



# MONTHLY WATER INVENTORY REPORT FOR OHIO

February 2002

<http://www.dnr.state.oh.us/water/pubs/newsltrs/mwirmain.html>

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Hydrologists  
Water Inventory Unit

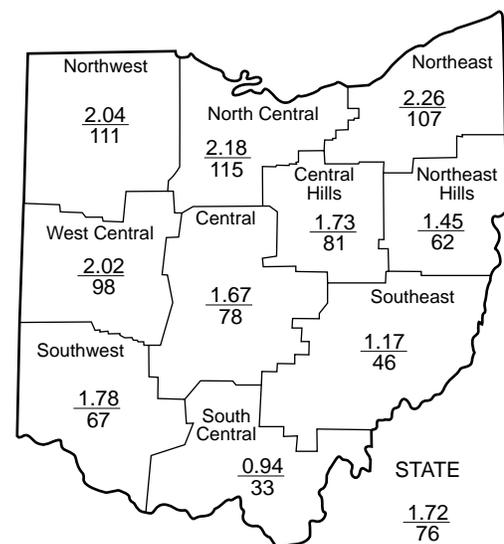
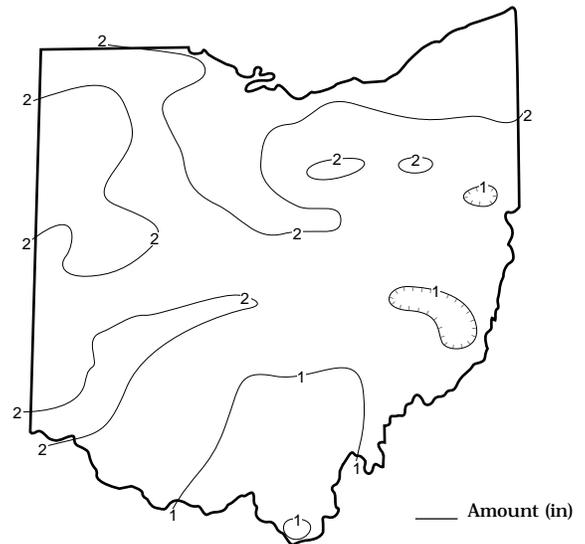
**PRECIPITATION** during February was below normal across most of the state, but slightly above normal in much of the northern third of Ohio. The average for the state as a whole was 1.72 inches, 0.54 inch below normal. Regional averages ranged from 2.26 inches, 0.14 inch above normal, for the Northeast Region to 0.94 inch, 1.90 inches below normal, for the South Central Region. This was the 10<sup>th</sup> driest February during the past 120 years for the South Central Region and the 14<sup>th</sup> driest for the Southeast Region. Ottawa (Putnam County) reported the greatest amount of February precipitation, 2.87 inches. Jackson (Jackson County) reported the least amount, 0.62 inch. Several other stations in eastern and southeastern Ohio reported less than 1 inch of February precipitation.

Precipitation during February fell as both rain and snow. Snowfall during the month was below normal across most of the state, but was above normal in northeastern Ohio. Chardon (Geauga County) received 26 inches of snow during February, which is about 6 inches above normal. For the season Chardon has received 41 inches of snow, which is 41 inches below normal. February got off to a wet start as the rain that began falling late on January 29 continued through February 1, ending as a wintry mix in northern Ohio. The precipitation on February 1 alone added an additional 0.25-0.75 inch of precipitation (liquid) to the 1-2 inch storm totals of late January. Minor flooding was reported in some areas, especially in northern Ohio. Dry conditions prevailed across most of the state during the next week. However, snow fell in northeastern Ohio on February 4 with generally 2-4 inches reported and as much as 5-10 inches in the snowbelt area. Precipitation during February 10-11 fell mainly as rain in the southern half of the state and as a wintry mix elsewhere with generally 0.25-0.50 inch of precipitation (liquid, melted) falling across much of the state. Rain returned to the state late on the 19<sup>th</sup> with another 0.25-0.50 inch falling across most of the state by the time it ended on February 21. Precipitation on February 26 began as rain and ended on the 27<sup>th</sup> as snow. Precipitation amounts were generally 0.25-0.50 inch (liquid, melted) in the northern half of the state and 0.25 inch or less elsewhere. The greatest amounts of snow fell in northern Ohio where more than 4 inches were reported with blizzard-like conditions in the northeastern Ohio snowbelt counties.

Precipitation for the 2002 water year is above normal across most of the state, but is below normal in southeastern Ohio. The average for the state as a whole is 14.16 inches, 1.16 inches above normal. Regional averages range from 16.16 inches, 1.73 inches above normal, for the Southwest Region to 12.18 inches, 2.05 inches below normal, for the South Central Region.

Precipitation for the 2002 calendar year is below normal throughout most of the state, except in northwestern Ohio where it is above normal. The average for the state as a whole is 3.78 inches, 1.05 inches below normal. Regional averages range from 4.35 inches, 0.47 inch above normal, for the Northwest Region to 3.30 inches, 1.40 inches and 1.75 inches below normal, respectively, for the Central and Northeast Hills regions.

## PRECIPITATION FEBRUARY



## 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	+0.20	+0.20	+5.35	+4.07	+7.53	+3.1
North Central	+0.29	-0.21	+4.27	-0.42	+3.27	+2.1
Northeast	+0.14	-0.59	+0.47	-4.57	-3.54	0.0
West Central	-0.04	-0.48	+3.79	+5.60	+5.38	+2.6
Central	-0.48	-1.22	+1.02	+1.64	+1.90	0.0
Central Hills	-0.40	-1.22	+1.16	-2.94	-2.24	+0.1
Northeast Hills	-0.88	-1.65	+0.28	-3.17	-2.92	-0.3
Southwest	-0.86	-1.09	+2.57	+3.49	+0.72	+1.8
South Central	-1.90	-2.24	-3.03	-2.93	-5.81	-2.0
Southeast	-1.40	-1.86	-1.82	+0.66	-2.42	-0.5
State	-0.54	-1.05	+1.40	+0.13	+0.17	

\*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

River and Location	Drainage Area (Sq. Mi.)	Mean Discharge (CFS)	% of Normal	% of Normal Past		
				3 Mos.	6 Mos.	12 Mos.
				This Month		
Grand River near Painesville	685	1,488	88	77	62	57
Great Miami River at Hamilton	3,630	5,343	113	128	164	110
Huron River at Milan	371	520	106	78	75	60
Killbuck Creek at Killbuck	464	493	71	63	60	57
Little Beaver Creek near East Liverpool	496	445	51	62	58	53
Maumee River at Waterville	6,330	11,540	176	115	141	99
Muskingum River at McConnelsville	7,422	7,923	65	106	102	62
Scioto River near Prospect	567	857	131	113	119	91
Scioto River at Higby	5,131	5,285	68	83	81	86
Stillwater River at Pleasant Hill	503	674	107	116	175	101

**STREAMFLOW** during February was generally above normal in the western half of the state and below normal in the eastern half. Flows were low enough to be considered deficient in some east-central Ohio basins. Flows during February were greater than the January flows statewide.

Streamflow was above normal across the state at the beginning of February. Minor flooding was reported in some areas at the beginning of the month as a result of the widespread rains that fell at the end of January and on the first day of February. Greatest flows for the month occurred generally between February 1-3, following the passage of this rain. Following these peaks, flows generally declined for the next two weeks as drier conditions prevailed. Low flows for the month occurred throughout the state on either February 19 or

February 25, just prior to the onset of precipitation. Flows statewide were below normal at the end of February.

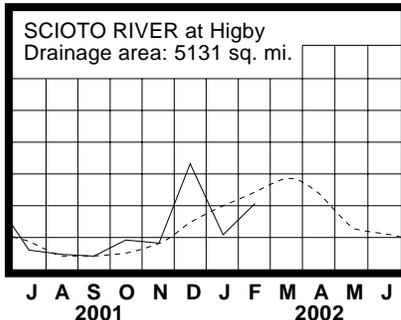
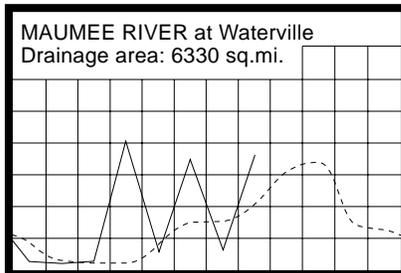
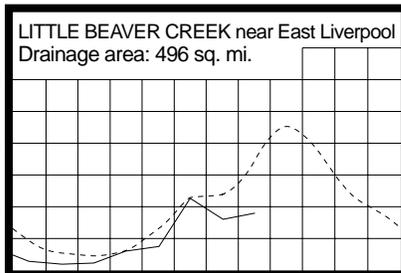
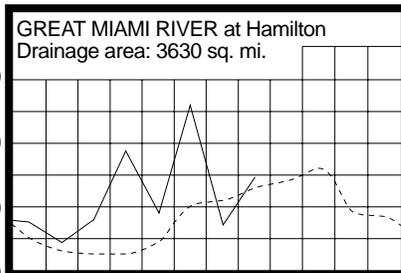
**RESERVOIR STORAGE** for water supply during February increased in both the Mahoning and Scioto river basins. Storage at the end of the month was above normal in both basins.

Reservoir storage at the end of February in the Mahoning basin index reservoirs was 82 percent of rated capacity for water supply compared with 73 percent for last month and 77 percent for February 2001. Month-end storage in the Scioto basin index reservoirs was 93 percent of rated capacity for water supply compared with 86 percent for last month and 94 percent for February 2001.

Note: The information regarding percent of rated capacity for water supply for the Scioto River basin was incorrect in last month's report. The data as previously presented did not include the addition of month-end storage statistics for Alum Creek Reservoir for the July-December 2001 period. That information has now been updated and the corrections are reflected in this report. For January, 2002, month-end storage in the Scioto River basin index reservoirs was 86 percent of rated capacity for water supply compared with 87 percent for December 2001 and 90 percent for January 2001.

## MEAN STREAM DISCHARGE

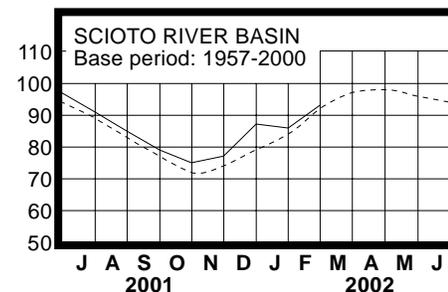
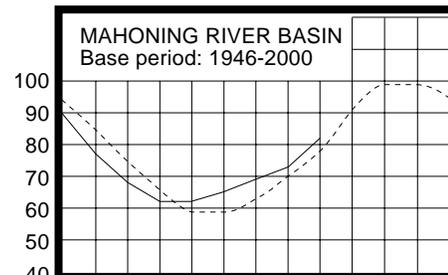
Discharge (cu ft/sec/sq mi)



Base period for all streams: 1971-2000

## RESERVOIR STORAGE FOR WATER SUPPLY

Rated capacity (%) for water supply



Normal - - - - Current ———

## GROUND-WATER LEVELS

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

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	14.65	-0.08	+2.26	+1.05
Fa-1	Jasper Mill, Fayette Co.	Limestone	7.94	-0.77	+0.22	-0.44
Fr-10	Columbus, Franklin Co.	Gravel	45.15	-2.27	+0.32	-0.04
H-1	Harrison, Hamilton Co.	Gravel	22.12	-0.62	-0.06	+0.84
Hn-2a	Dola, Hardin Co.	Dolomite	6.44	+0.79	+0.42	+0.51
Po-1	Windham, Portage Co.	Sandstone	20.99	-0.48	+0.25	+0.09
Tu-1	Strasburg, Tuscarawas Co.	Gravel	15.57	-3.13	+0.22	-1.14

**GROUND WATER** levels during February rose across much of the state. However, positive net changes from the January levels in most aquifers were less than usually observed for February. Water levels rose during the first half of the month in response to the widespread precipitation that occurred at the end of January and early February. Levels during the second half of February remained stable or declined slightly.

Ground water levels remain below normal across most of the state ranging up to just over 3 feet below the long-term February average. The one exception is in some carbonate aquifers in northwestern Ohio where levels are above normal. However, current levels are higher than last year's levels across much of the state.

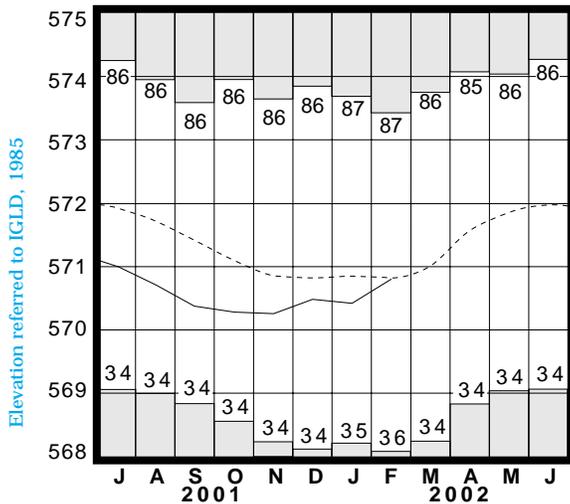
Although the current recharge season got off to a promising start, the below normal precipitation that much of Ohio has experienced during January and February has not been extremely beneficial for a quick return of the state's ground water supplies to normal seasonal levels. One positive aspect however, has been the mild winter temperatures which has allowed soils to remain unfrozen, thus increasing the potential for precipitation to infiltrate into the soils and aquifers. Although several months remain with the potential for additional recharge, near normal precipitation and other climatic conditions will be needed to ensure continued improvement to the state's ground water supplies. With this in mind, water supply managers with ground water sources should monitor their respective situations closely throughout the remainder of the recharge season and during the summer months.

**LAKE ERIE** level rose markedly during February. The mean level was 570.80 feet (IGLD-1985), 0.39 foot higher than last month's mean level and 0.03 foot below normal. This month's mean level is 0.43 foot higher than the February 2001 level and 1.60 feet above Low Water Datum.

The U. S. Army Corps of Engineers (USACE) reports that precipitation in the Lake Erie basin during February averaged 2.83 inches, which is 0.77 inch above normal. The entire Great Lakes basin averaged 2.25 inches, which is 0.49 inch above normal. For calendar year 2002 through February, the Lake Erie basin has averaged 5.66 inches of precipitation, 1.16 inches above normal, while the entire Great Lakes basin has averaged 3.70 inches, which is 0.23 inch below normal.

The USACE also reports that based on the current condition of the Great Lakes basin and anticipated weather conditions, the level of Lake Erie should range from near normal to about 4 inches below the long-term seasonal average for the foreseeable future. Deviations from the anticipated weather patterns could result in the level of Lake Erie ranging from around 3 inches above to as much as 11 inches below the normal seasonal levels.

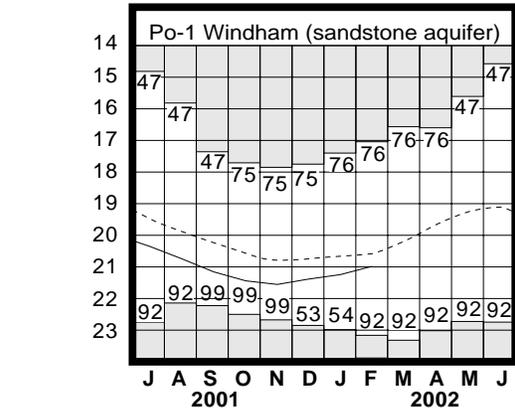
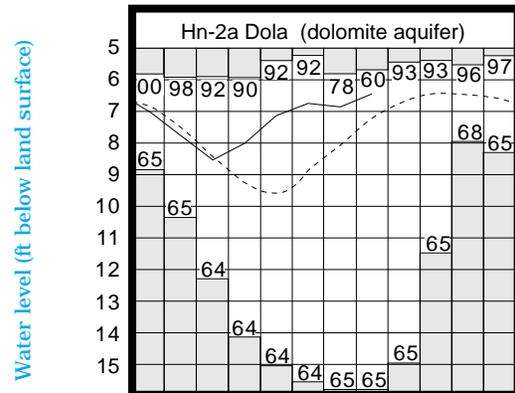
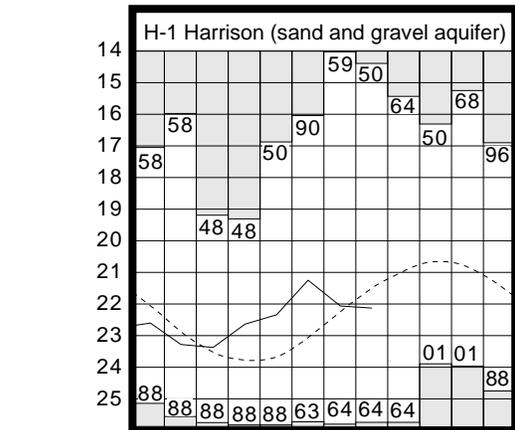
## LAKE ERIE LEVELS



Base period: 1918-2000

□ Record high and low, year of occurrence

## GROUND-WATER LEVELS



Base periods: H-1, 1951-2000; Hn-2a, 1955-2000;

Po-1, 1947-2000. □ Record high and low, year of occurrence

Normal - - - - Current ———

## SUMMARY

Precipitation during February was below normal across most of the state, but was slightly above normal through much of the northern third of Ohio. Streamflow was generally above normal in the western half of the state and below normal in the eastern half. Reservoir storage increased statewide and was above normal in both the Mahoning and Scioto river basins. Ground water levels rose across most of the state, but remained below normal in most aquifers. Lake Erie level rose 0.39 foot and was 0.03 foot below the normal seasonal levels.

## NOTES AND COMMENTS

### Ohio Stream Management Guides Series Completed

The Ohio Department of Natural Resources' (ODNR) Stream Team has recently completed the final fact sheet in the "Ohio Stream Management Guides" series. Guide number 21, *Large Woody Debris*, provides information about the benefits of woody material left in and along streams.

The Ohio Stream Management Guides cover a wide array of watershed and stream management issues and methods of addressing stream-related problems. The 22 fact sheets were funded by a non-point source implementation grant (319) administered by the U. S. Environmental Protection Agency. The guides are available on the Division of Water's web site as web pages and PDF files at:

[http://www.dnr.state.oh.us/water/pubs/fs\\_st/streamfs.html](http://www.dnr.state.oh.us/water/pubs/fs_st/streamfs.html)

Single copies of the Ohio Stream Management Guides are available free of charge from ODNR Public Information Center, 1952 belcher Drive, Building C-1, Columbus, Ohio 43224-1386, (614) 265-6791.

For more information about the project, call Jason Remich at (614) 265-6744 or e-mail [jason.remich@dnr.state.oh.us](mailto:jason.remich@dnr.state.oh.us).

### Index of guides with descriptions

- 01 *An Introduction to Stream Management*: An overview of streams as a water resource and the interactions between land uses and stream resources.
- 02 *Who Owns Ohio's Streams?*: Rights and responsibilities of landowners and the authorities and duties of government with regard to surface water.
- 03 *Natural Stream Processes*: An overview of stream ecosystems, processes, and terms.
- 04 *A Catalog of Contacts for Stream Topics*: Programs, Information, Authorities, Regulations and Funding.
- 05 *Ohio Stream Management Guides-Index of Titles*: Listing of all stream management guides with a brief descriptions.
- 06 *Permit Checklist for Stream Modification Projects*: An Overview and contact information for permits, requirements and consultations, which may be necessary for completion of projects in or adjacent to streams.
- 07 *Restoring Streambanks with Vegetation*: Guidelines for planting dormant cuttings of willow (or other species) to quickly establish living erosion barriers.
- 08 *Trees for Ditches*: Guidelines on species selection, planting locations and maintenance to achieve environmental and economic benefits while maintaining drainage capacity.
- 09 *A Stream Management Model*: Guide to the stream management displays and demonstrations at the Ohio Farm Science Reviews Gwynne Conservation Area.
- 10 *Biotechnical Projects in Ohio*: Biotechnical practices using vegetation and other natural materials are defined. Map of several projects using these techniques with contacts for on-site visits of these sites are listed.
- 11 *Tree Kickers*: Construction guidelines for using hardwood logs anchored to a streambank to prevent undercutting the streambank.
- 12 *Evergreen Revetments*: Construction guidelines for creating a buffer system made of cut evergreen trees and anchored into an eroding streambank.
- 13 *Forested Buffer Strips*: Benefits of vegetation left or restored along streams.
- 14 *Live Fascines*: Construction guidelines for placing long bundles of live woody vegetation in shallow entrenchments parallel to the flow of the stream.
- 15 *Gabion Revetments*: Construction guidelines for protecting submerged streambanks by placing stone-filled wire baskets in shallow entrenchments along the stream.
- 16 *Riprap Revetments*: Construction guidelines for protecting streambanks by layering various size rocks along a sloping bank.
- 17 *Live Cribwalls*: Definition, use, and guidelines for constructing cribwalls to aid in the establishment of willow cuttings on streambanks.
- 18 *Stream Debris and Obstruction Removal*: Questions and answers to assist landowners in maintaining a free flowing stream without logjams.
- 19 *Deflectors*: Procedures and materials necessary to stabilize streambanks by directing the current away from the outside of a stream meander.
- 20 *Eddy Rocks*: Guidelines for placing groupings of large rocks in small streams or modified channels to restore natural stream features and habitat.
- 21 *Large Woody Debris*: The benefits of all woody material left in and along the stream.
- 22 *Gravel Riffls*: Construction guidelines for placing gravel and cobble-sized stones in a modified or heavily impacted stream to stabilize the substrate.

## ACKNOWLEDGMENTS

This report has been compiled from Division of Water 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, Miskington 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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