

July 5, 2011 Drought Report

During the months of March and April, a good portion of the state received above-average precipitation (up to 8 inches above normal for some locations). More recently, precipitation amounts for most of the state were slightly below average in May and 25 to 75% below average in June, except for the southeast and northeast parts of the state. Those areas received closer to normal or above normal precipitation amounts in the month of June.

Precipitation drought indicators, based on the 90-day departure, are in “normal” status for all counties, primarily because of the large amounts of rain that were received in April. As the “April” precipitation amounts are replaced with more current precipitation data over the next 3-4 weeks, counties may change from “normal” to drought “watch/warning/emergency” stage overnight.

A review of the county streamflow monitoring gages indicates that the 30-day average streamflow values are displaying downward trends, which is typical for late summer into early fall. There are seven counties now in drought “watch” (Armstrong, Butler, Clarion, Clearfield, Forest, Mercer and Westmoreland) and one county is in drought “warning” (Cameron).

The instantaneous streamflows range from normal to above normal across the eastern and north eastern portions of the state. The instantaneous streamflows are normal to below normal in the western portion of the state with several streamflows significantly below normal.

There are four groundwater wells indicating drought “watch” (Juniata, McKean, Perry and Potter).

The 7-day forecast indicates the northwest portion of state to possibly receive trace amounts of precipitation and increasing up to 1-2 inches moving southeasterly. The 8–14 day forecast predicts the state to receive precipitation in the 0.25 to 1 inch range for the entire state.

Although conditions do not warrant a recommendation for any action to be taken, conditions will be monitored closely.

July 25, 2011 Drought Report

Precipitation

Precipitation drought indicators, based on the 90-day departure, have shown a significant downturn since the July 5 drought report. Nine counties are now at 26% to 50% below normal cumulative precipitation levels for this time of year with departures ranging from -3 inches up to -4.5 inches. Three weeks ago, most counties were at normal or above normal for 90-day departure amounts, except for 5 counties that at 25% were below average conditions.

Precipitation Indicators based on the 90-day departure show the following counties in “Watch”: Venango, Clarion, Jefferson, Elk, Cambria, Blair, Berks, Bucks and Philadelphia. The following counties are in “Warning”: Chester, Montgomery and Delaware.

Surface Water

A review of the county streamflow monitoring gages indicates that the 30-day average streamflow values are continuing their downward trends with an increase in the number of counties in drought watch/warning/emergency from 8 to 25.

The instantaneous streamflows are at normal or above normal in the northeastern and southwestern portions of the state and normal or below normal in the western portion of the state with several streamflows significantly below normal.

Groundwater

Since July 5, the two groundwater monitoring wells that serve 4 counties have moved from “watch” levels to “warning”. In addition, 7 other counties have moved from “normal” into “watch”. The 4 counties in warning are: McKean, Potter, Perry, and Juniata and the 5 counties in watch: Mercer, Lawrence, Allegheny, Clearfield, and Cameron.

Forecast

The 7-day forecast calls for between 0.5 and 1.0 inches of precipitation in the central portion of the state with lesser amounts between 0.25 and 0.5 inches for the remainder of the state.

Summary

Approximately two-thirds of the state has begun to indicate stress. Counties located predominantly across the Appalachian Plateaus and in the extreme southeast are displaying drought indicators in watch, warning, or emergency due to the continued lack of precipitation over the past 2 months. Within these areas there are several watersheds of particular concern. Due to the dry conditions in Two Lick Creek / Yellow Creek Watersheds (Indiana County), water conservation activities have been initiated that are contained in the Two Lick Creek / Yellow Creek Watershed Drought Management Plan, which is part of the Consent, Order and Agreement (COA) that DEP signed in 1988. Additionally, low flow water quality conditions on the Schuylkill River are beginning to cause concern for the Philadelphia Water Department. Last summer, low flow conditions were reached that required intervention by releases from Blue Marsh because there was not enough water in the river to meet demand and maintain adequate flow (>100 CFS) over the Fairmount Dam.

Areas in the eastern portion of the state and the southwest where precipitation has been closer to normal remain in mostly normal conditions.

It is recommended that a Drought Task Force meeting be scheduled to meet in the next 2 weeks to discuss conditions. If meaningful precipitation isn't received, a recommendation will be made to declare a drought watch and/or warning for affected areas of the state.

August 01, 2011 Drought Report

Precipitation

Precipitation departures are increasing for all of the past 30-, 60-, and 90- day periods. The 10 counties with the highest departure (between 26% and 50% below average) include:

Adams

Berks

Blair

Cambria

Cameron

Chester

Clearfield

Elk

Montgomery

Philadelphia

County Precipitation Indicators (based on the 90-day departure) Status:

Watch – Adams, Berks, Blair, Cambria, Chester (moved from Warning), Clearfield, Jefferson, Montgomery (moved from Warning), and Philadelphia.

Warning – Cameron and Elk

Surface Water

A review of the county monitoring gages indicates that the 30-day average streamflow values continue to decrease due to the lack of rainfall and higher than normal temperatures during the past week with the western and central counties displaying continued decrease in flows into Watch status.

County Streamflow Status:

Watch - Armstrong, Beaver, Bradford, Centre, Chester, Clarion, Clearfield, Crawford, Dauphin, Fulton, Huntingdon, Jefferson, Juniata, Lawrence, Lebanon, Lycoming, Potter, Tioga, and Venango.

Warning - Clinton, Elk, Forest, Indiana, and McKean.

Emergency – Bedford, Cameron, and Mercer.

The snapshot of instantaneous streamflows varies across the state with flows ranging from normal to much below normal across most of the Commonwealth with the exception being the northeast where flows range from normal to above normal.

Groundwater

Groundwater levels statewide are decreasing, as would be expected during this time of year with current low precipitation and little recharge due to evapo-transpiration. The monitoring well for Potter County has now dipped into the “emergency” indicator for the 30-day moving average with Schuylkill County moving from normal to “watch”. The rate of decline in well level appears to place the Juniata County well in line for “emergency” levels in coming weeks.

Forecast

The 7-day forecast calls for between 4 to 5 inches of cumulative precipitation in the northwest and northeast corners of the state with between 0.5 and 2 inches inches for the remainder of the state.

Public Water Supply Agencies (PWSAs)

There are currently 6 PWSAs that have initiated either voluntary or mandatory restrictions as a result of the dry conditions and in order to begin conserving their supply.

Summary

Counties located predominantly across the Appalachian Plateaus (western and central portions of the state) and in the southeast continue to display drought indicators in watch/warning/emergency due to the lack of precipitation over the past two months. Areas in the northeastern portion of the state and the southwest where precipitation has been closer to normal remain in mostly normal conditions.

A Drought Task Force meeting has been scheduled for August 4 to discuss the current conditions. If meaningful precipitation isn't received, a recommendation will be made to declare a drought watch and/or warning for affected areas of the state.

August 08, 2011 Drought Report

Precipitation

Over the past 7 days, above-average precipitation fell across areas of the state in amounts ranging from 2 to 5 inches, with most of the rain arriving this past weekend. Precipitation amounts in the southeast were much closer to normal and precipitation amounts received in the western part of the state were below average leaving these two areas with 90-day deficits as high as 3 to 4 inches (4.3 inches in Chester county and 3.4 inches in Elk county).

County Precipitation Indicators (based on the 90-day departure) Status:

Watch – Adams, Cambria, Cameron, Chester, Elk, Montgomery and Philadelphia.

Surface Water

A review of the USGS County monitoring gages indicates that the 30-day average streamflow values reflect the rainfall that has fallen over the past few days. Bedford and Cameron improved one stage to Warning from Emergency and Mercer improved from Emergency to Watch status. Clinton, Elk, Forest, Indiana and McKean counties improved from Warning to Watch status. Dauphin and Lebanon counties returned to Normal status. Erie County dropped from Normal to Warning status and Fulton moved from Watch to Warning status. There are now 22 counties in Watch and 4 counties in Warning.

County Streamflow Status:

Watch - Armstrong, Beaver, Bradford, Centre, Chester, Clarion, Clearfield, Clinton, Crawford, Elk, Forest, Huntingdon, Indiana, Jefferson, Juniata, Lawrence, Lycoming, McKean, Mercer, Potter, Tioga and Venango.

Warning - Bedford, Cameron, Erie and Fulton.

The snapshot of instantaneous streamflows varies across the state with flows ranging from above normal from the Lehigh Valley to the Northeast to much below normal across the Northwest. The Central part of the state is mostly at normal to below normal. Rainfall which occurred over the weekend has affect streamflows for the short term however without any sustained rainfall, it is apparent based on the current decrease in streamflow that is already occurring that most streamflow values will return to below normal flows.

Groundwater

The 30-day moving average of groundwater levels continue to decline throughout the state. Groundwater indicators have not changed from last week except for two wells: the Juniata county well moved from warning to emergency and the Delaware county well moved from normal to watch. The recent precipitation will not influence the groundwater indicators for several reasons. First, there is a lag time associated with precipitation events impacting groundwater levels and second, the drought indicator is based on a 30-day moving average and increasing groundwater levels need to be sustained in order to influence the 30-day average.

Forecast

The 7-day forecast calls for between 0.25 to 2.0 inches of cumulative precipitation across the state. The longer term forecast for August 16 to August 24 indicates up to one inch of precipitation to be evenly distributed across the state.

Public Water Supply Agencies (PWSAs)

There are currently 12 PWSAs that have initiated either voluntary or mandatory restrictions as a result of the dry conditions and in order to begin conserving their supply.

Summary

Counties located predominantly across the Appalachian Plateaus (western and central portions of state) and in the southeast continue to display drought indicators in watch/warning/emergency due to the lack of precipitation over the past two months and as a result, the Department of Environmental Protection issued a drought warning for four Pennsylvania counties and a drought watch for 40 counties on August 5, 2011, after consulting with the Drought Task Force.

Areas in the northeastern portion of the state and the southwest where precipitation has been closer to normal remain in mostly normal conditions. While the recent precipitation has brought some relief to the dry conditions, the amounts were not substantive enough to bring about recovery and the drought declarations remain.

The four counties under a Drought Warning are Cameron, Elk, McKean and Potter. The 40 counties under a Drought Watch are Allegheny, Armstrong, Beaver, Bedford, Berks, Blair, Bradford, Bucks, Butler, Cambria, Centre, Chester, Clarion, Clearfield, Clinton, Crawford, Dauphin, Delaware, Erie, Forest, Fulton, Huntingdon, Indiana, Jefferson, Juniata, Lancaster, Lawrence, Lebanon, Lycoming, Mercer, Mifflin, Montgomery, Perry, Philadelphia, Schuylkill, Sullivan, Tioga, Venango, Warren and Wyoming.

August 15, 2011 Drought Report

Precipitation

Precipitation amounts over the past 7 days across the state range from less than 1 inch to over 4 inches with the greatest amounts occurring in the eastern part of the state and the least in the upper middle part of the state. The 90-day precipitation deficits persist in the northwest corner of the state with deficits up to -4.3 inches in Elk County.

Surface Water

A review of the US Geological Survey (USGS) County surface water monitoring gages indicates that the 30-day average streamflow values reflect the rainfall that has fallen over the past week. Eight counties (Armstrong, Bradford, Centre, Indiana, Jefferson, Juniata, Lawrence, and Tioga) returned to Normal from Watch status and Cameron improved from Warning to Watch status. Adams, Franklin, and Warren Counties dropped from Normal to Watch status and Crawford and Venango moved from Watch to Warning status. There are now 16 counties in Watch and 5 counties in Warning for the surface water indicator.

The snapshot of instantaneous streamflows varies across the state with flows ranging from much above normal for most of the eastern portion of the state and at or above normal for the western portion of the state.

Groundwater

The trend lines for the 30-day moving average of groundwater levels vary from wells levels continuing to lower, others bottoming out, and others slightly increasing. Fayette County, last week having a groundwater indicator in "Watch" is now Normal. Two counties, Potter and Juniata, remain with Emergency indicators. Both these monitoring wells act as surrogate monitoring wells for McKean and Perry Counties.

Water Suppliers

There has been no change to the list of 12 Public Water Supply Agencies (PWSAs) on voluntary or mandatory restrictions.

Forecast

Forecasts call for lower precipitation depths over the next 2 weeks with somewhat even distribution of between trace amounts in the northwest to about 2 inches in the east. The forecast for the week between August 23 and August 31 calls again for trace amounts in the entire western half of the state to about 1 inch in the east.

Summary

Precipitation over the last week brought some relief to areas across the state, although the magnitude received was not sufficient to eliminate the 90-day precipitation deficits that still persist in the northwest/northcentral areas. Surface water and groundwater levels continue to show stress with drought indicators in watch/warning/emergency.

Conditions will be monitored closely, drought watch/warning declarations remain in effect.

August 22, 2011 Drought Report

Precipitation

Precipitation amounts over the past 7 days across the state range from trace amounts up to about 5” with the greatest amounts occurring in the Philadelphia and Pittsburgh areas. Despite the precipitation on the short term, the 90- day precipitation deficits have increased in parts of the state. Several additional north-central counties have moved into a departure range between 26 and 50% below average and several counties in the south-central region from average to 25% below average departures.

Surface Water

A review of the US Geological Survey (USGS) County monitoring gages indicates that the 30-day average streamflow values reflect the rainfall that has fallen over the past few days. Most counties previously in a drought status have shown improvement except for Warren and Fulton Counties which continue to decline. There are now 7 counties in Drought Watch and 1 in Drought Warning.

The snapshot of instantaneous streamflows indicates above normal flows across the eastern portion of the state, with flows ranging from above normal to below normal across central and western portions of the state.

Groundwater

The trend lines for the 30-day moving average of groundwater levels continued as in last week’s report with well levels continuing to lower, others bottoming out. Potter County remains in Emergency indicator with Juniata in Warning. Due to higher level of precipitation, a number of wells in the east show increased levels.

Water Suppliers

Since last week, 1 additional water supplier (located in Bradford County) has implemented voluntary conservation as a precautionary measure. There are now a total of 13 systems statewide implementing restrictions.

Forecast

The forecast for the next 7 days shows a higher probability of substantial precipitation for the southeast corner in the range between 4 and 6“ with the rest of the state forecast between a half and 1”. The forecast between August 30 and September 7 calls for moderate levels between a half inch and 2” predicted for the more south-central part of the state.

Summary

Due to the rainfall over the past several weeks, conditions have improved in the eastern half of the state where the heaviest precipitation has occurred. Unfortunately, even though the northcentral portion of the state has shown some improvement to surface water flows, the 90-day precipitation deficits continue to increase in this area, with some of the highest deficits in counties under a drought warning (Elk 4.7", Cameron and Potter 3.9").

A Drought Task Force meeting is scheduled for September 1 to discuss conditions. If meaningful and sustained precipitation continues to be received and improvement is seen in the drought monitoring indicators, a recommendation may be made to remove the drought watch declaration for affected areas of the state.

August 29, 2011 Drought Report

Precipitation

Hurricane Irene brought significant precipitation and flooding this past weekend to the eastern half of PA. Precipitation depths varied from trace amounts east of Indiana County to increasing bands up to 6.5 inches in the Delaware Valley region stretching from Philadelphia up through the Allentown area. Unfortunately, the deluge of rainfall over the past several days has not reached the northwest and northcentral portions of the state and the 90-day precipitation departures continue to increase. The 90-day precipitation departure indicators across the Commonwealth are in normal range except for the following counties in watch: Butler, Clarion, Clinton, Crawford, Forest, Jefferson, McKean, Mercer, Venango and Warren Counties in the northwest and Fulton County in the Southcentral. The 90-day precipitation departure indicators are in warning for the following counties: Elk, Cameron, Potter, and Tioga.

Surface Water

A review of the (US Geological Survey) USGS County monitoring gages indicates that the 30-day average streamflow values reflect the rainfall that has fallen over the past week including the effects of Hurricane Irene in the Susquehanna and Delaware River Basins. It should be noted that the Allegheny River Basin received little rainfall from Hurricane Irene. The counties that are still in Drought continue to show improvement as their 30-day average flows continue to increase. Bedford County is the only county where its 30-day average is decreasing.

The snapshot of instantaneous streamflows indicates above normal flows across the Susquehanna and Delaware River Basins where flows range from above normal to much above normal. In the Allegheny River Basin flows range from near normal to much below normal with continuing decreasing flow.

Groundwater

In PA, about 27 of the 69 real-time drought-monitoring wells saw fluctuations as a result of the magnitude 5.8 (Mw) earthquake that occurred on August 23 beneath the town of Mineral, Virginia. Most water-level changes were less than 0.20 ft. USGS will be assessing the hydrographs to determine whether the shifts appear to be permanent and if so, the records for some of the wells may be appropriately adjusted if the shifts, though small, are significant for drought determinations.

Water Suppliers

There is no change from last week.

Forecast

The forecast for the next week shows above normal precipitation percentages for most of the Commonwealth with the exception of the northwest and southeast corners. The forecast indicates between 2 to 5 inches in a band from the southwest corner up through the northeast

corner. The forecast for the week of September 6 through 14 indicates trace amounts of precipitation across the state.

Summary

Since the August 5 drought watch/warning declaration, the 90-day precipitation departures have been eliminated and conditions have improved for the counties currently under the drought watch declaration in the southeast (Berks, Bucks, Chester, Dauphin, Delaware, Lancaster, Lebanon, Montgomery, Philadelphia, and Schuylkill). A recommendation to lift the drought watch for the 10 southeastern counties as well as two counties in the northeast, Sullivan and Wyoming counties, will be made prior to the September 1 Drought Task Force meeting.

The remaining portions of the state currently under a drought watch or warning declaration have not seen improvement due to the continued lack of meaningful precipitation. A recommendation to keep the drought declarations for those areas will be made. More details will be provided prior to the September 1 Drought Task Force meeting.

September 06, 2011 Drought Report

Precipitation

This past week has seen greater than normal precipitation extending from Mercer County south and eastward to Schuylkill County with lesser amounts in the Upper Tier of PA and little to no precipitation in the lower Delaware Valley. Despite the significant rainfall events over the past several weeks, the 90-day precipitation deficit indicators remain in “watch” or “warning” for the northwestern area of the state (Elk, Cameron, McKean, Potter, and Tioga).

Surface Water

A review of the US Geological Survey (USGS) County monitoring gages indicates that the 30-day average streamflow values reflect the rainfall that has fallen over the past several weeks. Bedford and Fulton, the counties that are still in drought “watch”, continue to show improvement as their 30-day average flows continue to increase.

The snapshot of instantaneous streamflows indicates above normal flows across the Susquehanna and Delaware River Basins where flows range from above normal to much above normal. In the northwest portion of the Allegheny River Basin, flows range from normal to above normal.

Groundwater

The 30-day moving average Groundwater indicators have not changed except for Huntingdon County, which has moved from “normal” into “watch”. While the Juniata County groundwater 30-day moving average value continues to decline and remains in “emergency”, the observation well is being examined by the USGS for possible impact by the recent earthquake on August 23.

Palmer Drought Severity Index

The drought indicator for Region 8, which includes 5 counties (Bedford, Blair, Cambria, Fulton, and Huntingdon) is now in “watch” status. All other regions are normal.

Forecast

The short term forecast indicates heavy rain and significant flooding to the area through late in the week. Drier conditions are forecast for time period between September 14 through 22.

Summary

DEP lifted drought watch declarations for 40 counties and reclassified 4 counties to drought watch status on September 2 following a PA Drought Task Force meeting. Recent rainfall has returned most stream flows, groundwater levels and soil moisture levels to normal in the eastern and several southern portions of the state.

The 40 counties for which the drought watch was lifted are Allegheny, Armstrong, Beaver, Bedford, Berks, Blair, Bradford, Bucks, Butler, Cambria, Centre, Chester, Clarion, Clearfield, Clinton, Crawford, Dauphin, Delaware, Erie, Forest, Fulton, Huntingdon, Indiana, Jefferson,

Juniata, Lancaster, Lawrence, Lebanon, Lycoming, Mercer, Mifflin, Montgomery, Perry, Philadelphia, Schuylkill, Sullivan, Tioga, Venango, Warren, and Wyoming. The counties changed from drought warning to drought watch are Cameron, Elk, McKean, and Potter.

September 15, 2011 Drought Report

Precipitation

Due to the significant rainfall events (Hurricane Irene and Tropical Storm Lee) over the past 3 weeks, all 90-day precipitation departure indicators have returned to “normal”. The actual 90-day precipitation deficits were approaching 5 inches at the beginning of August for some portions of the state, following the dry back-to-back months of June and July. Hurricane Irene hit the eastern side of the state on 8/27-8/28/11 depositing up to 8 inches of rain in some areas, while Tropical Storm Lee pummeled the middle of the state on 9/6-9/8/11 dropping up to 10 inches of rain and causing recordbreaking flooding along the Susquehanna River and many of its’ tributaries.

Because the 2 storms bypassed the Ohio basin, small 90-day precipitation deficits remain in 8 northwest/northcentral counties (Cameron, Crawford, Elk, Erie, Forest, McKean, Potter and Tioga) although the indicators are in “normal”.

Surface Water

A review of the (US Geological Survey) USGS County monitoring gages indicates that the 30-day average streamflow values reflect the rainfall that has fallen over the past several weeks and all counties have returned to “normal” except Erie.

The snapshot of instantaneous streamflows indicates above normal flows across all major river basins.

Groundwater

The 30-day moving average groundwater indicators have all returned to “normal” except McKean and Potter.

Palmer Drought Severity Index

All regions are normal.

Forecast

The short term forecast indicates 1-2 inches of rain over the next 7 days and trace amounts up to about a ½ inch over the next 2 weeks.

Public Water Supply Agencies

It is anticipated that all of the Public Water Supply Agencies currently on voluntary or mandatory water use restrictions will eliminate the restrictions as their supplies are replenished and return to normal.

Summary

Conditions began to improve for the eastern side of the state by the end of August and with the most recent rainfall amounts, almost all drought monitoring indicators have returned to normal. A recommendation is made to lift the drought watch declaration for the remaining 4 counties (Elk, Cameron, McKean and Potter) and return them to normal status.

October 13, 2011 Drought Report

Based on the Pennsylvania Drought Task Force's recommendations, the Department of Environmental Protection today lifted a drought watch declaration in four northern counties. The action means all 67 counties are now at normal status.

On Sept. 2, DEP lifted drought declarations for 40 counties in the eastern and southern parts of the state. At that time, four northern counties had not recovered sufficiently and were kept in drought watch because the 90-day precipitation deficits were as great as four inches.

"The substantial rain we have received over the past two months, particularly for eastern and central Pennsylvania, has made significant impact on returning all drought monitoring indicators to normal," Secretary Mike Krancer said. "This has also erased the 90-day precipitation deficits in the northwest and north-central areas of the state."

Effective today, drought watch designations were lifted in Cameron, Elk, McKean and Potter counties. The Pennsylvania Drought Task Force used reports and forecasts from the National Weather Service in conjunction with DEP's drought monitoring program to make the recommendation.