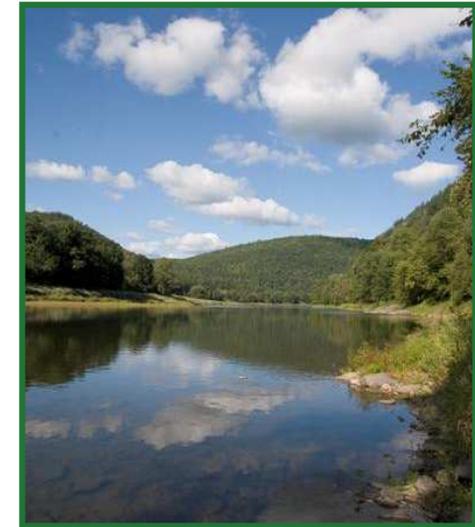


# Delaware River Basin Commission

FFMP  
Implementation  
Performance  
Release Year 2014  
June 1, 2014 – May 31, 2015

**Amy L. Shallcross, PE**  
Operations Supervisor  
*December 3, 2015*



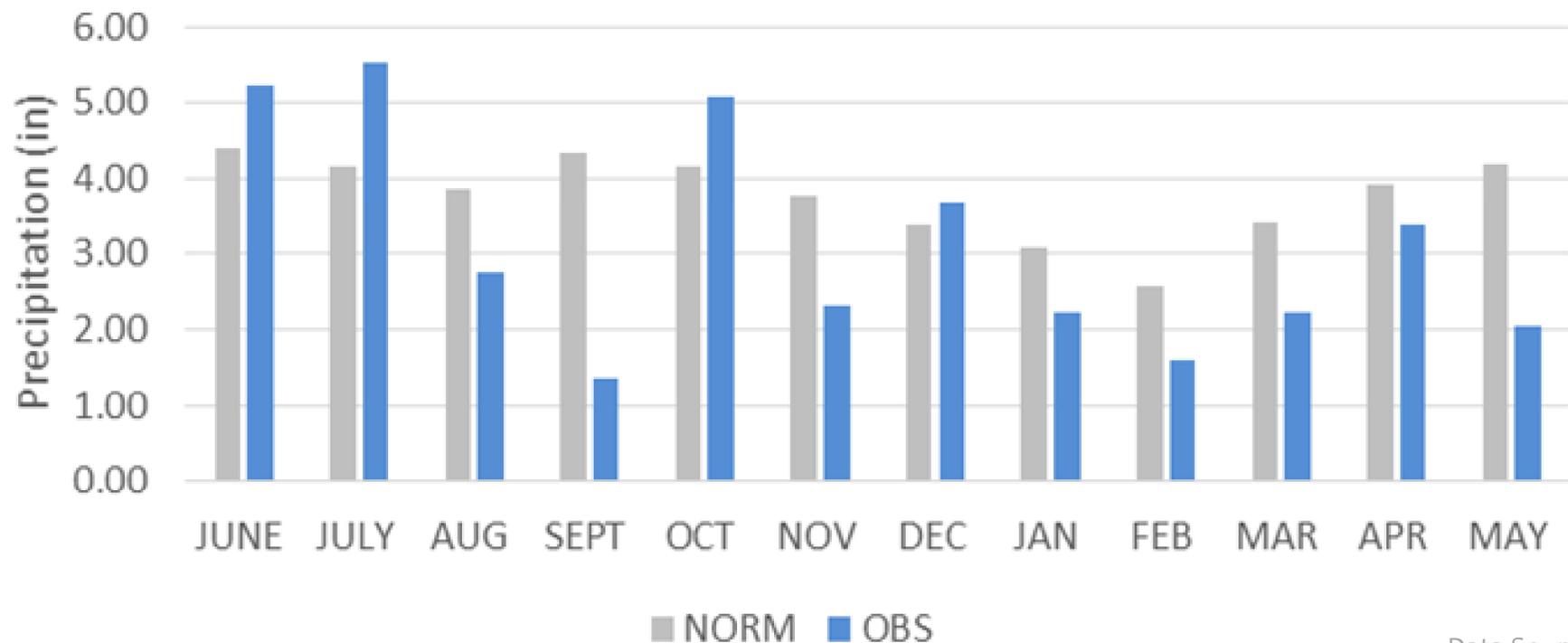
**Delaware River Basin Commission**  
DELAWARE • NEW JERSEY  
PENNSYLVANIA • NEW YORK  
UNITED STATES OF AMERICA

# FFMP Performance Goals

- \* Maintain flow objectives
- \* Avoid droughts
- \* Provide enhanced conservation releases
- \* Maintain desirable tailwater temperatures
- \* Minimize spills using the Conditional Seasonal Storage Objective (CSSO)

# Upper Basin Climate - Montague

Precipitation above Montague  
June 2014 - May 2015

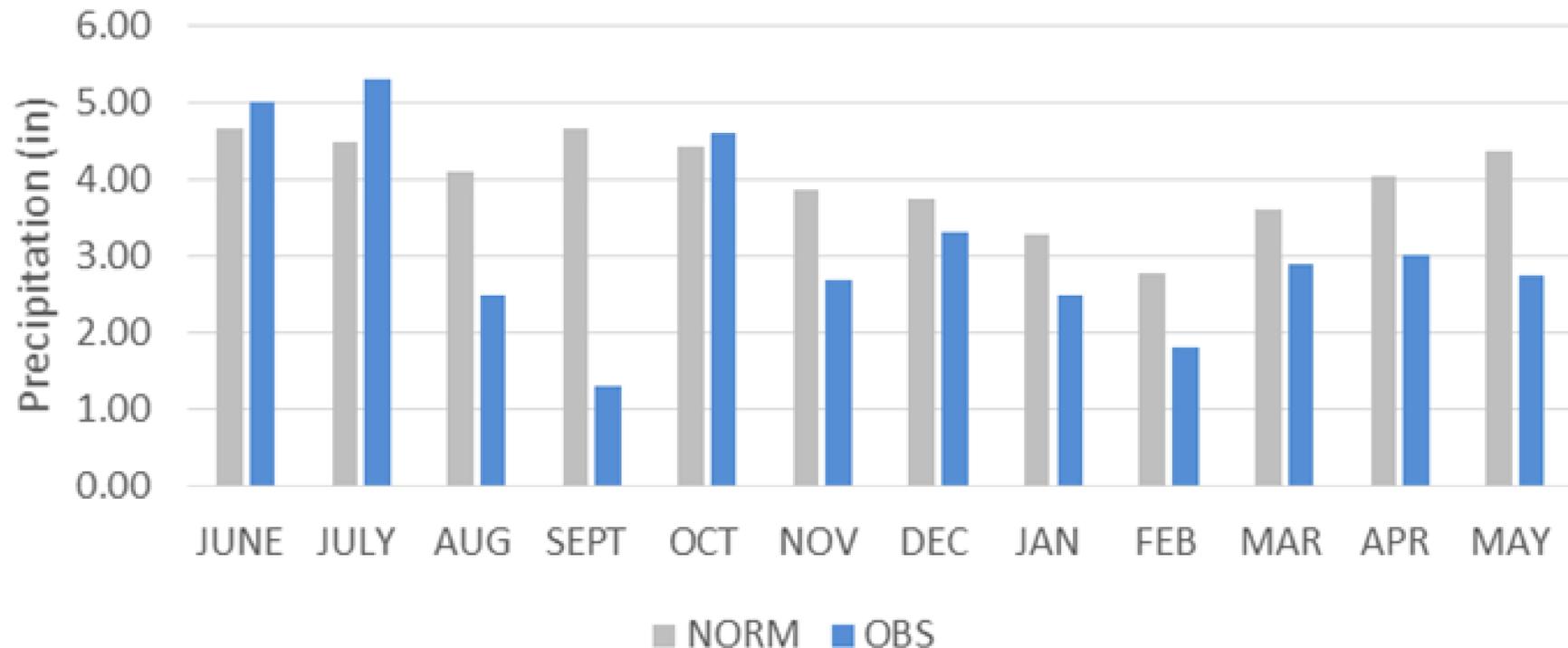


Data Source:  
NOAA/NWS

After July, most months (except October and December) experienced below normal rainfall.

# Lower Basin Climate - Trenton

Precipitation above Trenton  
June 2014 - May 2015



Data Source:  
NOAA/NWS

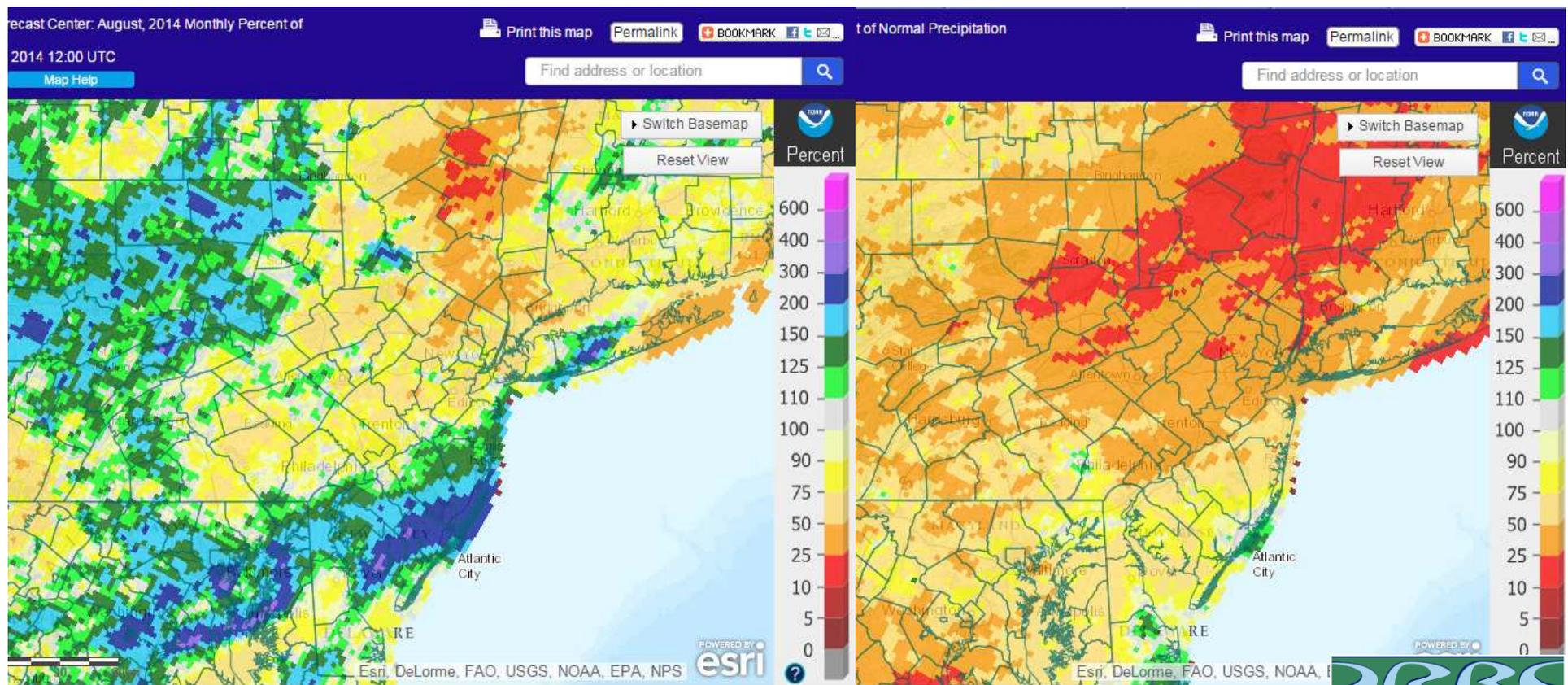
After July, most months (except October) experienced below normal rainfall.



# Precipitation Percent of Normal

## August - 2014

## September - 2014



Source: NOAA/NWS

# Flow Objectives

## Water Released from NYC Reservoirs to meet Flow Objectives (MG)

Montague	Trenton
54,424	3,190
IERQ water used for Trenton	

19 days less than 1,700 cfs  
(accounts for balancing adjustment)  
Some during ice-affected period

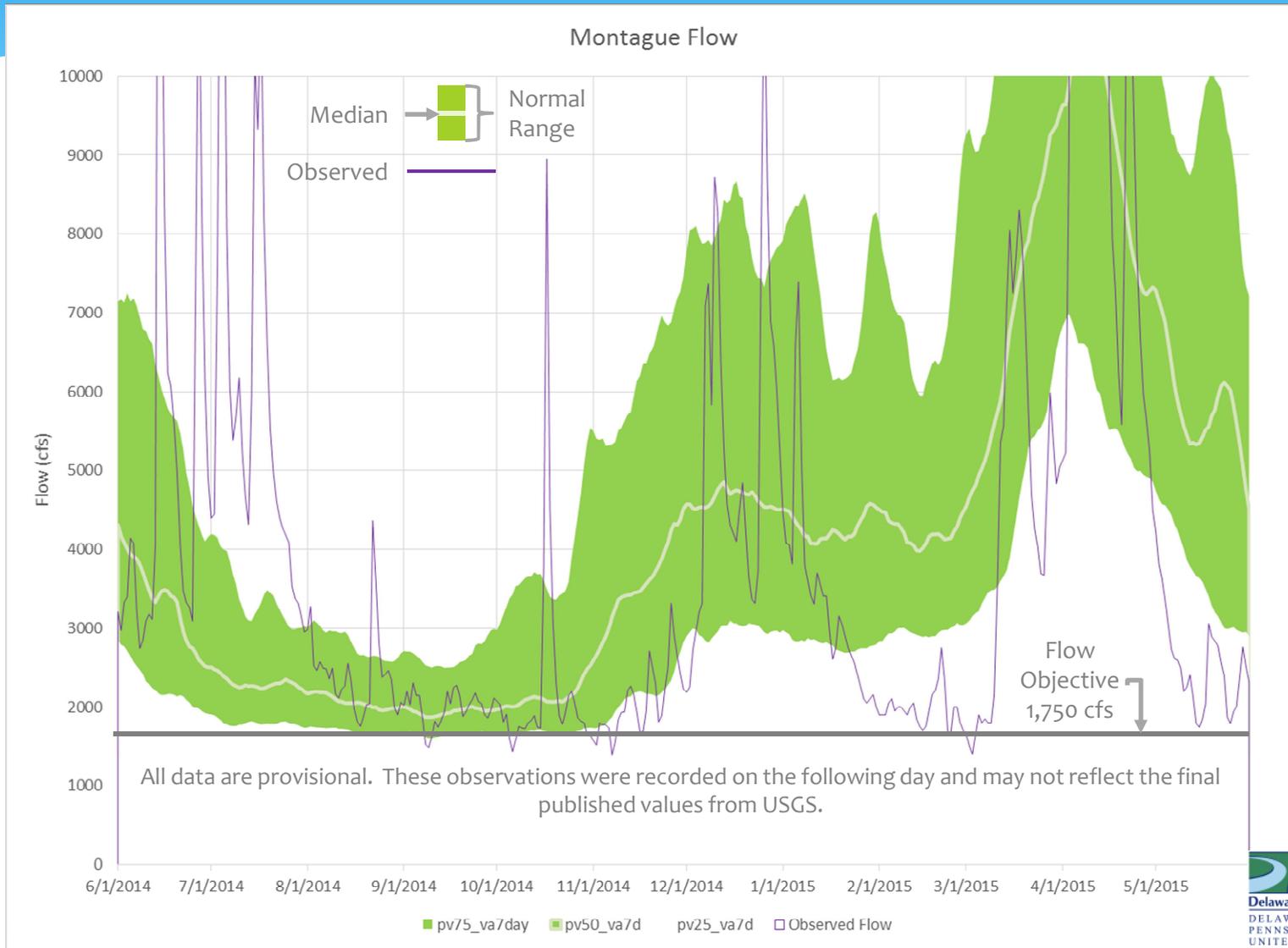
## Water Released From Lower Basin Reservoirs to Meet Trenton Flow Objective (MG)

Beltzville	Blue Marsh
3,690	582
Water from DRBC Water Supply Storage	

12 days less than 3,000 cfs  
Some during ice-affected period

Challenges to meeting flow objectives include changes to weather predictions and power generation schedules.

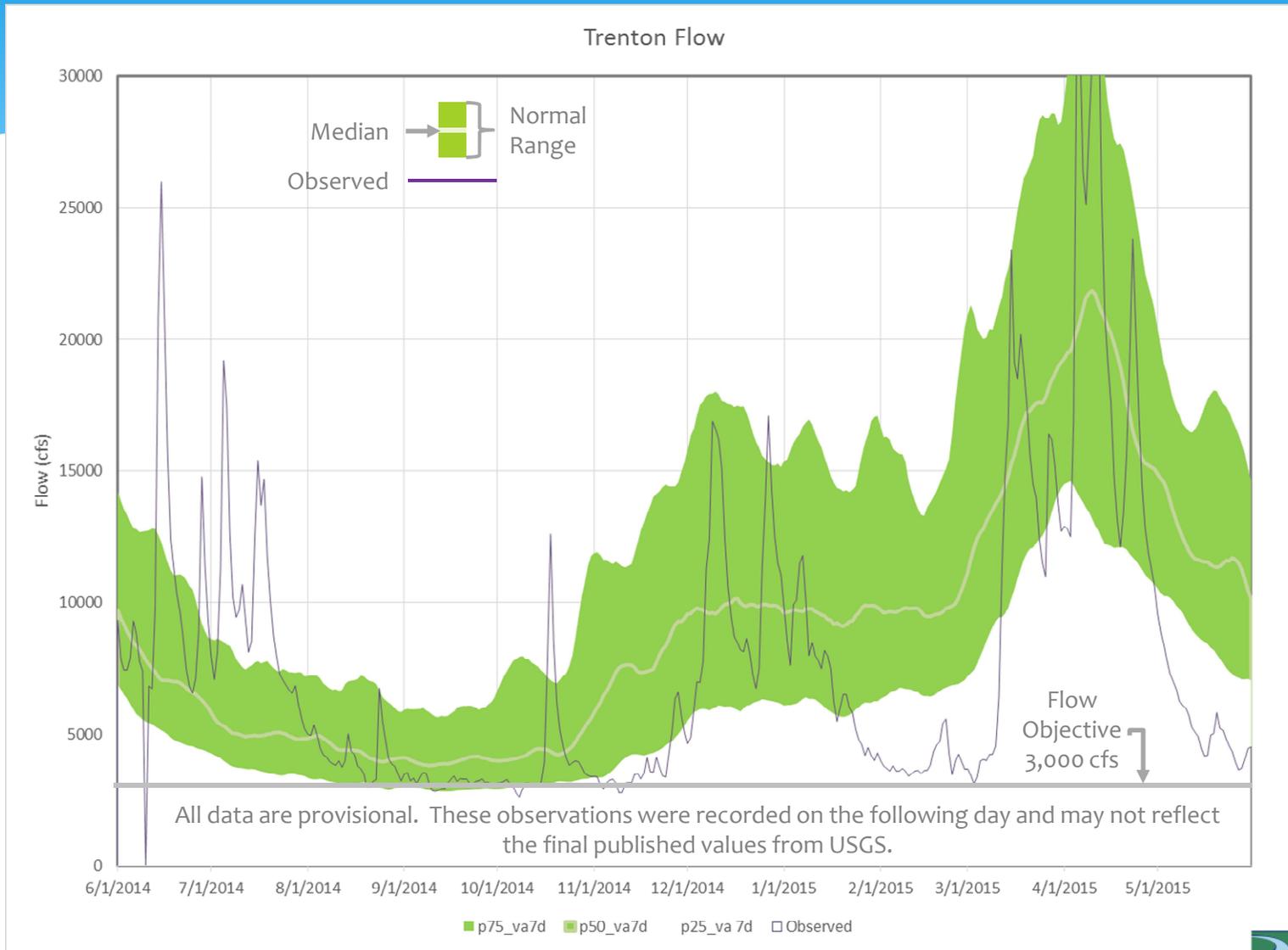
# Montague Flow



Data Source: USGS

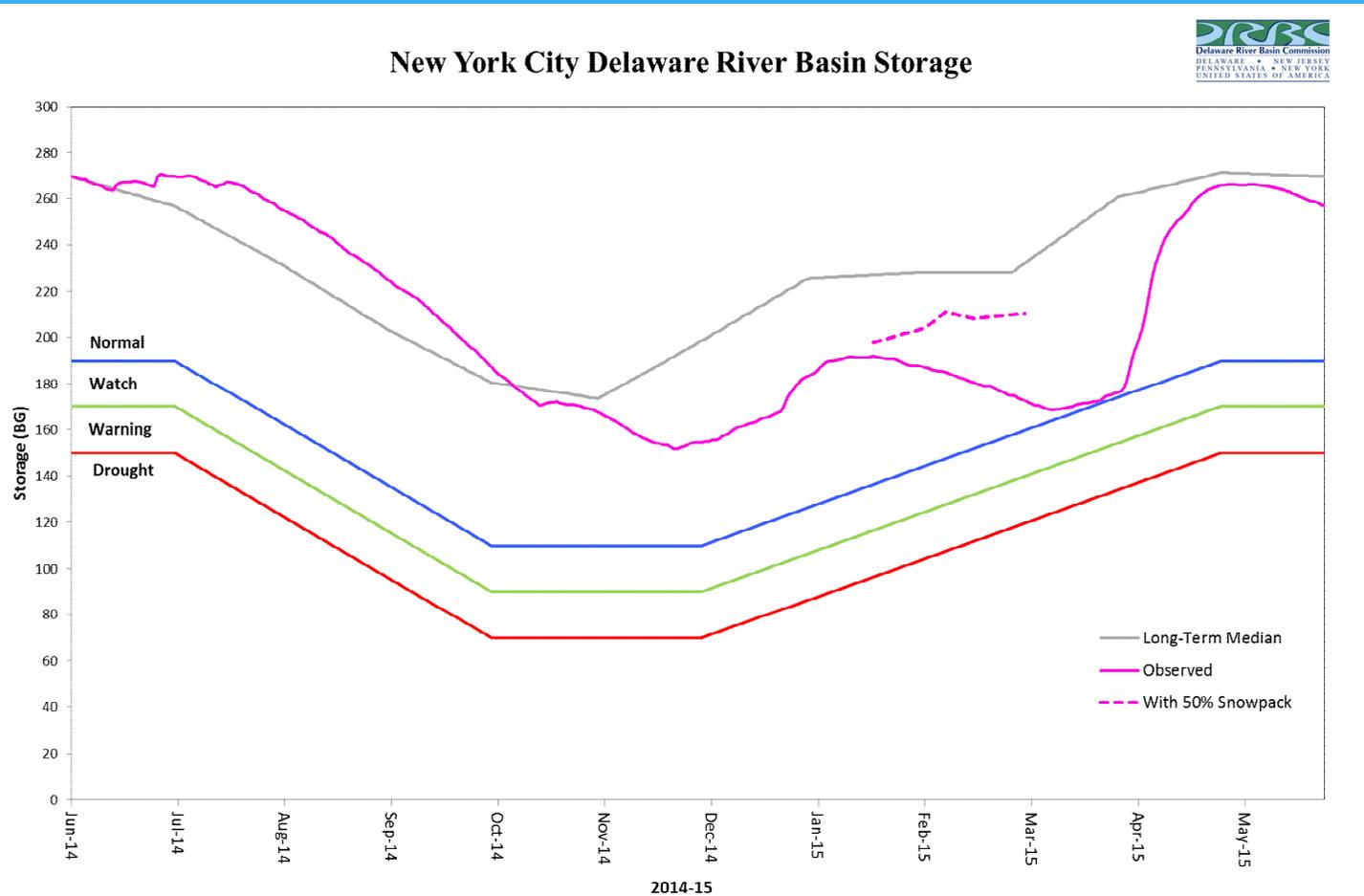


# Trenton Flow



Data Source: USGS

# Potential Drought Warning Averted



Data  
Source:  
NYC  
Generated  
by DRBC

NYC-OST simulations indicated that, considering the snowpack, adjustments to diversions and changing the release table, entrance into drought warning could be averted and was.

# Conservation Releases

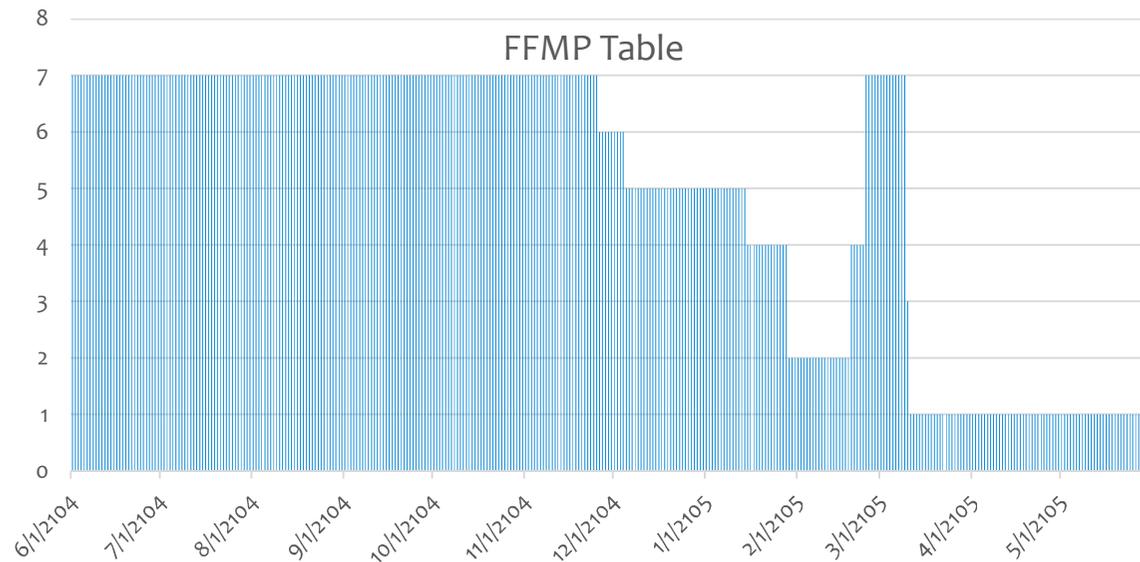
## Volume of Conservation Releases (MG)

	FFMP	REV1	Difference	Percent over REV1
Cannonsville	58860	20655	38206	185%
Pepacton	29917	14554	15363	106%
Neversink	18186	8660	9526	110%

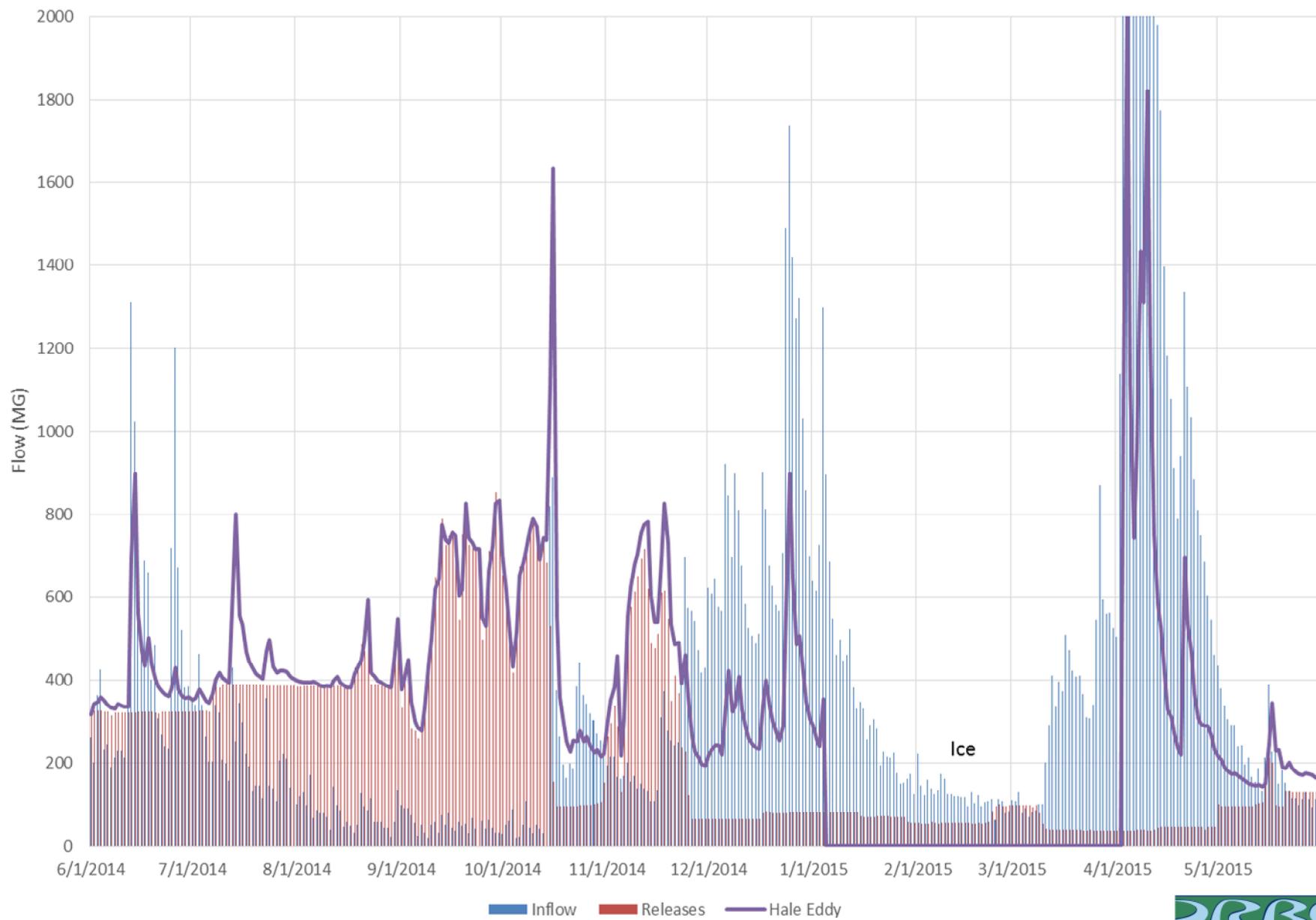
Values are conservation releases only and do not include the volume of directed releases.

## Release Tables

FFMP Table	Number of Days	Percent
G	192	53%
F	9	2%
E	41	11%
D	19	5%
C	1	0%
B	21	6%
A	82	22%



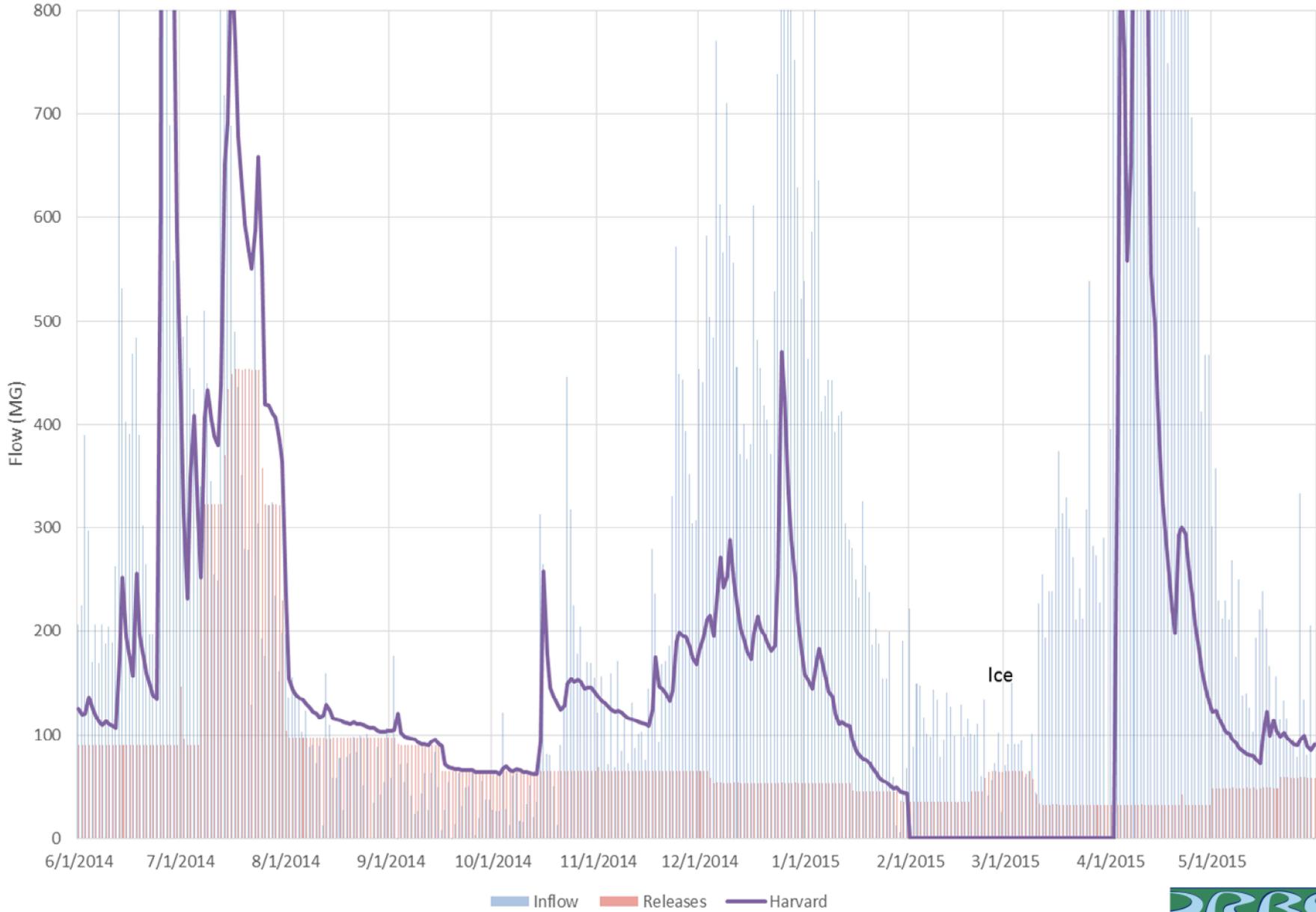
### Cannonsville Inflow, Releases and Downstream Flow



Data Source: USGS



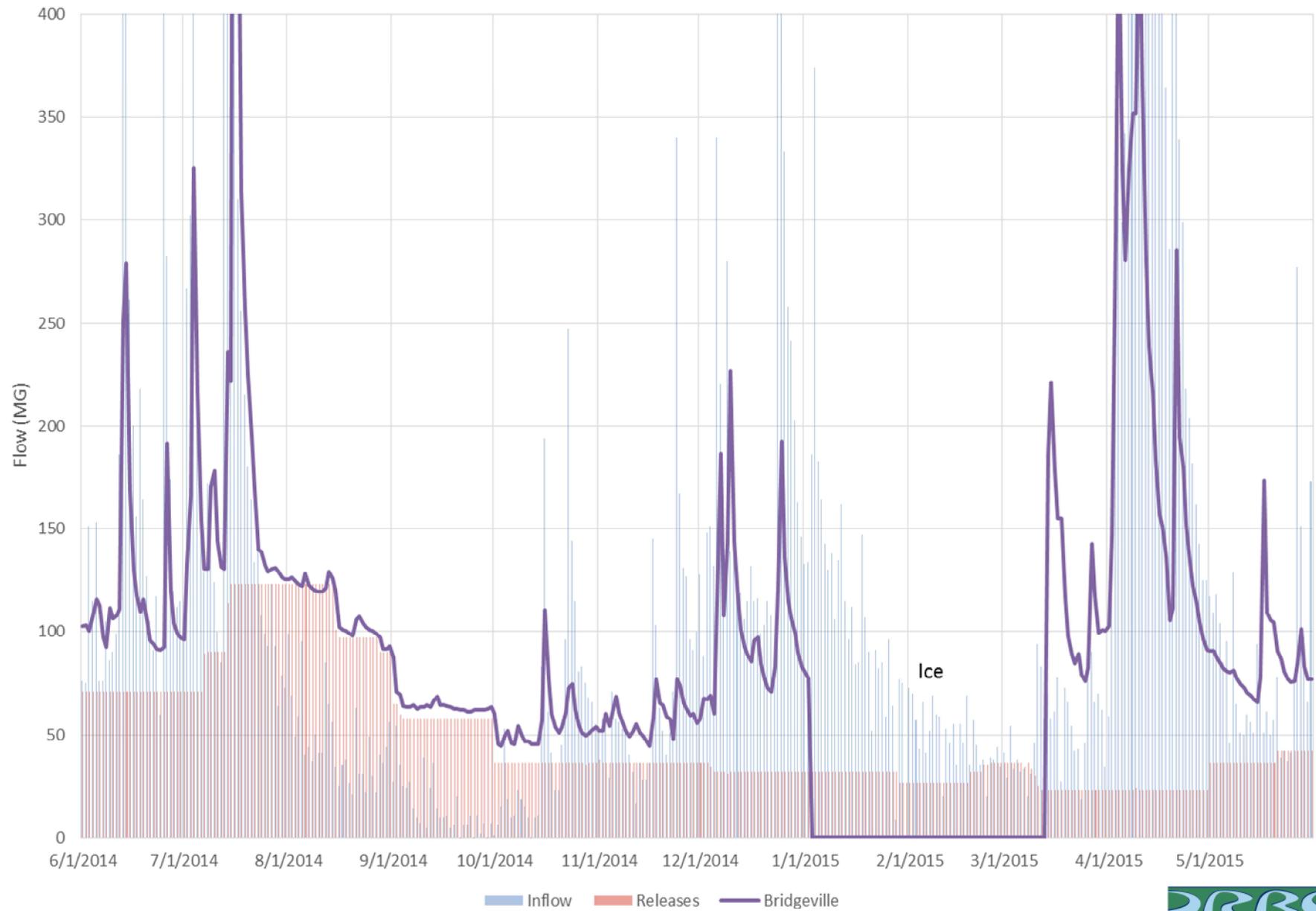
### Pepacton Inflow, Releases and Downstream Flow



Data Source: USGS



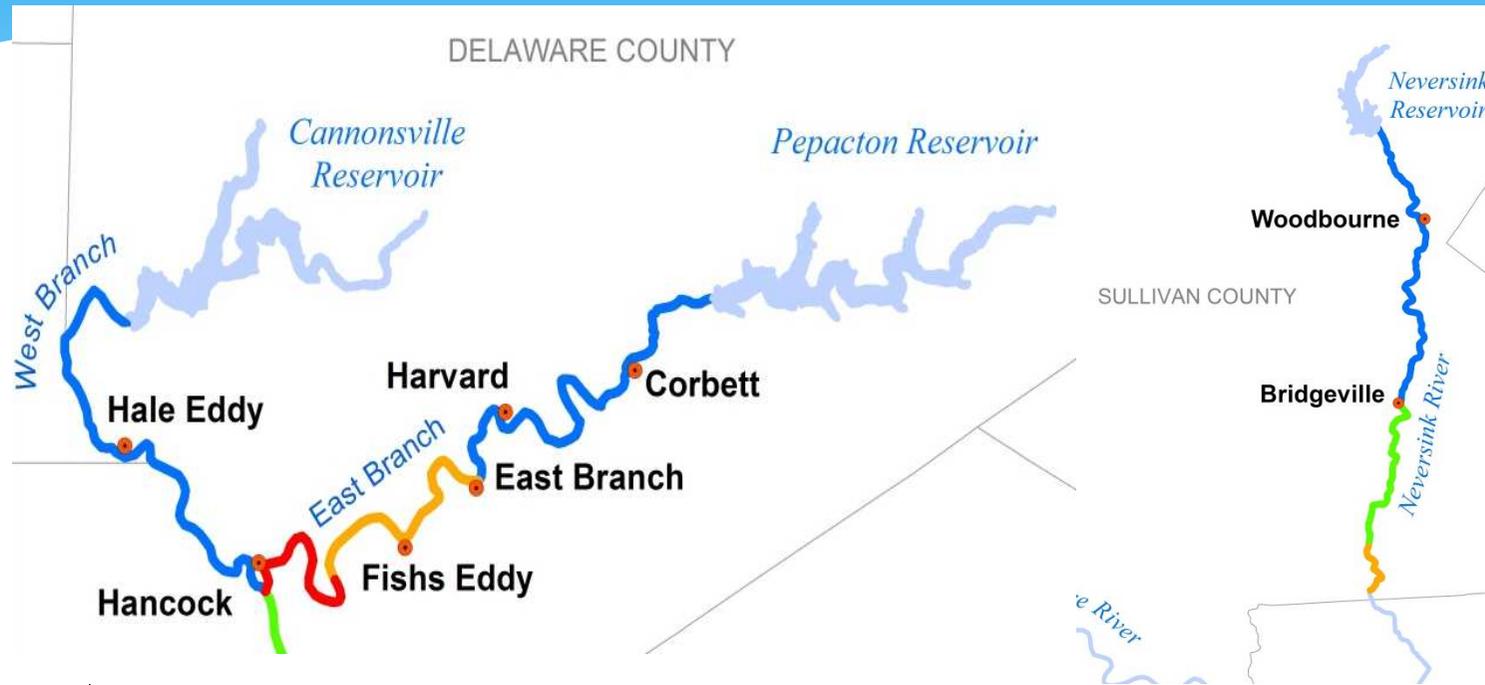
### Neversink Inflow, Releases, Downstream Flow



Data Source: USGS



# Habitat Protection (temperature)



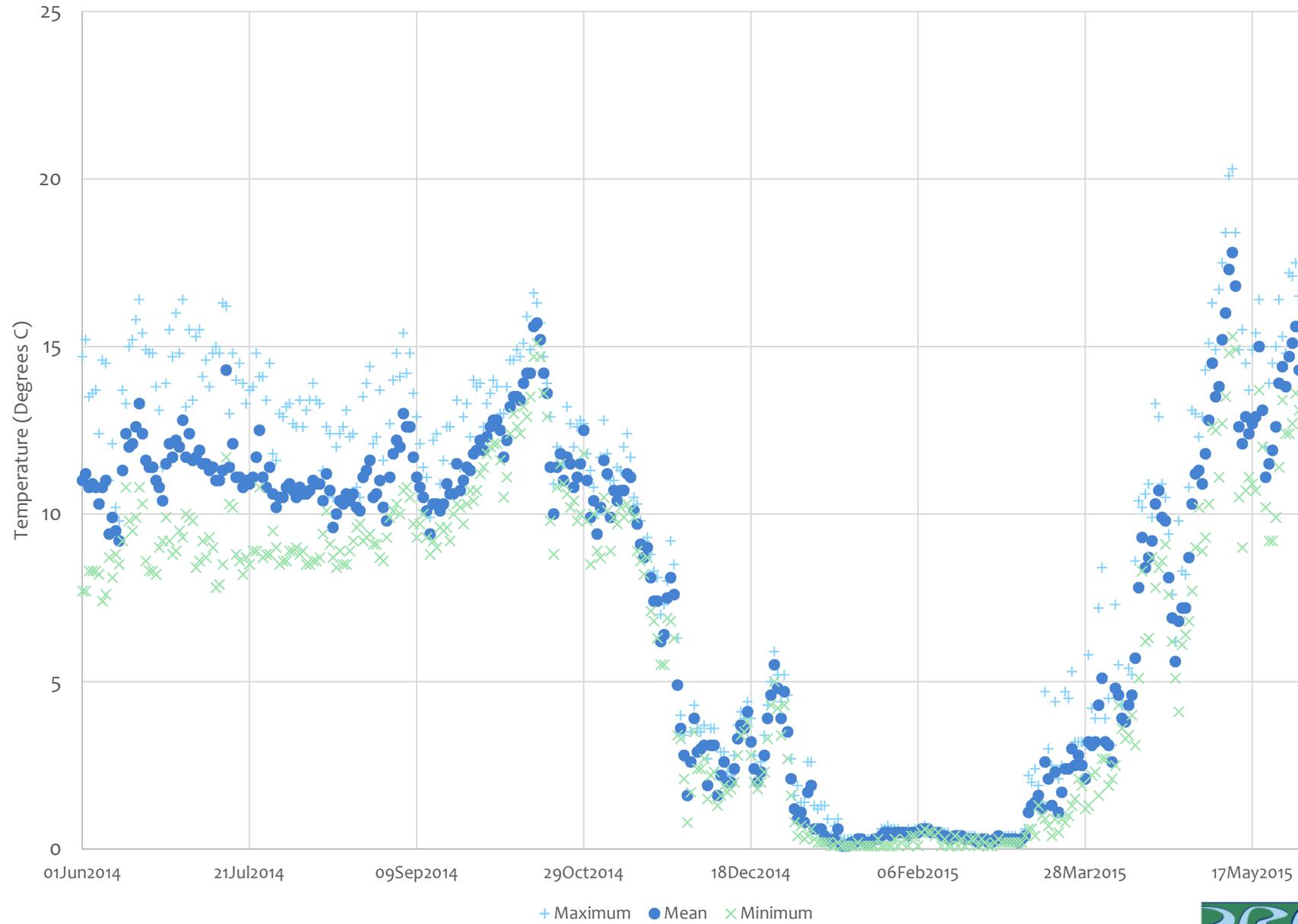
## Coldwater Ecosystem Protection Level

For non-drought years; includes flow & water temperature.

- Excellent
- Good
- Moderate
- Minimal

**GOALS for Excellent Habitat:**  
Summer temperatures typically  
less than 20C  
Rare exceedances of > 24C

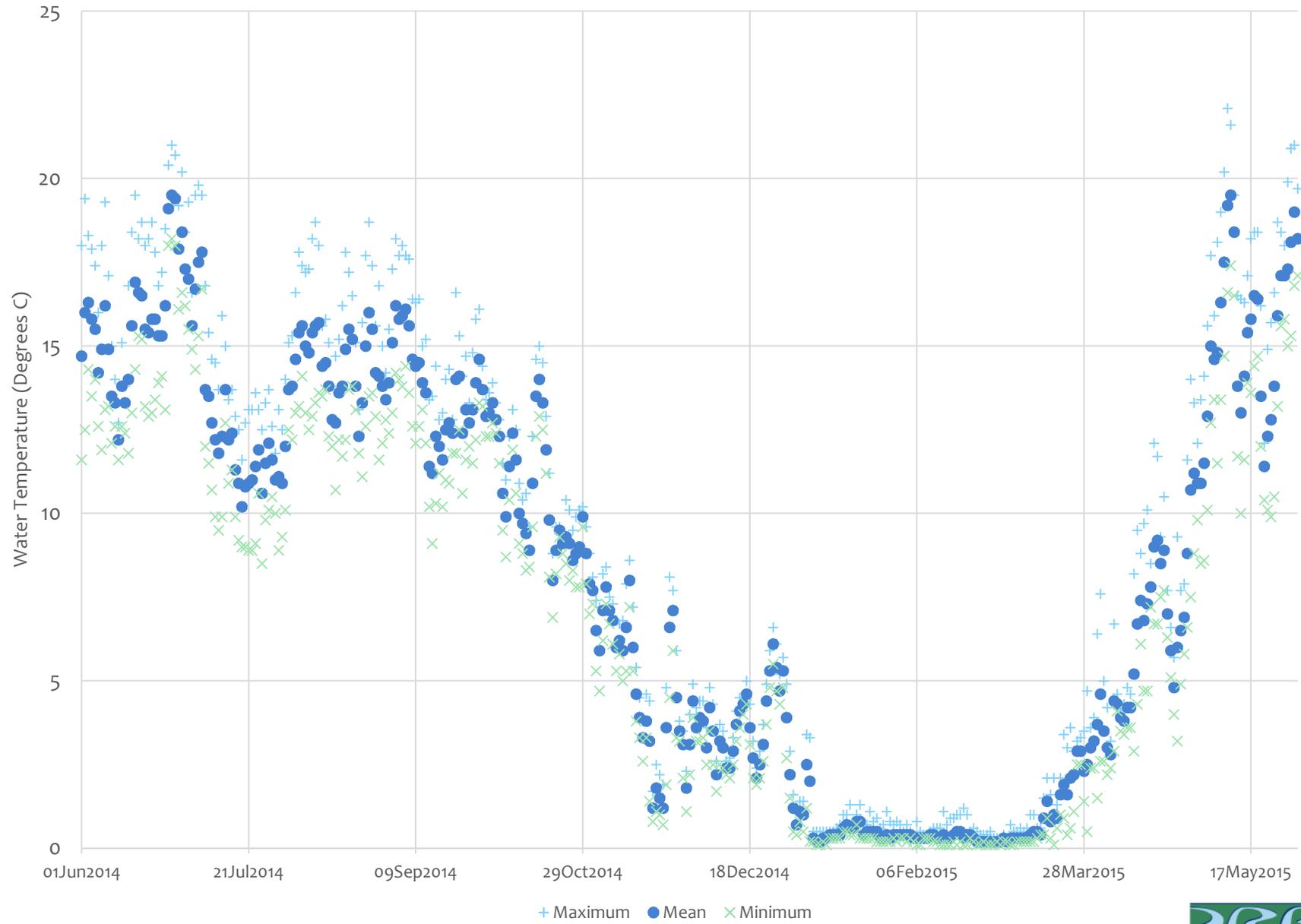
# Temperature at Hale Eddy



Data Source: USGS



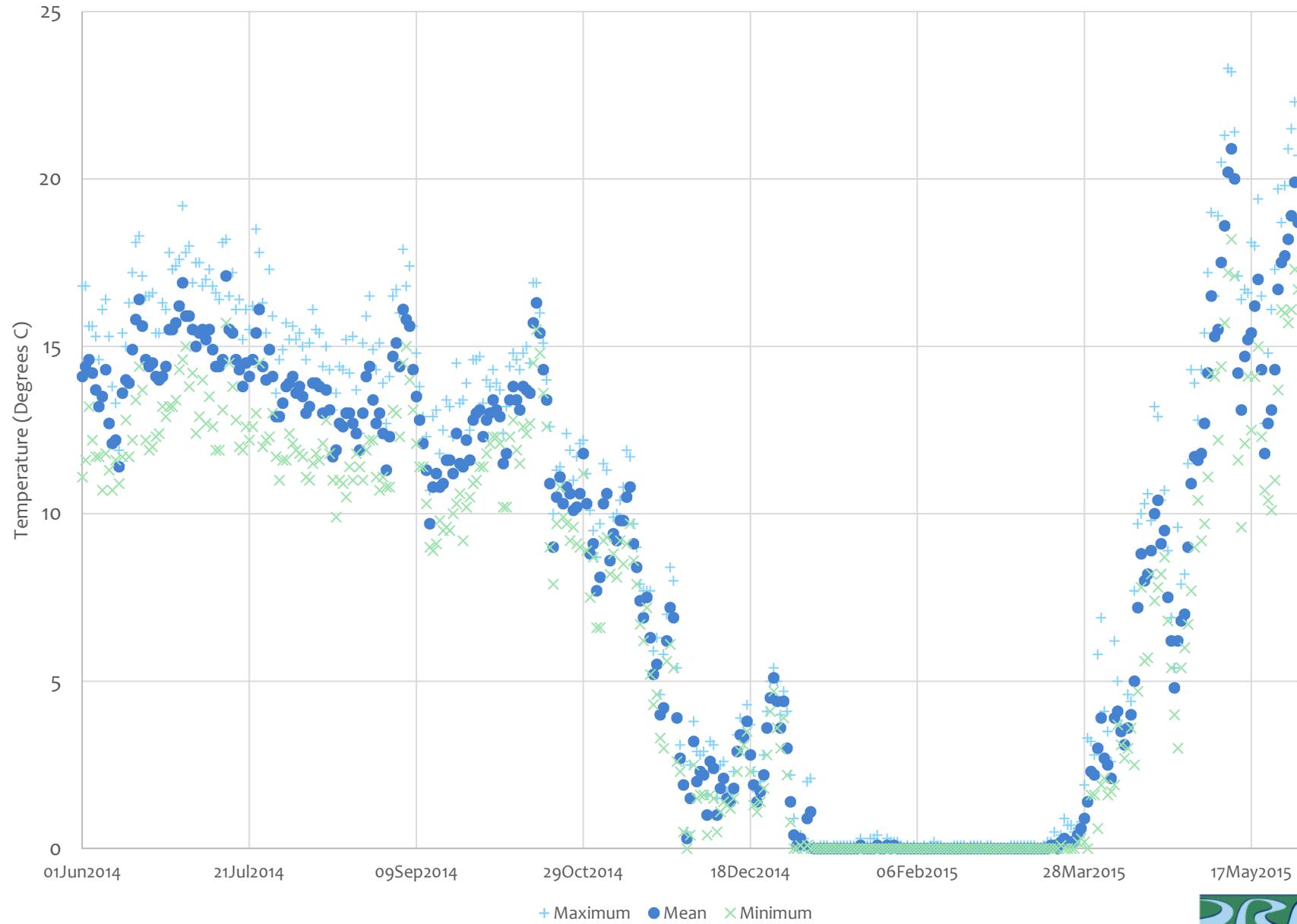
# Temperature at Harvard



Data Source: USGS



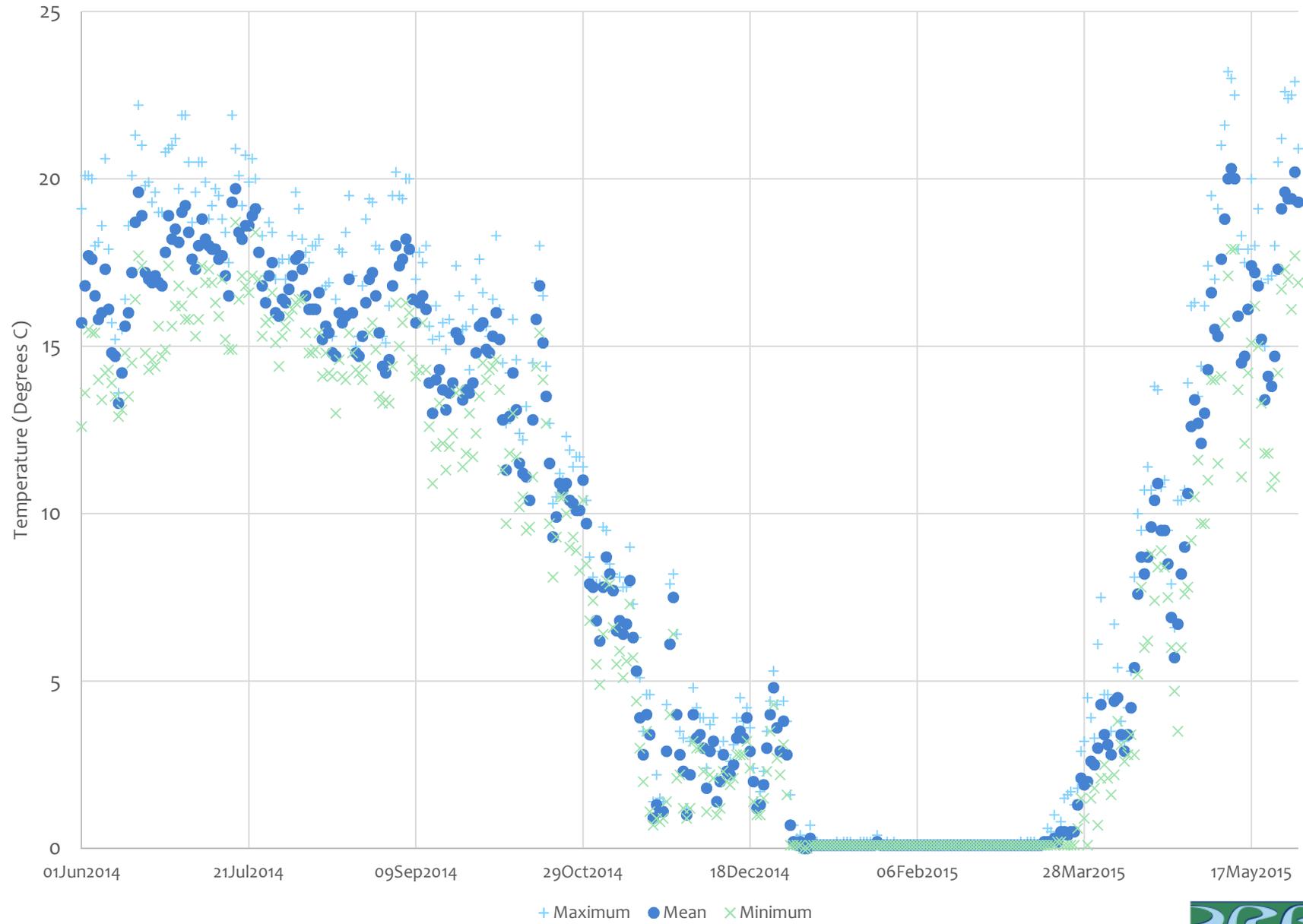
# Temperature at Hancock



Data Source: USGS



# Temperature at Bridgeville

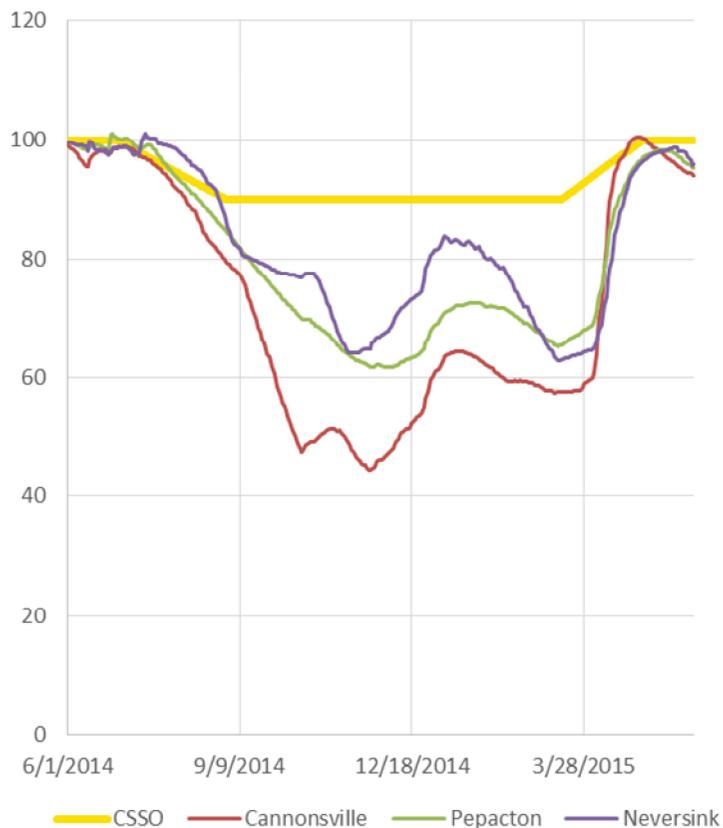


Data Source: USGS



# Discharge/Spill Mitigation

Useable Storage and Conditional Seasonal Storage Objective



Raw Data Source: NYC; Compiled by DRBC

	<b>Spill Volume (MG)</b>	<b>Dates</b>	<b>Days</b>
Cannonsville	407	4/24-5/2/2015	9
Pepacton	3597	6/25-7/7/2014	13
Neversink	1326	7/14-7/22/2014	9

	<b>Water Released for Discharge Mitigation (MG)</b>	<b>Number of Days Above Conditional Seasonal Storage Objective</b>
Cannonsville	23117	11
Pepacton	12503	34
Neversink	6311	45

# Summary

- \* Montague and Trenton flow objectives were met within operational constraints (weather forecasts, power generation)
- \* Drought averted through using OST diversion and release table adjustments
- \* Table 4g conservation releases (larger than REV1) – were made through summer and fall
- \* Temperature goals met for tailwaters
- \* Storage was below the Conditional Seasonal Storage Objective (CSSO) for much of the year.