Comments on General Scope of Work - Specifically to address Section 2.5 Storage

Date: March 29, 2019
To: amy.shallcross@drbc.gov and Klrussell@usgs.gov.
From: Diane Tharp Executive Director
North Delaware River Watershed Conservancy (NORDEL) diane@thetharps.net
Subject: Comments on General Scope of Work - Specifically to address Section 2.5 Storage

"2.5. Storage The development and use of existing storage are aspects of flow management identified in the FFMP2017 and previously considered by the Decree Parties during the Good Faith Negotiations in the early 1980s. Additional storage may be useful for increasing the basin's drought resiliency under current and future conditions, such as sea-level rise, and allow for more flexibility in meeting lower basin objectives. As part of the first five years of the FFMP2017, the potential increase in available storage for the lower basin, from the optimization of existing storage, the expansion of existing storage or the development of new storage, will be studied considering water planning efforts conducted by the DRBC, States, Decree Parties, and Office of the Delaware River Master (ODRM)"

To all parties to the FFMP 2017,

The focus of the Good Faith Negotiations almost 40 years ago was drought resiliency of the basin. Since that time the Delaware River Basin has experienced the catastrophic floods of 2004, 2005, and 2006 as well as major climatic changes. In 2006, the four Decree Party governors requested that the DRBC design a coordinated basin wide flood plan with the major objective to mitigate flooding. Even though the establishment of the Flexible Flow Management Plan (FFMP) in 2007 by the decree parties constituted a very important step toward the development of such a plan, it fails to mitigate flooding to the greatest extent possible as the governors had requested.

We have just recently experienced one of the wettest years on record. The scope of the study which you are to begin must take into consideration equally both drought and flood mitigation solutions. Although flood mitigation is not mentioned above, it is mentioned in your introduction for the study which states, "**These *three studies will be evaluated in relation to estuary salinity, aquatic and fishery resources, water supply availability for multiple purposes, flood mitigation, and projections of future sea-level rise as well as topics identified in section IV.6. A.***

The people of the Delaware River Basin are entitled to a fair and equitable plan that not only protects the water supply, but also protects them from drought and catastrophic flooding. By using a best practices reservoir management plan based on the scientific findings of engineers with expertise in this field, it is possible for this to be accomplished.

We ask that you consider each of the points below as you develop the scope for this study.

- The amount of storage and whether additional storage is needed must be based on an accurate and true assessment of safe yield of the NYC reservoirs considering: 1) balanced use of the entire NYC system, 2)maximization of the Croton system,3) equitable redistribution of the 65 BG of reserve storage and 4)equitable calculation of a reasonable IERQ.

- To the City's credit, through metering and effective conservation, the City's consumption is approximately the same today as before our three Delaware reservoirs existed. Thus, the yearly diversions from these reservoirs are far less than the 800mgd granted in the Supreme Court decree. When conducting the study for consideration of additional storage in the basin, modeling should be based on the actual diversions taken by the City.

- For many years the impact of spilling reservoirs on flood crests had been disputed. *The Flood Analysis Model* released in 2009 and paid for by the four states of PA, NJ, DE, and NY as well as the federal government ($750,000) is the scientific evidence and proof that if pre-storm voids exist, flood crests will be lower as much as 6 feet in some areas. This scientific body of evidence should have led to cooperation among the parties compelling a new safe yield reassessment and a new alternative operating program with proper flood mitigation and re-tasking of reservoir goals. Instead of this happening, the Parties did nothing significant about it. This evidence must be considered and be part of the development of new modeling programs.

- The reservoirs, when based on current true safe yield and true demand conditions, should never be full or overflowing in peak flood season and hurricane season (March – October), but should have a "void" space to capture precipitation.

- Although additional storage in FE Walter, Mongaup System and Merrill Creek may help the lower basin during drought condition, it can do nothing for flood mitigation. On the contrary, if storage is increased in these systems, the City will use even less water to meet its commitment to the Montague Objective, conservation releases and salinity movement. Thus, careful analysis must be done to ensure that additional storage in the lower basin does not contribute to even greater probability of flooding in the Delaware River Basin.

- The extremely wet hydrological times since July 2018 to the present March 2019 has proven that the City even with its unprecedented maximum releases for months does not have the ability to keep the reservoirs at the capacity levels in the CSSO in the FFMP. This problem needs to be addressed. The Delaware Dams do not have the crest gates, siphons, release channels or other modifications to provide for releases in addition to their valve releases, as are available in the Catskill watershed. A reservoir management plan that allows storage capacities to be at or above 100% with no back up plan for drawdown during emergencies is a dangerous scenario and should be evaluated and modeled during this study. What will happen if the reservoirs are spilling and an 8-10-inch rainfall event occurs? What do the models show will be the result of such an event? The public has the right to know.

- In addition, the City has concluded that during their 2022 shutdown of the Delaware Aqueduct that no additional modifications or infrastructure for drawdowns need to be made at the Delaware Dams (They say that FFMP releases will be sufficient). However, they have concluded that temporary siphons will be placed at Rondout. After the current wet hydrological period, and the inability to meet target capacities, this needs to be evaluated prior to aqueduct closure.

- The US Army Corps of Engineers began evaluating all of their dams in 2009 to estimate the probability of the impact of extreme floods on their dams to plan for any corrective actions and possible new infrastructure that will be needed. This is called *the Dam Safety Portfolio Risk Assessment Analysis*. The NYSDEC does not require this analysis. Before you consider storage capacity changes to any and all dams such an assessment should be part of your analysis to ensure the safety of the public.

- The City assures us that their dams are built to withstand the probable maximum flood (PMF). But due to climate changes, the PMF when the dams were built (Neversink- 1953, Pepacton-1954 and Cannonsville-1965) may not be the same now. I am sure that the dam owners across America and the world that have recently had their dams breached also were sure their dams were built to withstand the PMF. All modeling must be done using the most extreme conditions that other parts of the country have

experienced and then changes to the current plan can be scientifically applied. In this way drought, flooding and water availability can be equitably acknowledged.

Conclusion

We understand that it is a difficult task to balance all the needs of all stakeholders in the Delaware River Basin and a delicate balance in developing a program for both flooding and drought. Yet, the catastrophic flooding experienced across our nation and during the floods of 2004, 2005, and 2006 cannot be ignored when discussing the idea of "storage" in the Delaware River Basin. The Flexible Flow Management Program 2017 must address flood mitigation and add additional modifications to this part of the plan as well as estuary salinity, aquatic and fishery resources, and water supply availability studies. Please considered the points mentioned above as you develop the scope of the study and the modeling needed for a reservoir management plan based on true science and accurate data.

Diane Tharp
Executive Director
North Delaware River
Watershed Conservancy
NORDEL
diane@thetharps.net