STATE OF NEW YORK
DEPARTMENT OF PUBLIC SERVICE

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.

DEPARTMENT OF PUBLIC SERVICE STAFF REPORT ON NEED

State of New York
Department of Public Service
Three Empire State Plaza
Albany, New York 12223

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INTRODUCTION

On July 18, 2013, the Commission instituted this proceeding to determine whether, in light of changed circumstances, a need still exists in Rockland County for United Water New York Inc.'s (UWNY) development of a major new long-term water supply source. The instituting order required UWNY to file a report updating its analysis of need and provided for public statement hearings and public comment periods.

On August 19, 2013, UWNY filed its report in compliance with the Commission's Order (Report), and further supplemented on November 8, 2013, with its Response and Rizzi Letter (Supplement) (2013 Need Report).[1] Therein, UWNY confirms its continued belief that a major new water supply source is required by 2016 to satisfy potential increased water demand resulting from projected continued population growth and economic development and to protect its customers against deprivations of water supply that can exist during recurring local drought conditions. It maintains that alternative demand-

[1] Response by UWNY to Issues Raised During the Public Statement Hearings, including UWNY Price Elasticity and Water Usage by John F. Guastella (Response) and letter submitted by Deborah Rizzi, Director, Communications for UWNY (Rizzi Letter) (Supplements). A summary of UWNY's Report, Response, and Rizzi Letter is provided in Appendix A.

side and supply-side solutions proposed by opponents to satisfy need would not result in the sufficient and dependable water supply necessary to comply with legal requirements to provide safe and adequate service.

In 2006,[2] the Commission approved UWNY's plan to develop a new long-term water supply source to begin operation no later than December 31, 2015 and required UWNY to file a proposal for its development. In response, UWNY proposed the construction of a 7.5 million gallons per day (mgd) desalination plant at Haverstraw Bay on the Hudson River (Project), as the most cost-effective, reliable, and drought-resistant option.[3] Construction of the plant would occur, as needed, in stages over 15 years, with an initial 2.5 mgd capacity, and, if needed, two additional 2.5 mgd expansions, at a total estimated construction cost at completion between $139.2 and $189.3 million including approximately $55 million in preliminary unaudited pre-construction expenses for a pilot plant to verify project feasibility, overall project engineering and design, project permitting and legal expenses and associated AFUDC.[4] According to the Company, its proposed project was selected as the most economic and least environmentally disruptive choice from three major supply alternatives and after a thorough evaluation of several other potential options including additional groundwater sources (wells) or repurposing of four existing quarry

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[2] Case 06-W-0131, United Water New York, Inc. - Rates and Case 06-W-0255, United Water New York, Inc. - Merger, Order Approving Merger and Adopting Three-Year Rate Plan (issued December 15, 2006) (2006 Rate Order).

[3] Case 06-W-0131, supra, UWNY Long Term Water Supply Project January 2007, submitted January 12, 2007.

[4] The $55 million is being examined in a related case (13-W-0246).

operations. Each of these alternative options and their estimated costs are shown in Appendix B.[5]

The Rockland Water Coalition (RWC), its member organizations and supporters, and many of Rockland County's elected officials contest that the immediate construction of a new water supply source is needed, arguing that demand-side alternatives exist to address any projected shortfall in supply. They argue that a significant reduction in water demand over the last six years justifies postponement of the need for a major water supply source until at least 2021 and as a result, that time is available for Rockland County legislators to develop and implement a County wide drought management and water conservation plan. The RWC opines that the County is able to manage its response to drought conditions via more aggressive conservation measures, in coordination with the utility's targeted repair of leaks and increase in amounts expended on infrastructure improvement, and reduction in releases to New Jersey from the Lake DeForest Reservoir which in combination would delay need. They further argue that a recent United States Geological Survey (USGS) Reports confirms the availability of additional groundwater sources for new and expanded wells.

Conversely, several county business organizations, numerous unions, and the Town of Haverstraw promote the Project as a means to provide for population growth, avoid hardship during drought conditions, promote economic development, create more jobs, and obtain tax revenues.

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[5] Source: DEIS Chapter 18 Table 18-1(reproduced in Appendix B). The appendix also shows the estimated costs of the two other alternatives considered in the DEIS, as well as other alternatives that were considered or found to be unsuitable. The costs of the three main alternatives are further broken down in the page following Table 18-1, along with rate impacts.

Staff's focus in this report is on the requirement that the Company must continue to provide safe and adequate service, and whether or not that responsibility can reasonably be met without the addition of a new water supply. In evaluating the need for a major new water supply, Staff has updated the forecast of UWNY water demand to incorporate actual average annual water demand through 2013 and a forecast of average water demand. Staff has also considered the projected significant expenditures associated with the Project, the general public sentiment for and against the project and the rate impacts of the associated cost recovery.

BACKGROUND

UWNY Profile

UWNY is a private investor-owned water company that provides potable water and water for fire protection to the residents and businesses in Rockland County, excluding the Villages of Suffern, Nyack, and South Nyack. UWNY also serves a small portion of Orange County in parts of the Towns of Tuxedo, Warwick, and Monroe. As of December 31, 2013, the Company supplied water service to 71,426 customers of record in Rockland County, approximately 87% of the County's residents. The customers of record include 62,347 family residential, 5,390 non-residential, 1,820 multi-family residential, 972 private fire service, and 72 public fire service customers. UWNY's current water supply is drawn from ground water sources (reservoirs and wells) that are directly dependent on local precipitation and river flows, which fluctuate, depending on the weather. Periods of lower than average precipitation can result in temporary reductions in water supply; periods of higher than average precipitation can result in spilling of excess water over the Lake DeForest Reservoir dam.

History of Need

UWNY has engaged in planning for the construction of a major new water supply project since the early 1960s. In the early 1980s, the Company proposed development of the Ambrey Pond Reservoir because water demand trends indicated a need for a major supply addition by the 1990s. The New York State Department of Environmental Conservation (DEC) issued a permit for the Ambrey Pond project in 1987, upon the condition that construction would begin when average annual demand reached 27.9 mgd for two consecutive years. UWNY, after reevaluation of need in 2000, changed the design to a reservoir with one-third of the capacity of the original proposal, and put off the construction date to 2010. UWNY did not commence construction, because of the development of smaller, short-term supply solutions, the ongoing beneficial effects on demand from imposition of the summer/winter water consumption rate differential in 1980 and 1982,[6] and implementation of conservation measures.

The renewed need for a new long-term water supply source arose in 2006, after UWNY's failure to satisfy its peak demand over a number of years and Rockland County's experience with a series of droughts in 1991, 1993, 1995, 1997, 1999, 2001, 2002, and 2005. In the 2006 Rate Proceeding,[7] Dr. Miller explained that to meet system demands UWNY, at times, supplied

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[6] The Commission approved a 3:1 summer rate differential and instituted budget billing to avoid dramatic billing swings (Case 27567, Spring Valley Water Company, Inc. - Phase II Marginal Cost Study and Rate Design, Opinion and Order Determining Rate Design (issued May 30, 1980), p. 16); as a result of opposition to the high rate, in 1982, it was reduced to 1.5:1 (Case 27567, supra, Order Modifying Rate Structure (issued April 28, 1981).

[7] Case 06-W-0131, supra and Case 06-W-0255, supra, Exhibit 49, County of Rockland Direct Testimony of Dr. Daniel M. Miller (Testimony).

water through a combination of over-pumping some of its wells, which introduced entrained air[8] into the distribution system, and requesting mandatory or voluntary water conservation measures. In 2005, the Rockland County Department of Health (RCDOH) received a barrage of complaints from residents relating to entrained air. The entrainment problems became so severe that water mains became air-locked in some areas compromising fire-fighting capabilities and resulting in no water service for at least ten homes (Testimony, p. 16). In essence, according to Dr. Miller, UWNY depended upon the availability of mandatory water use restrictions,[9] instead of developing adequate peak supply capacity. He maintained that, based upon 2005 demand and sustainable capacity, a similar, but less immediate problem, existed for average annual demand.

In the 2006 and 2009 Rate Proceedings, Dr. Miller provided a linear regression of historical data to identify the trend in average day demand and in peak demands, extrapolated to project the most probable average day and peak demands in future years, with application of a statistical evaluation defining the likelihood that future demands will fall between a high and low limit for any given year (confidence levels). He concluded that the 2009 projections were slightly lower than the 2006 estimates, caused primarily by anomalously low 2009 demands due

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[8] Entrained air occurs when the pumping rate exceeds the available water supply and air is pulled into the distributions system and can interfere with the flow of water through the system.

[9] The RCDOH mandatory water conservation regulations establish five stages of water emergency and water use restriction, ranging from Stage I, Drought Watch, to Stage V, Severe Drought Emergency (Rockland County Sanitary Code Article V). During most of the drought years, RDCOH remained in observation mode; it instituted mandatory restrictions during the drought years 1995, 1999, and 2002.

to abundant rainfall during the summer months. Dr. Miller therein expressed his concern about UWNY's failure to aggressively pursue some of its short- and medium-term water supply projects to satisfy supply commitments beyond 2009 and develop options to provide safe and adequate service, given uncertainty regarding regulatory approvals.

Commission Orders

In its 2006 Rate Order, based in part upon Dr. Miller's testimony, the Commission issued an Order adopting the terms of a Joint Proposal authorizing UWNY to develop additional near and long-term sources of supply. For development of a short- and medium-term supply, the Order directed the Company to increase its annual average daily supply to a total 34.5 mgd (an additional 1.5 mgd) and its total three-day sustainable peak supply to 52.6 mgd (an additional 7.1 mgd) by December 31, 2015. The Order also directed UWNY to submit a proposal for a long term supply and complete construction in time for a December 31, 2015 in-service date.

On October 1, 2008, UWNY filed an application for DEC water permits and a Draft Environmental Impact Statement (DEIS) for its proposed long-term supply project with DEC. On June 1, 2009, the DEC issued the final scoping document for the proposed desalination plant. On January 12, 2012, DEC declared the DEIS complete and adequate and, in March 2012, held two public statement hearings on the proposal.

In 2010,[10] the Commission adopted the terms of a Joint Proposal, which continued several milestone commitments associated with a the company's proposed new long-term water

[10] Case 09-W-0731, United Water New York, Inc. - Rates, Order Adopting Joint Proposal as Modified and Establishing a Three-Year Rate Plan (issued July 20, 2010) (2010 Rate Order).

supply project, specifically, the May 31, 2013 date for beginning construction and the December 31, 2015 in-service date. The Commission also acknowledged the pending DEC permit application and stated that DEC's review will result in a final determination on the compatibility of the desalination plant with the environment and whether it is the best choice among available alternatives. Thus, the Commission determined that it was not necessary to conduct another examination into the matter and noted that the rate plan it approved is neutral as to the selection of the proposed desalination plant as the appropriate means to meet the projected need. In the 2009 rate proceeding, environmental organizations, citizens, and elected state and local officials expressed concerns about need for the Project and its costs, and suggested alternatives.

In December 2012, UWNY submitted a draft Final Environmental Impact Statement (FEIS) and permit applications to the DEC. UWNY cannot begin construction until DEC approves the FEIS and issues water permits. While DEC worked on the approval of a FEIS, opponents petitioned the Commission to reconsider its 2006 determination of need, given the passage of time, decline in water demand, changed circumstances,[11] and suggestions for alternative methods of controlling demand or obtaining supply.

COMMISSION RULES

A waterworks corporation is required to provide safe and adequate service (PSL §89-b(1)) consistent with procedures established in Commission regulations (16 NYCRR Part 503). That

[11] Since 2007, Rockland County participated in the national economic recession and also experienced higher than normal precipitation consequently there has been a reduced demand for water. Opponents of the Project argue that new circumstances justify postponement of the need for the Project.

section requires compliance with the Ten-State Standards (Standards).[12] The Standards require that potable water suppliers with surface sources meet the maximum projected water demand of the service area as shown by calculations based on a one in fifty year drought, or the extreme drought of record, including consideration of multiple year droughts, and provision of a reasonable surplus for anticipated growth, compensation for losses, such as, silting, evaporation, and seepage. Similarly, the Standards require that groundwater sources must equal or exceed the design maximum day demand with the largest producing well out of service. Collectively the combination of the resulting surface and groundwater source capacities are known as the "safe yield", which represents the quantity of water that can be reasonably counted on during periods of stress.

Commission regulations (16 NYCRR §503.4) require water companies with surface supplies to maintain a regularly updated projection of future demand that takes into consideration forecasted growth or decline in both the number of customers and in system usage for at least a ten-year period into the future. When a projection shows that demand will outstrip supply, the utility must act to control future demand, and, where necessary, secure additional supply.

Commission regulations (16 NYCRR §503.8) also require water utilities to maintain records of their annual rate of nonrevenue producing water(NRW), which is the difference between the amount of potable water produced by a utility and the amount of water charged to ratepayers. Sources of NRW include: authorized unmetered water use (fire fighting, system flushing);

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[12] Recommended Standards for Water Works (2012 Edition), Great Lakes - Upper Mississippi River Board of State and Provincial Public Health and Environmental Managers, Part 3.1.1 (a)&(b) and Part 3.2.1.1.

unauthorized use that is under-reported (defective metering and theft); and, physical losses through leaks. New York State regulated private water utilities are required to notify the Commission if annual NRW exceeds 18% of production, explain the specific steps taken to reduce nonrevenue producing water to acceptable levels, and, describe significant events affecting the NRW level.

PUBLIC NOTICE

The Secretary to the Commission issued a notice announcing public statement hearings scheduled for September 9 and 10, 2013; and, upon request and over UWNY's opposition, rescheduled the hearings to October 1 and 2, 2013. The Secretary initially set the deadline for comments on October 18, 2013; and, upon request and over UWNY's objection, extended the deadline to November 8, 2013. After UWNY filed comments responding to arguments put forth by opponents at the public statement hearings, upon several parties' request for an opportunity to respond and over UWNY's objection, the Secretary extended the deadline to January 8, 2014 to allow time for additional comments.

COMMENTS

Comments Supporting a Finding of Need

One Rockland County legislator, six elected municipal officials, eight labor organizations and 11 business organizations and representatives claiming representation of 310,000 members, and eight UWNY employees commented in support of a need finding and the Project. Approximately 160 members of the public filed comments, including form letters, supporting

the Project. A summary of the comments in support is provided in Appendix A, Part II.

The State of New Jersey Department of Environmental Protection (NJDEP) Division of Water Supply and Geoscience responded to comments relating to the amount of water (passing flow) allocated to New Jersey under the Lake DeForest water permit.

Comments Opposing a Finding of Need

RWC, an alliance of environmental and civic groups in Rockland County and the Hudson Valley, was formed to oppose the construction of a desalination plant on the Hudson River and to advocate for sustainable water management policies, including conservation. RWC contracted with several consultants and advisors to prepare analyses submitted in this proceeding: Albert F. Appleton,[13] former Commissioner of the New York City Department of Environmental Protection (NYCDEP); Dr. Charles F. McLane III, Ph.D. hydrologist (McLane Environmental LLC); Robert Kecskes, a consultant and former Section Chief of the New Jersey NJDEP; and, Pace Environmental Litigation Clinic, Inc. Other parties filing comments opposing a finding of need and construction of the Project include numerous environmental and other organizations, including RWC member organizations, and 17 state, county, and local elected officials. The RWC conducted a well-orchestrated grassroots campaign resulting in submission of emails and letters, including form letters, in opposition to the Project by approximately 550 individuals. Three petitions were filed in opposition to the Project: a petition with 24,000 signatures submitted by Citizens Campaign for the Environment, a

[13] Mr. Appleton prepared a report (Appleton Report) analyzing possible alternatives to the Project. The report forms the basis for many of the arguments of Project opponents.

petition with 254 signatures submitted by Hudson River Sloop Clearwater, and a petition of 23 signatures submitted by the United Women of Haverstraw. The New York State Department of State Utility Intervention Unit filed comments in opposition. A summary of the comments in opposition is provided in Appendix A, Part III.

COMMENTS AND DISCUSSION

The major issue raised in the comments pertains to the effect of recent decreases in demand on the immediate need and timing of the project and the requirement for a major additional water supply to accommodate economic development. Second, disagreement exists over the ability of Rockland County to better manage its response to drought conditions, instead of, as the company proposes, obtaining protection against scarcity of water arising from droughts through construction of a drought-resistant desalination plant.

The parties suggest a variety of demand-side and supply-side options and combinations thereof to further depress demand and delay or avoid development of a new water supply source. The demand-side options include more aggressive conservation measures implemented by both UWNY and Rockland County. The supply-side options include a more comprehensive leak repair program and expanded infrastructure improvement plan, although no details were provided on the contemplated improvements; revisions to the Lake DeForest water permit to reduce the amount of water supplied to New Jersey; and, more development and expanded use of groundwater sources, referencing two United States Geological Survey reports[14] analyzing Rockland County's groundwater supplies.

[14] United States of the Interior, United States Geological Survey, Scientific Investigations Reports 2010-5245, and 2010-5250).

NEED PROJECTIONS

UWNY: The 2006 water demand forecast predicted that average annual water demand would reach 34.3 mgd by 2015, and UWNY's 2010 updated forecasts using population data and per capita consumption, a different but acceptable methodology, validated the 2006 conclusions. UWNY did not incorporate the subsequent six years of more recent actual average annual demand data in its update of the 2006 projections. In its Supplement, UWNY reiterated its 2006 conclusions and states that average water demand is expected to reach its available 34.5 mgd capacity by the end of 2015; UWNY's Rizzi Letter asserts that Dr. Miller predicted in October 2013 a need for the Project by 2016 or 2017.

UWNY maintains that water demand historically fluctuates over short periods of time due to economic conditions and weather patterns; and it is therefore, prudent to use many years of consumption data for planning, instead of a snapshot of periods reflecting higher or lower demand. The company asserts that recent temporary reductions in average demand will abate with resumption of typical economic expansion, and, thus, should not be the sole consideration for long-range planning projections. UWNY refers to a statement by Dr. Daniel Miller that: "Reliance solely upon recent data could result in flawed planning decisions."[15]

UWNY ascribes the recent downturn in demand to impacts of the economic recession and unusually wet weather, arguing that full consideration of all factors, including population increases, economic growth trends, and natural weather variations, still demonstrate need by 2016. The company states that it has an obligation to provide water service to an

[15] Attachment to Rizzi Letter.

applicant within five business days after receipt of an application (16 NYCRR §14.3) and that, given recent economic development projections in Rockland County, it may be unable to meet this commitment by 2015 (average demand) or 2018 (peak demand) without a major new water supply source.

Comments: The comments argue that UWNY uses outdated data and prediction models, because although Rockland's population increased, a 10% reduction in average annual water demand since 2007 has resulted in a recent average annual demand that is 5 mgd less than the company's 2006 projections for 2013. The comments explain that the statistical trend method used by UWNY for its 2006 estimates results in a moving target projection for the estimated time that demand will exceed supply, depending on the most recent demand data used. Projections incorporating recent lower average annual demands would predict no need for the Project until 2021. Historic 1980s county economic growth, water use patterns (rapid suburbanization of the rural landscape with single family homes), and population growth (doubled between 1960 and 1990) are unlikely to occur at the same rate in the future, due to slower and better managed growth, and limited amount of remaining undeveloped land. The better starting point for projections, the comments argue, is the 1990s, which according to their estimates result in a projection of average demand to exceed existing supply by 2037.

The comments also challenge UWNY's assumptions relating to future economic growth, claiming that, to return to UWNY's projected trend and to meet and surpass its 34.5 mgd supply by 2016, the economy would need to perform at an unreasonably vigorous pace and increase demand by about 5 mgd, which they say will not occur. The comments concede that the economy may continue to gradually improve, but question the

likelihood of booming economic conditions happening within the short time span of a few years. The comments point to the considerable evidence that water use is steadily declining across the U.S. as population increases, as a likely explanation of declining demand in Rockland. In summary, many of Rockland County's legislative and elected officials, charged with providing leadership on the County's economic growth, are strongly opposed to UWNY's proposed project and request time to put into effect a plan for reducing water demand and managing economic development.

Rockland County, in its 2011 Comprehensive County Planning Report, surmises that the downward trend in demand may be attributed to the recent economic downturn and recent wet summers resulting in less demand for irrigation; it states that, if projected water demand for new development exceeds available capacity the RCDOH would need to deny applications (Public Health Law Article 11, Title 2), potentially resulting in negative impacts on its economy and lifestyle of its residents.[16]

Discussion

As depicted in Appendix C, the actual average annual demands on UWNY's water system for the years 2005 to 2013 are: 28.38 mgd (2013); 28.28 mgd (2012); 29.1 (2011); 29.5 (2010): 28.6 (2009); 29.9 (2008); 31.4 (2007); 30.9 (2006); and, 31.1 (2005). Clearly, these demands differ from the predictions of Dr. Miller's 2009 linear projections, which projected an annual

[16] The low maximum day demand in 2009 resulted from anomalously abundant rainfall (Rockland Tomorrow: Rockland County (Comprehensive Plan), adopted March 1, 2011, pp. 267 and 275).

average demand of approximately 31.1 mgd in 2010 and 33 mgd in 2015.[17]

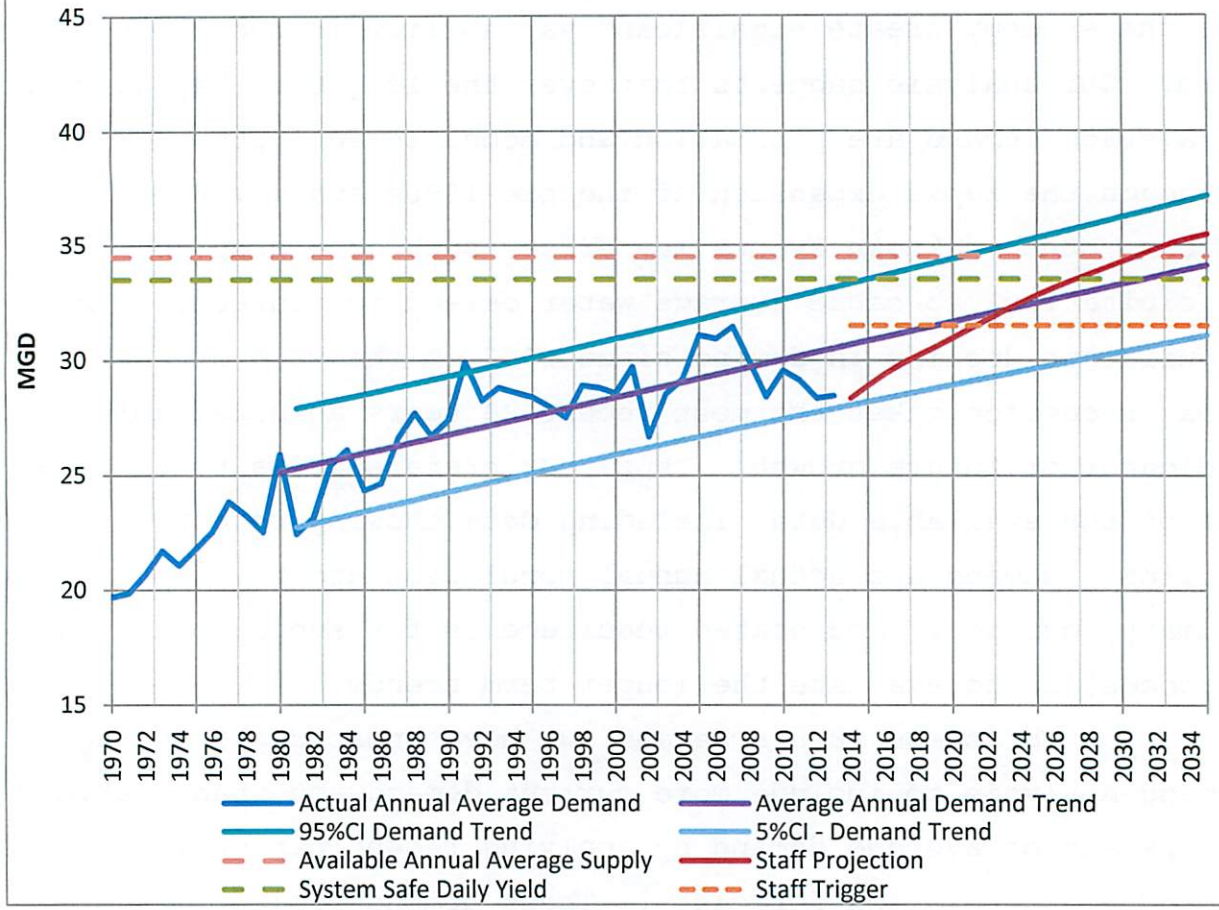
Staff believes it is reasonable to incorporate the complete range of historical data, including recent years of reduced water demand and the data from the period of historic growth, rather than exclude any specific portions of known historical information. Projections of near term water demands are, by necessity, best estimates of future occurrences that are difficult to predict with certainty as the influence of weather and the economy create significant variability in the short term. Our analysis suggests that over the long term key drivers of average demand are population and economic activity. Although the rapid expansion of the pre-1990s era may not return, other unknown events may arise, such as a drop in precipitation, to cause average water demand to increase. The significant decline in demand since 2007 in the wake of the great recession makes the most recent 20 years an unreliable indicator of future growth. Thus, our preference is to consider all of the available data, including data showing recent declining demand and actual annual population growth. In summary, our goal, and stated requirements for supply planning purposes, is to evaluate the longer term trends.

To assess future demand, we have updated the Average Demand Analysis to include more current demand and then overlaid a forecast of average demand by applying recent per capita demand and population forecasts. These demand projections are

[17] Case 09-W-0731, supra, County of Rockland Direct Testimony of Dr. Daniel M. Miller, p. 9.

then compared to the "safe yield" supply.[18] Based on our updated analysis, the longer term trend indicates a rising demand that places significant upward pressure on the need for an additional supply need date of approximately 2020 (See Chart below and Appendix C).

Figure 1:
Actual and Projected UWNY Annual Average Water Demand



[18] While the supply commitments indicated on the graph reflect the planning concept of "safe yield," which is the supply available during critically dry periods, we are concerned that silt build up in Lake DeForest, which provides roughly 33% of UWNY's water supply, may restrain its safe yield during any future extended dry periods.

Given the actual increased population, and projected commercial development, it would appear that the recent economic recession, and wetter than normal weather[19] most likely caused the majority of the recent downward shift in demand, as noted in the Comprehensive County Plan. Although the recent economic downturn apparently contributed to the drop in water demand and UWNY's claims of economic rebound may prove prescient, it is reasonable to assume that growth would occur on an incremental basis.

Given the significant decline in water demand since 2007 and the resulting delay in the need date projections, which we now project to be 2020, Staff recommends that UWNY be directed to file quarterly reports beginning October 1, 2014 providing regular updates of actual average and peak monthly demand/consumption and projections of future demand, consistent with our regulatory requirements (16 NYCRR §503.4). Staff further recommends that the Commission eliminate the requirement for construction of a major new long-term water supply source to be available by December, 2015. However, because we forecast that UWNY is facing an additional supply need and could experience a resumption of increases in demand due to population growth and post-recession resurgent economic activity, and given the time required to obtain a permit, we also recommend that UWNY should continue to pursue the necessary DEC water permits for the Project, subject to the condition that construction does

[19] The timing of precipitation during the year is important because precipitation during the spring may produce reservoir overflow if the reservoir is at capacity. Further the lack of precipitation during the summer tends to increase demand.

not begin until water demand surpasses a specific measure,[20] and/or the Commission confirms the need for beginning its construction. In this way, UWNY would be poised to respond to evolving demand trends and avoid the need to reapply for a DEC water permit and the considerable expense required to proceed through the permitting process.

PEAK DEMAND CONSERVATION

UWNY: UWNY states that the most recent population information and while near term peak supplies are adequate the overall average water demand data conclude that the long term trend for average water demand in Rockland County is increasing; and that, a new water supply project is required to meet longer term needs.

Comments: The Appleton Report recommends that Rockland County establish a task force to consider issues relating to the Project including the reduction of "wasteful" consumer water use with a primary focus on summer lawn watering which drives summer peak demand. The comments propose that reduction of non-essential consumer demand through restrictions

[20] Staff recommends average daily demand exceeding 31.5 mgd for a 12-month period. This will show that actual demand is reaching the point that new supply is needed while allowing time for the Project to be completed. With a two year construction period, we recognize that if demand growth occurs in a manner consistent with Staff's Alternative Demand Forecast (Appendix C), the reserve between demand and "safe yield" could become uncomfortably narrow and vulnerable to short term events like drought. This risk would have to be managed with aggressive drought restriction measures and other short term conservation measures. Staff recommends this course of action in order to allow trends to materialize and to allow time to explore and implement conservation alternatives.

on lawn watering and rate design changes during peak summer demand would eliminate or postpone need for the Project.

Discussion: The Commission's 2006 Rate Order determined that an immediate problem exists with respect to satisfying peak demand; and a less immediate problem existed with respect to meeting average demand.[21] The Company's past success in curbing non-essential summer usage through summer/winter differential rates, indicates that use of additional effective rate incentives may further suppress demand during summer peak use. We agree that conservation efforts to reduce usage, especially discretionary usage, during peak demand periods could provide value for general conservation purposes and play a significant role during droughts. We do not, however, expect that conservation measures that are within the company's control will, in and of themselves, be able to resolve a material future shortfall in average supply or eliminate the need for an additional long-term water supply source given expectations for the resumption of growth in population and associated overall average annual demand as the economy continues its recovery. That said, calculating the average annual demand as used in UWNY's projections should consider any sustained reductions of peak usage achieved via direct conservation efforts or better public education which could also, over time, reduce the average usage numbers. Similarly, any additional efforts by the County to introduce conservation measures relating to peak demand could also affect projections as to the timing of the need for a new water supply source.

[21] 2006 Rate Order, p 25.

DROUGHT CONDITIONS

UWNY: In addition to its projections of increased demand, UWNY supports the need for the Project as the appropriate strategy to protect its customers against deprivations of water supply occurring during drought conditions. One of the primary reasons that UWNY chose the proposed desalination plant as its preferred solution is the fact that, unlike its current surface and groundwater sources, the use of the Hudson River as its source makes it effectively drought resistant.

Comments: The Comments would accept droughts and rely on better management of water use through the restrictions, which have been imposed in the past. They state that Rockland County is forming a task force to take a two-phase approach involving implementation within one year of demand-side alternatives and development of a comprehensive long-term demand-side plan within three years. Mr. Krecskes asserts that drought is not a compelling need for an expensive desalination plant; claiming that droughts are a natural phase of the hydrologic cycle; and, a RCDOH drought management plan should make Rockland County's ability to withstand, and manage, droughts possible.

Discussion: Drought conditions affect the UWNY system in two basic ways. One is its impact on demand. Short term cycles of wet and dry periods produce short term swings in demand. Thus the forward looking projections address this variability through the confidence intervals which ensures supply is adequate to account for these swings in demand. The other impact relates to how much "safe yield" can be counted on when the system is stressed by dry periods. This is discussed further below. Drought conditions clearly factor into any need planning analysis, particularly in a situation such as this

where current supplies are so local rainfall dependent. And while drought management can reduce consumption, drought conditions themselves are not the cause of UWNY's need for a new long-term supply.

The "safe yield" standard applicable to planning for additional water supplies is the requirement for a sufficient quantity of water from all surface supply sources based on a one in 50 year drought, or the extreme drought of record, including consideration of multiple year droughts, and for groundwater sources include the contingency that the single largest ground water source is not available (Standards). UWNY's supply sources are directly dependent upon surface water supplies being adequately replenished on a regular annual cycle via local average annual rainfall. The Lake DeForest Reservoir (10 mgd average annual supply and safe daily yield), Ramapo Valley Well Field (RVWF) (7.0 mgd on average),[22] and, Letchworth Reservoir (1.0 mgd on average), comprising approximately 18 mgd, or 53%, of UWNY's 34 mgd of average annual supply, are directly dependent on local rainfall. The balance of the 16.0 mgd supply is from system wells, which are also reliant, though indirectly, on rainfall. All of Rockland County's water supplies come from the same geographic area, and are simultaneously affected by drought conditions; groundwater levels and aquifer recharge rates are also adversely affected by drought conditions, which diminish the robustness of groundwater resources.

Notwithstanding the USGS reports conclusions that annual aquifer recharge rates are adequate it also highlights

[22] The RVWF capacity is directly related to flows in the Ramapo River: ten RVWF shallow wells in the RVWF draw groundwater from the Ramapo Aquifer, which is hydraulically connected to the surface water flows in the Ramapo River. If Ramapo River flows are lower due to reduced summer precipitation, the RVWF is not as productive and/or subject to shut down.

the fact that recent local population and economic activities have increased the amounts of impermeable surface areas within the County. This does in fact limit the ability of the local aquifers to recharge on a short term basis, as much of the local precipitation is now collected as storm water runoff and directed to waste water treatment facilities or otherwise flowed directly to the Hudson River.

According to the County's Comprehensive Plan, long-term precipitation records indicate that the Northeast experiences a short-term drought (drought with duration of one to three months) once every two or three years and long-term droughts (droughts longer than three months) once every 20 to 30 years (p. 275).

Locally, very dry periods, loosely defined as annual rainfalls that are 30% below average, are not abnormal for Rockland County and cause a direct and material impact on available supply. This data is representative of all of the UWNY's surface supply source conditions because, when Lake DeForest experiences a drought year, the other surface supplies (RVWF and Letchworth Reservoir) are also severely curtailed. Collectively, the nine periods of 30% less than normal local rainfall that have occurred during the past almost 60 years of Lake DeForest's existence, signal a considerable risk of similar future local precipitation shortfalls in Rockland County.[23] This is particularly true as Rockland County's population continues to increase and the associated demand requirements substantially increased since the early 1970s, even if not at the pace experienced in the early 1990s.

[23] The relationship between annual precipitation and Lake DeForest storage levels is depicted in the chart in Appendix D.

Article V of the Rockland County Sanitary Code establishes five stages of water use restrictions during an emergency. The first stage imposes minimal restrictions on water use (restaurants would only provide water upon request, non-agricultural irrigation limited to alternating evenings). Restrictions increase until, in the final stage, severe restrictions or bans would be placed on most domestic and commercial uses of water (golf courses, car washing, steam cleaning of buildings), with residential water usage restricted to 50 gallons per resident per day or approximately 77% of average winter use.[24]

Many Rockland County elected officials state that they are willing to manage droughts and its task force will implement a drought management plan. The significant opposition to the Project, the apparent willingness of Rockland County and its elected officials to accept risks associated with drought conditions, and the significant costs of the Project does not change our planning requirements. As such, UWNY must plan using the "safe yield" supply during a drought of record in order to ensure an adequate water supply is available at all times. With the additional time that is now projected to be available before the additional supply need date, Staff recommends that UWNY should develop and file by December 1, 2014, additional rate design proposals that could potentially be implemented to further influence and constrain demand and promote greater conservation efforts (e.g., increase in residential and commercial tail blocks or an increase in the summer differential). Staff also urges Rockland County to develop and implement a comprehensive water conservation and water use

[24] Testimony, p. 22. See footnote 6, infra, for historic application of use restrictions in Rockland County.

management plan. Together these efforts may further extend the period in which average demand is able to remain below the threshold that would trigger the start of construction or delay the date the threshold is reached.

AGGRESSIVE CONSERVATION MEASURES

UWNY: The company's forecast assumed very modest going forward additional water conservation improvements because, at 60 gallons per day per capita (GPDPC) it reasoned that, the per capita water consumption in Rockland County is relatively low , and, thus, there are limited additional opportunities for incremental demand reductions. The company points to its successful conservation programs that have been implemented over the past three decades, which significantly reduced demand from close to 90 GPDPC in the early 1980s to the current 60 GPDPC. The Company's conservation programs include summer-winter rates, distribution of water conservation/ restriction devices, and conservation education and outreach efforts regarding its enviro-transpiration (ET) and lawn watering tips. UWNY states that further more aggressive utility directed conservation measures, without concomitant significant legislative mandates regarding development and use restrictions, would not result in savings large enough to obviate the need for the Project.

UWNY states that making speculative assumptions about additional future water conservation would not represent prudent planning or be consistent with its obligation to provide water for important public uses. It notes that it currently has no authority to enforce use restrictions; and, so far, Rockland County has not established any requirements for conservation or documented their effectiveness. It notes that the 2006 water demand forecast indicates a 39 mgd average water demand by the

year 2035; the expected available water supply will be 34.5 mgd by year end 2015, if no long-term water project is implemented; any conservation program would need to eliminate with certainty at least 5.0 mgd of water demand from the projected demand, and still maintain a reasonable margin of safety to account for the potential loss of the single largest groundwater source, a difficult-to-achieve conservation objective.

UWNY performed a comparative assessment of 17 other water systems to identify any additional conservation measures that it could put in place. It concluded that there are no readily identifiable conservation measures that are not currently employed that would reduce the need for the Project. The identified additional measures were rejected because their incorporation (rebates, ICI program, turf buy-back program) would not result in a material effect on water conservation in its system, are limited in applicability (summer watering restrictions), or would require municipal ordinances, which are beyond the company's control to implement, or enforce. The Company maintains that its current conservation measures, together with changes in federal and New York State laws have been influential in reducing overall water use patterns in its service area, that its customers are prudent about outdoor water use, and its current per capita 60 gpd residential water demand is relatively low.

COMMENTS: The reports by RWC's consultants and other comments consistently urge the continued and enhanced use of water conservation measures to reduce or delay need for the Project, and state that, in combination with other actions, would avoid need altogether. The comments claim that UWNY has not exhausted an array of conservation measures that could save significant quantities of water and postpone need for the Project, that the Company does not aggressively pursue

conservation efforts, and, as a result, except for its summer-winter rate, its conservation efforts result in little success. Specific criticism is leveled against its outreach and education program, claiming that the most prominent feature of its outreach is self-serving, involving promotion of its desalination plant proposal. Stuart Braman states that his studies indicate significant potential for conservation measures to reduce demand. Acknowledging that UWNY cannot pass ordinances or laws, he contends that it can, with Commission approval, take other actions, including modification of its pricing structure relating to discretionary water use[25] and non-residential prices, rebates for high efficiency fixtures, and water audits. He notes that, in the 1980s and 1990s, UWNY employed conservation measures to successfully postpone the need for construction of the Ambrey Pond Reservoir. The McLane Report concludes that conservation measures will allow the County to avoid construction of the Project.

UIU points out that the Project's cost would result in at least a 20% increase in customer bills; and, other commentators, including Assemblywoman Ellen C. Jaffee, describe the plant as excessive, and when viewed from the perspective of the ratepayer, the Project would mean a significant increase in rates; and, it is necessary to balance the tradeoffs between the need to hold rates down against future demand for water.

Discussion: The 2006 Rate Order established a need for a project that would increase the Company's overall average day water supply, in order to address a projected increase in annual average demand. Utility driven conservation measures,

[25] Mr. Appleton proposes that UWNY implement a conservation rate system that targets discretionary use through an ascending block ground rate, to avoid penalizing customers for essential water use. See footnote 6, infra, for prior history.

with additional and properly directed educational efforts may continue to incrementally mitigate average annual demand growth and thereby further delay the timing of need for the Project. Without dramatic local conservation ordinances, however, such efforts do not appear likely to be able to offset a sufficient amount of average annual water demand necessary to satisfy eventual future demand increases.

It is possible that UWNY could implement an aggressive conservation program to at least delay, but not necessarily avoid, reaching the average daily demand triggering the Project's need. The commentators point out, that the Company conservation programs are not very aggressive, and, that even though the company reports low per capita consumption rates, a more active conservation program may improve these rates. Staff agrees that additional water conservation may further mitigate overall increases in water demand, so as to further postpone the Project's need, and recommend UWNY develop a plan for additional conservation measures consistent with the Commission's requirements (16 NYCRR §503.4). That said, we reiterate our belief that conservation efforts by the utility alone will not be enough to eliminate the requirement for additional supply long term.

We recognize that the addition of a new water supply will create significant upward pressure on rates. The total estimated proposed desalinization project cost, with AFUDC, to be recovered will be approximately $190 million, for all 3 phases capable of providing 7.5 mgd. The project's initial 2.5 mgd supply increment is currently estimated to cost approximately $130, and by itself will result in bill increases of approximately 25% or $220 for an average residential customer. This is a significant increase and some comments claim this increase will cause a reduction in demand. As a

rough gauge of near term customer consumption price elasticity in the face of significant infrastructure additions, Appendix E depicts the average annual consumption for the years preceding and after the in-service date of the Delaware Interconnection project. This single project constructed by United Water New Rochelle, Inc., in Westchester County in 2007, at approximately $70 million, similarly increased the UWNR rate base by approximately 79% and impacted customer bills by almost 36%. The average annual consumption data pattern virtually mirrors that of the UWNY service area especially subsequent to the 2007 peak and the start of the recent economic recession. This comparison suggests no readily apparent material lessening in demand due to this significant capital addition and its associated cost recovery bill impact, suggesting that there may be little price elasticity for the nondiscretionary use of potable water.

REPAIR OF INFRASTRUCTURE LEAKS/NON-REVENUE WATER (NRW)

UWNY: UWNY explains that its NRW, ranging between 16.1 and 24% and averaging 19% of water production from 2000-2010,[26] is not evidence of a poorly maintained system that requires exhaustive repair over and above its current distribution system rehabilitation programs. NRW includes three broad categories: unbilled authorized consumption required for the system's operation and fire fighting; consumption that is unauthorized or metered inaccurately due to tampering; and, real losses resulting from system leakage, including water main

[26] UWNY reports the percentage of its NRW water production as follows: 19.08% in 2008; 22.62% in 2009; 19.72% in 2010; 23.28% in 2011; 20.72% in 2012, and an estimated 19.88% in 2013 Case 13-W-0295, United Water New York, Inc. - Rates, Interrogatory/Document Request, Town of Ramapo Comments, dated January 8, 2014.

breaks. UWNY states that it has several ongoing programs to identify and repair system leaks, including replacement of some of the system's water mains each year; and spends an average of $5.5 million in related annual investment as approved by the Commission in its 2006 and 2010 Rate Orders. The company notes that real losses in its water system are approximately 17% and are in line with other well-run water distribution systems; noting that all water systems have some leakage, which is unavoidable, no matter how aggressive their maintenance programs.

It states that, although a reduction in NRW could result in a reduction of apparent losses; doing so does not reduce future demand and, instead, all else being equal increases metered consumption, so that, NRW reductions would not negate the need for the Project. UWNY conducted an evaluation for the DEIS of an alternative that would annually replace 10%, rather than 1%, of the water main system each year on the unsubstantiated premise that older mains are the primary source of leaks. It determined that this alternative is would be very disruptive and costly; as the replacement of its 1,000 miles of water mains would cost an estimated $1.3 billion and in the end most likely result in only incremental improvements to main related NRW losses.

Comments: The Appleton Report concludes that significant gains in available water could be realized through the repair of UWNY's distribution system. The report claims, based on the Project's DEIS,[27] that UWNY incurs a 17% loss of water due to leaking mains, and that a concerted repair effort

[27] The DEIS assumes that UWNY could reduce NRW (real losses and apparent losses) by about 13% of total production from the 2009 value of 17.2% (DEIS p. 18-A-10); most of the reduction may occur due to reduction of apparent losses.

could reduce the loss to 10% over 5 years and provide for an additional 1.5 mgd of water. Other comments argue that repairing leaks in the water system is an alternative that would avoid the need for the Project, claiming that reports indicate that United Water New Jersey, Inc., UWNY's immediate parent, lost 26% of its treated water to leaking infrastructure in 2011 and professional organizations use 20% as the acceptable industry standard for leakage in a water system. They assert that "restoring" the lost water would allow retention of more water for Rockland County and complain about the lack of Company maintenance resulting in high leak percentages and water losses.

Discussion: The comments proposing NRW reduction through repair of leaks in the Company's water system misunderstand the percentages of lost water attributable to water system leaks and overestimate the opportunities for water use reduction through repairs. The percentages stated by the opponents range from 17% to 26% of lost water due to leakage. In reality, as the Company points out, these NRW percentages represent the difference between quantity of water produced and metered quantity of water used; as such they include unbilled authorized consumption, apparent losses from water theft and inherent metering inaccuracies (not necessarily with the meters themselves but with the timing of the measurements of system inflows vs. outflows), and physical losses due to leakage from transmission and distribution mains, storage facilities, or service connections. Reduction of apparent losses, as UWNY notes, would not result in water conservation, because the water is used, although it is not metered or billed. A relatively smaller percentage than assumed in the comments relates to physical losses, or leakage, specifically 11.23%; and, of that, the Company states, 9.32%, according to American Water Works Association, represents unavoidable real losses, leaving 1.91%

of net real losses that could be eliminated by direct utility actions if every leak were addressed although because most leaks are in fact underground they are effectively unknown to the utility.

The following table[28] summarizes the 2012 NRW, most recent data available, into the components and sub-components.

Category	Volume (MG)	NRW %
1. Total Production	10,348.9	
2. Water Exported	41.5	
3. Water Supplied	10,307.3	
4. Billed Consumption	8,192.3	
5. Non-Revenue Water	2,115.	20.52%
5.1 Unbilled Authorized Use	158.4	1.54%
5.1.1 Company Unmetered (1)	8.	0.08%
5.1.2 Company Metered (2)	21.6	0.21%
5.1.3 Public Unmetered (3)	128.8	1.25%
5.2 Apparent Losses	799.1	7.75%
5.2.1 Unauthorized Consumption (4)	497.	4.82%
5.2.2 Customer Metering Inaccuracies (5)	222.1	2.15%
5.2.3 Systematic Data Handling Errors (6)	80.	0.78%
5.3 Physical (Real) Losses	1,157.6	11.23%
5.3.1 Unavoidable Real Losses (UARL) (7)	960.4	9.32%
5.3.2 Net Real Losses	197.1	1.91%

(1) Water used for finished water analyzers at treatment plants and well sites; (2) Water used for main chlorination, installation and servicing of hydrants, flow/pressure testing; (3) Water used for fire-fighting, flushing, street sweeping, frost protection; (4) Water illegally withdrawn from hydrants, illegal connections, bypasses to consumption meters, or meter reading equipment tampering; (5) Under-registration of customer meters; (6) Errors in the meter reading and billing system; (7) Lowest technically achievable annual volume of Real Losses for well-maintained and well-managed systems is known as Unavoidable Annual Real Losses (UARL), calculated based upon number of service connections, length of mains and private pipes between the street/property boundary and customer meters, and, average operating pressure.

[28] Case 13-W-0395, supra, Pre-filing Interrogatory 75.

The Company is required to repair known leaks promptly upon discovery and, under a Commission program approved in the 2006 Rate Order, carries out a main replacement program that is a critical component of physical loss management: it annually replaces approximately 4 miles, or 0.4% as part of its Underground Infrastructure Replacement Program (UIRP). Although the comments correctly conclude that benefits of reducing physical losses include the possible delay of costly capacity expansion, the argument that UWNY does not properly maintain its system, and that additional readily available opportunities exist for considerably reducing demand by means of leakage repair, is not a reasonable conclusion based on the proffered evidence. In fact, reduction of other NRW categories would increase the company's revenues until such time that rates are reset whereupon all other customers would benefit via concomitant reductions in their rates to account for the newly found source of revenue. That said, such additional revenues would not directly result in a one for one reduction of demand or lost water. In summary, the Project's opponents most likely overestimate opportunities for cost-effective reduction of leakage from physical losses, but we agree that some incremental opportunities for system improvements could be achieved through further acceleration of UWNY's infrastructure upgrade program, and which are also part of the on-going rate case review and as such are subject to public scrutiny on a cost benefit basis.

Lake DeForest Reservoir

In 1956, the Hackensack River was dammed and a retention basin was dredged, creating the Lake DeForest

Reservoir,[29] impeding and controlling the flow of the River for downstream users, and requiring settlement of riparian water rights. Riparian rights is a legal doctrine pertaining to property rights protected under the U.S. Constitution to a reasonable use of a watercourse that does not deprive or hinder other riparian users from correlative enjoyment of the resource. A condition of the Lake DeForest Reservoir DEC water supply permit issued to UWNY for the reasonable use of the River to create the reservoir (WSA 2189) allocates 10 mgd for use by UWNY to serve Rockland County and release of a minimum amount for use of the Village of Nyack (2 mgd) and the subsequent downstream reservoirs of New Jersey for drinking water and other purposes (7.5 mgd) to maintain their correlative enjoyment of the River (passing flow). In total, this arrangement maintains the riparian water rights of downstream communities and has been in effect for 60 years.

UWNY: New Jersey and its residents depend upon water released from Lake DeForest Reservoir to meet normal everyday demands and promote economic well-being. The 7.5 mgd for New Jersey was established in accordance with the U.S. Supreme Court doctrine of equitable distribution.[30] UWNY and the New Jersey Department of Environmental Protection (NJDEP) state that the New Jersey internal standard, outlined above, is inapplicable for review in this instance because it is used for each square

[29] Some comments recommend dredging the Reservoir to increase its storage capacity during a severe drought. Dredging may prolong the time period over which the Reservoir sustains operations during a severe drought by removing 60 years of accumulated silt and further by incrementally increasing the available water storage capacity but, it would not in and of itself increase safe yield as stated in the existing DEC permit application to increase available supply.

[30] New Jersey v. New York, 283 U.S. 336 (1931).

mile of un-appropriated watershed; an un-appropriated watershed is located upstream from the diversion and does not support any downstream diversions; Lake DeForest is an appropriated watershed with downstream diversions. The primary purpose of the passing flow requirement of the New Jersey bound Hackensack River, downstream of Lake DeForest, is the preservation of water flows, based on typical seasonal low flow, or flow necessary to protect downstream water rights. UWNY and the NJDEP explain that the New Jersey standard applicable to intrastate passing flow decisions is not applicable to interstate decisions and that the doctrine of equitable apportionment applies to interstate decisions.

UWNY states that opponents claim it is reasonable to reevaluate New Jersey passing flow requirements, because, in 1982, modifications were made to WSA 2189 increasing the passing flow requirement. The Company explains that this Sixth Modifying Decision revising language regarding minimum releases did not in fact increase allocation to New Jersey but established a Rule Curve[31] that dictates under what conditions additional releases from Lake DeForest (above 7.5 mgd) are authorized. It requires an average annual flow of 9.75 mgd in the stream immediately above the Village of Nyack intake works, instead of requiring a blanket release of at least 9.75 mgd. Because a four square mile drainage area exists between the dam and the gauge, some of this water contributes to the 9.75 mgd flow at Nyack, and results in an overall reduction in Lake DeForest's minimum required releases to New Jersey. Additional

[31] According to UWNY, before the Sixth Modifying Decision, the rule curve stated: "release from DeForest Reservoir shall be made to maintain a daily average flow of 9.75 mgd in the stream immediately above the intake works of the Village of Nyack" (UWNY Response, p. 29).

releases of up to 25 mgd to New Jersey are permitted, after consultation with DEC and NJDEP, when the Lake DeForest Reservoir's capacity is above the Rule Curve and downstream New Jersey reservoirs are below 50% of their capacities (accounting for all water transferred to these reservoirs from other sources).

Additionally, the NJDEP asserts that the claim by some commentators that the 1952 water supply permit states that the Lake DeForest Reservoir is operated solely for the benefit of the citizens of Rockland County is taken out of context and incorrect; the permit maintains New Jersey's riparian rights by maintaining a regulated flow. The 1952 permit (Finding of Fact No. 37) states the following:

> This Commission has 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.

The NJDEP states that the 1952 permit intends that New Jersey benefit from the cooperative operation of Lake DeForest. The permit gives due regard to the interests of the State of New Jersey in maintaining a regulated flow, in pursuance of a policy of equitable apportionment.

Comments: Albert Appleton and Robert Kecskes recommend reduction of passing flow to New Jersey to conform to the passing flow laws and regulations of New Jersey. They note that Rockland County recently requested that DEC reopen the permit to examine the potential for amendment to the permit; which if successful, may increase the subsequent Lake DeForest safe yield and consequently supply a large fraction of Rockland County's future water supply needs. It recommends that the

Commission provide ample time for Rockland County to pursue a permit amendment. Mr. Appleton states that he agrees with the RWC statement that it is possible to reduce the passing flow to 3.75 mgd to provide an additional 4 mgd to Rockland County. Robert Kecskes, in comments filed January 8, 2014, argues that New Jersey requested use of its state statute during consideration of the issuance of the water permit. He points out that WSA 2189 states that, if the minimum release from Lake DeForest is in error, the DEC, upon application of any party to the proceeding, will reopen the case in order to make a suitable adjustment. He argues that the NJDEP's inconsistent policies regarding intrastate and interstate passing flows, without full explanation of these claimed inconsistencies, makes it difficult to determine what equitable apportionment means regarding interstate waters. Many public comments support allocation of greater amounts of Lake DeForest water to Rockland County, echo the arguments put forth by Albert Appleton and Robert Kecskes, and claim the reservoir is operated for the sole benefit of Rockland County.

Discussion: While a reapportionment of the Lake DeForest outflows would undoubtedly alter the water supply picture for Rockland County, it is Staff's position that the current standard used for allocation of Lake DeForest Reservoir water is proper.

Any analysis of UWNY's permit must begin with the basic understanding that although New York can allow diversions from the reservoir, sufficient water must be allowed to flow downstream to maintain historic uses and resources. See, New Jersey v. New York, 283 U.S. 336 (1931). It is well-established that, for the purposes of dividing the waters of an interstate stream, downstream water uses and priorities must both be considered. Nebraska v. Wyoming, 295 U.S. 40, 43 (1935), *see*

also United States v. Nevada, 412 U.S. 534 (1972). This legal principle governs operation of the Lake DeForest Reservoir.

Based upon the characteristics of its watershed and reservoir volume, Lake DeForest has a baseline calculated safe yield of 20 mgd. Under most conditions the existing permit requires that this water is distributed as follows:

- 10 mgd to UWNY for use in Rockland County;
- 2 mgd to the Village of Nyack;
- 7.75 mgd released downstream (passing flow to NJ), and
- 0.25 mgd unallocated.

When downstream storage in New Jersey is below capacity, and the reservoir is above projected storage, the present permit allows releases from Lake DeForest to be increased up to as much as 25 mgd. Conversely, when the levels in Lake DeForest are low, releases are to be lowered to 15 mgd. The procedure governing these flows is set forth in a 1983 modification to the Lake DeForest permit and is expressed in a sliding "rule curve."

In 1952, DEC's predecessor agency initially considered how to manage the Lake DeForest Reservoir. As required by the controlling legal precedents, the 1952 decision was based upon equitable considerations. The primary factors used to establish this allocation were: (i) size of the drainage basin serving the reservoir; (ii) capacity of the impoundment; and (iii) base flow in the downstream Hackensack River (defined as flow that was exceeded 80% of the time). At the time 80% was determined to be appropriate to ensure the protection of downstream users, preservation of the stream's characteristics and dilution of pollution. The passing flow necessary to satisfy these downstream requirements was calculated to be 7.75 mgd.

Neither the basin size nor the capacity of the reservoir has changed. The assumption that base flow in the Hackensack River should be the volume that was exceeded 80% of the time is based primarily upon equitable consideration. As a result, it lacks the precision of an engineering calculation. However, the basic facts and controlling legal precedents have not changed. Accordingly, we know of no reason to modify the 1952 allocation.

6 NYCRR Parts 601 and 621 establish the DEC's Uniform Procedures for unilaterally amending or revoking an existing permit. The six grounds for revoking or modifying a permit are:

(1) materially false or inaccurate statements in the application;

(2) failure by the permittee to comply with any terms or conditions of the permit;

(3) exceeding the scope of the project as described in the permit application;

(4) 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;

(5) noncompliance with previously issued permit conditions, orders of the commissioner, any provisions of the Environmental Conservation Law or regulations of the department related to the permitted activity; or

(6) for SPDES permits, in addition to paragraphs (1) through (5) above, any of the reasons listed in Part 750-1.18 (b)(1) through (7) of this Title. 6 NYCRR 621.13(a).

The DEC has the burden of proof of establishing the grounds for a revocation or unilateral modification of a permit. See, In the Matter of the Proposed Revocation of Karta Corporation, (DEC Permit No. 3-5512-00054-00004, DEC Case No. 3-5512-00054-00009.) Department Staff's understanding is that

issues and requests previously raised with the DEC have been addressed by the DEC are not newly discovered material information. Generalized objection to the passing flow amounts established in the 1952 Lake DeForest water supply permit and to the rule curve adopted in the 1982 amendment of permit fail to provide any 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.

Nor are the releases of excess amounts of water that occurred between May and October 2007 grounds to modify the permit. During that time, UWNY released excess amounts of water (i.e., beyond what the permit and rule curve would have allowed). The DEC's investigation concluded that these excess releases were due in part to faulty equipment. This issue was resolved when UWNY entered into a Consent Order and, *inter alia*, repaired the problem and held back other allowable releases. Given the nature of this violation and the fact that it was previously resolved, the incident does not appear to rise to a level sufficient to support a material change to the permit.

The fact that the present "equitable apportionment" of flow has been in place for more than 60 years represents a major barrier to any material reallocation. Moreover, regulators and water users in New York and New Jersey have been relying upon the present rule curve for more than 20 years. Accordingly, we have concluded that DEC would have a substantial burden if it were to attempt to *sua sponte* modify, amend or revoke the existing permit.

New Jersey carefully monitors how New York regulates operation of the Lake DeForest Reservoir. Indeed, the New NJDEP has provided formal comments to PSC in connection with its ongoing process. NJDEP has taken the position that the passing

flows allowed by the 1952 decision would be insufficient under present New Jersey standards. (NJDEP admits that these standards only apply to intrastate passing flows. However, the point remains that there are alternatives to the 1952 allocation.)

If the DEC were to adversely impact flow in the Hackensack River by changing UWNY's existing permit, there is a good chance New Jersey would sue. The United States Supreme Court would have original jurisdiction over such a lawsuit. Traditionally, the Court appoints a Special Master to develop the facts and propose an equitable allocation. It is impossible to predict with certainty that such a Special Master would conclude that the existing allocation is proper. Accordingly, there is a risk that litigation could result in a re-allocation less favorable to Rockland County than the current allocation.

EXCESS RELEASES FROM LAKE DEFOREST RESERVOIR

UWNY: In March 2013, the Lake DeForest water treatment plant permit was modified to allow the taking of additional raw water from the reservoir when it would not affect the storage of the reservoir and its overall safe yield. This occurs when the reservoir is overflowing or operating above the Rule Curve. The Company explains that the 2013 permit amendment allows for the treatment of more water, increasing the Lake's yield during normal to wet conditions only and does not increase the safe yield of Lake DeForest or the amount of water available for Rockland County.

Comments: Dr. McLane maintains that UWNY did not provide a comprehensive accounting of the water that enters and leaves the Lake and further states that while the safe yield of the reservoir is an important consideration during instances of a worst case drought, which he states a rare occurrence, normal

operations should not be limited to safe yield as long as a sufficient amount of water is maintained in the reservoir. Because the DOH removed the clause in the permit for water treatment limiting annual production average to 10 mgd, UWNY is allowed to withdraw greater than 10 mgd average sustainably from Lake DeForest for Rockland County's use, when available. Robert Dillon monitors the flow of water from Lake DeForest Reservoir as measured by the USGS Hackensack River station at West Nyack, New York. He states that the excess releases occur even when Lake DeForest is below 100% capacity and water is not spilling over the dam, during times of drought, and water restrictions.

Discussion: The calculation of the 19.75 mgd safe yield of Lake DeForest is determined on the basis of the drought of record. Consequently, more water is stored or discharged from the reservoir during non-drought periods in order to protect the dam's integrity or proactively in anticipation of severe weather events. Spilling over Lake DeForest dam may also occur, without UWNY's action to deliberately release excess water to New Jersey. As UWNY asserts, it is permitted to use an average 10 mgd for its customers in Rockland County, and, under its modified DOH water treatment permit, it may withdraw more than 10 mgd during normal to wet conditions as dictated by the Rule Curve. Rockland County has received the water to which it is entitled, Mr. Dillon's claims regarding excess flows to New Jersey and the change in the DOH permit do not change the amount of water available to Rockland County. While this occasional use of "excess capacity" will allow the Company's wells more opportunity to recharge, the additional water is not dependably available in times of drought.

USGS REPORTS

UWNY: The USGS reports do not indicate that the need for a long-term water supply project is reduced or eliminated. The reports state that, to date, the aquifer used by the Company for its groundwater annually replenishes prior to the next growing season, identifies concerns about its sustainability, and, overall, confirms the need for a long-term solution, identifying six options, including a desalination proposal. The need for the Project does not arise because of anticipated depletion in groundwater sources; it is needed because existing water sources are not able to provide sufficient supply to meet future demands due to projected population growth and local economic activity.

Comments: Dr. McLane states the USGS Reports conclude that groundwater levels remained stable in recent years; withdrawals are not occurring at a rate greater than estimated; the aquifer produces at a sustainable rate and may have additional yield; aquifer rebounds quickly after groundwater levels are drawn down in the summer; and, groundwater levels decline in the summer during periods of lower precipitation and recharge when precipitation returns to normal. Dr. McLane states that, in 2006, recharge estimates were constructed on RCDOH's rough estimates from a 1979 study of water resources. Dr. McLane claims that the USGS Studies show that, local aquifer recharge is substantially greater than previously estimated: RCDOH estimated that between 88-145% of recharge was withdrawn annually; the USGS recent hydro geologic analysis found that historically and in 2006, withdrawals were only about 12 to 24% of recharge in the three Rockland County watersheds.

Discussion: Staff believes that UWNY was correct in noting that the groundwater recharge rates were not the basis for the Commission's prior need determinations. Nevertheless,

UWNY should explain whether or not potential exists for further development of groundwater resources as short- and long-term measures to delay need for a major alternate supply source construction project. Accordingly, during current periods of decreased demand, Staff recommends that the Company should update its analysis of the potential for expanded use of additional groundwater resources, based upon information in USGS Reports and any other source materials.

RECOMMENDATIONS

In reviewing the case for and against the finding of continued need for a new long-term water source, Staff has not identified a compelling immediate need, but does find a long term need. While the 2006 demand projections overestimated the current water demand needs of Rockland County, the disparity was not so great that it invalidated the overall determination that additional water resources will be needed in the foreseeable future. We still expect, based on estimates of continued population growth, reasonable expectations of continued economic expansion, and offset by reasonable further mitigating conservation efforts, that a continued need still exists albeit shifted further into the future and closer to the 2020 timeframe. Likewise, the Company's insistence that current demand levels are solely the result of temporary meteorological and economic conditions does not mean that concerted efforts by Rockland County elected officials and residents cannot alter future demand projections.

Staff's recommendation is, therefore, neither a full acceptance nor rejection of the 2006 need determination. Instead, Staff proposes the Commission incorporate the more recent years of demand information now available and modify its 2006 Order accordingly. Specifically, Staff recommends that the

Commission suspend its 2015 deadline for the new water supply going online, while instructing UWNY to continue to pursue the necessary permits for construction before DEC. Construction of the Project should proceed only if specific conditions relating to demand are met, as was done with the Ambry Pond permit. This will allow the Company to act quickly should the need for a new water source become imminent but avoid the construction of a project that may not be needed if demand again fails to meet projections.

The suspension of the construction deadline will also allow opponents of the Project the opportunity to demonstrate, through their actions, the validity of their arguments. This recommended course of action provides the County and local municipalities with the time to implement promised conservation statutes that are designed to reduce demand and may delay or prevent construction of the Project. However, in the event that those measures prove ineffective, or something unforeseen occurs to increase demand, the Project can still be constructed in time to avoid devastating and prolonged water shortages in Rockland County.

Dated: May 22, 2014

STATE OF NEW YORK
DEPARTMENT OF PUBLIC SERVICE

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.

DEPARTMENT OF PUBLIC SERVICE STAFF
REPORT ON NEED

LIST OF APPENDICES

PART I

UWNY'S 2013 NEED REPORT and SUPPLEMENTS

2013 Need Report

UWNY states that, in 2006, at the Commission's direction, because of a history of documented droughts (1981, 1982, 1985 and 1999) and serious projected water shortage in Rockland County, it began planning for the development of the Project with a May 31, 2013 construction commencement date and an in-service date of year-end 2015.[1] The 2006 water demand forecasts concluded that, by 2015, the average water demand on the UWNY system would reach 34.3 mgd and the available supply will be only slightly higher at 34.5 mgd; and the peak demand will be 52.7 in 3018, approximately the same as the available peak supply in that year. The determination of need for the Project was based upon projections of water demand prepared by UWNY and the Rockland County Department of Health (RCDOH) and specifically considered development allowed under extant land use control in Rockland County and the Town of Ramapo's Comprehensive Plan and the Company's obligation to provide water upon request. The forecast did not assume any additional water conservation, because consumption is relatively low in comparison to residential water use elsewhere. UWNY states that making speculative assumptions about additional future water conservation would not represent prudent or acceptable planning with an obligation to provide water for important public uses. The Company states that the water demand forecast it prepared in 2010, updates it performed after release of the 2010 Census data, and update it prepared for its Report confirms the results of the 2006 projections: fundamental and long-term drivers of water demand, such as population increases, economic growth trends, and natural weather variations, continue to demonstrate the validity of past projections and need for the Project by 2016. It notes that the annual average water demand peaked at 31.4 mgd in 2007 and was less than that volume in recent years.

UWNY states that a number of factors likely contributed to a decline in water use, specifically a nationwide economic recession affecting Rockland County and suppressing water demand; a downturn in the pace of residential construction

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[1] An estimated 30 to 36 months is required for construction.

addition of new businesses,[2] and decline in employment. It maintains that the impacts of the economic recession are short-term and will abate; demand will return to projected levels after the expected economic recovery, including several proposed or developing high water usage projects. It maintains that water demand historically fluctuates over short periods of time due to several factors, such as economic conditions and weather patterns; prudent water supply planning necessarily encompasses many years of data; a snapshot period of higher or lower demand is unreliable. UWNY maintains that the temporary impacts of the economic recession are short term and do not drive long-range water projections. UWNY points to the number of large development projects that are proposed or under construction in Rockland County, as evidence of the County's economic recovery.[3] The Company maintains that, as the temporary slowdown of regional economic activity and reduced employment caused by the recession abates, the suppression of water demand will subside and return average and per capita water demand to previously projected levels. For these reasons, it states that the 2006 water demand forecast remains a conservative forecast for prudent water supply planning purposes.

UWNY states that its water supply system is comprised of a combination of surface water and groundwater supplies subject to specific Department of Environmental Conservation (DEC) permits for each water source that set the amount of water that can be withdrawn and Department of Health (DOH) conditions for water treatment. The Company states that the Commission's 2006 Rate Order required the Company to implement short- and intermediate- term improvements to increase supply; and, as a result of these improvements, at the end of 2015, its water system will have a total average system capacity[4] of 34.5 mgd and a peak supply capacity of 52.6 mgd. These improvements involve

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[2] Between 2003 and 2012, UWNY's water system lost five of its top ten largest water users, including Lovett Power Generating Station, and the U.S. Gypsum plant in Stony Point.

[3] Patrick Farm in the Town of Ramapo (497 residential units); Bloomberg LP Data Center in Orangetown; Martin Group Data Center in Orangeburg; Riverside in Haverstraw (106 residential units); United Structural Works, Inc. Steel Fabrication Plant Expansion in Congers (industrial); and replacement of the Tappan Zee Bridge, which will require a water supply, and increase commercial activity.

[4] For planning purposes "safe yield" is used; this figure exceeds safe yield.

development of new wells, conversion of existing test wells to production wells, and increasing capacity of existing wells. It avers that addition of new wells marginally adds water supplies and cannot satisfy the need for a larger water supply increase in the long-term. UWNY states that, if no new long-term water supply project is implemented, future capacity will remain at this level.

The Company states that, at this time, water supply remains adequate to address existing demand and little additional capacity remains for future growth. In a April 4, 2013 Report to the Rockland County Department of Health (RCDOH), UWNY concluded that it has 1.7 of available peak capacity and 0.8 mgd of available average capacity, ample amounts to meet expected growth in 2013. It is obligated, as a private company with a franchise to supply public water supply, to provide water service to an applicant within five business days after receipt of an application (16 NYCRR §14.3). It has approximately 0.5 mgd of average supply in additional commitments to serve projects approved by RCDOH and these commitments will draw from its remaining available supply; very little capacity remains for future growth. UWNY anticipates additional demands from other developments not yet approved by RCDOH. The Company asserts that, given the importance of water supply, prudent water supply planning should include a margin of error above the projected demand to ensure that adequate water is available.

Rebuttal to Opponents Arguments

UWNY provides a rebuttal to arguments in opposition to the Project, relating to USGS Studies, Rockland County Comprehensive Plan, modifications to Lake DeForest operations, and conservation.

USGS reports do not indicate that the need for a long-term water supply project is reduced or eliminated. The report states that, to date, the aquifer replenishes prior to the next growing season, identifies concerns about the acquifers sustainability, and, overall confirms the need for a long-term solution, identifying six options, including a desalination proposal. The need for the Project does not arise because of anticipated depletion in groundwater sources; it is needed because existing water sources are not able to provide sufficient supply to meet future demands due to projected population growth. The USGS February 2011 report is not helpful because it does not provide substantive analysis of surface water resources or other water supply options and did not provide a summary of overall annual recharge and amount of land

area needed to balance groundwater withdrawals from a domestic well. UWNY concludes that the value of the USGS reports are diminished as tools for planning and assessment of ability of water resources to meet projected water demands in 2015 and beyond.

The Rockland County Comprehensive Plan recommends that the County facilitate water conservation, as a means of offsetting some of the demand on water sources from population growth. It states that any conservation measures adopted to postpone or obviate the need for the Project must be effective year-round, to affect average annual demand, and would impact Rockland's economy and lifestyle of its residents. UWNY states that the Comprehensive Plan anticipates development of the Project as a long-term water supply to satisfy future water demand, due to population growth; it recommends additional conservation, but does not quantify savings or suggest that conservation obviates the need for the Project. It is unaware of any county or local legislative enactments in furtherance of the recommendations, some of which are controversial.

It is incorrect to state that discontinuance of excess releases from the Lake DeForest Reservoir would result in no need for the Project. It notes that the excess releases occurred between May 27, 2007 and September 22, 2007 due to a malfunctioning valve, and that it remedied the problem in October. It notes that NYSDOH modified the water permit for the Reservoir to allow treatment of more water during normal to wet conditions. This will not increase the Reservoir's safe yield.

Implementation of aggressive conservation measures are insufficient to eliminate the need for the Project given the vital importance of a public water supply. Projections indicate that average water demand will reach 29 mgd by 2035, in comparison to the available 34.5 mgd supply. Any conservation program would need to save 5.5 mgd of water, as well as some additional water for a margin of safety. UWNY has no authority to enforce conservation measures; it implemented a successful conservation program that has reduced water demand. It compared its programs to 17 other systems and found that it uses the majority of conservation programs identified and no clearly identifiable additional conservation measures are available.

Supplements

On November 8, 2013, Deborah Rizzi, Director, UWNY Communications, filed a letter stating that Dr. Daniel Miller recognized Rockland's need for a long-term water supply in 2006. At the end of October, 2013, in a presentation to a Rockland County business organization, Dr. Miller concluded, after a

review of data and impact of historical usage and weather patterns, that Rockland needs more capacity to meet average demand by 2016, or possibly 2017.

On November 8, 2013, UWNY filed a Supplement to its Report[5] stating its position on several issues, including: (1) projected water demand and need; (2) rebuttal of economic/price elasticity argument; (3) ability of conservation and demand-side management to delay or avoid need; (4) distinction of Brocton MA experience; and (4) availability of additional water supplies from Lake DeForest Reservoir. It concludes that no information in the proceeding contradicts the need for the Project to be in-service by the end of 2015. Demand for water in Rockland County remains projected to exceed supply in 2016.

Need Projections: Commission regulations establish a mandatory minimum ten year planning horizon; water utilities do not need to limit long-term planning to a ten-year window. A nationwide recession suppressed water demand in Rockland County since 2008, as residential housing construction, employment and development of new businesses declined. Economic recovery will return demand to typical levels. A temporary slowdown in economic development is not appropriate for consideration in long-term water projections. Dr. Daniel Miller explains that, because historical demand data vary substantially from year to year, projections of future demand must account for the variations, particularly when used for long-range planned. As Dr. Miller cautioned, "Reliance sole upon recent data could result in flawed planning decisions." As recently as a presentation on October 24, 213, Dr. Miller publicly recognized the need for a new long-term water supply. Rockland County's economy is beginning to rebound, as seen from the number of large development projects proposed and under construction. Over the long term, population and employment projections predict growth. UWNY predicted future water demand on a per capita basis, rather than a per household basis; thus, the profile of future customers likely to live in multi-family dwellings will not affect future demand. A very large shift to multi-family dwellings is needed, due to the overwhelming predominance of single-family housing in the County.

The most recent population information and water demand data confirm UWNY's 2006 and 2010 demand projections and the need for the Project to be in-service by year-end 2015.

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[5] Response by United Water New York Inc. to Issues Raised During the Public Statement Hearings.

UWNY has a legal obligation to provide a safe, dependable and adequate supply of water.

Rebuttal of Economic/Price Elasticity Argument:

Because water is a relatively inelastic commodity, it's not reasonable to expect that the anticipated water rate increase would cause water demand to decline and eliminate need for the Project. UWNY refers to an analysis of its expert, which confirms that arguments relating to price elasticity are not valid. Water is an inelastic commodity; although non-essential water use outdoors is somewhat responsive to price changes, it is very weather-sensitive. Legal requirements in the 1980s and 1990s resulted in changes in appliances and water fixtures. The relative inelasticity of water for non-essential use shifts, depending upon the affluence, environmental ethic, and social status. According to UWNY's expert, even though steady price increases occurred, base load or essential usage, representing about 89% of water demand in Rockland County, remained steady over the past ten years.

UWNY states that estimated future annual water rate increases for Phase 1 of the Project average $250 per customer, or a total annual average water bill of about $986.40. These increases fall well below an economic hardship threshold for water costs of smaller water systems. UWNY states that customers in Rockland County will be willing to absorb the anticipated water rate increases without significantly changing their water consumption behavior. UWNY believes its customers are already attentive to water conservation, meaning that less room exists for additional response to price increases. Even if UWNY's customers are sensitive to price changes, this will not negate need for the Project, because the resulting total demand will nonetheless still be large enough to require a long-term water supply project.

Conservation/Demand Side Management: The contention that aggressive water conservation measures would reduce demand to obviate need for the Project is not correct. UWNY has encouraged conservation by its customers and believes that most customers are prudent in water usage; per capita water consumption is already low; and, limited room for additional savings exists. UWNY has no authority to enforce conservation measures; over the past three decades, it implemented a successful conservation program that reduced water demand. It conducts an active and successful conservation program to educate customers and provide incentives. In 1981, New York passed a law mandating use of low-flow plumbing fixtures; and, in 1992, federal laws required even lower flow plumbing

fixtures. On a per capita basis, UWNY average total residential water use if 66 gpd (indoor use is 61.5 gpd) in comparison to an average total water use in the U.S. and Canada of 192 to 825 gpd per capita. The USEPA's Water Sense program, identifying an indoor per capita water consumption goal of 50 gpd is a target for new homes. This is a commendable goal, but unrealistic to assume that Rockland County residents could be retrofitted with state-of-the art fixtures and all leaks eliminated. A sensitivity analysis to determine potential reduction in future demand from water-conserving fixtures assumed residential water use would become more efficient at a rate of 0.1% a year. While various local government officials indicate an interest in conservation measures, until the measures are established as a matter of local law and water demand reductions documented, UWNY cannot rely on speculative projections of decreased water use.

Leakage: NRW is not equivalent to leakage, it includes water used for water treatment, flushing fire hydrants, fire-fighting, and lost from water main breaks. It is divided into three categories: unbilled, authorized consumption, apparent losses and real losses. During 2000-2010, its NRW generally ranged from 16.1 to 24%. The American Water Works Association methodology for assessing a water system's efficiency, based on real losses establishes an Infrastructure Leakage Index (ILI); using this methodology, UWNY's ILI was 1.24 in 2011 and 1.21 in 2012, indicating that its real losses from leakage are within the range expected for a well-run distribution system. UWNY is conducting on-going programs to reduce NRW and system leakage and real losses. To reduce real losses, UWNY's Underground Infrastructure Renewal Program (UIRP) is a program of regular maintenance and replace of pipes to increase reliability and reduce leaks and water main breaks. As part of the UIRP Program, established in the 2006 Rate Order, UWNY replaces distribution lines annually on a system-wide basis at the end of their useful lives. UWNY discusses the decisions in the 2006 and 2010 Rate Orders establishing the UIRP and identifying projects included in the UIRP. UWNY maintains that more aggressive leak management and NRW reduction would not eliminate the need for a new water supply. First, a certain amount of leakage is unavoidable; an aggressive reconstruction effort is a massive and cost-prohibitive undertaking and disruptive to the County and its residents. UWNY spends an average of $5.5 million on UIRP; the most cost-effective approach is to first replace the sections that lose the most water; some sections with small leaks are not cost-effective to replace. The total replacement of the 1,000 miles of mains in the County would cost an estimated $1.3 billion, which is not

reasonable. Success of conservation programs in New York City and Boston would not be successful in Rockland County, based upon a comparative review of 17 other water systems, as discussed in the DEIS (Chapter 18, Section 18A.3.2). The review demonstrated that UWNY employs the majority of conservation programs identified and, in certain areas, has more aggressive conservation elements in place. The review demonstrated that no clearly identifiable conservation measures would reduce water demand to avoid the need for a new long-term water supply project. The characteristics of New York City's and the Boston Metropolitan Area's water demand are completely different from Rockland County. The establishment of a task force does not equate to tangible increases in water conservation. If it takes six years to establish a task force, it would be highly imprudent for UWNY to rely on the results of totally undefined future actions that may hypothetically reduce water demand.

Brockton, MA: The two desalination plants are not analogous. At the time Brocton considered a desalination plant, unlike Rockland County, it was experiencing poor economic conditions, severe water shortages, and high unemployment rates. The fact that water demand in Brockton did not support the need for a new water treatment plant does not equate with conditions in Rockland County, where future forecasts for population and employment indicate notable growth.

Modifications to Lake DeForest Water Permit: UWNY's water permit sets forth minimum releases for use by the Village of Nyack (2 mgd) and downstream New Jersey reservoirs (7.5 mgd) for drinking water and other purposes. The total safe yield (amount of water continuously withdrawn during drought of record) is 19.5 mgd; 10 mgd of the safe yield is allocated for use by UWNY to serve Rockland County. The 7.75 passing flow was established based upon the normal flow in the river, that is, flow in the river exceeded 80% of the time prior to establishment of the Reservoir. New Jersey and its residents have depended upon the minimum releases for 60 years. The passing flow was established, based upon the doctrine of equitable apportionment established in a U.S. Supreme Court decision as the correct basis for a determination of riparian rights. Referring to NJDEP's comments, the default value used by New Jersey in calculating passing flow requirements for new permits is not applicable because it is used for each square mile of un-appropriated watershed; un-appropriated refers to watersheds that do not support downstream diversions. The New Jersey standard applies to intrastate passing flow decisions; and, it is not applicable to interstate decisions. While the decision was made to use the doctrine of equitable apportionment

applied to the Delaware River, a lesser flow per square mile was used for the Hackensack River.

UWNY states that opponents claim it is reasonable to reevaluate New Jersey passing flow requirements, because, in 1982, modifications were made to WSA 2189 increasing the passing flow requirement. The Company explains that the Sixth Modifying Decision revised language regarding minimum releases (Rule Curve)[6] and established certain conditions when addition releases are authorized. The standard it established for minimum releases requires an average flow of 9.75 mgd in the stream immediately above the Village of Nyack intake works, instead of requiring a release of at least 9.76 mgd. Because a four square mile drainage area exists between the dam and the gauge, some of this water contributes to the 9.75 mgd contribution, and an overall reduction in the Reservoir's minimum releases to New Jersey. Additional releases of up to 25 mgd to New Jersey are permitted, after consultation with DEC and NJDEP, when the Lake DeForest Reservoir has storage above the Rule Curve and downstream New Jersey reservoirs are below 50% of capacity (accounting for all water transferred to these reservoirs from other sources).

UWNY argues that diminishment of New Jersey's passing flow of water from the Reservoir, may result in amendments relating to other bi-state water source permits, resulting in a decrease offsetting decreases to the County's water supply. The Company states that revision of the passing flow requirements in the Hackensack River is anything but straightforward; and, it is likely that New Jersey would oppose the proposal, which would result in failure to resolve the issue for many years.

Excess Releases from Lake Deforest Reservoir: The water that it is required to release is not excess water; the releases are required as part of the permit and the Company is prohibited from making the water available to UWNY's customers. The total safe yield of Lake DeForest is 19.75 mgd; as set forth in WSA 2189; 10 mgd is allocated for use by UWNY to serve Rockland County; and 9.75 mgd is required for downstream users.

The excess releases referenced in the comments occurred between May 27, 2007 and September 22, 2007; at the time of the releases, the Company lost its ability to control

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[6] According to UWNY, before the Sixth Modifying Decision, the rule curve stated: "release from DeForest Reservoir shall be made to maintain a daily average flow of 9.75 mgd in the stream immediately above the intake works of the Village of Nyack" (UWNY Response, p. 29).

releases because a valve[7] was not fully operational and the Company was in the process of replacing it. It admits that it was at fault for not properly maintaining the valve and properly communicating the problem to DEC and the public. To remedy the situation, UWNY withheld required releases in October 2007 to restore the water level in the reservoir.

UWNY states that, in March 2013, DOH modified the water treatment plant permit to allow the taking of raw water from the reservoir when it would not affect the storage of the reservoir and its safe yield. The Company explains that the 2013 permit amendment would allow treatment of more water and increase the yield during normal to wet conditions; it will not increase the safe yield of the Reservoir.

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[7] A Howell Bunger valve that is a very large four-ton unit, that is complex to repair and replace, requiring a plant shutdown.

PART II

COMMENTS IN SUPPORT

New Jersey (NJ) Department of Environmental Protection Division of Water Supply and Geoscience (NJ DEP DWSG)

New Jersey's passing flow requirement is 125,000 gallons per day in addition to flows needed to support downstream diversions. The Hackensack watershed at Lake Deforest is an appropriated watershed and any passing flow must account for downstream diversions. Any diversion which reduced the safe yield of downstream potable supplies is not approvable in NJ pursuant to N.J.A.C. 7:19-2.2f(3), which states NJ's standard as . . . "125,000 gallons for each square mile of un-appropriated watershed . . . .

The standard NJ applies to intrastate passing flow decisions is not appropriate to apply to interstate decisions. The doctrine of equitable apportionment applies to interstate decisions. (See, New Jersey v. New York, et al., 283 U.S. 336 (1931)). In 1952, New York officials determined that a daily 7.75 million gallons per day release from Lake DeForest for NJ is an equitable apportionment of Hackensack River flow. While this decision was guided by application of the doctrine of equitable apportionment to the Delaware River, a lesser flow per square mile was used for the Hackensack River. The required Lake DeForest releases set in 1952 took into account the specific operating and hydraulic conditions of the Hackensack Basin.

Contrary to the statement that United Water New Jersey loses a substantial amount of water to leakage, the current unaccounted for water averages about 18% of system demand. This amount is not atypical for a system of its size and age; and, the Company is making considerable progress towards lowering this percentage.

4. Robert Kecskes' claim that the 1952 water supply permit states Lake DeForest is operated solely for the benefit of the citizens of Rockland County is taken out of context and incorrect. The 1952 permit (Finding of Fact No.37) states the following:

> The distribution in one State of water impounded in another is a complex situation froth with many legal problems of interstate law and in this State. Section 525 of the Conservation Law prevents the transportation of water across State lines through

> pipes or conduits. This Commission has 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.

The comments state that, looking at the 1952 permit in its entirety, it is clear that New Jersey is a beneficiary of the operation of Lake DeForest. The permit gives due regard to the interests of the State of New Jersey in maintaining a regulated flow, in pursuance of a policy of equitable apportionment. Therefore, a 7.75 mgd must be released from the reservoir for passage into New Jersey. Lake Deforest is operated for the benefit of Rockland County and New Jersey who depend on the "incidental benefit of a regulated flow in the river."

Elected Representatives: Several elected representatives support the Project, including: Jay Hood Rockland County Legislator, Town of Haverstraw Supervisor Howard T. Phillips, Jr.; Town of Haverstraw Councilmen Isidro Papo Cancel, Vincent Gamboli, John J. Gould, and Hector L. Soto; and Village of West Haverstraw Mayor John F. Ramundo, Jr.

Jay Hood states that the project is needed because of recent population trends, demand forecasts, weather trends, supply information, economic growth patterns, and new taxes to replace the $3 million in taxes lost due to a Bowline Power Plant tax certiorari case. Howard T. Phillips, Jr. states that DEC confirmed twice that Rockland needs a new water supply; if Rockland does not have enough water, it will lose the ability to attract and retain businesses; and, the desalination plant is the most reliable and affordable option. Isidro Papo Cancel states that UWNY's analysis shows that water supply is not expected to support population growth and the need for water will increase as the economy recovers. Vincent Gamboli states that population growth and droughts indicate that Rockland requires an additional water supply; and, tests assure that water is safe. John J. Gould states that the Project will produce 1,000 jobs and $7 million in taxes. Hector L. Soto states that the Project is needed and beneficial for Rockland County, based upon numerous hearings, reports, residents' opinions, scientific studies, and open house presentations; and, it is critical for the Town of Haverstraw because it will create jobs, stimulate the economy, and bring millions of dollars in much needed tax relief to the Town, North Rockland School District, and County. Mayor John F. Ramundo, Jr. states that

about 310,000 people, represented by business, labor, and community groups, support the project; it will provide high quality water; it is the most cost-effective option; the test facility established the high quality of water; and, it will produce $7 million in taxes.

Labor Organizations

Bricklayers and Allied Crafts Workers Local #5 New York: Project is needed because of a persistent water supply deficit and growing need, inadequate water supply continued growth, job creation, and tax revenues. A strong water supply is essential for economic growth; with large business centers considering new locations in the County, an infrastructure upgrade is needed.

Building and Construction Trades Council of Rockland County: The Project is needed because of droughts triggering water restrictions five times in the last 30 years, 20% population growth, and economic opportunity.

Teamsters Local Union No. 445: The Project is needed due to inadequate supply and economic development opportunities. Businesses and people are flocking to Rockland, because of its proximity to major markets, resources and economic potential. He and 310,000 members of organizations support it because it will bring in 980 jobs and $7 million tax revenue.

IBEW 363: The Project will create jobs, support economic growth, and ensure sufficient supply for County's water needs. The County has a pressing need for more water due to drought, population increases, and economic recovery. Absent a strong source of water, County is not able to retain and attract businesses, grow jobs and ensure public safety.

International Association of Bridge Structural Ornamental Reinforcing Ironworker Local 417: Project is needed because of 20% population increase by 2035, positive economic impact, 1,000 construction jobs and millions in construction dollars, and peace of mind that water is available regardless of drought, severe weather and high demand.

International Union of Operating Engineers: Project will produce a sustainable, affordable long-term supply, attract businesses and create jobs; supply inadequate to meet future growth projections. Rockland's water needs are well established; the Project is the most cost-effective, environmentally friendly, and reliable solution.

Local Union No 754: Business, labor, and community groups, representing 310,000 people publicly support the Project. It will provide water security, create 980 jobs, and deliver over

$7 million in taxes. UWNY's studies show that the Project is the most cost-effective and drought-tolerant option. The need for water is expected to grow as the economy recovers, given big projects, like the Tappan Zee Bridge and Bloomberg Data Center.

Business Organizations

Rockland Business Association

Al Samuels 10.1.13 Public Statement Hearing

Al Samuels, President and Chief Executive of the Rockland Business Association and a voting member of the Governor's Regional Economic Development Council, states that the Council's task is to identify inhibitors to economic development in the County, particularly because New Jersey is attracting so much business to that State. It identified a great need for infrastructure, including water, to attract businesses. He noted that municipalities pass resolutions to block the Project at the same time that they seek to attract businesses like data centers, one of the most water intensive businesses. Bloomberg data center says that it will use 250,000 gallons a day or 91.25 million gallons a year. Yet, the municipality that worked so hard to bring Bloomberg to Rockland County opposes the Project. A significant number of companies are short-listed to move to Rockland.

The Office of the State Comptroller issued a report that identified Rockland County as the County with the most distressed fiscal status in New York; on a scale of 1 to 100, with 100 representing the worst, Rockland scored 86.7%; only Monroe County came close; other counties scored in the 70s. The Rockland Business Association claims that elected officials fail to exercise fiduciary responsibility and make cuts where necessary. Failure to adjust, recession, and unfunded mandates resulted in a Standard & Poor's rating for Rockland County as one level above junk status.

To extricate itself from this situation, the County can cut its budget, but the budget under preparation is a minimum of $600,000 higher, or can raise money through taxes, which is politically difficult because of existing high taxes. The only other opportunity is to seek economic opportunities for the communities voting to block the Project. Cornell University projects a 20% increase in population by 2040.

Some of the statements made at the public hearing are not valid. For example, Pfizer is not closing; it is phasing out its manufacturing business; and, establishing an R&D facility; manufacturing and R&D, tech companies, such as data

centers, are prime economic development opportunities for Rockland, all water intensive. The Project is needed to provide the needed water.

UWNY is not driven by a profit motive; the Commission directed the company to build a new water source. A political decision is the reason for the new round of public hearings.

Some of the people opposing the plan use scare tactic or hysteria, including some of solicited signatures by asking if people wanted their children to get cancer. He urges the Commission to look beyond the significant number of people who expressed displeasure with the Project, and look at the substance and not the politics of the issue. He points out that UWNY is entitled to recover costs spent in researching and preparing for the Project.

Bill Madden 10.2.13 Public Hearing

Bill Madden, a member of the Rockland Business Association and Executive Vice President/Chief Operating Officer at Focus Media Inc., states that North Rockland endured a painful tax crisis for the last five years because of the Mirant settlement; most of our tax bills doubled in five years; and, we need tax relief and economic development. Rockland County has $150 million in debt and the highest property taxes in the country; so, we need tax relief. We need the Commission to act as an independent authority and judge this Project, because a silent majority in favor of the Project exists.

National Association of Water Companies: Numerous studies and population projections confirm the Commission's findings of need in 2006 and 2010. Rockland County relies on precipitation, a single reservoir, and network of underground wells for its entire supply; this puts residents at risk during droughts; the entire population is growing at a rapid rate; and, an inadequate supply cannot be ignored. The Project is the most environmentally sound and fiscally prudent solution; desalination is a highly effective technology for water purification. UWNY's test facility purified nearly 40 million gallons of water; and, an independent laboratory analyzed over 10,000 samples. The results show that the water met or surpassed federal and state safe drinking water standards.

Business Council

Heather C. Briccetti, Esq., President and CEO: Reports show that the County's water supply is not sufficient to meet projected water needs by 2016; and parties to the 2006 Rate Case

agreed upon development of a new water supply source; a new long-term water supply project to meet the County's projected population growth; delays in the Project's construction is costing customers about $500,000 a month, according the Michael Pointing, UWNY's Vice President; a drought-tolerant water supply is needed, given possible climate change effects; businesses will not seriously consider an area for possible economic investment unless it has a good source of water; on a global level, the value of a reliable supply of water in increasing; despite the success of stretching water resources through conservation and small water projects and rehabilitations, the need for an additional supply is proven; the conclusion of an extensive DEC SEQRA study is that the desalination plant is needed. The Business Council is strongly in favor of the Project's tax and job benefits, creation of hundreds of construction jobs and contribution of taxes and other revenues to help struggling municipal and school budgets. It states that the Project costs the least to construct and operate of any viable alternative.

Daren Suarez 10.2.13 Public Statement Hearing

A representative of the Business Council of New York State urges the Commission to determine that there is a need for a new water supply source, because of the County's projected population growth and possible increase of costs due to delays. With the new Tappan Zee Bridge on the way and the possible effects of climate change, it is critical to build a drought-tolerant water supply. A good source of water is critical for economic development. UWNY and the public, through the use of conservation programs and construction of small water supply projects and rehabilitations stretched resources. The Project was subject to a comprehensive SEQRA review process; and, the conclusion reaches is that the Project is the most cost effective, drought-tolerant, and environmentally responsible option.

Hudson Valley Pattern for Progress

Project is necessary for long-term economic growth and projected population growth. It will produce high quality water and is drought-tolerant, costs least to build and operate, produce jobs and $7 million in taxes revenues, and is thoroughly reviewed.

Ronald Van Autenried 10.1.13 Public Statement Hearing

Ronald Von Autenried, President of Buck, Seifert & Jost, is a professional engineer specializing in water and waste

water. He states that Rockland County's population and need for water will increase; and, the Project is drought resistant and reliable. He points out that the Project is scalable, depending on actual demand: an initial 2.5 mgd; intermediate 5 mgd; potential final 7.5 mgd.

McLaren Engineering Group 11.8.13 Written Comments: The Project will provide high quality water, represents the most drought-tolerant solution, and is economical to build and operate. It will create 980 jobs, and delivery $7 million in taxes. Business, labor, and community groups, representing 310,000 people publicly stated their support.

Degenshein Architects: In 1992, UWNY embarked on a water conservation campaign and managed to decrease per capita water use from 105 to 65 gpd; and, water use is reduced as much as possible. A pre-determined quantity of water must spill from Lake Deforest to New Jersey to compensate for the flow disrupted by the reservoir; absent a safety valve, DeForest would flood its banks and devastate the neighboring community. A regional water commission would serve to benefit equitable water distribution and flood control. Absent a regional water commission, UWNY offers the next best thing, the relationship of two water companies providing a unique overview of the broader needs of the region. The Project is necessary to provide adequate water pressure and water supply to fight fires and supply sufficient water for today's demands in times of drought. Radioactive isotopes naturally occur in measurable, safe quantities below the earth's surface and in our waterways; the desalination plant will monitor and measure these elements and shut down if quantities exceed allowable thresholds.

Abundant rainfall, experienced over the past decade, recently contributed to faster replenishment of the aquifer; this anomaly is unreliable, as evidenced by past droughts. Biopharma and data-processing, two businesses identified as ideal fits for Rockland, relay heavily on process and cooling water; without dependable water, businesses are discouraged from locating in Rockland, resulting in erosion of the tax base and loss of tax support. The Commission mandates adequate water at times of most severe drought; history demonstrates that the supply is inadequate; without adequate water, the community is at risk for firefighting, general health, and economic balance.

Keith Kelly, Environmental Engineer with CDM Smith 10.1.13 Public Statement Hearing

UWNY engaged his firm to plan and design the Project; and he worked on the Project for four years. He reviewed the Appleton Report and states it does not reflect familiarity with need studies performed since 2006; it is unclear if the Report is based upon any scientific or technical data or analysis as it is devoid of references; and, it does not acknowledge any need or planned or projected growth and basically looks at alternatives. Mr. Kelly states that these alternatives have been exhaustively evaluated in the DEIS, specifically conservation, waste water reuse, rain water reuse, water main replacement, and repair; and, the memo ignores the demand since management issues already implemented. Experts like Dr. Daniel Miller continue to conclude that a long-term water supply project is needed in Rockland County.

Joe Lagana 10.2.13 Public Hearing

The Commission, DEC, and other agencies are capable of making an assessment of the Project; UWNY has very qualified, effective, and talented people to make a decision. He thinks it is a good Project to supply the water that the County needs to grow, and that the emotion needs to be removed.

UWNY PERSONNEL

Keith Cartnick 10.2.13 Public Statement Hearing

As the Senior Director of UWNY water quality, he managed compliance with water quality standards for over 25 years. He thinks Rockland County needs more water to prepare for droughts and to meet the everyday needs of homeowners, firefighters, and businesses. Thousands of tests were conducted at the UWNY pilot facility indicating that the technology produces excellent quality water; the water produced at the Project will meet or surpass all safe drinking water standards. During the years of significant droughts (1999, 2002 and 2005, the residents of the County struggled; and, the Project will provide safe, reliable drinking water. We are not going to drink PCBs, Strontium and Tritium or damage the Hudson River.

Lynda DiMenna 10.1.13 Public Statement Hearing

Lynda DiMenna, a UWNY employee states that: the County's population is growing and need water, as confirmed by Dr. Dan Miller; demand side solutions, such as conservation, are helpful, they are not enough and have been in effect for decades; and residential customers use 66 mgd, an indication that conservation is effective. She states that Rockland needs

a new long term water supply; and, the Project is cost-effective, sustainable and will provide high quality water.

Don DiStante 10.2.13 Public Statement Hearing

Mr. DiStante, Director of Planning for UWNY, provides some clarifications relating to issues raised during the hearing. First, relating to proposals to obtain more water from Lake DeForest for use of Rockland residents: (1) New Jersey would strongly oppose the proposal; (2) passing flows are set for a variety of complex reasons, including water quality, preservation flow, riparian rights, and ecology, and the idea the permit could be amendment to require release of 125,000 gallons per square day is an assumption that could be challenged in a very major way; New Jersey would likely request an increase in the minimum flow on the New Jersey side of the shared Ramapo River, which would have a dramatic effect on our water supply from the Ramapo Valley well field. Relating to claims of excessive releases to New Jersey: in his opinion, too much is made of a broken valve in 2005, because these types of problems are common. A large, complicated valve that weighs over a ton was located in the dam and it was fixed.

UWNY carefully monitors releases, checked by DEC and the Rockland DOH; water naturally spills over the top of the dam due to rain fall. On the subject of wells, vast majority of well sites taken, existing wells lose capacity, and the bottom line is that there is not enough groundwater to meet the projected need. Although demand is down, the economic will improve and increase demand.

The same conservation opportunities that existed in NYC are not available in Rockland, because NYC achieved a 40% reduction in water use due to the addition of meters. Rockland's average use is 66 mgd, compared to NYC's 130 mgd.

Susan Gerard 10.1.13 Public Statement Hearing

Susan Gerard is a UWNY employee and resident of Clarkstown; she has seen the County struggle with water shortages; we need jobs so more businesses will help the tax burden. She states that there is not enough water to meet demands, based upon population projections, and to attract businesses. Conservation alone will not solve our problems; the Project is the least expensive, sustainable, a source of high quality drinking water.

John Moolick

10.1.13 Public Statement Hearing

John Moolick, UWNY manager of transmission and distribution, exercises oversight of 1,000 miles of water mains, 6,000 fire hydrants, and 14,000 valves. He states that it is simply not true that repairing distribution system leaks is an alternative to the Project. He asserts that UWNY operates a continuous leak detection program, including a procedure that sounds for leaks and repairs detected leaks within one day. Due to these practices and an annual Commission-approved underground infrastructure replacement program, UWNY operates an effective water system.

10.2.13 Public Statement Hearing

One measure of performance of the distribution system is the infrastructure leakage index (ILI), used by the American Water Works Association for comparing performance of utilities' management of real losses and leaks. In 2011, AMA concluded that the average ILI for systems with 50,000 or more customers is 3.62; UWNY serves about 73,000 customers and its ILI was 1.21. In 2006, the Commission approved an underground infrastructure replacement program, with an annual investment of $5.5 million.

Bill Prehoda October 1, 2013 Public Statement Hearing

Mr. Prehoda, a UWNY hydro-geologist, comments on the USGS Report, which UWNY helped finance. He says that the USGS study had two goals: evaluate whether current rates of groundwater withdrawal are depleting the reservoirs; and evaluate possible additional water sources. It documented water resources from 2005 to 2007.

The Report found that decades of suburban development resulted in increased demand; installation of storm and sanitary sewers and export of water into the Hudson River reduced recharge to aquifer; and, production of UWNY's wells has not exceeded available aquifer recharge. It concluded that peak summer demand does increase pumping rates and puts stress on the bedrock aquifer and that 25 to 35% of the wells may not be able to sustain demand rate during the summer season, requiring reduction in well production rates.

Installation of new wells is limited: higher yielding wells already developed; few new locations provide the required 200 foot setback; many aquifer areas are contaminated; impact to

neighboring users. Thus, it is unrealistic to expect additional bedrock aquifer resources to satisfy future projected demand.

Deborah Rizzi, Director, UWNY Communications 11.8.13 Written Comments On October 24, 2013, Dr. Miller concluded, after a review of data and impact of historical usage and weather patterns, that Rockland needs more capacity to meet average demand by 2016, or possibly 2017. She attached a copy of Dr. Miller's power point presentation to a local business organization.

Michael Shilale 10.2.13 Public Hearing

Mr. Shilale worked with UWNY since 2007 on this Project and others; growth and economic development are needed in Rockland to maintain our quality of life, standard of living, and keep our taxes reasonable. We need to balance the economic and environmental concerns of our water issues; but, he believes that we need a strong water supply project that adds diversity, scalability, and resiliency to this important critical resource for our economic and environmental well-being.

Public Comments: Approximately 15 members of the public and 1 student in the AP Environmental Class at the Nyack High School submitted comments in support of the Project; another approximately 159 filed a copy of a form letter (Form Letter A). The Form Letter states that in 2006 and 2010, the Commission directed UWNY to build a new long-term water supply; the most recent information provided the Commission in August 2013 confirms earlier findings and validates the need for water. The Project is needed because the County is growing rapidly and will soon outgrow its existing water supply; and, it is the best option because it will provide a reliable, drought-tolerant supply to help ensure public health and safety for years.

Part III

Summary of Comments in Opposition

Department of State Division of Consumer Protection Utility Intervention Unit (UIU): Credible data suggests that the Project's cost would jeopardize the Commission's obligation to ensure just and reasonable rates; it estimates a more than 20% increase. Due to vastly divergent interpretations of data and projections for water demand and supply, the need for a desalination plant is not clear.

Rockland Water Coalition Consultants

Albert A. Appleton: Mr. Appleton states that the UWNY demand forecast is untenable; actual water use figures through 2011 fell 5 mgd short of the projections and show a 10% reduction in water use in Rockland County since 2007. He notes that the recent drop of 5 mgd means that demand would need to grow considerably to catch up to UWNY projections. The Commission should act to find there is no need and to put a halt to all UW investments based upon it. The right demand study is needed, one that looks at climate change, market technology, and price changes.

UWNY claims the economic recession caused the decrease in demand. Mr. Appleton states that the recession did suppress real income and its growth in costs, including major local increases in property taxes, results in lower Rockland Country disposable income, to a point where all discretionary costs, such as water use, became targets for economizing. That trend remains.

The trending forward projections derived from past patterns of water use ignore the dynamic nature of the interactions of the many factors influencing water demand, including global warming, and high water rates. UWNY did not consider effects of water prices upon demand; and targeting price increases are a conservation tool. UWNY argues that water rates are inelastic and doubling water rates will have no effect on future demand and that major increases in water rates to date play no role in the leveling of demand over the last five years. UWNY's desal plant with its crippling water rates on local residents will result in less demand. Mr. Appleton states that water is both inelastic (basic household functions) and highly inelastic (industrial and commercial, residential outdoor water use, such as, lawn watering). At a very conservative level of

price elasticity, water demand would go down by 20%. If a 20% elasticity is assumed, the cost of the desal plant eliminates the demand for it. Price elasticity explains at least half of the shortfall in projected demand over the last five years. Whether you call that elastic or inelastic does not matter; it is standard economics 101 that price influences demand.

Costs will effect water demand, and this effect raises the question of whether the Project will become an economic white elephant, noting examples of plants in Australia and Brockton, MA. The reason that desalination plants become bad investments is the need to recover substantial capital investment by running them 24/7 and selling the entire output; if demand falls, water is not purchased.

Concerns relating to the need for the plant because businesses will not relocate in the County and a drought will occur are management issues, requiring a drought management plan.

Many alternatives to the Project would reduce future demand, or need, and must include a cost benefit analysis to determine the prudent course of obtaining additional supplies at a reasonable cost. The UWNY claim that the desal plant is the most cost effective option is extraordinary, given its projected cost.

The County Executive and Legislative leaders should establish an informal task force to consider issues relating to long-term demand, alternatives, and financial implications and hire experts to conduct studies, including a new demand analysis, water main leak reductions; conservation strategies; new operating rule for DeForest Reservoir; assessment of groundwater recharge; and impact analysis of water rate increases resulting from the Project. Given the size of the shortfall in projected demand, time is available to evaluate future water needs and consider options to satisfy future demand. Until DEC acts upon Rockland's request for a permit change, the Commission should not make its need determination or approve any inter-company agreement allocating costs. Mr. Appleton proposes three elements of a demand side strategy: conservation to reduce peak demand; reducing water main leaks; and, a new operating rule for Lake DeForest Reservoir.

Mr. Appleton recommends a modest 10% reduction in consumer water usage, or roughly 3 mgd and proposes a series of measures that would reduce water use. He points out that, compared to the Rockland usage of 62 gpd per household, the Environmental Protection Agency estimates that per capital use in a new house with water saving fixtures is 45 gpd. Reducing

wasteful consumer water use with a primary focus on summer lawn watering that drives up peak demand would avoid need for the Project. He criticizes the summer/winter differential rate, because it does not target discretionary use through an ascending block rate, and it penalizes people for essential water use. He recommends an inter-agency task force to look at immediate demand measures to reduce demand by 7.1 mgd and a long-term water plan, including various reservoirs and lakes, capturing storm water, recycling sewage water, ultra conservation. Traditional water conservation can make a meaningful contribution to available water, estimated at 3 mgd a day, and, combined with changes in demand and other demand side measures, show that for at least the next ten years no need exists for a new water supply source in Rockland.

Although UWNY, as it claims, has no authority to mandate conservation, it can offer incentives and work with government agencies to promote conservation measures and obtain local support; and, Rockland County's leadership is committed to finding a cost effective alternative.

Mr. Appleton asserts that an aggressive program to reduce water main leaks and repair water mains would reduce the current rate of water loss from leaky water mains form 17% to 10%, with a conservatively estimated savings of between 1.5 mgd and 2 mgd. He further proposes that UWNY replace 2%, instead of 1%, of its water mains annually.

A minimum of 9.75 mgd of water goes downstream as passing flow (2 mgd to Nyack and 7.75 mgd to New Jersey. The Appleton Report raises questions about how much flow is necessary to meet New Jersey's riparian water rights and equitable allocations and maintain the ecological health of the Hackensack environment. Passing flow must meet two requirements: water necessary for riparian downstream use and protection of the environmental resource. Arguments exist for changing the permit to allow Rockland four mgd a day of extra water from Lake DeForest, because of New Jersey's own passing flow standard, comparison of New Jersey's and Rockland's water management, size of watershed, and other technical and hydrologic considerations. He agrees with Robert Krecskes' request to reopen the permit because the passing flow is too high and should be reduced from 7.75 mgd to 4 mgd. Mr. Appleton estimates that an average of 30 mgd is sent downstream and states that Rockland County should retain any excess flows; he states that another benefit for reopening the water permit is seeking a new operating rule to make possible Rockland's use of the excess flow. A full scale review of the water permit, and development of a modern rule for

the Reservoir is long overdue. Other supply-side proposals include obtaining access to regional water providers, new well fields, better groundwater recharge and storage, storm water capture, reuse of sewage effluence, targeted price increases, and water neutral housing development.

These recommended alternatives would produce an overall total of 8.5 mgd of water: 1.5 mgd from water main leak reduction; 3.0 mgd from water conservation; and, 4.0 mgd from a new operating rule for DeForest. He cautions that his water reductions are targets, and due diligence is required to study them. He concludes that, for the next ten years at least, Rockland County has adequate available water to meet all of its foreseeable needs, even a major drought event. The Appleton Report notes the USGS Study conclusion that additional water is available from the aquifer to increase ground water use and additional wells.

Dr. Charles McLane III

Dr. McLane, a PH.D. Hydrologist concludes that changes in water demand, scientific information, and public interest indicate that concerns leading to the decision to obtain a new major water supply source are less critical. The highest annual average water production (maximum 31.4 mgd in 2007) sharply decreased following 2007. UWNY's demand projection is at an extreme upper bound of demand; and, the 7.5 mgd Project as an overly-productive, excessive supply plan; it includes no consideration of additional conservation efforts that the County could initiate. The 2006 demand forecasts were driven by the immediate need to meet peak demand, with average annual demand approaching system capacity and no plan to prepare for the County's water demand, and rough estimates of unsustainable water withdrawals from aquifer greater than recharge amounts. Circumstances changed since then, including USGS reports indicating possible increased ground water use, rate increases to depress demand, short- and intermediate-term measures increasing supply, opposition of local officials, decrease in actual demand, and Rockland County's plans to manage its water supply.

Dr. McLane states that the USGS 2010 Studies indicate that the aquifer is a healthy, resilient aquifer sustainable at current pumping levels with proper management, with the potential for expanded use. USGS Studies concluded that groundwater levels are stable; withdrawals are not occurring at a rate greater than estimated; aquifer produces at a sustainable rate and may have additional yield; aquifer rebounds quickly after groundwater levels are drawn down in the summer; and,

groundwater levels decline in the summer during periods of lower precipitation and recharge when precipitation returns to normal. Dr. McLane states that, in 2006, recharge estimates were constructed on RCDOH's rough estimates from a 1979 study of water resources. The USGS Studies show that, in fact, recharge is substantially greater than previously estimated: RCDOH estimated that between 88-145% of recharge was withdrawn; the USGS found that historically and in 2006, withdrawals were only about 12 to 24% of recharge in the three watersheds.

The USGS produced several ground water flow models which UWNY could use to determine placement and pumping rates of new wells and efficiently manage existing wells. The USGS Studies could assist UWNY in identifying potential groundwater source locations and associated yields, including new bedrock wells. UWNY criticisms of the USGS studies may indicate a predisposition to secure the need for the Project and more focus on defense of the Project rather than a balanced application of the new data in the USGS reports.

Dr. McLane asserts that the 7.5 mgd increase in safe yield predicted for 2035 is not an appropriate metric to use in evaluating the ability of other methods to meet demand and avoid the Project, particularly when the alternatives are far less capital intensive and provide additional benefits; UWNY gives the impression that each alternative must compete, volume-wise, with the potential full output of a large engineered plant; if a combination of alternatives could obviate need for the Project, UWNY should pursue them and conservation measures under its mandate to undertake all reasonable efforts to reduce and control future demands.

Dr. McLane maintains that UWNY did not provide a comprehensive accounting of the water that enters and leaves the Lake. While the safe yield of the reservoir is an important consideration in the worst drought, a rare occurrence, normal operations should not be limited to safe yield as long as a sufficient amount of water is maintained in the reservoir. Because DOH removed the clause in the permit for water treatment limiting annual production average to 10 mgd, UWNY is allowed to withdraw greater than 10 mgd average sustainably from Lake DeForest for Rockland County's use, when available.

Dr. McLane concludes that recent information demonstrates that a new water supply is not needed until at least 2025 and adequate time exists to develop a superior, more robust and sustainable water supply project. UWNY's operation of existing well fields could identify additional supply through better operational procedures and management; and, it could use

hydrologic system analysis software tools to improve its system. To reduce peak demand, Dr. McLane recommends: year-round demand reduction; more efficient operation of existing well fields; incorporation of withdrawals from additional existing wells currently out-of-service or underutilized; distributed well network; addition of wells in strategic locations; increased use of surface water sources; and aquifer storage and recovery; conjunctive surface water and groundwater use; and routed storm water and/or treated wastewater. He states that the 7.5 mgd is a phantom requirement, because expected demand is far less than 7.5 mgd. He recommends better management of existing well fields and identification of additional supply and conservation measures to decrease approximately 25% water demand during the summer seasons.

Robert Krecskes: UWNY over-estimates demand, because demand essentially remained stagnant over the last six years, even though the county's population increased; RCDOH projections are now showing that demand will not exceed supply until 2021 and, according to alternative projections, 2035, even without conservation. The statistical trend method employed in 2006 results in a moving target projection for the estimated time that demand will exceed supply, depending on the most recent demand data used. If UWNY updated the projection with the most recent demand data, it would show that the 2006 projections are no longer valid with regard to when demand would surpass available supply. UWNY does not factor in an expected slowing in per capita demand, surpassing of demand caused by higher water rates associated with the Project and, possibly, contamination; and, the actions of the County task force will substantially reduce demand. Based on use of the upper limit of the 90% confidence interval, worse case demand is projected to surpass the 2015 (34.5 mgd) supply by about 2021, five years beyond previous projections. If demand continues at the same rates, the projection for when demand will surpass available supply will move further into the future.

Historic growth and water pattern use (rapid suburbanization of the rural landscape) is unlikely to occur in the future (slower and better managed growth); population nearly doubled between 1960 and 1990; less than 10% of County land is vacant. If 1980s demands are removed from the forecast because the high-growth is unlikely to occur in the future, the better starting point for projections is the 1990s, resulting in a projection of average demand to exceed supply by 2037.

Water use restrictions could be implemented during a drought to control demand and preclude it from approaching the upper limit of the 90% confidence level. The Rockland County Task Force, in the near term, will employ a drought management plan to prevent any sharp increases in demand and, in the longer term, establish a comprehensive water supply plan to ensure that demand does not exceed supply.

In regard to the economic slowdown, he states that the recession officially ended four years ago, and demand is still low and it very much appears that economic and other conditions have dampened development in Rockland County, and that these conditions appear likely to continue for the time-being. To return to UWNY projected trend and surpass supply by 2016, the economy would need to perform at an unreasonably vigorous pace, which will not occur. No economist is predicting such intense economic growth to increase demand by 6 mgd by 2016.

Drought is not a compelling need for an expensive desalination plant; it is a natural phase of the hydrologic cycle, occurring once on average every three to five years. The RCDOH drought management plan ensures that the County can withstand drought, as evidenced by droughts occurring over the last 20 years, including the 2001-2002 drought. He supports conservation to reduce demand by at least 3 mgd and a decrease in passing flows to New Jersey to save 4.5 mgd.

He supports conservation to reduce demand by at least 3 mgd. Combinations of demand-side alternatives could eliminate the Project's need or reduce its size. He recommends acceleration of water conservation initiatives (fixture replacement) and reduction of losses from non-revenue water and a more aggressive leak reduction program would forestall the need for supply for decades. He claims that UWNY has not exhausted an array of conservation measures that could save significant quantities of water and postpone need for the Project.

He supports a decrease in passing flows to New Jersey to save 4.5 mgd. He provides the history of the 1952 permit, including New Jersey's initial recommendation to institute a lower passing flow; it notes Rockland's request for a modification; and it suggests that, if New Jersey's reservoir release requirements were implemented, as initially requested by New Jersey, Rockland County would obtain substantially more water from the Reservoir. He provides the legal and technical rationale for reducing passing flows: UWNY's predecessor proposed a higher pass flow than New Jersey recommended, based upon the one required for the Delaware River basin, instead of

the one enacted in a New Jersey statute. He states that a 1982 revision to the Lake DeForest water permit reduced the reserve storage by one-third, resulting in an increase in additional flows to New Jersey and a downgrade in drought safeguard for Rockland. He recommends allocating the reserve storage to Rockland to produce more than 4.5 mgd for the County.

Mr. Kecskes believes that the County will develop water conservation policies to extend the date for need of a new water supply source and urges the Commission to provide time for the County to implement conservation measures. Although UWNY states that it is imprudent to rely on the County's future action to adopt conservation measures, RWC states that the County Legislature imposed a schedule on the Task Force: one year to complete its short-term plan and three years to finish its long-term plan.

Rockland Water Coalition (RWC) and Members: Suzanne Barclay, Robert Kecskes, Peggy Kurtz, Martyn Ryan, Laurie Seeman and Alexis Starke: UWNY uses outdated data and prediction models and irrelevant historical data to justify the Project; use of recent data from 1990 to 2012 indicates no need for a new water supply well into the future. A demand-side strategy is enough to satisfy near- and long-term water supply needs and avoid costs and environmental impacts of the $139 to $189 million Project; and, time is available to implement this strategy, because more accurate water demand projections based upon current data show that Rockland will not need any additional water supply for at least ten years. Demand declined since 2007; UWNY over-estimates future demands in its base 2006 analysis, through use of demand data going back to 1970 and ending in 2005. UWNY's 2006 projection, last updated in 2010, shows that, if historical demand trends going back as far as 1970 are maintained in the future, average annual demand would surpass available supply by about 2017 or 2018. UWNY projections are substantially inflated because historical use of water prior to the 1990s will not be replicated in the future. It argues that the demand for the period 1990 - 2010 represents more typical growth and demand patterns for Rockland.

UWNY failed to update its demand trend analysis to include more recent demands; and decline in water demand over the last three years will affect the projected future trend. Using the same method and demand data that UWNY used for its 2006 projections, RWC provides an assessment with graphs, including more recent demand data and removing pre-1990 demand data, to project an average demand to exceed supply in about 2037, instead of 2017 or 2018.

It notes other factors that may reduce future demand, including nationwide decline in water use due to replacement of fixtures and Rockland County's acceleration of its development of conservation policies recommended in its Comprehensive Plan. Rockland is forming a task force to take a two-phase approach, involving implementation within one year of demand-side alternatives and development of a comprehensive long-term demand-side plan within three years. RWC states that Rockland is overwhelmingly opposed to the desalination proposal, referencing number of attendees at the public statement hearings, signatures on petitions, and positions taken by elected representatives.

Pace Environmental Litigation Clinic, Inc.on behalf of Riverkeeper, Inc.: New information and changed circumstances demonstrate that no continuing need exists for UWNY development of the Project. It states that UWNY failed to comply with Commission regulations because it did not undertake all reasonable efforts to reduce and control future demands (16 NYCRR §503.4). Over the last five years, actual water demand fell short of projections; while the economy may continue to gradually improve, UWNY cannot seriously argue that economic conditions will somehow magically boom overnight, causing demands to suddenly spike; UWNY is overstating demand to artificially manufacture a crisis situation to further its Project. Increased water rates to fund the Project will reduce demand; a sharp increase in rates (citing the pending rate increases) has the potential to reduce demand significantly, obviating the need for a new water supply source; water is subject to price elasticity; lawn watering is highly elastic; demand may decline by about 6 mgd; and the project may become a stranded investment (Brockton, MA).

UWNY concludes that no single measure meets the 7.5 mgd in demand; UWNY fails to consider the effect of combining the proposed actions to produce the 7.5 mgd. UWNY states that 17% leak reduction is a reasonable target to reduce water loss (DEIS, at 18A-10); reducing water main loss below 10% in three to five years would provide an additional 1.5 mgd (Appleton Report). Reduction of excess lawn watering, given the annual average 49 inches of rain in the County, would produce a modest goal of 10%, or 3 mgd, reduction in consumption.

UWNY can withdraw more than 10 mgd for Lake DeForest, while maintaining the required 9.75 mgd flow to downstream users under normal daily operations; reopening of the 1952 permit would provide at least 4 mgd of additional water. The USGS Studies conclude that the aquifer is recharging at a faster rate

than expected; much less of the recharge was used for water supply; UWNY can use flow models for new wells and hydrologic data to make its system more reliable and efficient and increase its efficient use of water supply.

UWNY fails to comply with Commission rules (16 NYCRR §503.4) because it did not undertake all reasonable efforts to reduce and control future demands to bring them into balance with supply. UNWY's 2013 Need Report did not analyze the most recent available information relating to projected demand and need, failed to adequately respond to concerns and issues raised by public officials and organizations in a meaningful way, and started planning to build its desalination plant without taking any efforts to reduce and control future demands. The new information and changed circumstances that UWNY failed to consider include: lower actual water demand than projected; effect of higher water rates to reduce demand; faster recharge rate of aquifers; Lake DeForest Reservoir water; and conservation measures. The comments assert that these factors would yield approximately 9.5 to 10 mgd in additional water supply.

Some water demand is inelastic (household functions), while some water demand, including industrial and commercial applications and residential outdoor water use, such as, lawn watering, are highly elastic. It is postulated that the desalination plant will likely decrease demand to the point where the project becomes a stranded investment, referring to the experience relating to the Aquaria Desalination Plant in Brockton, Massachusetts (Appleton Report).

Robert Dillon: Robert Dillon submits comments relating to the history of excess Lake DeForest releases to New Jersey, USGS reports on Newark Basin Bedrock Aquifer, passing flow rates and safe yields of the Hackensack River, reduced demand for water due to the high cost of desalination, and alternative supply. He states that he discovered the 2007 excess releases from Lake Deforest; no indication existed that UWNY was aware of them; and, he tracked releases from 1959 to 2010, which indicate that the passing flows were excessive. Based on his research and claims relating to UWNY excess releases, Mr. Dillon states that excess releases did not only occur between May 27, 2007 and September 22, 2007, due to a faulty valve, and that additional water was sent down river to New Jersey above and beyond the permitted amount, when Lake DeForest was not spilling over the dam and UWNY controlled the releases; between 2003 and 2006, he states that releases averaged, at times, 7 mgd.

The USGS 2010 Reports indicate that Rockland County's ground water resources are more abundant than projected in 2006 and the annual recharge rate is sufficient to replenish wells drawn down during peak demand months. Changes in passing flow rates would provide more water to Rockland County and satisfy New Jersey's riparian water rights, resulting in a 11.42 mgd increase in the County's safe yield from the Hackensack River. The additional yield from Lake DeForest will reduce demand on Rockland's ground water resources, allowing the aquifer to become more fully charged and increasing the aquifer's safe yield. Mr. Dillon suggests the possibility of pumping Lake Tappan water to the Lake DeForest Reservoir, and concludes that these actions could supply 11 mgd to Rockland County.

Stuart Braman, Adjunct Associate Research Scientist at the Lamont-Doherty Earth Observatory at Columbia University: Since 2007, Stuart Braman studied residential water use in Rockland County and the potential for conservation to reduce demand. In 2010, he and Simon Gruber researched the history of UWNY water conservation efforts in the 1980s and 1990s authorized by the Commission, including the summer-winter rate structure (1980) and other conservation programs (1990s). In 2012, he worked with two Columbia University workshops to estimate savings from increased water conservation programs using RCDOH software and conducting a sensitivity analysis; the workshops assessed the impact and cost-effectiveness of seven programs individually and in combination: toilet rebate and washer rebate programs, two efficient outdoor nozzle programs, irrigation control, and outdoor water waste ordinances. The conclusion is that combined programs were cost effective, with water savings nine years into the programs ranging from 1.14 mgd to 3.15 mgd; and, if a proportional amount of savings from non-residential conservation is added, results in 3 mgd water savings.

He comments that UWNY claims no gains are available from toilet and washer rebates, accounting for two-thirds of the estimated savings, and its water conservation discounts are equivalent to a rebate program. He reports that a $150 toilet and washer rebate program produced estimated average 1.4.mgd savings. Mr. Braman points out that UWNY argues that it cannot mandate conservation. He admits the Company cannot pass ordinances or laws prohibiting outdoor waste, restricting outdoor watering, and requiring water neutral new development; he says that UWNY is able, with Commission authority, to modify pricing structure relating to discretionary water use, modify non-residential prices, offer rebates for high efficiency appliances and nozzles, provide water audits, provide technical assistance to commercial and industrial users.

Simon Gruber, Environmental Planner: Simon Gruber states that the additional water supply that the PSC ordered United Water New York (UWNY) to develop in 2006 is not needed at this time to ensure an adequate supply for existing customers. Even counting all of the new projects UWNY's listed, based on UWNY's own information included in their recent needs analysis, the existing supply is adequate for at least 5 years. Significant potential exists to improve upon and expand UWNY's water supply, including more aggressive policies by RCDOH for reducing water use in relatively dry conditions without waiting for a drought as deep as their current regulations require to trigger outdoor water use restrictions; and, stronger leak detection and repair and water efficiency measures should be implemented. Conservation and efficiency, improved regulatory arrangements for restricting outdoor water use during dry periods and in general, better system management to reduce unaccounted for water use, and other steps can help avoid the need for new water supply capacity. Reducing the passing flow released from Lake DeForest to New Jersey should also be considered. He recommends that a task force look at all the issues relating to water supply.

Klaus H. Jacob, Geophysicist, Ph.D.: Klaus H. Jacob objects to the selection of a desalination plant; he suggests water consumption reduction measures; reducing leakage from faulty water mains and distribution pipes; limiting releases of water to New Jersey; reliance on increased precipitation from climate change; and, increasing recharge potential. These options and skyrocketing energy costs are fundamental arguments against a desalination plant; it would be an abysmal, energy-guzzling green-house-gas machine that has no place in a modern energy- and climate- change conscious environment and society.

Upmanu Lall, and Allan and Carol Silberstein, Columbia University Professors: UWNY does not consider elasticity of water use, which often drops substantially after new infrastructure construction due to high water rates and incentives to conserve. It is the responsibility of Rockland County to decide to pay for desalination or to invest in conservation and wastewater reuse. A need exists for a better demand study, including economic and regional considerations, a comprehensive long-term water plan, and, a system analysis of potential designs for mixed potable and non-potable water use.

Scenic Hudson, Inc.: Scenic Hudson, founded 50 years ago to fight a proposed pump storage electric facility on Storm King Mountain, states that UWNY fails to take into account a marked decline in demand for water despite an increase in population

and demand-side and water management measures available to obviate need for the Project. It challenges the Company's inclusion of proposed new development projects issued willingness to serve letters because it is very unlikely that every one of the projects will come to fruition. UWNY has at least 5 mgd of excess average day capacity available. Scenic Hudson claims that UWNY's assumptions relating to rebound of the economy and water demand ignores evidence that water use steadily declined across the U.S. as population increased. A dramatic increase in water rates, a consequence of a capital-intensive water supply infrastructure project, will result in a significant decrease in demand, due to price elasticity, particularly as it relates to non-essential outdoor water usage, although some price elasticity is related to indoor usage.

Referring to the Commission's regulations (16 NYCRR Part 500) and the Ten State Standards requirement for a ten-year planning horizon, Scenic Hudson states that any plan that goes beyond ten years results in speculative and inaccurate water demand projections and could lead to imprudent decisions to greatly increase water supply when the demand may not materialize.

Cheaper, more sustainable water management and demand-side solutions are available, referring to Commission rules that all reasonable efforts to reduce and control future demands to bring them into balance with supply (16 NYCRR §503.4(b) and (c)). These include maximizing groundwater resources, leak detection and repair, conservation, and Lake DeForest management. The USGS Studies found estimates providing the basis of the 2006 need finding of recharge are too low; and the aquifer rebounds after each growing season and levels have not declined over the years. The RCDOH estimated that 88% to 145% of recharge was withdrawn for water supply; and, the USGS Studies determined that withdrawals accounted for only about 12% to 24% of recharge (pp. 113-115). It notes that the McLane Report estimates 1 to 1.5 mgd of additional supply is possible through better management and optimization of groundwater supplies (p. 12).

Modest water conservation relating to outdoor irrigation and indoor use would result in addition of three mgd during peak summer use. Although UWNY cannot mandate conservation, it could initiate conservation actions with the Commission's approval, including an ascending block rate structure; changes in the non-residential rate structure; rebates for high efficiency appliances; water audits; conservation assistance. The 2011 Rockland County Comprehensive

Plan recommended development of a comprehensive water policy and promotion of water conservation, land use management to concentrate growth in existing centers, and formation of a task force. It is expected that the task force will develop mandatory water restrictions for use during drought emergencies. Scenic Hudson concludes that a water conservation program would reduce demand by 3 mgd. UWNY's DEIS estimated that 17% of system water is lost through leakage, proposed to reduce the loss to 13% by 2035 (pp. 1-43) to produce an estimated 1.2 mgd. Scenic Hudson proposes a more ambitious 10% target, redirection of funds to main replacement over a 20 year timeframe, noting New York City's ability to reduce water loss below 10% in less than five years. Reducing passing flows to New Jersey would make more water available to Rockland County; the minimum 9.75 mgd downstream passing flow is in excess of requirements to maintain riparian water rights of downstream users and the health of the Hackensack River ecosystem; the 1982 new rule curve in the Lake DeForest permit allowed increased passing flows from Lake Deforest as storage declines in New Jersey downstream reservoirs. This places UWNY customers at greater risk during future droughts to benefit UWNY customers, although Lake DeForest is constructed for the sole benefit of Rockland County. Scenic Hudson claims that UWNY is pushing a capital-intensive infrastructure project to advance its shareholders' interests and achieve a stable return on equity.

Riverkeeper, Inc. and Scenic Hudson: UWNY overstates future demand; demand for water has decreased; UWNY's projected demand for 2012 is 33.2 mgd and actual demand is 28.3 mgd. The period of growth in the 1970s and 1980s will not be replicated; Rockland is nearly built out; land use plans call for more dense development and preservation of open space; population is aging; and preferences are shifting to more clustered development and multi-family dwelling. The period 1990-2012 is more representative of the demand the County can expect to see in the future, as noted in the RWC assessment.

UWNY's claims that the decrease in demand is the result of temporary factors relating to the economic recession ignores the volume of evidence that, over the past two decades, water use steadily declined across the U.S., even as population grew and unrelated to economic conditions, referring to a 2012 American Water Works Association study, USGS and American Rivers studies, and experience of Seattle and South Florida. It is unwise to conclude that trends of pre-1990s era will continue; and, this could result in significant overbuilding of water supply infrastructure. The Commission's rules require that, when demand may exceed supply, a water corporation shall take

all reasonable efforts to reduce and control future demands (16 NYCRR §503.4(b) and (c)).

While per-capita water consumption is relatively low in Rockland, additional conservation measures could result in significant additional savings, as suggested by Dr. Stuart Braman's comments. Summer peak demand relating to lawn watering could be substantially reduced. UWNY could implement a number of conservation measures with the Commission's approval: modify rate structures; offer high-efficiency rebates; conduct water audits; and provide technical assistance.

Helen Cornell, Chairwoman of the Rockland County Legislature announced plans to establish a task force to develop a comprehensive water policy and promote water conservation. The County announced has an incentive to develop and implement a safe and sustainable water supply, because it is faced with a proposed water supply project that would cost nearly millions of dollars and come with intensive energy use, significant environmental impacts, questionable water quality, and no flexibility to respond to reduced demand or changing conditions. The first objective of the task force is to ensure demand will not come close to available supply during the interim period while a water policy is under development, including assessment of mandatory conservation measures during drought periods and initiation at an earlier point. Price elasticity would reduce demand if the Project is built, given the dramatic water rate increase resulting from a capital-intensive Project and pending rate increases and their its effect on further reducing demand. Building an expensive, energy-intensive and environmentally damaging water supply project would harm the economy and ecosystem of Rockland County and should not be pursued unless an imminent demand exists for water that cannot reasonably be satisfied in other ways.

Sierra Club Lower Hudson (George Klein and Peggy Kurtz): George Klein makes five points: water demand fell over the last five years; nationwide, demand is down; a USGS Report concluded that more water is available from aquifers than previously thought; fixing leaks and releasing less water to New Jersey would reduce demand; and dramatic water rate increases will result in marked decrease in demand.

Peggy Kurtz states that Rockland County's water use dropped by 10% since it peaked in 2007; and, UWNY filed a rate increase request to make up for the lost income. The UWNY Report does not mention that Rockland's declining water use is part of a very significant nationwide drop in water use over several decades. UWNY's estimate of a .1% reduction in water use

from conservation is unrealistic, given California's 20% reduction target; Ms. Kurtz claims that Rockland County could easily conserve 10% from residential use alone. She points to communities, such as Brocton, Ma and Tampa, FL, paying for plants that became unnecessary because demand dropped. She claims that water use is declining; precipitation and flooding are increasing; and, the County can get by with smart growth, water neutral development, water efficiency, leak repairs, sensible rate structure. Many of the conservation measures are not within UWNY's authority; the County and many towns are willing to move ahead with conservation. Many conservation measures are within UWNY's control and the Commission's authority, including changes in rate structure, reversing discounts for large business water users, water audits for large water users, effective education and outreach program, rebates for efficient fixtures, upgraded leak repairs, and main replacements. She asserts that construction of an extremely energy intensive water source in the water rich northeast is a terrible mistake when climate change is so urgent.

Food & Water Watch: Please say no to UWNY's costly, dangerous, and unnecessary proposal. The Project would impose an unnecessary financial burden on consumers; the Company overstates water needs by ignoring trends and consumption and promise of conservation; water demand fell by 10% since peaking in 2007; and, households are conserving water. The best option is to maximize supplies through conservation and improved system upkeep. The Project will saddle customers with decades of excessively high bills to pay for water that is not needed.

Stony Point Action Committee (SPACE): In 2006, a need for additional water supply was identified, in reaction to drought conditions in 2002 and 2005, and to test the reasonableness of UWNY issuance of letters of intention to serve prospective home developers. Since that time, the USGS issued its Final Report in 2011, DEC fined UWNY for violating its permitted releases from Lake DeForest (malfunctioning valve), opportunity arose to revise the Lake DeForest permit, and a 25% high leak rate, rate impact, effects of Hurricane Sandy, and similar weather events were identified. More effective water management and conservation policies are needed before imposing the Project's long-term unsustainable environmental and economic burdens on Rockland residents.

Torne Valley Preservation Association (Patsy Wooters): The cost of desalination is so extreme, than an extreme need is required as justification. UWNY's rates are among the highest in the United States, according to a survey by Circle of Blue. With

the Project, UWNY's rates would double, leading to a water tax that would cripple the County's economy. Rockland does not have an extreme need for water; it receives over 4 feet in annual precipitation.

West Branch Conservation Association (Lilliana Connor and Martus Granieer): Liliana Connor, individually and as a joint submission from concerned environmentalists and elected officials claims that UWNY's 2013 Need Report is full of inaccuracies and missing information, lists the inaccuracies, and requests that the Commission send the report back to UWNY for correction and completion. These inaccuracies include: inaccurate information on precipitation levels; missing information on recurring floods in Rockland County; dangerous carcinogens (Tritium) in the Hudson River and mercury in the Project's soil not subject to removal by reverse osmosis and posing health hazards; use of sulfuric acid to treat Hudson River water; unreliability of pilot plant tests because millions of PCG particles in the Hudson are not removable by reverse osmosis; and, claim that population and demand is increasing when the situation is just the opposite. Ms. Connor states that due to climate change with its abundant rainfall and snow, conservation, lowering of demand for water due to aging population and price factors, there is no need for a desalination plant in the foreseeable future. If extra water is required, proper management of the County's water resources, unique geological fissures, and other solutions will supply sufficient water.

Half of Rockland is in a flood zone, according to FEMA maps; a UN Report projects a 50% increase in precipitation for the Eastern Seaboard, due to climate change; and, a World Bank Report predicts that New York will be among the ten highest cities with flood costs by 2050. She quotes a scientific expert's statements that reverse osmosis does not remove Tritium, because its molecule is too small, and that leaks in pipes will cause contamination. Ms. Connor states that a recent study found heavy contamination of PCBs in the entire area of 200 miles.

Martus Granieer states that, in his experience with other major projects (waste-to-energy incinerator, Northeast Water Supply, and Sterling Project Nuclear Reactor), sponsors of capital-intensive public utility projects that rely on demand, seem to inflate their demand projections when seeking agency approvals.

Sierra Club Atlantic Chapter: No new long-term water supply project is needed, because other options are available, demand

for water decreased since 2009, and demand is not expected to exceed supply until at least 2025. The desalination proposal will cause considerable impact to the Haverstraw Bay ecosystem, unchecked development when water supply constraints previously limited growth; and desalination is an effort of last resort in a water rich area and indicative of poor resource management not a justified public need. This Project would abandon the fundamental philosophy of water resource management, based on sound land use, water infrastructure efficiency, and conservation. Acceptance of the Project would affirm unchecked consumption of water as an acceptable practice when affordable efficiency and land-use solutions are viable alternatives. Based upon the USGS Studies, ample opportunities exist to increase supply, including storm water run-off retention, curtailment of excessive out-of-state releases from impoundments, recycling municipal waste water, and efficient use of the infrastructure. The desalination plant may cause the plant to close under crushing debt or mandate new consumption water uses to keep the facility open. The Sierra Club requests that the Commission mandate a water conservation program; institute a leak detection and repair system; and send less water to New Jersey.

The Sierra Club, adopted a Resolution stating: repairing leaks is a necessary first step; water needs met with smart growth planning, water conservation and efficiency; water reuse, rain water collection, and other low water impact sources; desalination will impact the habitat of Haverstraw Bay; Project vulnerable to storm surges and storm related leaks from Indian Point; reverse osmosis technology cannot remove Tritium and Strontium-90 leaking from Indian Point; and, long-term impacts of these substances are unknown.

Hudson River Sloop Clearwater, Inc.: Clearwater submitted a petition with 254 signatures opposing the desalination plant, because it is energy-intensive, costly, and inconsistent with state and federal policies to protect the Hudson River ecosystem, especially the Coastal Management Plan.

Hudson River Fishermen's Association: The desalination process will result in three mgd of super salted water mixed with water from a sewage treatment plant that is devoid of life and sent back to the Hudson River.

Sparkill Creek Watershed Alliance; Strawtown Studio Environmental Education (Laurie Seeman): The people in Rockland County are prepared to take on the task of managing water resources as part of a public-private partnership. The world is changing; and, children are becoming more interested in environmental sciences and environmentally conscious and living

small in a sustainable manner. As an outdoor educator, she emphasizes the importance of Haverstraw Bay and the Hudson River Valley, as one of the most top-rated, significant habitats and coastal fisheries; and, it should not be a water mine. The Project would be a crime against this waterway. Ms. Seeman states that Rockland County residents will not drink radioactive water.

Organizing people is the greatest force for change. The best water conservation enforcement is education; real and meaningful conservation can take place in Rockland County. She provides a list of organizations, education leaders, outside organizations and related interest group that have an active interest in Rockland County's water and environment. She questions UWNY's extravagant advertising campaign, called outreach and education, designed to sell the Project; lack of UWNY accountability is outrageous; she asks if the Commission monitors UWNY's outreach/advertising campaign. Haverstraw Bay is a vitally important marine nursery; thus, it is not correct to impact the bay with the cumulative impacts of desalination. Among other things, Laurie Seeman requests that the Commission mandate a proper water use survey to facilitate an effective plan for water conservation; she notes the declining water demand in Rockland, due to population, cultural and behavioral changes that young people are bringing and the need to design a world that reflects an understanding of the next generation's values and beliefs; she asserts that UWNY's conservation efforts are ineffective and that it could do a great deal more.

Citizens Campaign for the Environment (CCE) (Jordan Christensen): CCE is an 80,000 member organization that advocates solutions to protect public health and the environment in New York and Connecticut, including protection of the Hudson River and promotion of sustainable water management and water conservation practices. CCE recommends that the Commission consider: specific impacts caused by a desalination plant when it evaluates need for the Project; ongoing and planned water conservation measures; decrease in water demand; effect of higher water rates on demand decreases; and sufficiency of County's water supply. The desalination plant would affect the Haverstraw Bay ecosystem, Hudson River water quality, water rates, drinking water quality, due to proximity of intake pipe to Indian Point. Rockland County is committed to water conservation and better management practices as alternatives; demand for water decreased by 5 mgd since 2006; no rush for the Project and Rockland should implement a Comprehensive Management Plan before approval of a new water supply project. CCE requests the Commission to lift its mandate for a new water

source by 2015 and allow the County time to implement water conservation measures.

Expected population increases and proposals for large development projects have not come to fruition; population growth slowed considerable; the County is using less water and developing at a less rapid rate. The 5 mgd demand decrease is part of a nationwide trend in decreased water use, even as population increases nationwide. CCE recommends an updated analysis on future water needs, using more realistic demand projections. The desalination plant is projected to cost up to $189 million and residential water rates will increase between $300 and $500 per year; a rise in water rates will cause demand to decrease (Brockton, MA). Rockland enjoys 49" of rain annually, which provides sufficient drinking water resources; prevention of loss of water through leaky pipes and excess water releases to New Jersey, green infrastructure, and conservation measures would produce more water. According to the USGS Studies, Rockland's aquifers are recharging at a greater speed. New Jersey receives excess water from Lake DeForest Reservoir; the Kecskes Report states that New Jersey receives excess water and a reduction in the passing flow would provide an additional 4 mgd to the County.

CCE collected 24,000 signatures from persons who oppose the desalination proposal and support increased water conservation methods as an alternative. Over the last seven years, contrary to projected increases in water use, water use decreased, proving the initial projection inaccurate. UWNY failed to consider alternatives: conservation measures; green infrastructure; repairing leaking pipes; Rockland Comprehensive Plan for water management; update building codes; zoning codes; education and publication of information on conservation.

AARP Rockland County Chapter 1577: AARP expresses concerns about the unnecessary financial impact on retirees and persons on fixed incomes, because customer bills will increase by about $500 per year, although UWNY estimates $300. AARP states that, based on the Appleton Report, Rockland's water demand will decrease by 30%, once the $500 rate increase takes effect; it suggests that 25%, or 7.8 mgd, of UWNY's water production is non-revenue water, lost primarily due to leaks and main breaks; and, it questions whether UWNY should invest in infrastructure improvements to prevent these losses instead of building its Project.

Public Health and Sustainable Energy (Dorice Madronero and Susan Hito Shapiro, Esq.: It is not safe or sensible to locate a desalination plant 3.5 miles downstream from Indian Point; no

study analysis cumulative exposure. Inquiries that need answers include type of real time radiation monitoring system and its additional costs. The Project requires an irreversible commitment of resources to obtain drinking water from a potentially highly radioactive source. Before committing these resources, it is necessary for UWNY to repair its water system to reduce physical losses, increase groundwater use, and use other water resources.

Putnam Highlands Audubon Society: The UWNY Project will drive up water rates and result in provision of water containing low levels of Tritium and Strontium 90. The Haverstraw Bay is an important spawning ground; and, it is vital that this critical habitat is protected. The drawing of water from the Hudson River increase negative impacts on fish and other river wildlife. The cheapest, most efficient, and least environmentally disruptive solution is conservation and education.

United Women of Haverstraw: A petition signed by 23 Latino women, object to the desalination plant because of the presence in the water of radio-nuclides from the Indian Point Power Plant. Rainfall is abundant; and, cost of the Project is excessive.

Rockland County Environmental Management Council (EMC) (Natalie Patasaw and Edmund Knyfd): Natalie Patasaw states that resolution of several issues is required before a finding of need is made, including: decision making criteria, County aggressive water conservation program, Project's energy use and cost; flood plain effect; decrease in demand; average 50.31" of rain fall; drop from 700 to 100 building permit applications; leak repairs; aggressive conservation program; use of waste water; Project's cost; and damage to trial plant during Hurricane Sandy. Ed Knyfd states that the Project is expensive to maintain, subject to damage from severe weather events, requires high energy costs, and causes ingestion of radioactive contaminants, which will accumulate in bodies. The USGS Study indicates that aquifers are productive and recharging faster than previously thought. A combination of actions would result in significant water savings and provide for additional time to allow the County to develop a Water Supply and Management Plan, including reducing passing flows to New Jersey; implementing pricing incentives to conserve; higher efficiency appliances; seasonal pricing structures; and, reduction of lost or unaccounted for water through leak repair.

Water demand increases are the result of irresponsible land development, including Palisades Center, proposed Patrick

Farm project, and Provident Bank Park. UWNY claims that the desalination plant is required for economic development and the County's economic condition; yet the Project will ruin existing natural resources. If the Project moves forward, Mr. Knyfd predicts: wasteful water use because UWNY will meet demand by processing more Hudson River water; increased costs to ratepayers due to higher energy costs because of use of an energy intensive treatment process and fuel cost to transport and dispose of contaminants; drop in water consumption because of rising costs; risk that plant is under-utilized or mothballed; lagging improvements to infrastructure, because no incentive to conserve water; increase in land development projects, located in unsuitable areas; impervious cover increase, leading to more storm water runoff and flooding.

An onslaught of recent projects will cause disturbances of Hudson River and sediments in the area of the proposed project, increasing chances of introduction of contaminants into the Project's treated water supply: Champlain-Hudson Power Express; PCB Clean-up; West Point Transmission Project; new Tappan Zee Bridge; and, barge transportation of fracking wastes down the Hudson River.

Ramapo Organized for Sustainability and a Safe Aquifer (ROSA Inc.: The Project will result in increased water prices and taxes; it will change the character of the community; no survey was conducted to gauge community views on the Project; it works against slow development in the County; and, it is necessary to turn the tide of overdevelopment and better manage our current resources.

Westchester Seeking Alternatives for the Environment (S.A.F.E): S.A.F.E. opposes an impact on the irreplaceable fisheries in Haverstraw Bay, expresses concerns about radioactive material from Indian Point in the water, lack of assurance that safe levels of radiation will be acceptable in the future, the proposed process which is energy intensive and distracts from proper use and water conservation.

Elected Officials

Senator David Carlucci: The USGS indicates that aquifers are recharging at a faster rate; water use is decreasing; a Columbia University study estimates 10% savings through conservation; we have time to make the right decision.

Assemblyman Kenneth Zebrowski: Circumstances have changed since 2006, including usage decreases, increased groundwater capacity, excess water sent to New Jersey, potential revision of the rule curve, opportunities for conservation and efficiencies, numerous

rate hikes, and extreme weather resulting in floods. He recommends a bi-state watershed initiative, and an active Commission role in determining the most cost-effective way to meet future demand and analysis of the data.

Assemblywoman Ellen C. Jaffee: In 2006, she supported development of a new long-term water source because she expected a thorough study evaluating all options, which did not occur. Subsequently, she asked USGS to perform an aquifer study, paid for by the County, UWNY, and DEC. She states that the USGS Study found: no downward trend in groundwater levels across the aquifer, which is recharging at a faster rate; water needs are seasonal, with no real drought conditions; low impact, common sense solutions are available; and, sustainability is largely dependent on adjusting for use during drought periods and summer peak demand. She notes that actual water use fell short of projections, significant information for the Commission to consider. She asks the Commission for time to put in place common sense demand side solutions. Based upon studies by experts (McLane Report and Appleton Report), Rockland County has no need for a new water supply. She requests Commission consideration of the selection of the desalination plant, in addition, to need, so agencies interact with each other, because the public does not separate need from the Project. She requests that the Commission provide time for Rockland County to implement its plan to cut consumption during the peak use months, stating that Rockland is on its way to managing demand because it formed a task force to establish sustainable alternatives.

C. Scott Vanderhoef, Former Rockland County Executive: The same projection methodology used in 2006, updated with demand data through 2013 accounting for lower recent demands, indicates that existing supply capacity crosses the critical upper 90% curve sometime between 2017 and 2018, 2 to 3 years later than modeled in 2006. He claims that Rockland County has some breathing room to carefully evaluate supply-demand options. DEC failed to reopen UWNY's Lake DeForest water supply permit to increase the amount of water allocated to New York, decrease releases to New Jersey, or explain why no modifications are permitted, despite his letters requesting reopening the permits in 1999, 2010, 2012, and 2013. He provides a letter from DEC, dated July 12, 2010, stating that DEC will examine the issues in connection with its EIS for the Project. The letter stating that reopening of the Lake DeForest water supply permit raises some salient points and DEC recognizes the need for their examination. It asserts that DEC, as part of its SEQRA review of UWNY's pending proposal to construct a desalination water treatment plant, will

explore the water-sharing agreements with New Jersey in depth. It notes the requirement in the DEC Scoping Document requiring analysis of these issues (Chapter 2: Purpose and Need, Section 2).

Ed Day, Rockland County Executive: Rockland County residents are outraged at paying higher water bills that inordinately benefit United Water customers in New Jersey. UWNY needs to fix its aging and leaky infrastructure; it is imperative that the Commission require major repairs and continued maintenance and take action to revise the Lake DeForest permit. He states that he will partner with the Rockland County Legislature to establish a task force on water policy.

Harriet Cornell, Former Chairwoman, Rockland County Legislature: The combined capacity of the Rockland water supply system, managed properly, will provide adequate water supplies for ten years, obviating the need for an infra structure project, given the decreased demand, focus on the safe yield of Lake DeForest, better management of water resources, groundwater recharge rates, and demand-side management. A list of relevant new information relating to need is provided, including changing demographics involving a major shift in the age structure of the County's population; analysis of Lake DeForest releases to New Jersey, including Robert Kecskes report on the rule curve and pass flow; water supply documents including USGS Studies, Appleton Report, Rockland County Comprehensive Plan, ECONwest Report, Braman and Gruber Report; state and regional initiatives including Smart Growth Public Infrastructure Policy,[8] Mid-Hudson Regional Sustainability Plan, Rockland Bergen Bi-State River Commission,[9] and Governor Cuomo's sustainability agenda. Rockland County began a process to prepare a comprehensive, long-term plan to address water supply and formed a working group. She requests the Commission to endorse a Task Force, to develop a plan to ensure the health and adequacy of Rockland's future water supply. One of the first objectives of the Task Force is to assess the Mandatory Conservation Measures Program to ensure that demand is sufficiently reduced during periods when it would increase to excessive levels. The Project generated enormous public awareness about the value of water and galvanized public opposition; and, this is the best time to

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[8] Environmental Conservation Law Article 6 (Chapter 433 of the Laws of 2010).

[9] The Governor vetoed Assembly Bill 1297, because it lacked appropriate funding through a budget appropriation.

address lost water or leaks in the system, implement code changes, and institute an aggressive conservation program.

UWNY contends that, by 2015, the County's average water demand will be 34.3 mgd, out of a 34.5 mgd of supply. Demand has declined since 2006, with a demand of 28.4 mgd in 2012. UWNY provides no data on how demand will suddenly increase by 6 mgd by 2015. UWNY states that new residents will use water, regardless of living arrangements. It is probable that new development will take the form of townhouses or apartment because not enough undeveloped land is available for single-family homes; and, per capital water consumption is less in townhouses or apartments.

A combination of actions would assure long-term water supply and preclude a single project with a number of undesirable and costly results. UWNY's claims that aggressive conservation alone would avoid the need for its Project ignores the other options put forward, including reopening of the permit and renegotiation for the rule curve, an aggressive leak management program, and ascending block water rates. UWNY claims that the majority of UWNY's customers already use water efficient plumbing fixtures; without providing the source for this conclusion or conducting any surveys, the statement is conjecture. Rockland County has relatively old housing stock with only 17% built after 1990, when the U.S. Energy Policy Act of 1992 mandated low-flow plumbing fixtures. Without research to verify its conclusions, UWNY's claim is specious.

UWNY claims that the success of conservation programs implemented elsewhere is not applicable because UWNY employs many of the measures and achieved maximum conservation. In fact, a visitor to the Company's website requires persistence to navigate and find a conservation guide. "If UWNY is serious about achieving and not just promoting conservation, it needs to reach out to the public, rather than wait for them to find UWNY." UWNY makes the case that, during the recession, water use and demand declined, but it does not explain why. One reason commercial use is down relates to the Pfizer downsizing, which eliminated vitamin manufacture and use of a substantial amount of water. While UWNY states that the number of its large customers declined, it does not necessarily follow that once the economy returns to some measure of normal growth, demand will increase significantly.

Alvin Wolfe, Chairman of the Rockland County Legislature:
Significant changes in circumstances occurred since the Commission's 2006 need determination: new data indicates water usage decreased, indicating that projections relied on are

inaccurate; the USGS Studies indicate that groundwater supply is far healthier than estimated and recharges at a faster rate, particularly during times of peak demand. Viable demand side solutions exist; elimination of UWNY's higher than average leakage rates; retention of water released to New Jersey; and, Rockland County's task force which will examine water management planning. Mr. Wolfe is working on adoption of non-emergency water use restrictions and enhancing conservation efforts.

Mr. Wolfe supports smart management policies in Rockland County. He is in the process of forming a task force to make short- and long-term recommendations, including a drought management plan, impartial analysis of need, and a non-emergency conservation plan.

Shirley Lasker, Supervisor of the Town of Clarkstown: Clarkstown is extremely proud of their environmental record and accomplishments in the area of land use, conservation, and control of development. Just say no to a hugely expensive, energy intensive, and unnecessary plant, that will adversely affect residents' health and pocketbooks. Clarkstown enjoys the lowest growth of any Town in Rockland, resulting from decades of comprehensive land use planning, controlled residential development, and environmental protections. This results in a lower demand for water and more recharge of existing supplies. Rockland is forming a task force to develop a comprehensive long-term county water plan. Clarkstown is working to reduce water demand by ten percent, by performing an audit of its own facilities and instituting conservation measures. The Project is not necessary and would be harmful to the health and well being of County residents and businesses.

Andy Stewart, Supervisor of the Town of Orangetown: No sufficient need for a new supply justifies the Project; and, we should look for alternatives, including waste water treatment and a new County water plan.

Town of Ramapo

Christopher St. Lawrence, Town of Ramapo Supervisor: Releasing water to Lake DeForest makes no sense; conservation can yield more than 10% savings; and, repairing leaks can produce additional savings. The Project will not bring any tax revenues to North Rockland and its price will force people to conserve. A comprehensive plan is needed that combines leak repairs with conservation, demand side management, and supply side management. Dan Duthie states that, from 2005 to 2007, average daily demand in Rockland County peaked at about 31 mgd; over time, this number dropped to 28.3 mgd. Due to the addition of capacity, UWNY now has a 34 mgd average daily capacity, with

a 5 to 6 mgd surplus. About 1.3 mgd of additional capacity is needed to serve planned projects; and, an average 5 mgd surplus is available until 2017. Mr. Duthie submitted an exhibit depicting UWNY demand and capacity projected through 2017.

No immediate need exists for a new long-term water supply project, because UWNY's short- and intermediate supply measures increased yield, demand decreased, and UWNY did not use the most recent information in its Need Report. UWNY is able to obtain 7.5 mgd from alternatives to the Project's construction, including conservation, reduction of water main leakage, reduced demand due to rate increases, changes in the DeForest water supply permit, and, additional fresh water supplies in the County.

According to the UWNY letter submitted by Deborah Rizzi, on October 24, 2013, Dr. Miller concluded that Rockland needs more capacity to meet average demand by 2016 or 2017, a departure from the 2015 estimate. The Town notes that average daily demand (ADD) peaked from 2005 to 2007 at 31 mgd and gradually declined since them to 28.38 mgd in 2013 indicating surplus of a 5.8 mgd ADD, and a peaking capacity surplus twice as large. It states plenty of time is available to continue to evaluate the need for the Project. UWNY's position on price elasticity is wholly self-serving and unsupported by vast majority of scientific studies. The bottom line is that the trend of average usage is inexorably down and expected as remodeling results in installation of more efficient fixtures and appliances. The remainder of the comments recite conclusions from the Appleton Report, Harriet Cornell's testimony at the October 1, 2013 Public Statement Hearing, Dr. McLane's Report, and other comments to substantiate the claim that other alternatives are available and it is unnecessary to build the Project.

The Town claims that unjust and unreasonable rates will result from a desalination project that is too expensive compared to other water treatment technologies. Capital investment in the Project will increase rate base by 50%, with an average capacity cost of $7.8 million, and very high operating expenses. It is recommended that the Commission institute a prudence investigation relating to the approximately $60 million in pre-construction costs. The Town attached UWNY response to interrogatories in a rate proceeding pending before the Commission to illustrate point that UWNY should do more to reduce non-revenue water.

Patrick Withers, Town of Ramapo Deputy Supervisor: Other water sources are available, including the abandoned

Tilcon Quarry in Suffern and other lakes in Rockland County. It seems reasonable to tap these fresh water sources.

Geoffrey Finn, Supervisor Town of Stony Point: The Project will require ratepayers to pay the highest water rates in the country; aquifers are recharging at a faster rate and aquifer levels are sustainable; conservation is a workable alternative; nationwide demand for water is decreasing; the Rockland County Comprehensive Plan will decrease demand; conservation is a better investment than a capital-intensive water project; elimination of system-wide leaks by replacing outdated infrastructure and reduced releases of water to New Jersey are better alternatives.

Jeffrey Oppenheim, Mayor Village of Montebello: Rockland County only has drought emergencies during the summer time, because of excessive sprinkler use, which is not a problem of need. In addition to rate increases, the Project will result in external costs, including environmental effects for disposal sludge waste produced by Project's treatment facility, health effects of chemicals in river, and effects on property values.

Brett Yager, Village of Pomona Major: Excessive energy required to produce potable water; UWNY should not be allowed to propose the Project without enactment of more stringent water conservation and consumption plans, and consideration of effect of potential catastrophic weather events.

Rita Louie, Village of Pomona Trustee: Even though UWNY worked on this Project for seven years, the Community began to express opposition only about three years ago; and, obtaining information is painstakingly slow. Pomona is built out and no population growth is expected; UWNY unfairly states that additional water is needed to fight fires; and, heavy rain fall and floods are common in the County. Trace elements of Tritium or Strontium-90 in the water, even if below the alleged EPA standards, because used to serve the Latino and Hispanic communities in Haverstraw constitute environmental abuse of a minority community.

List of potential supply source alternatives (source UWNY DEIS Chapter 18)

Table 18-1 (cont'd)
Summary of Alternatives

Project Alternative	Increase in Safe Yield	Meets Project Purpose and Need	Cost Estimate	Effects on Water Rates
Ambrey Pond Reservoir Alternative	7.5 mgd safe yield increase	Yes	Capital Cost (Total): $261.1 to $275.75 million Annual Operating Cost (Phase 3): $3.9 million	Average Daily Cost Increase Per Single-Family Household (Phase 3): $1.45 to $1.51
Wastewater Reuse Alternative	7.5 mgd safe yield increase	Yes	Capital Cost (Total): $302.6 to $325.9 million Annual Operating Cost (Phase 3): $7.5 million	Average Daily Cost Increase Per Single-Family Household (Phase 3): $1.54 to $1.63
Proposed Project	7.5 mgd safe yield increase	Yes	Capital Cost (Total): $139.2 to $189.3 million Annual Operating Cost (Phase 3): $5.6 million	Average Daily Cost Increase Per Single-Family Household (Phase 3): $0.85 to $1.05

Note: NA = Not applicable. For alternatives that do not meet the purpose and need for the Project, the potential cost and effect on water rates were not developed.

Table 18-1
Summary of Alternatives

Project Alternative	Increase in Safe Yield	Meets Project Purpose and Need	Cost Estimate	Effects on Water Rates
No Action Alternative	No increase in safe yield beyond 2015	No—would not provide safe yield	NA	NA
Operational Alternatives				
Alternative Water System Management Lake DeForest Spill Skimming Lake DeForest Permit Modification Other Alternative Management Strategies	No increase in safe yield	No—would not provide safe yield	NA	NA
Enhanced Water Conservation and Green Infrastructure	Would not reduce demand by 7.5 mgd amount of reduction is outside of United Water's control	No—would not provide safe yield	NA	NA
Enhanced Leak Management	Would not reduce demand by 7.5 mgd	No—would not provide safe yield	NA	NA
Surface Water Storage Alternatives				
Increased Storage at Lake DeForest	0.3 mgd increase in safe yield	No—would not provide safe yield	NA	NA
Quarry Reservoir Alternative	Suffern Quarry: up to 2.8 mgd safe yield increase	No—would not provide safe yield	NA	NA
	Tompkins Cove Quarry: 6.1 mgd safe yield increase	No—Quarry not available within required timeframe	NA	NA
	Congers-Haverstraw Quarry: 3.8 mgd safe yield increase	No—Quarry not available within required timeframe	NA	NA
Other Reservoir Alternatives: Ramapo High-Flow Skimming	Not likely to increase safe yield by 7.5 mgd	No—would not provide safe yield; potentially cost-prohibitive	NA	NA
Other Water Supply and Storage Alternatives				
New Groundwater Sources	No increase in safe yield beyond 2015	No—would not provide safe yield	NA	NA
Wastewater and Stormwater Reuse Alternatives: Direct Reuse of Stormwater or Wastewater as Non-Potable Water Indirect Reuse of Wastewater or Stormwater as Potable Water (i.e., Aquifer Storage and Recovery)	Direct Reuse: would not reduce demand by 7.5 mgd and/or cost-prohibitive Indirect Reuse: Most likely infeasible	No—would not provide safe yield; cost-prohibitive and likely to be infeasible	NA	NA
Hudson River Flood Skimming	7.5 mgd safe yield increase	No—No feasible storage option (same as quarry alternatives)	NA	NA
Combination of Alternatives	Not likely to increase safe yield by 7.5 mgd	No—would not provide safe yield	NA	NA

Environmental Review, (cont'd.)

	Ambrey Pond	Wastewater Reuse	HWSP
Capital Cost (Millions $'s)			
2015	225.7 – 238.2	243.3 – 262.0	97.2 – 144.8
2022	17.1 – 18.5	23.0 – 24.8	16.7 – 16.9
2030	18.3 – 19.0	36.3 – 39.0	25.2 – 27.8
Total	261.1 – 275.7	302.6 – 325.9	139.2 – 189.3
Operating Cost (Include property taxes, millions $'s)			
2015	8.5	5.9	5.2
2022	2.5	3.4	2.8
2030	5.6	4.6	4
Total	16.6	13.8	12
Annual Single Family Residential Rate Impact			
2015	403 – 421	403 – 430	188 – 256
2022	48 – 50	65 – 67	51 – 50
2030	78 – 79	93 – 99	73 – 77
Total	529 – 550	562 – 596	312 – 383

APPENDIX B
2 OF 2

UPDATED FORECAST OF UWNY WATER DEMAND

Staff has updated, UWNY's 2006 water demand forecast to incorporate recent actual average annual water demand in the UWNY Rockland County service area through 2013, which has been suppressed due in part since the 2007 recession.

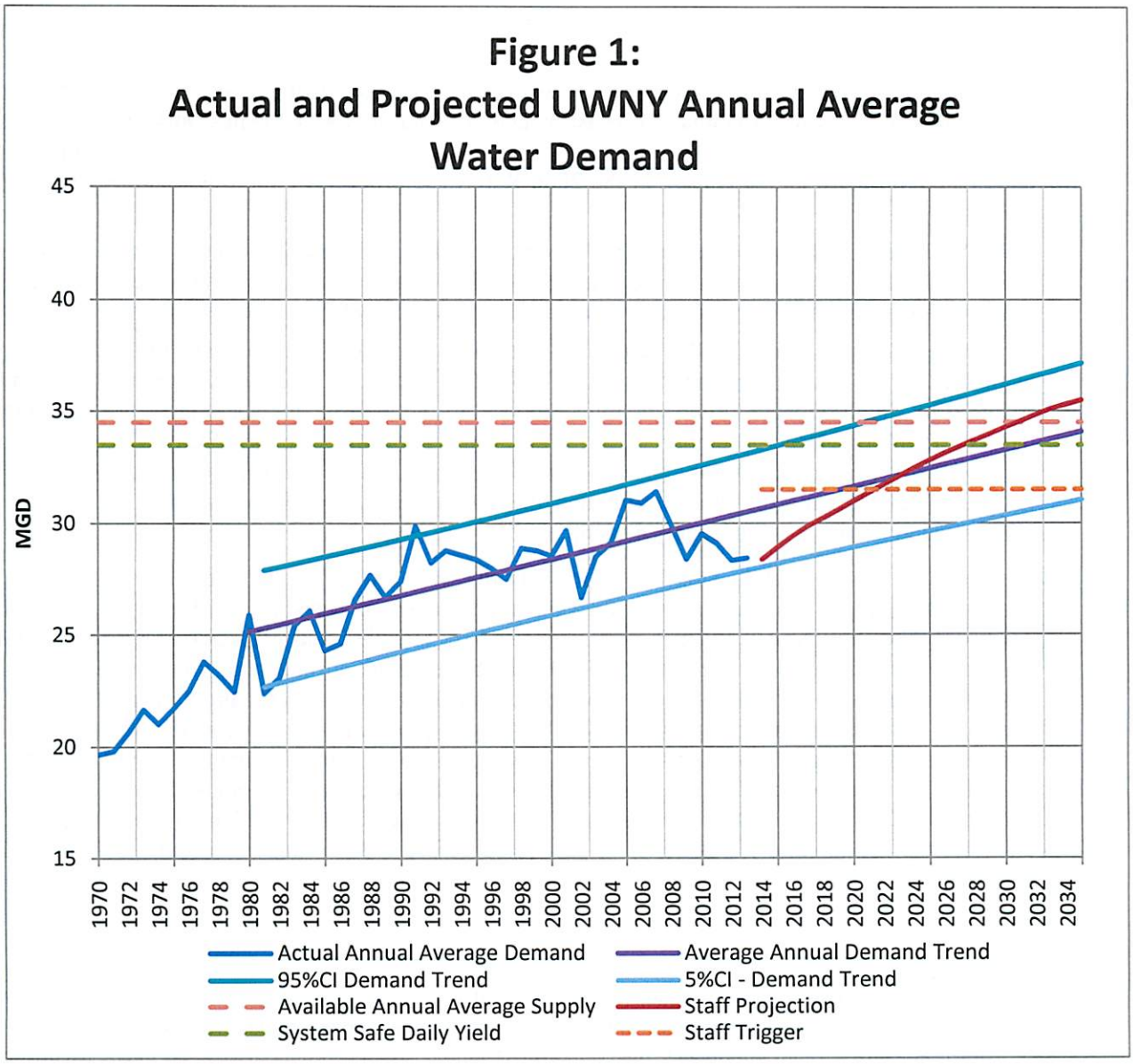

Figure 1 includes the following information:

- **Actual Annual Average Day Demand**—This line is the actual annual average demand each year (the total amount produced in a year divided by the days in the year). This information has been updated to include more recent actual average demand data through year end 2013.
- **Average Annual Day Demand Trend Line**—This line is an updated trend line based on actual annual average demand from 1981 through 2013. The trend line was developed as a linear regression analysis of past data, which was then continued into the future as an indicator of future demand trends. This line is not appropriate for forecasting future water supply needs, because it does not account for the significant weather induced variability in average day water demands from year to year.
- **UWNY Updated Demand Forecast (95 Percent Confidence Interval)**—Using the updated trend line, UWNY's water demand forecast, which is based on a 95 Percent Confidence Interval, has been recalculated. The 95 Percent Confidence Interval represents the upper limit of anticipated variation and was used in the 2006 Rate Case proceeding for water supply planning purposes.[1]
- **UWNY Updated Demand Forecast (5 Percent Confidence Interval)**—This line represents the lower limit of anticipated variation in water demand. Together, the upper and lower confidence interval bands should account for the variability due to weather effects on consumption.
- **Available Annual Average Day Supply**—This line represents the actual supply of water available, on an annual average basis, in UWNY's Rockland County system. UWNY was required by the 2006 Rate Order and Joint Proposal to increase its average annual water supply capacity to 34.5 mgd by December 31, 2015. Per UWNY's filing with the PSC on December 23, 2013, the average annual supply capacity was 34.49 mgd. The line on the chart is shown as a constant 34.5 mgd for readability, although the actual supply was lower in past years before UWNY added capacity to its supply system.
- **System Safe Daily Yield**—This line represents the Safe Daily Yield of total available water supplies for supply planning purposes on an annual average basis in UWNY's system. As defined in the *Ten-State Standards* document used by the PSC and NYSDOH as a regulatory standard,[2] the quantity of water that should be maintained in all surface and groundwater sources shall equal or exceed the design maximum day demand with the largest producing well out of service. The annual average supply of UWNY's largest producing well, New Hempstead #18, is approximately 1 mgd, based on the annual average supply capacity approved by RCDOH. Therefore, as of December 23, 2013, the available safe daily yield of UWNY's Rockland County system is 33.5 mgd. The line on the chart is shown as a constant 33.5 mgd for readability, although the actual supply was lower in past years before UWNY added capacity to its supply system.

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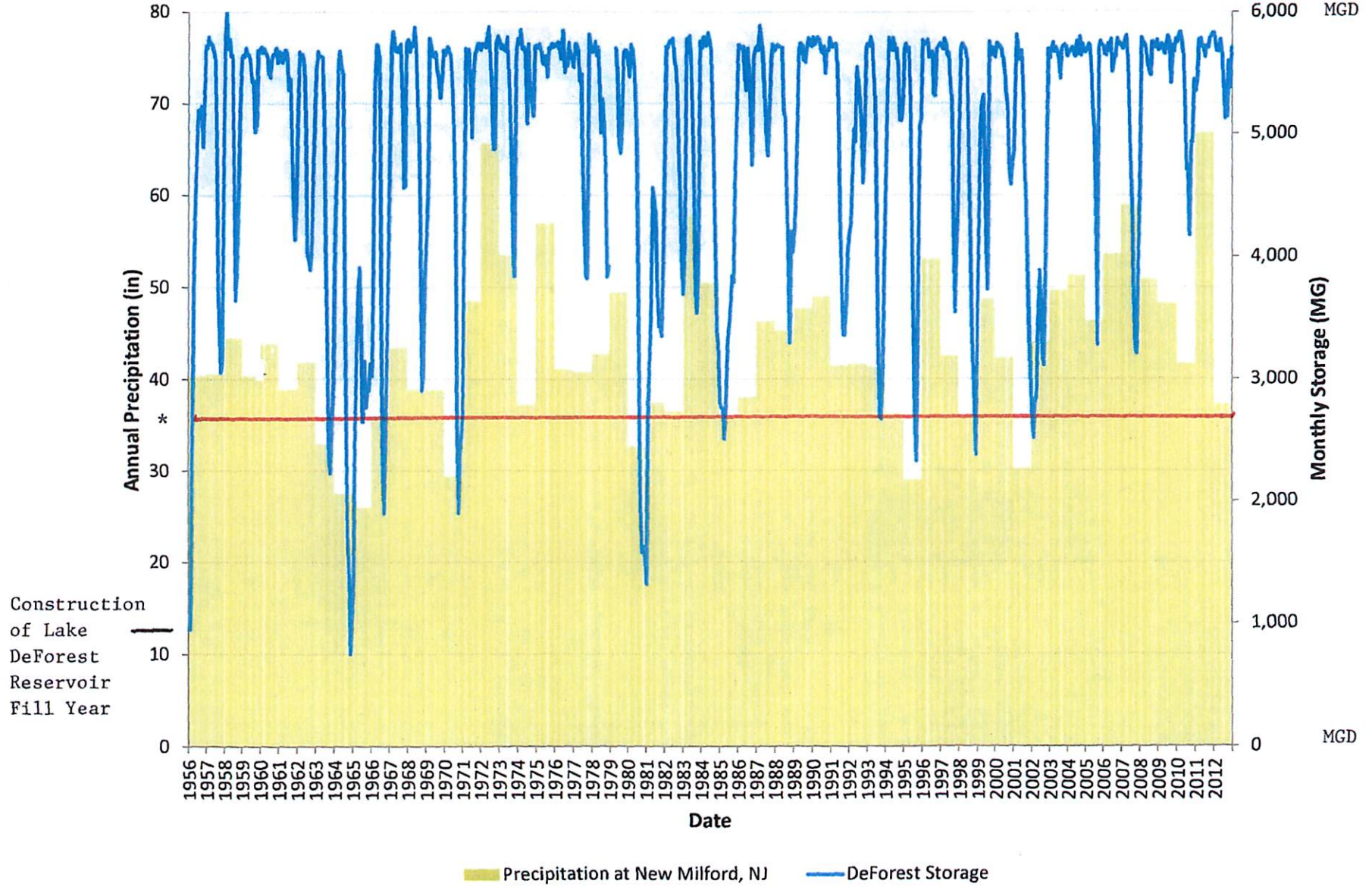
1 The lines shown as the 95 Percent Confidence Interval and the 5 Percent Confidence Interval are determined using the statistical average (i.e., the average annual demand trend line) and the standard deviation of observed values from this average. The confidence interval level is defined as the probability of an event occurring outside the range of the confidence interval pair.

2 *Recommended Standards for Water Works, Policies for the Review and Approval of Plans and Specifications for Public Water Supplies*, 2012 Edition, Part 3.

- **Staff's Average Annual Demand Forecast**---This line utilizes the County's population forecast updated for the actual 2010 census data that estimated growth at five year intervals to 2035. Staff used the Company's estimated percentage of people served as a subset of the total population which included the fact that systems within the service territory continue to migrate to the Company. Using the most recent three years of consumption data a gallons per day per person (per capita) consumption was determined. This was then multiplied by forecast population for each of the different user types - residential, non-residential and other. Adjustments to the per capita consumption were made to reflect resumption of economic growth (residential per capita was adjusted to match the 10 year average and non-residential was adjusted based on Moody's April 2013 employment forecasts for Rockland County) and continuing Company conservation activities to account for the continued turn-over of fixtures and new water use technology and an annual level of non revenue water reduction over the next decade based upon the Company's roll out of district metering.

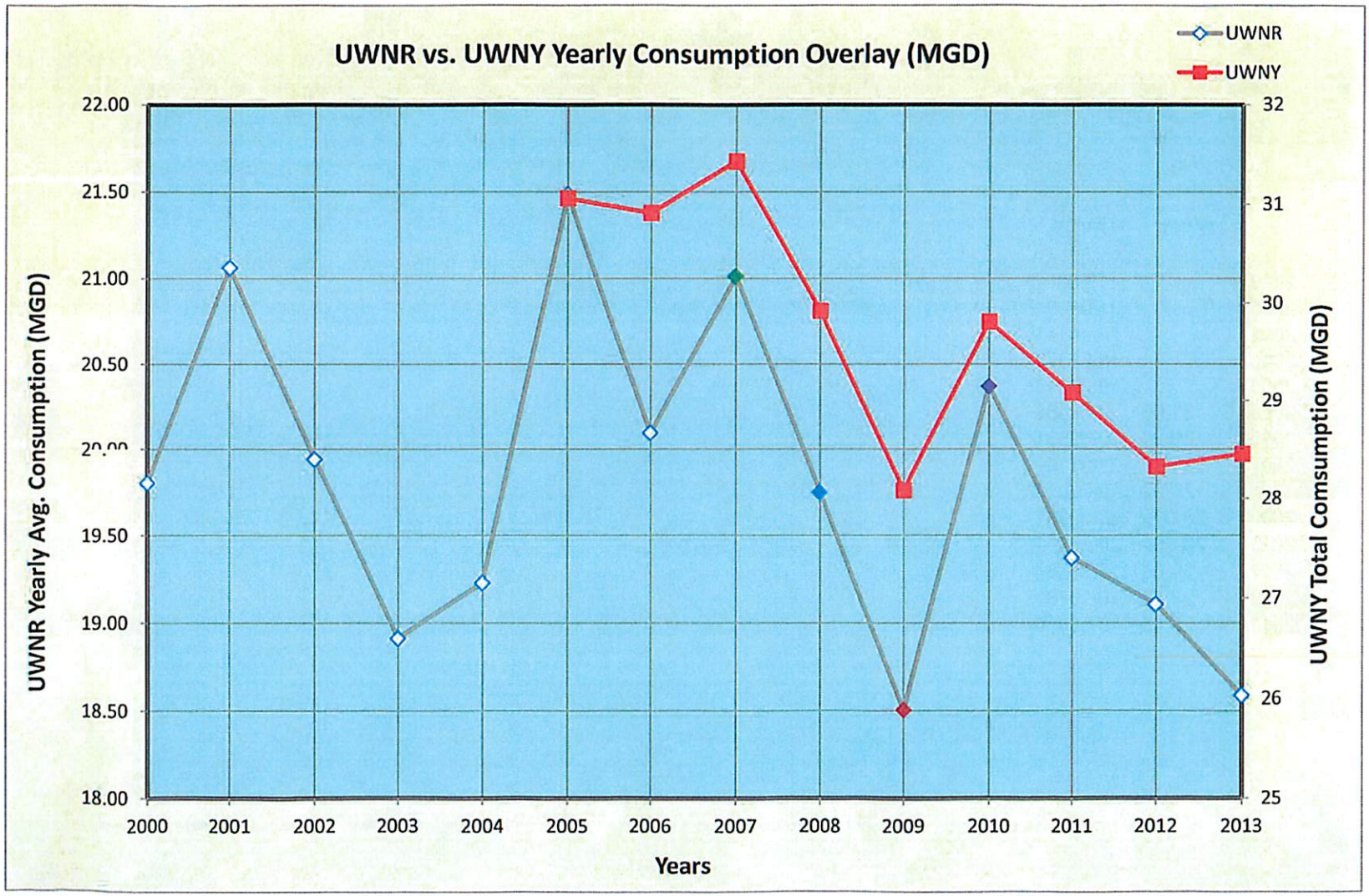
ANNUAL PRECIPITATION AND MONTHLY DEFOREST STORAGE



* At risk for running out of water; level reached nine times since 1956.

APPENDIX D

Initial DIP Surcharge 8/1/07 (9.62%) -
2/8/08 DIP Surcharge updated to 13.96% -
3/1/09 DIP Surcharge updated to 15.62% - 9/17/09 DIP surcharge updated to 17.8% -
DIP Surcharge Consolidated into rates 11/1/10 -



APPENDIX E