# MONTHLY WATER INVENTORY REPORT FOR OHIO

**November 2004**

http://www.dnr.state.oh.us/water/pubs/newsltrs/mwirmain.htm
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Water Inventory Unit

**PRECIPITATION** during November was above normal across most of the state, but generally below normal in northeastern Ohio. The average for the state as a whole was 3.54 inches, 0.56 inch above normal. Regional averages ranged from 4.52 inches, 1.59 inches above normal, for the South Central Region to 2.78 inches, 0.56 inch below normal, for the Northeast Region. Piqua (Miami County) reported the greatest amount of November precipitation, 5.77 inches; Chippewa Lake (Medina County) reported the least amount, 2.03 inches.

Precipitation during November fell mostly as rain with only meager amounts of snow falling across northern Ohio. Widespread precipitation during November 1-4 resulted in 0.75-2.0 inches of rain falling across most of the state. Little or no precipitation fell the next 6 days. Precipitation during November 11-12 was greatest in the southern half of the state with generally 1.0-1.5 inches of rain reported, decreasing to only a trace amount in extreme northern Ohio. Several days with precipitation occurred during the second half of the month, but daily amounts were usually less than 0.10 inch. Total amounts of precipitation during this period ranged from 1.5 to 2.5 inches across the state. Showers were widespread during November 16-19 with amounts of 0.50-1.0 inch reported throughout most of the state. Showers and isolated thunderstorms during November 24-25 produced 0.25-1.0 inch of precipitation with the greatest amount falling across northern Ohio. The month ended with widespread rain on November 30 producing 0.25-0.50 inch throughout the state.

Precipitation for the 2004 calendar year is above normal statewide. The average for the state as a whole is 42.95 inches, 7.69 inches above normal. Regional averages range from 52.28 inches, 16.60 inches above normal, for the Northeast Hills Region to 33.24 inches, 1.42 inches above normal, for the Northwest Region.

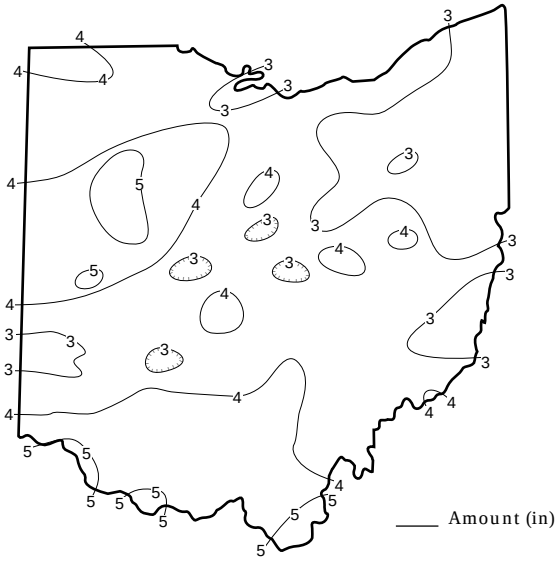
Precipitation for the 2005 water year is above normal across most of the state, but below normal in much of northeastern Ohio. The average for the state as a whole is 6.23 inches, 0.78 inch above normal. Regional averages range from 7.48 inches, 1.65 inches above normal, for the Southwest Region to 4.94 inches, 1.38 inches below normal, for the Northeast Region.

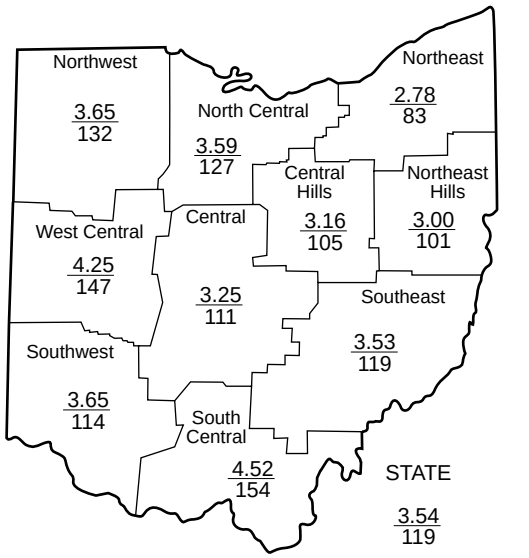
## PRECIPITATION

| Region | DEPARTURE FROM NORMAL (IN.) Base period 1951-2000 | | | | | Palmer Drought Severity Index* |
|---|---|---|---|---|---|---|
| | This Month | Past 3 Mos. | Past 6 Mos. | Past 12 Mos. | Past 24 Mos. | |
| Northwest | +0.89 | -0.49 | +3.25 | +1.53 | +8.34 | +3.2 |
| North Central | +0.76 | +0.27 | +2.24 | +6.38 | +12.39 | +3.5 |
| Northeast | -0.56 | -0.11 | +1.44 | +6.36 | +16.41 | +4.7 |
| West Central | +1.36 | -0.51 | +1.43 | +2.21 | +16.12 | +2.7 |
| Central | +0.33 | +1.50 | +3.80 | +9.28 | +16.37 | +3.6 |
| Central Hills | +0.14 | +0.54 | +5.72 | +10.55 | +15.81 | +5.2 |
| Northeast Hills | +0.04 | +4.80 | +11.40 | +16.50 | +25.25 | +6.2 |
| Southwest | +0.44 | -0.16 | -0.35 | +1.43 | +8.46 | +2.7 |
| South Central | +1.59 | +6.76 | +5.00 | +7.97 | +18.80 | +3.9 |
| Southeast | +0.56 | +8.65 | +10.32 | +15.68 | +24.47 | +5.4 |
| State | +0.56 | +5.11 | +7.40 | +10.77 | +19.15 | |

*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 NOVEMBER



## 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 | 585 | 53 | 81 | 92 | 126 |
| Great Miami River at Hamilton | 3,630 | 1,975 | 122 | 67 | 115 | 118 |
| Huron River at Milan | 371 | 341 | 360 | 141 | 178 | 164 |
| Killbuck Creek at Killbuck | 464 | 264 | 92 | 104 | 149 | 137 |
| Little Beaver Creek near East Liverpool | 496 | 571 | 173 | 382 | 301 | 179 |
| Maumee River at Waterville | 6,330 | 5,921 | 226 | 128 | 172 | 108 |
| Muskingum River at McConnelsville | 7,422 | 8,550 | 152 | 438 | 377 | 151 |
| Scioto River near Prospect | 567 | 454 | 469 | 104 | 183 | 156 |
| Scioto River at Higby | 5,131 | 4,946 | 197 | 136 | 155 | 145 |
| Stillwater River at Pleasant Hill | 503 | 198 | 201 | 46 | 94 | 89 |

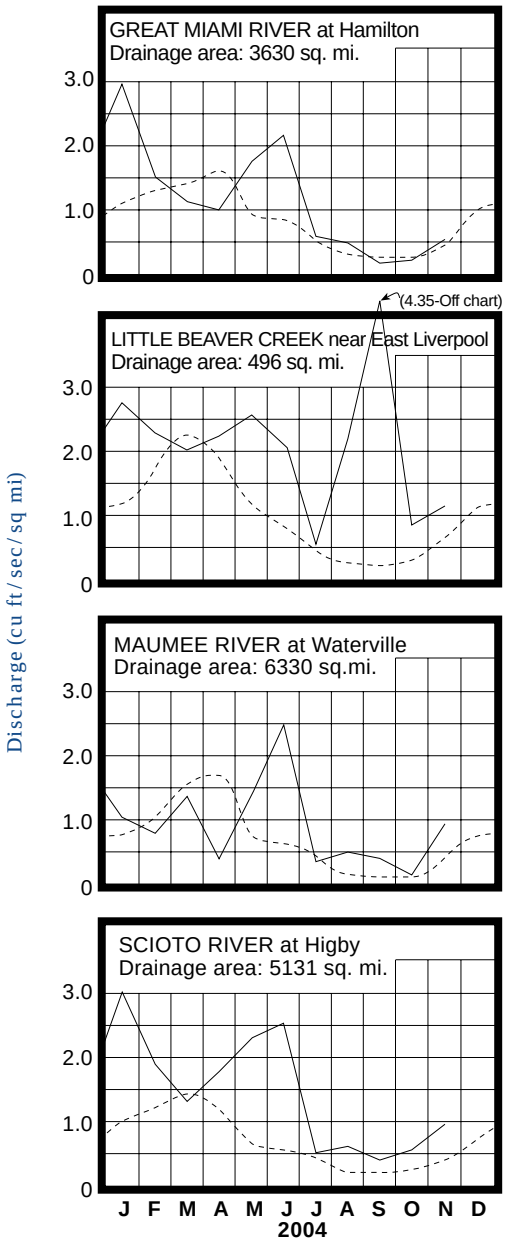
**STREAMFLOW** during November was above normal across most of the state, but below normal in some northeastern Ohio basins. Flows were high enough to be considered excessive in eastern, southeastern and some northwestern Ohio basins.

Flows at the beginning of the month were below normal in most areas of the state, but above normal across southeastern Ohio. Low flows across southern and north-central Ohio occurred during November 1-2. Flows increased the remainder of the first week in response to the rain that fell during November 1-4, then decreased until around mid-month. Low flows across the remainder of Ohio occurred between November 15 and 18. Flows then generally increased until near the end of the month following several days of precipitation, peaking during November 25-27 across the state. Flows at the end of the month were above normal throughout most of Ohio.

**RESERVOIR STORAGE** during November increased in both the Mahoning and Scioto river basins. Storage in both basins remained above normal.

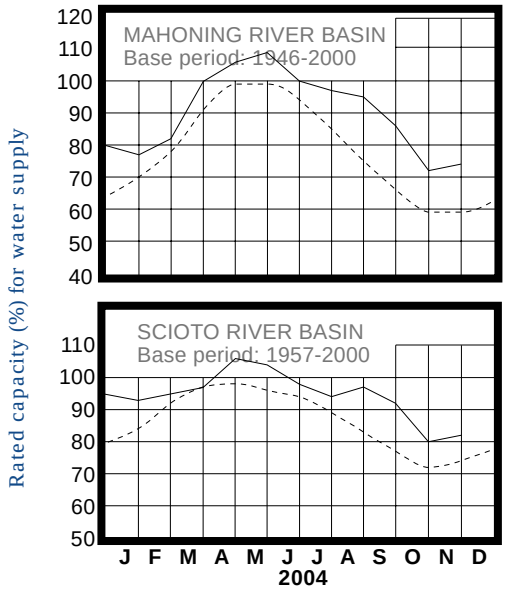
Reservoir storage at the end of November in the Mahoning basin index reservoirs was 74 percent of rated capacity for water supply compared with 72 percent for last month and 85 percent for November 2003. Month-end storage in the Scioto basin index reservoirs was 82 percent of rated capacity for water supply compared with 80 percent for last month and 89 percent for November 2003.

## MEAN STREAM DISCHARGE




Base period for all streams: 1971-2000

## RESERVOIR STORAGE FOR WATER SUPPLY




Normal – – – – Current ———

**GROUND WATER** levels during November rose across most of the state, but declined in northeastern Ohio. Generally, levels rose steadily throughout the month except in northeastern Ohio aquifers where they were stable or declined slightly until late in the month. For the month, net positive changes from the October levels were greater than usually observed across all but northeastern Ohio.

Ground water levels remain above normal across most of the state. Unconsolidated aquifers in central and southwestern Ohio remain at below normal levels, but have responded favorably to the climatic conditions of the past several months. Index observation well F-1 (Fairfield County), representing sandstone aquifers in eastern and southeastern Ohio, reached a new record-high level for November. Current levels are lower than they were at this time last year across most of the state.

Ground water supplies remain in good shape throughout Ohio. Conditions are favorable for anticipated improvement in ground water storage during the 2005 water year recharge period. The Ohio Agricultural Statistics Service reports that as of November 21, soil moisture was rated as being adequate in 64 percent of the state and surplus in 36 percent of the state.

**LAKE ERIE** level declined seasonally during November. The mean level was 570.93 feet (IGLD-1985), 0.17 foot lower than last month's mean level and 0.06 foot above normal. This month's mean level is 0.49 foot higher than the November 2003 level and 1.73 feet above Low Water Datum.

The U.S. Army Corps of Engineers (USACE) reports that precipitation in the Lake Erie basin during November averaged 3.21 inches, which is 0.37 inch above normal. For the entire Great Lakes basin, November precipitation averaged 2.51 inches, which is 0.23 inch below normal. For calendar year 2004 through November, the Lake Erie basin has averaged 32.74 inches, 0.44 inch above normal, while the entire Great Lakes basin has averaged 31.70 inches of precipitation, 1.66 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 range from near-normal to as much as 4 inches below normal for the foreseeable future. Deviations from the anticipated weather patterns could result in the level of Lake Erie ranging from as high as 8 inches above normal to as much as 14 inches below the normal seasonal average.

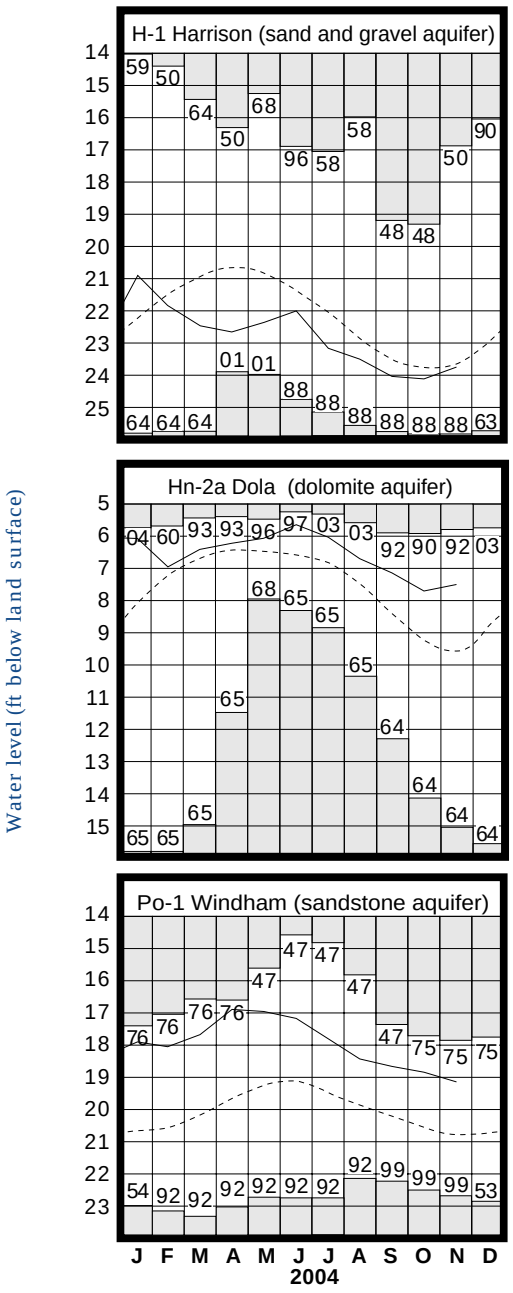
*(continued on back)*

## 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 | 12.29 | +5.29 | +1.33 | +1.87 |
| Fa-1 | Jasper Mill, Fayette Co. | Limestone | 8.14 | +0.89 | +0.87 | -0.21 |
| Fr-10 | Columbus, Franklin Co. | Gravel | 44.81 | -0.69 | +0.17 | +0.70 |
| H-1 | Harrison, Hamilton Co. | Gravel | 23.75 | -0.07 | +0.31 | -0.62 |
| Hn-2a | Dola, Hardin Co. | Dolomite | 7.50 | +2.07 | +0.20 | -1.09 |
| Po-1 | Windham, Portage Co. | Sandstone | 19.14 | +1.65 | -0.30 | -0.65 |
| Tu-1 | Strasburg, Tuscarawas Co. | Gravel | 13.55 | +0.45 | -0.77 | -0.67 |

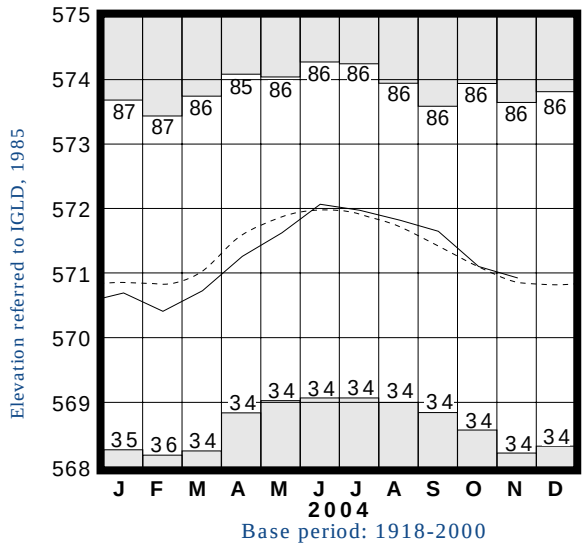
## GROUND-WATER LEVELS




Base periods: H-1, 1951-2000. Hn-2a, 1955-2000. Po-1, 1947-2000 ▭ Record high and low, year of occurrence

Normal– – – – Current———

## LAKE ERIE LEVELS




Base period: 1918-2000

▭ Record high and low, year of occurrence

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, 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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**SUMMARY**

Precipitation during November was above normal across most of the state, but generally below normal in northeastern Ohio. Streamflow was above normal across most of the state. Reservoir storage increased and was above normal in both the Mahoning and Scioto river basin. Ground water levels rose across most of Ohio. Lake Erie level declined 0.17 foot and was 0.06 foot above the long-term November average.

**NOTES AND COMMENTS**

**ODNR Strategic Plan**

After much hard work and input from employees, the Ohio Department of Natural Resources (ODNR) recently completed a comprehensive Strategic Plan. The Strategic Plan prioritizes the Departments current efforts while setting the stage for future planning of goals and priorities in the coming years. The plan establishes action priorities for protecting and wisely managing Ohio's natural resources. Titled *Strategy For Stewardship*, this plan includes the Department's Mission, Vision and Guiding Principals. Five Strategic Themes make up the Department's core mission: Outdoor Recreation; Land Stewardship; Water Stewardship; Lake Erie; and Wildlife and Plant Communities. With the completion of this plan, the Department now has a guide to understanding a jointly shared strategic vision. The plan coordinates ODNR's diverse resources, maximizes their impact and allows the Department to capitalize on their strengths as the most pressing natural resources challenges are addressed today and for years to come. To view/download the strategic plan as a pdf file, please go to: http://www.dnr.state.oh.us/strategicplan.

**Water Quality Data For Observation Wells Added To Records Available On-Line**

Analyses of water samples collected from the Ohio Observation Well Network were recently added to the data available on-line. More than 100 observation wells have been sampled at least once during the past 25 years. The results of those analyses are presented as a table for each observation well. The samples were analyzed for a wide range of naturally occurring parameters. Units of analysis are listed for each parameter.

To view the water quality data for selected observation wells, visit the Division of Water's web site at: http://www.dnr.state.oh.us/water/waterinv/. Click on the observation well network map and then select a particular observation well of interest. Click on the "Water Quality" button near the bottom of the page. For more information, contact the Division of Water at:

(614) 265-6759 or e-mail: Frank.Fugitt@dnr.state.oh.us.

**50-Year Anniversary Highlights**

**Notable November Events From The Past 50 Years**

November 2-3, 1966: Early season snowstorm blankets western half of Ohio. More than 14 inches reported in areas of northwestern and west-central Ohio.

November 1976: Markedly below normal precipitation fell across Ohio. The 0.59 inch of precipitation for the state as a whole was the 3rd driest November of record. For southern Ohio this was the driest November ever recorded.

November 1985: The 9.16 inches of precipitation for the state as a whole set a record high amount for November and was the second greatest total for any month. It was the wettest November of record for 8 of the state's 10 climatic regions. Areas of southeastern Ohio received in excess of 14 inches of precipitation.

November 22, 1992: A strong frontal system moved through the state accompanied by moderate rain and tornadoes. Arcanum (Darke County) was heavily damaged by a tornado that traveled through Preble and Darke counties. The November tornadoes brought the total number of tornadoes in Ohio during 1992 to a record 61.

November 10, 2002: Strong thunderstorms producing damaging winds, heavy rain, hail and tornadoes crossed the state in one of the worst late season severe weather outbreaks ever in Ohio. The hardest hit area was northwestern Ohio where several tornadoes caused considerable damage and killed 5 people. The most devastating damage was in Van Wert County