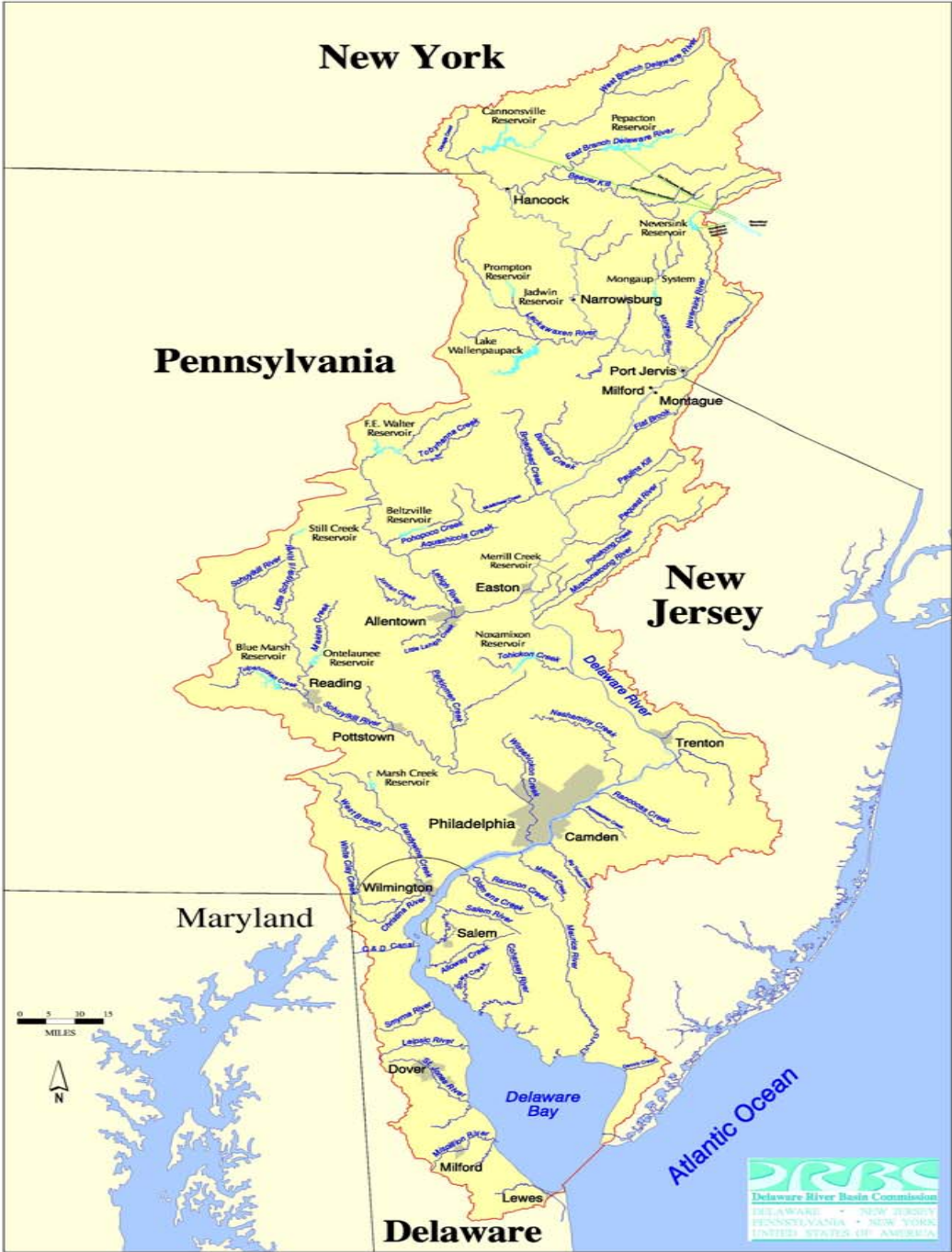


Report of the Delaware Water Supply Coordinating Council

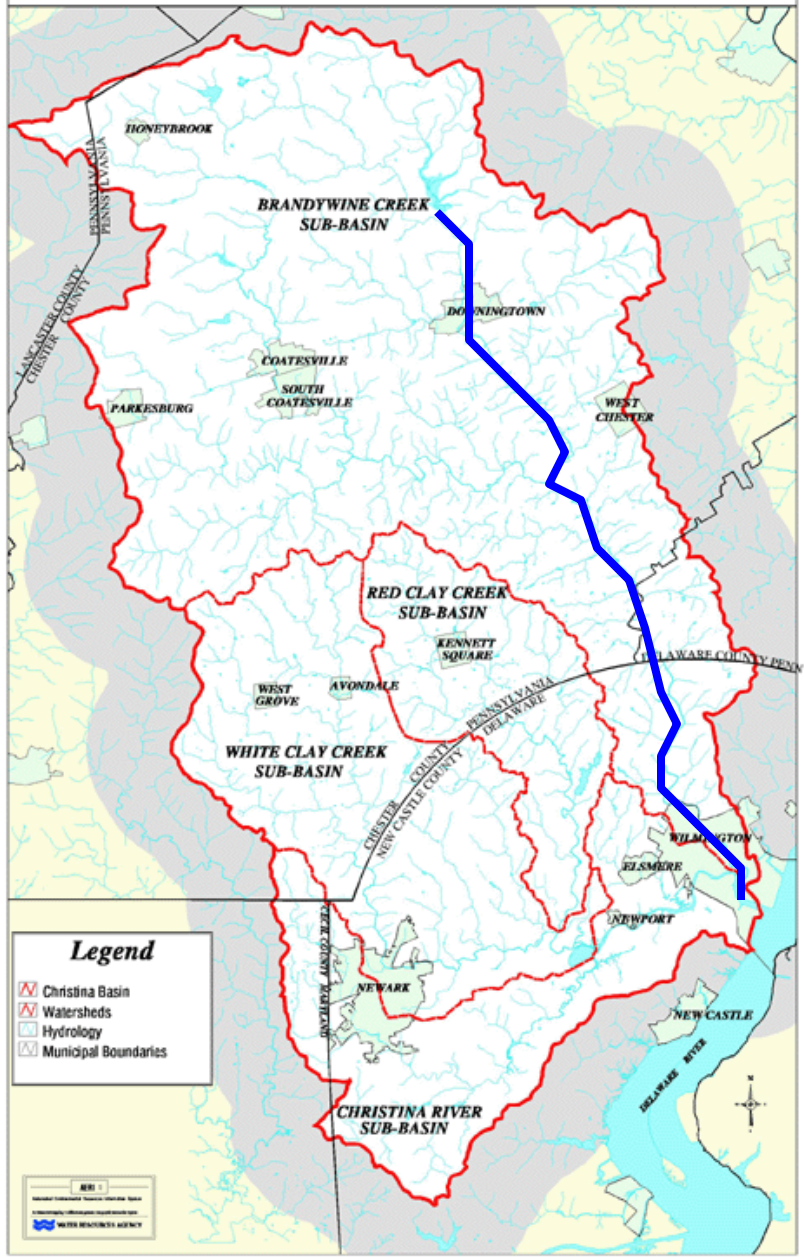
26 September 2005



Delaware River Basin

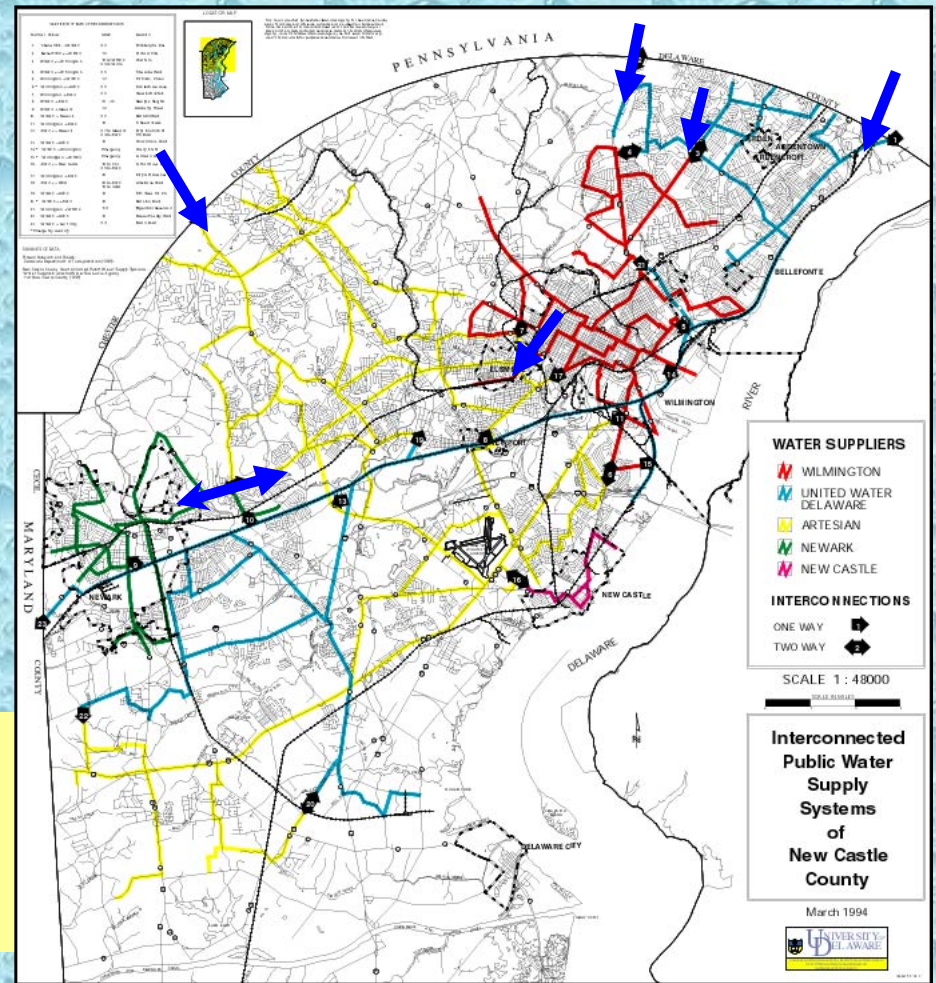
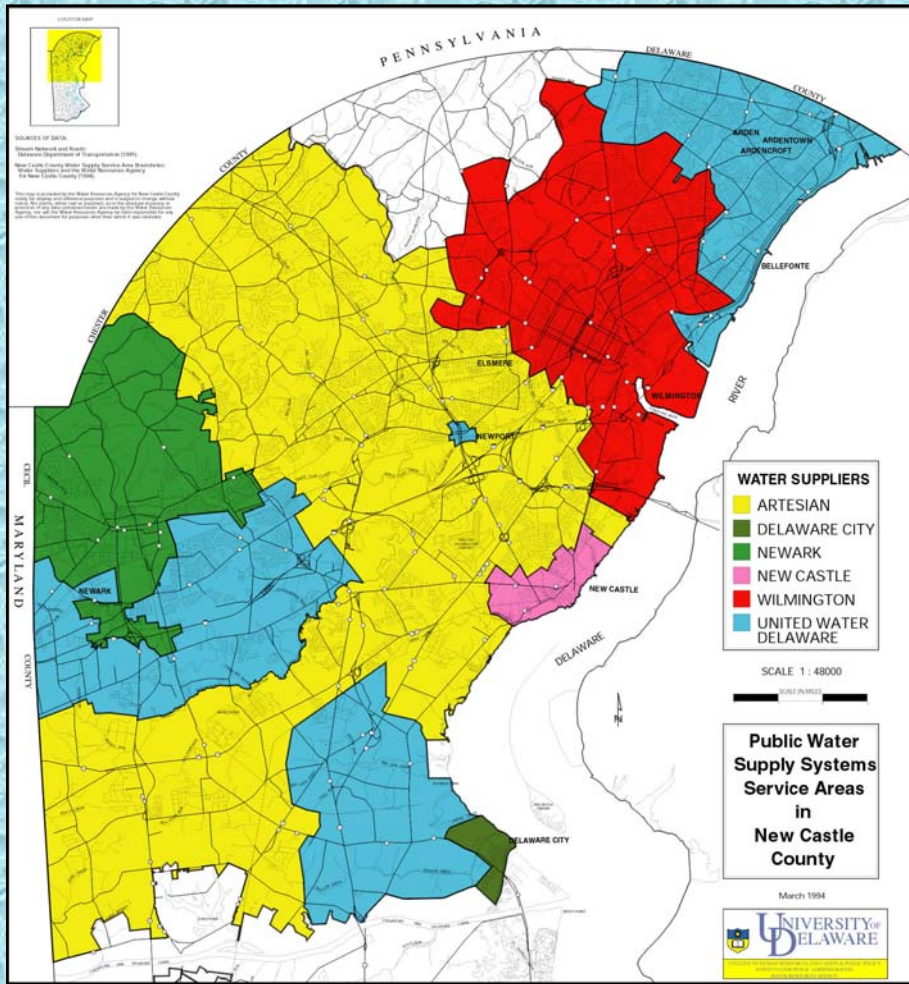


Christina Basin Water Quality Management Strategy *Base Map*



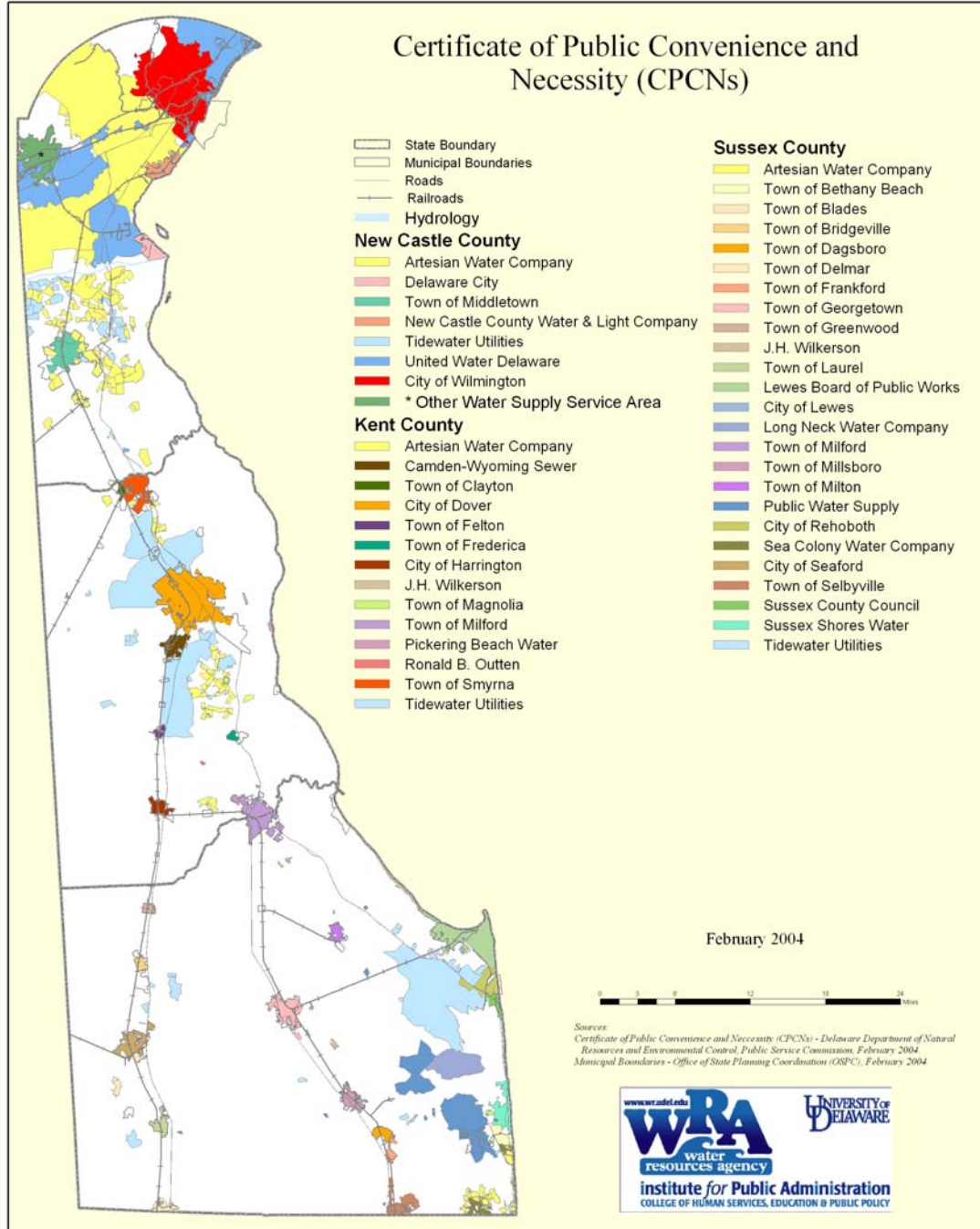
Christina Basin

New Castle County Public Water Supply System Service Areas



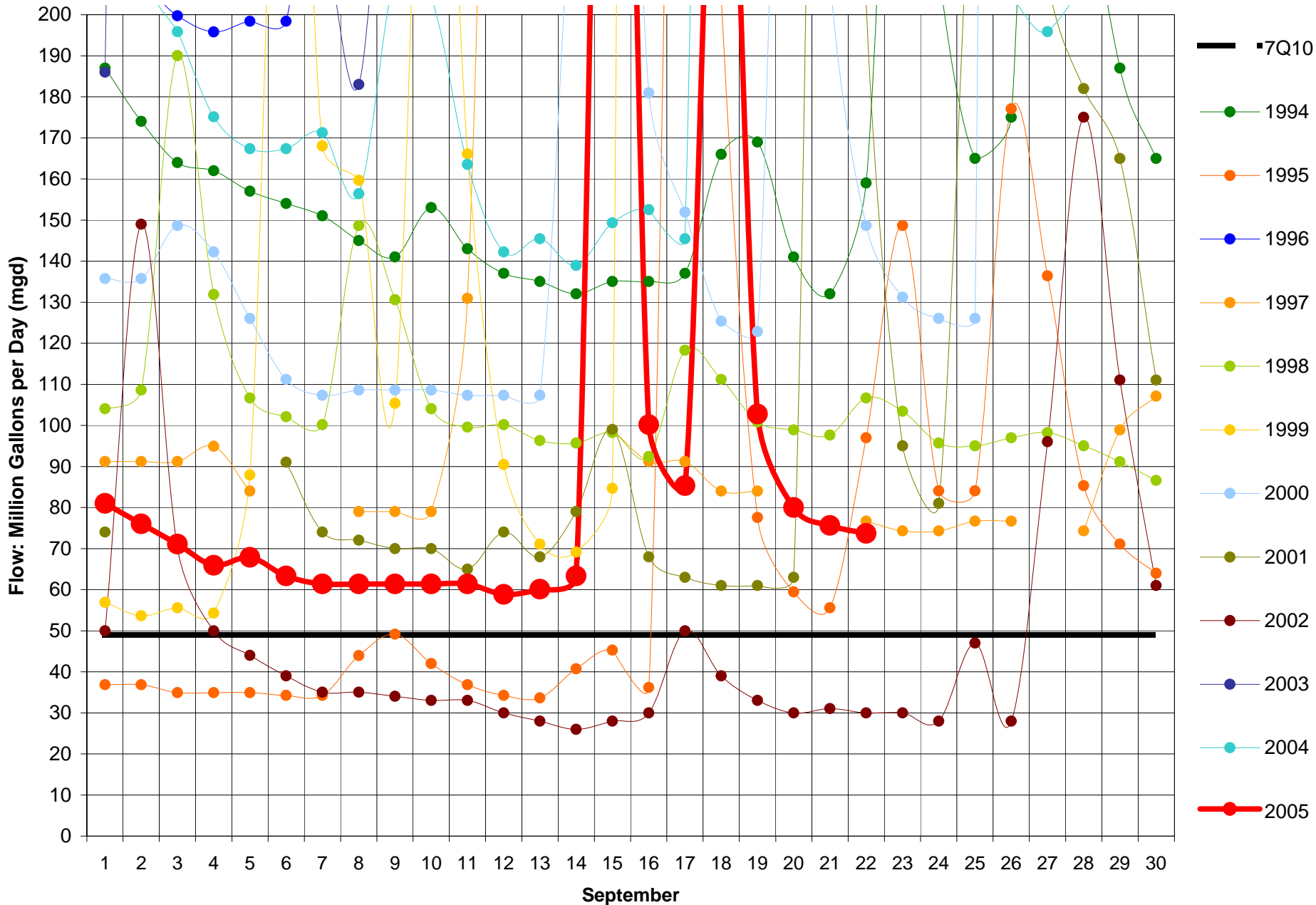
New Castle County Public Water Supply System Interconnections

Certificate of Public Convenience and Necessity (CPCNs)



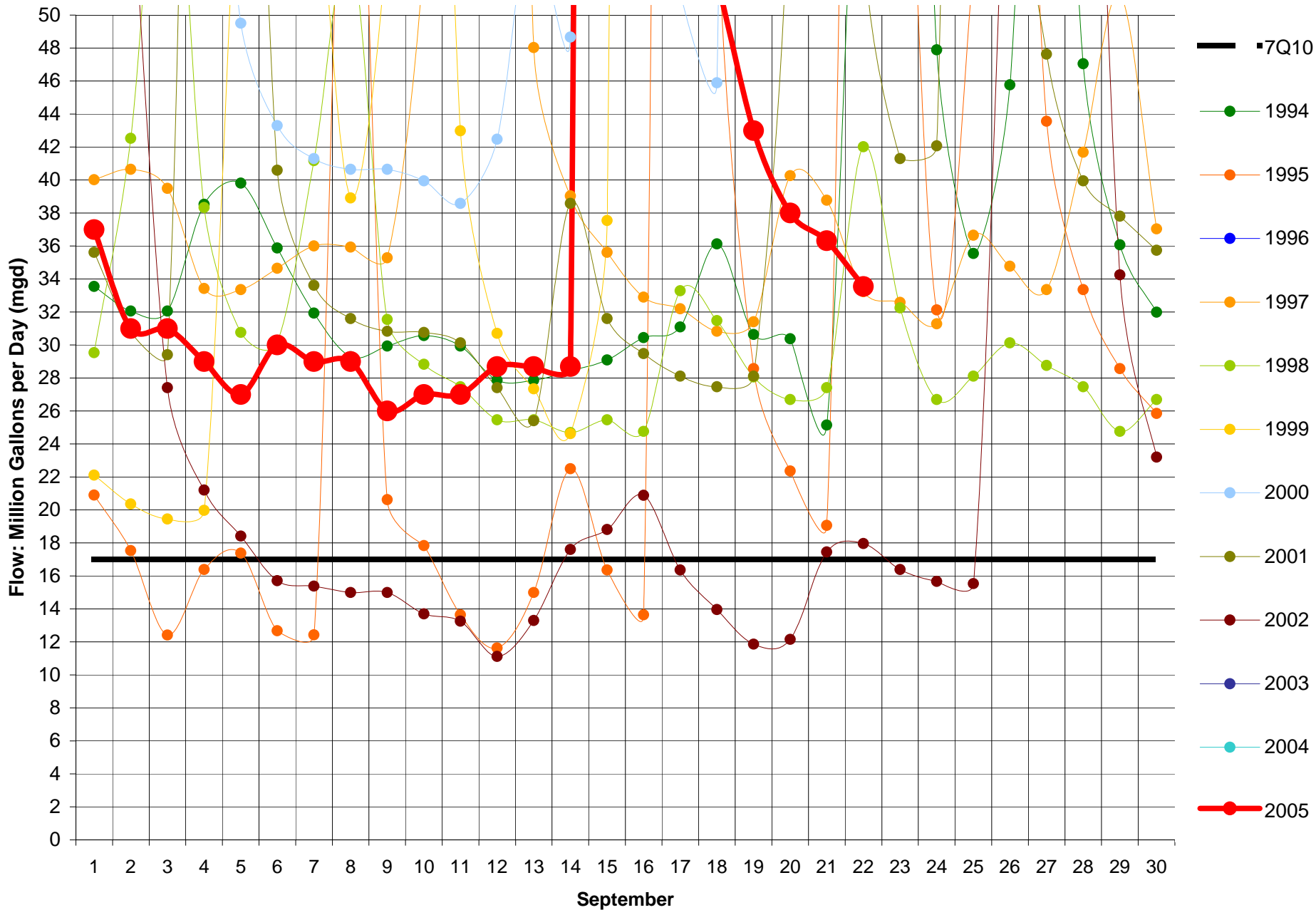
Brandywine Creek at Wilmington Streamflow Data, September 2005

*7Q10 is the minimum flow necessary to protect fishery and habitat that is likely to occur for 7 consecutive days, once every 10 years



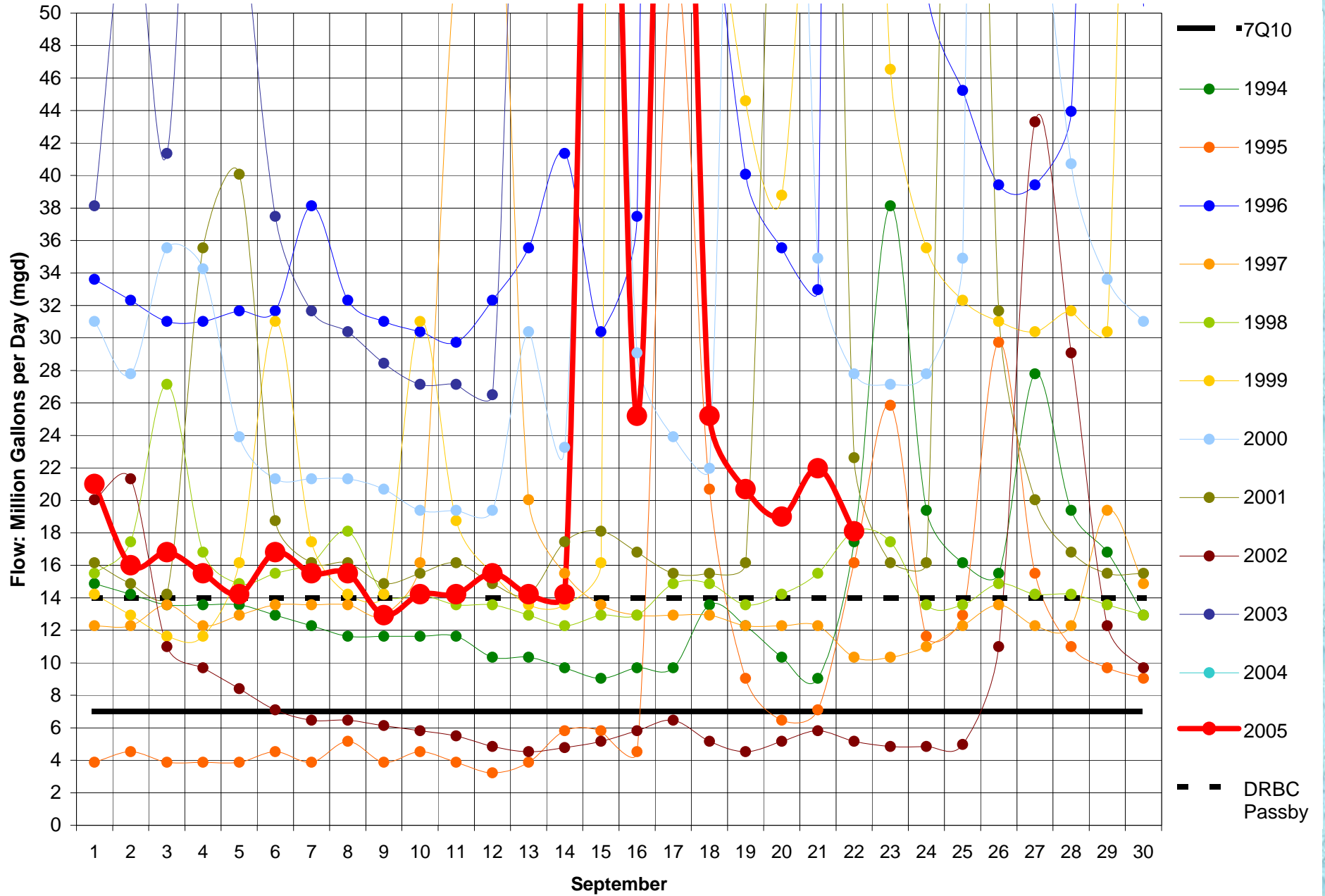
White Clay Creek at Stanton Streamflow Data, September 2005

*7Q10 is the minimum flow necessary to protect fishery and habitat that is likely to occur for 7 consecutive days, once every 10 years

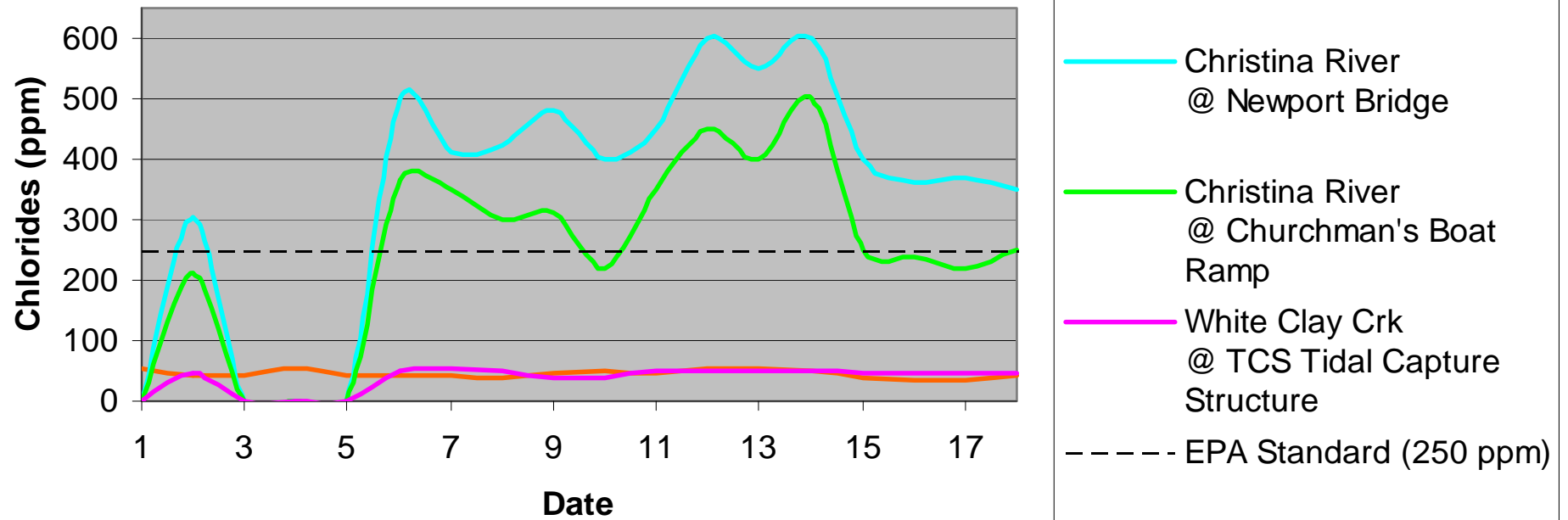


White Clay Creek at Newark Streamflow Data, September 2005

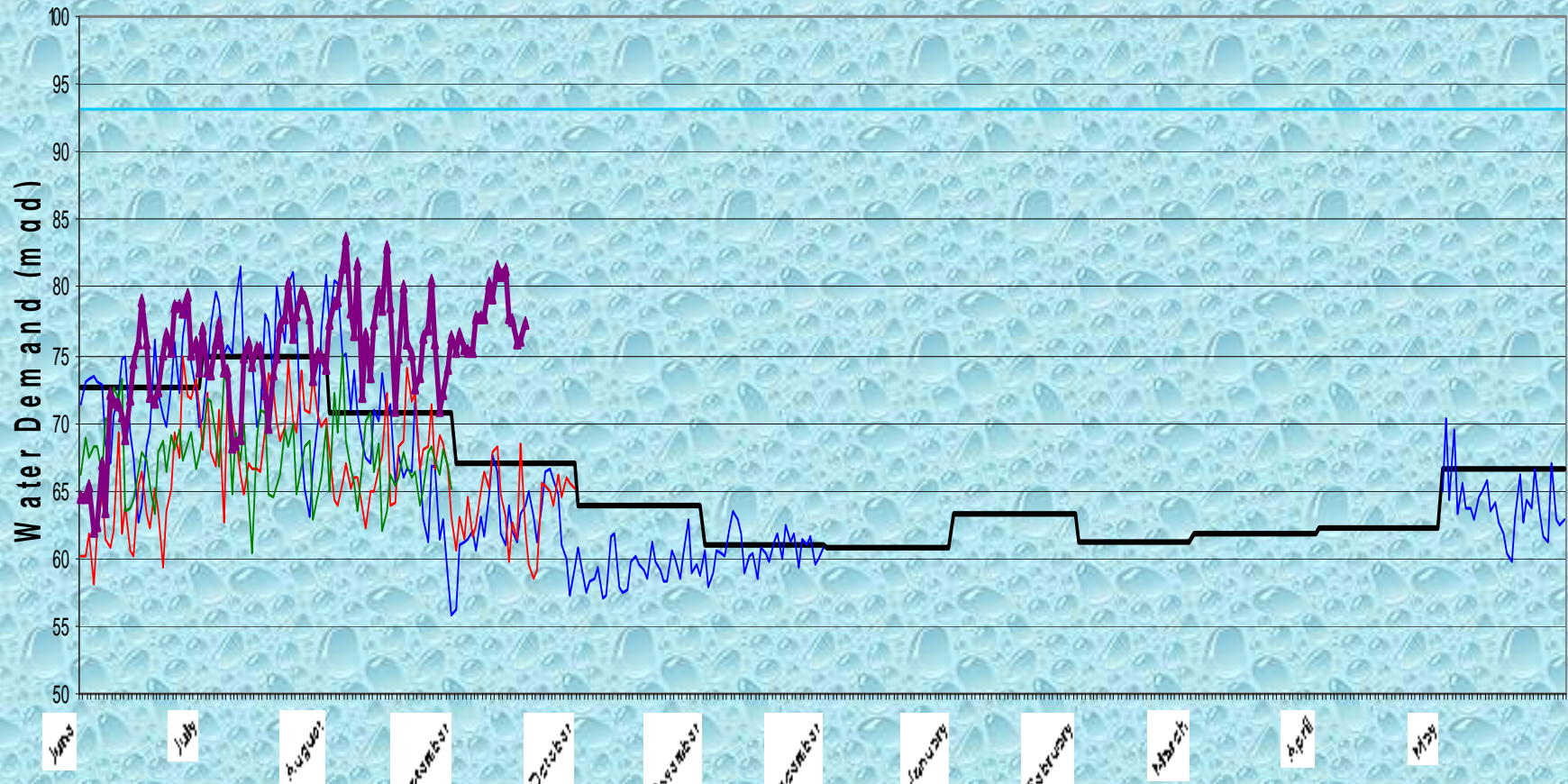
*7Q10 is the minimum flow necessary to protect fishery and habitat that is likely to occur for 7 consecutive days, once every 10 years



Chloride Comparisons SEPTEMBER 2005



Public Water Demand: Northern New Castle County



Compiled by the University of Delaware, Institute for Public Administration, Water Resources Agency using data from: Artesian Water Co., City of Newark, New Castle Municipal Services Commission, United Water Delaware and City of Wilmington

— Monthly Average

— June 2004-May 2005

— Historic Peak (7/18/97)

— June 2005-May 2006

— June 2002 - May 2003

— June 2003

Northern Delaware Drought Advisory Guidelines

<i>Advisories</i>	Drought Watch	Drought Warning	Drought Emergency
Status	Potential	Imminent	Emergency
Water Restrictions	Voluntary	Voluntary	Mandatory
Demand Conservation Goal	< 80 mgd	< 73 mgd	< 68 mgd

<i>Advisories</i>	Drought Watch	Drought Advisory	Drought Warning	Drought Emergency
Status	Potential		Imminent	Emergency
Demand Recommendations / Restrictions	Voluntary		Primarily Voluntary	Mandatory
Northern Del. Demand Conservation Goal	< 80 mgd		< 73 mgd	< 68 mgd
<i>Indicators</i>	Drought Watch		Drought Warning	Drought Emergency
Conditions Index	(potential shortage)		(potential shortage)	(shortage)
Precipitation:				
Running 12-month deficit				
New Castle County (Wilmington)				
Airport and Wilmington Porter Reservoir	6" to 8.99"		9" to 11.99"	>12.00"
Stream Flows:				
30-day moving average				
Brandywine Creek at Wilmington	85 mgd (90% exceedance)		70 mgd (95 % exceedance)	48 mgd (98% to 99% exceedance)
White Clay Creek at Stanton (RCC+WCC)	42 mgd (85% exceedance)		37 mgd (90% exceedance)	31 mgd (95% exceedance)
White Clay Creek at Newark	19 mgd (85% exceedance)		16 mgd (90% exceedance)	13 mgd (95% exceedance)
Chlorides	Stream flows \leq 37 mgd for 5 consecutive days on WCC at UWD Stanton Intake		Chlorides > 250 ppm for 3 consecutive days at the Christina River at Newport	Chlorides > 250 ppm for 3 consecutive days at the UWD Stanton Intake
Ground-Water Levels				
Shallow DGS Well Db24-10	14 - 14.99 feet (75% exceedance)		15 - 15.99 feet (90% exceedance)	> 16 feet (96% exceedance)
Aquifer Storage and Recovery	Report remaining water volume (mg) to GDAC		Report remaining water volume (mg) to GDAC	Report remaining water volume (mg) to GDAC
Reservoir Levels				
Hoopes Reservoir (City of Wilmington)	- 5 feet (elev. 215 feet) (85% capacity)		- 7 feet (elev. 213 feet) (79% capacity)	- 9 feet (elev. 211 feet) (72% capacity)
Newark Reservoir	- 10 feet (70% capacity)		-17 feet (52% capacity)	- 27 feet (28% capacity)
CWA Conditions (Octoraro Reservoir)	Report water levels to GDAC		Report water levels to GDAC	Report water levels to GDAC
DRBC Conditions (NY City Reservoirs)	Report water levels to GDAC		Report water levels to GDAC	Report water levels to GDAC
* These drought operating guidelines are not "triggers" for specific advisory levels. Rather, they are designed to provide guidance to the Governor's Drought Advisory Committee (GDAC) and the Delaware Water Supply Coordinating Council (WSCC). Final declaration of drought advisories rests with the Governor based upon input from the GDAC.				

Northern Delaware Drought Operating Plan							
% of Time Stream Exceeds Listed Flow	95 %	96 %	97 %	98 %	99 %	Record	
<i>I. Stream Flow</i>	mgd	mgd	mgd	mgd	7Q10 flow mgd	1999 drought mgd	2002 drought mgd
Brandywine Creek at Wilmington Intake	110	100	85	70	49	40	21
White Clay/Red Clay Creek at Stanton Intake	53	42	37	31	17	10	7
White Clay Creek at Newark Intake	20	19	16	13	7	5	3
Chlorides White Clay Creek at Stanton TCS	< 250	< 250	< 250	< 250	= 250	> 250	> 250
	<i>ppm</i>	<i>ppm</i>	<i>ppm</i>	<i>ppm</i>	<i>ppm</i>	<i>ppm</i>	<i>ppm</i>
<i>II. Available Water Supply</i>							
Artesian Water Company	31	31	31	31	31	30	30
* Wells	25	25	25	25	25	25	25
* Chester Water Authority interconnection	4	4	4	4	4	3	3
* Aquifer Storage & Recovery wells	2	2	2	2	2	2	2
* New Castle interconnection							
* Wilmington interconnection							
United Water Delaware	34	34	34	34	32	31	31
* White Clay/Red Clay Stanton intake	30	30	30	30	17	10	7
* Inflat Tidal Capture Structure @ WCC	0	0	0	0	10	15	16
* Hoopes Reservoir release to Red Clay Cr.					3	5	7
* Smalleys Pond intake at Christina River	4	4	4	3	1	0	0
* Christiana Well					0.25	0	0
* Chester Water Authority interconnection	1	1	1	1	1	0.8	0.8
* Wilmington interconnection							
* Artesian Water Co. interconnection							
* City of Newark interconnection	-1	-1	-1				
City of Wilmington	35	35	35	35	35	35	30
* Brandywine Creek intakes	35	35	35	35	34	30	10
* Hoopes Reservoir release (1,800 mg)					1	5	20
City of Newark	7	7	7	7	7	7	7
* White Clay Creek intake	3	3	1	0	0	0	0
* Newark Reservoir release (300 mg)	0	0	2	3	3	3	3
* Wells	3	3	3	4	4	4	4
* United Water DE interconnection	1	1	1	0	0	0	0
* Artesian Water Co. interconnection							
New Castle Municipal Services Commission	2	2	2	2	2	2	2
* Wells	2	2	2	2	2	2	2
Available Water Supply (mgd)	109	109	109	109	107	105	100

Water Supply/Demands through 2020 (based on drought of 1999)

<i>Scenario/Year</i>	<i>Supply (mgd)</i>	<i>Demand (mgd)</i>	<i>+/- (mgd)</i>	<i>Volume (mg)*</i>
2000	73.0	86.0	-13.0	-780
2010	73.0	88.0	-15.0	-900
2020	73.0	90.0	-17.0	-1,020

based on 60-day drought duration

<i>Project</i>	<i>Targeted capacity Dec. 1999 (mg) / (mgd)</i>	<i>Capacity in service Jun 2005 (mg) / (mgd)</i>	<i>Status of completion</i>
Newark Reservoir	200 / 3	0	75% complete, construction resumed in March 2005 with new contractor, 317 mg reservoir to be operational December 2005
Hoopes Reservoir Deep Storage Plan	500 / 8	500 / 8	Complete
New Wells North of C&D Canal	120 / 2	324 / 5	Complete, Chesapeake City Road well online
South Wellfield Iron Treatment Plant	60 / 1	60 / 1	Complete and online, November 2003
Aquifer Storage and Recovery	300 / 5	130 / 2	AWC pumped 130 mg into ASR wells during winter 2004-05
Projected 2020 Deficit: 1,020 / 17	1,180 / 19	1,014 / 16	

Water Supply/Demands through 2020 (based on drought of 2002)

<i>Scenario/Year</i>	<i>Supply (mgd)</i>		<i>Demand (mgd)</i>	<i>+/- (mgd)</i>		<i>Volume (mg)*</i>	
	<i>7Q50</i>	<i>7Q10</i>		<i>7Q50</i>	<i>7Q10</i>	<i>7Q50</i>	<i>7Q10</i>
2003	84.5	82.0	83.3	1.2	-1.3	90	-97
2010	84.5	82.0	86.3	-1.8	-4.3	-135	-322
2020	84.5	82.0	88.0	-3.5	-6.0	-262	-450

based on 75-day drought duration

<i>Sponsor</i>	<i>Project</i>	<i>Targeted capacity January 2003 (mg)</i>	<i>Capacity in service June 2005 (mg) / (mgd)</i>	<i>Status</i>
City of Wilmington	Raise Water Level in Hoopes Reservoir by 1 foot to 5 feet	60-375	0 / 0	City plans to raise water level by two to three feet. US Army Corps of Engineers determined that a permit is not needed.
Wilmington, United Water Delaware, DNREC	Increase Hoopes Pump Station Capacity	36-510	0 / 0	DNREC retained consultant in May 2005 to conduct study with supporting funds from DNREC and United Water Delaware.
Artesian Water Company	Aquifer Storage and Recovery	150	0 / 0	Completed preliminary feasibility study at Wilmington Manor Gardens and Artisan's Village.
United Water Delaware	Aquifer Storage and Recovery	225	0 / 0	Retained consultant to conduct testing near Delaware City and Smalleys Pond. Smalleys Pond site study completed: not feasible.
United Water Delaware	Modification of Tidal Capture Structure Operating Plan	75 to 500	400 / 5.3 *	DRBC docket decision in January 2005 replaced 7Q10 minimum flow standard with a standard based on minimum flow depth and chloride provisions.

* calculations performed by UWD and reviewed by the State Water Coordinator were based on January 2005 DRBC 7Q10 docket decision.



Newark
Reservoir



Newark
Reservoir

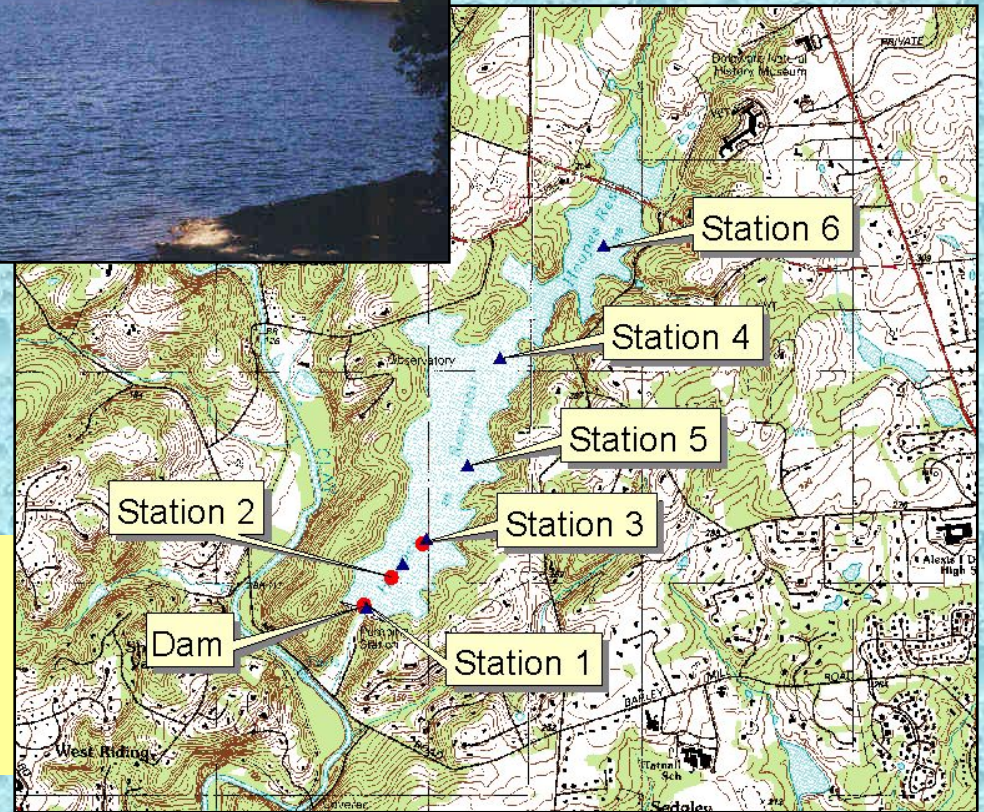


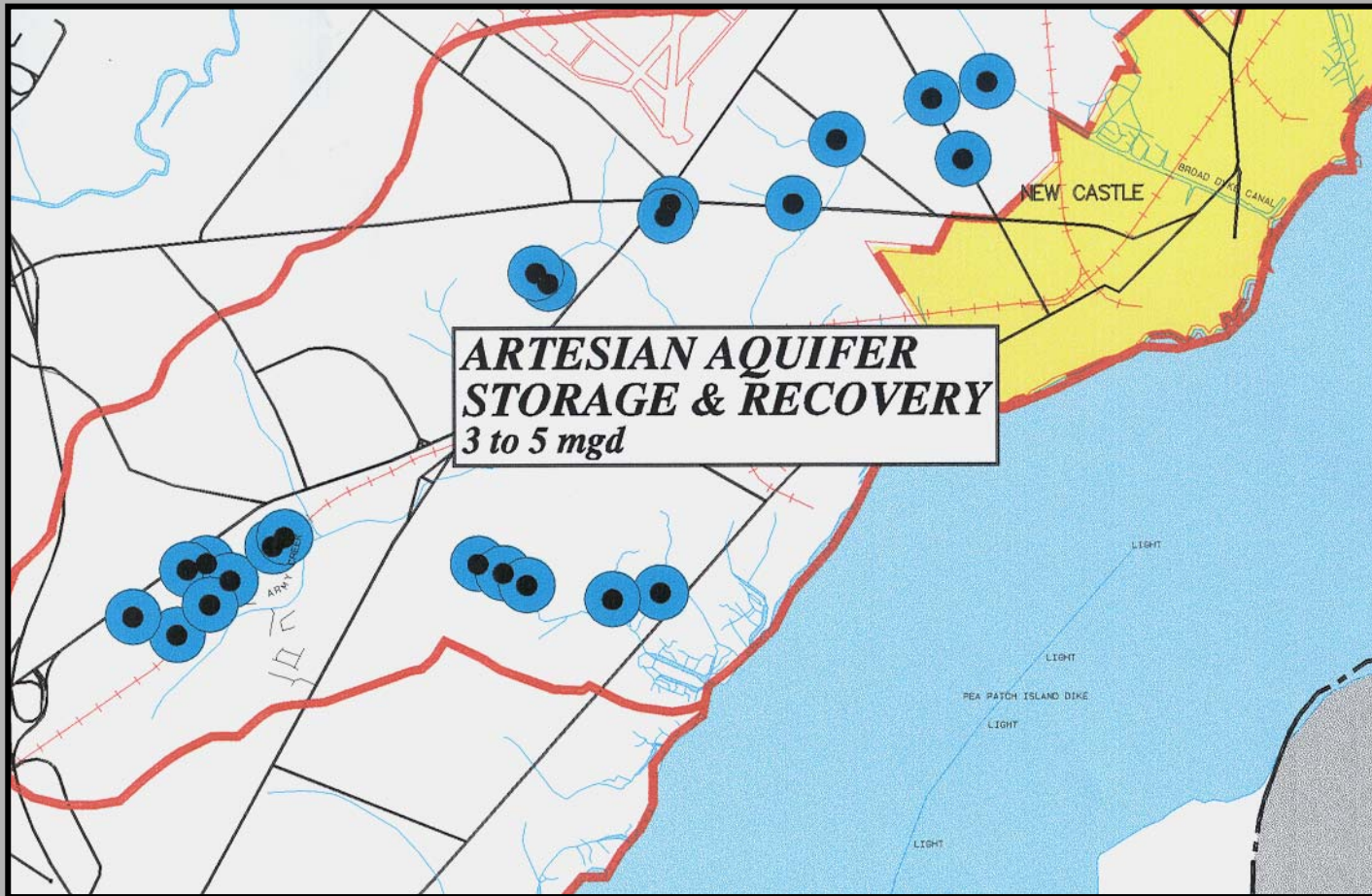
Newark
Reservoir



Deep
storage:
500 mg

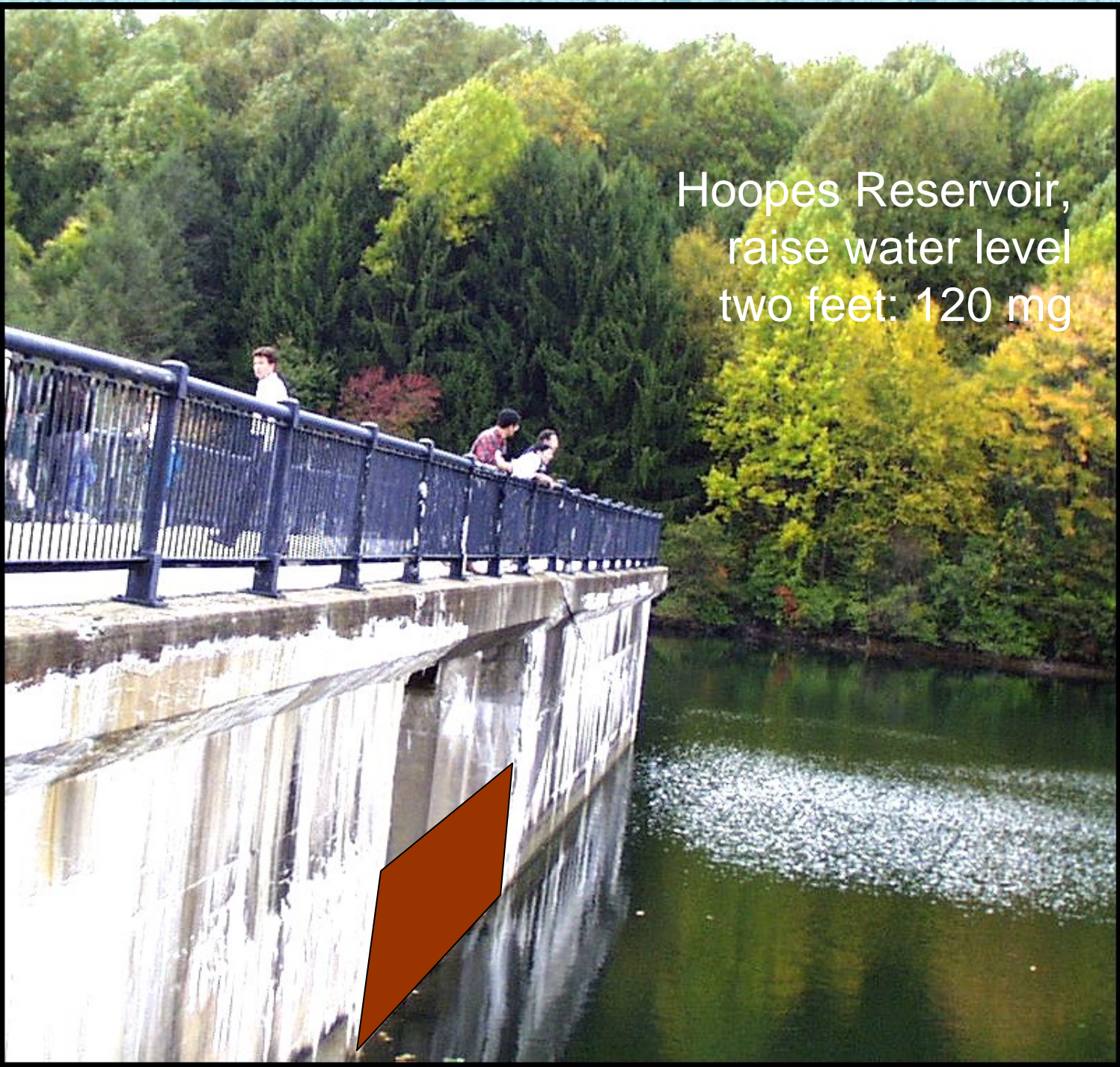
Hoopes
Reservoir





AWC New wells: 320mg / ASR: 130mg

Hoopes Reservoir,
raise water level
two feet: 120 mg





UWD TCS: 400mg

Interconnected System

- 25 interconnections in place
- Over 5 mgd capacity

Conservation Water Rates

- Governor Minner signed HB 118: Water Supply Self Sufficiency Act, July 2003
- Requires each utility to implement a conservation rate structure
- AWC: conservation rate since 1992
- Newark: adopts seasonal water rates 2001
- New Castle MSC: institutes conservation rates 2001
- UWD: adopts conservation rates 2005
- Wilmington: adopts conservation rates 2005

No. NCC Ground-water Study

- US Army Corps of Engineers
- Estimates long-term safe yield of groundwater
- Coastal plain from Wilmington to Middletown and N.J. to Del. To Md.
- Complete February 2006

Governance

- Governor Carper signs SB 370: transfers jurisdiction of CPCN's to Public Service Commission, 2001
- PSC orders AWC and UWD to submit water supply reports, filed in 2003
- Governor Minner signs HB 118: Water Supply Self-Sufficiency Act of 2003: establishes goal of in-state water supply self-sufficiency in No. Del. By 2010

Reservoir Status

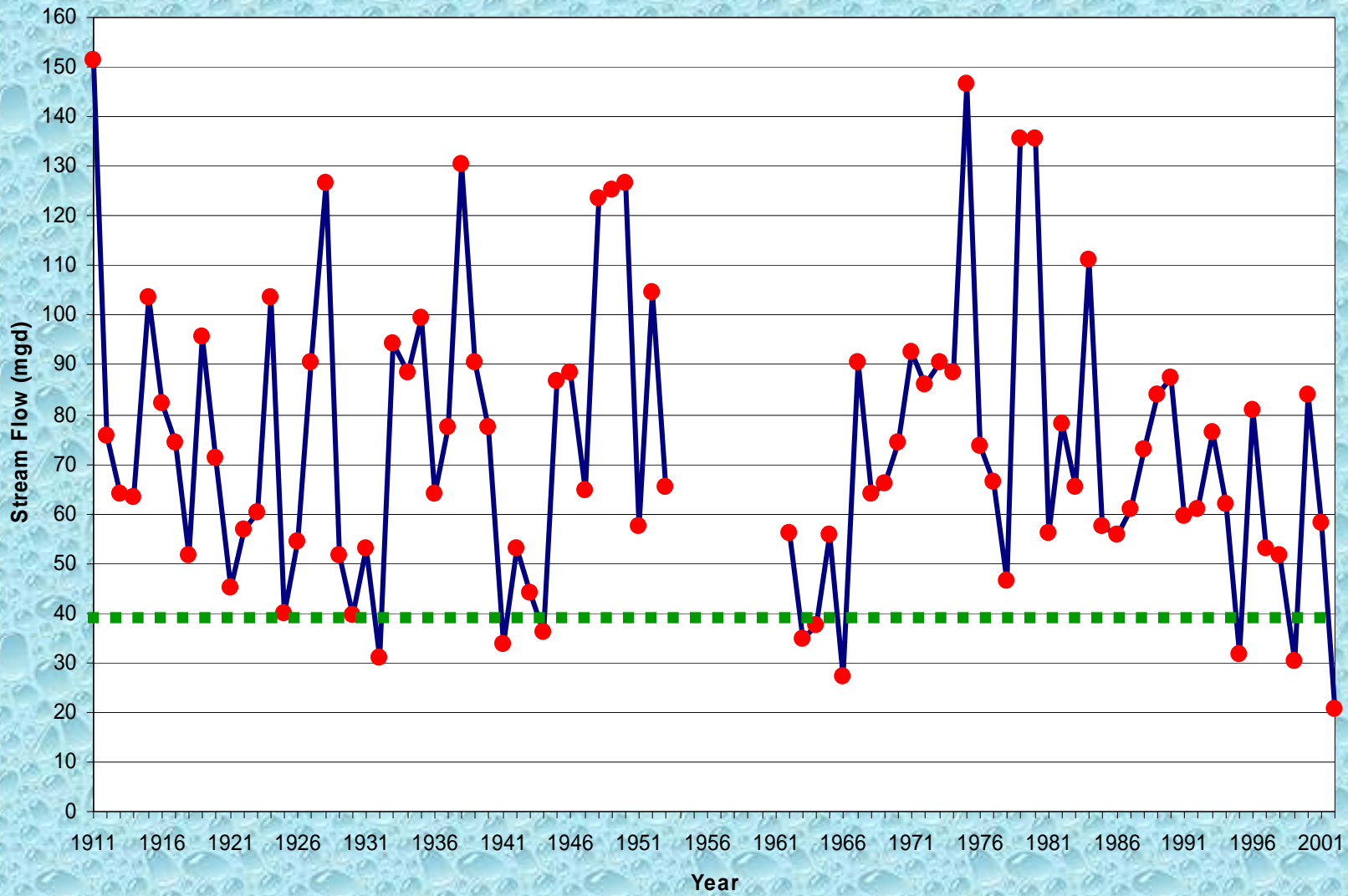
- Newark Reservoir: complete fall 2005
- Glenville Reservoir: tabled, state/county purchased flood-prone homes, restores wetlands, 2005-06
- Bread and Cheese Island Reservoir: DeIDOT conducting wetland and geotechnical studies

Drought Operating Plan

- Three-phase Drought Operating Guidelines approved by DE WSCC, January 2003
- Drought Operating Plan approved by WSCC, June 2005
- Green Industry Water Conservation Rules approved by WSCC, June 2005

Lowest stream flows on the Brandywine Creek at Chadds Ford, PA from 1911-2002

(*Data for the years 1954-1961 was unavailable*)





Questions/Comments

