	+2.09	+9.95	+9.63	+9.55	+8.01	+3.7
South Central	+2.68	+11.03	+11.51	+13.36	+16.18	+3.9
Southeast	+0.75	+6.71	+7.69	+7.66	+5.13	+2.3
State	+2.68	+8.03	+8.75	+10.03	+8.36	

*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

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	2,534	489	229	162	137
Great Miami River at Hamilton	3,630	15,720	461	305	206	168
Huron River at Milan	371	1,482	674	303	204	180
Killbuck Creek at Killbuck	464	1,371	299	212	150	131
Little Beaver Creek near East Liverpool	496	1,724	295	217	162	139
Maumee River at Waterville	6,330	24,190	501	222	151	127
Muskingum River at McConnelsville	7,422	21,877	237	281	204	112
Scioto River near Prospect	567	2,333	624	305	204	174
Scioto River at Higby	5,131	23,750	562	268	176	147
Stillwater River at Pleasant Hill	503	1,599	411	270	189	152

STREAMFLOW during May was notably above normal and high enough to be considered excessive statewide. Many gauging stations recorded record or near-record May flows. Preliminary data indicates that for the period of respective records, this month's mean monthly flow for the Huron River at Milan and Scioto River near Prospect were the greatest recorded for May. The Grand River near Painesville, Great Miami River at Hamilton, Killbuck Creek at Killbuck, Muskingum River at McConnelsville, Scioto River at Higby and Stillwater River at Pleasant Hill all recorded their second greatest May flow. In addition, the daily mean flow of 78,300 cfs on May 28 was the greatest ever recorded in May at the Maumee River at Waterville gauge. Flows for the month declined seasonally from those flows recorded during April across much of

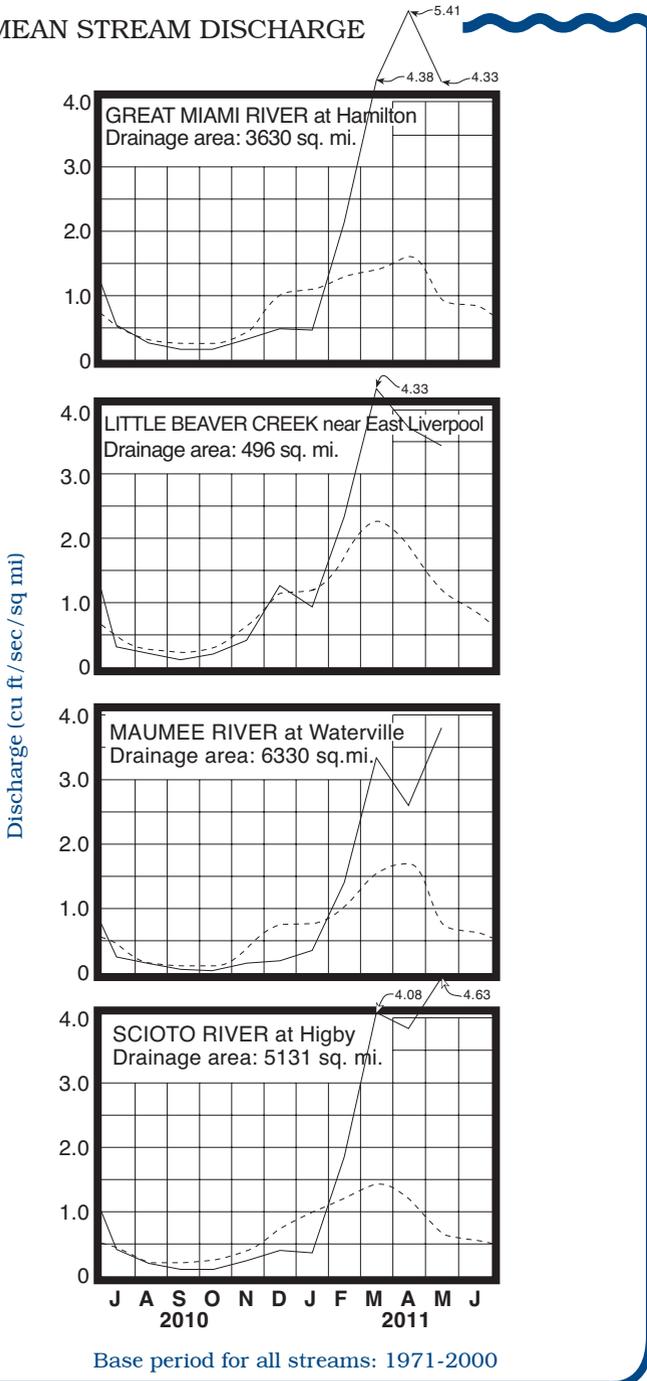
the state, but were greater in northwestern, north-central, central and south-central Ohio.

Streamflow at the beginning of May was above normal statewide due to above normal April precipitation. Flows increased during the first week of the month in response to widespread and locally heavy rainfall from May 1-3. Greatest flows for the month were recorded during the first few days of the month across the southern half of the state as a result of this precipitation. Flooding occurred across many areas of Ohio during this period. Additional flooding occurred during May 10-11 from west-central down through areas of southeastern and south-central Ohio following heavy rain. Rainfall during May 12-18 kept flows well above normal throughout the state. Excessive rain caused small stream and urban flooding, particularly across northern Ohio. Greatest flows for May occurred during this time in northeastern Ohio basins. Greatest flows in northwestern and north-central Ohio occurred near the end of the month as a result of May 22-27 rains. Small stream and urban flooding was again a problem in the northwestern half of the state at that time. Some small stream and urban flooding continued across northern Ohio as additional rain fell during May 28-29. Lowest flows for the month varied, but generally occurred around May 11 in northern Ohio and during the last week in southern Ohio. At the end of the month, flows remained above normal throughout most of the state.

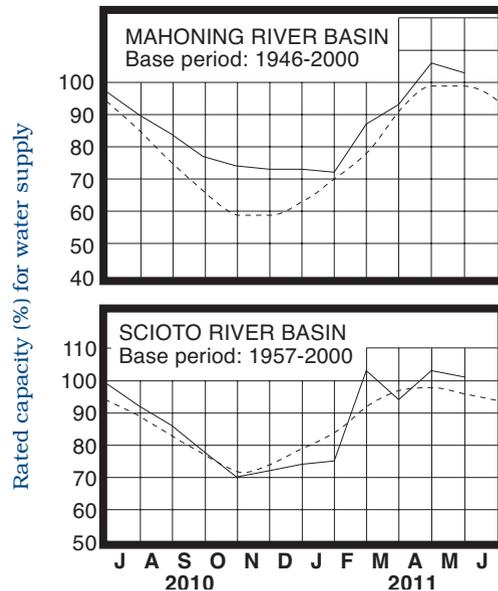
RESERVOIR STORAGE for water supply during May decreased slightly in both the Mahoning and Scioto river basins. Storage at the end of the month was above normal in both basins.

Reservoir storage at the end of May in the Mahoning basin index reservoirs was 103 percent of rated capacity for water supply compared with 106 percent for last month and 98 percent for May 2010. Month-end storage in the Scioto basin index reservoirs was 101 percent of rated capacity for water supply compared with 103 percent for last month and 96 percent for May 2010. Surface water supplies are in a favorable position as the summer high use and recreational periods begin.

MEAN STREAM DISCHARGE



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 May rose throughout most of Ohio in response to recharge from the above normal precipitation of the past two months. Positive net changes during the month from April's levels were greater than usually observed. Generally, shallow unconsolidated aquifers rose during the first and last week of the month. Levels in deeper unconsolidated aquifers and most consolidated aquifers were rather stable or rose gradually throughout most of the month. Levels in most aquifers in the state were beginning to seasonally decline at month's end.

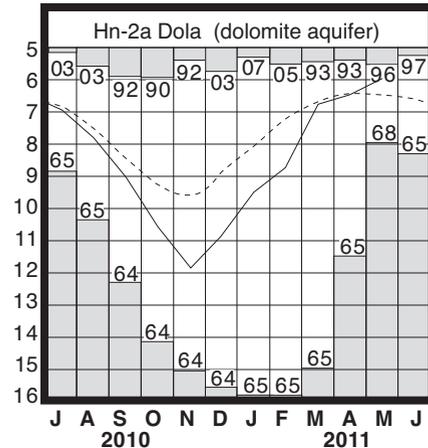
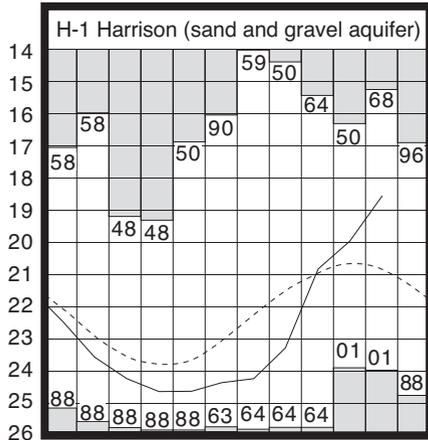
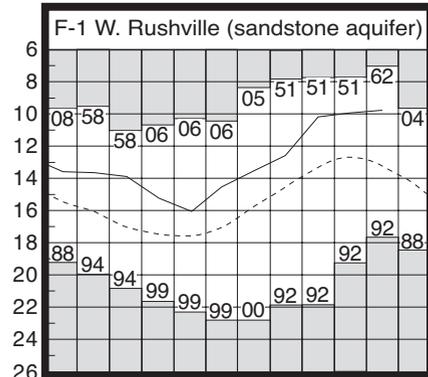
Following the above normal precipitation across most of Ohio during May, ground water storage has improved to above-normal levels throughout nearly the entire state. Also, ground water levels in most aquifers are substantially higher than they were a year ago. Current levels range from slightly lower to nearly 4 feet higher than they were in May 2010. Current soil moisture suggests that this year's recharge season may extend into June. The Ohio Agricultural Statistics Service reports that near the end of May, soil moisture was rated as being adequate in 10 percent of the state and surplus in 90 percent of the state. With near-normal precipitation next month, additional recharge might occur. The above normal precipitation of the past few months continues to be beneficial for ground water supplies. Ground water supplies are in excellent condition as we enter the summer high-use period. However, although beneficial for water supplies across the state, the above normal precipitation continues to cause significant delays in the spring planting of agricultural crops.

LAKE ERIE level rose significantly during May. The mean level was 572.38 feet (IGLD-1985), 0.86 foot above last month's mean level and 0.50 foot above normal. This month's mean level is 0.82 foot above the May 2010 level and 3.18 feet above Low Water Datum. This month's mean level marked the first time since December 2009 the mean lake level was above normal.

The level of Lake Erie has risen sharply the past three months in response to the above normal precipitation over the Lake Erie drainage basin. Since February, precipitation in the Lake Erie basin has averaged 20.34 inches, 8.99 inches above normal. The entire Great Lakes basin has averaged 12.79 inches of precipitation, 3.29 inches above normal, during the same February-May period. As a result, the U.S. Army Corps of Engineers reports that based on the current condition of the Great Lakes basin and anticipated weather conditions, the level of Lake Erie should remain near or 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 11 inches above to about 8 inches below the normal seasonal average.

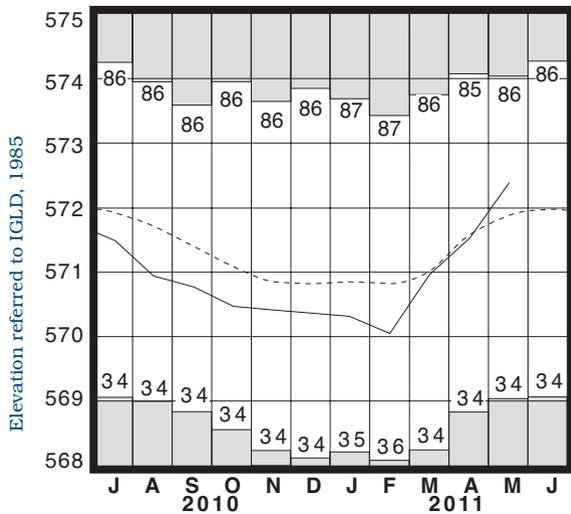
Index Well	Location	Aquifer	Mean This Month	Departure From Normal	Change in feet from:	
					Last Month	Year Ago
F-1	W. Rushville, Fairfield Co.	Sandstone	9.75	+3.47	+0.16	+3.21
Fa-1	Jasper Mill, Fayette Co.	Limestone	7.71	-0.64	+0.20	+0.56
Fr-10	Columbus, Franklin Co.	Gravel	42.34	0.0	+0.83	+1.20
H-1	Harrison, Hamilton Co.	Gravel	18.55	+2.28	+1.42	+3.80
Hn-2a	Dola, Hardin Co.	Dolomite	5.98	+0.51	+0.50	+0.93
Po-124	Freedom, Portage Co.	Sandstone	76.27	+1.35	+0.66	-0.08
Tu-1	Strasburg, Tuscarawas Co.	Gravel	10.47	+0.96	-0.03	+3.75

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 ———

(Precipitation continued from front)

Precipitation for the 2011 calendar year is also above normal statewide. The state average is 24.95 inches, 9.46 inches above normal. Regional averages range from 29.20 inches, 11.74 inches above normal, for the South Central Region to 22.48 inches, 7.09 inches above normal, for the Central Hills Region.

The wet pattern that has existed in Ohio since February continued across most of the state during May. When combined with the February, March and April precipitation, the current February-May period has been the wettest the state has experienced in the past 129 years. The state average of 23.40 inches easily surpassed the previous wettest February-May period of 19.51 inches established in 1893. In addition, 9 of the state's 10 climatic regions also ranked as the wettest February-May period of record. Only the Northeast Hills Region ranked as the second wettest. A few locations have received nearly three-quarters of their normal annual precipitation in the last 4 months. Preliminary data indicates Cheviot (Hamilton County) has received 34.21 inches of precipitation during this period, 18.19 inches above normal.

The above normal precipitation continues to be beneficial for the state's water resources, but it also continues to be problematic for farmers and agricultural activities. Not only has the amount of rain the past two months kept farmers from getting their crops planted, but the number of rain-free days has not given soils much of a chance to dry out. Some locations in Ohio have experienced rain on about 40 days during the past two months. With few long-duration dry spells to dry out the soils, farmers have had very limited opportunities to get out in their fields. However, drier conditions during the last few days of the month in southern Ohio allowed farmers some minimal time in the field, but planting remains far behind schedule.

SUMMARY

Precipitation was above normal across most of the state during May. Streamflow was above normal and excessive statewide. Many stream gauging stations experienced record or near-record mean monthly flows for May. Reservoir storage decreased slightly in both the Mahoning and Scioto river basins, but remained above normal in both basins. Ground water levels rose throughout most of the state and are above normal nearly statewide. Lake Erie level rose 0.86 foot and was 0.50 foot above the long-term May average.

NOTES AND COMMENTS

Dam Safety Program Educational Meetings

Over the past four months, the ODNR, Division of Soil and Water Resources, Dam Safety Program completed a series of meetings in 12 counties; Brown, Columbiana, Carroll, Clermont, Lorain, Miami, Morgan, Shelby, Stark, Tuscarawas, Van Wert and Williams. The meetings were held for regulated dam owners and local officials as part of a grant from the Federal Emergency Management Agency (FEMA). A series of three meetings were conducted in each county by Dam Safety Program employees. The focus of the meetings was on emergency action planning and response; the causes and impacts of dam failures; dam owner liability; and the proper operation, maintenance and inspection of dams. The meetings were well attended and the attendees had a very positive response on the educational value and effectiveness of the meetings. The division plans to apply for another FEMA grant to allow for more educational meetings to be held in additional counties in 2012.

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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