Delaware River Basin Commission

Flow Management in the Delaware River Basin

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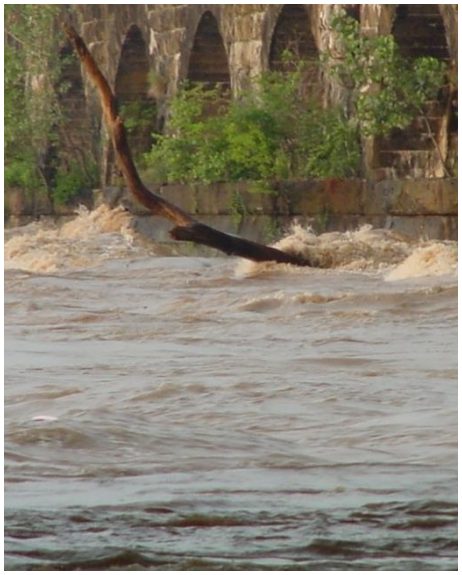
September 7, 2018
Meerwald Legislative Education Sail



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Flow Management

* **Storage – Drought and Flood Mitigation**
* **Low Flow Augmentation**
* **Flow Objectives**
* **Allocations – Conservation**

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Sources of Water

* Decree
* DRBC Storage in USACE Reservoirs
* Emergency
* Consumptive Use Make –Up
* Dockets

In very dry periods, flow at Trenton can be 60 percent or more from reservoir releases

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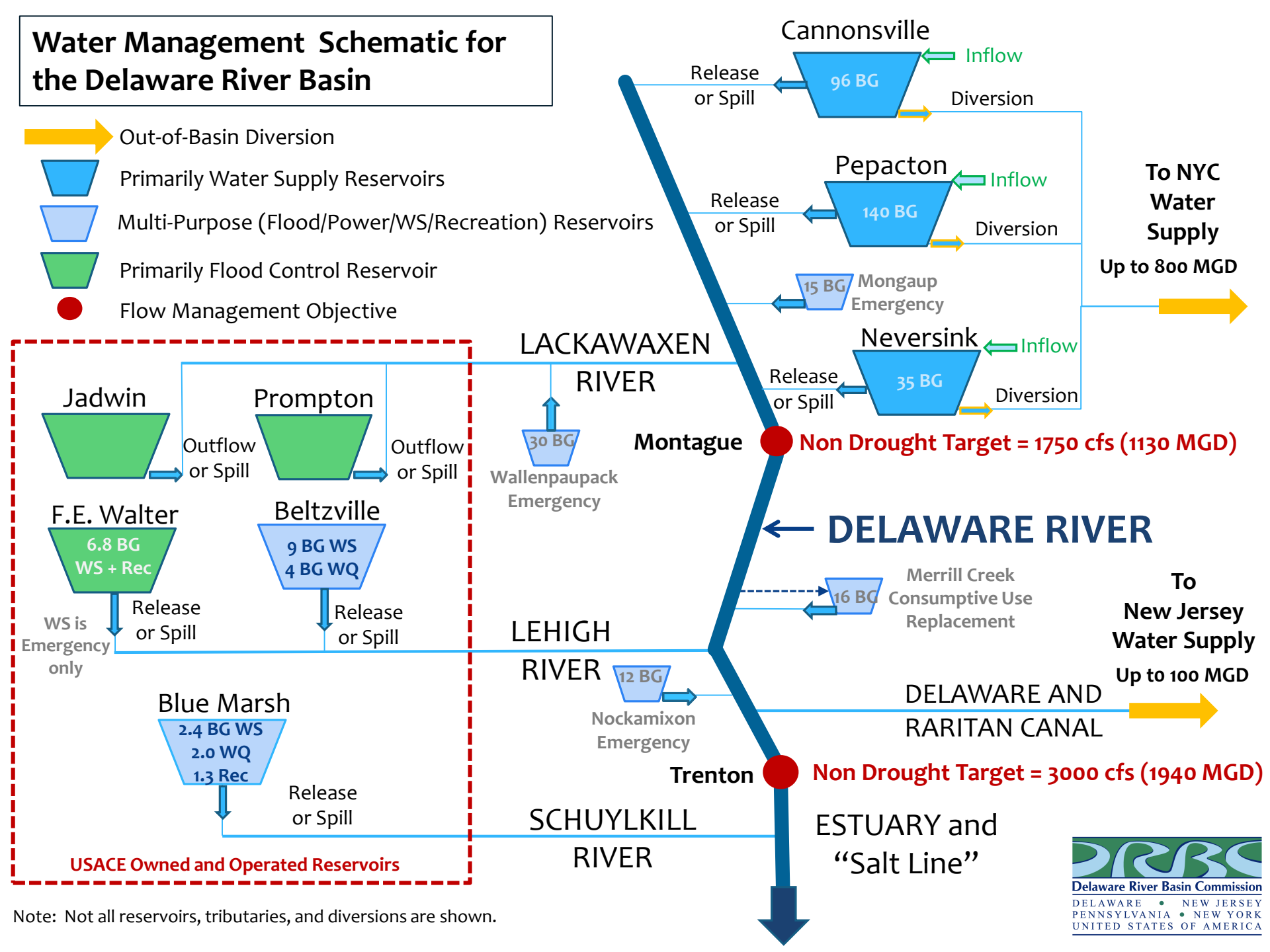
Water Management Schematic for the Delaware River Basin



Note: Not all reservoirs, tributaries, and diversions are shown.

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Hurricane Diane
1955 Flood
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1960s - Drought

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Designing Reservoir Releases

* Timing
* USGS Gages
* River Master's Office (Montague)
  * Balancing Adjustment (over/under adjustments)
  * Post-Release Montague Prediction
  * Hydropower changes to schedule
* Quantitative Precipitation Forecasts (Day 1, Day 2, Day 3, Days 1-2, Days 1-3, Days 4-5, Days 6-7 and 5- and 7-day totals)
* Observed Precipitation
* Meteorologic Model Ensemble River Forecasts (MMEFS)
  * Flow
  * Precipitation

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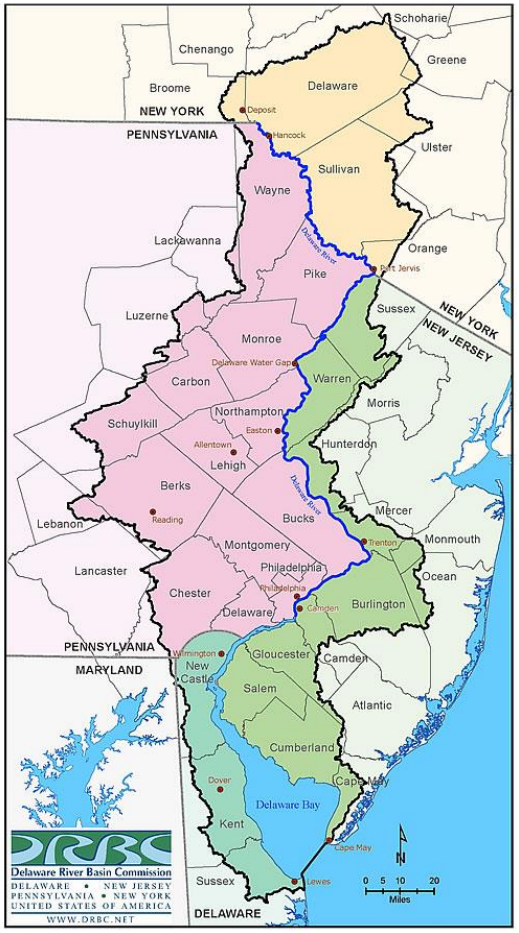
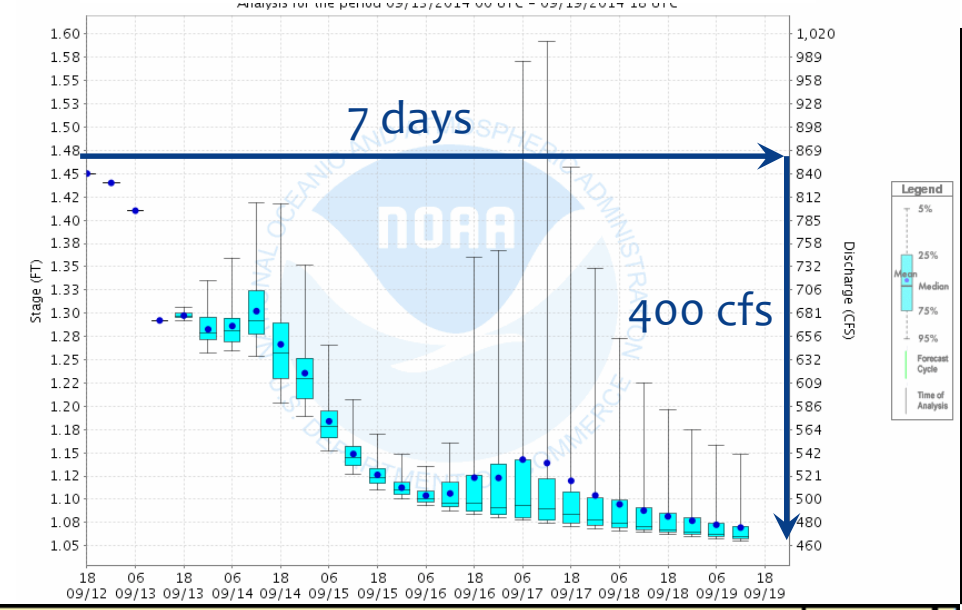
Travel Times



Reservoir	To Montague	To Trenton
Cannonsville	48 hours	96 hours
Pepacton	60 hours	108 hours
Neversink	33 hours	84 hours
Prompton	48 hours	96 hours
Wallenpaupack	16 hours	64 hours
Mongaup	8 hours	56 hours
FE Walter		60 hours
Beltzville		48 hours
Merrill Creek		24 hours
Nockamixon		12 hours
Blue Marsh		38 hours (Estuary)

How quickly will baseflow drop?

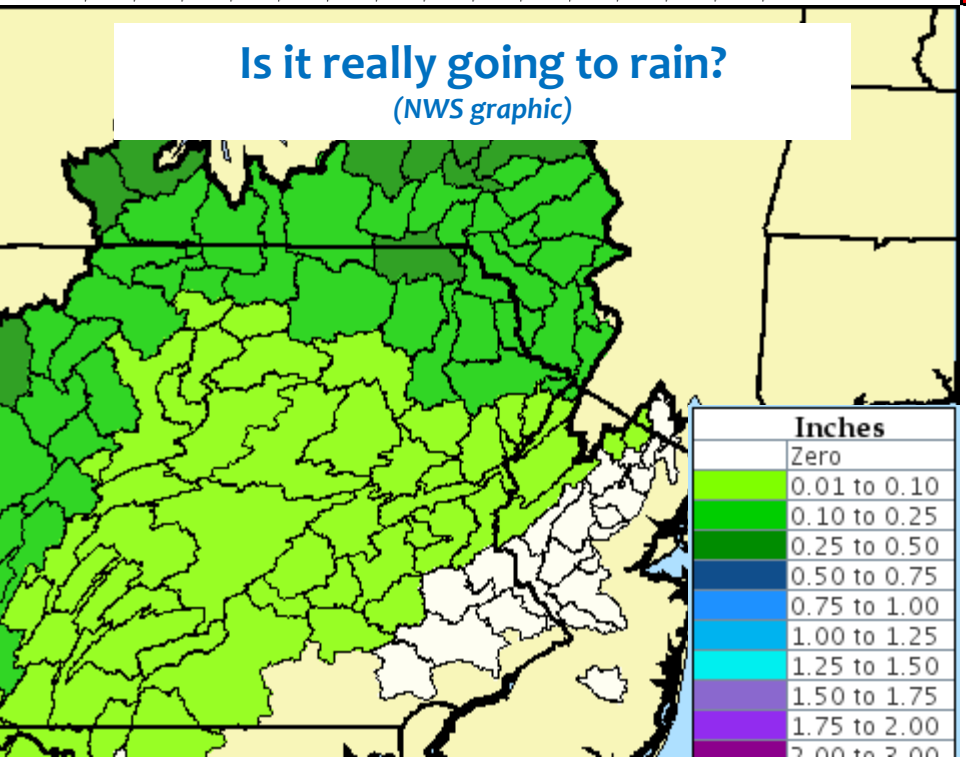


Will it get there on time?

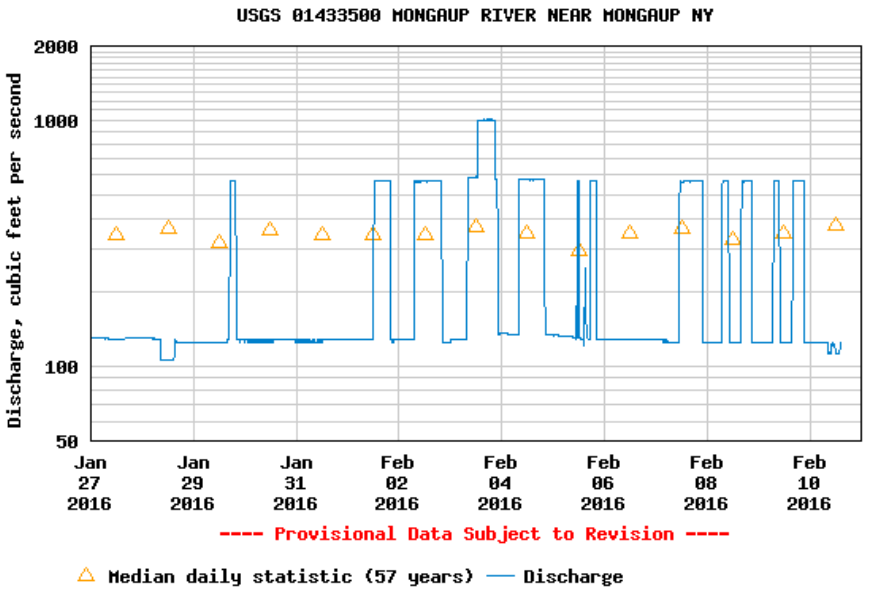
Approximate Travel Times During Low Flow Conditions				
	Hours		Days	
	Montague	Trenton	Montague	Trenton
Cannonsville	48	96	2	4
Pepacton	60	108	2.5	4.5
Neversink	33	84	1.4	3.5
Wallenpaupack	16	64	0.7	2
Rio	8	56	0.3	2
Merrill Creek		24		1
FE Walter	44	60		2.5
Beltzville		32		2
Nockamixon		12		0.5
	Philadelphia			
Blue Marsh		38		

Is it really going to rain?

(NWS graphic)



Will scheduled hydropower release occur?



Water Resource Management
in the DRB

* System developed over a long time with competing objectives
* Finite resources (water and storage)
* Operations can be designed to:
  * Use the resource when available
  * Conserve the water when becoming scarce
  * Be more drought resilient
* Uncertainties in real-time management – some irreducable
* Future uncertainties: *today could be the first day of the next drought of record*

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