

# **LAKE LEVEL MANAGEMENT A BALANCING ACT**

## **NH LAKES**

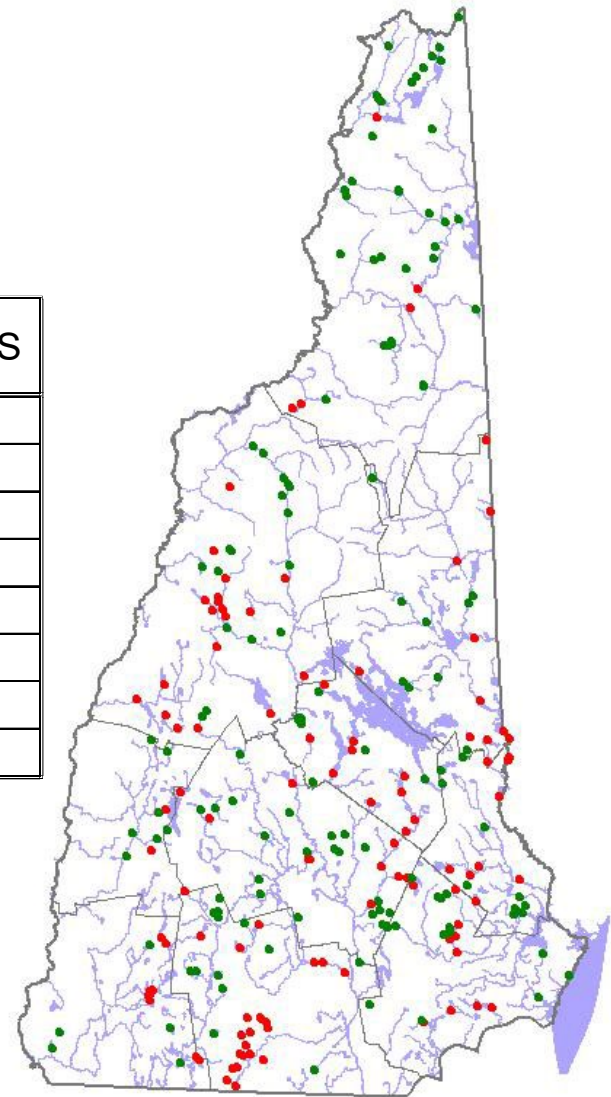
**June 16, 2021**

**James W. Gallagher, Jr., P.E**  
**Chief Engineer**  
**Dam Bureau**  
**271-1961**  
**[James.W.Gallagher@des.nh.gov](mailto:James.W.Gallagher@des.nh.gov)**



# State Dams

AGENCY	Hazard Classification				TOTALS
	HIGH	SIG.	LOW	NM	
DES	40	25	40	6	111
NHFG	4	6	43	47	100
DNCR	2	3	9	17	31
DOT	1	4	4	18	27
UNH	1	1	0	3	5
Glenciff	0	0	0	2	2
Veterans Home	0	0	0	2	2
TOTAL	48	39	96	95	278







# Recreational Resources



Ossipee Lake



Squam Lake



Newfound Lake



Lake Winnepesaukee



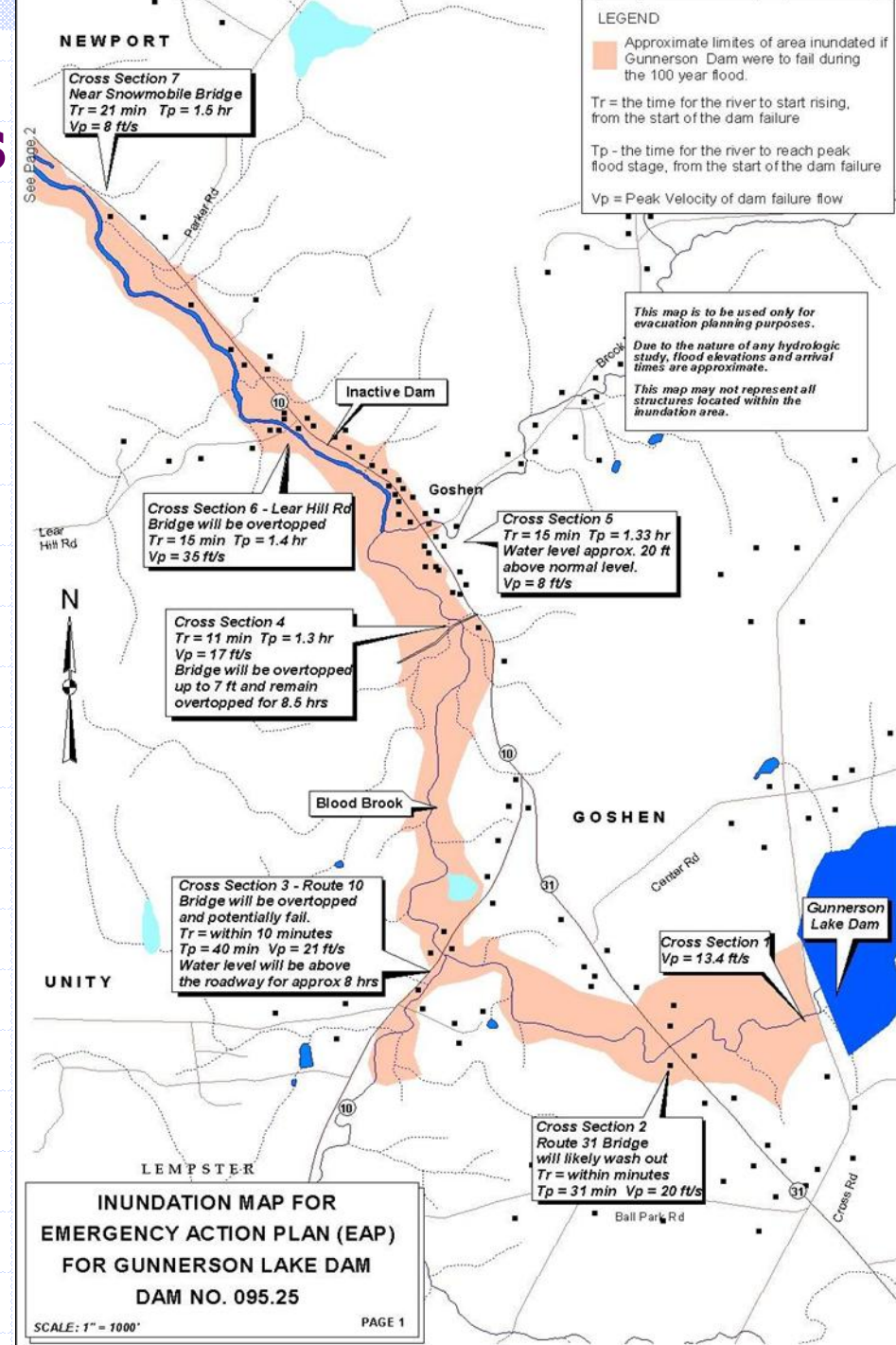
Winnisquam Lake



Lake Sunapee



# Emergency Action Plans Inundation Mapping



# Population At Risk Downstream of State Owned High and Significant Hazard Dams

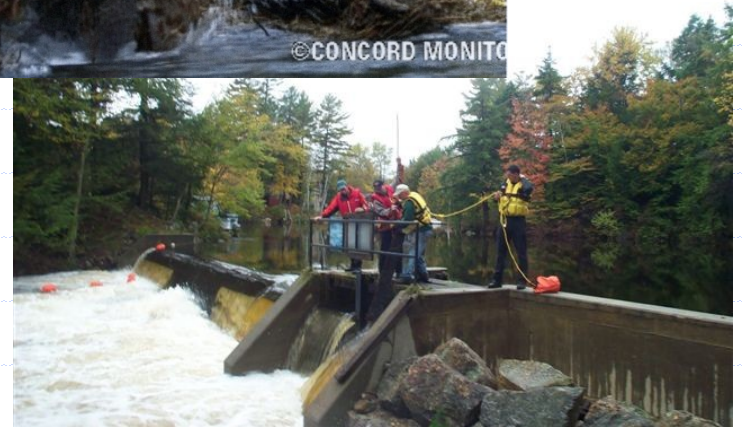
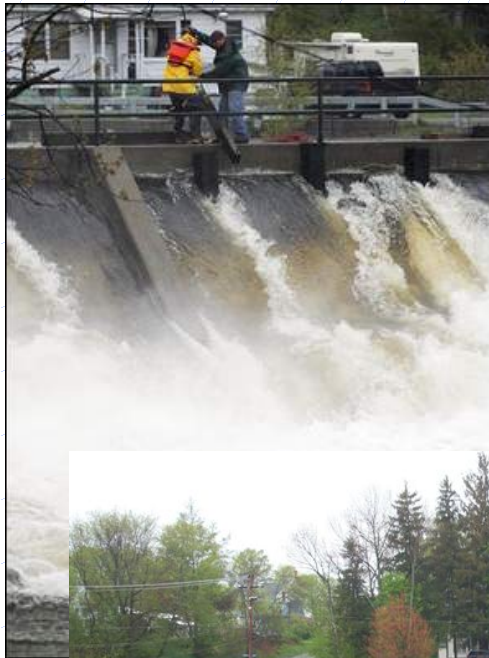
- ◆ More than 4,000 houses
- ◆ More than 130 State Road Crossings
- ◆ More than 800 Town Road Crossings

# Dam Operations





# Emergency Operations





# Remote Dam Operations



LAKE	RIVER	TOWN	START DATE	DEPTH (in feet) FROM FULL
Angle Pond	Bartlett Brook	Sandown	Oct. 13	2'
Akers Pond	Greenough Brook	Errol	Oct. 13	1'
Ayers Lake	Tributary to Isinglass River	Barrington	Oct. 20	3'
Ballard Pond	Taylor Brook	Derry	Oct. 13	2'
Barnstead Parade	Suncook River	Barnstead	Oct. 13	1.5'
Bow Lake	Isinglass River	Strafford	Oct. 13	4'
Buck Street	Suncook River	East Pembroke	Oct. 13	6'
Bunker Pond	Lamprey River	Epping	Oct. 13	2'
Burns Lake	Tributary to Johns River	Whitefield	Oct. 13	1.5'
Chesham Pond	Minnewawa Brook	Harrisville	Oct. 13	2'
Crystal Lake	Crystal Lake Brook	Enfield	Oct. 13	4'
Crystal Lake	Suncook River	Gilmanton	Oct. 13	3'
Deering Reservoir <sup>1</sup>	Piscataquog River	Deering	Oct. 13	5'
East Washington Pond	Beards Brook	Washington	Oct. 13	2'
Glen Lake/Greggs Falls	Piscataquog River	Goffstown	Nov. 1	1'
Goose Pond	Goose Pond Brook	Canaan	Oct. 13	7.5'
Grafton Pond	Bicknell Brook	Grafton	Oct. 13	2'
Great East Lake	Salmon Falls River	Wakefield	Oct. 1	3'
Great Pond	Powwow River	Kingston	Oct. 13	1'
Hawkins Pond <sup>2</sup>	Hawkins Pond Brook	Center Harbor	Oct. 13	7.5'
Hermit Lake <sup>3</sup>	Salmon Brook	Sanbornton	Oct. 13	2'
Highland Lake	North Branch Contoocook River	Stoddard	Oct. 13	3'
Horace Lake	Piscataquog River	Weare	Oct. 17	5'
Horn Pond	Salmon Falls River	Wakefield	Oct. 1	6'
Howe Reservoir	Tributary to Minnewawa Brook	Dublin	Oct. 13	6'
Island Pond	North Branch Contoocook River	Stoddard	Oct. 13	3'
Lake Kanasatka	Tributary to Lake Winnepesaukee	Moultonboro	Oct. 31	1.5'
Kezar Lake	Lane River	Sutton	Sept. 30	2'
Kingswood Lake	Churchill Brook	Brookfield	Oct. 13	4'
Little Sunapee Lake	Kidder Brook	Sunapee	Oct. 15	1'
Lovell Lake	Branch River	Wakefield	Oct. 13	3'
Mascoma Lake	Mascoma River	Lebanon	Oct. 13	3'
Mendums Pond	Little River	Nottingham	Nov. 9	7'
Milton Three Ponds	Salmon Falls River	Milton	Oct. 13	3'
Newfound Lake	Newfound River	Bristol	Oct. 13	3.5'
Nippo Pond	Nippo Brook	Barrington	Oct. 13	2'
North River Pond	North River	Nottingham	Oct. 13	1'
Northwood Lake	Little Suncook River	Epsom	Oct. 10	6'
Ossipee Lake	Ossipee River	Effingham	Oct. 13	3.25'
Pawtuckaway Lake	Pawtuckaway River	Nottingham	Oct. 13	7'
Pequawket Lake	Tributary to Swift River	Conway	Oct. 31	2'
Pine River Pond	Pine River	Wakefield	Oct. 13	8'
Pleasant Lake	Tributary to Little Suncook River	Deerfield	Oct. 13	3'
Sawyer Lake	Badger Brook	Gilmanton	Oct. 13	3'
Shellcamp Pond	Academy Brook	Gilmanton	Oct. 13	4'
Silver Lake	Minnewawa Brook	Harrisville	Oct. 13	3'
Squam Lake	Squam River	Ashland	Oct. 13	2.5'
Sunapee Lake	Sugar River	Sunapee	Oct. 13	3'
Suncook Lakes	Suncook River	Barnstead	Oct. 3	5'
Sunrise Lake	Dames Brook	Middleton	Oct. 19	2'
Sunset Lake	Suncook River	Alton	Oct. 13	7'
Trickling Falls	Powwow River	East Kingston	Oct. 31	1'
Webster Lake	Chance Brook	Franklin	Oct. 13	2'

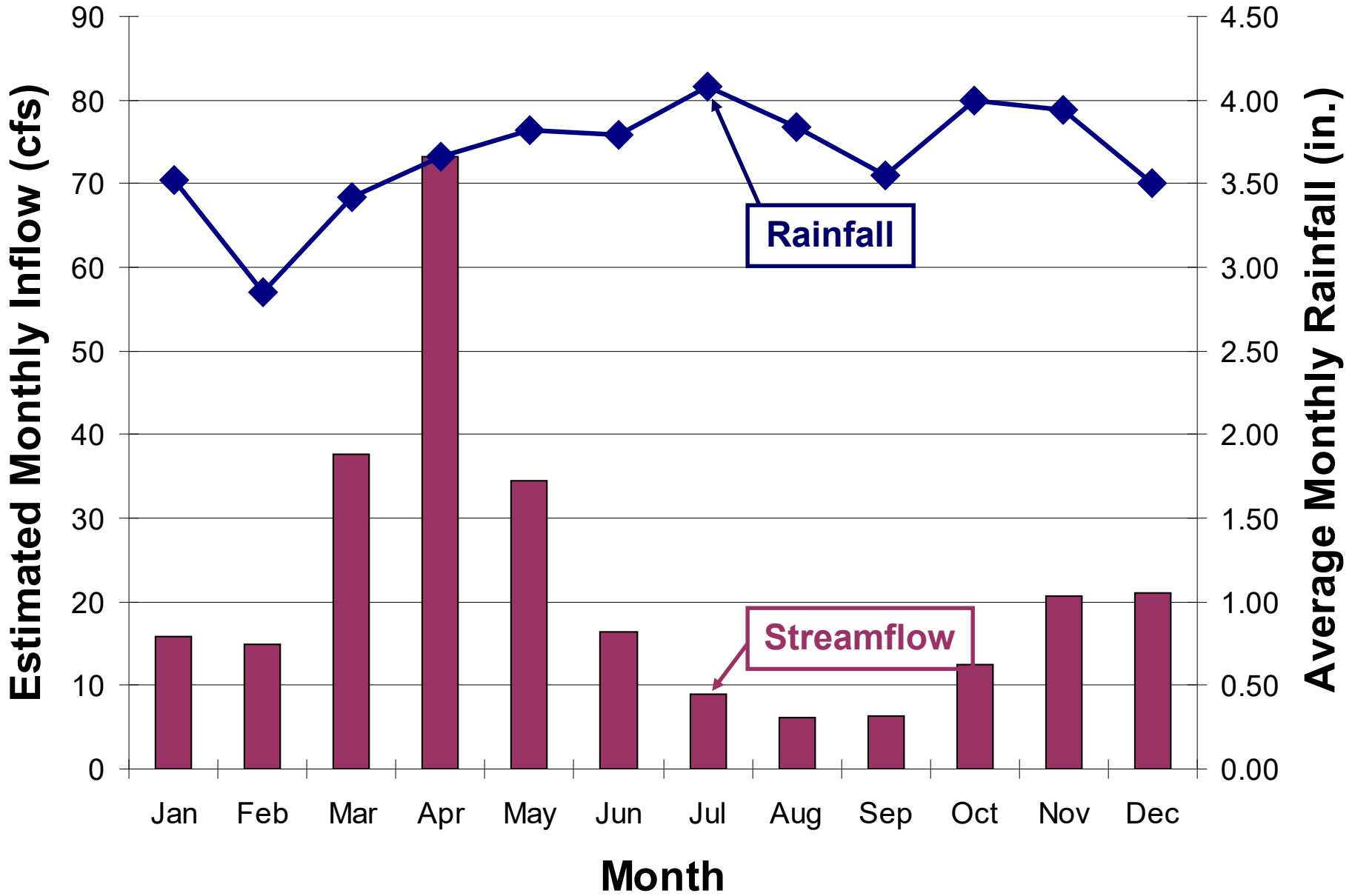




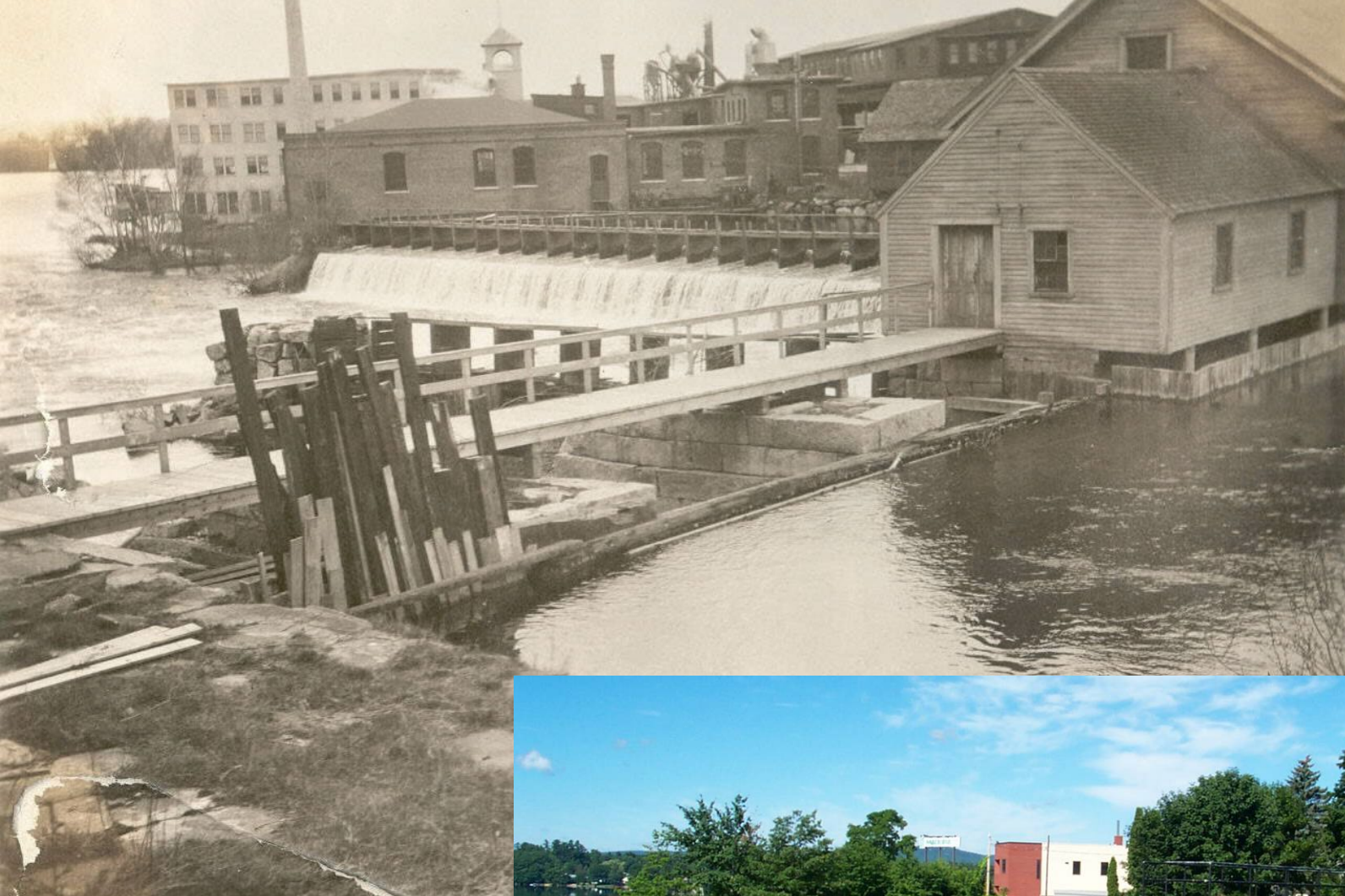












**1929  
forebay**



1929

Downstream left side



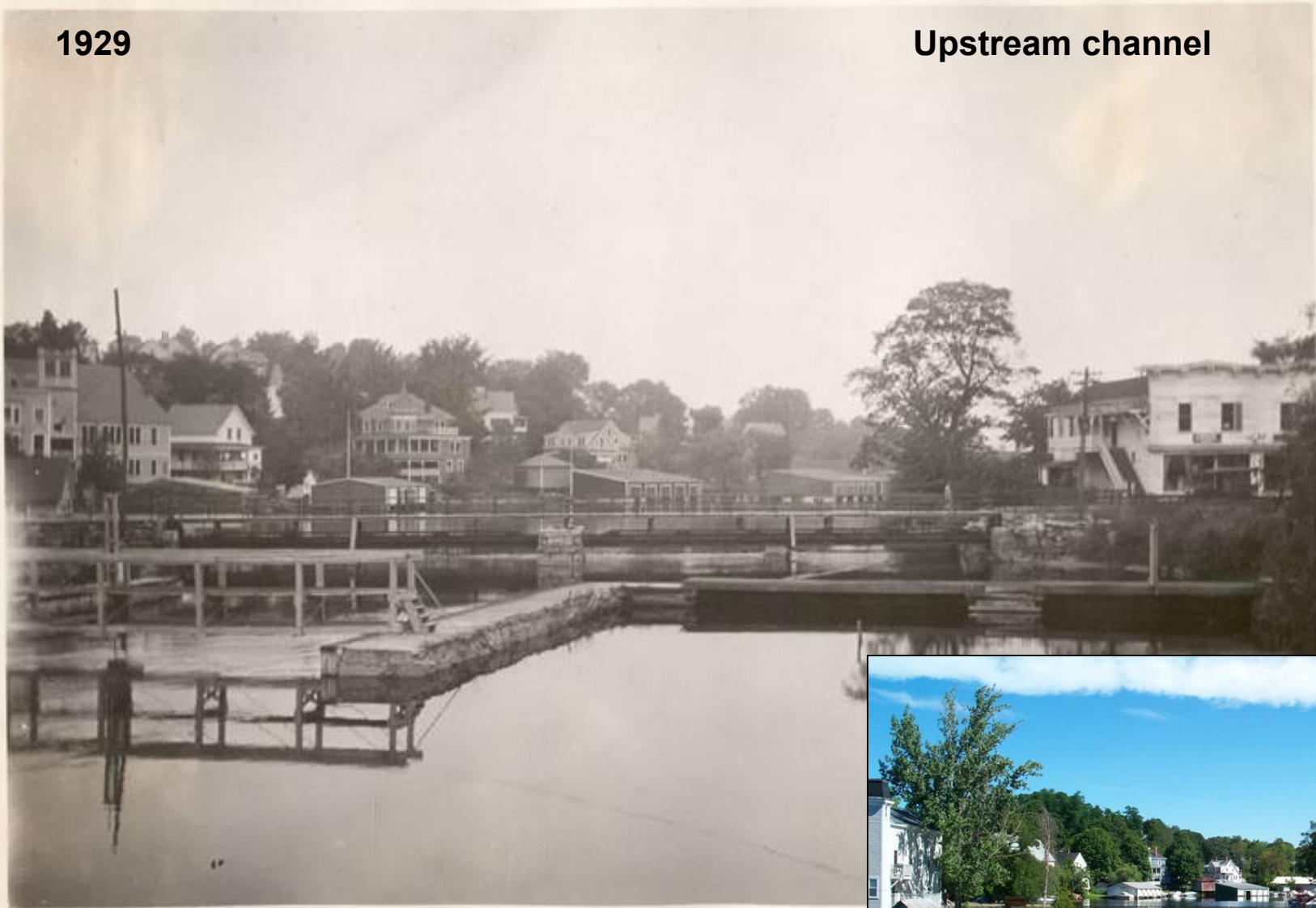
!





**1929**

**Upstream channel**















ARTMENTS

05/26/2009





















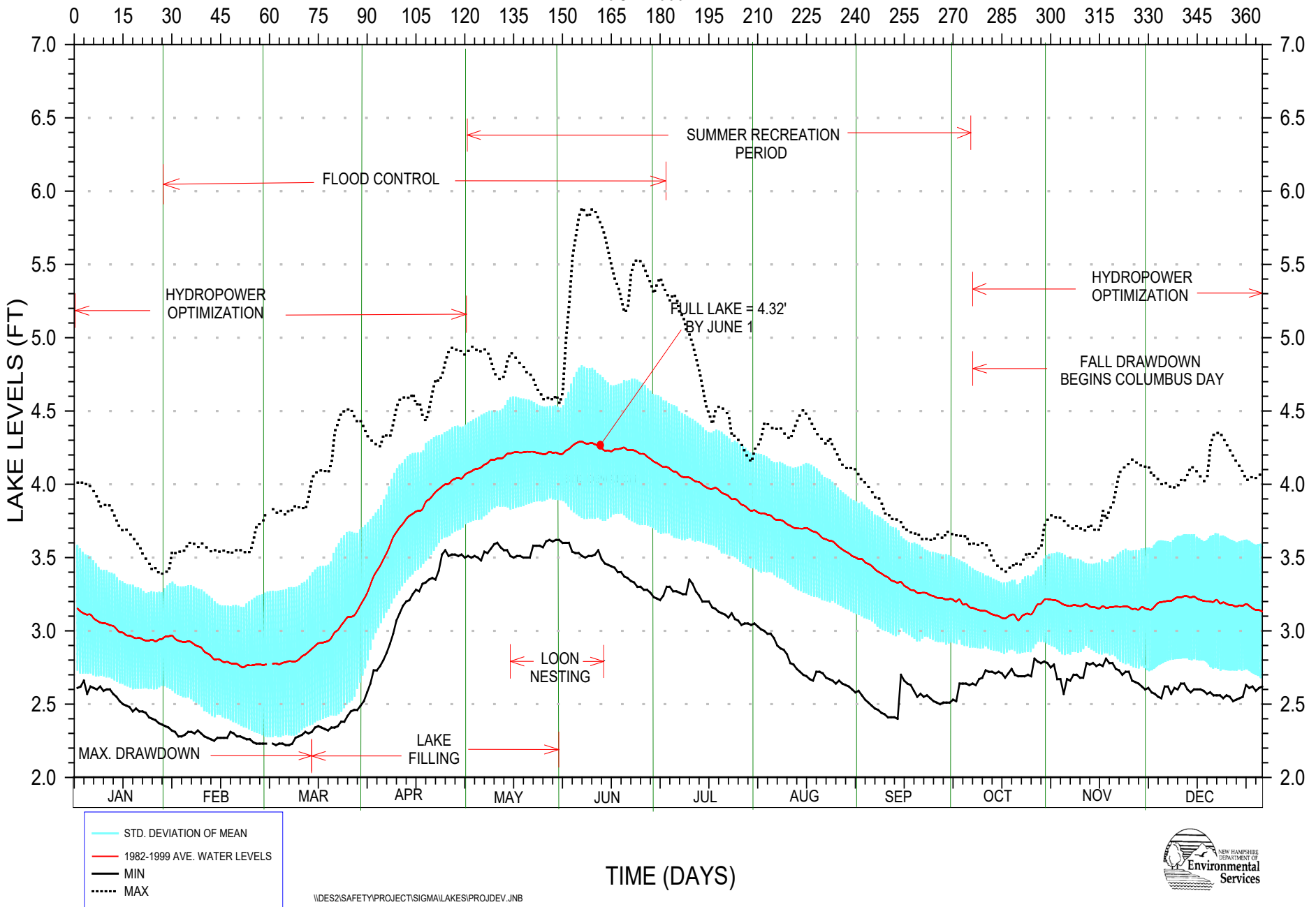


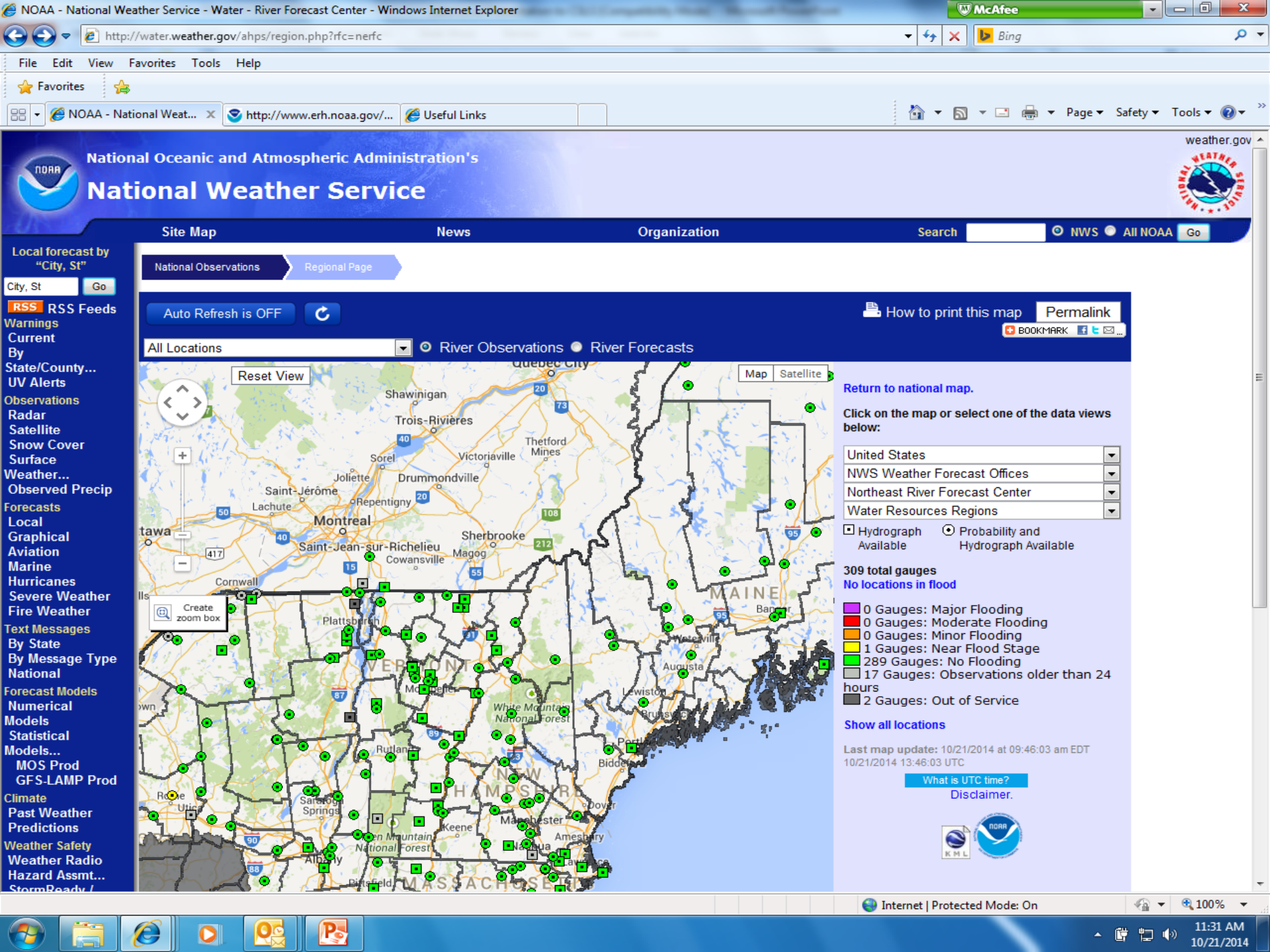




# LAKE WINNIPESAUKEE LAKE LEVEL OPERATING RANGE

1982 - 1999

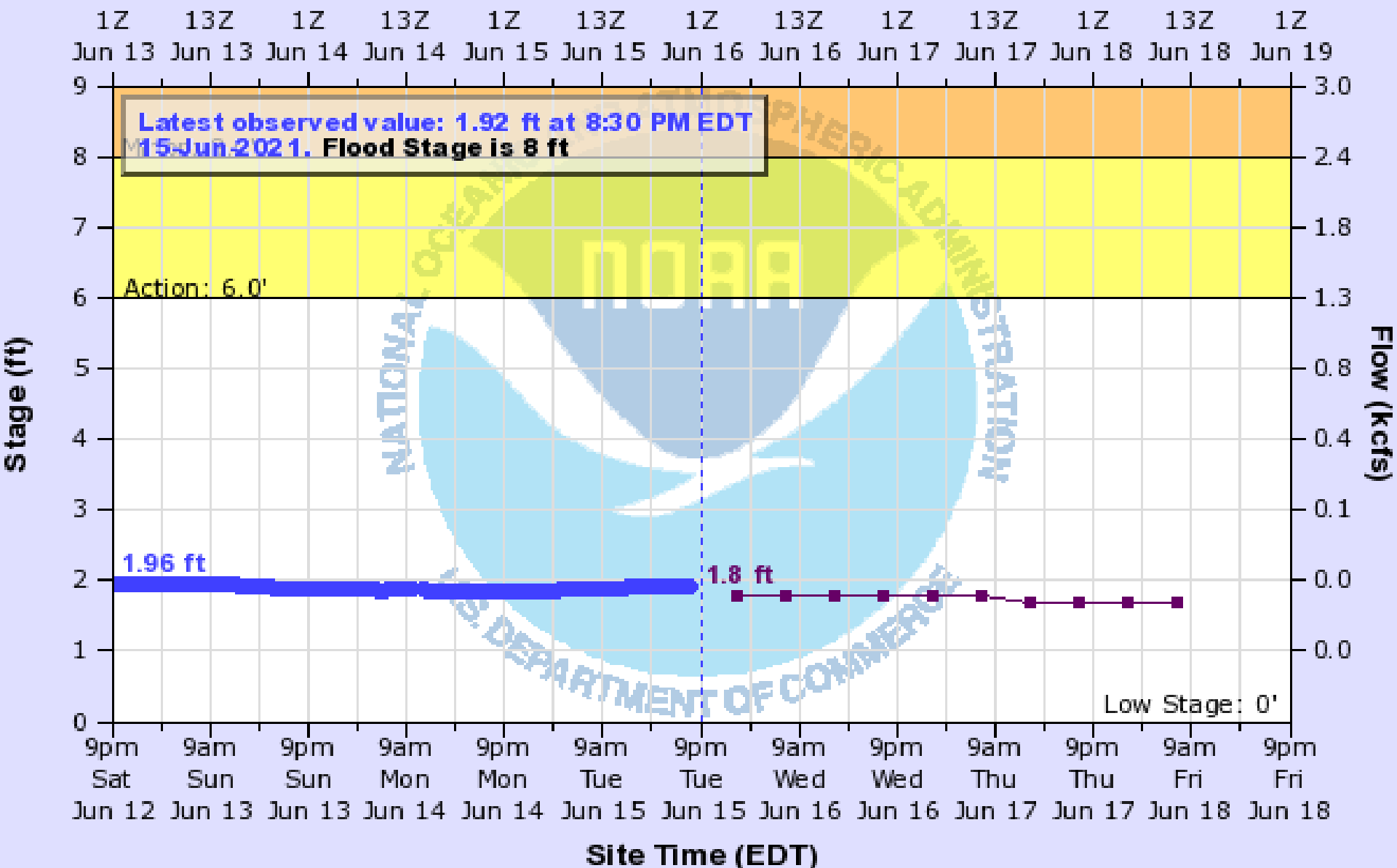






# SMITH RIVER (NH) AT BRISTOL

Universal Time (UTC)



----- Graph Created (9:51PM Jun 15, 2021) —●— Observed —■— Forecast (issued 11:08AM Jun 15)

# Gage Stations

## Legend

### Active Gages

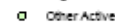


USGS



HOCN

### Other Gage Stations

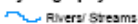


Other Active



Inactive

### Hydrography



Rivers/Streams

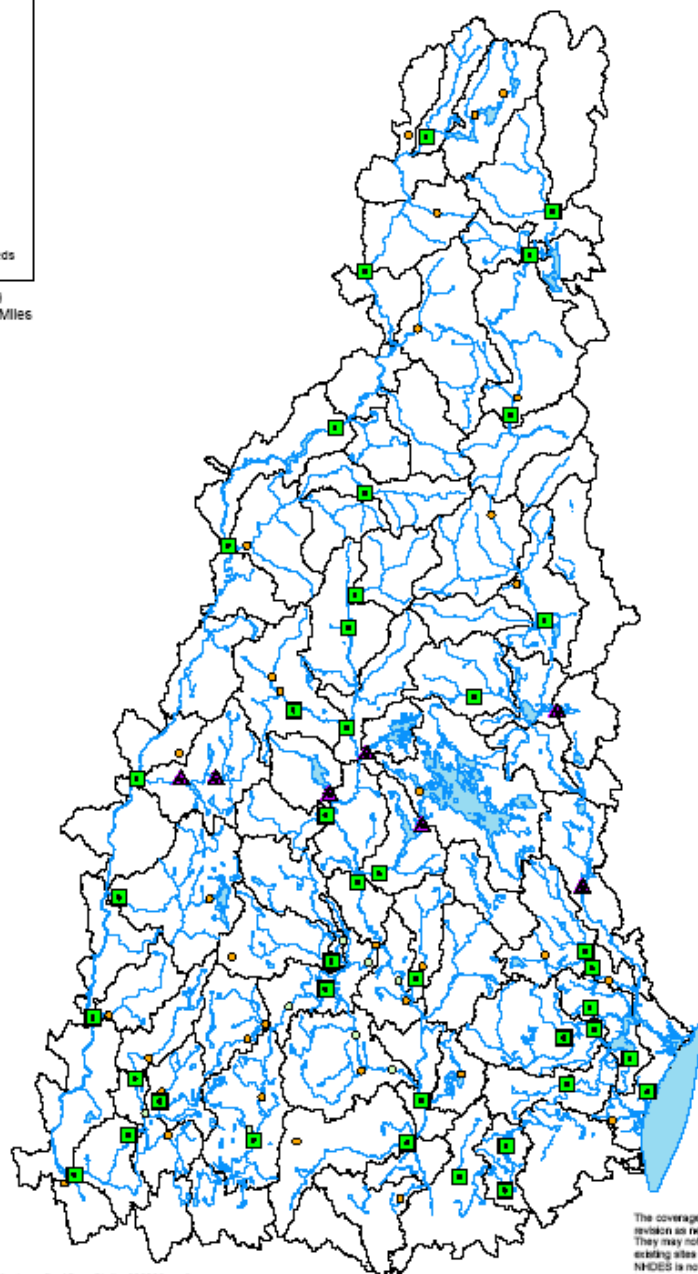


Lakes/Ponds



Huc 10 Watersheds

0 5 10 20 Miles



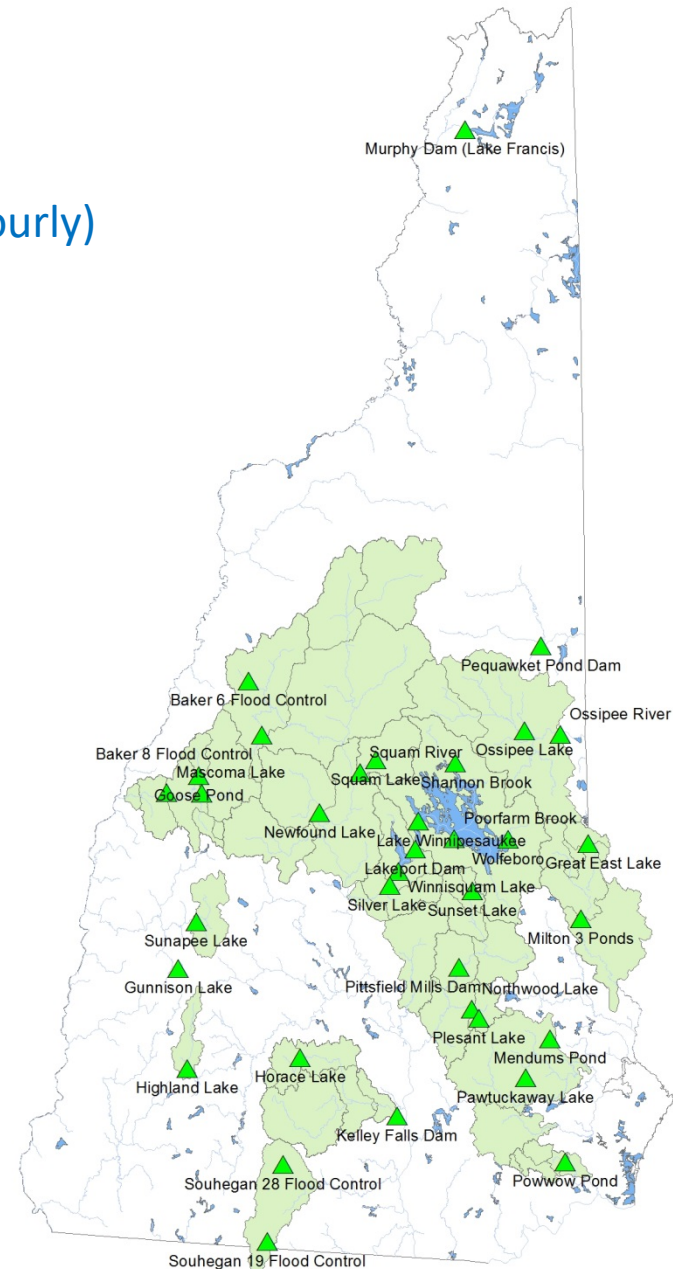
Map Document: (H:\Water Quality\GIS\streamflow\GageStation062206.mxd)  
6/22/2006 1:14:33 PM

The coverages presented are under constant revision as new sites or facilities are added. They may not contain all of the potential or existing sites or facilities. NHDSS is not responsible for the use or interpretation of this information. Not intended for legal purposes.



# NHDES Hydrologic Data Collection Network

- 35 stations maintained by NHDES
- Satellite telemetry transmits data in real-time (hourly)
- Dataloggers are programmable for user entry of gate/logbay settings and flow calculations



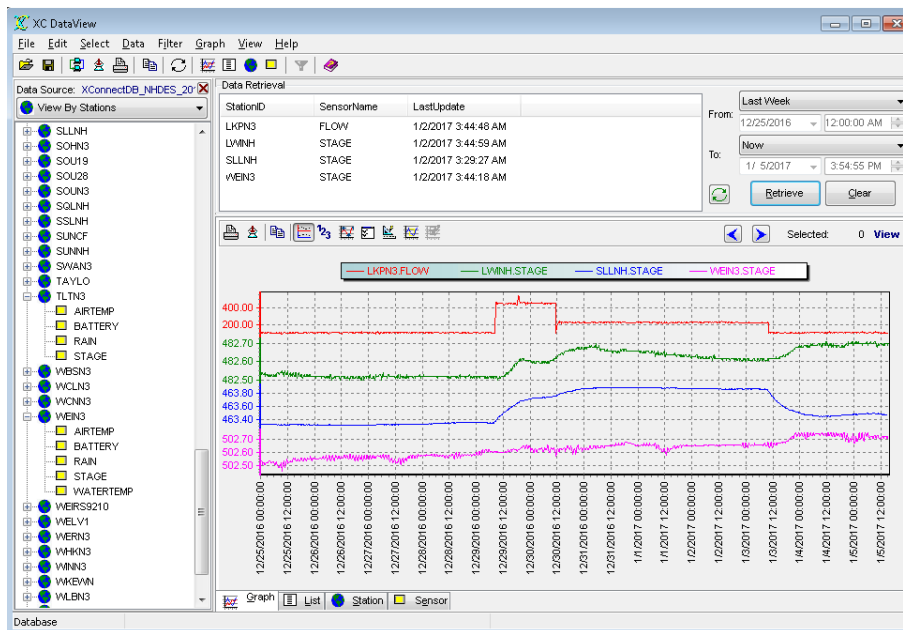






## Direct Readout Ground Station (DRGS)

- Direct Readout Ground Station (DRGS) enables direct download of transmissions from GOES satellite
- Emergency generator power for DRGS and modeling systems provides uninterrupted functionality in flooding emergencies
- Data is decoded and archived in database using Sutron Xconnect software suite

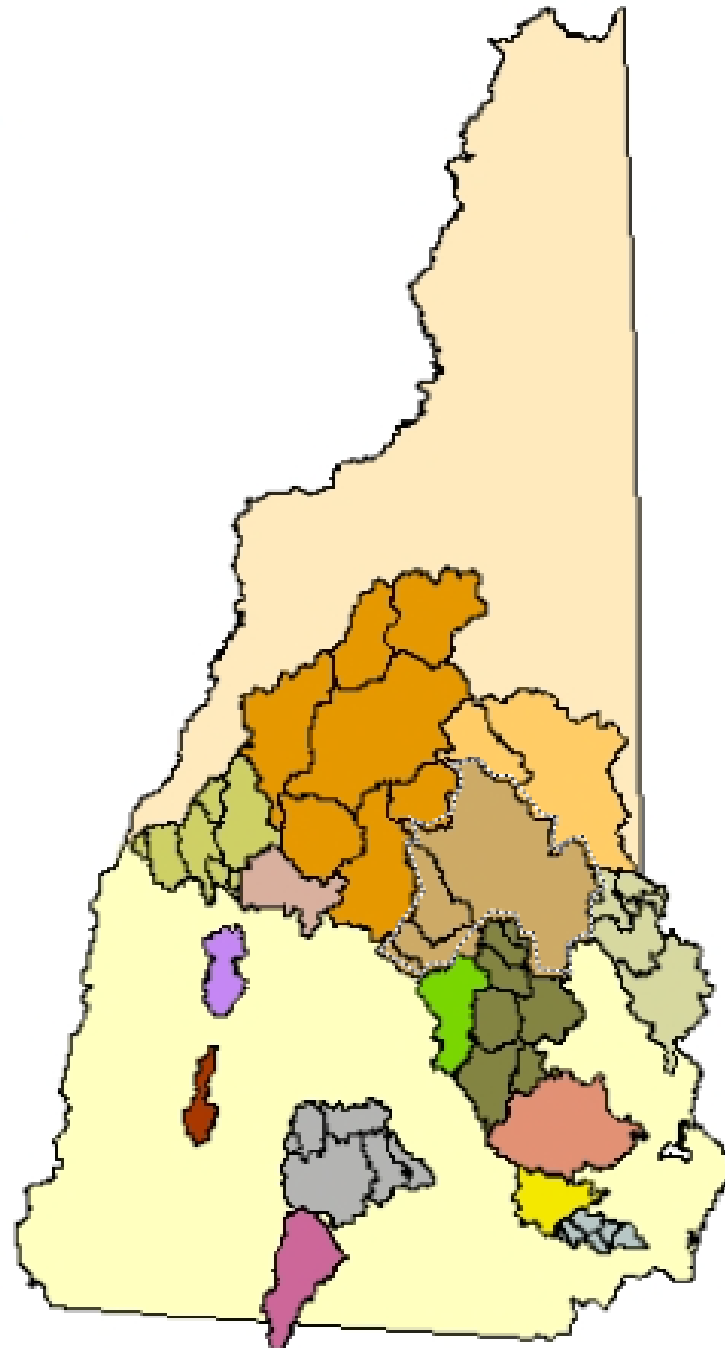


### Basins

- Winnepesaukee River
- Smith River
- Pemigewasset River
- Ossipee River
- Salmon Falls River
- Suncook River
- Mascoma River
- Piscataquog River
- Powwow River
- Soucook River
- Lamprey River
- Exeter River
- Sugar River
- Contoocook River
- Souhegan River

### Areas

- Northern
- Southern

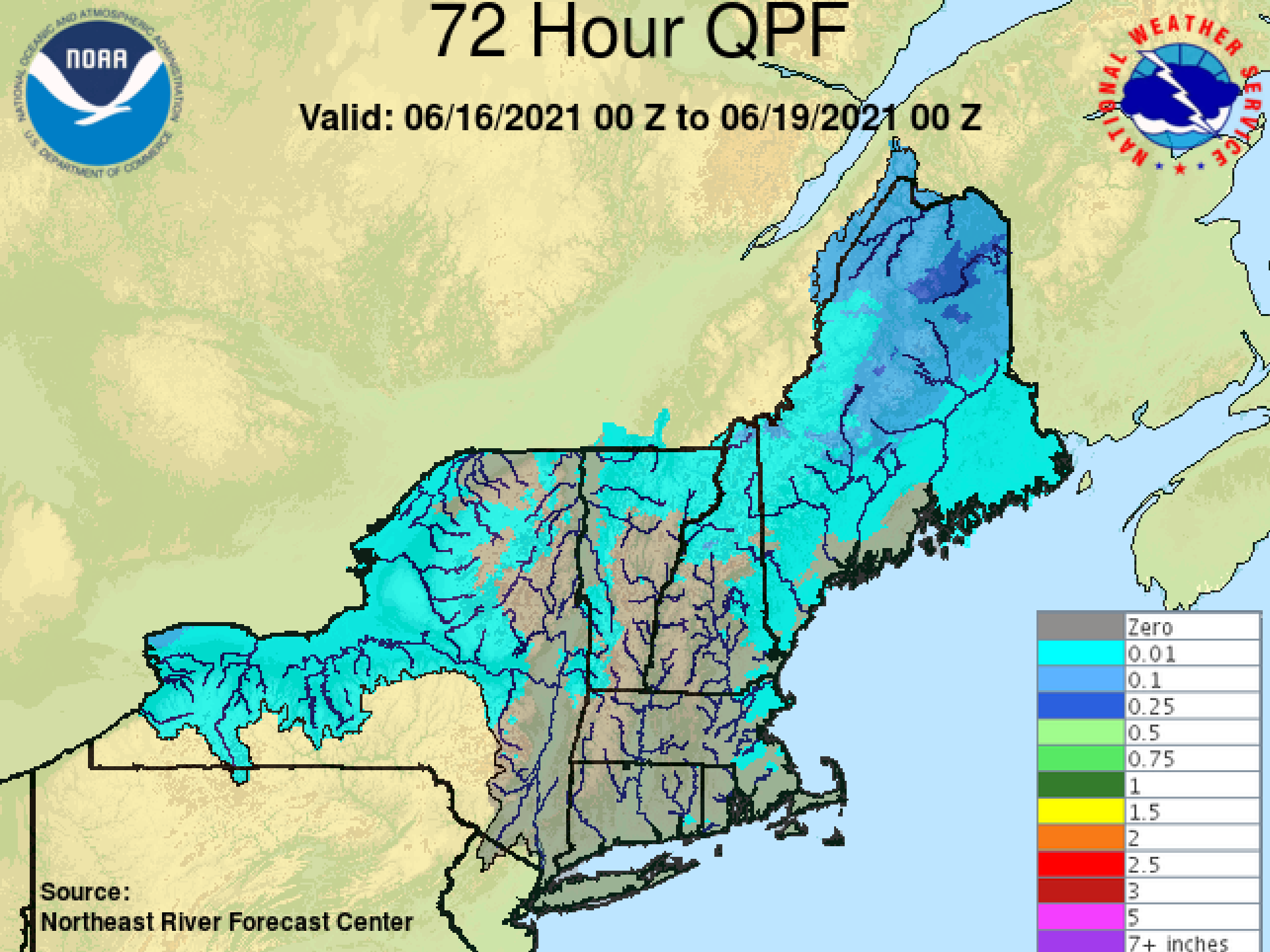
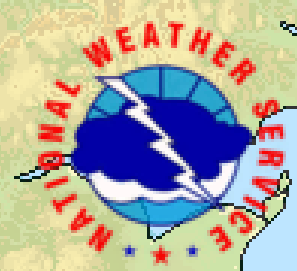






# 72 Hour QPF

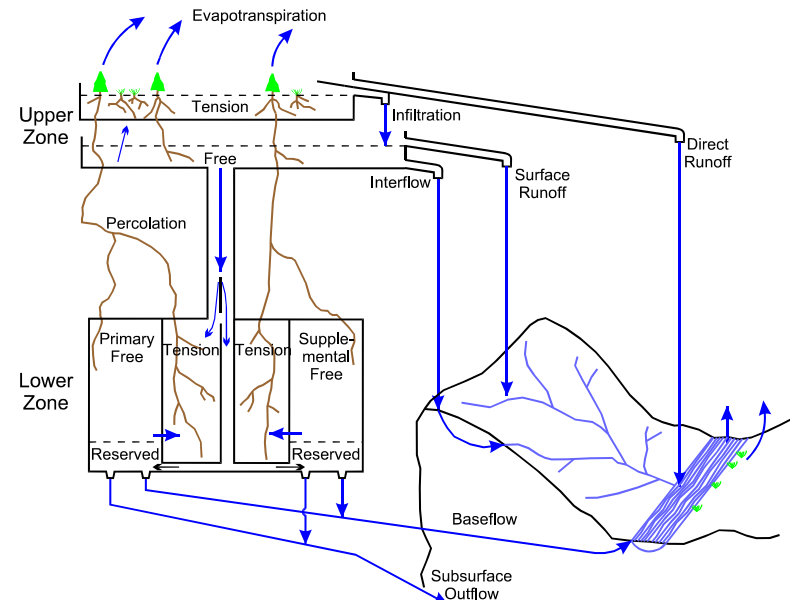
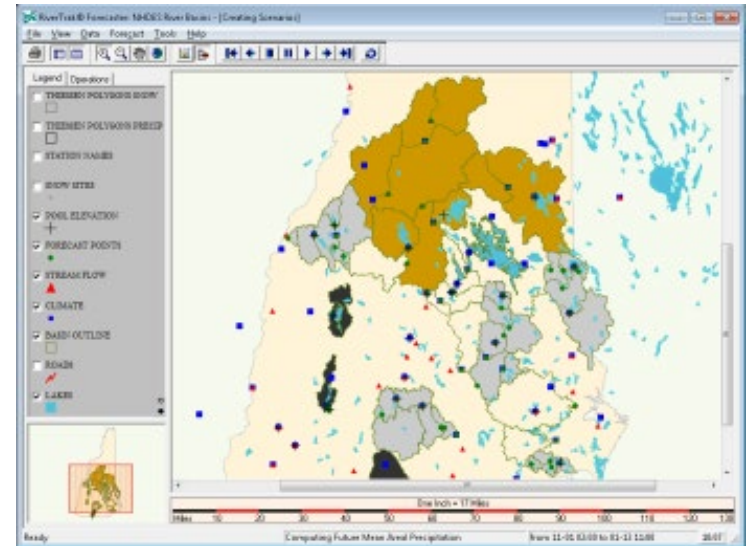
Valid: 06/16/2021 00 Z to 06/19/2021 00 Z



Source:  
Northeast River Forecast Center

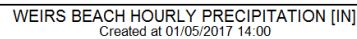
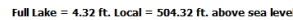
# Rivertrak Modeling and Flood Forecasting

- Imports data from NHDES stations and USGS stream-gauges as well as forecasted precipitation and temperature from NWS
- Uses Sacramento Soil Moisture accounting model to predict future inflows, releases and lake levels
- Outputs graphs and tables of “observed” data to publicly-accessible webpage
- Outputs Flood Monitor plots for use in NHDES Dam Bureau as both daily guidance and for major flood forecasting



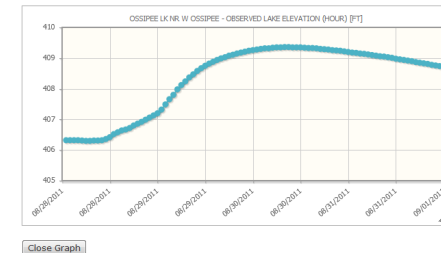


- Interactive map allows user selection of specific area/basin in New Hampshire
- Clicking a particular station allows user to view graph page showing Lake Levels, Flows, Precipitation etc.
- New “Historic Data” page allows user-specified graph and download of all historic data available for a particular station



Note: Data is provisional and all fields are required.

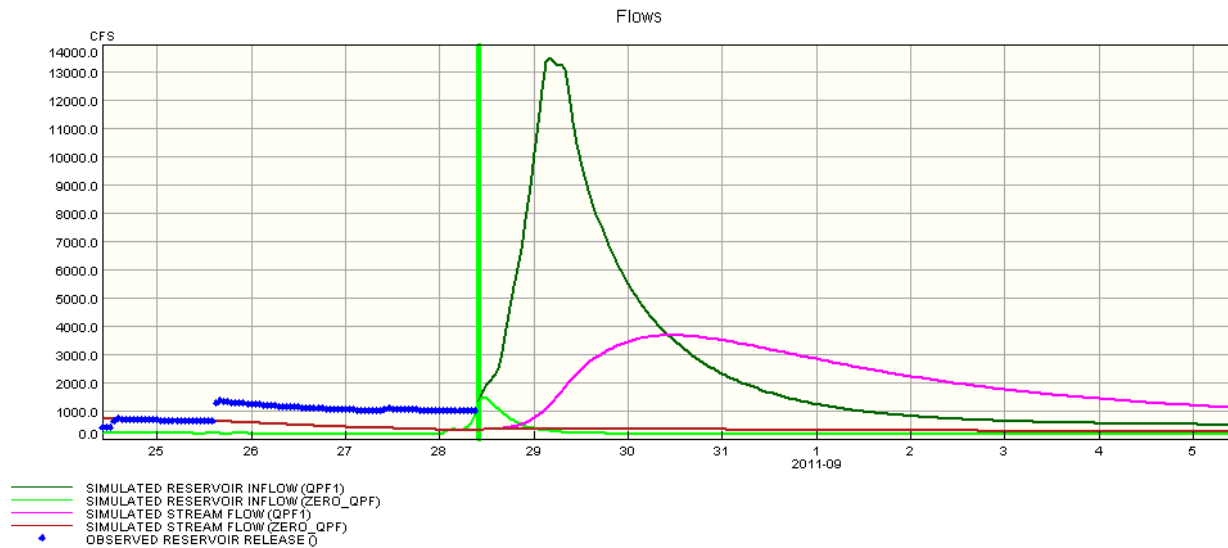
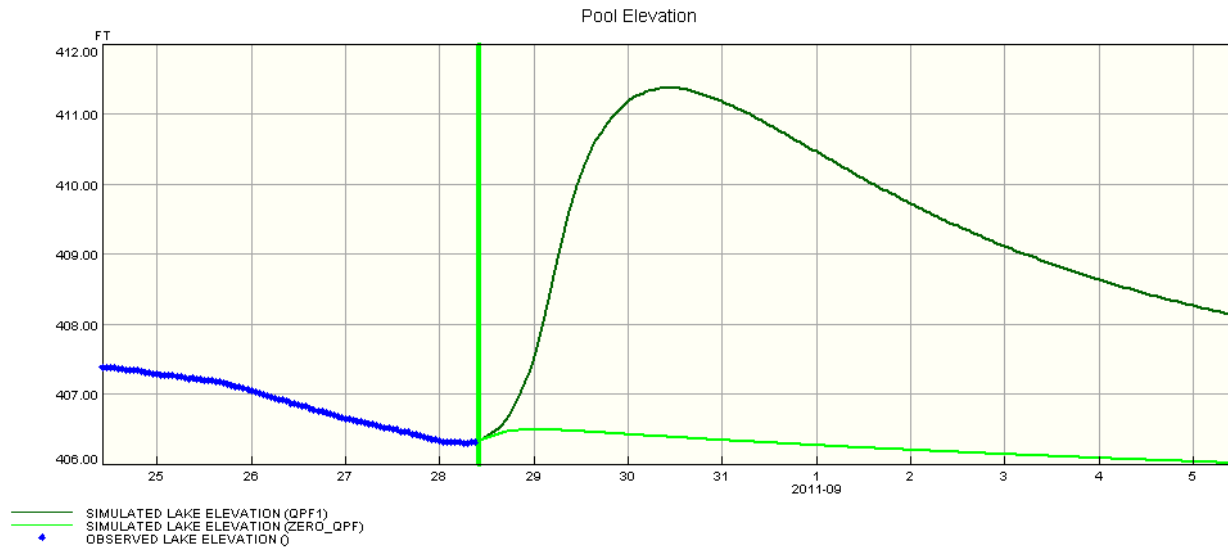
Large date ranges can take some time to download.



# Forecasts & Flood Monitor Plots

OSSIPEE LAKE DAM - RESERVOIR

Created at 08/28/2011 10:00





**Hydrologic Data  
Collection Network**



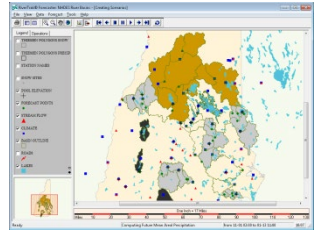
**GOES Satellite**

**DRGS**



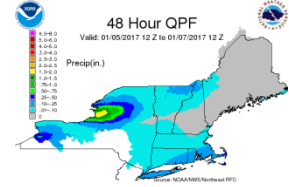
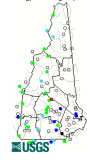
**XConnect  
Database**

**Rivertrak Modeling  
Software &  
Database**



**USGS & NWS Imports**

**Daily Streamflow Conditions**  
Select a site to retrieve data and station information.  
Friday, January 20, 2017 09:28

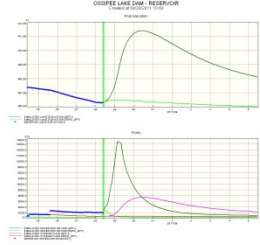


**Manual Data Entry**

**Public Real-  
Time Data  
Webpage**



**Flood Monitor Plots**



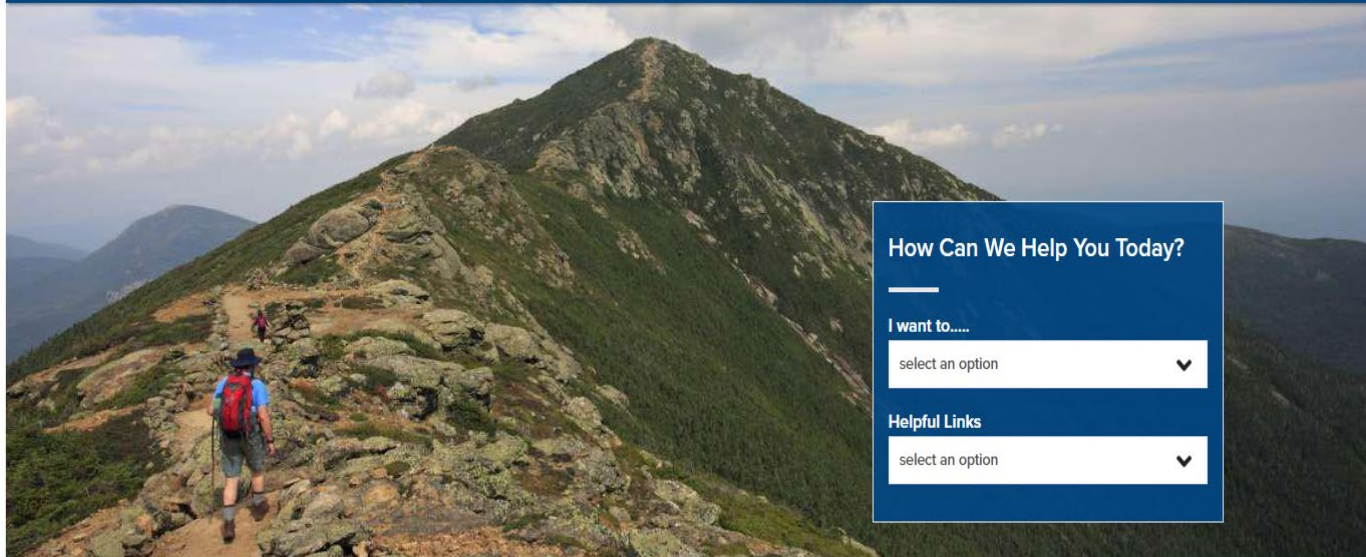
**ALERT** Get the latest Coronavirus COVID-19 update at <https://www.covid19.nh.gov>



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### How Can We Help You Today?

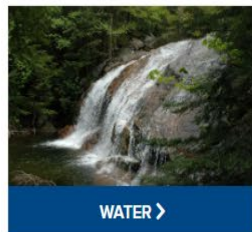
I want to.....

select an option



### Helpful Links

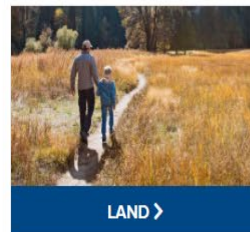
select an option



[WATER >](#)



[AIR >](#)



[LAND >](#)



[WASTE >](#)



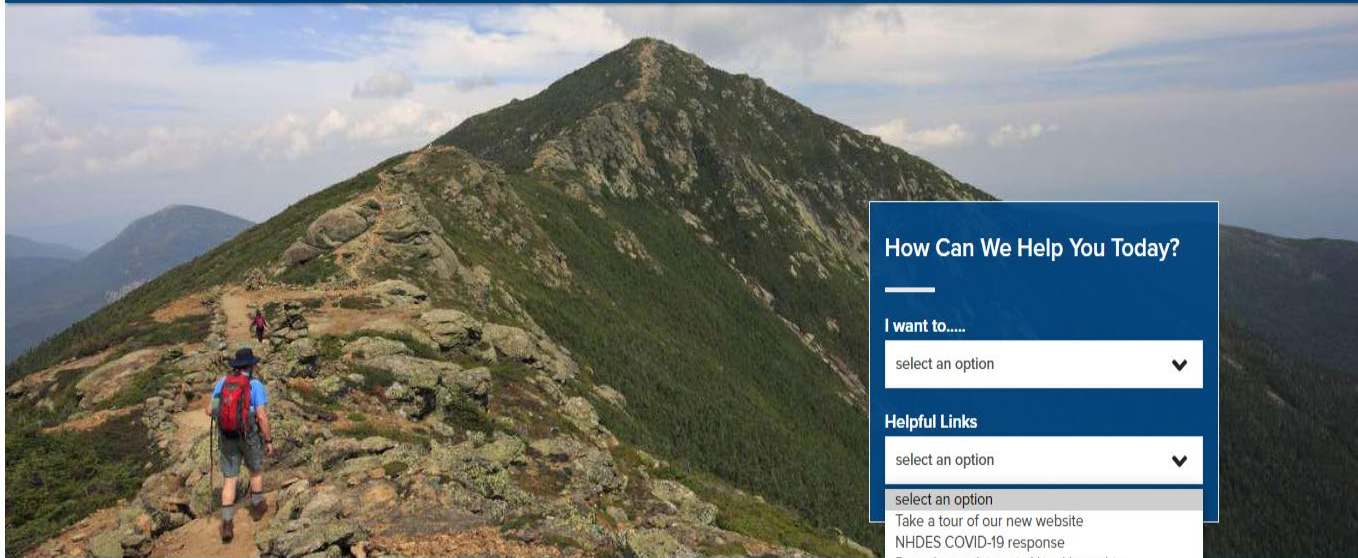
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### How Can We Help You Today?

I want to.....

select an option

#### Helpful Links

select an option

select an option

- Take a tour of our new website
- NHDES COVID-19 response
- Drought conditions in New Hampshire
- Public Comment Opportunities
- Disposing of sharps and unused prescriptions
- Water quality of NH lakes and rivers
- River and lake levels
- NH PFAS investigation
- Drinking Water and Groundwater Trust Fund
- Volunteer opportunities
- Managing household waste
- Managing used oil
- Managing construction and demolition debris
- Campfires and bonfires



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## Real-Time Data & Information for Watersheds in New Hampshire

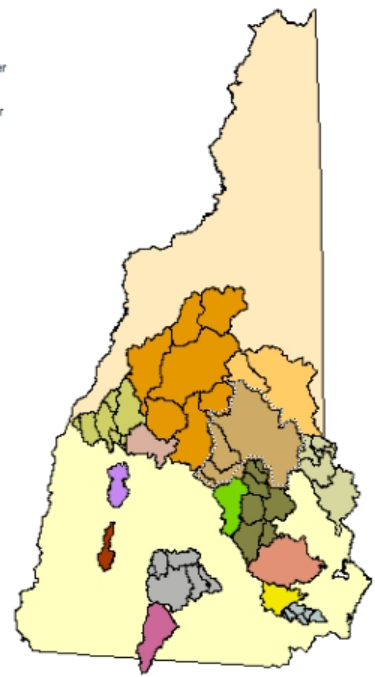
Select a basin from the menu or click on a portion of the map to view information for the area of interest

### Basins

- Winnepesaukee River
- Smith River
- Pemigewasset River
- Ossipee River
- Salmon Falls River
- Suncook River
- Mascoma River
- Piscataquog River
- Powwow River
- Soucook River
- Lamprey River
- Exeter River
- Sugar River
- Cortiscook River
- Souhegan River

### Areas

- Northern
- Southern



### Related Information

- [Historic Data](#)
- [Radar Data](#)
- [Useful Links](#)
- [Operations Info](#)
- [Snow Sampling](#)

NH Department of Environmental Services | 29 Hazen Drive | PO Box 95 | Concord, NH 03302-0095  
(603) 271-3503 | TDD Access: Relay NH 1-800-735-2964 | Hours: M-F, 8am-4pm





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[Dam Maintenance and Management](#)

## Winnepesaukee River Watershed



[Current Watershed Operations Information](#)  
[Lake Winnepesaukee Year-to-Date Graph and Data](#)

### General Operating Constraints:

We are constrained to release a minimum of 250 cfs throughout the summer months to fulfill the following obligations and limiting restraints:

1. Hydroelectric plants downstream of the lake have permanent deeded rights to an outflow or 250 cfs in the river. These historical water rights were established in the 19th century but are still valid today.
2. The State maintains water user contracts to other hydroelectric power producers downstream. These contracts are based on the presumption the State will continue with the practice of maintaining the 250 cfs release rate. Tonnage in the plant and long-term operational expenditures in the plants

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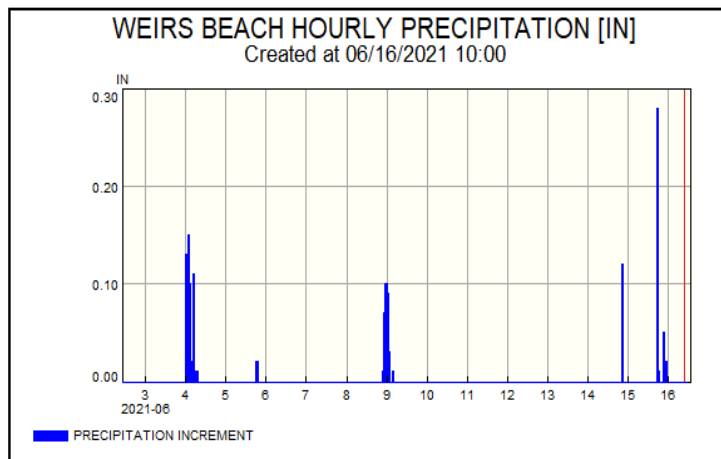
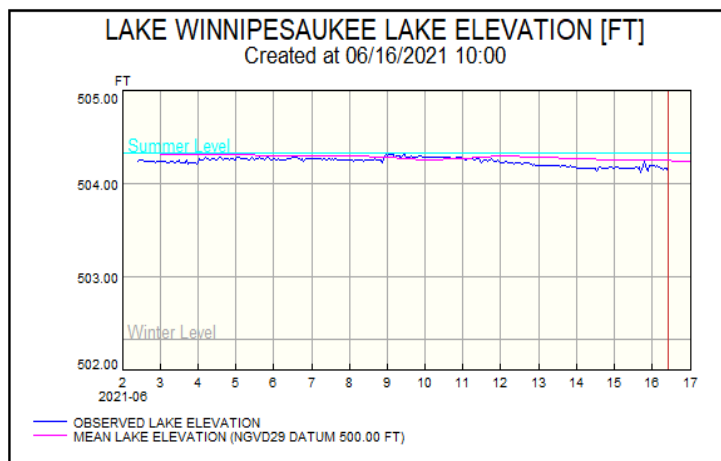


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## Station: Lake Winnepesaukee (WEIN3)

[Data Graphs](#) [Operations Information](#) [Disclaimer Information](#) [Tabular Data](#) [Historic Data](#)

**Full Lake = 4.32 ft. Local = 504.32 ft. above sea level**





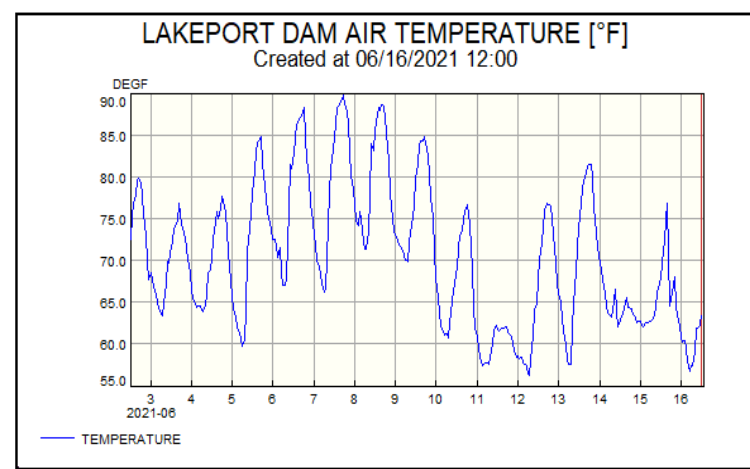
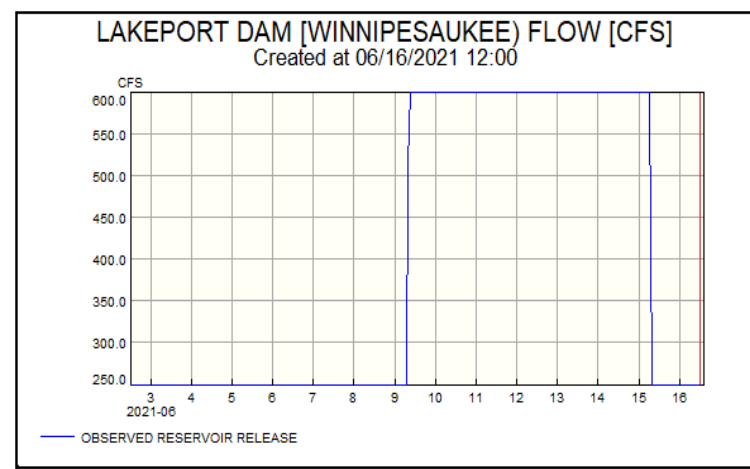
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## Station: Lakeport Dam (LKPN3)

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## Operations Information

### Current Watershed Operations Information

[List of Specific Station Operations](#)

The The information on this page is intended to provide users with the most current operations information related to the Winnepesaukee River watershed. For specific information about operations and the current water levels and discharges at these locations, return to the map interface and select the appropriate link.

Wednesday, June 16th, 4 AM readings

#### Winnepesaukee

The level of Lake Winnepesaukee is at 504.17. The discharge at Lakeport Dam is 250 cfs.

These flows could change due to weather, or other operational factors.

#### Winnisquam

The level of Lake Winnisquam is currently at elevation 482.84. Outflow is about 335 cfs. Flow will be increased tomorrow to around 600 cfs. Flow will be increased further on Friday to about 800 cfs. This flow rate will be maintained over the weekend for the Franklin kayak event.

These flows could change due to weather, or other operational factors.

#### Silver Lake

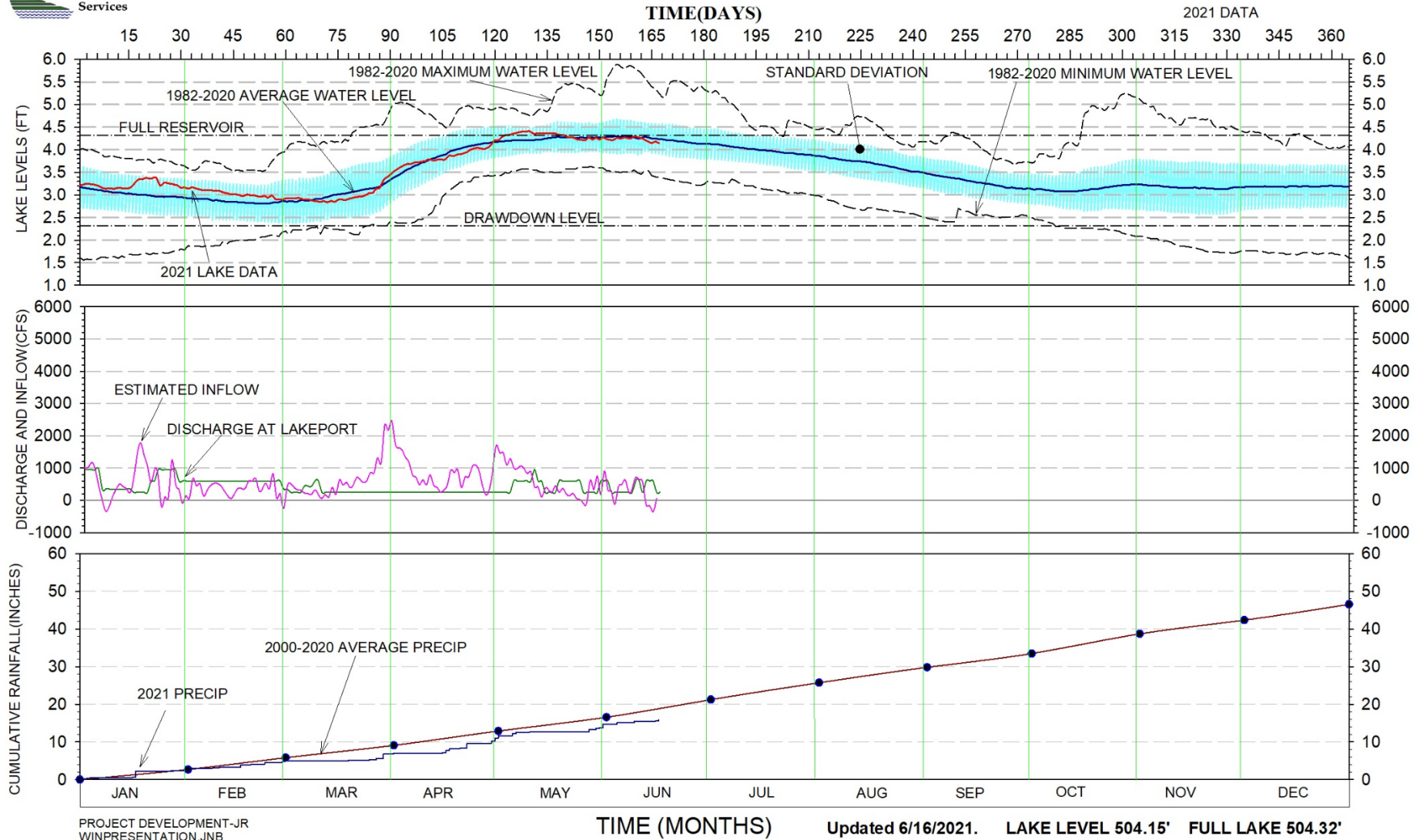
The level of Silver Lake is 464.45. The level will rise starting tomorrow morning about 7 inches, and 5 more inches with the increase in upstream releases Friday. The level will drop back close to currnt levels starting Monday morning.

This message will be updated as necessary when operational changes are planned or implemented, otherwise the information should be considered representative of current conditions at each location.





# LAKE WINNIPESAUKEE LAKE LEVEL DATA





NEW HAMPSHIRE  
DEPARTMENT OF  
**Environmental  
Services**  
**Water Division**  
**Dam Bureau**