



Proposed Rulemaking To Implement a Flexible Flow Management Program for the New York City Delaware Basin Reservoirs



Flexible Flow Management Program Rulemaking

- **Timing/Process**
- **History**
- **Consent Decree Party Action**
- **Proposed Rulemaking - Flexible Flow Management Program (FFMP)**
- **Questions**

Timing/Process

- **December 3, 2007** - Draft Rulemaking posted/published
- Other outreach endeavors
- **4 public availability meetings** - - for an exchange of information only – a formal record will not be made:
 - **Tuesday, December 18, 2007** at the Best Western Inn at Hunt's Landing, 120 Routes 6 & 209, Matamoras, PA 18336-2056
 - 3:00 pm to 5:00 pm
 - 6:30 pm to 9:30 pm
 - **Tuesday, January 8, 2008** at the law offices of Wolf, Block, Schorr and Solis-Cohen LLP, 1650 Arch Street, 26th Floor Meeting Room, Philadelphia, PA 19103
 - 3:00 pm to 5:00 pm
 - 6:30 pm to 9:30 pm

Timing/Process

- **Public hearing - Wednesday, January 16, 2008** at the West Trenton Ballroom Facilities at the West Trenton Volunteer Fire Company, 40 West Upper Ferry Road, West Trenton, NJ 08628
 - 3:00 pm to 5:30 pm
 - 7:00 pm to 10:00 pm
- **Comment period ends Friday, January 18, 2008**

Timing/Process

- Written comments are to be submitted by email to: paula.schmitt@drbc.state.nj.us; by U.S. Mail to **Commission Secretary, DRBC, PO Box 7360, West Trenton, NJ 08628-0360**; or by fax to **609-883-9522** to the **attention of the Commission Secretary**.
- In all cases, the commenter's name, affiliation and address should be provided in the comment document, and "FFMP" should appear in the subject line.

Timing/Process

- Written comments will be accepted through the close of business on Friday, January 18, 2008.
- All testimony and written comments submitted to the Commission during its previous hearings or comment period on the FFMP, including comments on the form of the FFMP that was published on the Commission's website in February 2007, will be included in the administrative record for this action and need not be re-submitted.

Timing/Process

- Comments will be discussed with the Decree Parties.
- Staff prepares response to comments and recommendation to Commissioners.
- Anticipated Commission action on Wednesday, May 14, 2008.

History

- 1954 U.S. Supreme Court Decree
- 1961 DRBC Compact
- Docket D-77-20 (Revised) – Good Faith Agreement - 1983
- Docket D-77-20 Revisions 2 through 10
- Docket D-77-20 Revision 7 (extended through September 30, 2007) – Interim fishery program
- Docket D-77-20 Revision 9 (extended through September 30, 2007) - Temporary spill mitigation program

Consent Decree Party Action

- **September 26, 2007:** Decree Parties reached unanimous agreement on a Flexible Flow Management Program (FFMP) which provides a framework for managing diversions and releases from New York City's Delaware Basin reservoirs:
 - water supply
 - drought mitigation
 - flood mitigation
 - protection of the tailwaters fishery
 - diverse array of habitat needs in the main stem, estuary and bay
 - recreation
 - salinity repulsion

Proposed Rulemaking - FFMP

- **September 26, 2007:** Commission approved Resolution No. 2007-14
 - Publish proposed regulations for implementing the FFMP
 - Amending Commission Rules
 - Dockets
 - Comprehensive Plan
 - Conduct notice and comment on proposed rulemaking
 - Public hearing
- **December 3, 2007:** Proposed amendments posted on the Commission website and published in the Federal Register.

Proposed Rulemaking - FFMP

- **Water Code Amendments:**

- Section 2.5.3 of the Water Code newly titled, “Flexible Flow Management Program”
- Section 2.5.4 (concerning drought emergency actions by the Commission in accordance with Section 3.3 of the Compact)
- Section 2.5.5 (providing for coordinated operation of lower basin and hydroelectric reservoirs during a basinwide drought)
- Section 2.5.6 (relating to coordinated operation of upper and lower basin reservoirs during a lower basin drought)

Sections 2.5.3 through 2.5.6 collectively implement the “FFMP.”

Proposed Rulemaking - FFMP

- **Term of Amendments:**
 - Code amendments constituting the FFMP are proposed to expire on May 31, 2011, unless extended or modified by unanimous agreement of the Decree Parties.
 - Unless extended or modified prior to May 31, 2011, the New York City Delaware Basin reservoirs will be operated in accordance with the pre-FFMP Water Code and Docket D-77-20 CP (Revised).

Proposed Rulemaking - FFMP

- **Effect of Proposed Amendments:**
 - Establish diversion and flow objectives
 - Substitute a fixed volume of releases called the “Interim Excess Release Quantity” for the Excess Release Quantity
 - Modify the schematic rule curves diagram that defines
 - basinwide normal
 - drought watch
 - drought warning
 - drought emergency operating conditions

Proposed Rulemaking - FFMP

- **Effect of Proposed Amendments (Continued):**
 - Increase New Jersey's allowable out-of-basin diversion during drought warning and drought emergency operations by 15 mgd and 20 mgd, respectively, above the levels established by the Good Faith agreement
 - Eliminate the link established by the Good Faith agreement between the Montague, NJ flow objective and the location of the salt front during basinwide drought emergency operations
 - Establish the rate of releases to be made from each of the City's Delaware Basin reservoirs for habitat protection and discharge mitigation, based upon combined reservoir storage levels and individual reservoir storage levels
 - Revisions to made to Tables 1 and 2

Proposed Rulemaking - FFMP

- **Diversion/Flow Objective:**

- **Table 1: Interstate Operation Schedule For Diversions and Flow Objectives**

NYC Storage Condition	NYC Diversion (mgd)	NJ Diversion (mgd)	Montague Flow Objective (cfs)	Trenton Flow Objective (cfs)
Normal (June 15 – Sept 15)	800	100	1,850*	3,000
Normal (Sept 16 – June 14)	800	100	1,750	3,000
Drought Watch (L3)	680	100	1,660	2,700
Drought Warning (L4)	560	85	1,550	2,700
Drought Emergency (L5)	520	85	1,100-1,500**	2,500-2,900***
Severe Drought	(to be negotiated depending upon conditions)			

* To the extent supported by the IERQ in accordance with Section 2.5.3 E.2. Otherwise, 1,750 c.f.s.

** Varies with time of year, in accordance with Table 2.

*** Varies with time of year and location of salt front, in accordance with Table 2, except that for lower basin drought warning and drought emergency conditions, Section 2.5.6 of these regulations shall control.

Proposed Rulemaking - FFMP

- **Diversion/Flow Objective:**

- **Table 2: Interstate Operation Schedule For Adjusting Montague and Trenton Flow Objectives During Drought Conditions**

7-Day Average Location of “Salt Front”* (River Mile**)	Flow Objective (cfs)						
	Trenton			Montague			
	Dec 1 – Apr 30	May 1 – Aug 31	Sep 1 – Nov 30	June 1 – June 30	July 1 – Nov 31	Dec 1 – Dec 31	Jan 1 – May 31
-	-	-	-	1,450	1,500	1,350	1,100
Upstream of R.M. 92.5	2,700	2,900	2,900				
R.M. 87.0 – R.M. 92.5	2,700	2,700	2,700				
R.M. 82.9 – R.M. 87.0	2,500	2,500	2,500				
Downstream of R.M. 82.9	2,500	2,500	2,500				

* Defined as the 250 mg/L isochlor in the Delaware Estuary.

** Measured in statute miles along the center of the navigation channel, from the mouth of the Delaware Bay.

Proposed Rulemaking - FFMP

- **Interim Excess Release Quantity (IERQ):**
 - Substitute a fixed volume of releases called the “Interim Excess Release Quantity (IERQ)” for the Excess Release Quantity (ERQ) (during normal conditions)
 - Fixed amount of 15,468 cfs-days for non-leap years (approx. 10 bg)
 - 17,125 cfs-days for leap years
 - ERQ has been 11,600 cfs-days (7.5 bg)
 - IERQ releases available only during basinwide normal operations

Proposed Rulemaking - FFMP

- **IERQ available to:**
 - increase the Montague flow objective from 1,750 cfs to 1,850 cfs during the period from June 15 through September 15;
 - maintain the Trenton, NJ flow objective of 3,000 cfs for the period from June 15 through March 15.

All or a portion of the available IERQ also is proposed to be subject at any time to placement in an “IERQ Extraordinary Needs Bank”

Proposed Rulemaking - FFMP

- **Rule curves diagram modifications:**
 - basinwide normal (UPDATED)
 - drought watch (PROPOSED ADDITION)
 - drought warning (UPDATED)
 - drought emergency
 - Rule curves reflect changes made to Water Code via resolutions and current Decree Party agreement.

Proposed Rulemaking - FFMP

- **Fourth curve added to Figure 1:**
 - To indicate the combined storage level at which L1 discharge mitigation releases are triggered.
 - Figure 1 is linked to the schedule of diversions and flow objectives set forth in proposed Table 1 of the same section and to provisions set forth in the text of that section.
 - Figure 1 is proposed to be further amended by the addition of labels L1 through L5 for the five storage zones delineated by the curves.
 - The storage zones correspond to minimum releases from each of the City's Delaware Basin reservoirs for purposes of habitat protection and discharge mitigation in accordance with Tables 3A through 3D of proposed Section 2.5.3 G.

T1

T2

F1

F2

How the new rules work

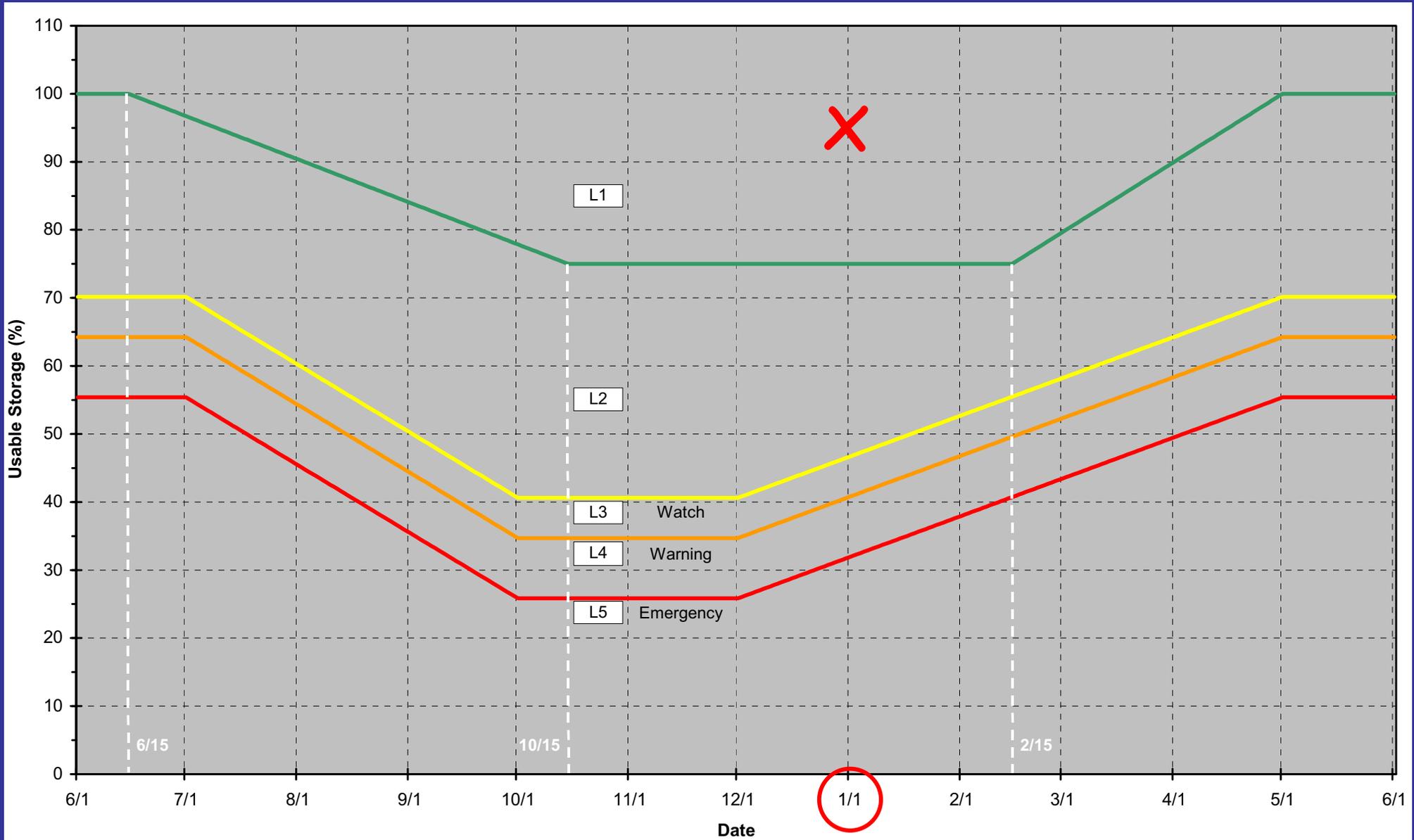
An Example

Today is January 1, 2008 and reservoir storage, including snowpack, is as follows:

Reservoir	Usable Storage (BG)	Usable Storage (%)
Cannonsville	95.6	99.9
Pepacton	130.5	93.1
Neversink	30.7	87.8
combined	256.8	94.8

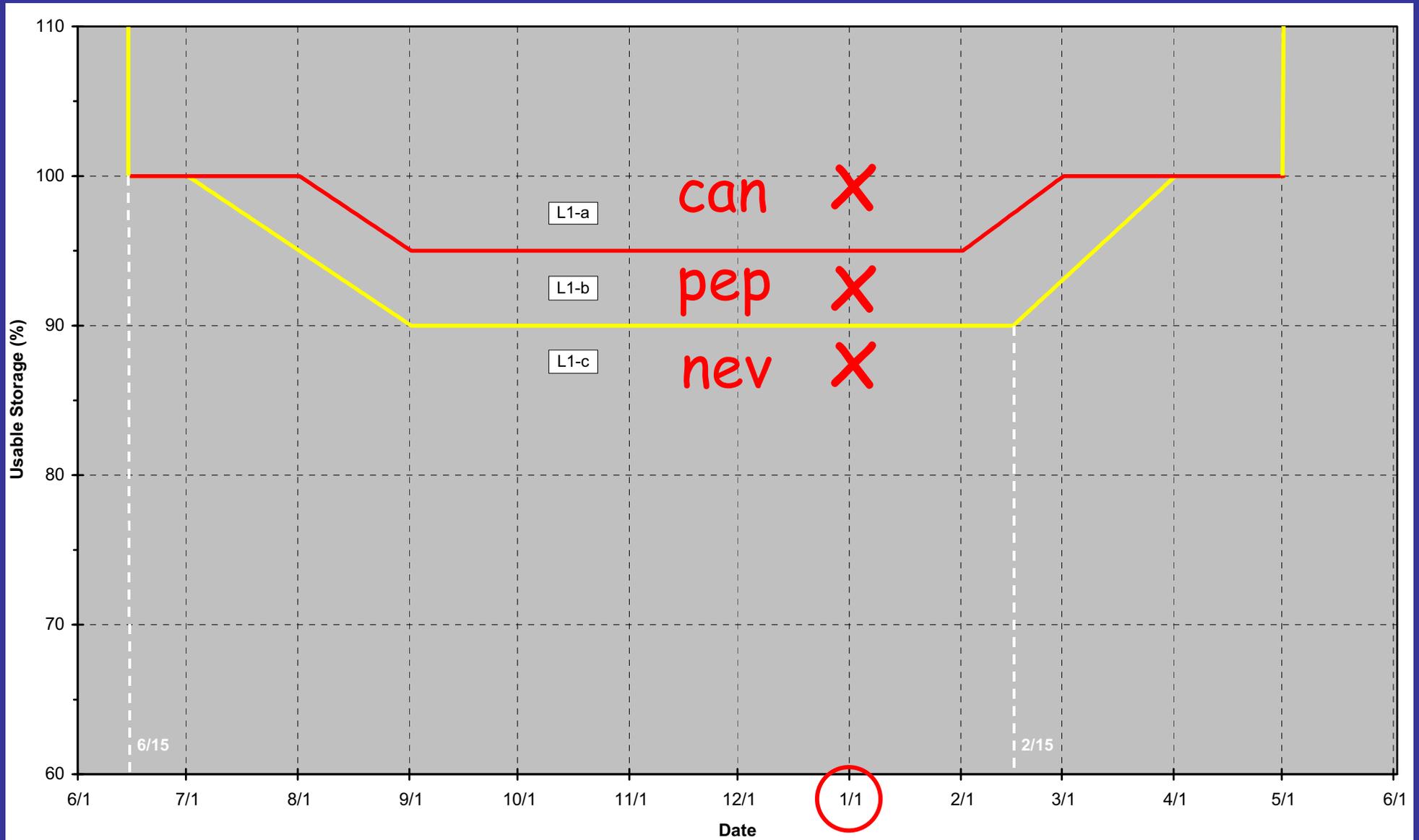
Example Figure 1

NYC Delaware System Combined Usable Storage (Cannonsville, Pepacton and Neversink Reservoirs)



Example Figure 2

NYC Delaware System Usable Individual Storage (Cannonsville, Pepacton and Neversink Reservoirs)



Example Table 3

Schedule Of Releases (cfs)

With 35 mgd Available

Neversink	Winter		Spring	Summer			Fall	
	Dec 1 -	Apr 1 -	May 1 -	Jun 1 -	Jun 16 -	Jul 1 -	Sep 1 -	Oct 1 -
Storage Zone	Mar 31	Apr 30	May 31	Jun 15	Jun 30	Aug 31	Sep 30	Nov 30
L1-a	190	190	*	*	190	190	190	190
L1-b	100	*	*	*	*	125	85	95
L1-c	65	65	90	110	110	110	75	60
L2	45	45	85	100	100	100	70	45
L3	40	40	50	75	75	75	40	40
L4	35	35	40	60	60	60	30	30
L5	30	30	30	55	55	55	25	25

Example Table 3

Schedule Of Releases (cfs)

With 35 mgd Available

Pepacton	Winter		Spring	Summer			Fall	
	Dec 1 -	Apr 1 -	May 1 -	Jun 1 -	Jun 16 -	Jul 1 -	Sep 1 -	Oct 1 -
Storage Zone	Mar 31	Apr 30	May 31	Jun 15	Jun 30	Aug 31	Sep 30	Nov 30
L1-a	700	700	*	*	700	700	700	700
L1-b	185	*	*	*	*	250	200	185
L1-c	85	85	120	150	150	150	100	85
L2	65	65	110	140	140	140	85	60
L3	55	55	80	100	100	100	55	55
L4	45	45	50	85	85	85	40	40
L5	40	40	40	80	80	80	30	30

Example Table 3

Schedule Of Releases (cfs)

With 35 mgd Available

Cannonsville	Winter		Spring	Summer			Fall	
	Dec 1 - Apr 1 -	Apr 1 -	May 1 - Jun 1 -	Jun 1 -	Jun 16 - Jul 1 -	Jul 1 -	Sep 1 - Oct 1 -	Oct 1 -
Storage Zone	Mar 31	Apr 30	May 31	Jun 15	Jun 30	Aug 31	Sep 30	Nov 30
L1-a	1500	1500	*	*	1500	1500	1500	1500
L1-b	250	*	*	*	*	350	275	250
L1-c	110	110	225	275	275	275	140	110
L2	80	80	215	260	260	260	115	80
L3	70	70	100	175	175	175	95	70
L4	55	55	75	130	130	130	55	60
L5	50	50	50	120	120	120	50	50

c) THPDMP Releases

Cannonsville Reservoir Schedule of Releases (cfs)

With 35 mgd available

Shows (change) in values: September vs. February

Cannonsville Storage Zone	Winter		Spring	Summer			Fall	
	Dec 1 - Mar 31	Apr 1 - Apr 30	May 1 - May 31	Jun 1 - Jun 15	Jun 16 - Jun 30	Jul 1 - Aug 31	Sep 1 - Sep 30	Oct 1 - Nov 30
L1-a	1500(500)	1500(500)	*	*	1500(500)	1500(500)	1500(500)	1500(500)
L1-b	250	*	*	*	*	350	275	250
L1-c	110	110	225 (45)	275 (25)	275(25)	275 (15)	140	110
L2	80	80	215 (35)	260 (10)	260 (10)	260 (10)	115	80
L3	70 (10)	70 (10)	100 (20)	175 (10)	175(10)	175(10)	95(10)	70(10)
L4	55(5)	55(5)	75(25)	130(30)	130(30)	130(30)	55(5)	60(10)
L5	50 (10)	50 (10)	50 (10)	120 (45)	120 (45)	120 (45)	50 (10)	50(10)

c) THPDMP Releases

Pepacton Reservoir Schedule of Releases (cfs)

With 35 mgd available

Shows (change) in values: September vs. February

Pepacton Storage Zone	Winter		Spring	Summer			Fall	
	Dec 1 - Mar 31	Apr 1 - Apr 30	May 1 - May 31	Jun 1 - Jun 15	Jun 16 - Jun 30	Jul 1 - Aug 31	Sep 1 - Sep 30	Oct 1 - Nov 30
L1-a	700	700	*	*	700	700	700	700
L1-b	185	*	*	*	*	250	200	185
L1-c	85	85 (20)	120 (35)	150 (15)	150 (15)	150	100	85
L2	65	65	110 (25)	140 (5)	140 (5)	140 (5)	85	60
L3	55 (5)	55 (5)	80 (30)	100 (5)	100 (5)	100 (5)	55 (5)	55 (5)
L4	45 (5)	45 (5)	50 (10)	85 (15)	85 (15)	85 (15)	40	40
L5	40 (10)	40 (10)	40 (10)	80 (35)	80 (35)	80 (35)	30	30

c) THPDMP Releases

Neversink Reservoir Schedule of Releases (cfs)

With 35 mgd available

Shows (change) in values: September vs. February

Neversink Storage Zone	Winter		Spring	Summer			Fall	
	Dec 1 - Mar 31	Apr 1 - Apr 30	May 1 - May 31	Jun 1 - Jun 15	Jun 16 - Jun 30	Jul 1 - Aug 31	Sep 1 - Sep 30	Oct 1 - Nov 30
L1-a	190	190	*	*	190	190	190	190
L1-b	100	*	*	*	*	125	85	95
L1-c	65	65 (20)	90 (15)	110	110	110	75	60
L2	45	45	85 (10)	100 (-10)	100 (-10)	100 (-10)	70	45
L3	40	40	50 (10)	75 (10)	75 (10)	75 (10)	40	40
L4	35 (5)	35 (5)	40 (10)	60 (20)	60 (20)	60 (20)	30	30
L5	30 (5)	30 (5)	30 (5)	55 (20)	55 (20)	55 (20)	25	25

How the new rules work – 4 steps

Releases from each reservoir are determined each day based solely on storage and date, following these steps:

1. Calculate today's usable storage (including snowpack) for each NYC reservoir and the combined total
2. Place the NYC combined usable storage value on Figure 1 to determine applicable release "zone" (L1-L5)
3. If in zone L1, go to Figure 2 first to determine which of the L1 sub-zones (a, b or c) applies for each reservoir, using today's usable storage value for each reservoir; then proceed to Table 3 to find today's release value for each reservoir
4. If in zones L2-L5, proceed directly to Table 3 to find today's release value for each reservoir

Proposed Rulemaking - FFMP

- **Tailwaters Habitat Protection and Discharge Mitigation Program (“THP-DMP”):**
 - Consisting of conservation releases to help maintain minimum flows and adequate temperatures in the tailwaters immediately below the City’s Delaware Basin reservoirs to protect the cold water fishery.
 - Consisting of discharge mitigation releases to help mitigate the effects of flooding immediately below the three NYC reservoirs.
 - Releases are defined for each of the reservoirs individually, based upon total combined storage in accordance with the four rule curves contained in Figure 1 in proposed Section 2.5.3 F.

Proposed Rulemaking - FFMP

- **Tailwaters Habitat Protection and Discharge Mitigation Program (“THP-DMP”) (Continued):**
 - Amendments would largely eliminate the use of storage “banks” for purposes of habitat protection (including the thermal bank).
 - Conservation releases based on reservoir storage levels, resulting in larger releases when reservoir storage is high and smaller releases when storage is at or below normal.
 - Conservation release rates for each storage zone are set forth in new Tables 3A thru 3D of Section 2.5.3 G.

Proposed Rulemaking - FFMP

- **Drought Management:**
 - Revises drought management curves – Watch, Warning and Emergency
 - Replaces Drought Emergency salt front vernier with fixed seasonal releases for Montague flow objective
 - Significantly increased releases during Watch, Warning and Emergency

Proposed Rulemaking - FFMP

- New Jersey's allowable diversion is increased from 70 mgd to 85 mgd during drought warning operations and from 65 mgd to 85 mgd during drought emergency operations.
- Montague flow objective is proposed to be “detached” from the 7-day average location of the 250 mg/L chloride concentration (the “salt front”) in the Delaware Estuary during basinwide drought emergency operations.
- Current Water Code provisions that link the Trenton flow objective to the salt front location will remain in place.

Proposed Rulemaking - FFMP

- **Discharge mitigation releases:**
 - Designed to help mitigate the effects of flooding immediately below the three NYC reservoirs, while not compromising availability of storage for other uses.
 - Designed to increase the likelihood of storage voids during Fall and Winter.
 - Voids of a given size are not guaranteed; size and duration of voids will depend on the combination of inflows, releases and diversions for each reservoir.

Proposed Rulemaking - FFMP

- **Temporary Suspension or Modification of FFMP in Case of Emergency (Section 2.5.3.H.):**
 - Executive Director, after consultation with the decree parties and with their unanimous consent, finds that customary notice and comment rulemaking by the Commission is impracticable and contrary to the public interest.
 - Executive Director may issue an emergency order, which must be ratified, rejected or modified at the next meeting of the Commission, subject to the unanimous approval of the decree parties.
 - Public notice of such action in advance of the public meeting is required.
 - Ratification by the Commission would be temporary.

Table 1
Interstate Operation Schedule
For Diversions and Flow Objectives

NYC Storage Condition	NYC Diversion (mgd)	NJ Diversion (mgd)	Montague Flow Objective (cfs)	Trenton Flow Objective (cfs)
Normal (June 15 – Sept 15)	800	100	1,850*	3,000
Normal (Sept 16 – June 14)	800	100	1,750	3,000
Drought Watch (L3)	680	100	1,660	2,700
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Drought Emergency (L5)	520	85	1,100-1,500**	2,500-2,900***
Severe Drought	(to be negotiated depending upon conditions)			

* To the extent supported by the IERQ in accordance with Section 2.5.3 E.2. Otherwise, 1,750 c.f.s.

** Varies with time of year, in accordance with Table 2.

*** Varies with time of year and location of salt front, in accordance with Table 2, except that for lower basin drought warning and drought emergency conditions, Section 2.5.6 of these regulations shall control.

Table 2

Interstate Operation Schedule For Adjusting Montague and Trenton Flow Objectives During Drought Conditions

7-Day Average Location of "Salt Front"* (River Mile**)	Flow Objective (cfs)						
	Trenton			Montague			
	Dec 1 – Apr 30	May 1 – Aug 31	Sep 1 – Nov 30	June 1 – June 30	July 1 – Nov 31	Dec 1 – Dec 31	Jan 1 – May 31
-	-	-	-	1,450	1,500	1,350	1,100
Upstream of R.M. 92.5	2,700	2,900	2,900				
R.M. 87.0 – R.M. 92.5	2,700	2,700	2,700				
R.M. 82.9 – R.M. 87.0	2,500	2,500	2,500				
Downstream of R.M. 82.9	2,500	2,500	2,500				

* Defined as the 250 mg/L isochlor in the Delaware Estuary.

** Measured in statute miles along the center of the navigation channel, from the mouth of the Delaware Bay.

Figure 1

NYC Delaware System Combined Usable Storage (Cannonsville, Pepacton and Neversink Reservoirs)

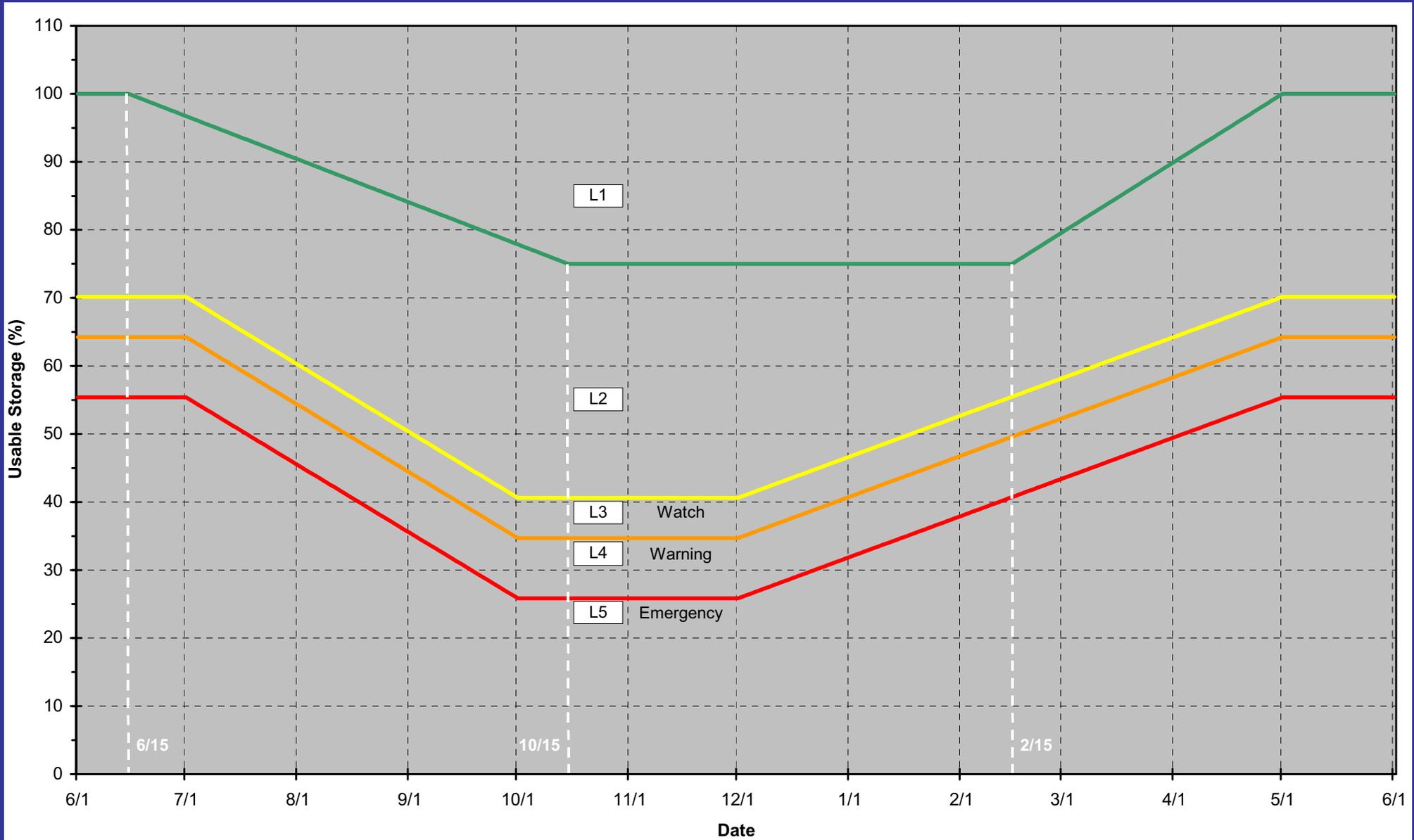
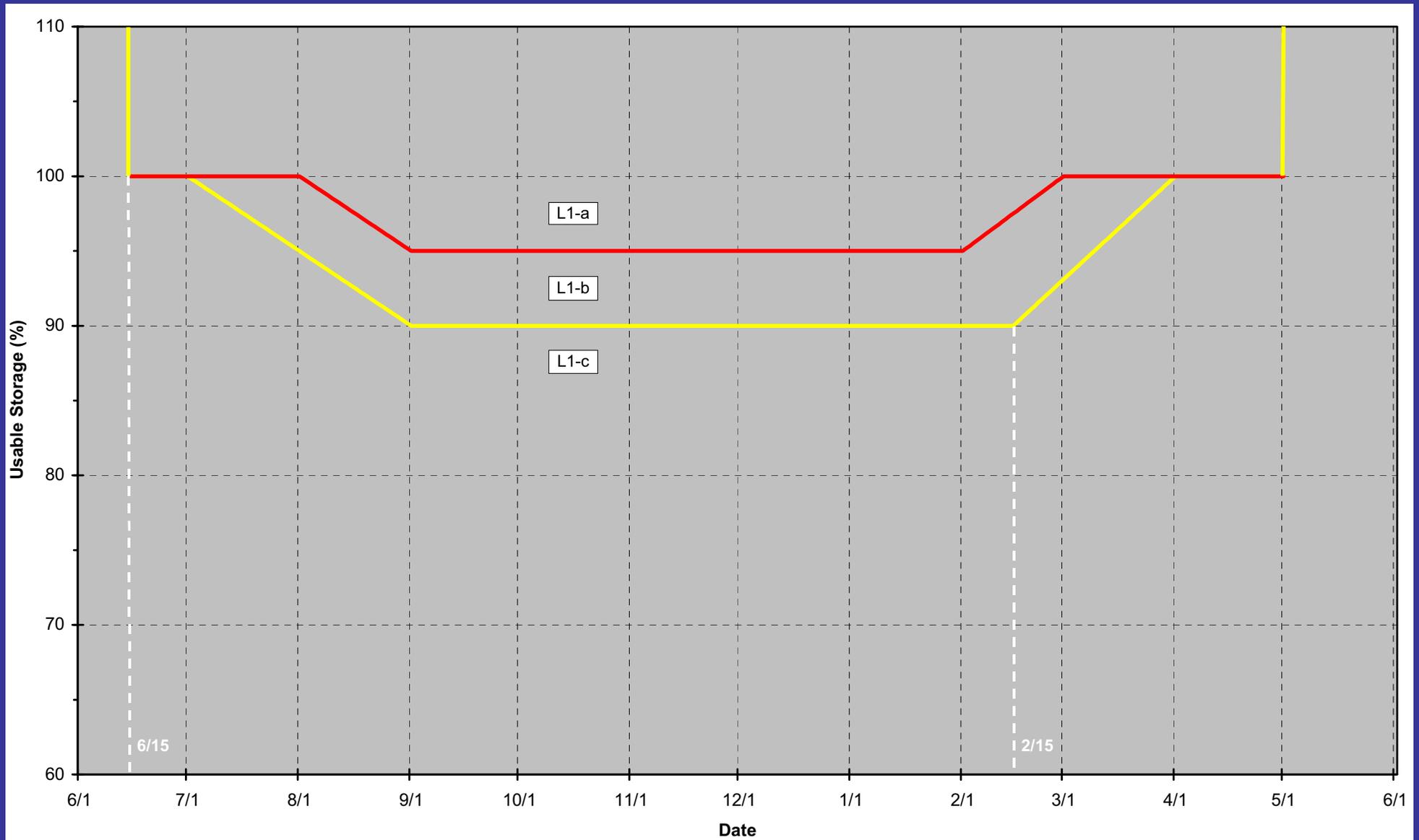


Figure 2

NYC Delaware System Usable Individual Storage (Cannonsville, Pepacton and Neversink Reservoirs)





Questions ?



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

**Reminder: written comments due by close of
business on Friday, January 18, 2008**

by email to: **paula.schmitt@drbc.state.nj.us**

by U.S. Mail to: **Commission Secretary
DRBC
PO Box 7360
West Trenton, NJ 08628-0360**

by fax to: **609-883-9522
Attn: Commission Secretary**

- **Public hearing - Wednesday, January 16, 2008** at the West Trenton Ballroom Facilities at the West Trenton Volunteer Fire Company, 40 West Upper Ferry Road, West Trenton, NJ 08628
 - 3:00 pm to 5:30 pm
 - 7:00 pm to 10:00 pm

Additional information is available on the Commission's website: www.drbc.net