



MONTHLY WATER INVENTORY REPORT FOR OHIO

February 2011

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Compiled By Scott C. Kirk

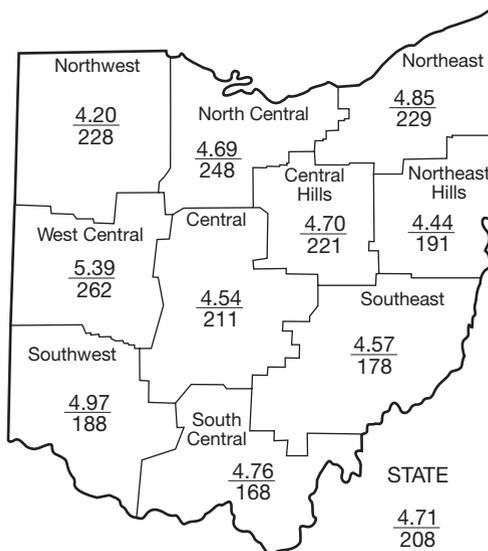
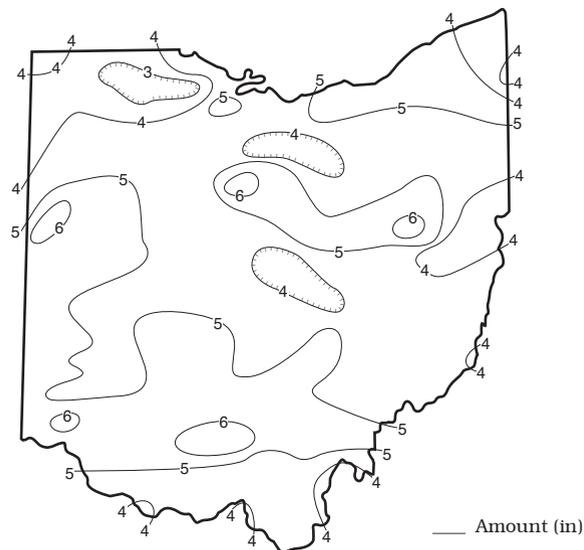
Hydrologist
Water Inventory Unit

PRECIPITATION during February was noticeably above normal statewide. The state average was 4.71 inches, 2.45 inches above normal. This was the 10th wettest February during the past 129 years for the state as a whole. Regional averages ranged from 5.39 inches, 3.33 inches above normal, for the West Central Region to 4.20 inches, 2.36 inches above normal, for the Northwest Region. Regionally, all 10 of the state's climatic regions ranked in their top 13 wettest February's of record including 2nd wettest for the West Central, North Central and Northeast regions. Kincaid State Fish Hatchery (Pike County) reported the greatest amount of February precipitation, 6.79 inches. A few other locations also reported more than 6 inches of precipitation for the month. Elmore (Ottawa County) reported the least amount, 2.15 inches.

February precipitation fell as rain, freezing rain, snow and a wintry mix. The bulk of the month's precipitation fell during the first and last week of the month. Snowfall for February was below normal in the southern half of the state and above normal in the northern half of the state with some areas receiving record or near-record February snow totals. Dorset (Ashtabula County) received 37 inches of snow for the month, about 25 inches above normal and a new February snowfall record. The month started with a major winter storm that impacted the state on February 1. Precipitation during this storm generally fell as snow and freezing rain in northern Ohio, rain and freezing rain in central Ohio, and mainly rain in southern Ohio. Amounts of precipitation from this storm were around 0.5-1.5 inch across much of the state with slightly higher amounts reported in some areas of west-central Ohio. The weight from ice accumulations on trees and power lines caused power outages across areas of central and northern Ohio. Light snow and a wintry mix on February 5 brought light accumulations throughout most of the state, except in northwestern Ohio where several inches of snow was reported. The next two weeks were relatively dry across most of the state with just some light snow showers reported. Conditions changed dramatically during the last week of the month with three major storms impacting the state within a nine day period. The first of these storms began on February 20 and continued into February 21. Precipitation started as rain, but changed to freezing rain, sleet and snow across central and northern Ohio with snow accumulations of 5-10 inches common across northern Ohio. In addition to the snow that blanketed northern Ohio, there was a significant accumulation of ice from the freezing rain that fell in northern Ohio, resulting in several power outages. Precipitation amounts (liquid) ranged from 0.75 inch to a little more than 1.5 inches from this storm. The next major storm impacted the state during February 24-25. Most of the precipitation during this storm fell as rain in southern Ohio and as snow in northern Ohio. Precipitation amounts (liquid) from this storm period ranged from 1.5 to 2.0 inches in southern Ohio to around 0.5 inch in northern Ohio. Another 5-10 inches of snow fell across

(Continued on back)

PRECIPITATION FEBRUARY



Average (in)
Percent of normal

PRECIPITATION

Region	This Month	DEPARTURE FROM NORMAL (IN.) Base period 1951-2000				Palmer Drought Severity Index*
		Past				
		3 Mos.	6 Mos.	12 Mos.	24 Mos.	
Northwest	+2.36	+0.45	-0.73	+1.99	+0.90	-0.9
North Central	+2.80	+0.82	+2.32	+3.95	+1.36	+1.4
Northeast	+2.73	+2.36	+3.01	+2.70	+2.75	+1.1
West Central	+3.33	+0.86	+0.92	+1.74	-1.79	+0.6
Central	+2.39	+0.31	+0.16	+0.77	-0.49	+0.7
Central Hills	+2.57	+0.57	+1.32	+0.85	-0.89	+0.5
Northeast Hills	+2.11	+0.76	+1.45	+0.77	-3.44	+0.6
Southwest	+2.33	-0.32	-1.45	-1.89	-4.22	+0.8
South Central	+1.92	+0.48	-0.33	+3.97	+5.14	+1.0
Southeast	+2.00	+0.98	+0.34	+0.32	-2.04	+1.0
State	+2.45	+0.72	+0.71	+1.54	-0.26	

*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	2,328	137	100	86	89
Great Miami River at Hamilton	3,630	7,761	164	80	71	99
Huron River at Milan	371	1,068	218	98	94	95
Killbuck Creek at Killbuck	464	744	107	73	67	84
Little Beaver Creek near East Liverpool	496	1,159	134	97	83	97
Maumee River at Waterville	6,330	8,861	135	56	47	91
Muskingum River at McConnelsville	7,422	11,240	92	100	94	70
Scioto River near Prospect	567	1,043	160	78	69	87
Scioto River at Higby	5,131	9,507	123	64	56	81
Stillwater River at Pleasant Hill	503	1,261	201	87	73	104

STREAMFLOW during February was above normal throughout most of the state. Some flows were high enough to be considered excessive. February flows were noticeably greater than January's flows. Record daily flows for February were established on some streams in northeastern Ohio on February 28, 2011.

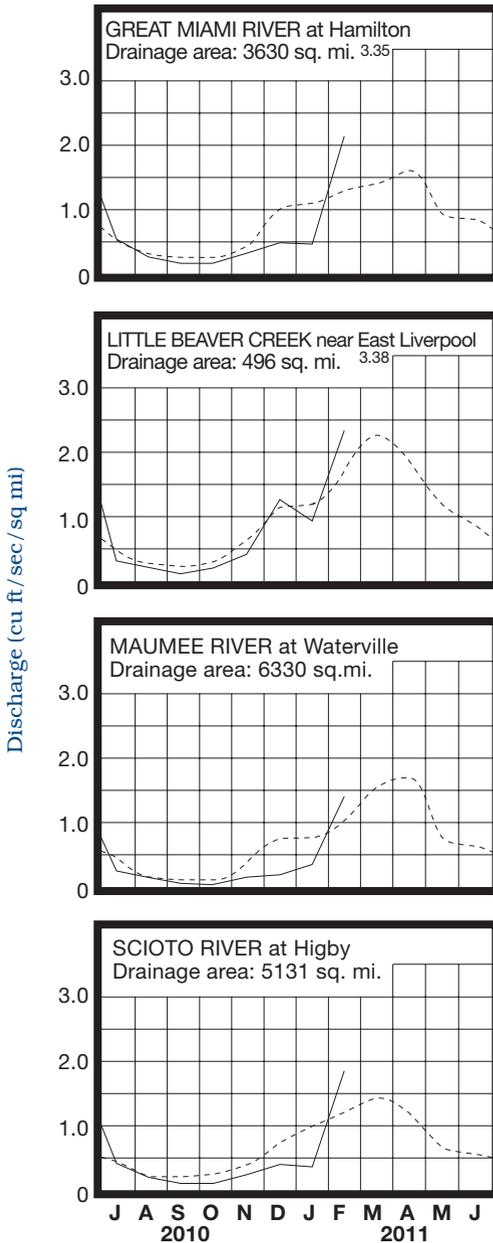
Streamflow at the beginning of the month was below normal across Ohio. Lowest flows for the month occurred on the first day of February throughout most of the state. A few exceptions occurred in some basins in northwestern Ohio which had slightly lower flows around February 9 and 10. Flows increased for a few days from these lows as a winter storm brought precipitation throughout the state on February 1. Flows soon began to decline as temperatures dropped and precipitation fell as snow. Flows increased again just before mid-month as warmer temperatures

began to melt any snow and ice that was on the ground. Some minor flooding occurred in low-lying areas in eastern and northern Ohio as ice-jams were a major contributing factor. Flows continued to increase during the last week of the month as a series of storms moved through the region. Greatest flows for the month occurred on February 28 following widespread heavy rain and melting snow. Moderate to severe flooding, exceeding 50-year recurrence intervals and in a few basins exceeding 100-year recurrence intervals, occurred in northern Ohio. Streamflow at the end of the month was noticeably above normal throughout the state.

RESERVOIR STORAGE for water supply during February increased in both the Mahoning and Scioto river basins. Storage at the end of the month remained above normal in the Mahoning basin reservoirs and increased to above normal in the Scioto basin reservoirs.

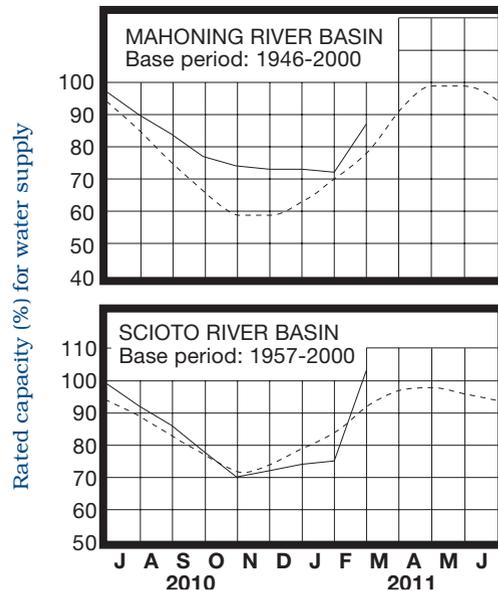
Reservoir storage at the end of February in the Mahoning basin index reservoirs was 87 percent of rated capacity for water supply compared with 72 percent for last month and 77 percent for February 2010. Month-end storage in the Scioto basin index reservoirs was 103 percent of rated capacity for water supply compared with 75 percent for last month and 89 percent for February 2010. Surface water supplies are in a favorable position throughout the state.

MEAN STREAM DISCHARGE



Base period for all streams: 1971-2000

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 February rose in nearly all aquifers across the state when compared to last month's levels. Ground water levels in most consolidated aquifers rose steadily throughout February while levels in unconsolidated aquifers were rather stable during the first half of the month and then rose during the second half in response to melting snow and precipitation. Generally, net increases during February were greater than usually expected in western Ohio aquifers and less than usually expected in eastern Ohio aquifers.

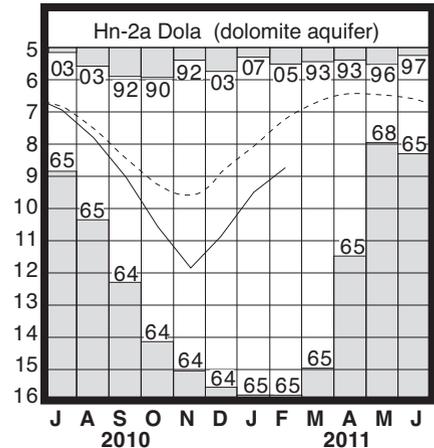
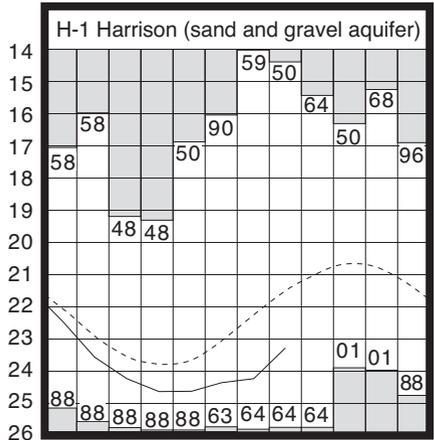
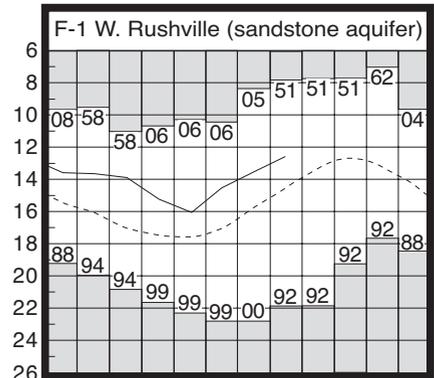
Ground water levels remain below normal across most of the state ranging to around 2 feet below the average February levels. An exception is in a few consolidated aquifers in eastern Ohio where levels remain above normal. Also, current levels are lower than they were at this time last year across most of the state, but are higher in some aquifers in northern Ohio. In spite of this, ground water supplies remain adequate throughout the state. The above normal precipitation during February allowed for some much needed recharge to take place during the second half of the month. Current conditions are favorable for continued improvement in ground water storage provided precipitation and other climatic conditions are near-normal during the next several months.

LAKE ERIE level declined during February. The mean level was 570.05 feet (IGLD-1985), 0.26 foot lower than last month's mean level and 0.78 foot below normal. This month's mean level is 0.55 foot lower than the February 2010 level and 0.85 foot above Low Water Datum.

The U.S. Army Corps of Engineers (USACE) reports that precipitation in the Lake Erie basin during February averaged 4.02 inches, 1.93 inches above normal. For the entire Great Lakes basin, February precipitation averaged 1.82 inches, 0.04 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 1 inch above to as much as 16 inches below the normal seasonal level.

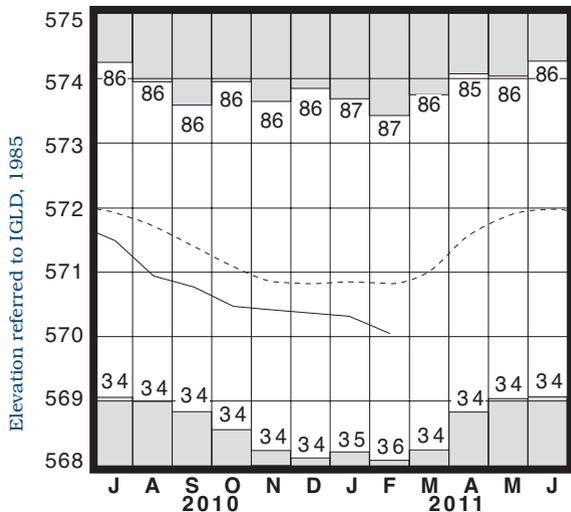
Index Well	Location	Aquifer	Mean This Month	Departure From Normal	Change in feet from:	
					Last Month	Year Ago
F-1	W. Rushville, Fairfield Co.	Sandstone	12.59	+1.98	+0.93	-1.00
Fa-1	Jasper Mill, Fayette Co.	Limestone	9.07	-1.90	+0.86	-0.84
Fr-10	Columbus, Franklin Co.	Gravel	44.73	-1.85	+0.20	-0.52
H-1	Harrison, Hamilton Co.	Gravel	23.29	-1.79	+0.94	-0.49
Hn-2a	Dola, Hardin Co.	Dolomite	8.73	-1.50	+0.77	+1.52
Po-124	Freedom, Portage Co.	Sandstone	77.61	+0.61	+0.01	-1.05
Tu-1	Strasburg, Tuscarawas Co.	Gravel	14.47	-2.03	+0.21	+1.09

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)

the northern half of the state. The third major storm occurred during February 27-28. The precipitation fell as rain and was greatest across northern Ohio where 1-2 inches was widespread with some areas receiving as much as 3.5 inches of rain. The heavy rain, along with much above normal temperatures and rapidly melting snow, were the ingredients for significant small stream and river flooding, especially throughout the northern half of the state. The widespread flooding closed numerous roads and prompted evacuations in several areas of northern Ohio. Many homes, businesses and roads were damaged by these floods, but it is too early to know the full impact of this situation as the flooding continued into March. Tragically, at least one death was attributed to these floods as the swift waters swept a vehicle into a rain-swollen stream in Huron County.

Precipitation for the 2011 water year is above normal throughout most of the state. The state average is 14.50 inches, 1.46 inches above normal. Regional averages range from 17.56 inches, 3.69 inches above normal, for the Northeast Region to 11.76 inches, 0.29 inch above normal, for the Northwest Region.

Precipitation for the first two months of the 2011 calendar year is above normal statewide. The state average is 6.27 inches, 1.44 inches above normal. Regional averages range from 6.73 inches, 2.09 inches above normal, for the Northeast Region to 5.68 inches, 1.80 inches above normal, for the Northwest Region.

SUMMARY

Precipitation during February was above normal statewide. Streamflow was above normal throughout most of the state and was high enough to be considered excessive in several basins. Moderate to severe flooding occurred throughout many areas of northern Ohio. Reservoir storage increased and was at above normal seasonal levels. Ground water storage improved in most aquifers, but levels remain below normal across much of the state. Lake Erie level declined 0.26 foot and was 0.78 foot below the long-term February average.

NOTES AND COMMENTS

Severe Weather Awareness Week

Governor John Kasich has designated the week of March 20-26, 2011 as Spring Severe Weather Safety Awareness Week. The goal is to better educate people about the hazards of severe weather and to encourage people to have a plan in the event severe weather should occur. Each year the Ohio Committee for Severe Weather Awareness (OCSWA) sponsors two awareness weeks to draw attention to the need to prepare for severe weather. The OCSWA consists of representatives from the National Weather Service, American Red Cross, Emergency Management Association of Ohio, Ohio Citizens Corps, State Fire Marshal's office, Ohio Emergency Management Agency, Ohio Departments of Aging, Education, Health, Insurance, Natural Resources, and Transportation, the Ohio Insurance Institute and the Ohio News Network. A statewide tornado drill will be conducted on March 23 at 9:50 am. Communities and individuals should use this time to think about what course of action they would take in the event if severe weather were to affect them and their property.

For more information, please visit the OCSWA website at: www.weather-safety.ohio.gov.

New Employee Joins WRS Staff

Curtis Coe recently joined the ODNR-Division of Soil and Water Resources, Water Resources Section as a Geologist 3. He will be conducting research activities, field investigations, data collection and providing ground water technical assistance related to hydrogeology investigations in Ohio. He will be providing technical assistance to the public, industry, government agencies and consultants on matters related to ground water supply development and protection. Curtis will also be involved in ground water mapping.

Curtis earned a Bachelors degree from The Ohio State University and a Master's degree from Florida State University. He is an AIPG Certified Geologist. You can call Curtis at 614-265-6733 or e-mail him at Curtis.Coe@dnr.state.oh.us with any questions related to ground water resources in Ohio.

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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