



# New Hampshire Drought Management Team (DMT)

July 9, 2020

## Announcements;

- If WebEx crashes, this meeting will be rescheduled for next week.
- Note that this meeting is being recorded for later posting.
- Please hold questions till the end to ensure we have time to cover all material.





## **New Hampshire Drought Management Team (DMT)**

### **Agenda**

**July 9, 2020 – 2:30 PM**

**WebEx**



- I. Introductions of Presenters and Agenda - Tom O'Donovan, Director, Water Division, NHDES and Chair, DMT**
- II. Key aspects of the 2016 drought - Tom O'Donovan and DES Water Division**
- III. Overview of Drought Management in New Hampshire – Brandon Kernen, NHDES**
- IV. Current Drought and Forecast for New Hampshire, Mary Stampone, UNH – State Climatologist**
- V. Drought Impacts;**
  - a. Rivers and Streams, Ted Diers, Administrator, Watershed Bureau, Water Division, NHDES**
  - b. Reservoirs, Jim Gallagher, Administrator, Dam Bureau, Water Division, NHDES**
  - c. Groundwater – Shane Csiki, NHGS**
  - d. Drinking Water, Brandon Kernen, Assistant Administrator, DWGB, Water Division, NHDES**
  - e. Agriculture, TBD**
  - f. Other as appropriate**
- VI. Ongoing actions – Tom O'Donovan and DES Water Division**
- VII. Drought Management Team Discussion (input from all Drought Management Team participants)**
  - a. Recommended responses to any specific impacts**
  - b. Recommended public messaging**
  - c. Next steps**
  - d. Next session; proposed for 6 August 2020**



## II. Key aspects of the 2016 drought

Lake levels and Stream flow, Reservoir Management

Failing water supply wells (private & public)

Public water supply shortages

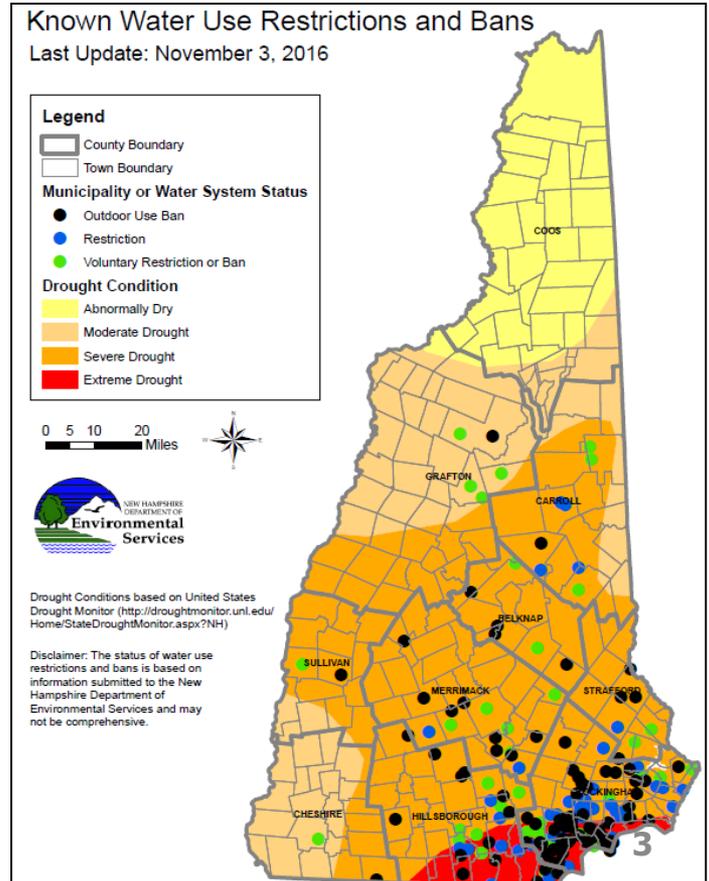
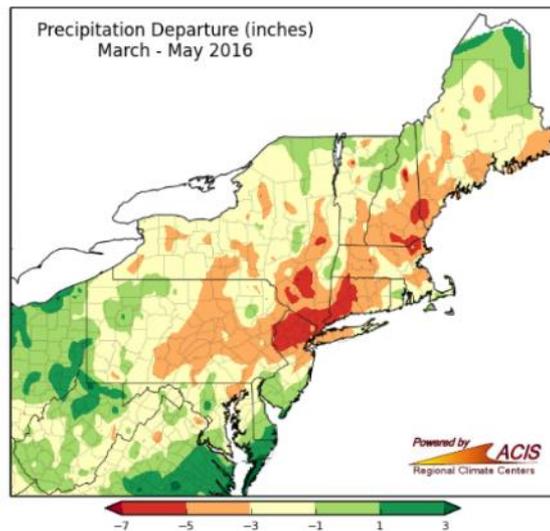
Restricting outdoor water use

Impacts on business, industry

Roadside withdrawals by tanker trucks &  
Well refill by Tanker Trucks

Fire danger

Crop loss





## NH Drought Management Plan

(<https://www.des.nh.gov/organization/divisions/water/dam/drought/documents/drought-management-plan-for-web.pdf>)

- **Technical criteria updated by UNH in 2014**
- **Drought Management Plan Updated in 2015 – Stakeholder review in 2012**
- **Developed as an annex for the State’s Emergency Operation Plan**
- **Coordinated by NHDES**
- **Administered by a Drought Management Team (DMT)**
  - **More than 30 entities**
  - **Government/Water Supply/Business/Recreation**



## **NH Drought Management Team (DMT)**

- 1) Assembles after a sustained moderate drought is occurring**
- 2) Assesses data and makes drought classification determination for each management area**
- 3) Determines and provides public relations messaging**
- 4) Makes recommendations to each other, State agencies and Governor**
- 5) Assists in capturing economic damage and other impacts**
- 6) Forum for information sharing and collaboration**



## Legal Mechanisms to Address Drought

- Large groundwater withdrawal permits – reduce withdrawals based on phase of drought
- Emergency authority to approve new large groundwater withdrawals
- Municipal authority to restrict or ban residential lawn watering during drought (applies to public and *residential wells*)
- Authority to require dam owners to release water
- Authority to require a public water system to extend service to address a nearby emergency

# IV. Current Drought and Forecast for New Hampshire

**U.S. Drought Monitor**  
**New Hampshire**  
 June 30 - July 8, 2020

Intensity:

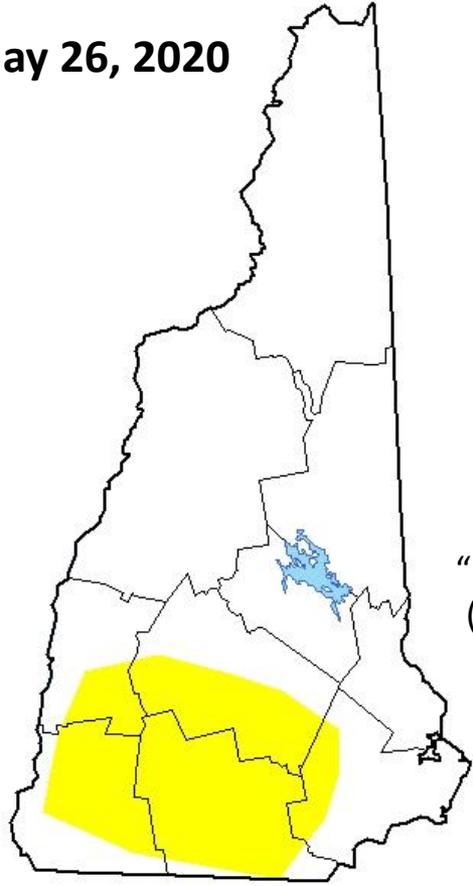
- None
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought



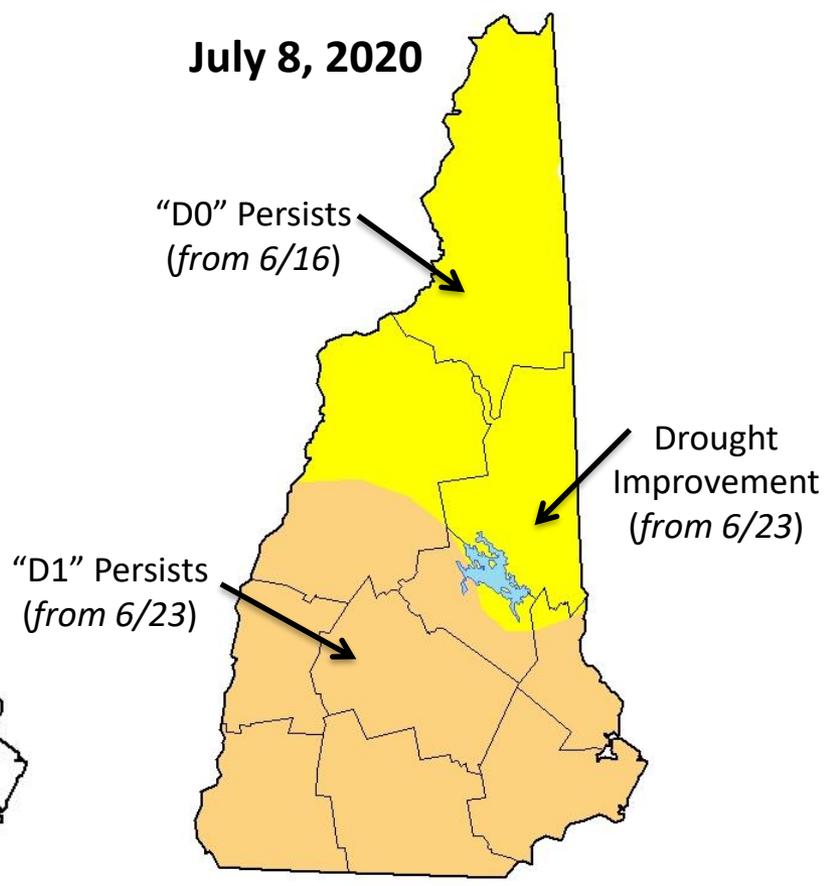



<http://droughtmonitor.unl.edu/>

May 26, 2020



July 8, 2020

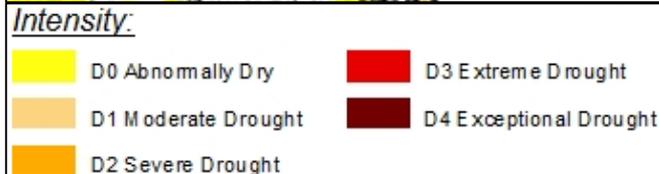
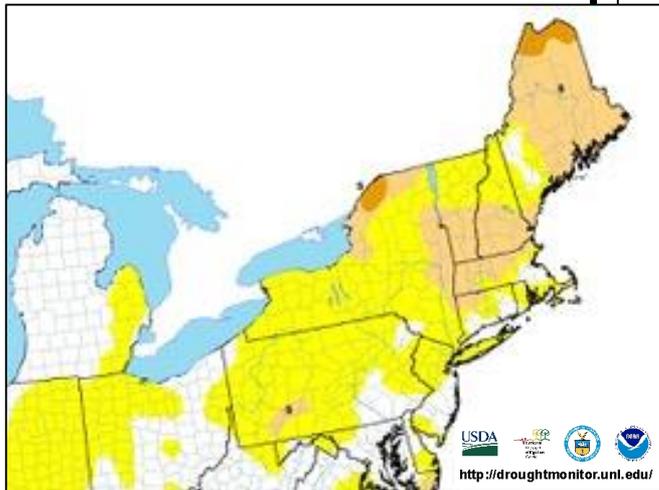


Week	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
2020-07-07	0.04	99.96	56.45	0.00	0.00	0.00
2020-06-23	1.45	98.55	72.32	0.00	0.00	0.00
2020-06-16	1.45	98.55	0.00	0.00	0.00	0.00
2020-05-26	78.01	21.99	0.00	0.00	0.00	0.00



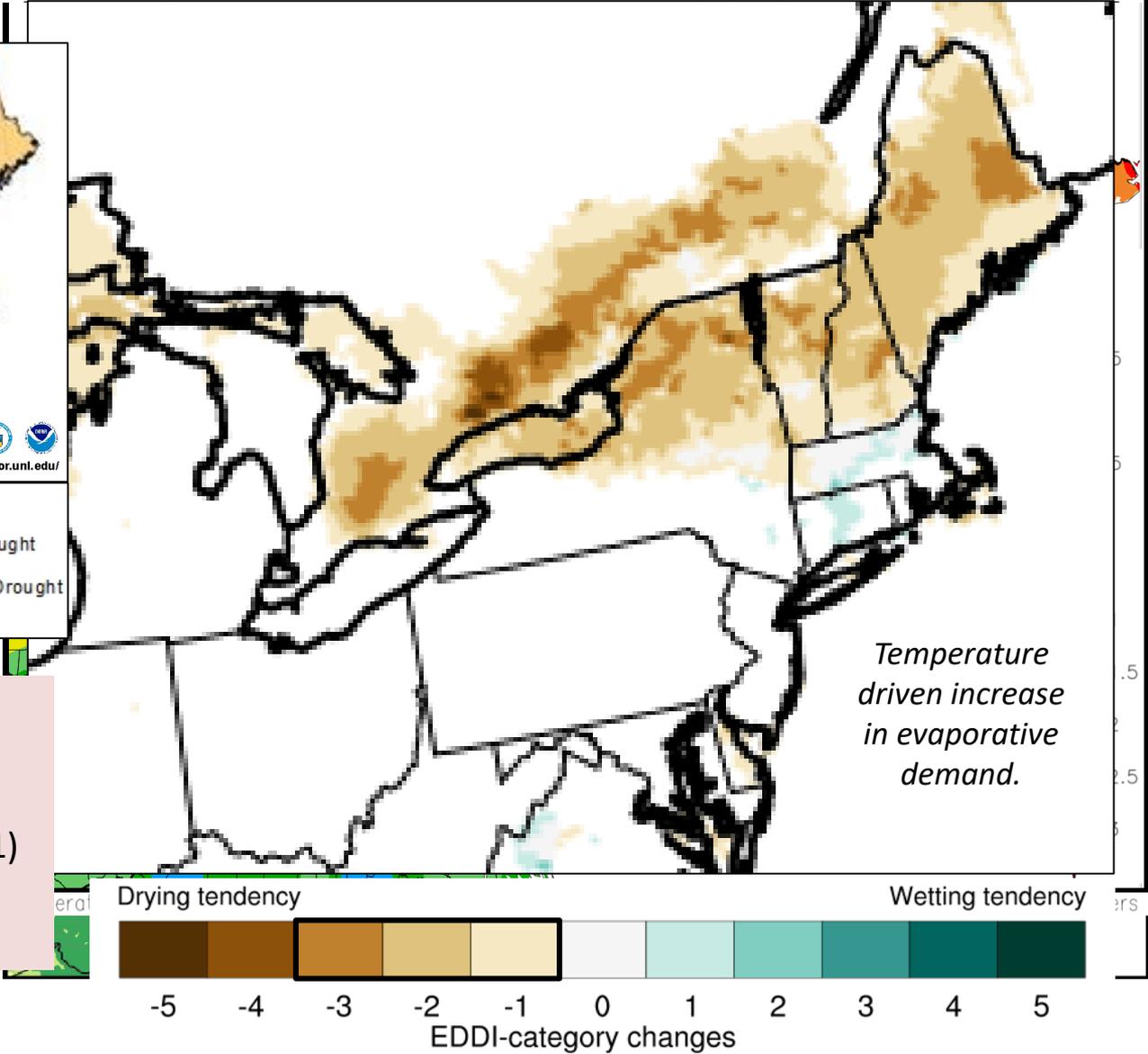
# IV. Current Drought and Forecast for New Hampshire

3-month EDDI: Changes during the 30 days ending on July 3, 2020



Drought onset:

- 3-month precipitation < 75% of normal
- 3-month SPI & PSDI < 0.0 (D1)
- 3-month EDDI > 80% percentile (D1)



# IV. Current Drought and Forecast for New Hampshire

**U.S. Drought Monitor**  
**New Hampshire**  
 June 30 - July 8, 2020

Intensity:

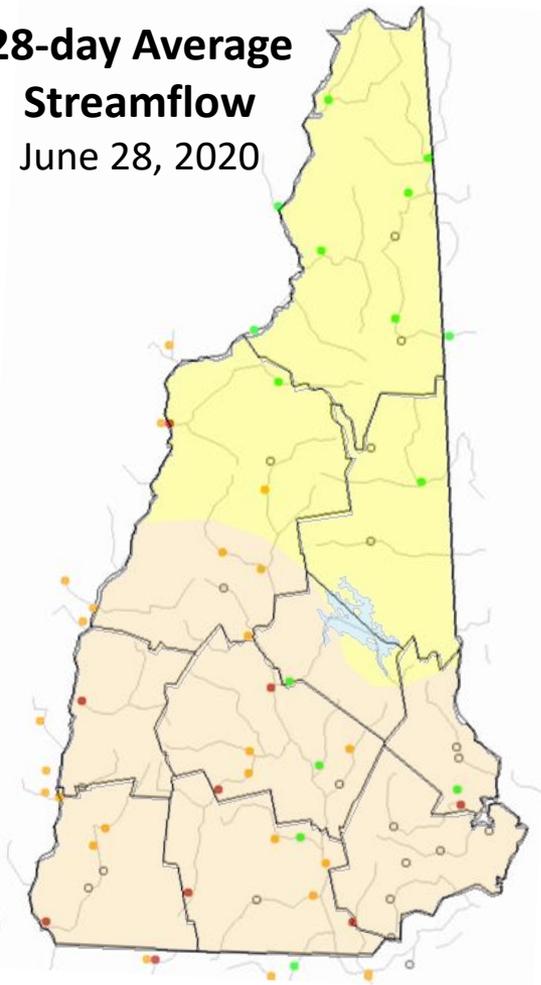
- None
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought






<http://droughtmonitor.unl.edu/>

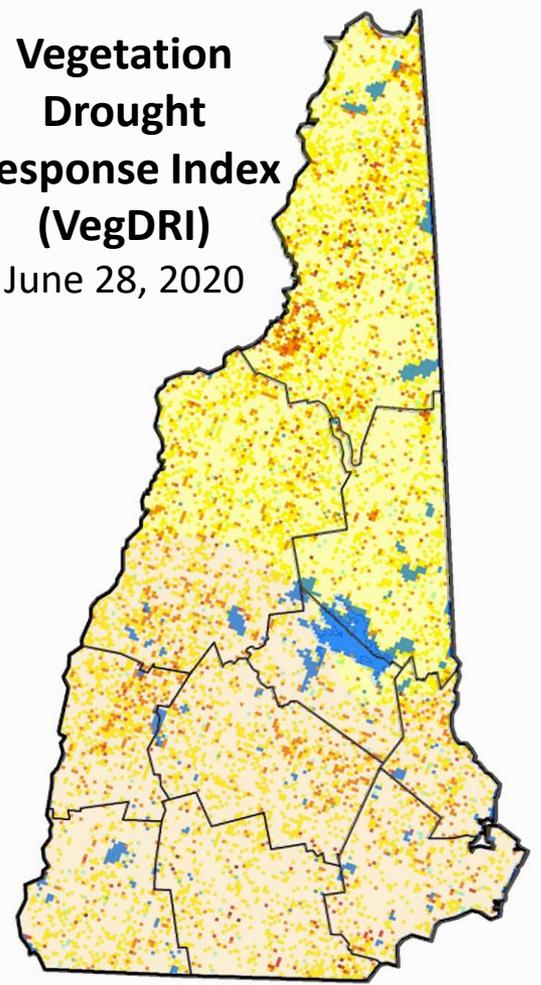
**28-day Average Streamflow**  
 June 28, 2020



**USGS** Explanation - Percentile classes

<span style="color: red;">●</span>	<span style="color: orange;">●</span>	<span style="color: green;">●</span>	<span style="color: cyan;">●</span>	<span style="color: blue;">●</span>	<span style="color: black;">●</span>	<span style="color: grey;">○</span>
Low	<10 Much below normal	10-24 Below normal	25-75 Normal	76-90 Above normal	>90 Much above normal	High
						Not-ranked

**Vegetation Drought Response Index (VegDRI)**  
 June 28, 2020



**Vegetation Condition**



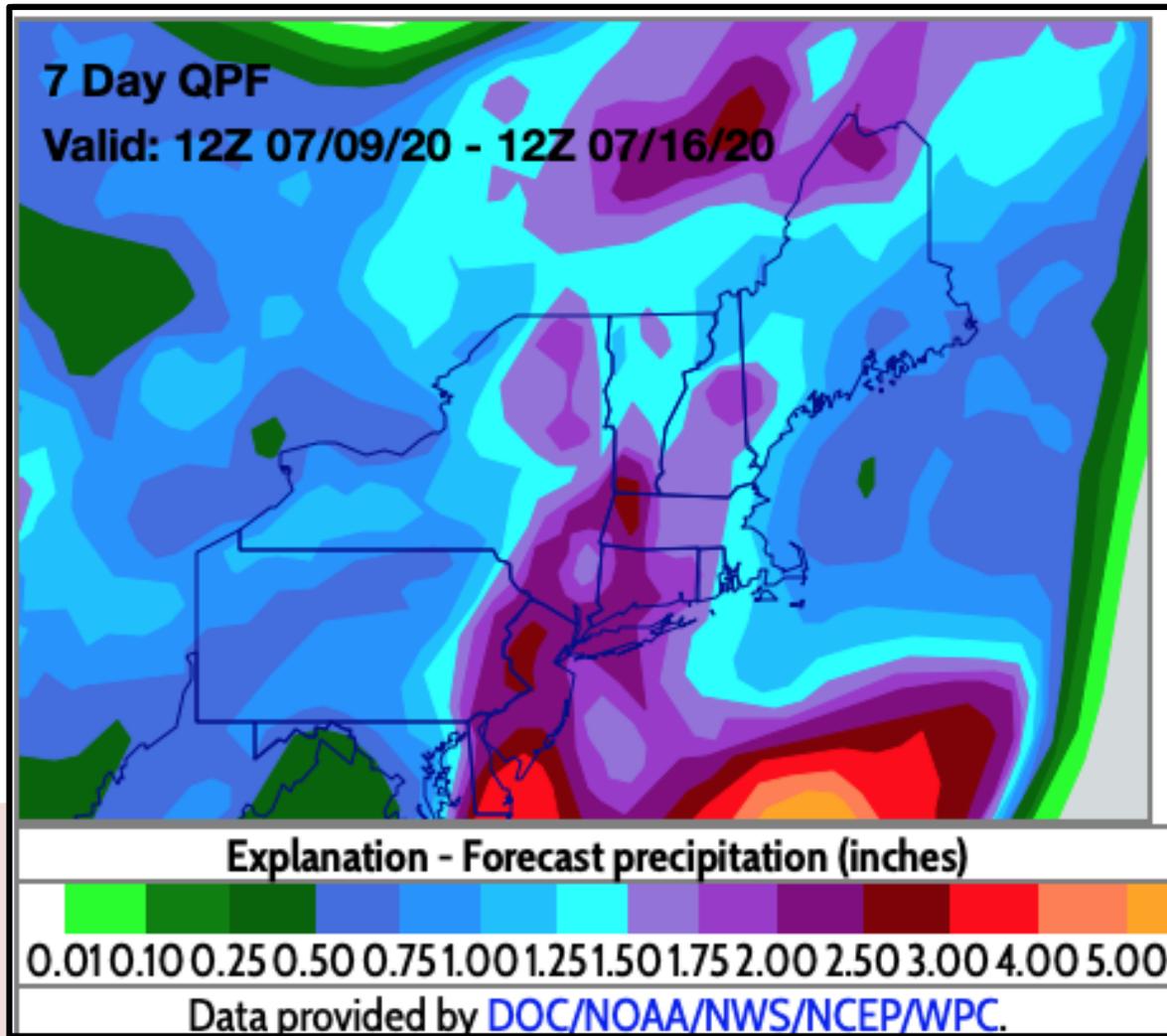
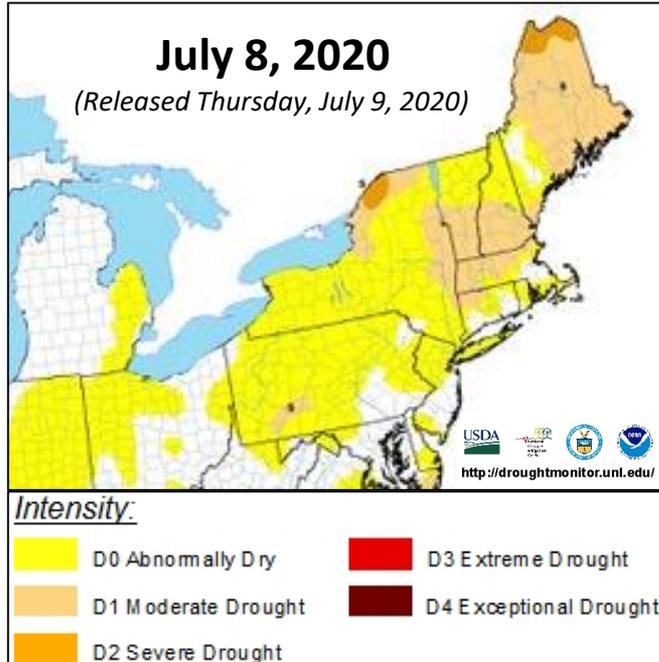



- Extreme Drought
- Severe Drought
- Moderate Drought
- Pre-drought stress
- Near Normal
- Unusually Moist
- Very Moist
- Extremely Moist

Streamflow, groundwater, & vegetation conditions moderate to severe by end of June.



# IV. Current Drought and Forecast for New Hampshire

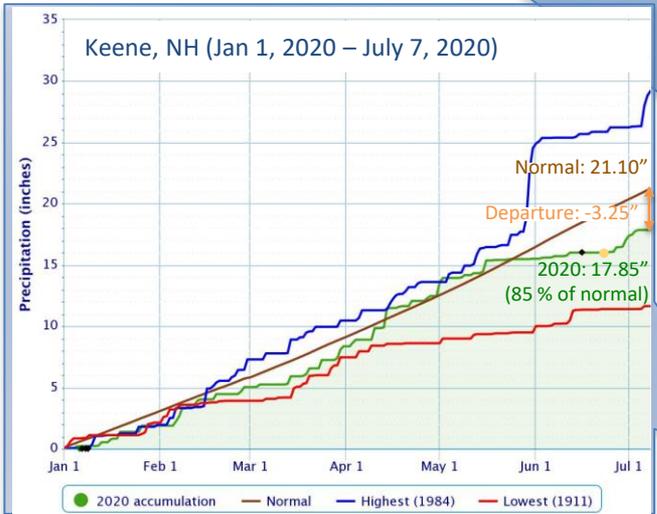
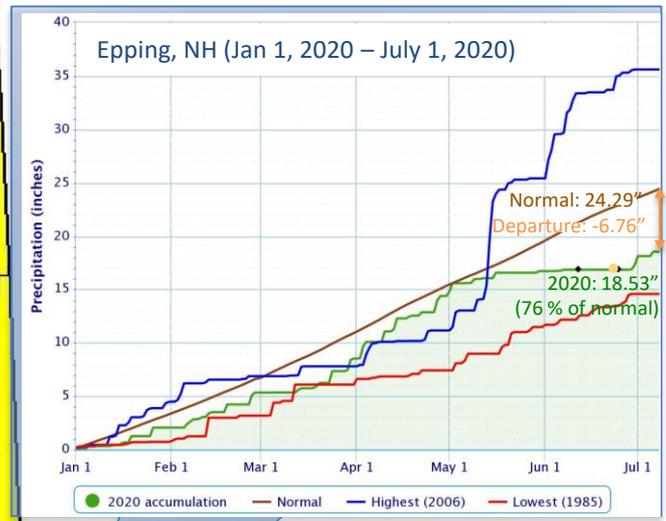
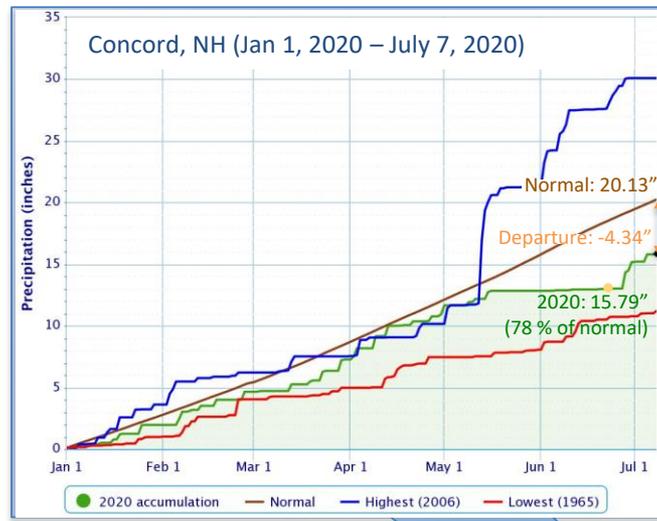
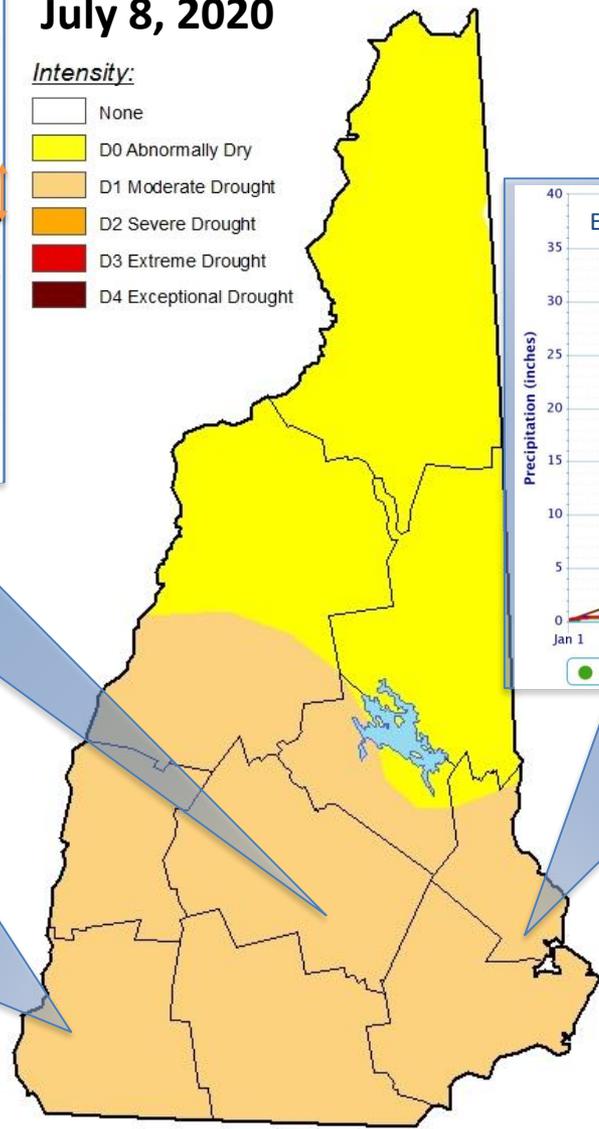
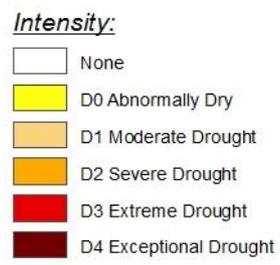


## July improvements:

- 7-day precipitation above normal
- 7-day streamflow near normal
- Groundwater status near normal
- 7-day rain forecast for 1.5" – 2.5"

# IV. Current Drought and Forecast for New Hampshire

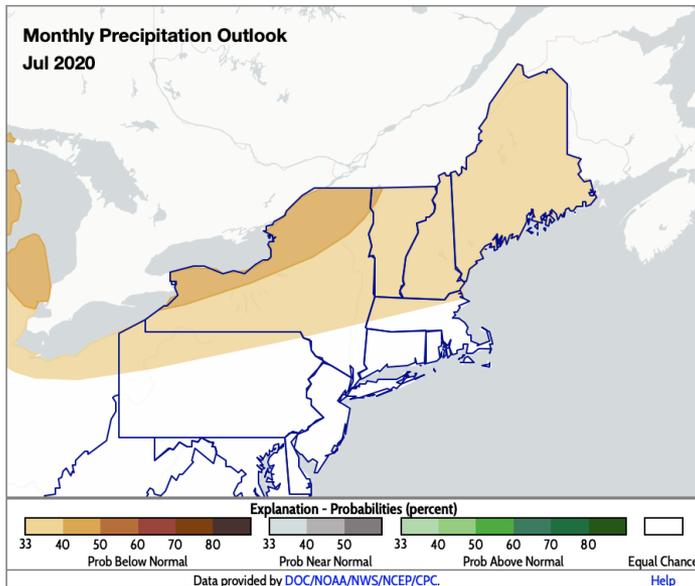
**July 8, 2020**



Year-to-date precipitation deficits across southern NH 75%-100% of normal.

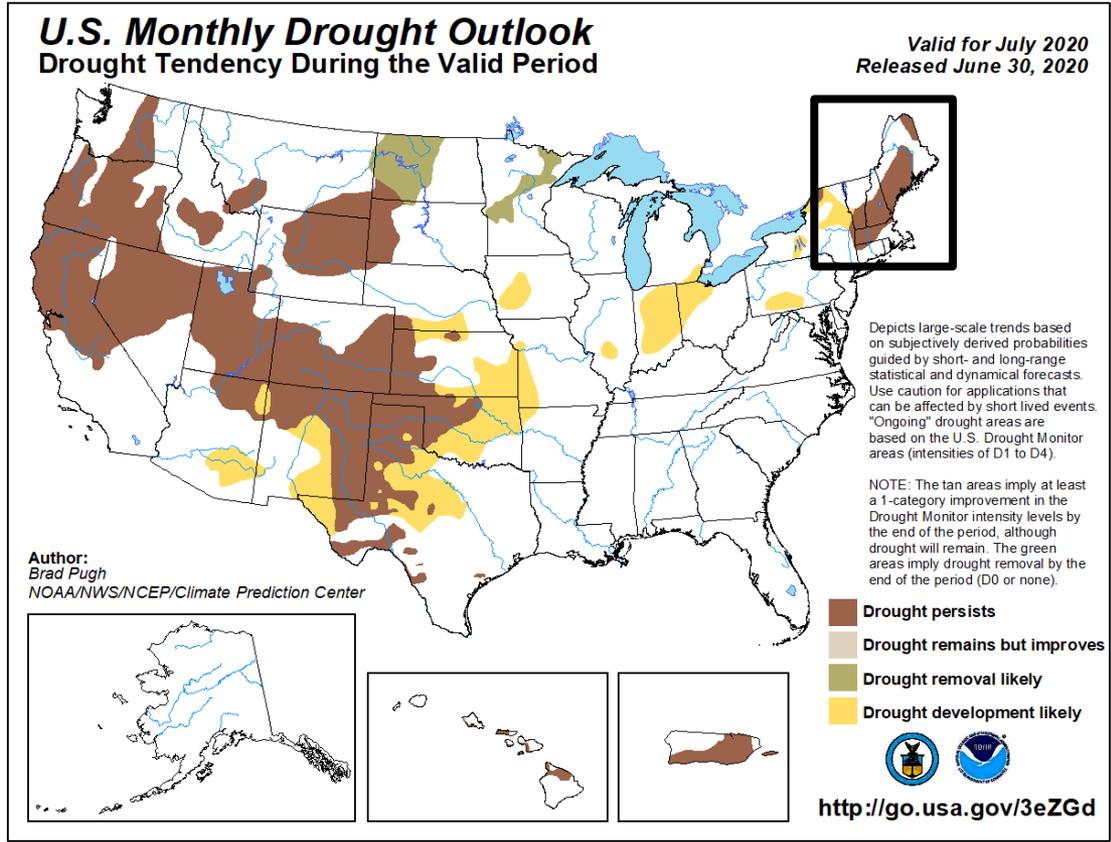
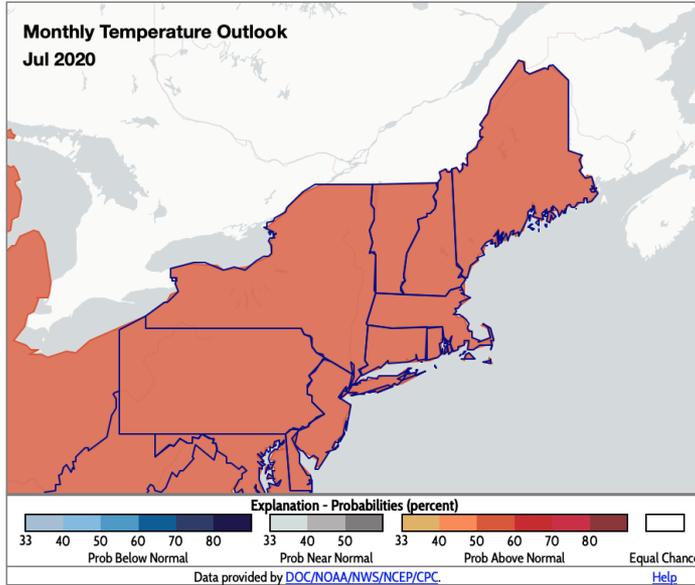


# IV. Current Drought and Forecast for New Hampshire



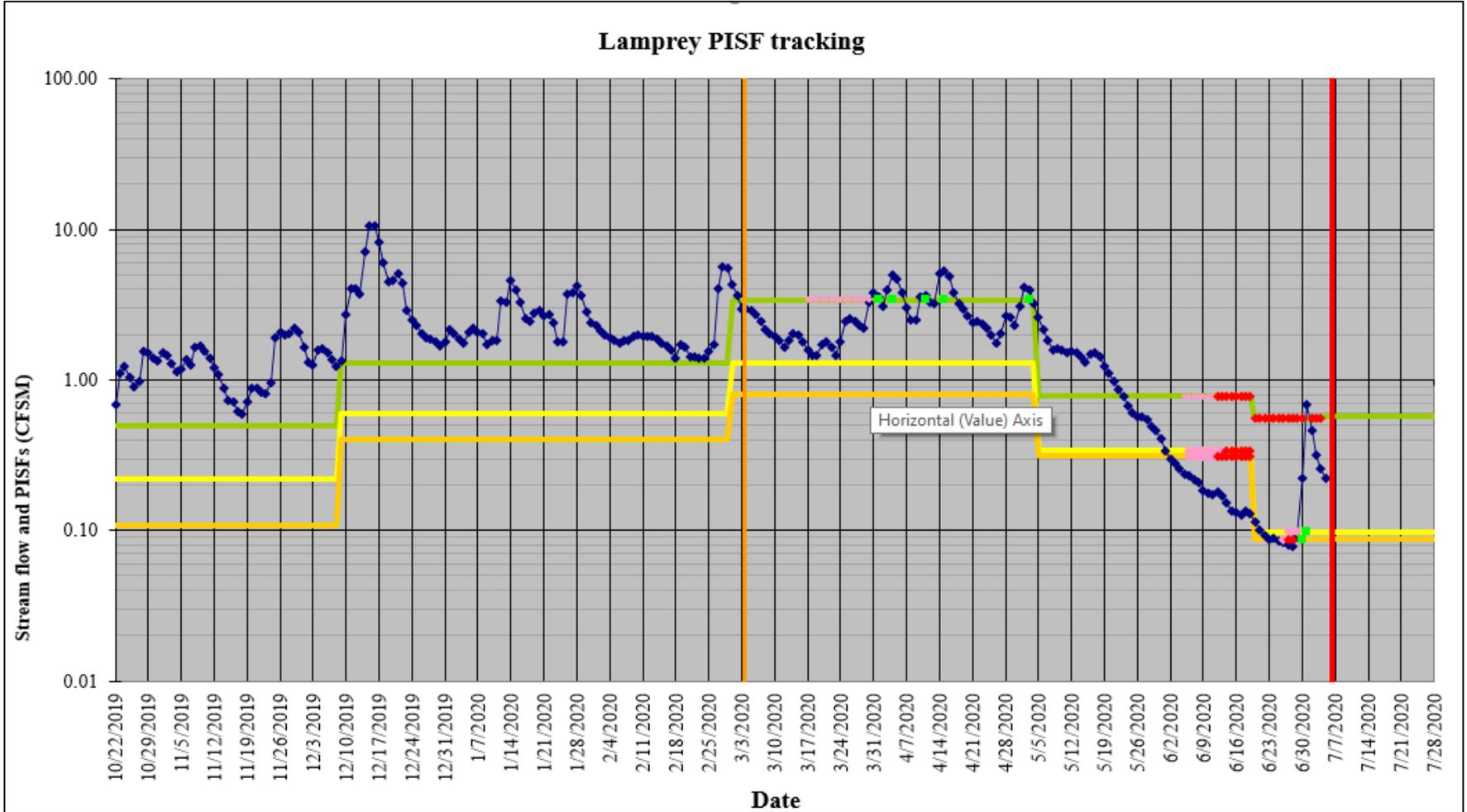
Drought likely to persist through July:

- Chance for below normal precipitation
- Above normal temperature likely





# V. Drought Impacts, Rivers and Streams, Ted Diers, Administrator, Watershed Bureau, Water Division, NHDES

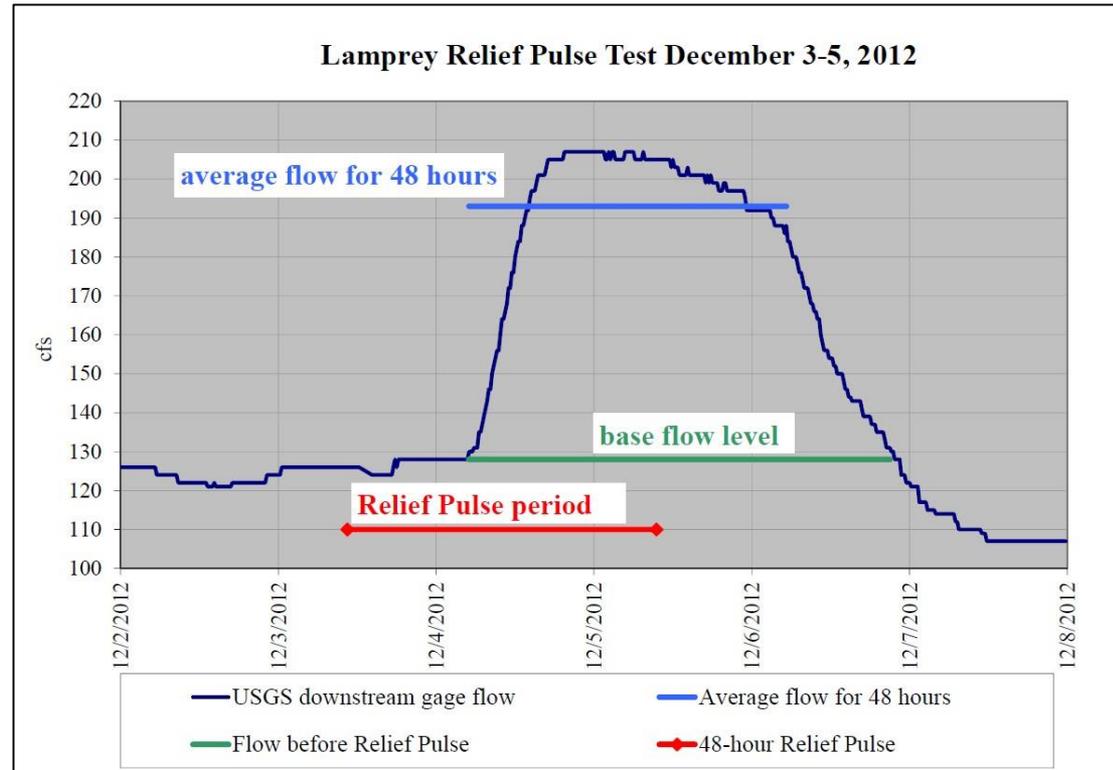




## V. Drought Impacts, Rivers and Streams, Ted Diers, Administrator, Watershed Bureau, Water Division, NHDES

# Instream Flow Program

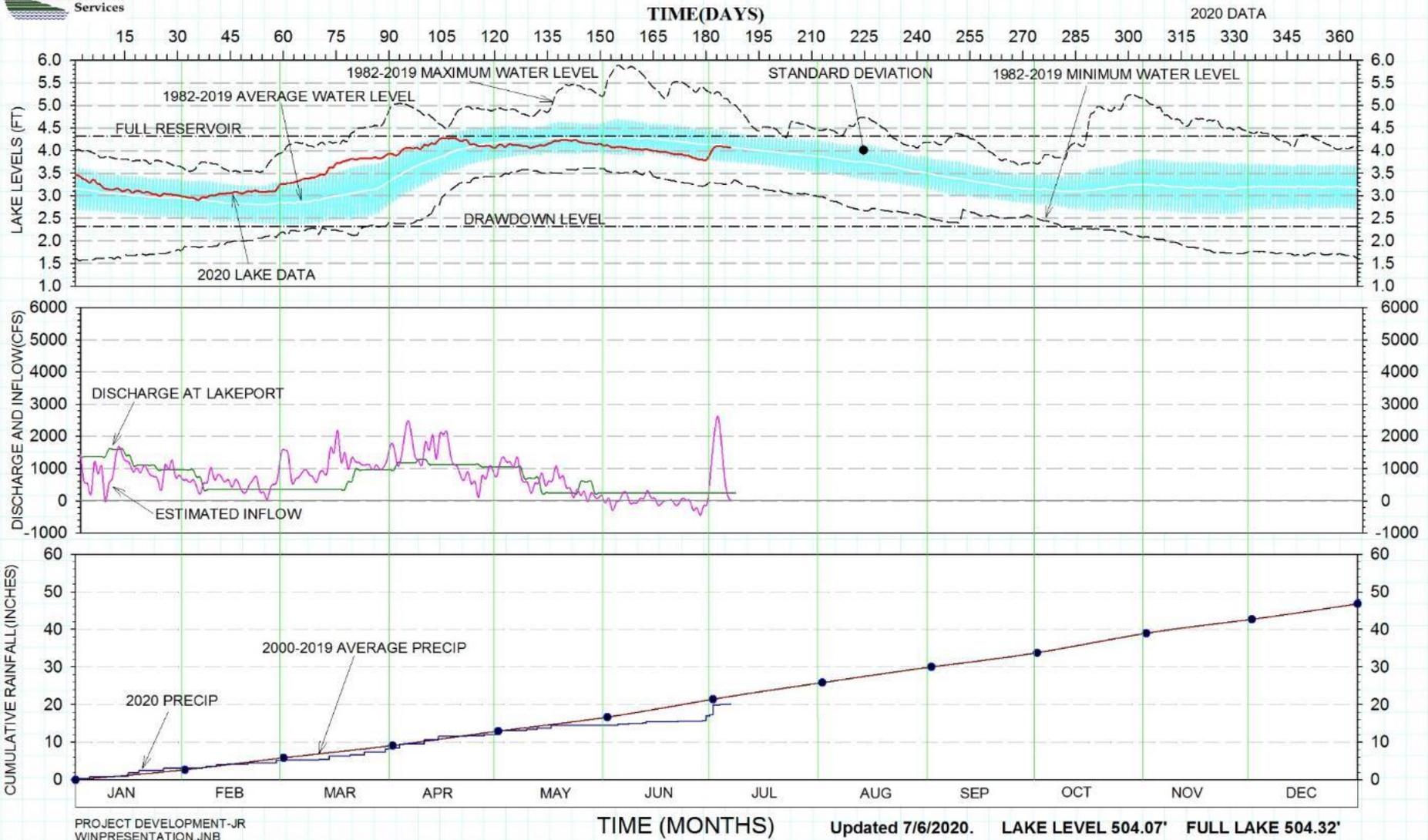
- Applies in Lamprey and Souhegan Watersheds
- Conservation practices
- Watering restrictions
- Move from surface to groundwater sources
- Relief pulses in Lamprey watershed



# V. b. Drought Impacts, Reservoirs. Jim Gallagher, Administrator, Dams Bureau, Water Division, NHDES



## LAKE WINNIPESAUKEE LAKE LEVEL DATA





# V. c. Drought Impacts, Groundwater, Shane Csiki, NH Geologic Survey, NHDES

## Groundwater Level Data in New Hampshire (Percentile Classes) June 2020



### Legend

#### NHGS Wells

- Low (<10%), Overburden
- Below Normal (10-24%), Overburden
- Normal (25-75%), Overburden
- Not Analyzed, Overburden
- ◆ Below Normal (10-24%), Bedrock
- ◆ Normal (25-75%), Bedrock
- ◇ Not Analyzed, Bedrock

#### USGS Wells

- Below Normal (10-24%)
- Normal (25-75%)

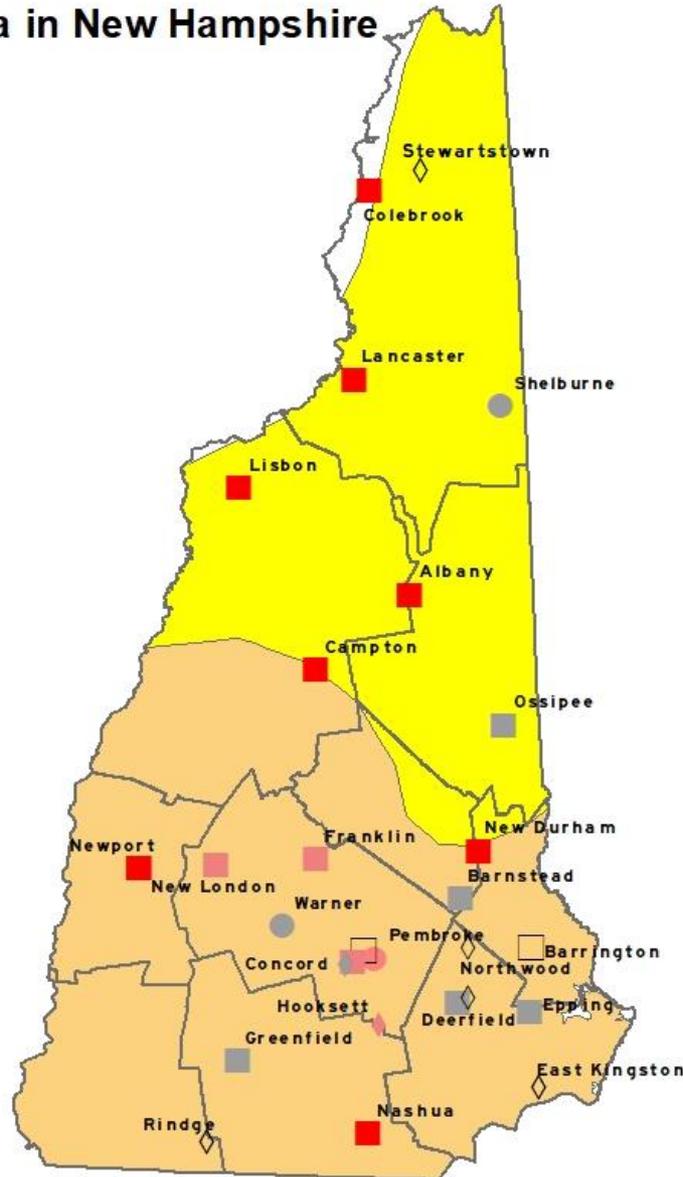
#### US Drought Monitor

- D0 (Abnormally Dry)
- D1 (Moderate Drought)

#### County Boundaries



\* - Not analyzed - Well has <10 years of record to generate percentile statistics



20  
Miles



# V. d. Drought Impacts, Drinking Water, B. Kernan, Asst Administrator, DWGB, Water Division, NHDES

## Known Water Use Restrictions

Last Updated: June 25, 2020

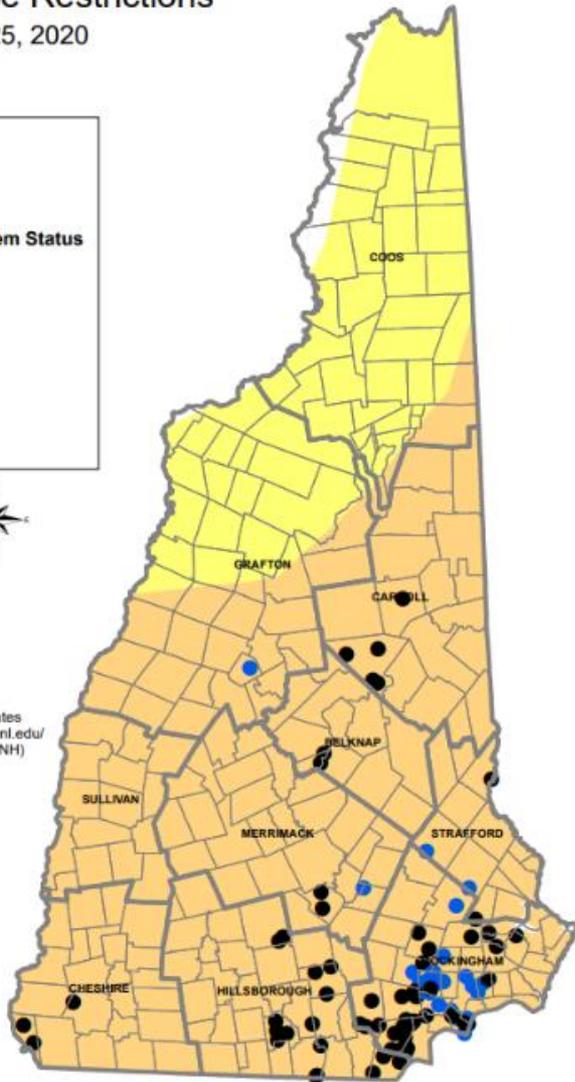
**Legend**

- County Boundary
- Town Boundary
- Municipality or Water System Status**
- Mandatory Restriction
- Voluntary Restriction
- Drought Condition**
- Abnormally Dry
- Moderate Drought
- Severe Drought
- Extreme Drought



Drought Conditions based on United States Drought Monitor (<http://droughtmonitor.unl.edu/CurrentMap/StateDroughtMonitor.aspx?NH>)

Disclaimer: The status of water use restrictions is based on information submitted to the New Hampshire Department of Environmental Services and may not be comprehensive.



## Known Water Use Restrictions

Last Updated: July 9, 2020

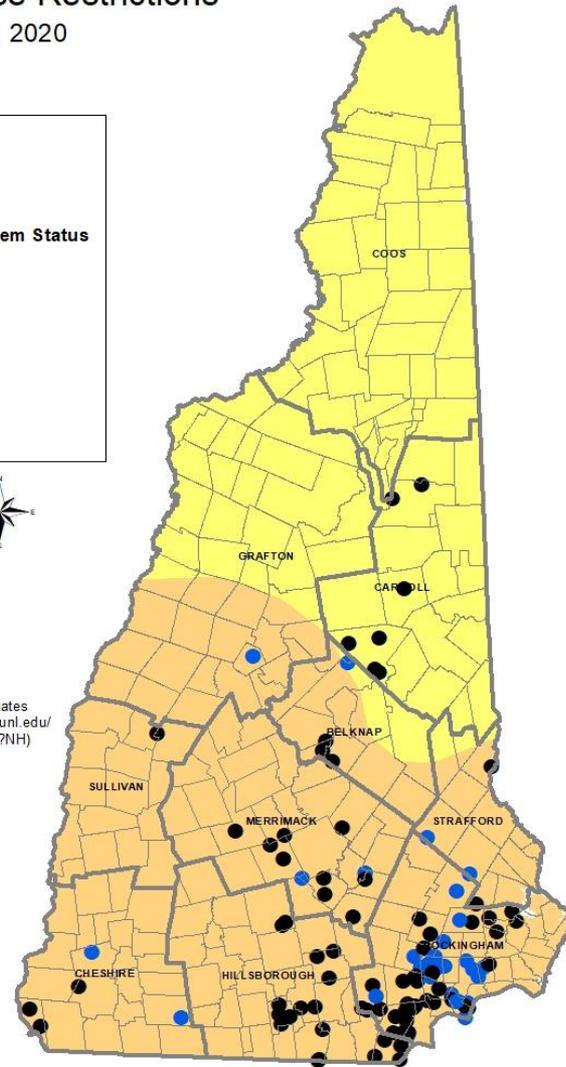
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V. d. Drought Impacts, Drinking Water, B. Kernen, Asst  
Administrator, DWGB, Water Division, NHDES

# Drought Assistance for Residential Wells

- Answer calls from residential well owners
- Conservation tips
- Well failure symptoms
- Well improvement options
- Well Information
- Licensed well drillers and pump installers
- Financial Assistance – USDA loan/grant for very low income households
- Coordinate with local officials to establish emergency water sources
  - NHDES conducts testing if the source is not a public water system
- Guidelines & prohibitions on “filling” dry wells with bulk water
- Compile data on drought impacted areas, remedies sought and financial burden

V. d. Drought Impacts, Drinking Water, B. Kernen, Asst  
Administrator, DWGB, Water Division, NHDES



## Private Well Financial Assistance Program for Very-Low Income Households

The United States Department of Agriculture Rural Development can provide loans to very-low-income homeowners to repair, improve or modernize their homes, as well as to remove health and

**\$20,000 loan at 1% interest**

**\$7,500 grant for those over 62**

Funds may be used for:

- New Well Construction
- Well Pump Installation
- May Not Be Used for Hydro-fracturing

Eligibility based on family income being <50% of area's median income



V. d. Drought Impacts, Drinking Water, B. Kernen, Asst  
Administrator, DWGB, Water Division, NHDES

# Drought Assistance for Municipalities and Public Water Systems

- Drought condition summary
- Water use restriction examples
- Tools available for implementing voluntary and mandatory restrictions
- Promote relationship between towns and community water systems.
- Weekly emails to community water systems updating them on the status of drought and providing recommendations and resources.

A A A  an official NEW HAMPSHIRE government website

## New Hampshire

Department of Agriculture,  
Markets & Food

Thursday, July 9, 2020 For Farmers | For Licensees | For Consumers | Subject List

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### Weekly Market Bulletin

**The Division of Agricultural Development compiles market information and publishes the Weekly Market Bulletin for the agriculture community.**

The Bulletin is the department's "publication of record" and includes appropriate industry notices, announcements, seasonal information and market survey data. The Bulletin is a subscription publication and is available by mail, or secure internet. For subscription information call (603) 271-2505.

#### How to Subscribe to the Weekly Market Bulletin

You may choose to access the Weekly Market Bulletin by either logging into a secure website or receiving it by US mail. Subscription prices are \$22 for the online version and \$28 for US mail.

You may sign up for the Weekly Market Bulletin by calling our office at (603) 271-2505 and providing a credit card for payment. You may also visit our office at 25 Capitol Street, Concord, or mail in your request with a check. Be prepared to provide your address, phone number, and if you are requesting an online subscription, an email address.

Use this handy form to provide your [subscription information](#). 

When it's time to renew your subscription, you will receive a postcard reminder in the mail. You must then call, visit or email the NH Department of Agriculture, Markets & Food at (603) 271-2505 with your request and payment. Per Agr 502.01 (e), the department shall not refund the price, or any part of the price, of a subscription to the Bulletin.

#### Advertising in the Weekly Market Bulletin

Subscribers may advertise farm equipment, livestock and farm supplies in the bulletin for no additional charge. For rules regarding Weekly Market Bulletin advertising ([PART Agr 503](#)), call (603) 271-1324.

**Only current subscribers may place an advertisement in the bulletin!**

When sending in an advertisement, please email them to [marketbulletin@agr.nh.gov](mailto:marketbulletin@agr.nh.gov), or mail them to WMB, NH Dept of Agriculture, Markets & Food, PO Box 2042, Concord, NH 03302. You may also fax your ad to (603) 271-1109. We must have the ad in writing to place it in the Bulletin.

When submitting an advertisement to be included in the bulletin, please make sure to include the following required information:

- Your name
- Subscription Number (online subscribers, please also indicate you are an "online subscriber")
- Subscription Expiration Date (not necessary for online subscriber)
- New Hampshire telephone number (no out of state cell or home phone numbers will be accepted!)



Click on this button to visit our new searchable agritourism website. Find New Hampshire farm locations and more!



## VI. Ongoing Actions - Water Division, NHDES

### Informing and Messaging

### NH Drought Management Team (DMT)

NH Governor's Office  
Ski NH  
NH Department of Natural & Cultural Resources  
NH Water Council  
NH Department of Health and Human Services  
NH Health Officer's Association  
NH Geological Survey  
NH Department of Agriculture, Markets and Food  
NH Department of Environmental Services  
US Army Corps of Engineers  
NH Municipal Association  
NH Public Utilities Commission  
NH Office of Energy and Planning  
City of Portsmouth  
University of New Hampshire  
City of Keene  
National Oceanic and Atmospheric Administration  
NH Fish and Game Department  
US Department of Agriculture  
NH Farm Bureau Federation  
US Geological Survey  
NH Business and Industry Association  
NH Water Works Association  
City of Manchester  
Eversource  
City of Manchester  
Granite State Rural Water Association  
City of Concord  
NH Department of Safety  
NH Housing Finance Authority  
RCAP Solutions, Inc.  
Skillings & Sons Inc.  
NH Golf Course Superintendent Association



### 1. Please follow NH Department of Environmental Services



### 2. Share NHDES drought related posts

### 3. Create your own drought posts and include #nhdrought





## **VII. Drought Management Team Discussion (input from all Drought Management Team participants)**

- a. Recommended responses to any specific impacts**
- b. Recommended public messaging**
- c. Next steps**
- d. Next session; proposed for 6 August 2020**

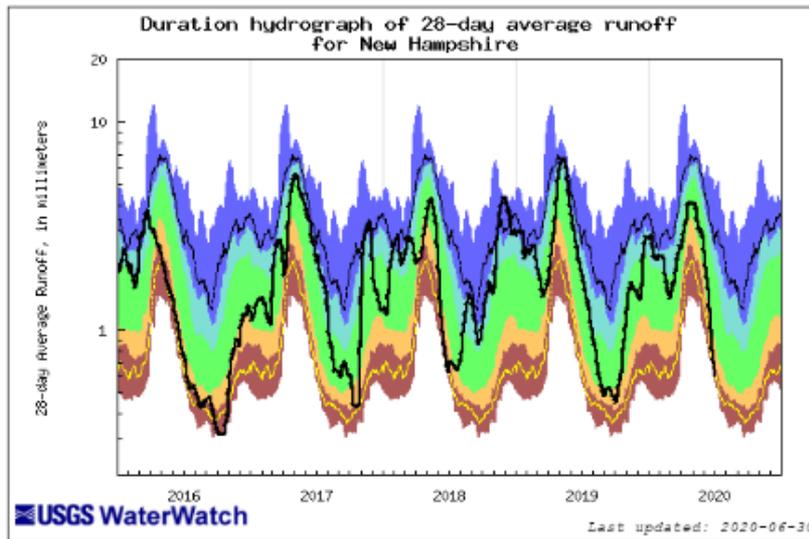


# Backup:

## USGS Area-Based Runoff Duration Hydrograph Builder

State New Hampshire	Water Res. Region	Years 2020	Runoff type: 28-day	No. of years: 5	GO
Draw 5th and 95th percentiles as: Line		Year Type: Calendar Year	Output: Hydrograph		

For some streams, flow statistics may have been computed from mixed regulated and unregulated flows; this can affect depictions of flow conditions.



Explanation - Percentile classes						
----- ----- -----	5	10-24	25-75	76-90	95 ----- -----	Runoff
Much below Normal	Below normal	Normal	Above normal	Much above normal		

### Additional Information

- [USGS daily streamflow data](#)



# Drought Emergency in New Hampshire

## Impact Reporting

- Drought impacts on residential wells can be reported using forms on NHDES' Drought webpage
- Well drillers report deepened or replaced wells to NHDES (90 day reporting deadline)
- Water systems report water emergencies/water use restrictions/bulk water shipments