

**Getting Our Fair Share of Water:
An Equitable Apportionment Plan
for the Delaware Water System**

Safe Yield

The safe yield of a drainage basin/reservoir system is defined as the amount of water that can be continuously withdrawn from the system during a specified drought, without causing an undesirable result; and is typically based on an analysis of conditions during the “drought-of-record” of the system.

NYC's Water Supply System is comprised of three major systems:

- The Delaware system
- The Catskill system
- The Croton system

These three systems are used in combination to supply drinking water to approximately 9 million people including: NYC; and residents of outside communities in Westchester, Putnam, Orange and Ulster counties.



The Croton system has been essentially off-line for many years due to water quality issues; resulting in additional demands being placed on the Delaware and Catskill systems.

With NYC striving to maintain a Filtration Avoidance Determination (FAD) status for the Delaware and Catskill systems, turbidity issues with the Catskill system have placed an even greater demand on the Delaware system

The return of the Croton system later this year will restore up to 290mgd of high quality water to the NYC Water Supply System; and will reduce the demands on the other two systems.



1954 Decree

1954

Decree

mgd

NYC system safe yield

1,665

UDR diversion safe yield

800

Drought-of-Record

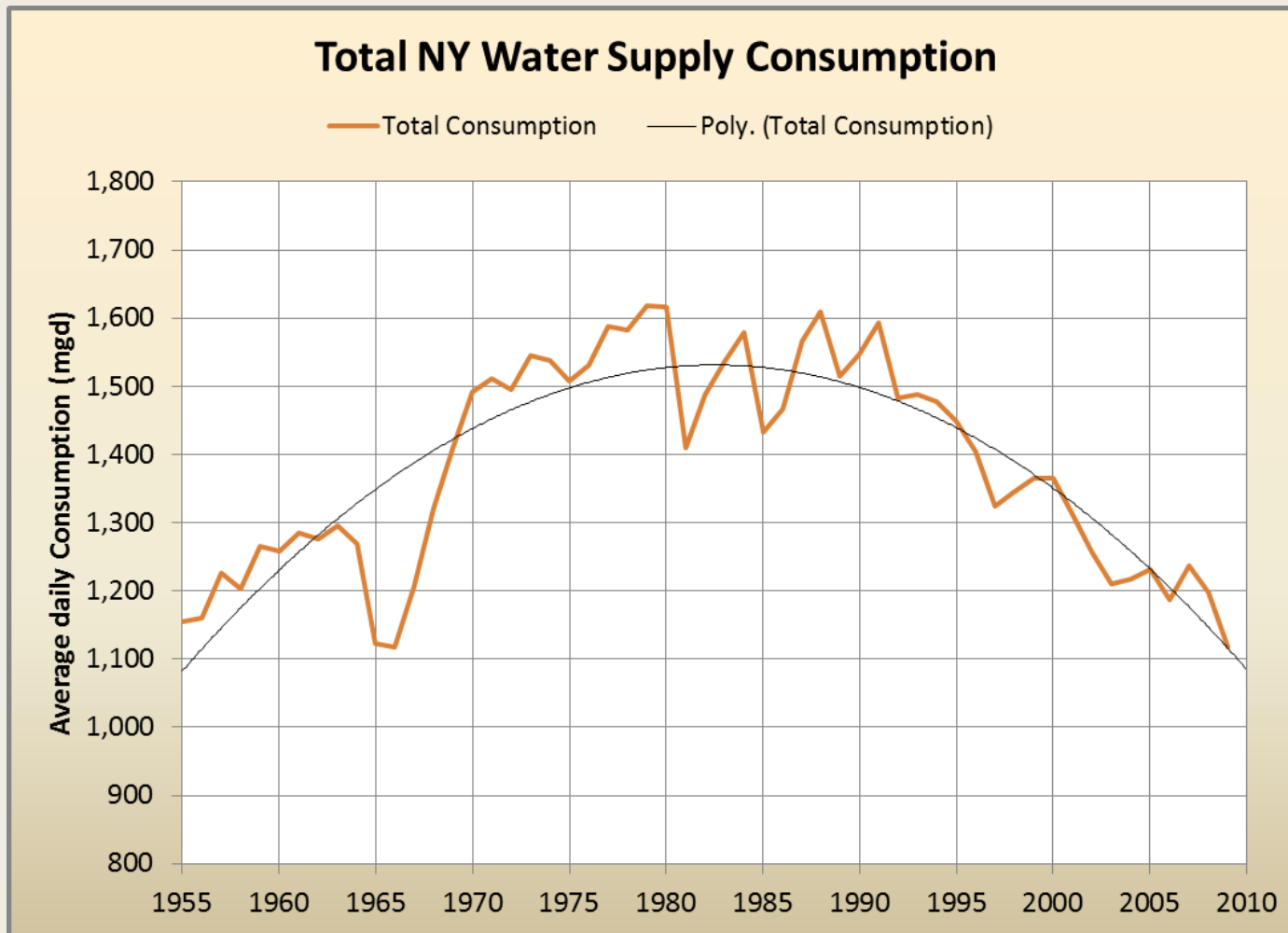
1930's

1954 Decree vs 1960's Drought

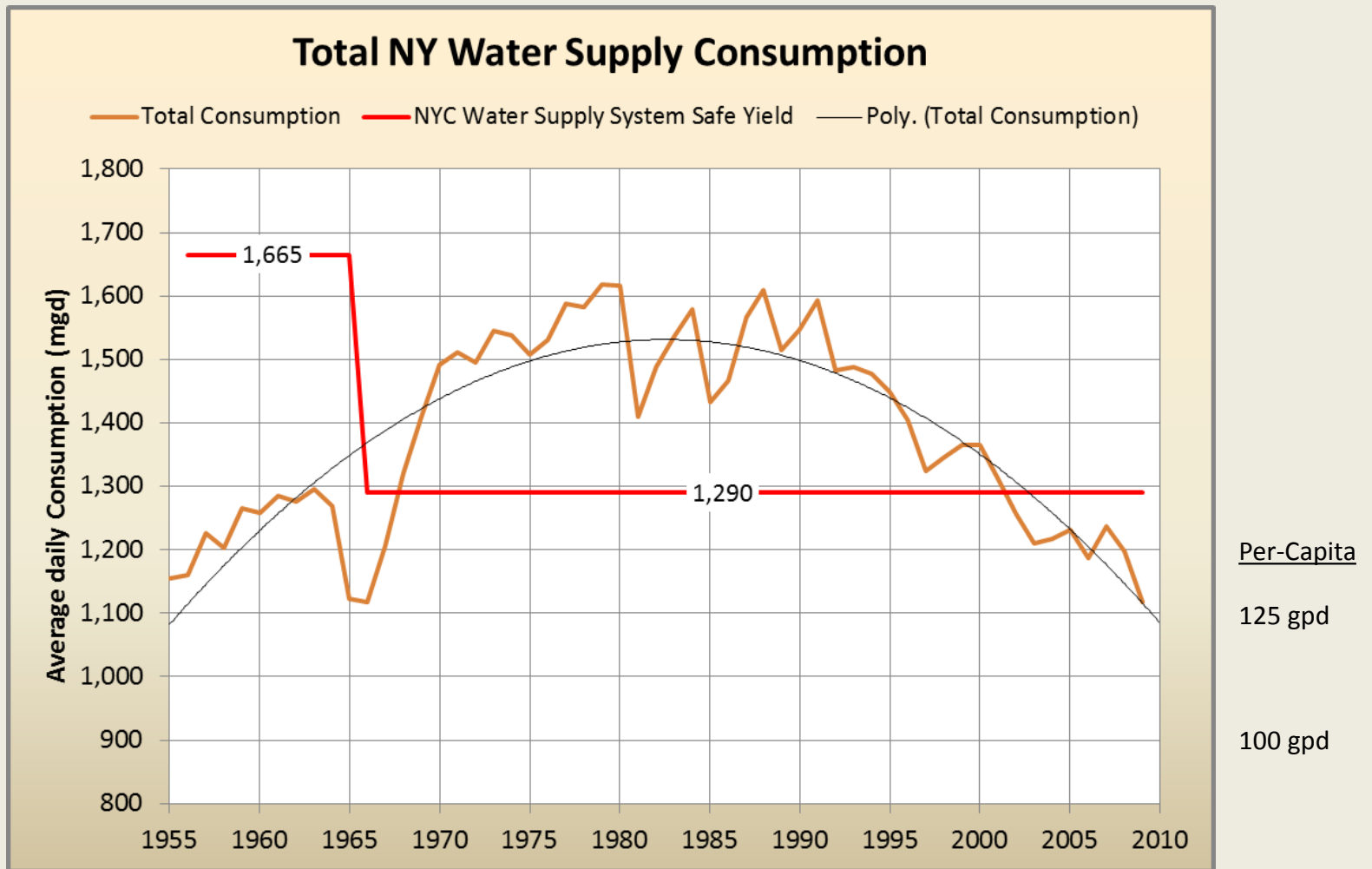
	1954	1960's
	Decree	Drought
	mgd	mgd
NYC system safe yield	1,665	1,290
UDR diversion safe yield	800	480
Drought-of-Record	1930's	1960's

The 1983 Good Faith Agreement (GFA)

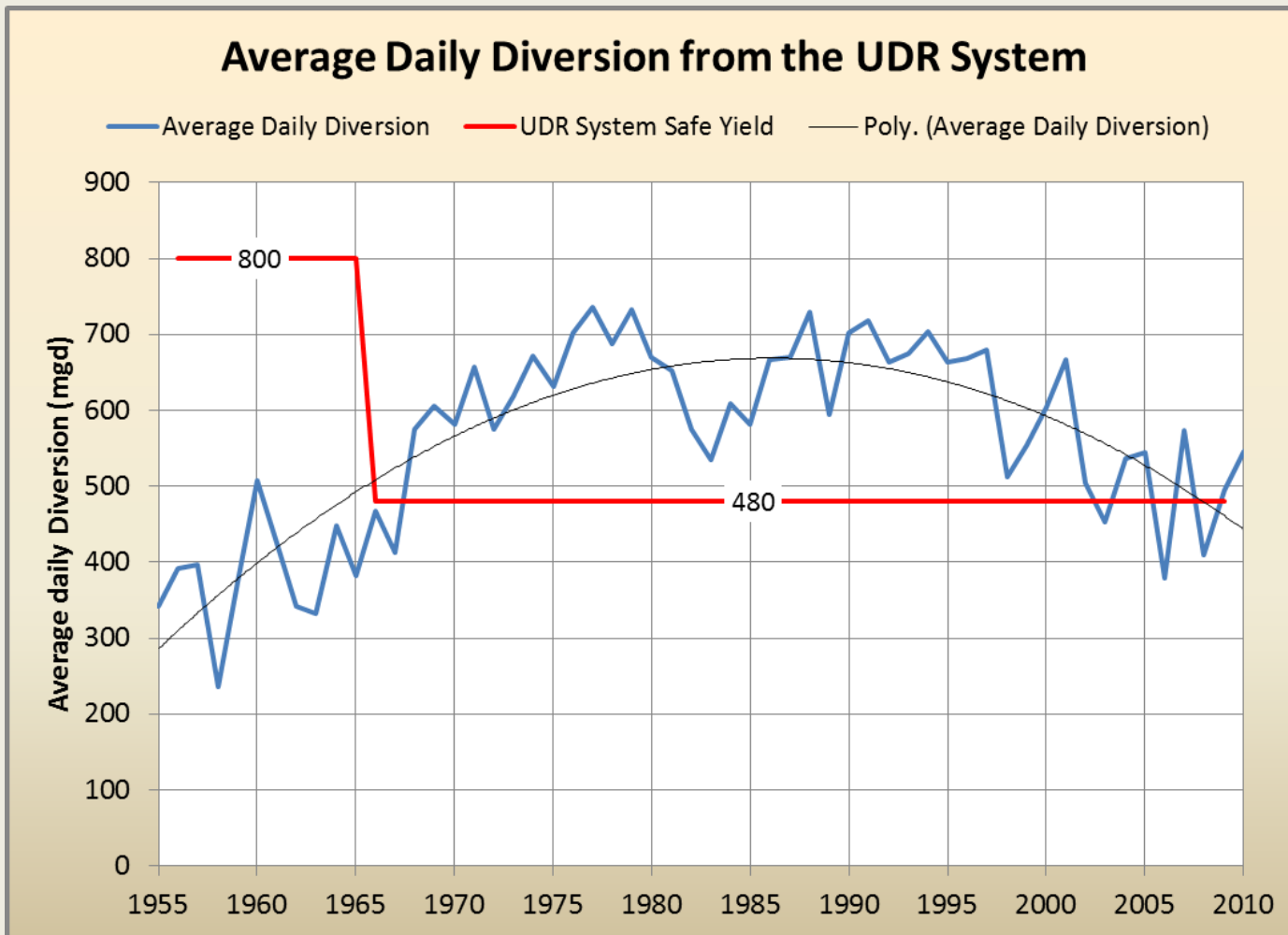
- The drought of 1980-82 brought things to a head. The average consumption rate of NYC's Water Supply System preceding the drought had climbed above **1,600** mgd (close to the original WSS safe yield of **1,665** mgd), and NYC needed help.
- The GFA accommodated NYC by permitting the City to continue to divert up to **800** mgd in normal conditions; but progressively reduced both NYC's permitted diversion rate and the lower-basin flow guarantees, during drought conditions.
- At the same time, the City was placed on notice to take immediate steps to reduce its per-capita consumption rate.



- NYC's Total Water Consumption peaked in the early '80's, and has now returned to the level of the 1950's.



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- NYC's rate of progress in reducing the demand on the UDR system however, has not been as successful.

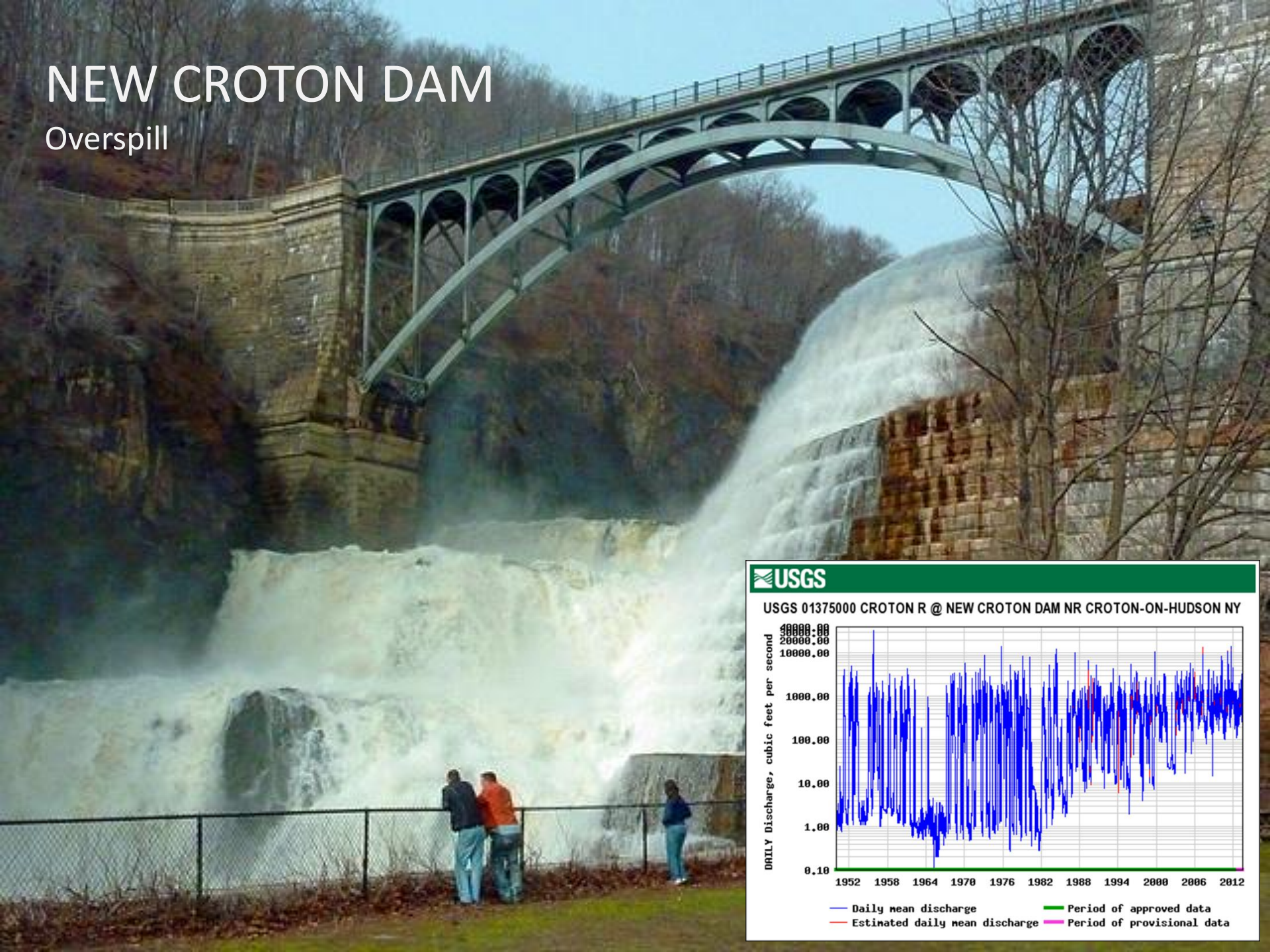
WATER OVER THE DAM

Underutilization of the Croton and Catskill system's safe yields

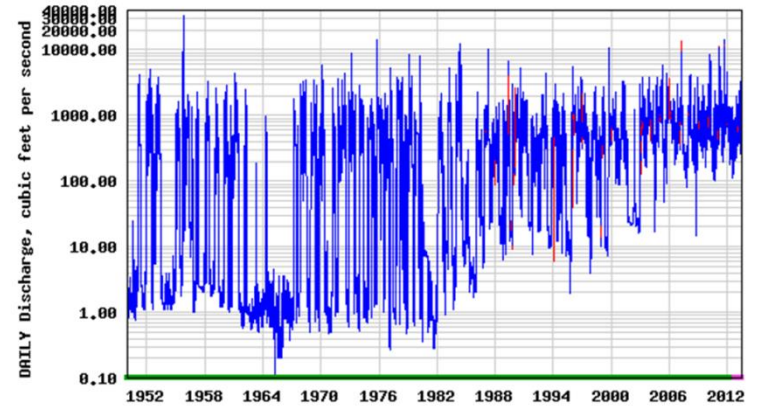
- USGS data indicates significant dumping of excess water from the Croton and Catskill systems, at the following three locations:
 1. New Croton Dam to the Hudson
 2. Schoharie Gilboa Dam discharge to Schoharie Creek
 3. Ashokan Dam discharge to Esopus Creek via the reopened Ashokan "release" channel

NEW CROTON DAM

Overspill

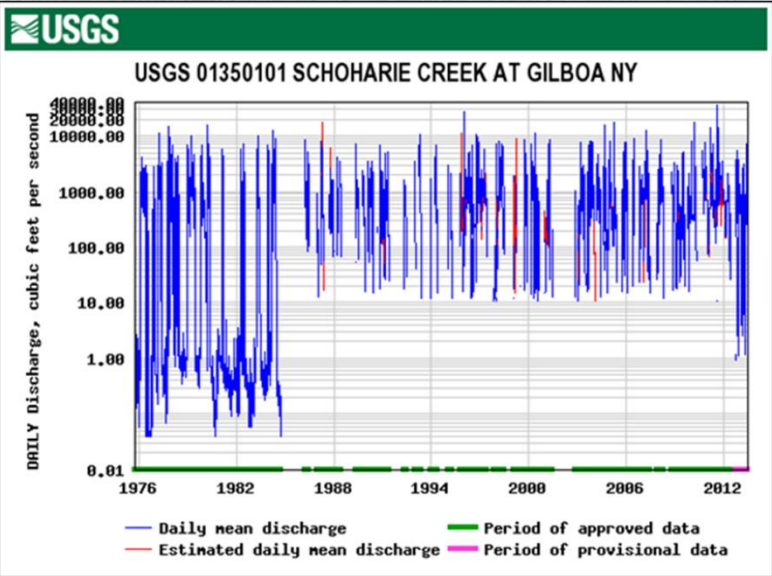
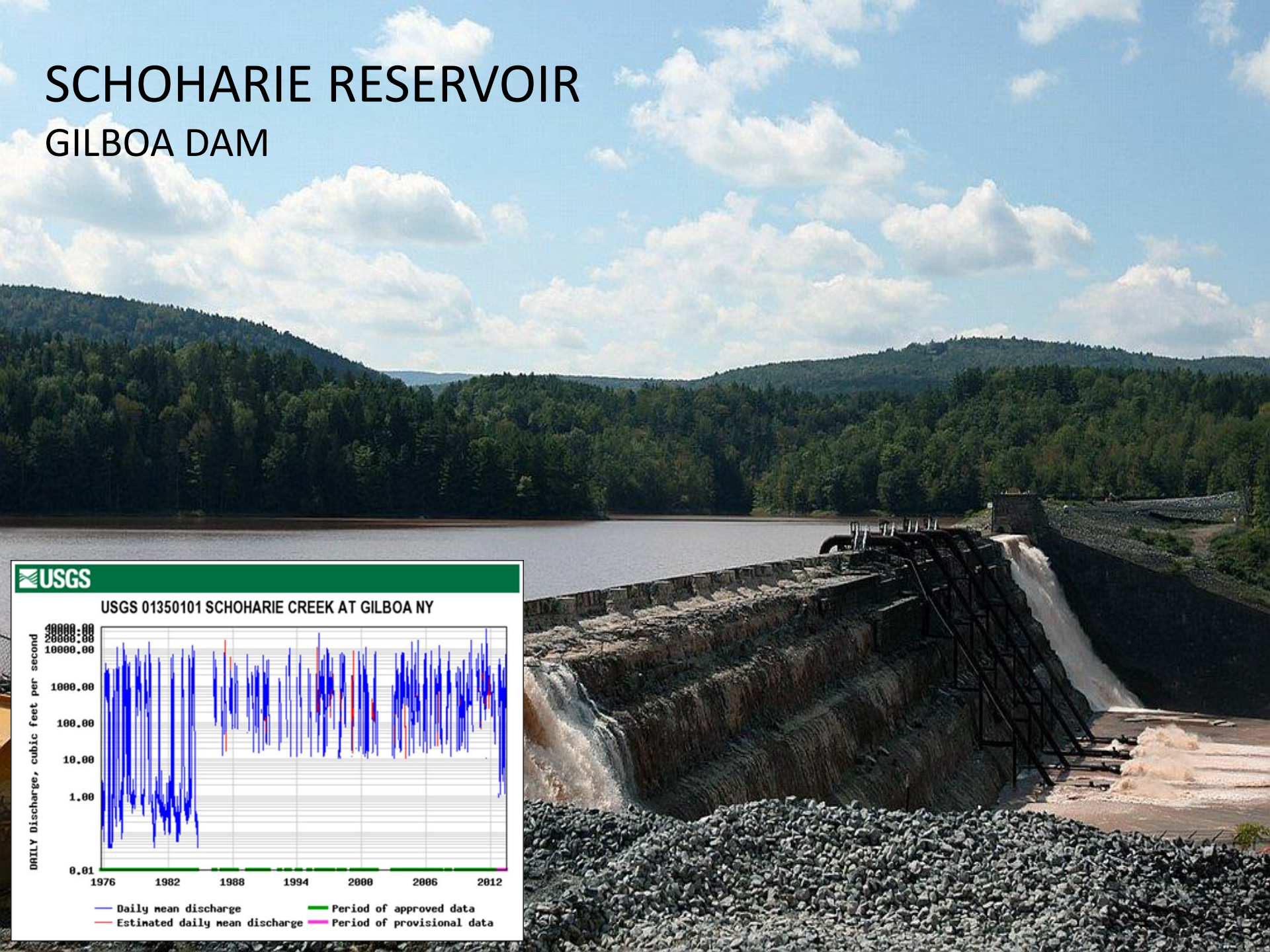


USGS 01375000 CROTON R @ NEW CROTON DAM NR CROTON-ON-HUDSON NY



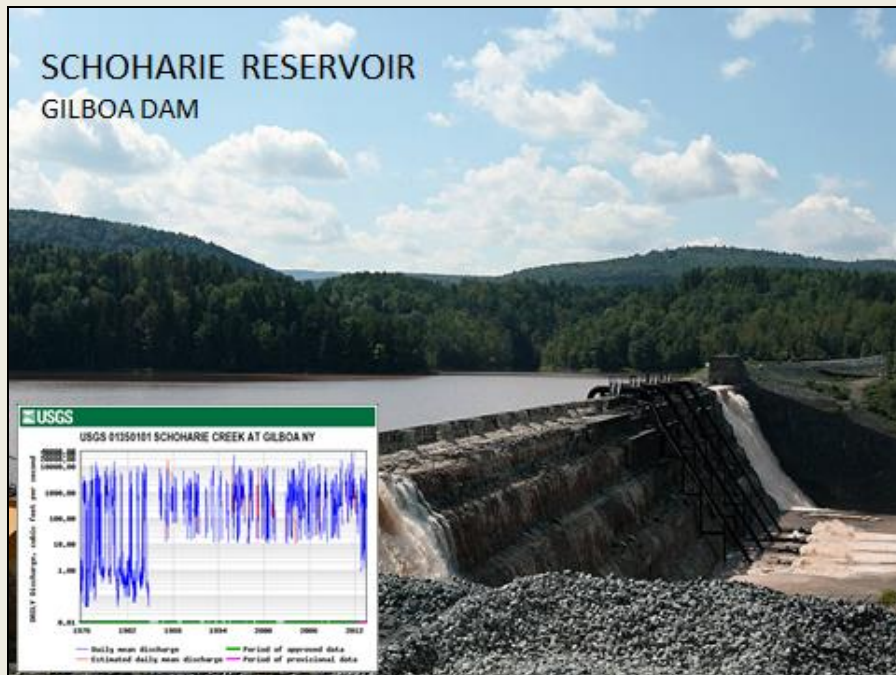
— Daily mean discharge — Period of approved data
— Estimated daily mean discharge — Period of provisional data

SCHOHARIE RESERVOIR GILBOA DAM



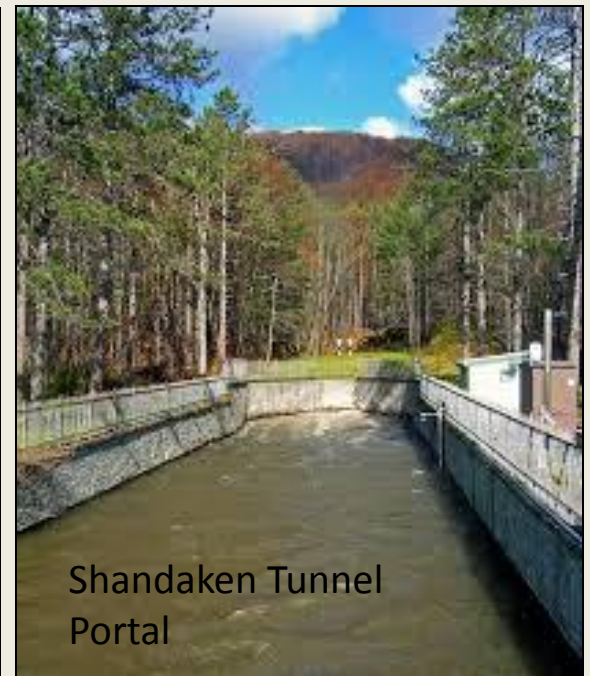
Review of the Catskill System

- The safe yield of the Schoharie watershed is approximately **230** mgd, and yet NYC diversions (via the Shandaken Tunnel) over the long-term, have averaged only **150** mgd; representing an underutilization of: **230 - 150 = 80** mgd of safe yield.



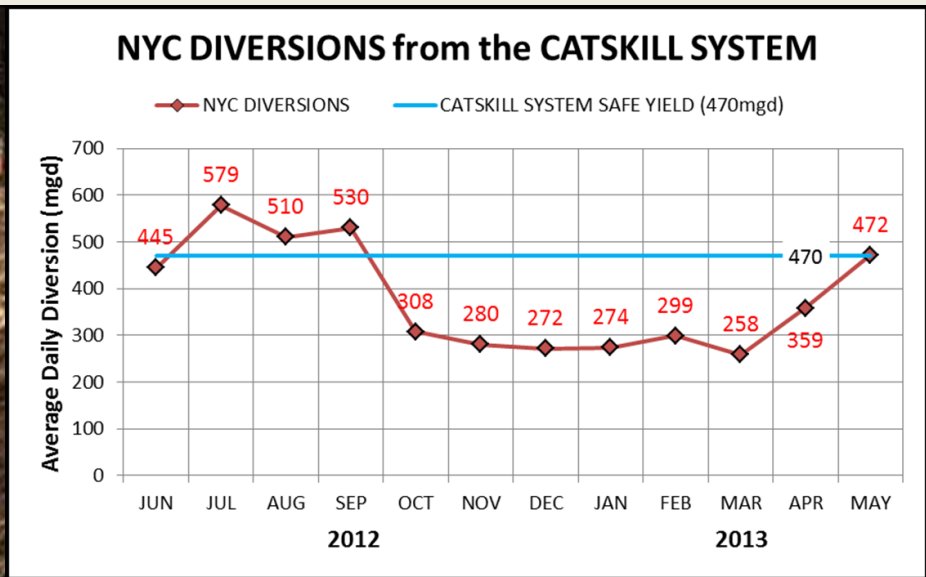
USGS 01362230 DIVERSION FROM SCHOHARIE RESERVOIR, NY

Water Year	mgd
1998	132
1999	164
2000	161
2001	129
2002	207
2003	146
2004	58
2005	109
2006	416
2007	167
2008	166
2009	157
2010	111
2011	46
2012	86
Average	150



Review of the Catskill System

- The recently reopened Ashokan “release” channel provides a third location to release excess water, however we have limited access to discharge data from this location.



Analysis of the 2012 water year, indicates that the Catskill system’s **470** mgd safe yield was underutilized by an average of **88** mgd.

This slide illustrates where NYC has been dumping up to $240 + 80 = 320$ mgd of safe-yield water from the Catskill and Croton watersheds over the years; while over-drafting the Delaware system, and minimizing releases to the rivers and lower-basin States.

Until recently, NYCDEP has been insisting that because the Catskill and Croton systems are outside the jurisdiction of the DRBC, they are of no interest to them.



Water Quality Issues

- Historical usage indicates NYC prefers water from the Delaware system vs the Catskill and Croton systems, based on water quality.
- Croton system water requires filtration to meet current water quality standards.
- Turbidity issues with the Catskill system threatens NYC's Filtration Avoidance Determination (FAD).
- Future water quality standards will only become more stringent.

The Realities

- The safe yield of the Delaware system is 480mgd; not 800mgd.
- Poor water quality of the Croton system, does not change the safe yield of the Delaware system.
- Turbidity issues with the Catskill system, does not change the safe yield of the Delaware system.
- Continued development of New York's upstate (outside) communities, does not change the safe yield of the Delaware system.

The Last Straw

NYC's Operations Support Tool (OST)

- Advises the lower-basin States that NYC intends to take more water from the Delaware system in the future
- Advises the lower-basin States to start looking for alternative water supplies
- switches the risks of the future from NYC, onto the lower-basin States

These developments run counter to the spirit and intent of the Good Faith Agreement, and the 1954 Decree

The Solution

CROTON WATER TREATMENT PLANT (290mgd)




The **290** mgd capacity Croton Water Treatment Plant will provide high quality water from the Croton system, and will restore the **240** mgd of lost Croton system safe-yield, to the NYC water supply system.

The return of the Croton System

The successful commissioning of the Croton Water Treatment Plant in 2013 will result in:


- The restoration of up to **290** mgd of high quality water to the NYC Water Supply System.
- Consequential drop in NYC diversion demands from the Delaware system.
- Significantly higher UDR releases that will benefit the entire length of the river.
- The opportunity for the lower-basin States to finally dispense with the 1980's GFA **800** mgd accommodation.

Equitable Apportionment Plan



A Decision Support Framework for Water Management in the Upper Delaware River


By Ken D. Brown, Terry J. Whittle, John Bartholomew, and Lucy Burris



Open-File Report 2007-1172

U.S. Department of the Interior
U.S. Geological Survey

<http://www.fort.usgs.gov/Products/Publications/21225/21225.pdf>



Coldwater Ecosystem Protection Level
For non-drought years, includes flow & water temperature.

- Excellent
- Good
- Moderate
- Minimal

http://www.delawarehrc.org/da_notify_fishing/White_Paper_Delaware_Fishery.pdf

EQUITABLE APPORTIONMENT PLAN													11-92013
EAP NORMAL													
CANNONSVILLE	Winter			Spring			Summer			Fall			HYC DIV (mpd)
	Dec-Mar	Apr	May	May	Jun	Jun-Jul	Jul-Aug	Sept	Sept	Oct-Nov	HYC DIV (mpd)		
Zone	121-331	41-430	51-520	52-531	51-515	515-530	711-831	81-815	815-930	101-1130			
L1-a	1,500	1,500	475	525	600	1,500	1,500	1,500	1,500	1,500	590		
L1-b	700	700	475	525	600	600	700	700	700	700	575		
L1-c	225	475	475	525	600	600	600	525	375	225	535		
L2-a	225	350	475	525	600	600	600	525	375	225	540		
L2-b	225	350	475	525	600	600	600	525	375	225	520		
L2-c	225	275	325	475	525	525	525	475	350	225	505		
L3	225	225	275	325	400	400	400	325	225	480	480		
L4	225	225	225	225	225	270	270	270	250	225	480		
L5	225	225	225	225	225	225	225	225	225	225	480		
	200	200	200	200	200	200	200	200	200	200	420		
	170	170	170	170	170	170	170	170	170	170	360		
	125	125	125	125	125	125	125	125	125	125	300		

EAP NORMAL													
PEPACTON	Winter			Spring			Summer			Fall			HYC DIV (mpd)
	Dec-Mar	Apr	May	May	Jun	Jun-Jul	Jul-Aug	Sept	Sept	Oct-Nov	HYC DIV (mpd)		
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L1-a	700	700	150	150	175	700	700	700	700	700	590		
L1-b	500	500	150	150	175	175	500	500	500	500	575		
L1-c	150	150	150	150	175	175	175	175	150	150	555		
L2-a	140	140	150	150	175	175	175	175	150	140	540		
L2-b	140	140	150	150	175	175	175	175	150	140	520		
L2-c	140	140	150	150	175	175	175	175	150	140	505		
L3	140	140	140	140	150	150	150	150	140	140	480		
L4	140	140	140	140	140	140	140	140	140	140	480		
L5	140	140	140	140	140	140	140	140	140	140	480		
	130	130	130	130	130	130	130	130	130	130	420		
	115	115	115	115	115	115	115	115	115	115	360		
	105	105	105	105	105	105	105	105	105	105	300		

EAP NORMAL													
NEVERSINK	Winter			Spring			Summer			Fall			HYC DIV (mpd)
	Dec-Mar	Apr	May	May	Jun	Jun-Jul	Jul-Aug	Sept	Sept	Oct-Nov	HYC DIV (mpd)		
Zone	121-331	41-430	51-520	52-531	51-515	515-530	711-831	81-815	815-930	101-1130			
L1-a	100	100	100	115	140	100	100	100	100	100	575		
L1-b	125	110	100	115	140	140	150	150	125	90	555		
L1-c	90	90	100	115	140	140	150	150	115	90	540		
L2-a	90	90	100	115	140	140	140	140	115	90	520		
L2-b	90	90	100	115	140	140	140	140	115	90	505		
L2-c	90	90	100	115	130	130	130	130	115	90	480		
L3	75	75	75	75	90	110	110	110	90	75	480		
L4	75	75	75	75	85	85	85	85	75	75	480		
L5	70	70	70	70	70	70	70	70	70	70	480		
	60	60	60	60	60	60	60	60	60	60	420		
	55	55	55	55	55	55	55	55	55	55	360		
	45	45	45	45	45	45	45	45	45	45	300		

Equitable Apportionment Plan (EAP)

DESIGN CRITERIA:

Whatever comes in; goes out:

Usable Inflow = Diversions + Releases; resulting in refill by June-1, for the most part

Release quantities are designed to:

- Meet or exceed recommended USGS DSS flows to support 80% of the possible Adult Brown Trout Habitat. (100% Juvenile Trout Habitat)
- Limit maximum daytime water temperatures to 68°F, or below; where/when practicable

Available Water Quantity is calculated from:

- Current Reservoir Level - and required refill quantity
- Inflow profile - based on the hydrological conditions over the last 3-months
- Long range hydrological forecast

Permissible Diversions and Releases (tables) are adjusted to reflect current conditions and projected inflows/Available Water Quantities



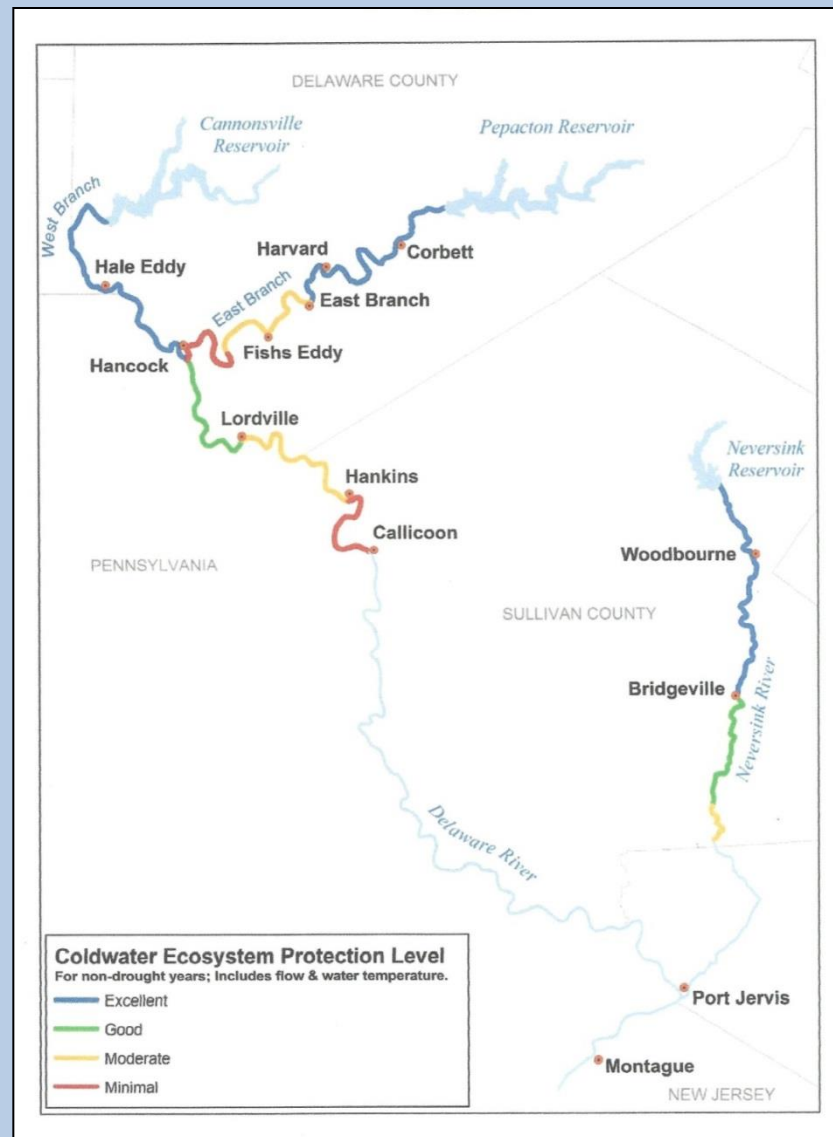
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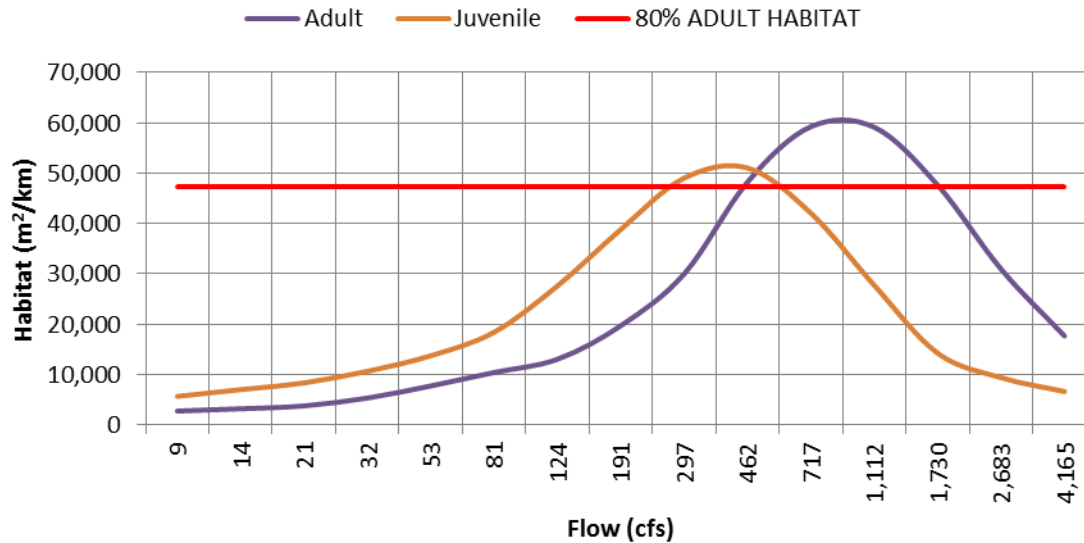


<http://www.fort.usgs.gov/Products/Publications/21938/21938.pdf>

http://www.delawareriverguide.net/fly_fishing/White_Paper_Delaware_Fisheries.pdf

The USGS DSS and the Joint Fisheries White Paper help provide the science to determine the optimum flows for trout habitat and ecosystem protection.

West Branch Brown Trout Habitat (STV-OQA)



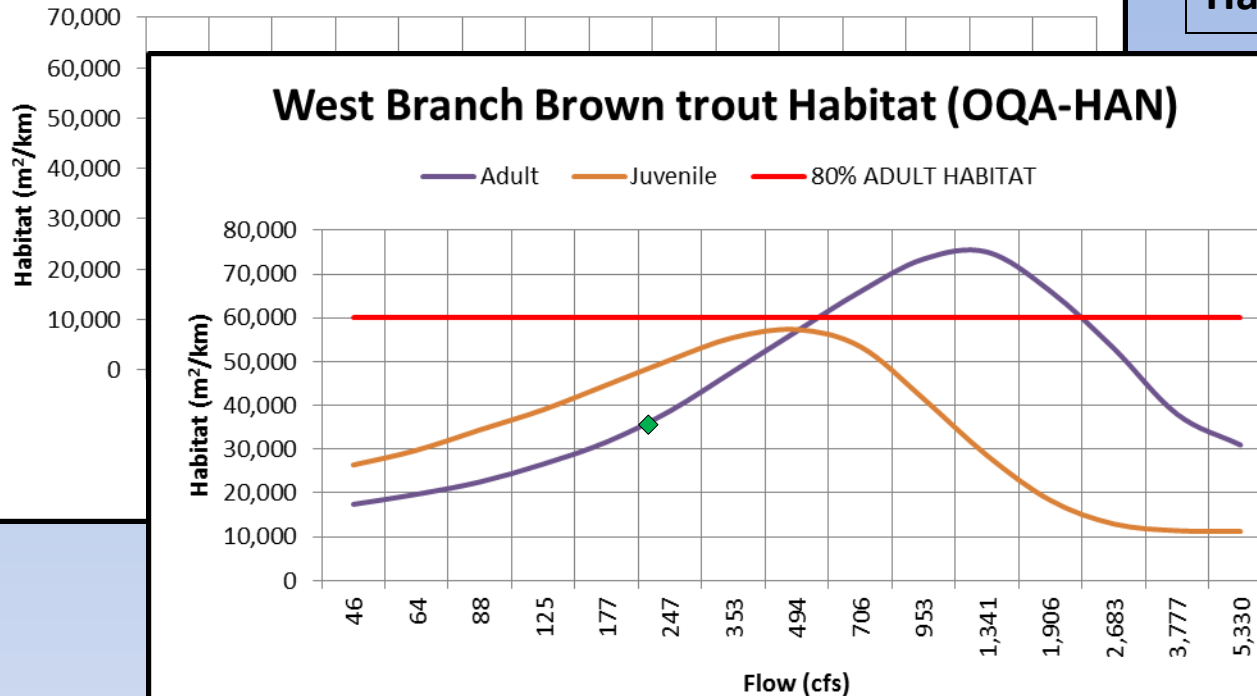
USGS 2007 Decision Support System Habitat Data

A flow of 900 cfs would be required to maintain the maximum possible (100%) Adult trout habitat from STV-OQA. However a more practicable flow of 460 cfs would be required to maintain 80% Adult habitat. This flow also comes close to coinciding with maximizing Juvenile trout habit.

West Branch Brown Trout Habitat (STV-OQA)

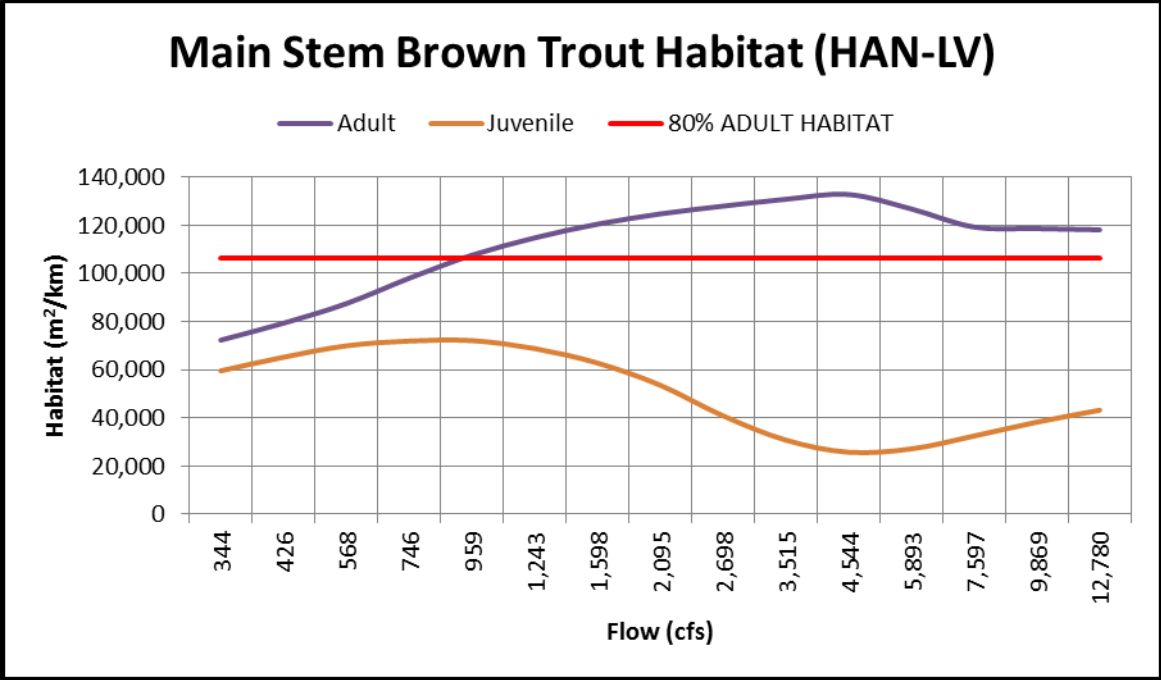
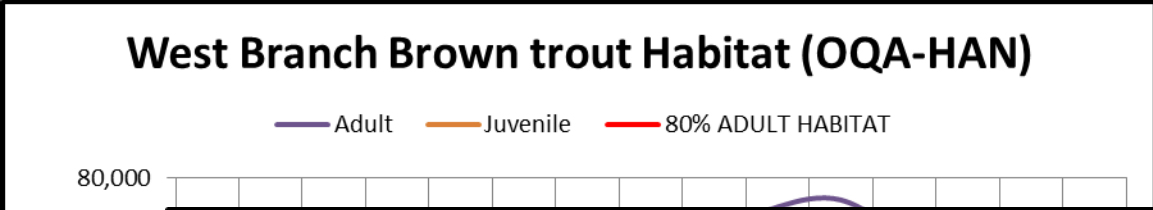
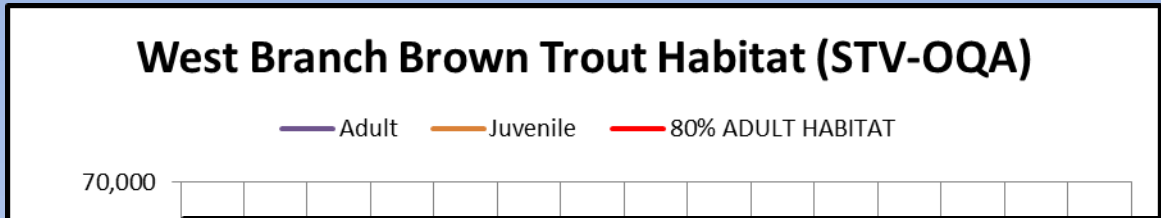
— Adult — Juvenile — 80% ADULT HABITAT

**USGS 2007
Decision Support System
Habitat Data**



For the OQA-HAN section, a flow of 500-525 cfs would be sufficient to maintain 80% Adult trout habitat. The increase in habitat from the Rev-7 days to the current FFMP/OST (36,000 to 60,000 m²/km), is evident.

**USGS 2007
Decision Support System
Habitat Data**

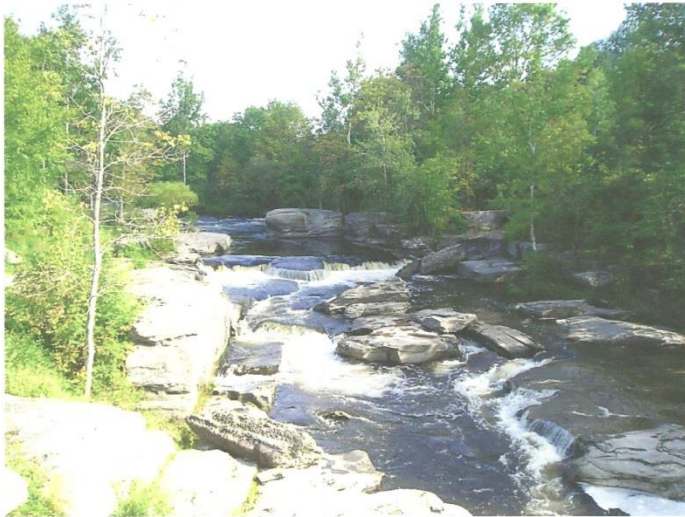


For the Main Stem: a flow of 950 cfs corresponds to the 80% Adult habitat; however a Cannonsville release rate of 600 cfs would be required to provide necessary thermal protection.



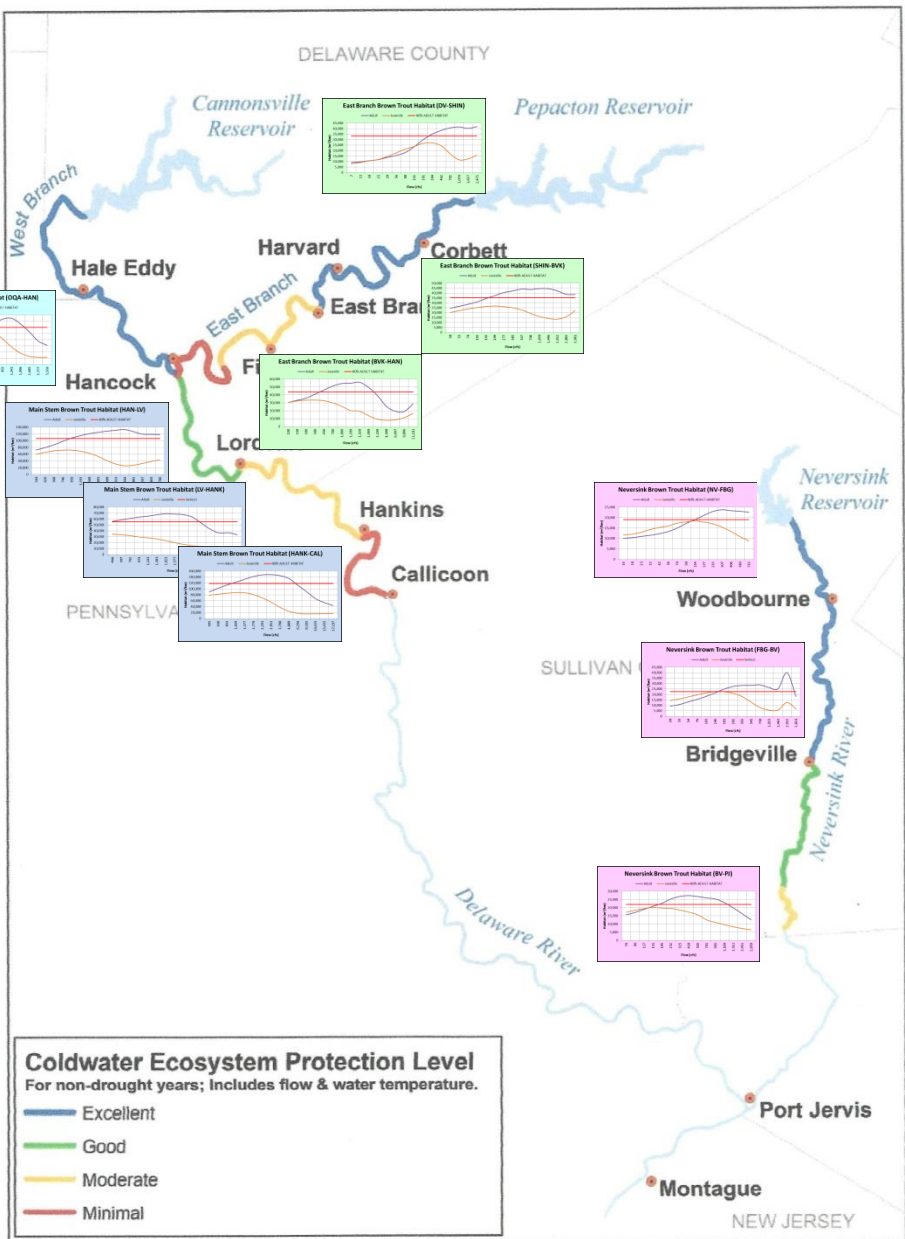
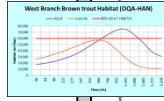
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Coldwater Ecosystem Protection Level
For non-drought years; includes flow & water temperature.

- Excellent
- Good
- Moderate
- Minimal

Equitable Apportionment Plan (EAP)

The EAP links Release and Diversion quantities to the anticipated available water quantity, based on:

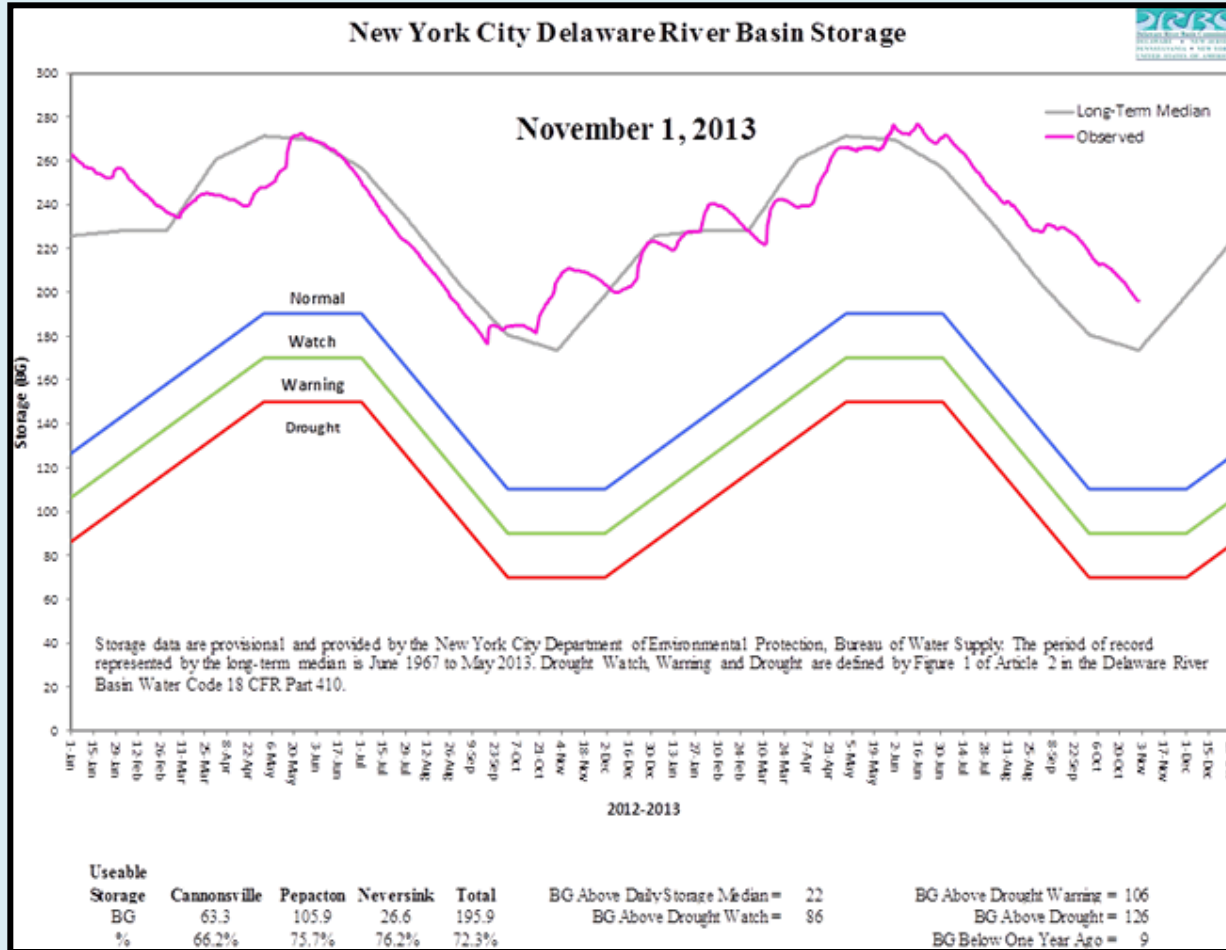
- **Reservoir Level** – and refill requirements
- **Inflow Profile** – based on the hydrological conditions of the previous three months
- **Long-range hydrological forecast**

EQUITABLE APPORTIONMENT PLAN											11/5/2013
EAP NORMAL											NYC DIV (mgd)
CANNONSVILLE	Winter		Spring		Summer			Fall			
	Dec - Mar	Apr	May	May	Jun	Jun	Jul - Aug	Sept	Sept	Oct - Nov	
Zone	12/1 - 3/31	4/1 - 4/30	5/1 - 5/20	5/21-5/31	6/1 - 6/15	6/16 - 6/30	7/1 - 8/31	9/1 - 9/15	9/16-9/30	10/1 - 11/30	
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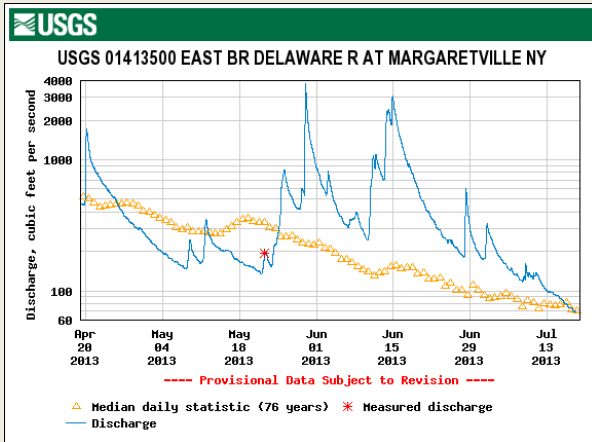
Reservoir Level



<http://www.nj.gov/drbc/library/documents/nyc.pdf>

http://www.nyc.gov/html/dep/html/drinking_water/maplevels_wide.shtml

UDR System 90-day Inflows

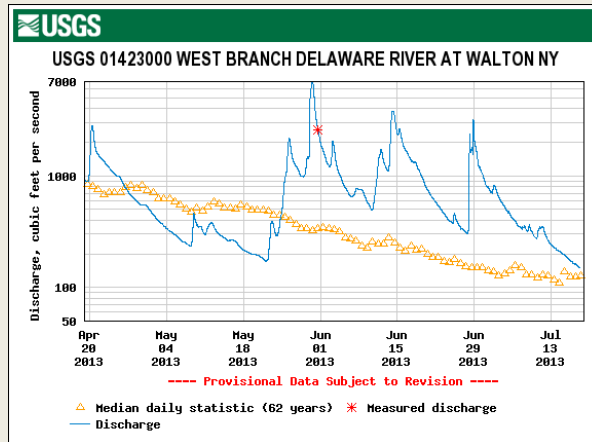


http://waterdata.usgs.gov/ny/nwis/uv/?site_no=01413500&PARAMETER_cd=00065,00060

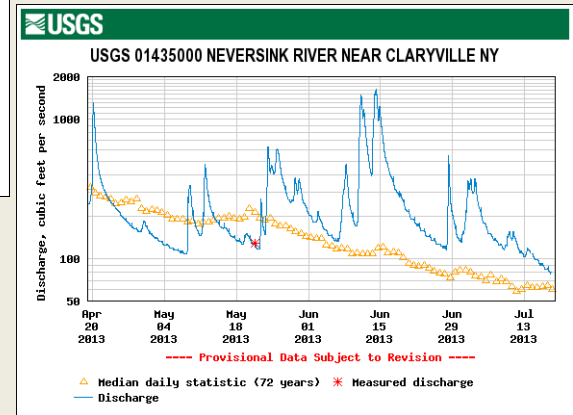
Margaretville (cfs) x 1.46 = Pepacton inflow (mgd)

Walton (cfs) x 0.88 = Cannonsville inflow (mgd)

Claryville (cfs) x 0.90 = Neversink inflow (mgd)



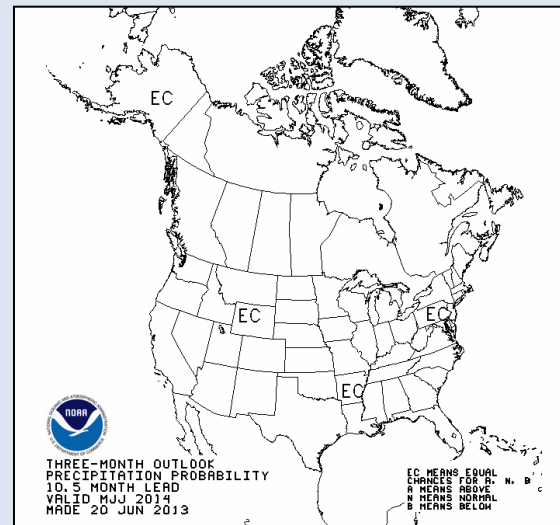
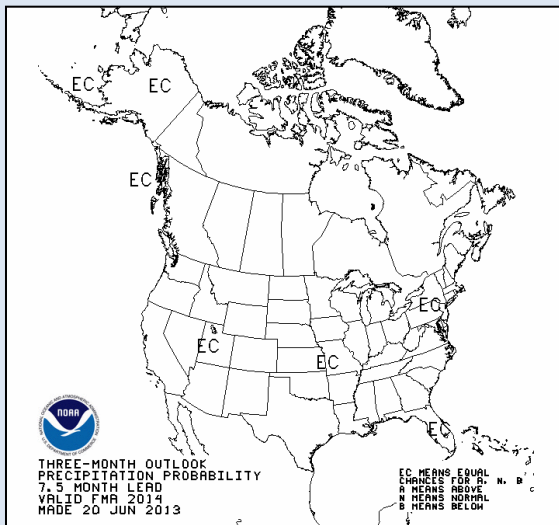
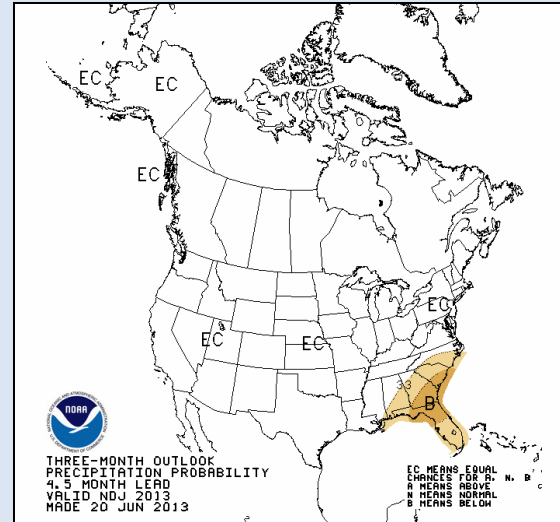
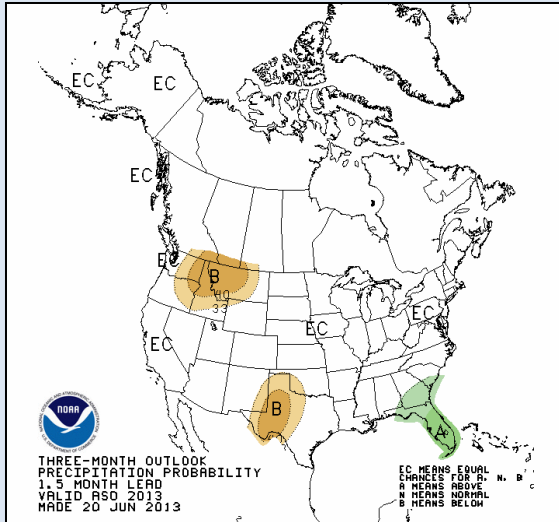
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http://waterdata.usgs.gov/ny/nwis/uv/?site_no=01435000&PARAMETER_cd=00065,00060

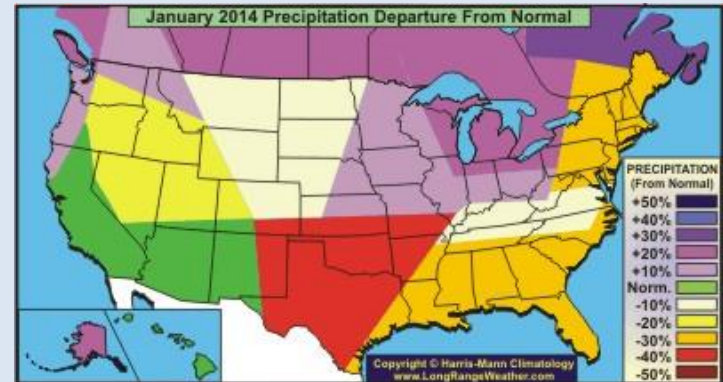
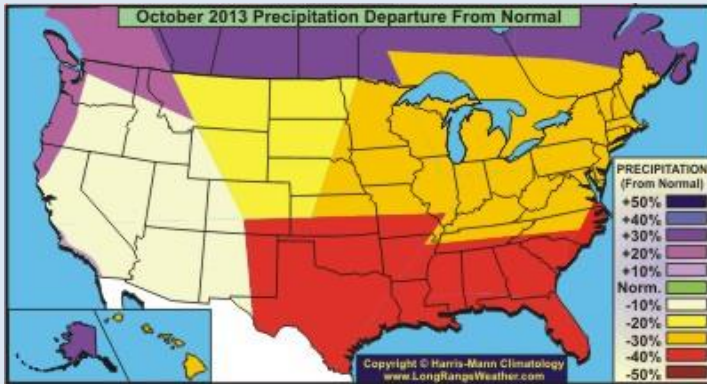
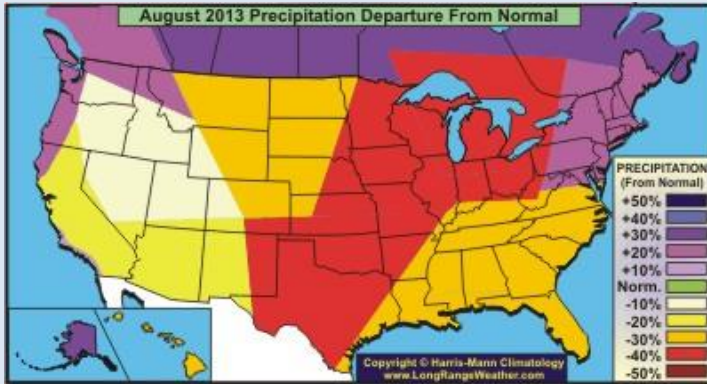
90-day system inflows can be obtained from the USGS gauges, at Margaretville, Walton and Claryville.

NOAA Long-Range Precipitation Forecasts

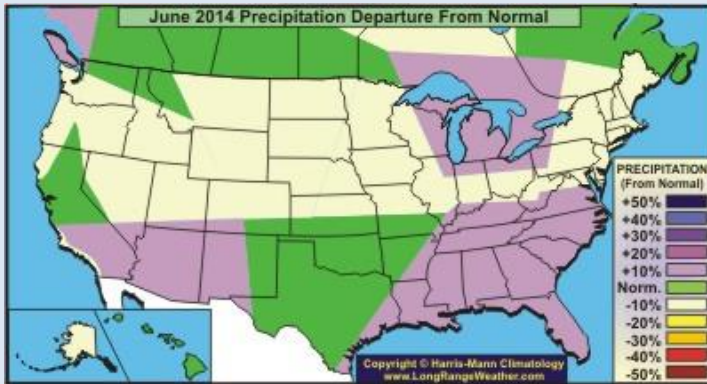
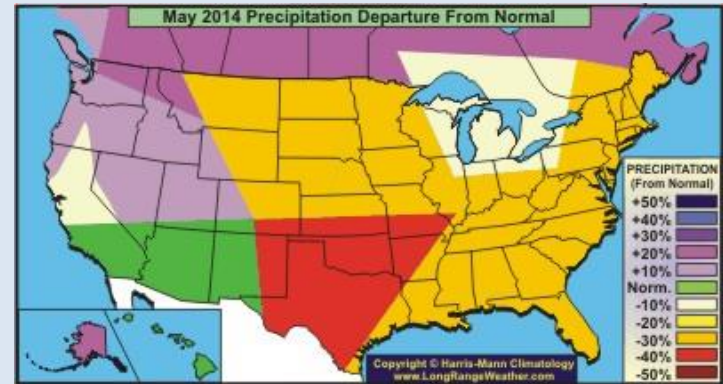
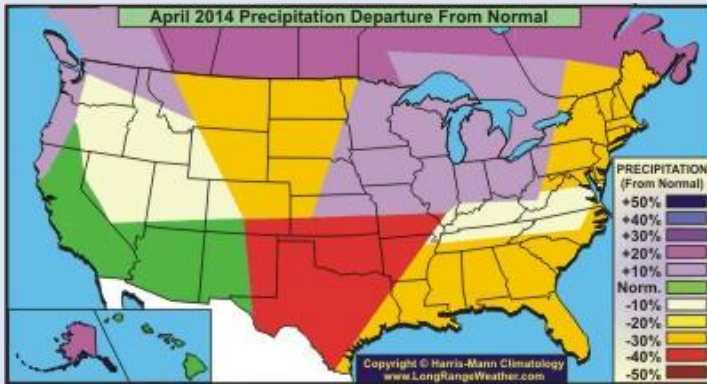
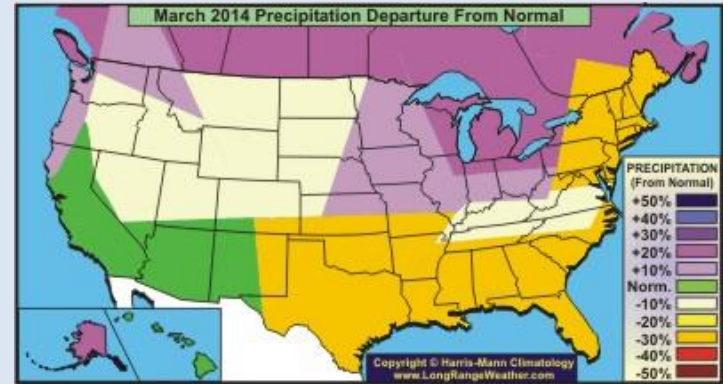
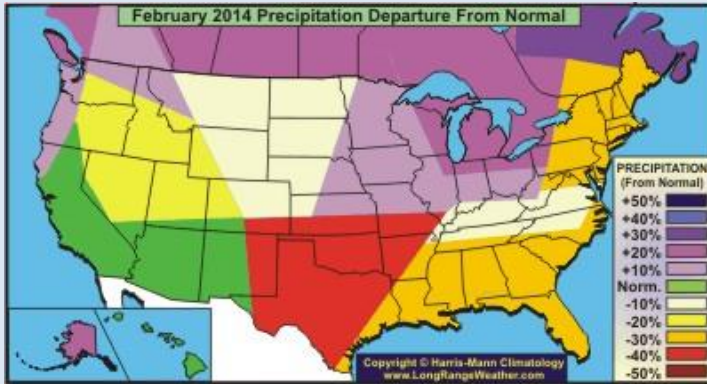


<http://www.cpc.ncep.noaa.gov/products/predictions/30day/>

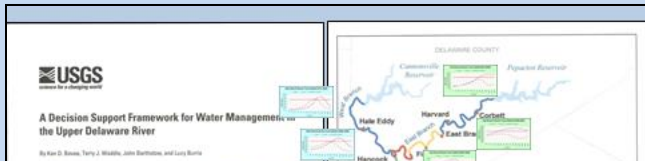
HARRIS-MANN Long-Range Precipitation Forecasts



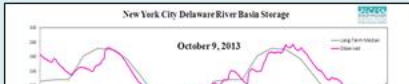
HARRIS-MANN Long-Range Precipitation Forecasts



Equitable Apportionment Plan



Reservoir Level

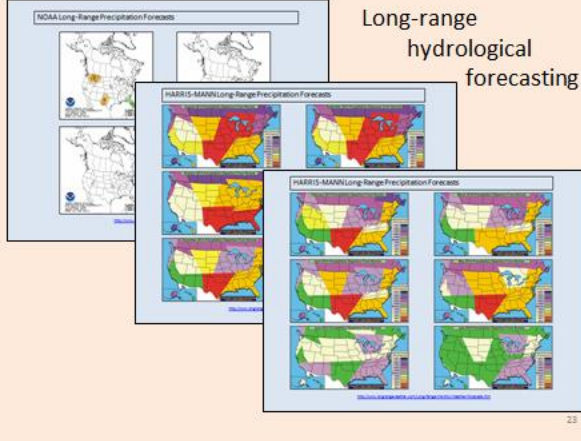


UDR System 90-day Inflows



Margaretville (d5) x 1.46 = Pepacton inflow (mgd)
 Walton (d5) x 0.88 = Cannonsville inflow (mgd)
 Claryville (d5) x 0.90 = Neversink inflow (mgd)

Long-range hydrological forecasting



EQUITABLE APPORTIONMENT PLAN

11/9/2013

EAP NORMAL												NYC DIV (mgd)
CANNONSVILLE	Winter			Spring		Summer			Fall			
	Dec - Mar	Apr	May	May	Jun	Jun	Jul - Aug	Sept	Sept	Oct - Nov		
Zone	12/1 - 3/31	4/1 - 4/30	5/1 - 5/20	5/21-5/31	6/1 - 6/15	6/16 - 8/30	7/1 - 8/31	9/1 - 9/15	9/16-9/30	10/1 - 11/30		
L1-a	1,500	1,500	475	525	600	1,500	1,500	1,500	1,500	1,500	590	
L1-b	700	700	475	525	600	600	700	700	700	700	575	
L1-c	225	475	475	525	600	600	600	525	375	225	555	
L2-a	225	350	475	525	600	600	600	525	375	225	540	
L2-b	225	350	475	525	600	600	600	525	375	225	520	
L2-c	225	275	325	475	525	525	525	475	350	225	505	
L3	225	225	275	325	400	400	400	400	325	225	480	
L4	225	225	235	250	270	270	270	270	250	225	480	
L5	225	225	225	225	225	225	225	225	225	225	480	
	170	170	170	170	170	170	170	170	170	170	420	
	125	125	125	125	125	125	125	125	125	125	300	

EAP NORMAL												NYC DIV (mgd)
PEPACTON	Winter			Spring		Summer			Fall			
	Dec - Mar	Apr	May	May	Jun	Jun	Jul - Aug	Sept	Sept	Oct - Nov		
Zone	12/1 - 3/31	4/1 - 4/30	5/1 - 5/20	5/21-5/31	6/1 - 6/15	6/16 - 8/30	7/1 - 8/31	9/1 - 9/15	9/16-9/30	10/1 - 11/30		
L1-a	700	700	150	150	175	700	700	700	700	700	590	
L1-b	500	500	150	150	175	175	500	500	500	500	575	
L1-c	150	150	150	150	175	175	175	175	150	150	555	
L2-a	140	140	150	150	175	175	175	175	150	140	540	
L2-b	140	140	150	150	175	175	175	175	150	140	520	
L2-c	140	140	150	150	175	175	175	175	150	140	505	
L3	140	140	140	140	150	150	150	150	140	140	480	
L4	140	140	140	140	140	140	140	140	140	140	480	
L5	140	140	140	140	140	140	140	140	140	140	480	
	130	130	130	130	130	130	130	130	130	130	420	
	115	115	115	115	115	115	115	115	115	115	360	
	105	105	105	105	105	105	105	105	105	105	300	

EAP NORMAL												NYC DIV (mgd)
NEVERSINK	Winter			Spring		Summer			Fall			
	Dec - Mar	Apr	May	May	Jun	Jun	Jul - Aug	Sept	Sept	Oct - Nov		
Zone	12/1 - 3/31	4/1 - 4/30	5/1 - 5/20	5/21-5/31	6/1 - 6/15	6/16 - 8/30	7/1 - 8/31	9/1 - 9/15	9/16-9/30	10/1 - 11/30		
L1-a	190	190	100	115	140	190	190	190	190	190	590	
L1-b	125	110	100	115	140	140	150	150	150	125	575	
L1-c	90	90	100	115	140	140	150	150	115	90	555	
L2-a	90	90	100	115	140	140	140	140	115	90	540	
L2-b	90	90	100	115	140	140	140	140	115	90	520	
L2-c	90	90	100	115	130	130	130	130	115	90	505	
L3	75	75	75	90	110	110	110	110	90	75	480	
L4	75	75	75	75	85	85	85	85	75	75	480	
L5	70	70	70	70	70	70	70	70	70	70	480	
	60	60	60	60	60	60	60	60	60	60	420	
	55	55	55	55	55	55	55	55	55	55	360	
	45	45	45	45	45	45	45	45	45	45	300	

Normal Conditions

EAP NORMAL												NYC DIV (mgd)
CANNONSVILLE		Winter		Spring		Summer			Fall			
		Dec - Mar	Apr	May	May	Jun	Jun	Jul - Aug	Sept	Sept	Oct - Nov	
Zone		12/1 - 3/31	4/1 - 4/30	5/1 - 5/20	5/21-5/31	6/1 - 6/15	6/16 - 6/30	7/1 - 8/31	9/1 - 9/15	9/16-9/30	10/1 - 11/30	
L1-a		1,500	1,500	475	525	600	1,500	1,500	1,500	1,500	1,500	590
L1-b		700	700	475	525	600	600	700	700	700	700	575
L1-c		225	475	475	525	600	600	600	525	375	225	555
L2-a		225	350	475	525	600	600	600	525	375	225	540
L2-b		225	350	475	525	600	600	600	525	375	225	520
L2-c		225	275	325	475	525	525	525	475	350	225	505
L3		225	225	275	325	400	400	400	400	325	225	480
L4		225	225	235	250	270	270	270	270	250	225	480
L5		225	225	225	225	225	225	225	225	225	225	480
		200	200	200	200	200	200	200	200	200	200	420
		170	170	170	170	170	170	170	170	170	170	360
		125	125	125	125	125	125	125	125	125	125	300

PCN June-1 Reservoir Level

100 %

Normal

Average Inflow Profile over last 3 months

1,175 mgd

Normal

Long-range Forecast

Average

Normal

Abnormal Condition 1

EAP AC-1												NYC DIV (mgd)
CANNONSVILLE		Winter		Spring		Summer			Fall			
		Dec - Mar	Apr	May	May	Jun	Jun	Jul - Aug	Sept	Sept	Oct - Nov	
Zone		12/1 - 3/31	4/1 - 4/30	5/1 - 5/20	5/21-5/31	6/1 - 6/15	6/16 - 6/30	7/1 - 8/31	9/1 - 9/15	9/16-9/30	10/1 - 11/30	
L1-a		700	700	475	525	600	600	700	700	700	700	575
L1-b		225	475	475	525	600	600	600	525	375	225	555
L1-c		225	350	475	525	600	600	600	525	375	225	540
L2-a		225	350	475	525	600	600	600	525	375	225	520
L2-b		225	275	325	475	525	525	525	475	350	225	505
L2-c		225	225	275	325	400	400	400	400	325	225	480
L3		225	225	235	250	270	270	270	270	250	225	480
L4		225	225	225	225	225	225	225	225	225	225	480
L5		200	200	200	200	200	200	200	200	200	200	420
		170	170	170	170	170	170	170	170	170	170	360
		125	125	125	125	125	125	125	125	125	125	300

PCN June-1 Reservoir Level

90 %

Low

Average Inflow Profile over last 3 months

1,175 mgd

Normal

Long-range Forecast

Average

Normal

Abnormal Condition 2

EAP AC-2												NYC DIV (mgd)
CANNONSVILLE		Winter		Spring		Summer			Fall			
		Dec - Mar	Apr	May	May	Jun	Jun	Jul - Aug	Sept	Sept	Oct - Nov	
Zone		12/1 - 3/31	4/1 - 4/30	5/1 - 5/20	5/21-5/31	6/1 - 6/15	6/16 - 6/30	7/1 - 8/31	9/1 - 9/15	9/16-9/30	10/1 - 11/30	
L1-a		225	475	475	525	600	600	600	525	375	225	555
L1-b		225	350	475	525	600	600	600	525	375	225	540
L1-c		225	350	475	525	600	600	600	525	375	225	520
L2-a		225	275	325	475	525	525	525	475	350	225	505
L2-b		225	225	275	325	400	400	400	400	325	225	480
L2-c		225	225	235	250	270	270	270	270	250	225	480
L3		225	225	225	225	225	225	225	225	225	225	480
L4		200	200	200	200	200	200	200	200	200	200	420
L5		170	170	170	170	170	170	170	170	170	170	360
		125	125	125	125	125	125	125	125	125	125	300

PCN June-1 Reservoir Level

90 %

Low

Average Inflow Profile over last 3 months

950 mgd

Low

Long-range Forecast

Average

Normal

Abnormal Condition 3

EAP AC-3												NYC DIV (mgd)
CANNONSVILLE		Winter		Spring		Summer			Fall			
		Dec - Mar	Apr	May	May	Jun	Jun	Jul - Aug	Sept	Sept	Oct - Nov	
Zone		12/1 - 3/31	4/1 - 4/30	5/1 - 5/20	5/21-5/31	6/1 - 6/15	6/16 - 6/30	7/1 - 8/31	9/1 - 9/15	9/16-9/30	10/1 - 11/30	
L1-a		225	350	475	525	600	600	600	525	375	225	540
L1-b		225	350	475	525	400	400	600	525	375	225	520
L1-c		225	275	325	475	400	400	525	475	350	225	505
L2-a		225	225	275	325	400	400	400	400	325	225	480
L2-b		225	225	235	250	270	270	270	270	250	225	480
L2-c		225	225	225	225	225	225	225	225	225	225	480
L3		200	200	200	200	200	200	200	200	200	200	420
L4		170	170	170	170	170	170	170	170	170	170	360
L5		125	125	125	125	125	125	125	125	125	125	300

PCN June-1 Reservoir Level

90 %

Low

Average Inflow Profile over last 3 months

950 mgd

Low

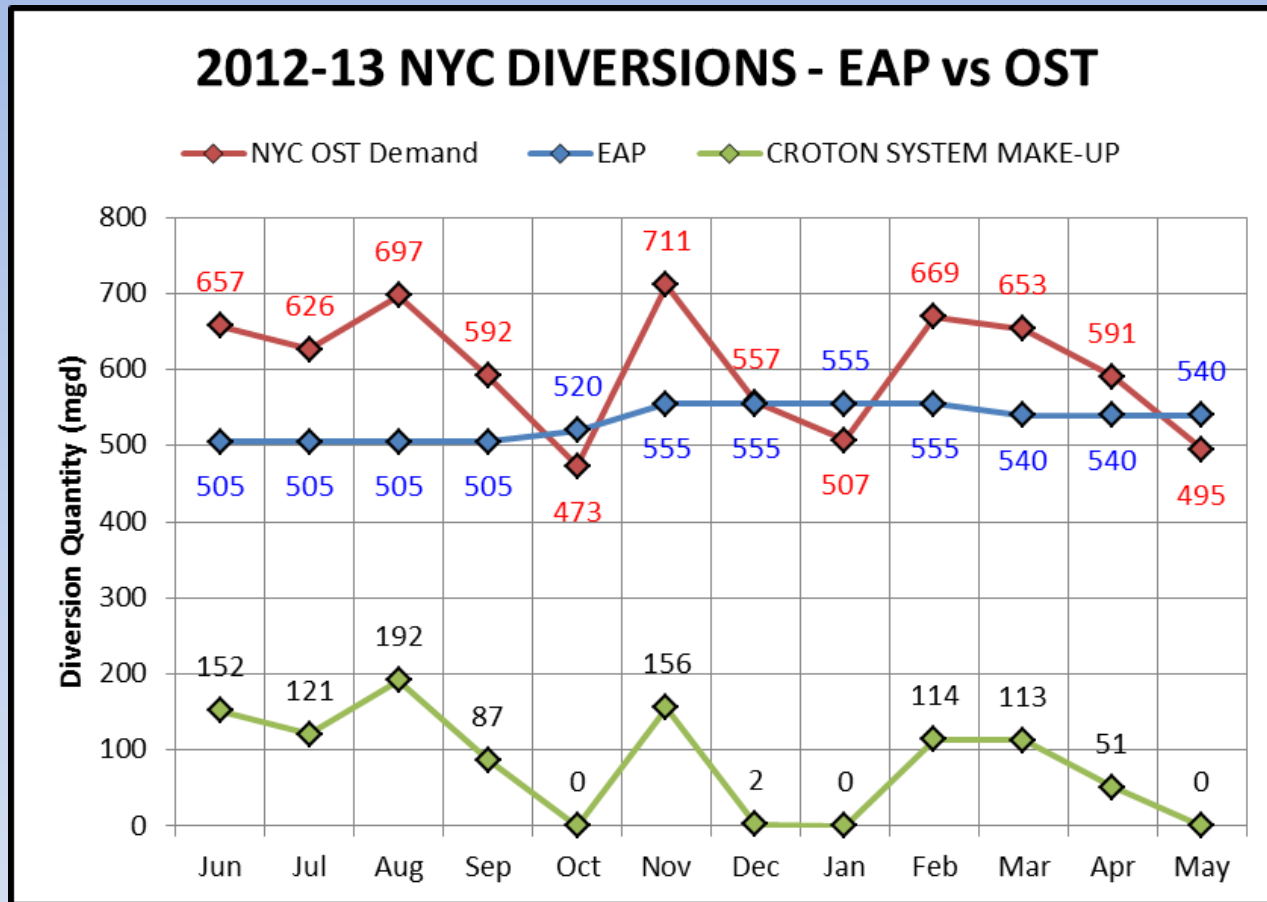
Long-range Forecast

Dry

Low

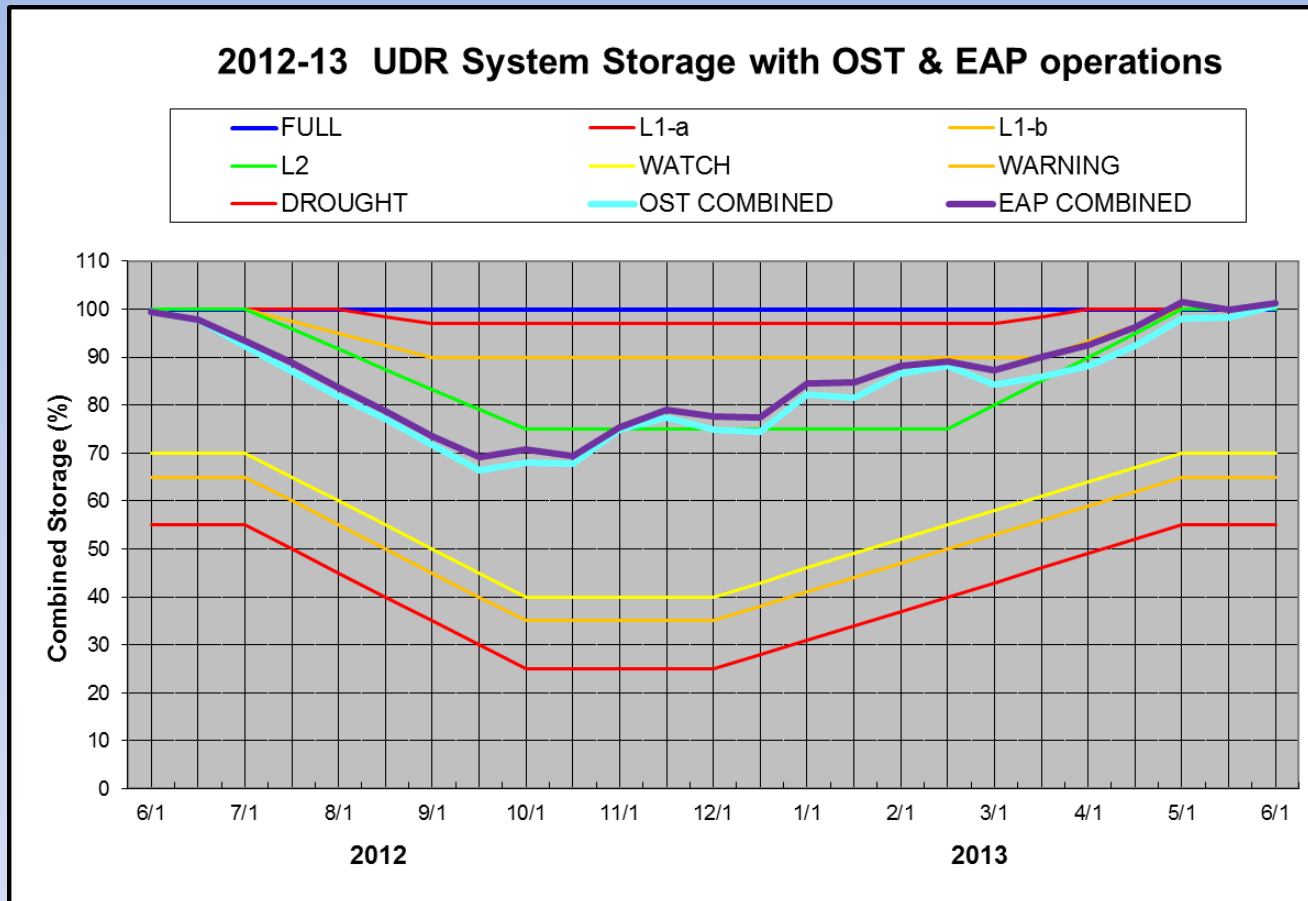
EAP Validation Tests

The OST, the EAP, and the Croton system



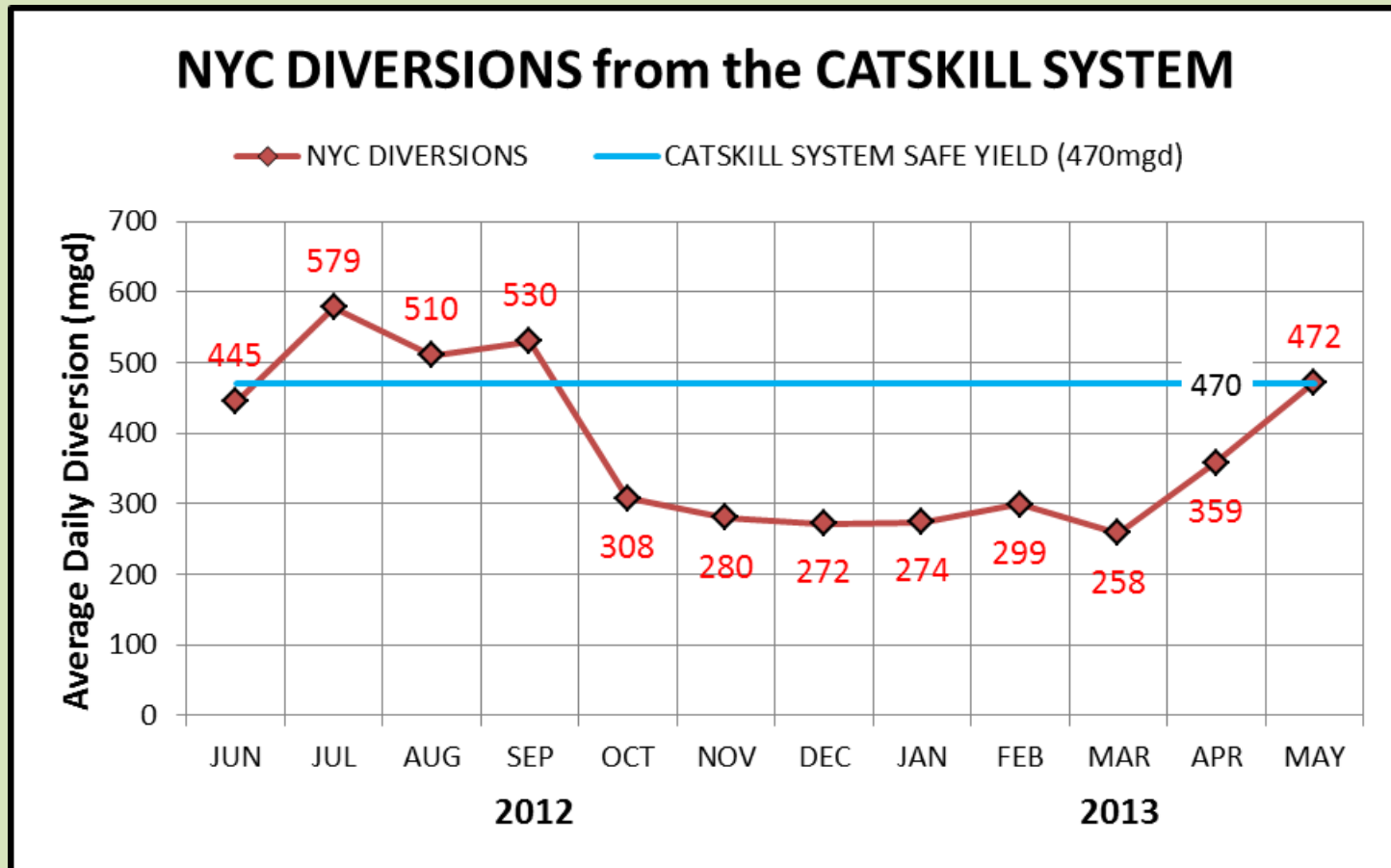
For 2012-13, the required **make-up quantities** from the Croton system would have remained well within the 290mgd capacity of the Croton Water Treatment Plant. (Average required **make-up** = 82mgd).

OST vs EAP Water Usage



The EAP's water usage profile would have been very similar to the OST's profile in 2012; however the EAP would have used a little less water.

Catskill System Utilization



Analysis of the 2012 water year, indicates the Catskill system's (470mgd) safe yield was underutilized.

(Average **underutilization** = 88mgd)

Equitable Apportionment Plan

- Provides and restores a sustainable and equitable apportionment of resources between all parties

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- Keys all water usage (both Releases and Diversions) to the available water quantity

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Equitable Apportionment Plan

- Provides and restores a sustainable and equitable apportionment of resources between all parties
- Keys all water usage (both Releases and Diversions) to the available water quantity
- Provides NYC with more water than traditional plans
- Shares the risk of the future
- Safeguards the future interests of the lower-basin States

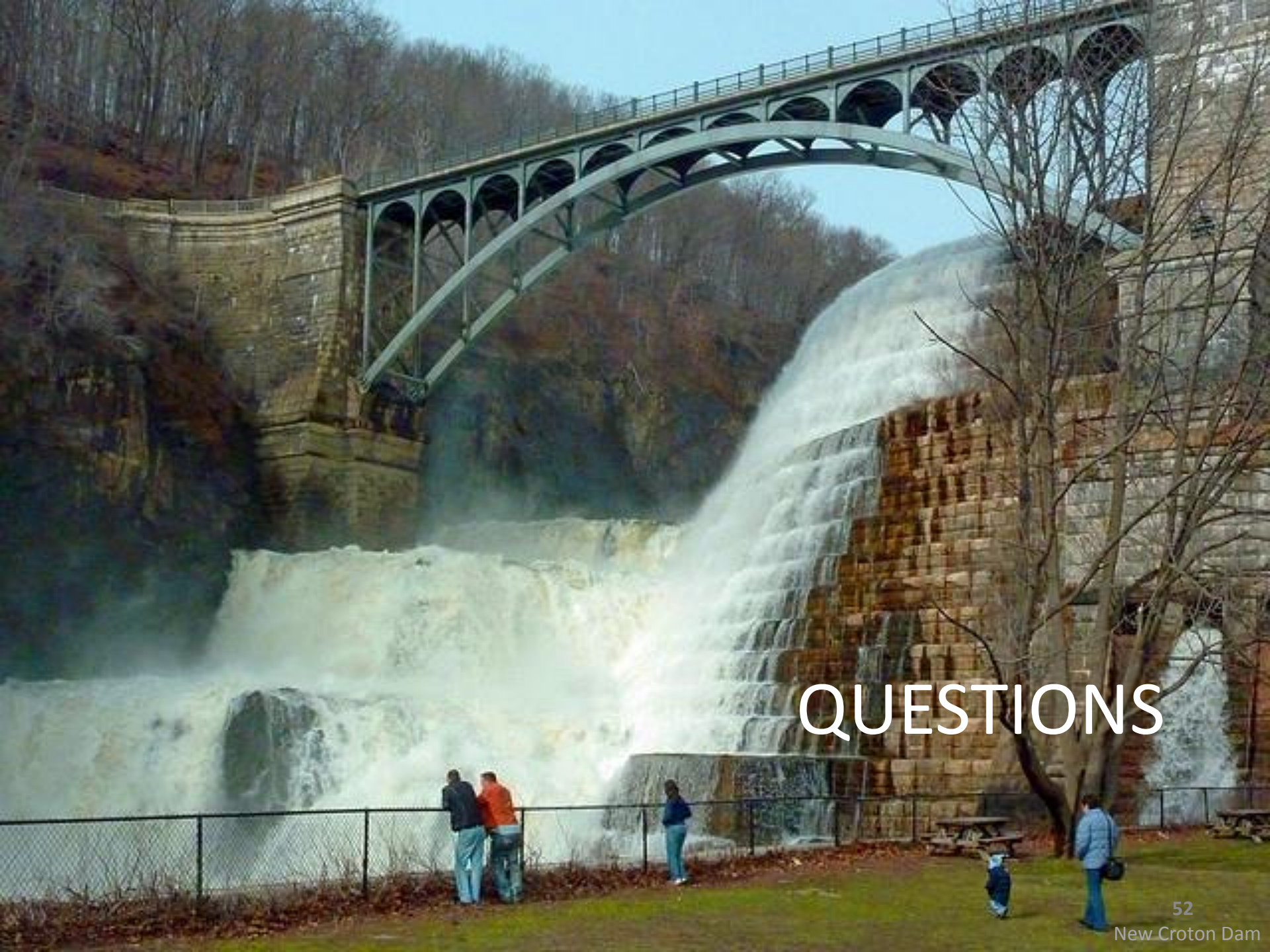
Timing

- Implement the EAP after commissioning of the Croton Water Treatment Plant (currently scheduled for late fall of 2013); in time for the 2014 water year.

The Opportunities

- The opportunity for the Delaware system's lower-basin States to finally dispense with an accommodation that was extended to NYC in the 1980's, and protect their future interests; will occur with the return to service of the Croton system in 2013.
- Fishery and Conservation coalitions agree: it's time to hit the reset button, and restore the principle of equitable apportionment to the management of the Delaware system's resources.





QUESTIONS