July 9, 2014

Case 13-W-0303 - Proceeding on Motion of the Commission to Examine United Water New York, Inc.'s Development of a New Long-Term Water Supply Source in Rockland County

May 22 2014 Department of Public Service Staff Report on Need

Comments to the New York State Public Service Commission

Lake DeForest Reservoir Passing Flows

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For the

Rockland Water Coalition

Introduction

I have been retained by the Rockland Water Coalition (Coalition) to evaluate the May 22 2014 New York State Department of Public Service (DPS) Staff Report on Need regarding Case 13-W-0303 - Proceeding on Motion of the Commission to Examine United Water New York, Inc.'s Development of a New Long-Term Water Supply Source in Rockland County. I wish to convey some of my concerns with the DPS Staff Report's position that the current standard used for allocation of Lake DeForest Reservoir water is proper, and recommend means to address those concerns. My professional background is found at the rear of this document.

The PDS Staff Report identifies on page 39 six of the grounds for unilaterally revoking, amending, or modifying the existing New York State Department of Environmental Conservation (NYSDEC) permit for the Lake DeForest Reservoir in accordance with 6 NYCRR Parts 601 and 621 that establish the NYDEC'S Uniform Procedures. Among these are:

- materially false or inaccurate statements in the application; and

- Newly discovered material information or a material change in environmental conditions, relevant technology or applicable law or regulations since the issuance of the existing permit.

Based on these reasons, I would like to identify several areas where there is potential substantiation that the NYSDEC permit should be revoked, amended, or modified.

<u>Initial Misrepresentation of Reasons for Building Lake DeForest Reservoir</u>

The original 1951 and 1952 hearings and the final permit granted to the Spring Valley Water Works and Supply Company ("Spring Valley")[1] completely gave the impression that the Lake DeForest Reservoir was needed exclusively to meet the water supply demands of Rockland County and any benefit to the Hackensack Water Company (HWC)[2] was "incidental." A review of the history of these water

[1] Spring Valley is now known as United Water New York.

[2] The HWC is now known as United Water New Jersey.

companies, however, reveal that the HWC planned decades in advance for the construction of reservoirs and other water supplies in Rockland County to assist it in meeting the growing water supply needs for its customer base in New Jersey.

As shown below, it is more than obvious that the Lake DeForest Reservoir was primarily built at the time due to the HWC urgently needing a large portion of this reservoir's safe yield, in conjunction with the HWC's fear that it would lose the site of the Lake DeForest Reservoir to imminent development. Meeting a share of the future water needs of Rockland County residents appears to have been more or less a secondary consideration of the HWC when it was planning for and seeking approval of the reservoir. And, as demonstrated in a subsequent section of this report, substantially more of Lake DeForest Reservoir's supply could have been made available to Rockland County if a truly independent Spring Valley would have been seeking approval for the reservoir to solely serve Rockland County.

None to very little of these events were presented at the hearings or memorialized in the final permit by officials from Spring Valley, even though many objectors were claiming that the proposed reservoir was to be built to serve the HWC. If this record were accurately represented in Spring Valley's application and hearings for the permit, it is doubtful that the permit would have been granted as originally requested by the company. I make this assertion with the following in mind.

Henry L. DeForest, Vice President of Spring Valley made application to the New York Water Power and Control Commission (Commission) for "the approval of acquisition of land and the construction of a dam for an impounding reservoir on the Hackensack River in Rockland County in 1951" (State of New York, 1952, page 1). The reservoir was later to be named the Lake DeForest Reservoir. As discussed later, Mr. DeForest was the son of Robert W. DeForest, who was the President of the HWC when it acquired Spring Valley in 1900.

During the numerous Commission hearings in 1951 and 1952 on the application by Spring Valley, objectors of the proposed reservoir contended that no direct benefit would accrue to residents of Rockland County, but rather to Bergen County in New Jersey (State of New York, 1952, page 3). The Commission, however, stated that it had "full power to see that this project is operated solely for the benefit of the citizens of Rockland County. The only benefit to the Hackensack Water Company and the people of New Jersey is the incidental benefit of a regulated flow in the river" (State of New York, 1952, page 10). I have concluded that the Commission's findings based on Spring Valley's application for its permit and Spring Valley's positions during the hearings for the proposed reservoir did not provide ample background on the proposed project. If it had, it is quite possible that the original objectors would have succeeded in a denial of the project or, at a minimum, a substantial modification of the Spring Valley proposal.

As briefly described above, the HWC owned Spring Valley for decades before the Lake DeForest Reservoir was built. In 1893, Spring Valley was independently founded in Rockland County. The company was formed to supply water to the Spring Valley section of the Town of Ramapo. Initially, the system had but one employee and 91 customers (Funding Universe – Company Histories, 2013).

The HWC was formed in 1869 to supply water to the Village of Hackensack and adjacent areas. In 1881, the HWC signed a ten-year contract with the growing city of Hoboken to supply its drinking water, and purchased land and built a small reservoir for that purpose on the Hackensack River in New Milford. The HWC shortly began laying miles of pipes and built its first pumping station. The HWC soon delivered clean water to Hoboken's 30,000 residents. In 1881 Robert W. DeForest was elected to run the operation (Reference for Business, 1996). He would do so for the next 46 years. He was the father of Henry L. DeForest, discussed above.

Additional towns in Bergen County were steadily added to the HWC system. As the company continued to grow, it needed to develop new water supplies. The company deepened the small pond it dug in 1881 on the Hackensack River to build the first phase of the Oradell Reservoir in 1902 (NJDEP, Passing Flow, 2013, pages 15 – 16).

The HWC's interest in Rockland County would also grow as the company's demand continued to increase in New Jersey. The HWC acquired Spring Valley in 1900 as discussed earlier. The HWC's objective was to obtain a controlling interest in the upstream (Spring Valley) water company because it wished to "protect and conserve" its New Jersey supply (Public Utilities Reports - Annotated, 1917, page 153). This was the *first* extension of the HWC into the New York State portion of the watershed (Rutgers, 2012, page 29).

The purchase of Spring Valley by the HWC was both important long-term financial and technical decisions. Over the course of time, Spring Valley would provide a major portion of the HWC's business (Funding Universe – Company Histories, 2013). While Spring Valley was initially a small water company, "what DeForest was smart enough to realize, however, was that despite operating in another state, Spring Valley shared the same watershed. Its acquisition would help to protect the integrity of the water supply for the entire region, not just the territory of one company or another. As a subsidiary of Hackensack Water, Spring Valley would upgrade its facilities and begin to add communities to its system in a manner similar to Hackensack Water" (Funding Universe – Company Histories, 2013).

The HWC clearly envisioned the Hackensack River in Rockland County, New York, to assist in meeting the water supply needs of Bergen County long before the Lake DeForest Reservoir was constructed. During a drought in 1910, the HWC was compelled to purchase water from Jersey City (which had a reservoir in Boonton) because its Woodcliff Lake and Oradell Reservoirs were nearly empty (Municipal Journal, 2010, page 661). According to this 1910 Journal, "the rapid growth of Bergen County municipalities is emphasizing the need for additional storage facilities, and with this view the Hackensack Water Company is said to be contemplating the erection of another storage reservoir at Pearl River in Rockland County, N.Y., just north of the Bergen County line." This was the *second* extension that the HWC was considering into the New York State portion of the watershed.

One year later, the HWC was exploring the ground water supplies of Rockland County (Municipal Journal, 2010, page 438). According to this 1911 Journal, "Not many of the inhabitants know that Rockland County has a sufficient supply of water to furnish all the territory between it and New York

City. It is not of the surface kind that is easily polluted; but lies a sufficient depth to ensure its purity. This supply of water was accidentally discovered by the Hackensack Water Company, who could not get a sufficient supply in its own watersheds, so they came over the line in Rockland County. Following the small stream that passes through Pearl River toward its head, the company purchased a tract of land in Spring Valley and sank artesian wells. So great was the supply from these wells that they quietly purchased another tract adjoining their first holdings, and proceeded to bore more wells. At present they have sunk six wells, each about 200 feet deep, and a full, steady flow comes from each of the pipes. Within the past few days the company put the most powerful pressure obtainable on two of these wells to see if it were possible to draw out sufficient water to lower other wells, and although 2,000,000 gallons a day were drawn off for several days and emptied into a stream at that point, the water in the other four stand pipes flowed as regularly and freely as though there was no connection between the wells. The company believes it has located one of the greatest water pockets ever found, and is already laying plans to supply water as far south as Jersey City. The company has prepared a petition asking the Board of Supervisors of Rockland County to grant it a perpetual franchise to carry this water out of State."

While a search for the events that transpired on the petition found no further information on this matter, I assume that the HWC decided it was politically difficult to seek a major water supply from another state. Nevertheless, this was the *third* extension into the New York State portion of the watershed that the HWC was contemplating in order to augment its New Jersey water supplies.

To meet its immediate growing water supply needs in New Jersey, the HWC expanded the existing Oradell Reservoir with the installation of a larger dam, and expanded it again to its present size in 1923. Passing flows were not required by the State of New Jersey downstream of the reservoirs, possibly because by the time the reservoir was built, the HWC acquired all the downstream water rights on the Hackensack River (NJDEP, Passing Flow, 2013, pages 15 – 16).

Subsequent to a short economic depression after World War I, the HWC entered a period of high growth (Reference for Business, 1996). After managing the HWC for more than 40 years, Robert W. DeForest retired in 1926 and was succeeded by Nicholas S. Hill.[3] The new President of the HWC quickly made plans for future expansion; he anticipated a growing need for water supplies for the new development that was certain to occur in Bergen County when the George Washington Bridge was completed in 1931. A major dam that would raise the level of the Hackensack River was planned at about this time, and the process of acquiring thousands of acres of land that would be flooded to make a new reservoir was begun.

This was to be the Lake Tappan Reservoir on the Hackensack River at River Vale and Old Tappan, where Hill was proposing a high dam 75 feet above sea level and flood thousands of acres of land up the river into Rockland County to meet the quickly-rising water supply needs in New Jersey. Large amounts of property in New Jersey and New York was acquired, before it was learned that the Rockland County

[3] Nicholas S. Hill was later to become president of the Spring Valley Water Works and Supply Company.

Hospital was to be built on land below the 75 feet above sea level flood boundary. Hill was forced to reduce the reservoir flood line to 55 feet above sea level, resulting in a loss of 75 percent of storage capacity. As a consequence, only 700 million gallons of the 4 billion gallon reservoir is impounded in New York State (State of New York, 1965, page 3). If the hospital was not an impediment, and the original plan by Hill was approved, the Lake Tappan Reservoir would extend well into Rockland County. All the same, the Lake Tappan Reservoir represents the *fourth* extension of the HWC into the New York State portion of the watershed.

The stock market crash of 1929 made everything come to a halt for the HWC (Reference for Business, 1996). New housing construction came to an abrupt stop and customers cut back on their consumption of water, making the development of the Lake Tappan Reservoir unnecessary at that time. The opening of the George Washington Bridge even did little to stimulate growth in Bergen County. However, it was after World War II that the area would begin to feel the true economic impact of the bridge.

By 1950, the HWC and Spring Valley served a population of 500,000 (Rutgers, 2012, pages 33 - 34). According to the Rutgers report, "It (the HWC) owned $40,000,000 in plant and equipment, 1,200 miles of water mains, and pumped 47,000,000 gallons of water a day out of the Hackensack River system. To supply the post-war development boom in northeastern New Jersey and Rockland County, New York, two additional reservoirs were needed, and an interstate project commenced in Clarkstown, New York. A reservoir holding 20,000 gallons[4] and supplying 200,000 people[5] was built by damming a long, narrow swamp that had high hills on both sides. Lake DeForest cost $8,000,000 and was dedicated in March 1959." As discussed above, the other reservoir would be the Lake Tappan Reservoir.

One would think that the HWC would logically build the Lake Tappan Reservoir before the Lake DeForest Reservoir for several reasons. First, the conclusion reached by the Commission in the hearings is that the Lake DeForest Reservoir represented a <u>prospective</u> water supply for Spring Valley to meet future demand. In its 1952 decision, the Commission wrote that "there is an immediate need for the acquisition of additional sources of supply by the Company and studies of the trend of the population growth and future consumption in the area ultimately to be served by the applicant indicate that the long range solution is the development of a surface supply to augment the other sources. Such a measure is wise from the point of view of conservation of the supply for the future. It is good engineering practice for a water utility to look to the future and to develop additional sources of supply so that it will be in a position to meet rising demands on its system in the years ahead. This is particularly so in a case such as here, where increased population and industrial development are indicated" (State of New York, 1952, page 7).

[4] It is believed that the author meant that the reservoir had a safe yield of 20 million gallons a day.

[5] It is assumed that this estimate of 200,000 people was calculated using 100 gallons a day per person, and that the 10 MGD safe yield set aside for Rockland County would provide 100,000 people in that county, and that the 7.75 MGD passing flow would provide 75,000 people in HWC's service area in New Jersey, and the 2 MGD passing flow would provide 20,000 people in Nyack's service area.

Indeed, while a permit for the reservoir was sought by Spring Valley in 1951 and it was completed in 1956 (i.e., began releasing its passing flow to New Jersey), it did not begin to serve its Rockland County customers until 1963 (LEAGLE, 1968, page 676). In fact, at the ground breaking ceremony of the Spring Valley water treatment plant in 1962, George H. Buck, president of the company stated that "the modern purification plant will increase substantially the county's dependable water supply far into the future. The supply is now four times the demand, he said, "which points up the company's policy of doing everything possible to discharge its responsibility" (Fultonhistory, 1962). It is clear that the Lake DeForest Reservoir was not needed to serve Rockland County until 12 years after Spring Valley applied for the permit, and the HWC funded nearly all of its construction cost.

Second, demand from the HWC water system in New Jersey was by far more pressing than that for the Rockland County customers of Spring Valley. In 1955, it was indicated that "extensive residential and industrial development in Bergen County has increased water consumption to the point where continued development will begin to reduce the safe margin of reserve. New supplies should be brought into Service Area III (the HWC service area) within the next 5 years if the growth of the area is to continue at the present rate" (Tippitt – Abbett – McCarthey – Stratton, 1955, page V-I).

Third, much of the properties for the Lake Tappan Reservoir in New Jersey and New York were already purchased by the HWC years ago. The HWC was paying for these purchases, but not receiving any income from them in the absence of the reservoir.

Fourth, success for the HWC in being able to receive approval to construct a reservoir in New Jersey was far greater than being granted approval for a reservoir in the State of New York. Numerous legal and political hurdles would stand in the way if the HWC had attempted to officially construct a reservoir in Rockland County to meet its Bergen County water supply needs.

As it turns out, the HWC built the Lake DeForest Reservoir before the Lake Tappan Reservoir because the company needed to increase it supply for its New Jersey customers without delay, it wished to so in the least expensive manner, and it feared that development in Rockland County would displace the future site for the Lake DeForest Reservoir. In a 1959 New Jersey Superior Court case in which the HWC wished to overturn a New Jersey Board of Public Utilities rate case that denied the HWC's requested payment to Spring Valley in the 1957 intercompany agreement between the two water companies, it was stated (Justia, In Re Hackensack Water Co., 57 N.J. Super. 180 (1959), 154 A.2d 212, pages 185 - 187):

> "The testimony heard by the Board clearly demonstrated Hackensack's need for an additional reservoir[6] prior to the construction of DeForest. Several experts testified that the water supply situation was 'critical.' The 'dependable yield' of the Hackensack River and its tributaries, i.e., the amount of water which could be obtained during a critical period of extreme drought, was insufficient to meet the demands of the area served by Hackensack. One of the main functions of DeForest is to store water which would normally be wasted. The storage capacity of existing

[6] This would be the Lake Tappan Reservoir at River Vale.

reservoirs was inadequate to save enough water during wet periods for use during drought periods; millions of gallons of water were wasted by flowing over the spillways of Oradell and Woodcliff Lake Reservoirs. When full, DeForest, with its impounded 5.6 billion gallons, is some 40% greater than the combined capacity of the two prior existing reservoirs.[7]

Although Hackensack owned considerable land for a reservoir in New Jersey below DeForest Lake at River Vale, the testimony by engineering experts demonstrated that the best site for present construction was in the State of New York where DeForest is now located, and that that site would provide the largest and most economical supply of additional water.

George H. Buck, president of Hackensack and Spring Valley, and also an engineering expert, testified that there were two persuasive reasons for building at DeForest in New York rather than at River Vale in New Jersey: (1) although Hackensack controlled the bulk of the land for the proposed River Vale reservoir in New Jersey, it controlled no land for a reservoir in New York. Mr. Buck declared that growth and development in Rockland County, New York, was proceeding so fast that if the real estate were not purchased and developed immediately it would be lost forever as a source of water supply for the inhabitants of New York and New Jersey; (2) the reservoir in New Jersey would have been much smaller in capacity and in yield, and if it had been built first it would only have met Hackensack's requirements up to about 1961 or 1962, and then a reservoir would have been necessary in Rockland County, New York. There is no indication that the means by which Hackensack proceeded to have DeForest constructed were not the most practical and economical.

In accordance with New York law, Spring Valley filed a petition with the New York Water Power and Control Commission seeking approval of the project. Hackensack had received advice from their attorneys that the most feasible legal method of constructing DeForest was to have Spring Valley, a New York corporation, undertake the construction, since Hackensack had no right to condemn in New York nor did it have any franchise rights. In its decision approving the project, the New York Commission determined that the dependable yield of DeForest was 20 million gallons a day. It required a minimum flow below the proposed dam of 7.75 million gallons a day, to which flow it added a quantity of water sufficient for the needs of the Village of Nyack of at least 2 million gallons a day, making a total minimum release of 9.75 million gallons a day, with the proviso that if Nyack in the future took water from the reservoir, this 2 million gallons a day could be eliminated. Ten million gallons a day was forever reserved for the water supply needs of the residents of Rockland County through the facilities of Spring Valley.

In order for Spring Valley to take water from DeForest it must first build filter facilities. The facilities were not installed in 1957 and they will not be built until management decides to do so. The record indicates that this will not be for four or five years. Therefore, for at least that period of time, as much water as is required can be released downstream into New Jersey. The cost of DeForest, as of December 31, 1957, was $7,134,980, financed by Hackensack through the purchase of Spring Valley's securities."

[7] The" two prior existing reservoirs" are the Oradell and Woodcliff Lake Reservoirs.

While the above is seven years after the HWC's hearings on the Lake DeForest Reservoir, it clearly shows the company's planning that had earlier occurred to build the Lake DeForest Reservoir when the company did. That planning without a doubt prioritized the principal benefits that the HWC would receive with the construction of this out-of-state reservoir -- not the "only benefit to the Hackensack Water Company and the people of New Jersey is the 'incidental benefit' of a regulated flow in the river" as prescribed in the permit that the Commission granted to the HWC (State of New York, 1952, page 10).

It very much appears from the 1951 – 1952 hearings and the permit that was issued that the HWC, through its subsidiary Spring Valley, "sold the project" to the Commission and the residents of Rockland County that it was to meet that county's future water supply needs. Based on the historical record, instead, the project emerges as one of which the primary purpose was to economically increase the HWC's supply in New Jersey, and the company needed to construct it before it lost the future impundment to developers. The future supply that it would provide to Rockland County actually appears to be the "incidental" benefit. If all, or perhaps just even some, of this record had been produced during these hearings, the Commission may have issued a different decision on the Lake DeForest Reservoir, especially the amount released by the impoundment to the HWC.

<u>Misrepresentation of Increasing the Lake DeForest Reservoir Passing Flow in 1982</u>

As earlier described, the method for establishing the passing flow for the Lake DeForest Reservoir was "fashioned" after the 1931 US Supreme Court case for the Upper Delaware River. In 1982, the passing flow for the Lake DeForest Reservoir was increased via a modification of the original 1952 permit under certain drought conditions (State of New York, 1982, page 3). The revision of this permit failed to disclose some pertinent facts that, if properly made known in the draft permit, would probably have led to a different decision in the final permit.

First, the 1982 draft permit did not indicate that its modification would result in the Lake DeForest Reservoir being transformed from a relatively independent reservoir in a sovereign state to a regional component of an interstate water supply. When this permit was finalized, the Lake DeForest Reservoir was converted from a water supply of which the original purpose was to solely benefit the residents of Rockland County to an interstate water supply system without a formal interstate compact. A major objective of the permit modification was for the Lake DeForest Reservoir to serve as a "balancing" storage facility in New York State that was to release a portion of its water that was originally intended for Rockland County homes and businesses during drought to instead be re-allocated to the HWC's reservoirs in New Jersey.

Second, and perhaps more alarming, is the lack of disclosure that in order to release this increased supply to New Jersey reservoirs, a large fraction of water that was initially reserved to support Rockland County homes and businesses during a very severe drought was "re-assigned" to the HWC reservoirs in New Jersey. If a drought more severe than the historic drought of record were to occur, the reserve for Rockland County was reduced by more than a third so that additional releases could be made to the

HWC's reservoirs. The higher range of these releases (25 MGD) is larger than the safe yield of the Lake DeForest Reservoir.

Third, with respect to inadequate public notice, was that the additional releases from the Lake DeForest Reservoir would defer mandatory water restrictions for the users of the HWC reservoirs, while accelerating mandatory water restrictions for the users of the Lake DeForest Reservoir. As a consequence, not only would the users of the Lake DeForest Reservoir be more vulnerable to a severe drought, but they would be prematurely subject to serious water curtailment measures as future drought became more severe.

While much of what is described above is to be expected of a regional, multi-reservoir system, my problem is that none of it was revealed to the public. The irony of these circumstances was they are the result of Spring Valley releasing excessive amounts of water from the Lake DeForest Reservoir to the HWC reservoirs during the 1981 drought; to resolve this problem, the Lake DeForest Reservoir permit was modified to formally allow more water to be released from the Lake DeForest Reservoir!

Furthermore, while the customers of Spring Valley are expected to endure premature drought restrictions as well as being subject to a reduced safety factor should a drought be more severe than the drought of record in the future, there are no financial provisions in the existing UWNY – UWNJ Intercompany Agreement for this potential forfeiture.

In addition, the 1931 US Supreme Court Upper Delaware River case ruled that "at any time the stage of the Delaware River falls below .50 c.s.m[8]. at Port Jervis, New York, or Trenton, New Jersey, or both (.50 c.s.m. being equivalent to a flow of 1535 c.f.s. at Port Jervis and 3400 c.f.s. at Trenton), water shall be released from one or more of the impounding reservoirs of New York City in sufficient volume to restore the flow at Port Jervis and Trenton to .50 c.s.m., provided, however, that there is not required to be released at any time water in excess of 30 percent of the diversion area yield, and the diversion area yield having been ascertained to be 2.2 c.s.m., the maximum release required shall be 30 percent of that amount, or .66 cubic feet per second per square mile of the areas from which water is diverted" (New Jersey v. New York, 283 U.S. 336. 1931, page 806).

The safe yield for Lake DeForest Reservoir is estimated at 20 MGD; 30 percent of that yield is 6 MGD. If 2 MGD is added to compensate for Nyack's withdrawal, the maximum release from the Lake DeForest Reservoir would be 8 MGD if the release formula was to be consistent with the 1931 US Supreme Court case for the Upper Delaware River as provided for in the 1952 permit for the Rockland County reservoir. Based on the above, the 1982 modification of the Lake DeForest Reservoir permit and its 15 MGD to 25 MGD passing flows is in conflict with the formula supposedly designed to provide equitable apportionment.

[8] "c.s.m." is cubic feet per second per square mile. One c.s.m. is equivalent to 0.646 MGD per square mile.

Last, a case of possibly misleading the New York Conservation Department (NYCD), Water Resource Commission might be made in the application by the HWC for one of its reservoirs. In the late 1950's, the HWC purchased 941 acres of property along the Hackensack River in the Borough of Old Tappan and Township of River Vale in order to build its third reservoir in Bergen County, which it later called Lake Tappan (Leagle, Hackensack Water Company Versus Borough of Old Tappan, 1978). These land purchases occurred before any local, county or state approvals to build the reservoir were granted.

Several years later, in 1965, the HWC filed an application and received approval from the NYCD, to build the Lake Tappan reservoir in River Vale, that would flood lands in both New Jersey and New York to meet the growing water supply needs of New Jersey (NYCD, 1965). According to proceedings for the permit, no direct use of the reservoir was proposed for New York State at the time of application. George H. Buck, president of both the HWC and Spring Valley, made the application before the NYSDEC. The HWC made the case that population increases in Bergen County in recent years is resulting in increasing demands on the present sources of supply of the Hackensack River.

The HWC indicated that the presently (1965) developed safe yield of the Hackensack River at the company's Oradell Reservoir intake in New Jersey is about 67 MGD (NYCD, 1965). The HWC explained that practically the entire regulated flow of the Hackensack River was available to the HWC for use in New Jersey prior to completion of the water treatment plant at the Lake DeForest Reservoir by Spring Valley in 1963. The company indicated that, as Lake DeForest is gradually more utilized as a water supply in Rockland County, however, the available yield in New Jersey to the HWC proportionately will be reduced.

The HWC consequently made the case before the NYCD for proposed Lake Tappan Reservoir, approximately two miles below the New York-New Jersey State Line, to create an impoundment extending into New York State (NYCD, 1965). The 4 billion gallon reservoir would be used to preserve the existing yield of the river supply for the HWC. The construction of the reservoir was reportedly to add 10 MGD to the total safe yield of the Hackensack River. The HWC contended that this increase in yield only will offset the loss in yield of the river available to it as Rockland County consumers use more of the waters of Lake DeForest.

This argument is highly flawed and disingenuous. The argument is “materially false and inaccurate.” As discussed, construction of the Lake DeForest Reservoir increased the safe yield of the HWC’s reservoirs in New Jersey. As demand from the Lake DeForest Reservoir is progressively increased, the safe yield of downstream reservoirs will be unaffected.

It is thus recommended that the Lake Tappan be re-evaluated based on the above, as well as important items and provisions that were incorporated into the permit for the reservoir. Among these proposals that the HWC indicated was in its future plans was the installation of pumps and transmission facilities which could be utilized to pump water from the Lake Tappan Reservoir to the Lake Deforest Reservoir during future low flow periods (NYCD, 1965). The company mentioned, however, that the installation of such equipment is not a part of the permit proposal. In consideration of this testimony, the Commission

did not reserve to New York State any portion of the yield of the Hackensack River that was attributable to the River Vale Reservoir. The Commission did nevertheless reserve to itself the right to consider future applications for the taking of water by communities in New York State from the Hackensack River for public water supply purposes. Since the majority of water in Lake Tappan originates from Rockland County, the County may wish to make application for some of this supply as part of reopening the Lake Tappan Reservoir permit.

Inappropriate Application of Equitable Apportionment Concept

The Lake DeForest Reservoir permit granted to Spring Valley states that since "the Hackensack River is an interstate stream, the Commission must act with respect and consideration for the doctrine of "equitable apportionment" as pronounced by the Supreme Court of the United States in the litigation involving the use of the Delaware River" (State of New York, 1952, page 12). The permit then used the reservoir (passing flow) release formula employed in the 1931 Delaware River Supreme Court case to devise the passing flow for the Lake DeForest Reservoir. The passing flow of 7.75 MGD was established just downstream of the Nyack intake on the Hackensack River to fulfill this doctrine. The 7.75 MGD flow is equivalent to a flow of about 0.45 CFS/Square Mile (0.292 MGD/Square Mile), or a flow that is exceeded about 80 percent of the time. There are a number of issues that were not addressed when this legal concept was incorporated into Spring Valley's 1952 permit for the Lake DeForest Reservoir.

Equitable apportionment is the water law doctrine that governs the U.S. Supreme Court's allocation of interstate waters between or among states. In the case of the New York City reservoirs in the Upper Delaware River, this doctrine instituted the principle that *each state* within a shared watershed has the right to its fair share of the water in that watershed. As the name implies, the principles of equitable apportionment are directed to all the affected states.

The inclusion of a passing flow for only the upstream state in interstate waters does not constitute equitable apportionment as implemented in the Delaware River US Supreme Court case. In the latter, New York (primarily New York City), New Jersey and Pennsylvania realized in the 1920s that the only legal way that the three states could develop water supplies in this shared watershed was through interstate cooperation that *equitably allocated* the Delaware River, and had initiated the development of an interstate compact to apportion the waters among each (Albert, 2005, pages 16 -). After two failed compacts in the 1920s, New York City sought in 1929 to withdraw 600 MGD from the Upper Delaware River in New York State to meet the City's growing population. New Jersey filed a petition with the US Supreme Court to block New York City, and Pennsylvania became an intervener.

After two years of negotiations, the Supreme Court in 1931 affirmed New York's right to divert water from the Delaware River based on the principle of equitable apportionment. According to this principle, each state in the Delaware River Basin had a right to a fair share of the water. The court did reduce New York City's withdrawal to 440 MGD due to concerns in the Lower Delaware River. It also required New York City to meet a passing flow of 0.5 CFS/Square Mile at the border of New York, New Jersey and Pennsylvania, and at Trenton, New Jersey, where the Delaware River turns to tidal conditions. The

Court also required New Jersey and Pennsylvania to meet passing flows of 0.5 CFS/Square Mile at Trenton if water was to be removed by either state out of the watershed. This, of course, would require these two states to develop reservoirs in order to make these compensating releases.

As can be seen, equitable apportionment in the Delaware River case entailed an approach that impartially allocated the shared river to the affected states. There was no such equitable apportionment of the Hackensack River by the New York Water Power and Control Commission in 1952 when it was considering the Lake DeForest Reservoir permit. Pursuant to the 1952 permit, nearly 40 percent of the Lake DeForest Reservoir's available supply was required to be released from the Spring Valley impoundment to New Jersey; yet, the Commission was silent with regard to the HWC's allotment from the river. The HWC was free at the time to withdraw the entire Hackensack River during periods of low streamflow, and release none. In my view, this is more along the lines of "inequitable" apportionment.

As discussed above, the HWC's Oradell Reservoir on the Hackensack River has been in operation for more than 100 years. This reservoir has a drainage area of nearly 113 square miles; the upstream Lake DeForest Reservoir has a drainage area of about 27 square miles (or less than one-quarter of that of the Oradell Reservoir).

A review of the US Geological Survey gaging station that was installed in 1921 just downstream of the Oradell Reservoir indicates that this reservoir did not release any water on most days during the summer months in the 30 years prior to Spring Valley making its application for the Lake DeForest Reservoir (US Geological Survey, 01378500 Hackensack River at New Milford, N. J., website). In fact, in those 30 years, the only times that the Oradell Reservoir released water to the lower Hackensack River was when it rained so hard that the reservoir reached capacity and water spilled over its dam.

Therefore, the Commission was requiring, and the HWC-owned Spring Valley was not objecting to, a substantial passing flow from a reservoir to a downstream reservoir that was observing no passing flow. This is hardly consistent "with respect and consideration for the doctrine of 'equitable apportionment' as pronounced by the Supreme Court of the United States in the litigation involving the use of the Delaware River" as defined in the permit issued by the Commission.

For the Commission to characterize its Lake DeForest Reservoir passing flow decision as being in accordance with the doctrine of equitable apportionment consistent with the US Supreme Court Upper Delaware River case of 1931, some semblance of parity would be needed among the two reservoir systems in the two affected states. To be entirely consistent with the earlier litigation, the two reservoir systems would have employed similar methods to calculate their passing flows. If treated exactly uniformly, the Oradell Reservoir would have had a passing flow of approximately 32.9 MGD (0.291 MGD/Square Mile x 113 square miles) required by the State of New Jersey. In contrast, New Jersey did not mandate a passing flow, and the HWC was not coming close to observing one.

Further expounding on the principle of equitable apportionment, Justice Holmes (who delivered the 1931 opinion of the US Supreme Court) on its Upper Delaware River case declared that (Albert, 2005, pages 22 – 24):

> "A river is more than an amenity, it is a treasure. It offers a necessity of life that must be rationed among those who have power over it. (Underline added). New York has the physical power to cut off all the water within its jurisdiction. But clearly the exercise of such power to the destruction of the interests of lower states could not be tolerated. And on the other hand, equally little could New Jersey be permitted to require New York to give up its power altogether in order that the River might come down undiminished. Both States have real and substantial interests in the River that must be reconciled as best they may be. The effort always is to secure an equitable apportionment without quibbling over formulas.

This is interpreted that the court defined the doctrine of equitable apportionment as a fair allocation among the users of a river, and that it is not the specific prescription for the allocation that is important. Rather it is the "balanced" treatment of the effected parties that is imperative. This definition clearly does not fit in the Commission's construal in the case of the Lake Hackensack Reservoir permit. The doctrine of equitable apportionment as described in the permit was not adhered to. If it were, a mechanism such as an interstate agreement with New Jersey would have been implemented, where a "share" of the Hackensack River's water supply would have been allocated to the HWC. As currently established, a share of the Hackensack River watershed has been allocated to the Lake DeForest Reservoir, but all remaining water from the watershed is available to the HWC.

There was no discussion of these deviations from the equitable apportionment legal doctrine during the hearings for the Lake DeForest Reservoir in 1952. The incongruity is so well-defined. If the Upper Delaware River case was the "model" for equitable apportionment for the interstate Hackensack River, each state (New York and New Jersey) would be subject to the 0.291 MGD/Square Mile criteria. Instead, the Commission placed this restriction on New York and totally ignored New Jersey. One can only imagine if an objector at the hearings asked the Commission "why is so much water being required to be released from New York State when New Jersey does not require any to be released in its own state?"

Newly Discovered Material Information or a Material Change in Environmental Conditions, Relevant Technology or Applicable Law or Regulations Since the Issuance of the Existing Permit

The PDS Staff Report also identifies on page 39 "a material change in environmental conditions or applicable law or regulations since the issuance of the existing permit" as grounds for unilaterally revoking, amending, or modifying the existing New York State Department of Environmental Conservation (NYSDEC) permit for the Lake DeForest Reservoir in accordance with 6 NYCRR Parts 601 and 621 that establish the NYDEC'S Uniform Procedures. I would like to identify some areas where there is potential substantiation that the NYSDEC permit should be re-evaluated based on this provision.

Reduction in Passing Flows in Upper Delaware River. As previously described, passing flows were prescribed for New York City's reservoirs in the Upper Delaware River in the 1931 US Supreme Court case. And, as previously described, the passing flow for the Lake DeForest Reservoir was modeled after the New York City reservoir passing flow. Since then, the Delaware River Basin Commission (DRBC) was formed by the US Congress to allow New York, New Jersey, Pennsylvania, and Delaware to manage the water resources of the entire Delaware River watershed (1961). DRBC's management provisions are embodied in the Commission's code.

These states have agreed to what are known as the 1983 "Good Faith Negotiations" to reduce demand throughout the Delaware River basin and the New York City reservoir passing flow during drought (Collier, 2004, pages 52 - 53). The drought operating program is the cornerstone of the Good Faith Negotiations, and is triggered in stages by declining storage in the three New York City reservoirs. A Drought Rating Curve (also termed a drought rule curve) was developed with trigger points for Drought Watch, Drought Warning, and Drought Emergency. As water levels in the reservoirs decline, there is an agreed upon plan of phased reductions in both demand by New York City and New Jersey, as well as passing flows at Montague and Trenton in order to preserve as much water as possible in the reservoirs.

The operating plan for the Lake DeForest Reservoir is almost the opposite of that protocol used for the Delaware River basin. As described above, the passing flows for the Lake DeForest Reservoir do not decrease during drought, they instead increase. If the Delaware River basin is the "foundation" for the Lake DeForest Reservoir passing flow, and relevant changes have been made to the Delaware River basin's regulations since the issuance of the Lake DeForest Reservoir permit, it appears that there is very much grounds for evaluating whether that permit should be revised accordingly.

Recent Requirement for Oradell Reservoir Passing Flow. A passing flow of 8.3 MGD for the UWNJ Oradell Reservoir in New Milford on the Hackensack River was required by the State of New Jersey during the late 1990s (NJDEP, Passing Flow, 2013, page 10). The drainage area upstream of the Oradell Reservoir dam is approximately 113 square miles. If the same formula used to establish the passing flow at the Lake DeForest Reservoir (0.291 MGD/Square Mile) was used for the Oradell Reservoir, the latter would be required to release about 32.9 MGD.

The passing flow for the Oradell Reservoir is somewhat of an oddity in the regulation of New Jersey water resources. Its reservoir release is governed by what is known as the 1907 "excess diversion" passing flow (NJDEP, Passing Flow, 2013, page 9). Purveyors that have been withdrawing water before 1907 have essentially been "grand-fathered" where they can continue to divert water from a reservoir while not adhering to their passing flow, as long as they pay their minimal "excess diversion fee." In the case of the Oradell Reservoir, which supplies water to most of Bergen County and portions of Hudson County, if it does not meet its 8.3 MGD passing flow, it must pay an excess diversion fee that is proportional to the volume of water withdrawn and the volume by which releases were less than the required passing flow. While the excess diversion fee formula is somewhat complicated, it is very cost effective for a purveyor to use. The excess diversion passing flows are also used by UWNJ at its intakes on the Saddle River and Passaic River.

An assessment of the Oradell Reservoir passing flow was made from the year 2000 to present (US Geological Survey, 01378500 Hackensack River at New Milford, N. J., website). It was determined that the passing flow was met for most, normal years. However there were numerous periods, some lasting for weeks, when the minimum flow was not being met during drought (e.g., 2001, 2002, 2004, 2005, 2006, 2008, and 2013). Presumably, UWNJ exercised its right to pay the excess diversion fee during these periods when its passing flow was not met.

As discussed above, the doctrine of equitable apportionment is one which each affected state is provided with its fair share of water. While it has been abided by the State of New York, it often is not adhered to by the State of New Jersey.

Absence of Equitable Apportionment in New Jersey Rivers Flowing into New York. A review of the State of New Jersey's water withdrawal database (NJDEP, Data Miner) was made of the Wallkill River watershed in New Jersey. The Wallkill River flows into southern New York State. Dozens of water allocations/certifications have been issued for public supplies, commercial and industrial uses, and agricultural activities in the New Jersey portion of the watershed. Based on the State of New Jersey's methodology to estimate loss of streamflow due to withdrawals (NJDEP, Low Flow Margin, 2013, page 11), virtually every one of the allocations are consumptive to various degrees (i.e., they cause reductions in streamflow). The loss of streamflow as the Wallkill River as it flows into New York is likely significant during periods of low precipitation.

While New Jersey's water withdrawal database does not specify the dates when the water allocations in the Wallkill River watershed were issued, it is quite probable that the majority of them were granted subsequent to the 1952 approval of the Lake DeForest Reservoir. A review was made to determine if the New Jersey withdrawals adhered to the concept embodied in the Lake DeForest Reservoir permit (i.e., compensating releases made to the downstream state) to determine if New Jersey reciprocally followed the "spirit" of the Rockland County case in point.

That assessment found that some of the withdrawals were required to cease pumping at certain low streamflows (NJDEP, Passing Flows, 2013, pages 45 – 50), but none where water was released in order to compensate for the withdrawal(s). Apparently, the State of New Jersey does not practice the doctrine of equitable apportionment when it comes to affecting flows in the State of New York.

Availability of Interstate Safe Yield Model

The NJDEP is nearing completion of a safe yield model for the Passaic-Hackensack watershed (NJDEP, Planning Activities, 2013, page 4). This model includes the Lake DeForest Reservoir in Rockland County. A major objective of the model is to estimate how much additional safe yield can be obtained through coordination among purveyors in the watershed. The NJDEP plans to shortly hold coordination meetings with affected stakeholders. This venue may provide opportunities to re-evaluate the Lake DeForest Reservoir in a non-litigious manner. It is recommended that this potential opportunity be discussed in the revised DPS Staff Report.

Conclusions

Based on the above, the following conclusions can be reached:

- It very much appears that the HWC used Spring Valley as a "pretense" to build the Lake DeForest Reservoir so that it could increase its New Jersey water supply. The prior history of the HWC's planning for the Lake DeForest Reservoir appears to not have been made known at the hearings for the impoundment.

- While it was not disclosed as such, the Lake DeForest Reservoir was transformed in 1982 to a "balancing" reservoir that increased the HWC's supplies in New Jersey. It essentially was converted into regional component of an interstate water supply.

- In order to fulfill the above objective, the margin of safety for the Lake DeForest Reservoir was reduced, and the frequency and duration of future drought emergencies was increased. These facts were not made available in the public notice for the permit modification.

- The Lake DeForest Reservoir passing flow was supposedly "modeled" after the New York City reservoir passing flows in the Upper Delaware River in a 1931 US Supreme Court case. In this case, the Court ruled that the passing flow should not be in excess of 30 percent of the New York City reservoir's safe yield. The increased passing flows that were incorporated into the Lake DeForest Reservoir permit in 1982 substantially exceed 30 percent of the impoundment's safe yield. This important fact was not revealed during the hearings for the Lake DeForest Reservoir.

- New York City's reservoir passing flows have been allowed to be reduced during drought since 1983. This is the opposite of the Lake DeForest Reservoir, which are supposed to be increased during drought since 1982.

- The large passing flow from the Lake DeForest Reservoir to the Oradell Reservoir was to ensure that the doctrine of equitable apportionment was met, as provided in the 1931 US Supreme Court case discussed above. In that case, each of the affected states (New York, New Jersey, and Pennsylvania) was required to observe a passing flow threshold. In the case of the Lake DeForest Reservoir, there was no discussion of the Oradell Reservoir. In fact, the Oradell Reservoir frequently "consumed" the entire lower Hackensack River, and only released water when it filled to capacity. This important detail was not disclosed during the hearings for the Lake DeForest Reservoir. Even now that the Oradell Reservoir was assigned a passing flow, it does not observe it during drought. Instead, it is allowed to pay a minor fee.

- The "pretense" for building the Lake Tappan Reservoir in New Jersey and New York was that the Lake DeForest Reservoir will decrease the safe yield of the HWC's reservoirs in New Jersey. In

reality, the opposite is true; the safe yield of the HWC's New Jersey reservoirs was significantly increased by the construction of the Lake DeForest Reservoir.

- If the above information was known when the Lake DeForest and Lake Tappan Reservoir permits were undergoing their public comment periods, it is strongly presumed that the permits for these facilities would be substantially different than they are today. The benefits to Rockland County residents and businesses would be much greater.

- New Jersey does not observe the doctrine of equitable apportionment for the State of New York that the State of New York implemented in the permit for the Lake DeForest Reservoir to protect New Jersey's water supplies.

- A water supply model being developed by the NJDEP will soon be available to evaluate reservoir operation alternatives in both New Jersey and New York.

Recommendations

Based on the above, the NYSDEC should allow Rockland County to reopen the permits for both the Lake DeForest and Lake Tappan Reservoirs. The evaluation can be conducted in coordination with New Jersey in an effort to optimize the water supply for Rockland County.

Background of Author

Regarding my professional background, I possess a Bachelor's Degree in Earth Science from the College of New Jersey and have completed my Graduate Credits in Water Resources from Rutgers University. I have over 40 years of experience managing environmental projects and programs, including 25 years as Chief of the Water Supply Planning Section at the New Jersey Department of Environmental Protection. This section is devoted to statewide and regional water supply planning, and is mandated to develop water supply plans, strategies and policies for areas experiencing or projected to experience water supply shortages. I have directly managed or have been directly involved in an array of projects that included new reservoirs, regional water pipelines, desalination facilities, etc., and strategies dealing with water conservation, wastewater reuse, ground-surface water optimization, and other water planning initiatives that are capable of maximizing available water. Further, I was one of the primary authors of the 1996 and 2014 (draft) New Jersey Statewide Water Supply Plans.

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