APPENDIX A

FLEXIBLE FLOW MANAGEMENT PROGRAM

This Flexible Flow Management Program (FFMP or FFMP2017) is the program referred to in the Agreement for a Flexible Flow Management Program and consented to by the Parties (the State of Delaware, the State of New Jersey, the State of New York, the Commonwealth of Pennsylvania, and the City of New York; hereafter Decree Parties or Parties) to the Amended Decree of the Supreme Court in New Jersey v. New York, 347 U.S. 995 (1954), (hereafter Decree). References herein to "Agreement" are to that document and modifications, if any, to this FFMP shall be pursuant to the provisions of the Agreement. Accordingly, the FFMP shall be implemented as follows:

1. DIVERSIONS

a. New York City

In accordance with Section III.A. of the Decree, and subject to the limitations provided herein, at no time during any twelve-month period, commencing June 1st, shall the aggregate total quantity of water diverted by the City, divided by the number of days elapsed since the preceding May 31st, exceed 800 million gallons per day (mgd). The City shall be subject to the conditions and obligations in connection with the diversions, and releases to maintain the Montague flow objective, set forth in Section III.B. of the Decree, and to the limitations provided herein in Section 4. For the term of the Agreement, the City shall make releases from its Delaware Basin Reservoirs in accordance with the releases schedules incorporated herein.

b. New Jersey

In accordance with Section V. of the Decree, except with respect to limitations provided herein in Section 4, the State of New Jersey may divert outside the Delaware River watershed, from the Delaware River or its tributaries in New Jersey, without compensating releases, the equivalent of 100 mgd under the supervision of the Delaware River Master (River Master) established by the Decree and shall be subject to the following conditions and obligations:

i. The State of New Jersey may divert not to exceed 100 mgd as a monthly average, with the diversion on any day not to exceed 120 million gallons.

ii. Pursuant to Section V.2. of the Decree, if and when the State of New Jersey has built and is utilizing one or more reservoirs to store waters of the Delaware River or its tributaries for the purpose of diversion to another watershed, it may withdraw water from the Delaware River or its tributaries into such impounding reservoirs without limitation except during the months of July, August, September and October of any year, when not more than 100 mgd as a monthly average and not more than 120 million gallons in any day shall be withdrawn. This restriction may be modified upon unanimous consent of the Decree Parties should the State of New Jersey purchase or lease reallocated water or new storage from an existing or new facility.

iii. Regardless of whether the State of New Jersey builds and utilizes storage reservoirs for diversion, its total diversion for use outside of the Delaware River

watershed without compensating releases shall not exceed an average of 100 mgd during any calendar year.

2. FLOW OBJECTIVES

a. Montague Flow Objective

Except with respect to limitations provided herein in Section 3, releases from the City Delaware Basin Reservoirs shall be in quantities designed to maintain, during Normal storage conditions, a minimum basic rate of flow at the gaging station of the United States Geological Survey (USGS) at Montague, N.J. of 1,750 cubic feet per second (cfs), as directed by the River Master in accordance with Section VII. of the Decree.

During Basinwide Drought Watch, Drought Warning, and Drought Emergency, in accordance with Section 4 of this FFMP and Section 2.5.3.B. and Tables 1 and 2 of the Delaware River Basin Water Code (Water Code), the Montague flow objective shall vary based upon the time of year and location of the salt front, and minimum compensating releases shall be made by the City of New York from its reservoirs in the upper Delaware Basin.

The Decree Parties, with the guidance of the Operations Support Tool described herein in Section 5 shall seek to maximize the frequency of the minimum basic rate of 1,750 cfs flows at the USGS gaging station at Montague, N.J. without adversely impacting basin water supplies and other objectives of the FFMP.

b. Trenton Equivalent Flow Objective

Section 2.5.3 of the Water Code establishes a set of equivalent flow objectives at Trenton, N.J. to control salinity intrusion in the Delaware Estuary. One means to manage salinity is through releases from Beltzville and Blue Marsh Reservoirs. Blue Marsh Reservoir is located on the Schuylkill River and is downstream of the USGS gaging station at Trenton, N.J. Releases from Blue Marsh Reservoir, as well as bypass flows from Yardley and the Point Pleasant Pumping station, are considered to be as effective at repelling salinity as water entering the estuary from the main stem Delaware River at Trenton. The Trenton Equivalent Flow is computed as the sum of flows at the USGS Trenton gaging station, releases in excess of conservation releases from Blue Marsh Reservoir, and an amount of water, determined by the Delaware River Basin Commission (DRBC), to account for bypass flows via Yardley and the Point Pleasant Pumping Station. This value is compared to the Trenton Equivalent Flow Objective to determine if the flow objective was satisfied.

During Basinwide Drought Watch, Drought Warning, and Drought Emergency, in accordance with Section 4 of this Agreement and Section 2.5.3.B. and Tables 1 and 2 of the Water Code, the Trenton Equivalent Flow Objective shall vary based upon the time of year and location of the salt front.

3. RELEASES

a. Conservation Releases from the City Delaware Basin Reservoirs

Conservation releases designed for protection of the ecology in the stream reaches below the City Delaware Basin Reservoirs, including water quality, fisheries, and aquatic habitat needs, shall be made at the rates described in the Habitat Protection Program in Section 5 below.

b. Excess Release Quantity

Section III.B.1.(c) of the Decree defines an excess amount of water, known herein as the Excess Release Quantity (ERQ). For the period of the current program, the Decree Parties agree to use the Excess Release Quantity in support of an Interim Excess Release Quantity (IERQ) as defined in Paragraph c. below.

c. Interim Excess Release Quantity

An IERQ of 10.0 billion gallons (15,468 cfs-days) shall be provided (determined as in the original FFMP) and based upon 83 percent of the difference between 1,257 mgd (the highest year's consumption of the NYC water supply system between 2002 and 2006 inclusive) and 1,290 mgd (NYC's estimate of continuous safe yield of the NYC water supply system at that time, obtainable without pumping). The IERQ shall reset to 10.0 BG (15,468 cfs-days) on June 1st of each year of the Agreement or upon return to normal conditions after drought.

For each year beginning June 1st of the current program, the IERQ shall be used as defined below:

i. Trenton Equivalent Flow Objective: 6.09 billion gallons (9,423 cfs-days) of the IERQ, upon request by the Lower Basin States or the DRBC, NYC shall release from the IERQ water in sufficient quantities to maintain a flow at Trenton of 3,000 cfs during basin wide normal conditions for the period commencing on June 1 and continuing through May 31. NYC shall make releases from the IERQ as provided above until the aggregate quantity of the IERQ is exhausted.

ii. Thermal Mitigation: 1.62 billion gallons (2,500 cfs-days) of the IERQ will be banked and is available during basinwide normal conditions to support mitigation of thermal events which may adversely impact the cold-water fishery below the NYC Delaware Reservoirs. Use of the water for any single event will be informed by the current and forecasted basin conditions and the thermal mitigation guidance as developed by the Decree Parties. Releases for Thermal Mitigation shall be made at the direction of the New York State Department of Environmental Conservation ("NYSDEC") and administered by the River Master and the New York City Department of Environmental Protection ("NYCDEP") with notification made to all Decree Parties.

iii. Rapid Flow Change Mitigation: 0.65 billion gallons (1,000 cfs-days) of the IERQ will be banked and is available during basinwide normal conditions to mitigate potentially ecologically harmful conditions caused by rapid reductions in the NYC Delaware Reservoir directed releases because of the requirements of the Montague Flow Objective in Section 2.a. Use of the water for any single event will be informed by the current basin conditions and the guidance for its use as developed by the Decree Parties. Releases to mitigate rapid flow changes shall be made at the direction of the River Master and NYCDEP, with notification to all Decree Parties.

iv. NJ Diversion Amelioration: 1.65 billion gallons (2,545 cfs-days) of the IERQ will be banked and reserved for use during drought conditions (basinwide and/or lower basin), to supply NJ's increased diversion when the NJ Diversion Offset Bank, as described below in Section 4.d., has been exhausted. Once the NYC Reservoirs enter into drought watch, the combined storage of the City Delaware Reservoirs shall be computed as the actual storage volume minus the NJ Diversion Amelioration Bank and NJ Diversion Offset Bank volumes for purposes of determining storage zones.

d. Interim Excess Release Quantity Extraordinary Needs Bank

In addition to the hydrologic criteria described in Section 2.5.6.A. of the Water Code and subject to other provisional uses of the IERQ as provided herein, the Decree Parties, the DRBC and the River Master may at any time review extraordinary water needs to support such research, aquatic-life, or other water-use activity as may be approved by the DRBC. Upon unanimous agreement, the Decree Parties may reallocate all or a portion of the IERQ uses identified in section 3.c remaining at such time, and such portion shall be placed in an IERQ Extraordinary Needs Bank and used to provide for such extraordinary water needs. Such quantity as may be reallocated shall be deducted from the agreed upon IERQ source as defined above. Any unused Extraordinary Needs Bank water shall be returned to IERQ.

4. DROUGHT MANAGEMENT

Figure 1 defines five zones of combined reservoir usable storage relative to the three drought management rule curves (Drought Watch, Drought Warning, and Drought Emergency creating Zones L3, L4, and L5, respectively) and one additional curve that subdivides the Normal storage zone into two zones (L1 – discharge mitigation and L2- normal). The three drought management zones are described below. The two normal conditions storage zones are described in Section 5.

During the effective period of this Agreement, the following drought stage definitions and procedures will be in effect:

a. Drought Watch (L3)

The seasonally segmented line (shown as dashes) dividing the current Drought Warning in Figure 1 of DRBC Resolution No. 83-13 and DRBC Docket No. D-77-20 CP (Revised) is raised by four (4) billion gallons during the entire year. In addition, the upper half of the Drought Warning zone, previously referred to as DW1 in DRBC Resolution No. 83-13, is hereby designated Drought Watch, with diversions and flow objectives as shown in Table 1.

b. Drought Warning (L4)

The lower half of the Drought Warning zone (DW2), based upon the rule curves included in DRBC Resolution No. 83-13 and as modified by Paragraph a. above, is hereby designated Drought Warning, with diversions and flow objectives as shown in Table 1.

New Jersey's maximum average monthly diversion from the Delaware River Basin via the Delaware and Raritan Canal shall be in accordance with Table 1, when said diversion shall not exceed a daily running average of 90 mgd commencing on the day such Drought Emergency becomes effective. Under all City Delaware Basin Reservoir combined storage conditions, New Jersey's diversion on any day shall not exceed 120 million gallons.

c. Drought Emergency (L5)

The operation level named "Drought" in the rule curves included in DRBC Resolution No. 83-13 and Docket D-77-20 CP (Revised) is hereby designated Drought Emergency. During Drought Emergency, diversions shall be limited as shown in Table 1. The Montague and Trenton Equivalent Flow Objectives are shown in Tables 1 and 2.

New York City's diversions from the Delaware River Basin shall be in accordance with Table 1 (Interstate Operation Formula for Diversions and Flow Objectives). Minimum releases from the New York City Delaware Basin Reservoirs shall be in accordance with Table 3 (Schedule of Releases during Drought Operations).

New Jersey's maximum average monthly diversion from the Delaware River Basin via the Delaware and Raritan Canal shall be in accordance with Table 1, when said diversion shall not exceed a daily running average of 80 mgd commencing on the day such Drought Emergency becomes effective. Under all City Delaware Basin Reservoir combined storage conditions, New Jersey's diversion on any day shall not exceed 120 million gallons.

d. New Jersey Diversion Offset Bank

There is hereby established a NJ Diversion Offset Bank, not to exceed 1.49 billion gallons (2,300 cfs-days) of water in the City Delaware Basin Reservoirs, for the purpose of offsetting the increased diversions by New Jersey as provided in Table 1 of this FFMP, during drought conditions (basinwide and/or lower basin). The increases are in increments, not to be exceeded on any day, as follows: 0 mgd during Normal conditions; up to 15 mgd during Drought Watch; up to 20 mgd during Drought Warning; and up to 15 mgd during Drought Emergency. The differences in New Jersey's diversion, computed on the basis of Table 1 of the Good Faith Agreement, and the corresponding rates in Table 1 of this FFMP, establish the additional increments for New Jersey's diversion as incorporated herein.

This Diversion Offset Bank shall be created by use of Forecast Available Water from June 1 to August 31 as described in Section 5 of this Appendix and reserved for New Jersey to offset the increased diversion during drought periods (basinwide and/or lower basin). Water shall be accumulated in the Diversion Offset Bank (up to 25 cfs per day) and shall be excluded from the Forecast Available Water calculation. Once the NYC Reservoirs enter into drought watch, the combined storage of the City Delaware Reservoirs shall be computed as the actual storage volume minus the NJ Amelioration Bank and NJ Diversion Offset Bank volumes for purposes of determining storage zones.

If the accumulated incremental increased diversions by New Jersey, at any time, exceed the available water in the Diversion Offset Bank, the IERQ water dedicated to the NJ diversion amelioration will be used in the same manner. If the accumulated incremental increased diversions by New Jersey exceed both the combined NJ Diversion Offset Bank and the IERQ water dedicated to NJ diversion amelioration, the Lower Basin Reservoirs in Pennsylvania will provide the additional water to offset New Jersey's increased diversions.

Releases from the NJ Diversion Offset Bank and the IERQ dedicated to the NJ diversion amelioration shall be at the direction of DRBC with prior notification to New Jersey, and will be implemented by the River Master. Releases from the Lower Basin Reservoirs for New Jersey's diversion, if necessary, shall be at the direction of DRBC, in consultation with and at the request of New Jersey.

Releases from the NJ Diversion Offset Bank, the IERQ dedicated to the NJ diversion amelioration, or the Lower Basin Reservoirs in Pennsylvania to offset New Jersey's incremental increases in out-of-basin diversions, measured at Port Mercer, NJ shall be in accordance with timing procedures agreed upon by DRBC, New Jersey, and the River Master. No offsetting or accounting for offsetting is required for New Jersey's increased diversions on any day when DRBC determines that no water is required to meet the current Trenton flow objective.

The River Master will maintain the ongoing accounting for releases made from this bank and the Diversion Amelioration Bank. At no time during the year commencing June 1st shall releases from the NJ Diversion Offset Bank exceed the balance of the bank. The bank will reset under normal conditions on June 1st and begin accumulating water as defined in this section. If under basin wide drought conditions on May 31st the balance of the NJ Diversion Offset Bank shall remain available for use until normal conditions resume. Upon return to normal conditions, the NJ Diversion Offset Bank will reset and begin accumulating water as described in this and Section 5.

Figure 1
New York City Delaware System Usable Combined Storage
(Cannonsville, Pepacton, and Neversink Reservoirs)

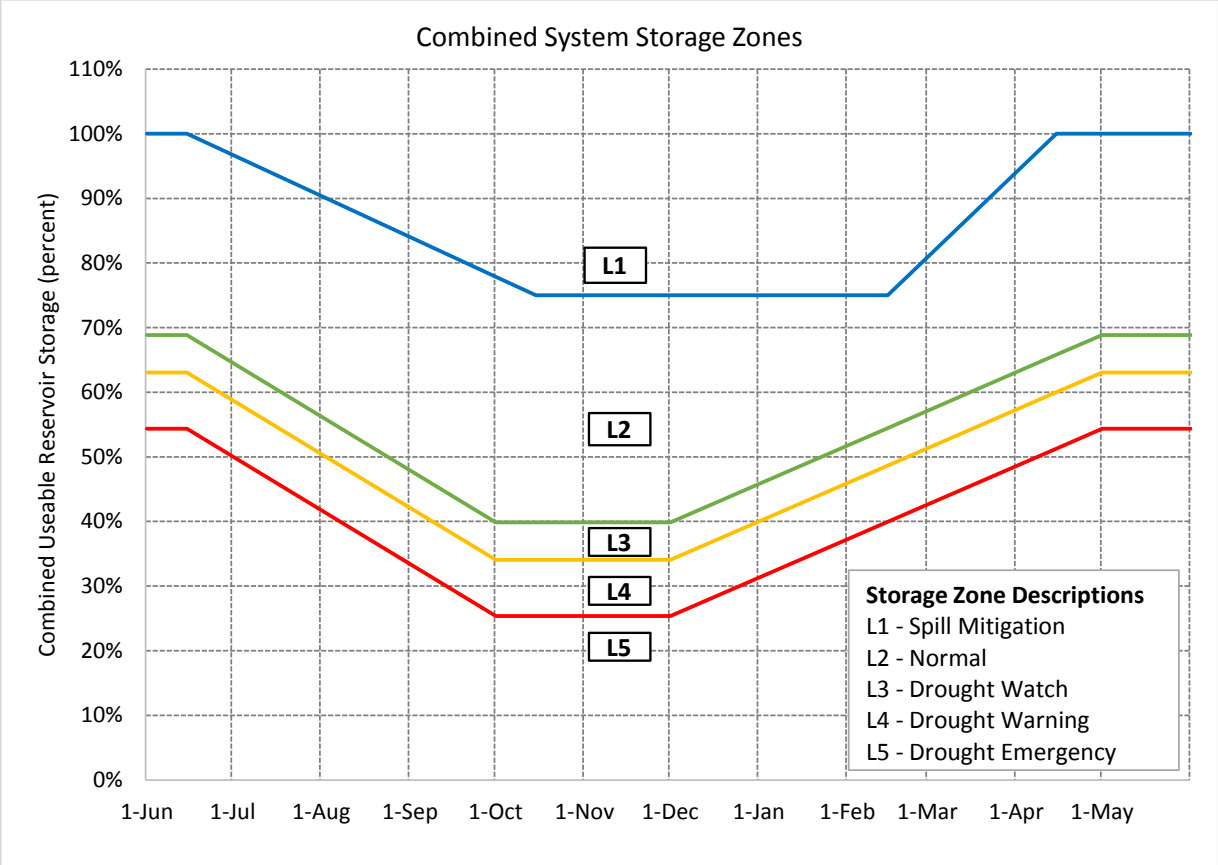


Table 1
Interstate Operation Formula for Diversions and Flow Objectives

NYC Storage Condition	*NYC Diversion (mgd)*	*NJ Diversion (mgd)*	*Montague Flow Objective (cfs)*	*Trenton Flow Objective (cfs)*
Normal (L1, L2)	800	100	1,750	3,000
Drought Watch (L3)	680	100	1,650	2,700
Drought Warning (L4)	560	90	1,550	2,700
Drought Emergency (L5)	520	80	1,100-1,650*	2,500-2,900*
Severe Drought	(to be negotiated depending upon conditions)			

* Varies with time of year and location of salt front, in accordance with Table 2.

Table 2

Interstate Operation Formula for Adjusting Montague and Trenton Flow Objectives during Drought Emergency (L5) Operations

	Flow objective, cubic feet per second at:					
	Montague, NJ			Trenton, NJ***		
7-day average location of Salt Front*, River Mile**	Dec-Apr.	May-Aug.	Sept-Nov.	Dec-Apr.	May-Aug.	Sept-Nov.
Upstream of R.M. 92.5	1,600	1,650	1,650	2,700	2,900	2,900
Between R.M. 87.0 and R.M. 92.5	1,350	1,600	1,500	2,700	2,700	2,700
Between R.M. 82.9 and R.M. 87.0	1,350	1,600	1,500	2,500	2,500	2,500
Downstream of R.M. 82.9	1,100	1,100	1,100	2,500	2,500	2,500

***** Defined as the 250 milligrams per liter isochlor in the Delaware Estuary.

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

*** The Trenton Equivalent Flow Objective is achieved if the sum of flows observed at the USGS Trenton gaging station, releases in excess of conservation releases from Blue Marsh Reservoir, and an amount to account for water withdrawn above Trenton and returned below the gage is greater than the Trenton Flow Objective listed above.

Table 3
Schedule of Releases (cfs) during Drought Operations

	Summer			Fall			Winter		Spring	
Cannonsville	Jun 1 -	Jun 16 -	Jul 1 -	Sep 1 -	Sep 16 -	Oct 1 -	Dec 1 -	Apr 1 -	May 1 -	May 21 -
Storage Zone	15-Jun	30-Jun	31-Aug	15-Sep	30-Sep	30-Nov	31-Mar	30-Apr	20-May	31-May
L3	135	135	135	85	85	55	55	55	85	85
L4	100	100	100	50	50	50	50	50	60	60
L5	90	90	90	40	40	40	40	40	40	40

	Summer			Fall			Winter		Spring	
Pepacton	Jun 1 -	Jun 16 -	Jul 1 -	Sep 1 -	Sep 16 -	Oct 1 -	Dec 1 -	Apr 1 -	May 1 -	May 21 -
Storage Zone	15-Jun	30-Jun	31-Aug	15-Sep	30-Sep	30-Nov	31-Mar	30-Apr	20-May	31-May
L3	75	75	75	45	45	45	45	45	60	60
L4	65	65	65	40	40	40	40	40	50	50
L5	60	60	60	35	35	35	35	35	35	35

	Summer			Fall			Winter		Spring	
Neversink	Jun 1 -	Jun 16 -	Jul 1 -	Sep 1 -	Sep 16 -	Oct 1 -	Dec 1 -	Apr 1 -	May 1 -	May 21 -
Storage Zone	15-Jun	30-Jun	31-Aug	15-Sep	30-Sep	30-Nov	31-Mar	30-Apr	20-May	31-May
L3	55	55	55	30	30	30	30	30	40	40
L4	45	45	45	25	25	25	25	25	30	30
L5	40	40	40	20	20	20	20	20	20	20

e. Entry and Exit Criteria

Criteria for entry into and exit from the various stages of drought operations shall be in accordance with Section 2.5.3.E. of the Water Code. Normal (L2 or higher) level releases will be restored when combined storage in the City Delaware Basin Reservoirs reaches 25 billion gallons above the L3 curve in Figure 1 and remains at or above that level for 15 consecutive days.

f. Balancing Adjustment

In order to conserve water, the River Master is requested to utilize a balancing adjustment, based upon procedures agreed upon by the Decree Parties, when calculating the releases to be directed to meet the Montague flow objectives in Tables 1 and 2.

5. HABITAT PROTECTION PROGRAM

a. Applicability and Management Objectives

The overall management goal of the Habitat Protection Program (HPP) is to protect the cold-water fishery while maintaining aquatic community diversity, structure, and function through improved ecological flow releases. A series of four categorical protection levels for describing cold water ecosystem management objectives for waters downstream of the City Delaware Basin Reservoirs was developed by New York and Pennsylvania fishery managers and is shown on Plate 1. These protection levels apply in non-drought years and are defined as follows:

Excellent: Excellent year-round cold-water aquatic habitat protection. Summer water temperatures are routinely 68ºF or less and only very rarely exceed a daily maximum of 75ºF. Excellent protection level applies to the West Branch Delaware River from Cannonsville Reservoir to the junction with the East Branch Delaware River, the East Branch Delaware River from Pepacton Reservoir to the hamlet of East Branch, N.Y., and Neversink River from Neversink Reservoir to Bridgeville, N.Y.

Good: River section provides cold water aquatic habitat and thermal protection and maintains opportunities for a cold-water fishery. Summer water temperatures will occasionally exceed a daily maximum of 75ºF for short periods and water temperatures greater than 68ºF occur more frequently than with the Excellent protection level. Elevated temperatures will occasionally be an issue. Good protection level applies to the Delaware River main stem from the junction of the West and East Branches to Lordville, N.Y. and the Neversink River from Bridgeville, N.Y. to the mouth of Eden Brook near Oakland Valley, N.Y.

Moderate: River sections will experience adequate flow and some thermal protection for cold water species. Seasonal opportunities for a cold-water fishery will occur, but thermal benefits will diminish. Moderate protection level applies to the East Branch Delaware River from East Branch, N.Y. to the mouth of Corn Creek near Peas Eddy, N.Y., the Neversink River from the mouth of Eden Brook near Oakland Valley, N.Y. to the Sullivan/Orange County, N.Y. boundary, and the Delaware River main stem from Lordville, N.Y. to Hankins, N.Y.

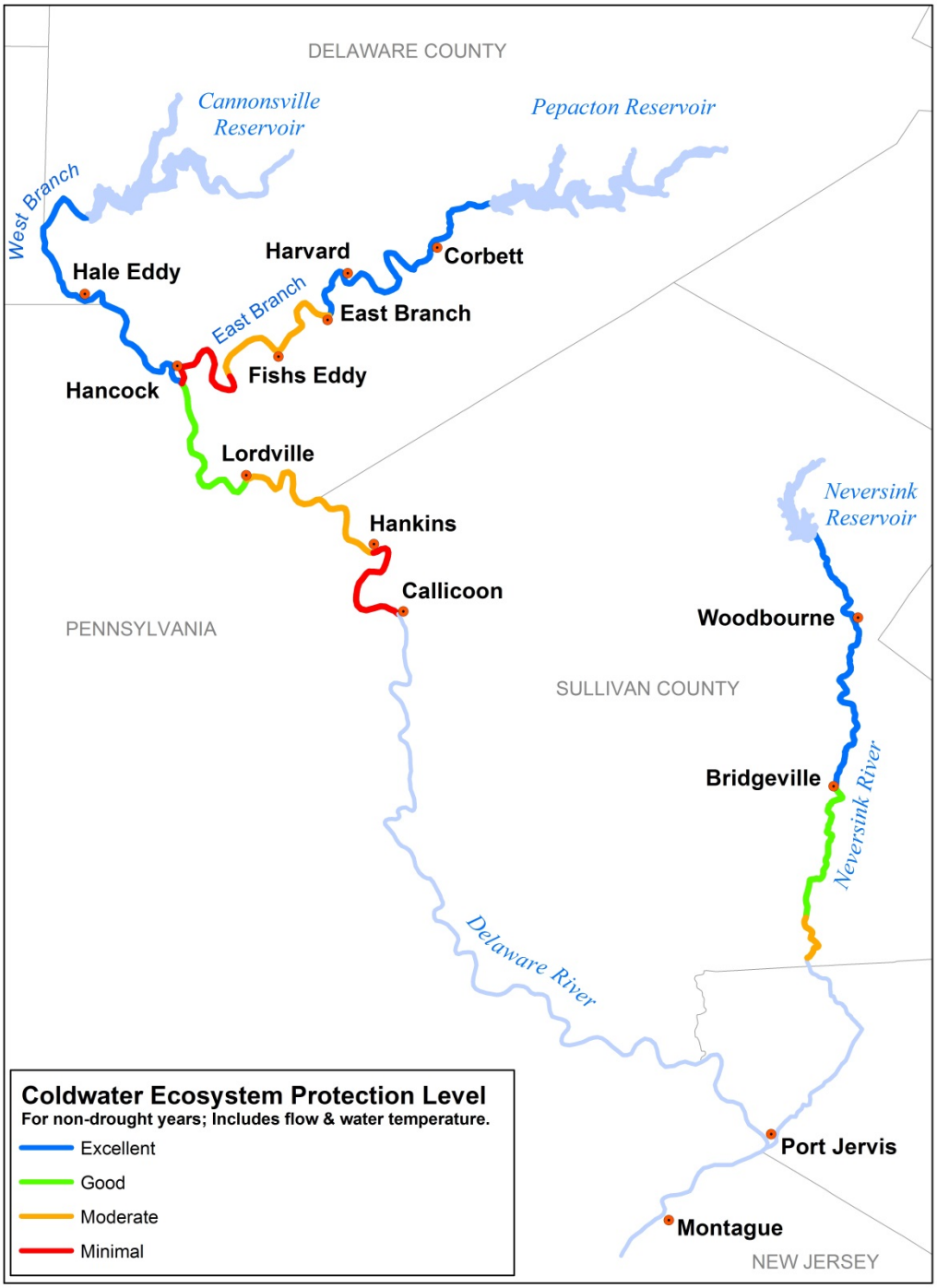
Minimal: River sections with this designation will experience adequate flow, but only limited thermal protection. The quality of the fishery will be generally seasonal and will vary from year to year. Flows should be adequate to allow trout to reach cold water refugia and to protect dwarf wedgemussel populations in the

vicinity of Callicoon, N.Y. Minimal protection level applies to the East Branch Delaware River from the mouth of Corn Creek near Peas Eddy, N.Y. to the junction with the West Branch Delaware River, and the Delaware River main stem from Hankins, N.Y. to Callicoon, N.Y.

The Decree Parties recognize that the degree of protection in waters downstream of the City Delaware Basin Reservoirs will vary according to annual fluctuations in precipitation and temperature, reservoir releases rates, distance from the locations of reservoir releases, and tributary influences. Requirements for protection of the federally endangered dwarf wedgemussel are currently under study and are poorly defined.

Plate 1

Extent and Protection Level of the Cold-Water Ecosystem



b. Controlled Releases for Habitat Protection Program

There is hereby established a Habitat Protection Program (HPP), which consists of conservation releases designed for the protection of the cold-water fishery below the City Delaware Basin Reservoirs.

The HPP is designed to make enhanced releases, above the base releases given in Table 4a, when an assessment by New York City, using its Operations Support Tool (OST) as guidance, determines that additional water is available for releases and that any risk to the City's water supply is at an acceptable level. The Base Releases table is designed for drought neutral minimum releases, i.e., no additional drought risk relative to DRBC Docket D-77-20 CP Revised (Rev. 1), which can be maintained under Normal conditions, independent of inflow or the City's demand.

The City is using OST, a state-of-the-art forecast-driven analysis and decision support tool that provides the City with probabilistic predictions of future system status. In addition to its principal objective of improving operational decision making in providing a reliable supply of high quality drinking water for 9 million people, OST also provides assurance that the actions taken to support downstream objectives, such as fish habitat, stream ecosystems, and better discharge mitigation, will not adversely impact water supply reliability. It allows the City to compare different sets of operating scenarios using real-time system information (e.g., reservoir levels, water quality, streamflows) and forecasts (e.g., streamflows, meteorological drivers) to evaluate the impacts on water supply reliability so that objective risk-based decisions can be made quickly and efficiently.

Under this agreement the City will voluntarily make enhanced releases using the Forecast-based Available Water (FAW) as determined by an OST assessment and in accordance with Figures 1 and 2 and the appropriate FAW or the base releases shown in Table 4a. During periods when Table 4g is in effect, a 25 cfs credit towards the New Jersey Diversion offset Bank shall be included with the total NYC Reservoir releases. During periods when Table 4f is in effect, a 10 cfs credit towards the New Jersey Diversion offset Bank shall be included with the total NYC Reservoir releases. When the assessment indicates that no additional water is available, the City shall make releases in accordance with the currently sustainable base releases shown in Table 4a. The City is under no obligation to make enhanced releases beyond the base releases, when the risk to water supply, as determined by the City using its OST assessment, is unacceptable.

The City will make available to the Decree Parties the inputs to the OST model, the outputs from the model, and the releases table selection guidelines, including the forecasted probabilistic inflows, the status of the City Delaware Reservoirs, and the operational assumptions applicable to OST-based decisions. OST assessments shall be performed as frequently as necessary to confirm confidence in the selected FAW table but generally not less than monthly. Prior to making a releases table change, the City will provide notification, along with a general description of the rationale of such change to the Decree Parties, the River Master, and DRBC. The City shall provide the OST Summary Data, described above through the River Master's website.

As shown in Tables 4a through 4g, each reservoir has a schedule of seasonal releases based on the quantity of combined reservoir usable storage, and the quantity of water available for the HPP.

Figure 2
New York City Delaware System Usable Individual Storage
(Cannonsville, Pepacton, and Neversink Reservoirs)

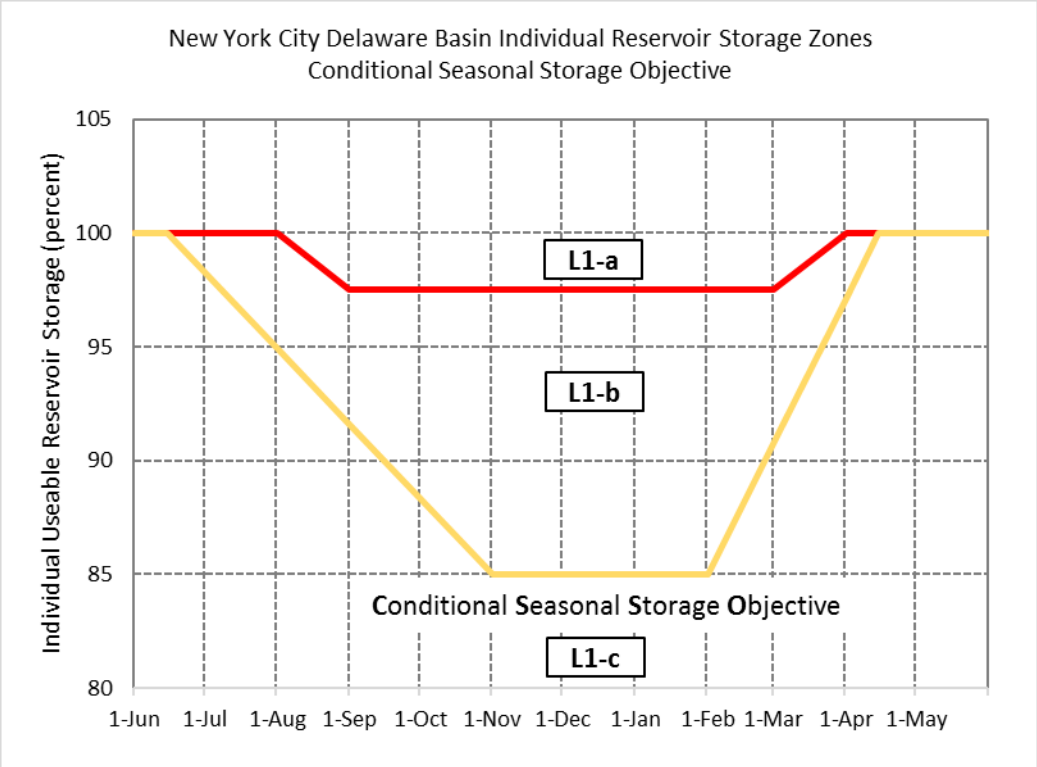


Table 4a

Schedule of Releases (cfs) during Normal Conditions
Base Releases with no Forecast based Available Water (FAW)

	Summer			Fall			Winter		Spring	
Cannonsville	Jun 1 -	Jun 16 -	Jul 1 -	Sep 1 -	Sep 16 -	Oct 1 -	Dec 1 -	Apr 1 -	May 1 -	May 21 -
Storage Zone	15-Jun	30-Jun	31-Aug	15-Sep	30-Sep	30-Nov	31-Mar	30-Apr	20-May	31-May
L1-a	*	1500	1500	1500	1500	1500	1500	1500	*	*
L1-b	600	600	600	600	600	600	600	600	600	600
L1-c	215	215	215	200	105	85	85	85	185	185
L2	190	190	190	180	85	60	60	60	160	160

	Summer			Fall			Winter		Spring	
Pepacton	Jun 1 -	Jun 16 -	Jul 1 -	Sep 1 -	Sep 16 -	Oct 1 -	Dec 1 -	Apr 1 -	May 1 -	May 21 -
Storage Zone	15-Jun	30-Jun	31-Aug	15-Sep	30-Sep	30-Nov	31-Mar	30-Apr	20-May	31-May
L1-a	*	700	700	700	700	700	700	700	*	*
L1-b	300	300	300	300	300	300	300	300	300	300
L1-c	120	120	120	110	80	70	70	70	100	100
L2	100	100	100	90	60	50	50	50	80	80

	Summer			Fall			Winter		Spring	
Neversink	Jun 1 -	Jun 16 -	Jul 1 -	Sep 1 -	Sep 16 -	Oct 1 -	Dec 1 -	Apr 1 -	May 1 -	May 21 -
Storage Zone	15-Jun	30-Jun	31-Aug	15-Sep	30-Sep	30-Nov	31-Mar	30-Apr	20-May	31-May
L1-a	*	190	190	190	190	190	190	190	*	*
L1-b	150	150	150	150	110	110	110	110	110	110
L1-c	90	90	90	85	65	50	50	50	75	75
L2	75	75	75	70	50	35	35	35	60	60

* Indicates storage zone not present at this time period; release is entry in cell below.

Table 4b

Schedule of Releases (cfs) during Normal Conditions

	Summer			Fall			Winter		Spring	
Cannonsville	Jun 1 -	Jun 16 -	Jul 1 -	Sep 1 -	Sep 16 -	Oct 1 -	Dec 1 -	Apr 1 -	May 1 -	May 21 -
Storage Zone	15-Jun	30-Jun	31-Aug	15-Sep	30-Sep	30-Nov	31-Mar	30-Apr	20-May	31-May
L1-a	*	1500	1500	1500	1500	1500	1500	1500	*	*
L1-b	600	600	600	600	600	600	600	600	600	600
L1-c	300	300	300	250	200	110	110	165	245	265
L2	245	245	245	225	140	75	75	110	200	210

	Summer			Fall			Winter		Spring	
Pepacton	Jun 1 -	Jun 16 -	Jul 1 -	Sep 1 -	Sep 16 -	Oct 1 -	Dec 1 -	Apr 1 -	May 1 -	May 21 -
Storage Zone	15-Jun	30-Jun	31-Aug	15-Sep	30-Sep	30-Nov	31-Mar	30-Apr	20-May	31-May
L1-a	*	700	700	700	700	700	700	700	*	*
L1-b	300	300	300	300	300	300	300	300	300	300
L1-c	135	135	135	125	95	80	80	80	95	110
L2	110	110	110	100	70	55	55	55	90	90

	Summer			Fall			Winter		Spring	
Neversink	Jun 1 -	Jun 16 -	Jul 1 -	Sep 1 -	Sep 16 -	Oct 1 -	Dec 1 -	Apr 1 -	May 1 -	May 21 -
Storage Zone	15-Jun	30-Jun	31-Aug	15-Sep	30-Sep	30-Nov	31-Mar	30-Apr	20-May	31-May
L1-a	*	190	190	190	190	190	190	190	*	*
L1-b	150	150	150	150	110	110	110	110	110	110
L1-c	100	100	100	85	75	55	55	55	85	85
L2	80	80	80	75	55	40	40	40	65	65

* Indicates storage zone not present at this time period; release is entry in cell below.

Table 4c

Schedule of Releases (cfs) during Normal Conditions

	Summer			Fall			Winter		Spring	
Cannonsville	Jun 1 -	Jun 16 -	Jul 1 -	Sep 1 -	Sep 16 -	Oct 1 -	Dec 1 -	Apr 1 -	May 1 -	May 21 -
Storage Zone	15-Jun	30-Jun	31-Aug	15-Sep	30-Sep	30-Nov	31-Mar	30-Apr	20-May	31-May
L1-a	*	1500	1500	1500	1500	1500	1500	1500	*	*
L1-b	600	600	600	600	600	600	600	600	600	600
L1-c	350	350	350	300	225	110	110	175	275	275
L2	300	300	300	270	190	90	90	155	240	255

	Summer			Fall			Winter		Spring	
Pepacton	Jun 1 -	Jun 16 -	Jul 1 -	Sep 1 -	Sep 16 -	Oct 1 -	Dec 1 -	Apr 1 -	May 1 -	May 21 -
Storage Zone	15-Jun	30-Jun	31-Aug	15-Sep	30-Sep	30-Nov	31-Mar	30-Apr	20-May	31-May
L1-a	*	700	700	700	700	700	700	700	*	*
L1-b	300	300	300	300	300	300	300	300	300	300
L1-c	140	140	140	125	105	80	80	80	100	120
L2	115	115	115	105	80	60	60	60	95	100

	Summer			Fall			Winter		Spring	
Neversink	Jun 1 -	Jun 16 -	Jul 1 -	Sep 1 -	Sep 16 -	Oct 1 -	Dec 1 -	Apr 1 -	May 1 -	May 21 -
Storage Zone	15-Jun	30-Jun	31-Aug	15-Sep	30-Sep	30-Nov	31-Mar	30-Apr	20-May	31-May
L1-a	*	190	190	190	190	190	190	190	*	*
L1-b	150	150	150	150	110	110	110	110	110	110
L1-c	105	105	105	95	75	60	60	60	85	90
L2	90	90	90	80	65	45	45	45	70	75

* Indicates storage zone not present at this time period; release is entry in cell below.

Table 4d

Schedule of Releases (cfs) during Normal Conditions

	Summer			Fall			Winter		Spring	
Cannonsville	Jun 1 -	Jun 16 -	Jul 1 -	Sep 1 -	Sep 16 -	Oct 1 -	Dec 1 -	Apr 1 -	May 1 -	May 21 -
Storage Zone	15-Jun	30-Jun	31-Aug	15-Sep	30-Sep	30-Nov	31-Mar	30-Apr	20-May	31-May
L1-a	*	1500	1500	1500	1500	1500	1500	1500	*	*
L1-b	600	600	600	600	600	600	600	600	600	600
L1-c	400	400	400	325	275	140	140	245	305	345
L2	360	360	360	315	245	105	105	205	280	305

	Summer			Fall			Winter		Spring	
Pepacton	Jun 1 -	Jun 16 -	Jul 1 -	Sep 1 -	Sep 16 -	Oct 1 -	Dec 1 -	Apr 1 -	May 1 -	May 21 -
Storage Zone	15-Jun	30-Jun	31-Aug	15-Sep	30-Sep	30-Nov	31-Mar	30-Apr	20-May	31-May
L1-a	*	700	700	700	700	700	700	700	*	*
L1-b	300	300	300	300	300	300	300	300	300	300
L1-c	150	150	150	125	115	85	85	85	120	130
L2	125	125	125	115	95	65	65	65	105	110

	Summer			Fall			Winter		Spring	
Neversink	Jun 1 -	Jun 16 -	Jul 1 -	Sep 1 -	Sep 16 -	Oct 1 -	Dec 1 -	Apr 1 -	May 1 -	May 21 -
Storage Zone	15-Jun	30-Jun	31-Aug	15-Sep	30-Sep	30-Nov	31-Mar	30-Apr	20-May	31-May
L1-a	*	190	190	190	190	190	190	190	*	*
L1-b	150	150	150	150	110	110	110	110	110	110
L1-c	110	110	110	95	85	60	60	60	90	95
L2	95	95	95	85	70	50	50	50	75	80

* Indicates storage zone not present at this time period; release is entry in cell below.

Table 4e

Schedule of Releases (cfs) during Normal Conditions

	Summer			Fall			Winter		Spring	
Cannonsville	Jun 1 -	Jun 16 -	Jul 1 -	Sep 1 -	Sep 16 -	Oct 1 -	Dec 1 -	Apr 1 -	May 1 -	May 21 -
Storage Zone	15-Jun	30-Jun	31-Aug	15-Sep	30-Sep	30-Nov	31-Mar	30-Apr	20-May	31-May
L1-a	*	1500	1500	1500	1500	1500	1500	1500	*	*
L1-b	600	600	600	600	600	600	600	600	600	600
L1-c	450	450	450	375	335	150	150	285	350	385
L2	415	415	415	360	295	120	120	255	320	355

	Summer			Fall			Winter		Spring	
Pepacton	Jun 1 -	Jun 16 -	Jul 1 -	Sep 1 -	Sep 16 -	Oct 1 -	Dec 1 -	Apr 1 -	May 1 -	May 21 -
Storage Zone	15-Jun	30-Jun	31-Aug	15-Sep	30-Sep	30-Nov	31-Mar	30-Apr	20-May	31-May
L1-a	*	700	700	700	700	700	700	700	*	*
L1-b	300	300	300	300	300	300	300	300	300	300
L1-c	155	155	155	140	125	90	90	90	120	140
L2	135	135	135	125	105	70	70	70	110	120

	Summer			Fall			Winter		Spring	
Neversink	Jun 1 -	Jun 16 -	Jul 1 -	Sep 1 -	Sep 16 -	Oct 1 -	Dec 1 -	Apr 1 -	May 1 -	May 21 -
Storage Zone	15-Jun	30-Jun	31-Aug	15-Sep	30-Sep	30-Nov	31-Mar	30-Apr	20-May	31-May
L1-a	*	190	190	190	190	190	190	190	*	*
L1-b	150	150	150	150	110	110	110	110	110	110
L1-c	115	115	115	105	90	65	65	65	95	100
L2	100	100	100	90	75	50	50	50	80	85

* Indicates storage zone not present at this time period; release is entry in cell below.

Table 4f

Schedule of Releases (cfs) during Normal Conditions

	Summer			Fall			Winter		Spring	
Cannonsville	Jun 1 -	Jun 16 -	Jul 1 -	Sep 1 -	Sep 16 -	Oct 1 -	Dec 1 -	Apr 1 -	May 1 -	May 21 -
Storage Zone	15-Jun	30-Jun	31-Aug	15-Sep	30-Sep	30-Nov	31-Mar	30-Apr	20-May	31-May
L1-a	*	1500	1500	1500	1500	1500	1500	1500	*	*
L1-b	600	600	600	600	600	600	600	600	600	600
L1-c	500	500	500	425	400	175	160	325	375	425
L2	460	460	460	405	350	135	135	300	360	400

	Summer			Fall			Winter		Spring	
Pepacton	Jun 1 -	Jun 16 -	Jul 1 -	Sep 1 -	Sep 16 -	Oct 1 -	Dec 1 -	Apr 1 -	May 1 -	May 21 -
Storage Zone	15-Jun	30-Jun	31-Aug	15-Sep	30-Sep	30-Nov	31-Mar	30-Apr	20-May	31-May
L1-a	*	700	700	700	700	700	700	700	*	*
L1-b	300	300	300	300	300	300	300	300	300	300
L1-c	160	160	160	145	135	95	95	95	130	150
L2	140	140	140	130	115	75	75	75	120	130

	Summer			Fall			Winter		Spring	
Neversink	Jun 1 -	Jun 16 -	Jul 1 -	Sep 1 -	Sep 16 -	Oct 1 -	Dec 1 -	Apr 1 -	May 1 -	May 21 -
Storage Zone	15-Jun	30-Jun	31-Aug	15-Sep	30-Sep	30-Nov	31-Mar	30-Apr	20-May	31-May
L1-a	*	190	190	190	190	190	190	190	*	*
L1-b	150	150	150	150	110	110	110	110	110	110
L1-c	120	120	120	105	95	65	65	65	100	105
L2	110	110	110	95	85	55	55	55	85	95

* Indicates storage zone not present at this time period; release is entry in cell below.

Table 4g

Schedule of Releases (cfs) during Normal Conditions

	Summer			Fall			Winter		Spring	
Cannonsville Storage Zone	Jun 1 - 15-Jun	Jun 16 - 30-Jun	Jul 1 - 31-Aug	Sep 1 - 15-Sep	Sep 16 - 30-Sep	Oct 1 - 30-Nov	Dec 1 - 31-Mar	Apr 1 - 30-Apr	May 1 - 20-May	May 21 - 31-May
L1-a	*	1500	1500	1500	1500	1500	1500	1500	*	*
L1-b	600	600	600	600	600	600	600	600	600	600
L1-c	550	550	550	475	425	175	175	375	425	475
L2	500	500	500	450	400	150	150	350	400	450

	Summer			Fall			Winter		Spring	
Pepacton Storage Zone	Jun 1 - 15-Jun	Jun 16 - 30-Jun	Jul 1 - 31-Aug	Sep 1 - 15-Sep	Sep 16 - 30-Sep	Oct 1 - 30-Nov	Dec 1 - 31-Mar	Apr 1 - 30-Apr	May 1 - 20-May	May 21 - 31-May
L1-a	*	700	700	700	700	700	700	700	*	*
L1-b	300	300	300	300	300	300	300	300	300	300
L1-c	170	170	170	160	145	100	100	100	145	160
L2	150	150	150	140	125	80	80	80	125	140

	Summer			Fall			Winter		Spring	
Neversink Storage Zone	Jun 1 - 15-Jun	Jun 16 - 30-Jun	Jul 1 - 31-Aug	Sep 1 - 15-Sep	Sep 16 - 30-Sep	Oct 1 - 30-Nov	Dec 1 - 31-Mar	Apr 1 - 30-Apr	May 1 - 20-May	May 21 - 31-May
L1-a	*	190	190	190	190	190	190	190	*	*
L1-b	150	150	150	150	110	110	110	110	110	120
L1-c	125	125	125	115	100	75	75	75	100	115
L2	115	115	115	100	90	60	60	60	90	100

* Indicates storage zone not present at this time period; release is entry in cell below.

6. DISCHARGE MITIGATION PROGRAM

To enhance flood mitigation provided by the City Delaware Basin Reservoirs, a Conditional Seasonal Storage Objective (CSSO) rule curve in Figure 2 will be established. Consistent with good practices for water supply reservoirs, and in order to ensure that sufficient resources are available during an extended dry period to support both lower basin and NYC needs, it is essential to ensure that the City Delaware Basin Reservoirs are filled on or around June 1st every year. To accomplish this, the CSSO (boundary between the L1-b and L1-c storage zones in Figure 2) must be limited and ramped. NYC shall endeavor, to the maximum extent possible without impacting water supply reliability, to maintain reservoir levels at the CSSO, thus creating a high probability of maintaining fifteen (15) percent void spaces each year between November 1 through the following February 1to help mitigate flooding events. In determining the releases needed to maintain the CSSO, the following parameters are considered in the OST evaluation: forecasted inflows over the next seven (7) days, FAW table releases in effect over the next seven (7) days, anticipated diversions over the next seven (7) days, including inflow from the snow water equivalent (snowmelt) as forecast by the National Weather Service's (NWS) Hydrological Ensemble Forecasting System (HEFS), and the current usable reservoir storage. Based on any projected seven (7) day storage surplus, the City will calculate new release volumes, above the FAW table releases in effect, to progress toward the CSSO and allocate those volumes over the upcoming 7-day period, within the limitations of the release works for each reservoir.

Discharge Mitigation Program releases are designed to help mitigate the effects of flooding immediately below the City Delaware Basin Reservoirs. When the combined reservoir usable storage in Figure 1 is in Zone L1, the spill mitigation zone, Figure 2 defines three zones of reservoir-specific storage (L1-a, L1-b and L1-c) relative to two rule curves for each reservoir. Tables 4a through 4g further define spill mitigation releases based on reservoir-specific storage when combined storage is in Zone L1. When combined usable reservoir storage is below Zone L1, reservoir-specific storage zones as defined in Figure 2 are not applicable, and the releases to be made, as set forth in the tables, are for conservation purposes only.

The City shall make discharge mitigation releases from the City Delaware Basin Reservoirs in accordance with the following:

i. If combined reservoir usable storage is in Zone L1 in accordance with Figure 1, discharge mitigation releases shall be made based upon individual reservoir usable storage in accordance with Zones L1-a, L1-b and L1-c as provided in Figure 2 and Tables 4a through 4g. HEFS will explicitly model the amount and timing of snowmelt in reservoir inflow forecasts. By incorporating the most recent City snowpack survey data, as well as the City's automated snowpack sensor network data and the NWS's meteorological forecasts into a runoff model, HEFS will determine an up to date prediction of reservoir inflows from rainfall and snowmelt.

ii. For the period April 16 through June 15, discharge mitigation releases shall be made in accordance with standard practices for water supply reliability, toward achieving the CSSO, at rates up to but not exceeding L1-a release rates as provided in Figure 2 and Tables 4a through 4g.

iii. NYCDEP and the NYSDEC reservoir releases managers, upon mutual agreement, may transfer spills to bottom releases to the extent possible at any reservoir.

iv. The current National Weather Service (NWS) flood stage for the West Branch

Delaware River at Hale Eddy is 11 feet. Accordingly, Zone L1 discharge mitigation releases will not be made from Cannonsville Reservoir when the river stage for the West Branch Delaware River at Hale Eddy is above 9 feet, or is forecasted to be above 9 feet within 48 hours of planned discharge mitigation releases, and releases shall be made in accordance with Zone L2 through L5 as provided in Tables 4a through 4g. This guidance may be modified at any time upon unanimous consent by the Decree Parties, if additional information demonstrates that a different cautionary stage should be used to limit the discharge mitigation releases.

v. The current NWS flood stage for the East Branch Delaware River at Fishs Eddy is 13 feet. Accordingly, Zone L1 discharge mitigation releases will not be made from Pepacton Reservoir when the river stage for the East Branch Delaware River at Fishs Eddy is above 11 feet or is forecast to be above 11 feet within 48 hours of planned discharge mitigation releases, and releases shall be made in accordance with Zone L2 through L5 as provided in Tables 4a through 4g. This guidance may be modified at any time upon unanimous consent by the Decree Parties, if additional information demonstrates that a different cautionary stage should be used to limit the discharge mitigation releases.

vi. The current NWS flood stage for the Neversink River at Bridgeville is 13 feet. Accordingly, Zone L1 discharge mitigation releases will not be made from Neversink Reservoir when the river stage for the Neversink River at Bridgeville is above 12 feet, or is forecast to be above 12 feet within 48 hours of planned discharge mitigation releases, and releases shall be made in accordance with Zone L2 through L5 as provided in Tables 4a through 4g. This guidance may be modified at any time upon unanimous consent by the Decree Parties, if additional information demonstrates that a different cautionary stage should be used to limit the discharge mitigation releases.

vii. Discharge mitigation releases may be suspended from the respective reservoir if NYCDEP and NYSDEC, in consultation with the NWS, determine that ice conditions threaten flood prone areas of the West Branch Delaware River below Cannonsville Reservoir, East Branch Delaware River below Pepacton Reservoir, or Neversink River below Neversink Reservoir.

viii. Discharge mitigation releases will be designed so that the combined discharge from each reservoir's controlled release works and spillway does not exceed the maximum rate given in Table 5 below. Respective controlled releases will be reduced to L5 in Table 3.

ix. To more naturally effect downward or upward transitions between discharge mitigation releases rates identified in Tables 4a through 4g, discharge mitigation releases rates may be ramped, in cooperation with NYSDEC, generally over a period of three days at Cannonsville and Pepacton Reservoirs, and two days at Neversink Reservoir.

x. Modifications to the program necessary to accommodate emergencies, maintenance and repair operations or short-term needs shall be undertaken pursuant to Section V of the Agreement.

Table 5
Maximum Combined Discharge Rates

Reservoir	*Maximum Combined Discharge Rate (cfs)*
Neversink	3,400
Pepacton	2,400
Cannonsville	4,200

7. SALINITY REPULSION

New York City will provide releases to protect the lower basin water supply from salt water movement up the Delaware River in accordance with Table 2 of the Interstate Water Management Recommendations of the Parties to the U.S. Supreme Court Decree of 1954 to the Delaware River Basin Commission pursuant to Delaware River Basin Commission Resolution 78-20 (Good Faith Agreement). As stipulated in the Good Faith Agreement and in accordance with Table 2, herein (Interstate Operation Formula for Adjusting Montague And Trenton Flow Objectives During Drought Emergency (L5) Operations), the City shall make releases to meet the Montague flow objectives according to the location of the salt front.

8. TEMPERATURE MONITORING AND REPORTING

During the term of the current Agreement, NYSDEC shall monitor water temperatures within the stream reaches defined and categorized in Section 5. Monitoring will be conducted at a sufficient number of locations (to be determined by NYSDEC) to adequately characterize temperatures. At the end of the current Agreement, NYSDEC shall provide a compilation of the monitoring data with a brief statement of the findings to the Decree Parties.

9. TEMPORARY SUSPENSION OR MODIFICATION OF FFMP

From time to time, the Decree Parties and DRBC may agree that upgrades to facilities, emergencies, maintenance and repair operations, short-term needs, or unanticipated effects of the FFMP may require temporary suspension or modification of one or more of the provisions herein. In considering such temporary suspensions or modifications, the Decree Parties and DRBC may estimate probabilities and risks associated with such temporary suspensions or modifications. Any resultant action taken, other than the temporary suspension or modification to the releases as provided below, shall require the unanimous approval of the Decree Parties.

New York City shall provide reasonable advance notification to the Decree Parties, River Master and DRBC of any planned extended tunnel shutdowns from New York City's Delaware System reservoirs and/or changes in releases due to emergencies, maintenance and repair operations, upgrades to existing facilities or the construction and integration of new infrastructure. New York City shall establish the scope of work and the schedule for the work and shall inform the Decree Parties and DRBC of such plans as early as practicable. For work involving a temporary suspension or modification due to new infrastructure or an upgrade to an existing facility, New York City shall provide the Decree Parties and DRBC with the releases modification strategy and project design materials at the sixty (60) percent design point to allow for review, comment and discussion. The Decree Parties shall make their best effort to reach unanimous approval for a modified release schedule as may be required for purposes of performing the work. In the absence of unanimous approval, New York City, acting in cooperation with the New York State

Department of Environmental Conservation (NYSDEC), will make releases to the best of its ability for the duration of the work, provided, however, that releases shall be sufficient to meet the Montague flow objective in effect at the time.

Modifications to releases not to exceed seven (7) consecutive days for purposes of maintenance or repair of immediate necessity, or to avoid unreasonable fluctuations in releases, shall not require Decree Party approval, but shall be done in cooperation with the NYSDEC, provided, however, that releases shall be sufficient to meet the Montague flow objective in effect at the time.