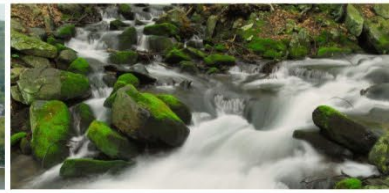




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DEPARTMENT OF ENVIRONMENTAL PROTECTION



Bureau of Safe Drinking Water

Drought Management in Pennsylvania

PWS TAC Board
February 14, 2024

Susan K. Weaver, P.E.
Commonwealth Drought Coordinator

Josh Shapiro, Governor

Jessica Shirley, Interim Acting Secretary

Drought Management in Pennsylvania

- Coordination efforts between agencies
- Three-Stage process
- Statewide network to monitor hydrologic conditions
- Drought Emergency Regulations –
25 Pa. Code Chapters 118–120
- Focus on Public Water Systems, specifically
Community Water Systems

Drought Management in Pennsylvania

- To assure sufficient water is available to serve essential health, safety and economic needs

Coordination Efforts

- PEMA responsible to manage Commonwealth's water resources during a drought emergency with coordination and support from DEP
- Commonwealth Drought Coordinator
- Drought Task Force

Drought Task Force

- Statewide internal group, agencies whose operations/programs may be impacted by drought or drought management operations.
- Will meet when hydrologic conditions indicate the beginning of a drought period and throughout the drought period.
- Presentations from the NWS and DEP, discussion amongst Task Force members regarding appropriate actions necessary to address drought conditions.

Drought Status/Declarations

● Watch

- DEP Secretary issues press release
- Voluntary 5% reduction

● Warning

- DEP Secretary issues press release
- Voluntary 10-15% reduction

● Emergency

- Governor declares proclamation
- Nonessential use bans
- Local water rationing plans

Drought Watch Declaration – June 15, 2023

DEP Newsroom



COMMONWEALTH OF PENNSYLVANIA

Dept. of Environmental Protection

Commonwealth News Bureau

Room 308, Main Capitol Building

Harrisburg PA., 17120

FOR IMMEDIATE RELEASE

06/15/2023

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DEP Declares Statewide Drought Watch, Recommends Voluntary Water Conservation

Harrisburg, PA – Following a meeting of the Commonwealth Drought Task Force this week, the Pennsylvania Department of Environmental Protection (DEP) has declared a statewide drought watch. While not required, residents and businesses are encouraged to voluntarily conserve water by reducing their nonessential water use.

“Although this week has brought some welcome rain to much of the state, it’s not enough to make up for the lack of rainfall this spring, following a winter that brought little snowfall in many areas,” said **DEP Acting Secretary Rich Negrin**. “As a result, we’re seeing lowered stream flows, dropping groundwater levels, and persistent precipitation deficits. Water conservation, always a good practice, is especially helpful now as it’ll lessen potential future impacts on water supplies if rainfall continues to be scant this summer.”

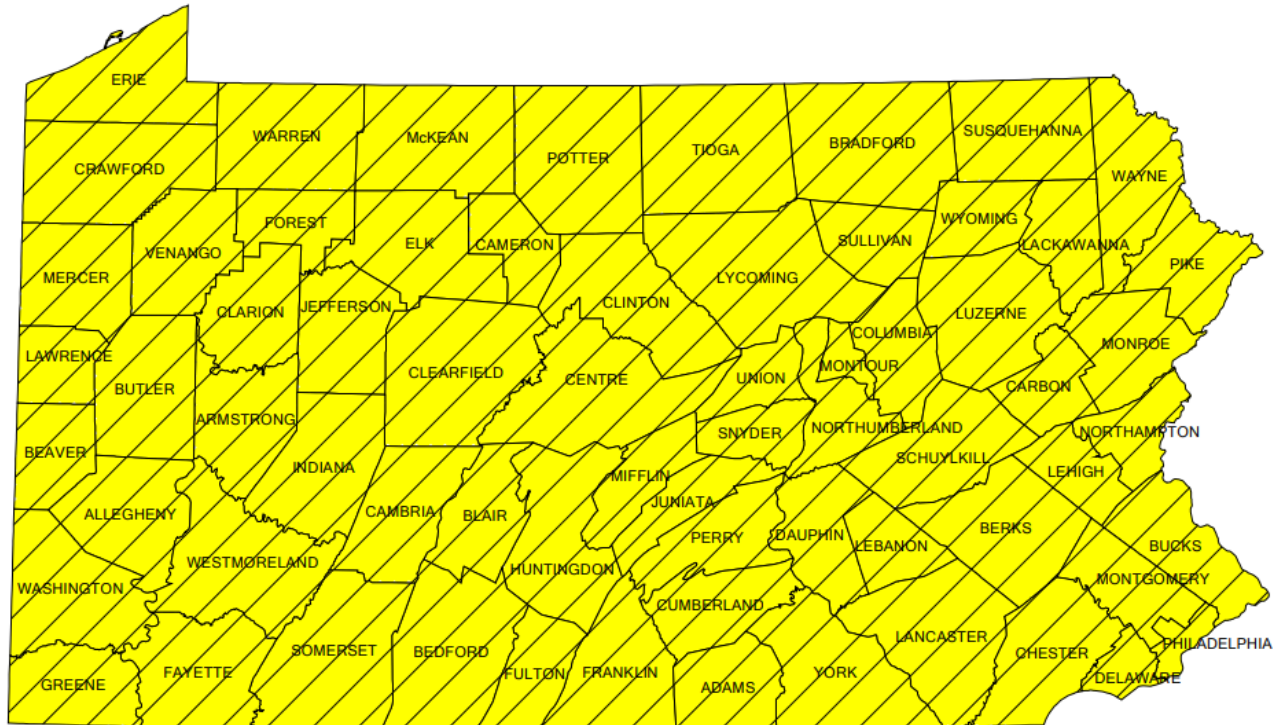
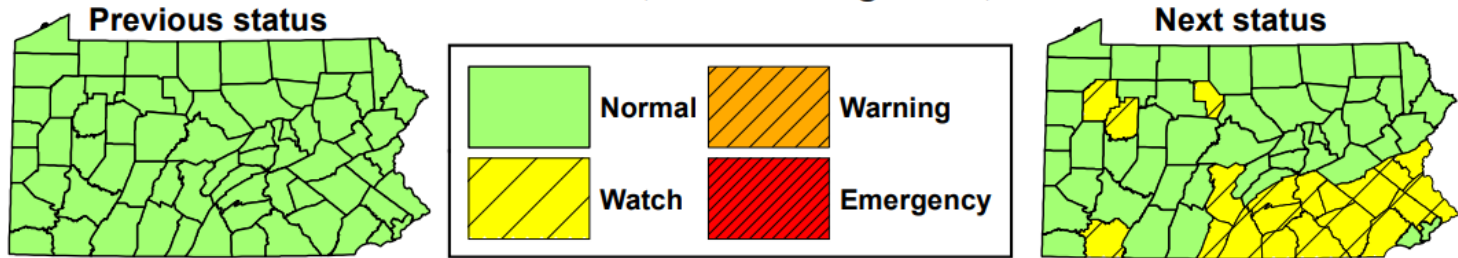
Residents and businesses are encouraged to reduce their nonessential water use by 5–10 percent. For example, at home there are many simple ways to use less water:

- Run the dishwasher and washing machine less often, and only with full loads.
- Don’t let the faucet run while brushing your teeth or shaving. Take shorter showers. For example, consider not washing your hair daily.
- Water your lawn only if necessary. Avoid watering on windy and hot days. Watering grass lightly and efficiently will encourage healthier, deeper grass roots. Overwatering is wasteful, encourages fungal growth and disease, and results in shallow, compacted root systems that are more susceptible to drought.
- When mowing your lawn, set the blades 2-3 inches high. Longer grass shades the soil, improving moisture retention.
- Water your garden less often. If necessary, water only in the cooler evening or morning hours, and direct the water to the ground at the base of the plant. Focus on new plantings, which have shallow root systems. Older plants may endure dry conditions longer.
- Skip the car washing. If you have to wash your car, it’s better environmentally to go to a drive-through car wash that recycles the water.

Drought Watch Declaration – June 15, 2023

Declared Drought Status

Effective: June 15, 2023 to August 24, 2023

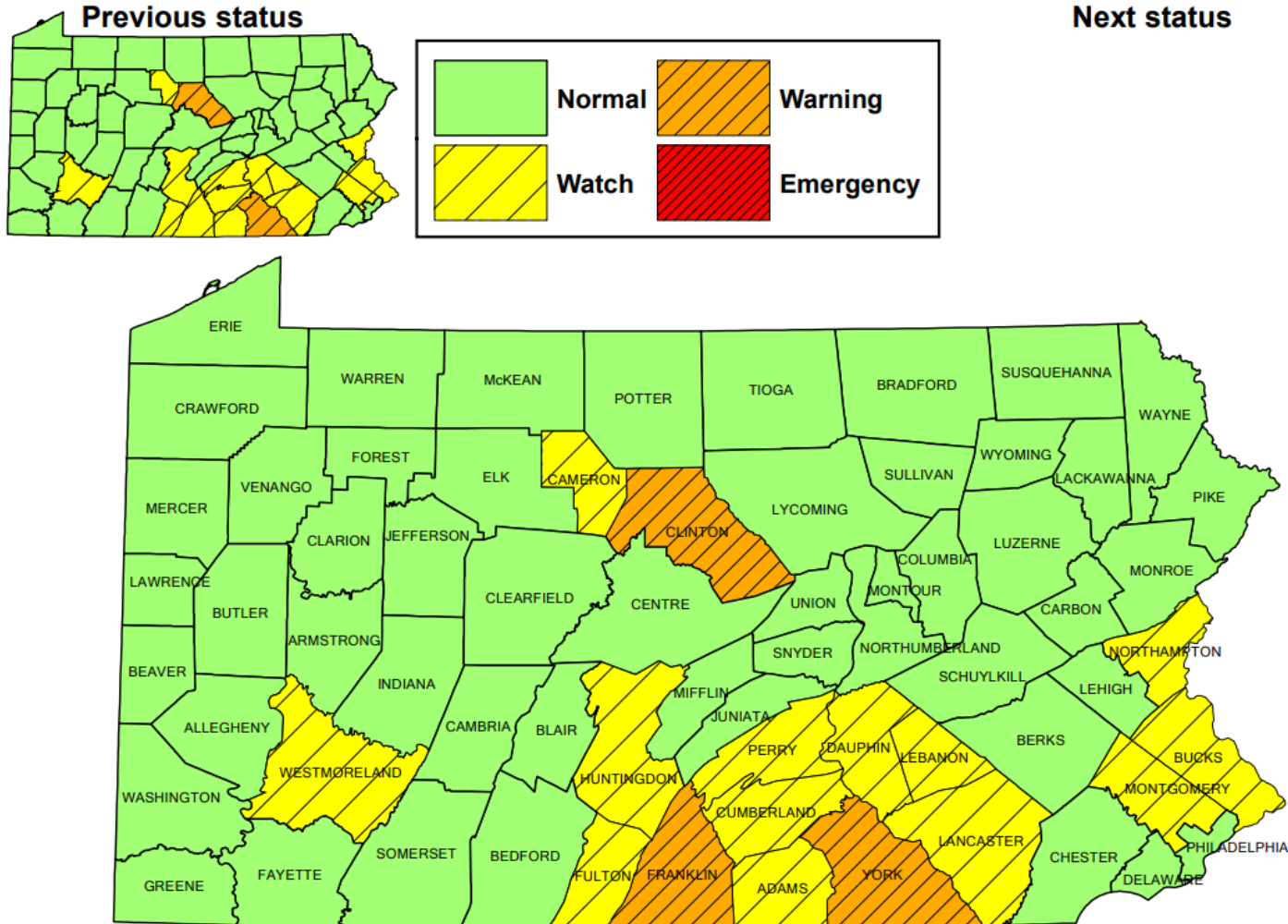


Source of information: Press Release - 6/15/2023

Drought Watch Declaration – December 22, 2023

Declared Drought Status

Effective: December 22, 2023 to Present



Source of information: Press Release - 12/22/2023

Hydrologic Conditions and Water Suppliers

- **Four hydrologic indicators**
 - **Precipitation** – 90-, 120-...365-day deficits
 - **Stream Flow** – moving 30-day average
 - **Ground Water** – moving 30-day average
 - **Soil Moisture** – Palmer Index
- **Status of Community Water Systems**
 - **Voluntary or Mandatory Restrictions**

Hydrologic Data Collection

- Stream flows and groundwater levels are collected through a cooperative program with United States Geologic Survey (USGS)
- National Weather Service (NWS) provides daily updates of precipitation data and weekly updates on the Palmer Drought-Severity Index

Data Available on Websites

- USGS Drought Monitoring Website
[Pennsylvania Drought Condition Monitoring \(usgs.gov\)](#)
- PA DEP Drought Monitoring Website
[Drought Information Links \(pa.gov\)](#)

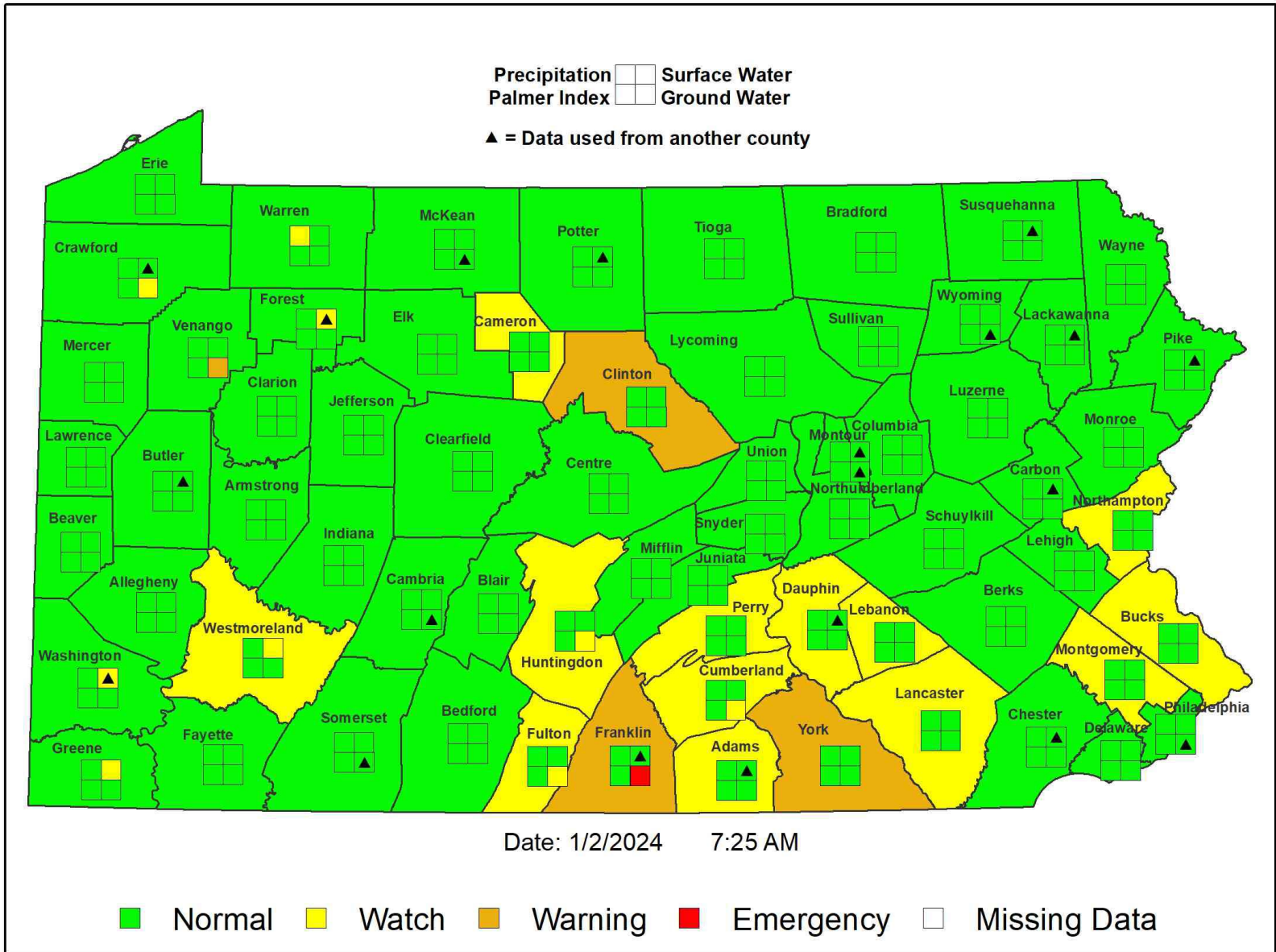
Drought Monitoring Network

- County-based network, coverage of entire state
- Real-time display of stream flow and groundwater levels
- Degree of drought severity based upon long-term records
- Designed to provide timely identification of developing drought conditions

Drought Monitoring – Pennsylvania-specific

- Four stages: **normal**, **watch**, **warning** and **emergency**
- Applied to historical data for each drought monitoring parameter
- Current condition is compared to the historical data in order to assess the monitoring data/parameters relative to drought conditions

Composite Indicator Map (Precipitation Based on 90-day Departure)



Precipitation Deficits

- Earliest indicators of a potential drought are precipitation deficits
- Precipitation is monitored in terms of departures (surpluses or deficits) from 30-year normal monthly precipitation quantities
- Droughts result from accumulations of precipitation deficits over periods of three or more months

Stream Flows (Surface Water)

- Stream flows typically lag one to two months behind precipitation in signaling a drought
- USGS stream-gage records are used to compute the 30-day moving average daily flow, which serves as a stream flow indicator
- Stream flow indicators compared with statistical flow values known as “percentiles” derived from historic stream-gage records

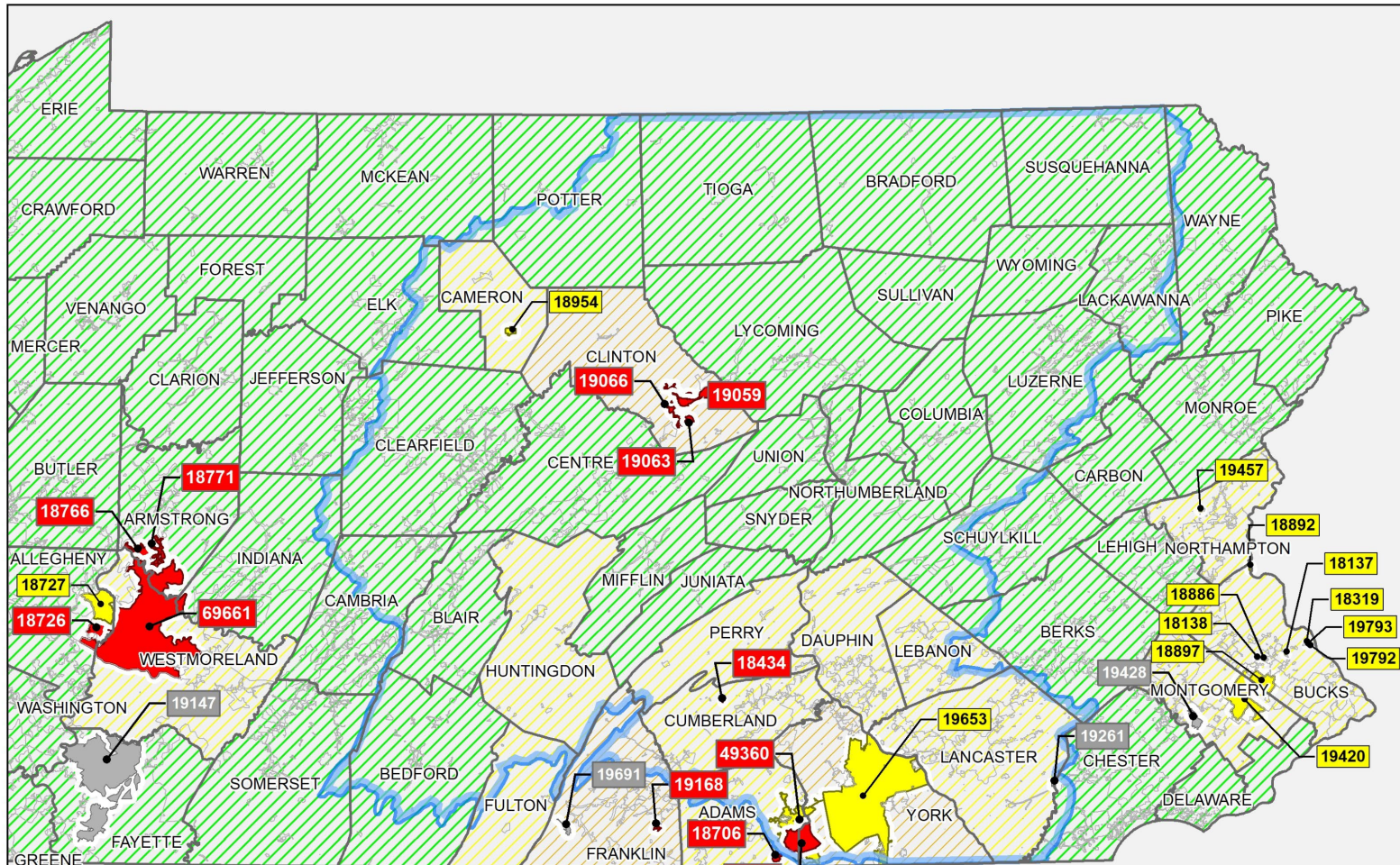
Groundwater Levels

- Groundwater typically lags two to three months behind precipitation, largely because of the storage effect.
- Groundwater levels are used to indicate drought status in a manner similar to stream flows.
- Every day, groundwater levels in USGS observation wells are used to compute an average level of the last 30 days preceding that day (called the “30-day moving average groundwater level”), that serves as a ground water indicator.

Palmer Drought Severity Index

- The Palmer Drought Severity Index is a value computed as a function of both meteorological and hydrologic data to measure soil moisture conditions.
- It is compiled weekly by the Climate Prediction Center of the U.S. National Weather Service for each of their climatological regions.
- The computed value ranges from +6.0 to -6.0.

Community Water System Restrictions

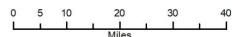


Nonessential Water Use Restriction Status

Service Area Boundary*

- No Restrictions (1,635)
- Mandatory (12)
- Voluntary (13)
- Restriction Ended (4)

Public Water Suppliers on Voluntary or Mandatory Conservation Measures

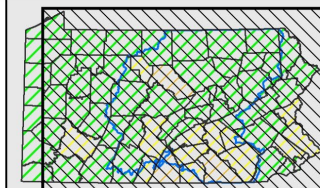


Notes:

- 1) *as of 1/2/2024, counts of service areas are of features within the map extent.
- 2) PWS service areas and county boundaries with color-code declared drought status are shown on the map.

Susquehanna River Basin Boundary

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Drought Management Response Levels

- **Watch** - public notice of possible development of a drought
 - DEP requests meeting of Drought Task Force, issues press release
 - DEP notifies public water suppliers
 - 5% voluntary reductions in water use
- **Warning** - impending drought emergency conditions
 - DEP issues press release and notifies public water suppliers
 - 10-15% voluntary reductions in water use
- **Emergency** - water shortages exist that threaten health, safety or welfare
 - Governor declares emergency
 - Drought Emergency Regulations Effective
 - Mandatory nonessential water use restrictions
 - Variances
 - Rationing

Drought Emergency Statutes and Regulations

- [35 Pa.C.S. § 7102](#) – Defines “natural disaster”, including drought
- [35 Pa.C.S. § 7301](#) – Authorizes the Governor to declare a disaster emergency
- [4 Pa. Code Chapter 118](#) Reductions of Major Water Use in a Commonwealth Drought Emergency Area
 - § 118.4 Contingency plans – public water supply agencies
 - § 118.5 Contingency plans – self supplied industrial and commercial water uses
- [4 Pa. Code Chapter 119](#) Prohibition of Nonessential Water Uses in a Commonwealth Drought Emergency Area
 - § 119.4 Prohibition of nonessential water uses
 - § 119.5 Penalties and enforcement
- [4 Pa. Code Chapter 120](#) Local Water Rationing Plans

4 Pa. Code Chapter 118

Reductions of Major Water Use in a Commonwealth Basin Drought Emergency Area

Purpose: provide for the preparation and implementation of contingency plans by Public Water Supply Agencies to reduce water use in response to a state of drought or water shortage emergency.

Objective: conserve water, balance demand with limited available supplies and assure that sufficient water is available to serve essential health, safety and economic needs.

Public Water Supply Agencies

- **Governor's Drought Emergency Declaration**
 - Prepare and submit a Drought Contingency Plan
 - May use previously approved plan if not more than 3 years old prior to Governor's proclamation
 - Implement approved DCP

4 Pa. Code Chapter 119

Prohibition of Nonessential Water Uses in a Commonwealth Drought Emergency Area

- Watering grass, irrigating trees and landscaped areas
- Irrigating athletic fields and golf courses without an emergency operations plan
- Washing paved surfaces
- Using water for ornamental use
- Washing mobile equipment (e.g. cars)
- Serving water in restaurants except when requested
- Filling or topping off pools
- Using water from fire hydrants except to fight fires

(each has exceptions and there is a variance process)

4 Pa. Code Chapter 120

Local Water Rationing Plans

Purpose: establish procedures for reviewing and approving plans by Public Water Supply Agencies or political subdivisions in response to a state of drought or water shortage emergency

Objective: balance the daily demands placed upon a public water supply agency with the requirement to maintain a sufficient water supply to meet the long-term needs that may be placed upon the public water supply agency during a period of water shortage or drought emergency

25 Pa. Code Chapter 109

109.707(a) Emergency Response Plans

A community water supplier shall develop a plan for the provision of safe and adequate drinking water under emergency circumstances. The emergency response plan must generally conform to the guidelines contained in the Department's *Public Water Supply Manual*, as applicable.

25 Pa. Code Chapter 109

109.708(a) System Service

..... a community water supplier shall submit a certification ...verifying completion of the uninterrupted system service plan (USSP) which was completed ... to ensure operation of the sources, treatment and pumping facilities necessary to ensure that safe and potable water is continuously supplied to users in accordance with subsection (b) or (c), or both.

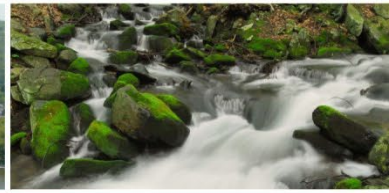
A continuous supply of safe and potable water is one that meets all applicable MCLs, MRDLs and treatment techniques specified in § 109.202 (relating to State MCLs, MRDLs and treatment technique requirements) and is sufficient to maintain system pressure specified in § 109.607 (relating to pressures) throughout the distribution system.

Summary

- Statewide network to monitor hydrologic conditions and water suppliers
- Three-Stage Response Level
- Coordination efforts between agencies
- Conditions were very dry in 2023 summer, recent rain has improved conditions
- Public water suppliers are to ensure that safe and potable water is continuously supplied to users



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