STATE OF NEW YORK
PUBLIC SERVICE COMMISSION

IN THE MATTER OF A PROCEEDING ON MOTION
OF THE COMMISSION AS TO THE RATES, CHARGES,
RULES AND REGULATIONS OF

SUEZ WATER NEW YORK INC. (CONSOLIDATED)
(consisting of SUEZ Water New York Inc., SUEZ Water Westchester Inc. and SUEZ Water Owego-Nichols Inc.)

FOR WATER SERVICE

Case No. 19-W-____

TESTIMONY OF PAULA L. MCEVOY

SUEZ Water
360 West Nyack Road
West Nyack, NY 10994

Q. Please state your full name and business address.

A. My name is Paula McEvoy. I am the Director of Engineering for the New York Division of SUEZ, including the five Operating Units for which consolidation is being sought; SUEZ Water New York ("SWNY"), SUEZ Water Westchester Rate District 1 ("SWWC RD#1") (formerly United Water New Rochelle), SUEZ Water Westchester Rate District 2 ("SWWC RD#2") (formerly United Water Westchester), SUEZ Water Owego-Nichols ("SWON") and SUEZ Owego-Nichols Forest Park System ("Forest Park or "SWON-FP"). The Business Unit SUEZ Water Westchester, containing SWWC RD#1 and SWWC RD#2, will be referred to as "SWWC". For the proposed merger, in this testimony, the consolidated entity will be referred to as "Merged Company", "Company" or "SWNY Consolidated". My current business address is 360 West Nyack Road, West Nyack, NY 10994.

Q. What is your current title and work responsibilities?

A. My current title is Director of Engineering, NY Division. I am responsible for capital investments and capital plans for the Operating Units. In this capacity, I direct the design and construction of capital projects concerning sources of water supply, dams and reservoirs, water treatment plants, transmission and distribution systems, customer service lines, meters, distribution system storage tanks, pumping facilities, and other facilities as needed.

Q. What is your education and professional background?

A. I hold a Bachelor's Degree in Civil Engineering and a Master's Degree in Civil Engineering from the New Jersey Institute of Technology. I have worked at SUEZ since August of 1995. Prior to accepting my current position, I have held various engineering positions. Additionally, I am a registered professional engineer, licensed in the State of New Jersey.

Q. Have you previously testified before the New York State Public Service Commission ("Commission")?

A. Yes. I prepared and supported pre-filed testimony in the Companies' last rate cases, including Cases 17-W-0528 (SWON), 16-W-0130 (SWNY) and 13-W-0564 and 13-W-0539 (SWWC). I have also sponsored testimony before the Public Utility Commission in Rhode Island and the Board of Public Utilities in the State of New Jersey.

Q. What is the purpose of your testimony?

A. The purpose of my testimony is to describe the Operating Units' capital needs to sustain their systems, ensure adequate supply, and provide for necessary capital improvements. I present the Company's capital projects on Exhibit PM-1. The Company's strategy to meet long term water needs includes conservation, reduction of non-revenue water and increased supply. I address the capital requirements needed to implement this strategy.

Q. What is the main focus of the Company's capital investment plan?

A. The focus of the capital investment plan is on infrastructure improvement, non-revenue water reduction, regulatory requirements, facility improvements, and dam safety improvements.

Other areas of significant capital investment in the Company's five-year capital plans are the distribution system, storage tanks, blanket projects, building improvements and other typical capital upgrades. Exhibit PM-1 provides a summary of the Company's planned capital investments for the Bridge Period and Rate Year.

Q. Does Exhibit PM-1 identify those capital projects that are forecast to be in service during the Rate Year?

A. Yes. Exhibit PM-1 provides a list of capital projects that will be placed in-service for our customers from the bridge period, ending January 31, 2020 through the rate year, ending January 31, 2021. I have provided this information to Company Witness Michaelson for inclusion in the Revenue Requirement Panel's Rate Base calculation

Q. Can you describe how you categorized the capital the projects on Exhibit PM-1?

A. The projects shown on Exhibit PM-1 are categorized as follows: infrastructure improvements, water treatment and supply improvements, non-routine pumping

improvements (*e.g.*, SCADA improvements), operations improvements and blankets.

Infrastructure Improvements

Q. What types of projects are categorized as Infrastructure Improvements?

A. Infrastructure Improvements include Main Replacement projects and Pressure Reduction projects.

Main Replacement

Q. Please explain the need for the Main Replacement projects shown on Exhibit PM-1.

A. The Company owns and maintains over 1,700 miles of transmission and distribution water mains (45 miles in SWON and SWON-FP systems, 617 miles in SWWC system, and 1,060 miles in the SWNY system). The pipe age varies significantly by system. In Owego and Westchester, much of the system was installed prior to 1940, while in SWNY's territory, most of the system was installed after the 1960s. Pipe age in the Company water systems corresponds with the growth and development trends of the area. Like the rest of the water utility industry, the Company faces the challenge of planning for significant asset replacement investments over the next 30 to 40 years.

The Company's capital plans include various main replacement and rehabilitation projects aimed at, among other things, increasing available fire flows and addressing water quality issues. The Company plans to steadily

increase its rate of capital investment to meet the goal of a 1% replacement rate in the SWNY system by 2020 and in the Westchester and Owego systems by 2023. Meeting the goal of 1% replacement will require the Company to replace over 17 miles of water main per year by 2023.

Q. Does the cost of replacing or rehabilitating water main vary by area?

A. Yes. The cost per foot cost in Westchester is more than two times the cost in other areas.

Q. Please explain the reasons for the disparity of costs for water main replacements within the Company's service territory.

A. The main drivers for the cost difference are paving requirements, use of flowable fill, permitting and working around other utilities.

Q. How does a municipality determine the paving requirements?

A. For municipal roads the municipality sets the paving limits as part of the road opening permit. Some municipalities only require the Company to pave the trench width. In many instances, however, when replacing an older water main, the gas utility (*e.g.*, Con Edison) is required to replace the gas main at the same time. Since gas and water are typically on opposite sides of the roadway, the municipality may require that each utility pave to the center of the road as part of the permit to ensure the overall roadway pavement is not adversely affected by the work and to make the final project more visually appealing.

Q. Is that the only reason a municipality will request additional paving beyond the trench width?

A. No. Municipalities will request additional paving for other reasons such as aesthetics. While the Company can discuss the paving requirements with the municipality and attempt to reduce the scope of such requirements, in the end we are required to perform all work in compliance with the road opening permit, including any paving requirements.

Q. Please describe the use of flowable fill?

A. Flowable fill is a Controlled Low Strength Material composed of Portland cement, aggregates such as sand or rock, and water, and it is required to be used as a barrier in place of typical fill by the Department of Health when a proposed water main installation does not meet the utility separation requirements. Flowable fill, typically referred to as K-Crete, is more frequently required in Westchester due to their congested utility corridors. The unit cost of flowable fill is higher than typical fill material.

Q. What methodology does the Company utilize to evaluate water mains and prioritize replacement?

A. The Company utilizes a combination of evaluation of hydraulic model results, results from the District Meter Areas (“DMAs”), a project tool InfoMaster, and Operational feedback.

Q. What are DMAs?

A. DMAs are a method to break the water systems into smaller, metered districts, (between 1,500 and 5,000 connections per DMA) in order to perform mass balancing – which determines how much water went into the area, how much was registered at individual meters, and how much is Non Revenue Water ("NRW").

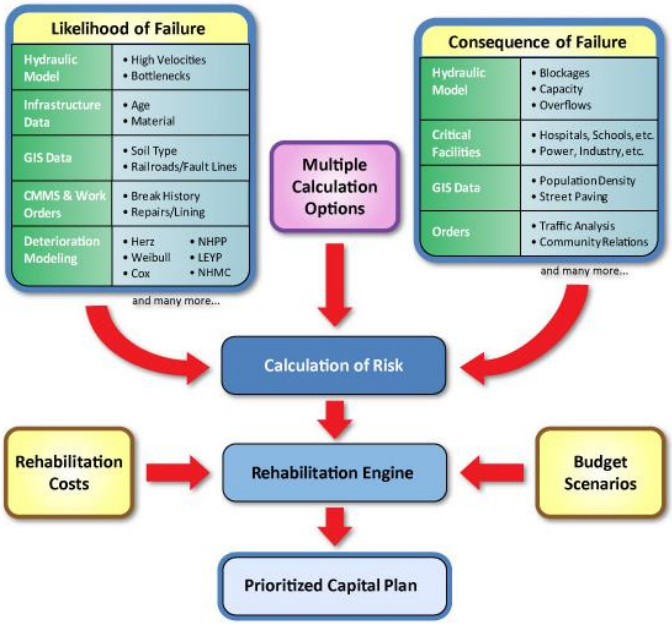
Q. What information can be obtained from the DMAs?

A. As noted, DMAs break the system into smaller areas, allowing the Company to monitor the water entering a DMA and quickly determine if a leak has developed in the area. The installation of the DMAs, along with Advanced Meter Infrastructure ("AMI") have assisted in our work to reduce NRW. If a water main has a higher number of failures, the water main will be prioritized for replacement. The failure rate is utilized by the InfoMaster system as part of the water main prioritization.

Q. Please describe the InfoMaster system

A. InfoMaster an industry-leading capital planning and infrastructure replacement tool that utilizes ArcGIS based asset management software to improve the sophistication of infrastructure replacement evaluations and allow for additional metrics such as pipe failure rate and water loss profiles to be considered within the analysis. As depicted in the diagram below, InfoMaster analyzes all the water mains in the system, and develops a priority list for renewal or

replacement based on the likelihood of failure, and the consequence of failure. InfoMaster provides an objective and systematic approach to scoring and categorizing the water mains in the system and develops a list of mains to be renewed or replaced on an annual basis. The prioritized list generated by InfoMaster then undergoes Engineering and Operational review.



Q. Is InfoMaster the only criteria utilized to categorize water main replacement/renewal projects?

A. No. As mentioned, we also utilize operational and engineering experience, as well as hydraulic model results, plus ongoing issues encountered in the field to prioritize water main projects. For example, if a water main starts to fail frequently, or operations observes that a water main pipe wall has degraded beyond what was previously known, that main would be prioritized for immediate replacement.

Q. Does the Company have plans to continue valve replacements?

A. Yes. We will continue to replace broken or inoperable valves as needed. In Westchester, a Valve Replacement project has been established to capture associated costs and SWWC has met or exceeded the budget every year

Q. Is Westchester the only system that replaces valves regularly?

A. No. All systems replace broken or inoperable valves on a regular basis. While in the Westchester system there is a specific project for valve replacements, in the other systems this work in budgeted under the project “Replace short mains and valves”.

Q. Are there any significant water main replacement projects planned in the rate year?

A. Yes. The City of New Rochelle (“New Rochelle”) has developed a Master Plan to revitalize the Downtown area by increasing residential and commercial space. The Downtown Overlay Zone (“DOZ”) in downtown New Rochelle is planned to add over 6,000 residential units and 3.4 million square feet of retail and office space. In order to provide water service to this area, the Company has developed a plan to replace the existing 12” cast iron water main in Webster Avenue with a 30” ductile iron water main and replace the 12” and 16” cast iron water main in Main Street with a 16” ductile iron water main.

Q. Has a timetable been provided for construction of the residential and commercial developments for this downtown revitalization project?

A. Yes. Some of the developments are under construction now, while other developments are still in the planning phase. It is expected that construction of new residential and commercial space in the DOZ will continue through 2028.

Q. Has the Company communicated with New Rochelle on the planned water system upgrades?

A. Yes. We are performing this work in partnership with New Rochelle. The Company and New Rochelle are drafting an agreement regarding cost sharing and ensuring new Developers in the DOZ sign the required Developers Agreement and make the contribution to the water system improvements.

Q. Will Developers be required to make contributions to the system improvements after the improvements are in service?

A. Yes. Developers that are part of the DOZ revitalization will be required to sign a Developers Agreement and contribute to the water system improvements that were completed for the projects.

Q. Please describe the benefits of working directly with New Rochelle for this project.

A. The DOZ is planned to consist of over 25 individual buildings, with multiple developers working simultaneously to revitalize downtown New Rochelle. The

planned water system upgrades are designed to meet the needs of the built-out DOZ, improve fire flow in the area, and renew the water system. In order to accomplish the project, it is expected that New Rochelle will reduce permit fees and traffic control for the water system upgrades, which will provide significant savings for the Company (and its customers). In addition, it is expected that New Rochelle will work as a partner with the Company to expedite the Westchester County Department of Health permitting process and potentially allow streets to be completely closed during the Main Street water main replacement, which will increase construction speed and decrease the cost of the project.

Q. Is the agreement with New Rochelle typical for new development projects?

A. No. This is the first time the Company has developed an agreement with a municipality for a water system upgrade to serve future developments.

Q. Does the Company anticipate use of this type of agreement in the future?

A. Yes. As other municipalities revitalize their downtown areas, we will look to use this agreement as a model for water system improvements to facilitate the new areas.

Q. How does this project benefit customers?

A. The water main in Main Street is over 100 years old and has been identified as requiring replacement due to the age and criticality of the number of customers served by this water main. Also, New Rochelle is expected to replace the existing sewer line in Main Street, which is over 15 feet deep. If the cast iron water main in Main Street is not upgraded to ductile iron before the sewer work is done, it is very likely that the sewer work will cause numerous water main breaks and disruptions of service to our customers. Moreover, the reduction of permit fees and traffic control costs, and allowing the road to be closed during construction as a result of the agreement between the Company and New Rochelle will result in reduced cost to customers for this required upgrade.

Q. Will other areas of the SWWC system benefit from the DOZ upgrades?

A. Yes. Not only will the water system upgrades generally improve flow and pressure in the area, the contributions from future developers in the DOZ will be allocated to the general water main replacement budget and will be used to fund more water main replacements in other areas in Westchester.

Q. Are there any other significant developer projects planned for the rate year?

A. In the Owego system, there is a new development that may be constructed in the rate year. This development is planned to consist of 62 apartments and 32 multi-family units. In order to serve this development, a new water storage tank would be required.

Pressure Reduction

Q. Please explain the need for the Pressure Reduction projects shown on Exhibit PM-1.

A. Pressure Management, along with DMAs is a key component to reducing NRW. Higher pressure increases the rate of NRW in a system due to additional leakage of the water mains and service lines.

Q. Can system pressure be reduced?

A. Yes in some areas, system pressure can be reduced with Variable Frequency Drives ("VFDs") on pumps, the installation of pressure reducing valves, or redistricting existing areas into lower pressure zones. Pressure management projects require careful study prior to being implemented to ensure the project does not affect fire flow or otherwise negatively impact service.

Q. Has the Company implemented any pressure reduction projects since the last rate cases?

A. Yes. Since the last rate filing, SWNY has implemented pressure reductions that affected 2,500 customers and 35 miles of water main in its system

Q. Does the Company have plans for additional pressure reduction projects?

A. Yes. SWNY We will continue to implement pressure reduction projects in its system.

Q. Is the Company planning additional projects to reduce NRW?

A. Yes. NRW is one of our priorities. During the rate period, we will continue to roll-out AMI antennas and replace meter endpoints with Sensus endpoints, which will provide addition information to facilitate identification of NRW. Please refer to the testimony of the Operations Panel for further details.

Water Treatment and Supply Improvements

Q. Please elaborate on the Water Treatment and Supply Improvement projects shown on Exhibit PM-1.

A. The Water Treatment and Supply Improvement projects shown on Exhibit PM-1 include:

1. Low Level Outlet Indian Kill:

The Indian Kill Dam is located in Orange County and is the site of the Indian Kill Water Treatment Plant. A dive inspection performed as part of DEC inspection requirements determined that improvements were required at the low level outlet pipe, the sluice gates, and the intake tower. We are in the process of bidding the work and plans to fully complete the project in the rate period.

2. Ramapo Well Field Well 97 Well Improvements:

The New York State Department of Health (NYSDOH) has evaluated the wells in the Company's system to determine if any should be categorized as Ground Water Under the Direct Influence of Surface Water ("GWUDI"). In order to make the determination if a well is GWUDI, the NYSDOH required quarterly sampling of the well water. If the sampling detects elevated levels of particles that are

normally found in surface water, it may mean that the water quality in the wells is directly influenced by surface water. In that instance, the NYSDOH can declare that additional treatment for the well must be provided before it can be used. This additional treatment includes engineered filtration, an ultraviolet ("UV") disinfection system and contact time piping to enhance disinfection. At the Ramapo Valley Well Field ("RVWF"), Wells 84 and 97 were declared GWUDI by the NYSDOH. The RVWF is the second largest source of water for the Company. These wells were taken out of service when the GWUDI determination was made. Treatment was previously installed on RVWF 84 and construction is underway at RVWF 97.

3. <u>Upgrade Grandview Arsenic Treatment:</u>

The Grandview Wells have an existing treatment system in place for the removal of arsenic. Arsenic is a semi-metal element that occurs naturally in rock and soil in this area. SWNY initially planned to replace the existing treatment trains at the Grandview well field in 2017, but due to permitting delays the project was not under construction until 2018. Additionally, a building around the treatment facility will be constructed in compliance with a request from the Rockland County Department of Health. Work is underway at this site.

4. <u>Production Well Replacement:</u>

Production wells are replaced when they lose capacity and can no longer be rehabilitated. The Company regularly rehabilitates production wells, but well production may not return to its full permitted capacity after rehabilitation and a new well may need to be drilled. We are evaluating replacing production wells

at Catamount and RVWF to increase the yield at these sites back to the permitted yield.

5. Well Treatment at Mahopac:

The Mahopac system has elevated levels of manganese in the existing well. SWON-FP is currently working with the Putnam County Department of Health to pilot a greensand treatment system. Greensand filtration is a standard treatment for elevated manganese and iron in water systems.

6. Ramapo Valley Well Field Caisson Flood Protection:

This project is to raise the well caissons at the RVWF to harden the well field against flooding which has become more prevalent recently, due to climate change and other factors. It is important to ensure this source of supply is protected against flooding. Raising the well heads will ensure that the caissons remain above the flood levels.

7. Ramapo Valley Well Field Overhaul:

RVWF was constructed approximately 45 years ago and some of the electrical and other equipment requires replacement or upgrading. This project is to replace electrical equipment, install additional meters to improve operation, and replace electrical panels and switches in the well field. Work is planned to be done over several years so the operation of the wellfield is not impacted.

8. Watershed Restoration:

This project is to make improvements along Lake DeForest to restore the shoreline and reduce non-point source runoff into the reservoir by allowing storm water to naturally filter into the soil. Reducing runoff and improving the

natural filtration of storm water around Lake DeForest will improve the quality of the water entering the Lake DeForest Treatment Plant.

Lake DeForest Water Quality Upgrade Project

Q. Please describe the Lake DeForest Treatment Plant and the Pilot Study.

A. Lake DeForest Treatment Plant is almost 60 years old and utilizes traditional flocculation, and filtration as well as Dissolved Air Flotation ("DAF"). In recent years, Lake DeForest has been experiencing water quality challenges including moderate total organic carbon ("TOC"), elevated dissolved iron and manganese during lake destratification, wide dissolved oxygen ("DO") and pH fluctuations due to algal growth, and significant seasonal algae blooms resulting in elevated taste and odor issues. Some success was achieved in the past in addressing water quality challenges by using temporary solutions, including limiting algal blooms through the application of copper based substances; however, a long-term reliable treatment solution is required through upgrades to the treatment process. As a result, the Company implemented a pilot study to identify potential treatment solutions that could be implemented during an expansion or upgrade to the existing Plant, which would address existing and emerging water quality regulations.

Q. What water quality parameters were evaluated as part of the pilot study?

A. The water quality parameters evaluated during this pilot study included:

- Disinfection by-product ("DBP") formation (specifically, trihalomethane formation). The system upgrade identified below would enhance treated water quality to reduce DBP formation even under challenging water quality conditions;
- TOC was also evaluated as a means to manage seasonal variations in raw water quality and DBP precursors in order to reduce DBPs.
- Manganese ("Mn") The system upgrade identified below would increase dissolved raw water Mn removal.
- Taste and odor compounds. High taste and odor concentrations have been a challenge for the Lake DeForest Plant and have caused complaints from customers; therefore, the system upgrade identified below is expected to have the ability to enhance taste and odor compound reduction;
- Turbidity. The solution identified below would improve turbidity removal and provide treatment robustness during challenging raw water quality conditions;
- The threat of cyanotoxins due to algal blooms. The solution identified below would provide sufficient resiliencies to better handle this emerging challenge.

Q. What alternative treatments did SWNY consider?

A. As I indicated, in 2017 SWNY constructed a Pilot Plant onsite to test alternative treatments. The alternatives listed below were evaluated:

- Pre-Ozone
- Chlorine Dioxide
- Rapid Mix
- Static Mix
- Powder Activated Carbon
- Granular Activated Carbon
- Intermediate Ozone
- Chemical Dosing
- Alternative Filter Media

Q. What was the outcome of the Pilot Plant tests?

A. Based on the results from the Pilot Plant tests as well as evaluation of life cycle costs of alternatives, over the next few years, SWNY plans to move forward with upgrades at the plant which include installation of Powder Activated Carbon, construction of a Rapid Mix chamber, and the installation of Pre-Ozone, as well as replacement of the raw water pumps, filter media replacement and medium voltage electrical within the Plant.

Q. Please describe the planned upgrades for the rate period

A. In the rate period, SWNY plans to install Powder Activated Carbon and construct a rapid mix facility. Please see below for a description of the planned projects:

Powder Activated Carbon ("PAC") and Rapid Mix:

Rapid mixing is a high-intensity mixing step used before the flocculation process to disperse the coagulant and coagulant aid throughout the water to begin the coagulation process. Rapid dispersal of the chemicals before precipitation helps ensure that the coagulant is uniformly distributed throughout the water and among the suspended and colloidal particles which improves flocculation and filtration. SWNY piloted rapid mix and found the process to be more effective than the current static mix system. In addition, the current static mix system is a single train with no redundancy. The proposed rapid mix chamber is a dual system, allowing the system to remain in operation when one train has to be taken offline for maintenance.

PAC will be used on an as needed basis and added prior to the Dissolved Air Flotation process. Algae and other organics adsorb to the PAC and are removed. Activated carbon is an effective tool for organic adsorption due to its large surface area.

Q. Does the use of PAC increase residuals?

A. Yes. PAC will increase residuals while it is in service. SWNY intends to operate the system only when needed to maximize the benefits of PAC and minimize the residual impact.

Q. Please describe if PAC is utilized in other areas as a solution for taste and odor and algae.

A. Yes, PAC is a recommended solution for algae and taste and odor and used at water utilities throughout the United States. It is recognized as a treatment option by both the EPA and AWWA.

Q. Please describe how PAC is delivered into the process

A. PAC is fed into the water treatment process with a hopper. The PAC is introduced early in the process and removed in the DAF process and through filters.

Q. Granular Activated Carbon ("GAC") is also an EPA and AWWA sanctioned solution for algae, as well as taste and odor. Why was PAC selected over GAC?

A. As indicated, GAC was evaluated along with PAC. While both PAC and GAC provided effective treatment solutions, PAC was the most cost effective alternative to address the treatment requirements at Lake DeForest.

Q. Are there other updates planned a Lake DeForest Treatment Plant in the rate period?

A. Yes. In addition to normal capital upgrades, SWNY plans to overhaul the traveling screens in the rate period and install an upgraded fish deterrent system at the intake. The traveling screen dates to the original installation of the plant, and requires replacement. The design for this work is planned to start in the 2nd quarter of 2019 with completion in late 2020. The fish deterrent system has the

same planning period with completion in early 2020. The purpose of the project is to improve the intake design.

Q. Are there any other significant water quality upgrades planned for the Lake DeForest Treatment Plant outside of the rate period?

A. Yes. In addition to PAC and rapid mix, SWNY also has the projects listed below planned:

- Raw Water Pump Replacement
- Filter Upgrades
- Electrical Improvements at Lake DeForest Plant
- Pre-Ozone Treatment

Q. Please provide a description of these significant water quality updates.

1. **1. Raw Water Pump Replacement**

The existing raw water pumps at Lake DeForest Treatment Plant are used to increase the water pressure to move the raw water from the intake, through the treatment process to the clearwell. The water is then pumped out of the clearwell into the distribution system by using the High Service Pumps at the Treatment Plant. The raw water pumps are original to the Treatment Plant and will not provide sufficient head to move the water through the treatment process as the new processes are put in place. The raw water pumps will be replaced with more efficient pumps (reducing electricity usage and carbon footprint) that

have the necessary capability to move the water through the new treatment process.

2. Filter Upgrades

The filter media becomes less efficient and effective if it is not replaced periodically. The media will be due for replacement while the other upgrades are underway. When the filters are out of service and the media is removed, SWNY will replace the Wheeler bottoms and evaluate the underdrain system to determine if upgrades or replacements are needed to the filter valves or underdrain system.

3. Electrical Improvements

The medium voltage existing electrical system with the main Treatment Plant building is original to the building and requires replacement. Due to the age of the electrical system, as breakers or panels need to be repaired, replacement equipment is no longer available. Because SWNY will be undertaking a major upgrade of the Plant, new electrical equipment will be installed at the same time to ensure it is compliant with code and able to handle the load for the future treatment upgrades.

4. Pre-ozone

As a pre-oxidant, ozone is intended to oxidize organic compounds, decrease DBP formation, taste and odor compounds, algal toxins, iron and manganese, and aid in improving coagulation/flocculation in the dissolved air flotation system. Pre-ozone was found to be effective in the Pilot Plant, especially when combined with PAC and used prior to the DAF. Based on the results from the

pilot testing, we have begun the design project for the installation of Pre-ozone at Lake DeForest.

Q. Is pre-ozone required if PAC is utilized?

A. Yes. PAC is effective at addressing taste and odor but is not as effective by itself under challenging water quality conditions. Pre-ozonation as an additional treatment step would provide numerous benefits under normal and challenging water quality conditions including oxidation of manganese, removal of taste and odor compounds, oxidation of extracellular cyanotoxins and turbidity removal enhancements across the treatment train.

Q. Will this project increase the capacity or safe yield of the Lake DeForest Treatment Plant?

A. No. This project is being implemented to improve the treatment train and will not affect the capacity or safe yield of the Lake DeForest Treatment Plant.

Q. Are there any significant treatment projects in Westchester in the rate period?

A. Yes. SWWC RD#1 plans an upgrade at the Central Avenue Pump Station ("CAPS") in Westchester.

Q. Why is the upgrade needed?

A. SWWC RD#1 purchases water directly from the New York City Department of Environmental Protection ("NYCDEP") through the NYCDEP Catskill and Delaware Aqueducts for Rate District One in Westchester. Historically, the Catskill and Delaware water achieved compliance with disinfection requirements upstream of SWWC RD#1's connections to the aqueducts through a combination of UV disinfection and chlorination. A letter dated July 27, 2015, NYCDEP provided notice that they are in the process of installing updates that affect chlorination at the upstream Kensico Reservoir. NYCDEP has further informed the Company and other municipalities that they plan to cease continuous chlorination at Kensico after 12/31/2022, and the water purveyors must develop alternate plans to meet state and federal regulations. As a result, we will be required to provide additional disinfection of its withdrawal from the Catskill and Delaware Aqueducts to meet Chlorine Contact Time ("CT") regulations.

Q. Can SWWC RD#1 meet the CT regulations and requirements with the existing system when NYCDEP ceases continuous chlorination at Kensico?

A. No. While SWWC RD#1 chlorinates at the Delaware Pump Station ("DPS") to maintain a residual within the distribution system, the first customers after DPS are too close to the station to meet CT regulations with the existing system. In order to be effective, chlorine requires time to react within the system.

Q. Is adding CT pipe after DPS a viable alternative?

A. No. It was calculated that over 13 miles of 48" pipe would be required to meet CT regulations at DPS. This option was discarded due to the cost and constructability.

Q. Please describe the two phases of the upgrades at CAPS.

A. The CAPS upgrade is divided into two projects. The first project was to install a chlorination system to be used in the short term if the NYCDEP performed emergency maintenance on their chlorination system. That project was placed in service in December, 2018. The second phase of the upgrades will require constructing onsite chlorine generation equipment at CAPS and rebuilding portions of the station for the new equipment.

Q. Is the CAPS upgrade sufficient to meet the chlorination demands of the entire system?

A. No. The CAPS station cannot meet max day requirements for the entire system, only average day. Additionally, the system would not have redundancy because CAPS is only connected to the Catskill aqueduct and if the Catskill aqueduct is taken out of service the system would not be able to meet the CT requirements.

Q. Will SWWC RD#1 have to abandon all of the work done in phase 1 when phase 2 construction begins?

A. No. Some of the work for phase 1 will be retired after phase 2 starts, but some of the equipment will be reutilized in the final project.

Q. Will the phase 2 upgrade at CAPS allow the entire system to meet the CT requirements?

A. No. The work at CAPS will only feed the Pocantico Division under normal operating conditions. The CAPS station cannot be upgraded to meet max day requirements for the entire system, and there would be no redundancy to the supply if CAPS was the only source. Additional work will need to be done to ensure the entire system meets the CT requirements and that redundancy exists in the system.

Q. Does SWWC RD#1 plan to do additional work for the disinfection projects after the rate period?

A. Yes. The existing Troublesome Brook Pump Station needs to be rebuilt and onsite generated chlorination needs to be added to the station. This project is currently under design and permitting will start later in 2019. This project will ensure compliance with the CT regulations during “all demands” scenarios. Because this project could have permitting delays that impact the in service date, it is shown on Exhibit- PM-2 as an System Improvement Charge (“SIC”) project.

Q. Will this project increase or modify the withdrawal permit for Westchester?

A. No. This project is being implemented to address a treatment issue and will not affect the withdrawal permit from the NYCDEP.

Non-Routine Pumping Improvements

Q. Please describe further the Non-Routine Pumping Improvements shown on Exhibit PM-1.

A. The non-routine Pumping Improvements include the SCADA Master Plan, generators at Forest Park and Booster Stations.

Q. What is the SCADA Master Plan for the SWNY system?

A. SWNY's SCADA system allows remote monitoring and operation of our facilities. The existing system was originally installed approximately 30 years ago and requires replacement. The system needs to be updated to ensure compliance with the current cybersecurity challenges, to utilize the more efficient and effective equipment available and because obtaining replacement equipment for the older system is problematic. The SCADA Master Plan rollout began in 2018 and will continue through 2024 as we upgrade the sites without affecting operations

Q. Please describe the SCADA implementation process.

A. SWNY is installing the new equipment in an organized, efficient, methodical manner so system operations are not affected.

Q. Is the new SCADA system standardized across all companies?

A. The Company has standardized all of the visual platforms so operating the system is more streamlined. This will improve training and reduce the time to fully train new hires. We have also standardized the new SCADA controls, panels and cabinets so each site gets the same communication equipment, in either small, medium or large sizes depending on the complexity of the site.

Q. Are there other benefits to the new system?

A. Because the new SCADA system has standardized all controls, the operators are able to see information that was not available in the previous system and as a result are making decisions based on improved data. In addition, the new VFD equipment has improved sensors that allow the system to be operated more efficiently.

Q. Please describe the work planned for generators at Forest Park.

A. SWNY was made the Licensed Operator of Forest Park in 2016 and agreed to take over the system in 2017**.** Many of the individual Forest Park systems do not have adequate capabilities to either install permanent standby power or have the ability to quickly connect a generator to the facility in the event of a power outage. It is my understanding that Standby power is a regulatory requirement in the Putnam County Sanitary Code, and the 10 State Standards to ensure water service during power outages. Forest Park has purchased several standby generators and has an electrician performing the necessary

electrical upgrades to install a “quick connect” at the sites. The quick connect allows a portable generator to be quickly connected when a site loses power without an electrician onsite to connect the generator to the facilities’ electrical system.

Q. Are the sites updated to be fully compliant with the current electrical code as part of the project?

A. Yes, based on their age, many of the sites are not fully compliant with the current electrical code. When the electrician is working at the site, he is required to bring the site to code as part of the project.

Q. Please describe the planned booster station improvements in the rate year.

A. The Company owns and operates several booster stations in the system. These booster stations require improvements in order to continue to provide reliable service to our customers. The Company plans to make improvements including pump replacements, electrical improvements, standby power and structural improvements. Please see the below descriptions of booster station improvements planned during the rate period

Donald Park

The Donald Park Booster Station is a backup station that is currently not utilized. SWWC RD#1 plans to replace the existing station to improve system redundancy.

Delaware Pump Station - Pump Replacement

This project is to replace the pump and motor at Delaware Pump Station as part of normal maintenance to ensure that the equipment is operating efficiently.

Office Facility Improvements

Q. Please describe further the West Nyack Office Facility Improvements shown on Exhibit PM-1.

A. SUEZ Water New York is in the process of relocating its office building approximately 2 miles from the current location. The new site will require capital improvements to upgrade the office building, construct a storage yard, add parking, as well as requiring safety and security work.

Q. Please describe the reasons for relocating the office building.

A. The existing facilities are unable to accommodate expansion to improve the customer experience, has insufficient parking for customers and staff, and is not compliant with the Americans with Disabilities Act ("ADA"). In addition, customer access from West Nyack Road can be difficult due to a severe, blind curve in close proximity to the office.

Q. Please describe the existing office building.

A. The existing office building has two buildings for staff (Main Building and Maintenance Building), a garage, a storage yard and parking.

Q. Did SWNY evaluate upgrading the existing office building?

A. Yes. A high level cost benefit analysis was performed to determine the cost of upgrading the existing buildings. It was determined that the cost to expand and renovate both buildings, build a parking garage, make both buildings ADA compliant, and relocate the access road was greater than the cost of relocating the office.

Q. Could the existing main office building be easily renovated for ADA compliance?

A. No. The main office building is 3 floors, with office space on all three floors and a conference room on the top floor. In order to make the building ADA compliant, the exterior doors as well as the office doors would all need to be enlarged, the bathrooms would need to be renovated, and elevators would need to be added. The building currently does not have sufficient space for the staff, and does not provide our customer service representatives with private space to meet with customers to discuss their account.

Q. Please describe other benefits of the new office building

A. The new office building provides approximately 30% more square footage of space over the existing buildings. The new office building is being renovated to improve the lobby space to better accommodate our customers as well as meeting areas for guests and contractors. In addition, the new space will allow all the office and field personnel to be located in one building. The new office

also has an adjacent building that will be renovated for meetings and safety tailgates.

Q. Will the renovations reduce the overall carbon footprint of the building?

A. Yes. SWNY is updating the lighting to energy efficient LED lighting, replacing the windows for better insulation and replacing the HVAC system with a more energy efficient system.

Q. Is SWNY seeking to obtain a rebate from New York Electric & Gas Corporation ("NYSEG") or Orange and Rockland Utilities Inc. ("O&R") for these improvements?

A. Yes. SWNY will apply to both NYSEG and O&R for a rebate after the new fixtures and equipment are installed.

Q. Are other office relocation projects planned for the rate period?

A. Yes. We are planning to relocate the Owego office building in 2020.

Q. Please describe how this relocation would be beneficial to the customers?

A. The existing office building is undersized and requires substantial safety improvements. The building does not have a meeting area for guests or customers that want to discuss their account. It is undersized, which requires field staff to be located at the well field, which lacks an efficient heating and cooling system. Therefore, SWON is looking to relocate to a building that can

accommodate the office and field staff needs and is located within the business district so it is easier for our customers to get to the office.

Q. What does SWON plan to do with the existing office building?

A. Because the existing office building also houses a booster pump station, SWON will continue to maintain the building. However, the area that is current used for office staff will become storage.

Storage Safety Improvements

Q. Please describe further the Storage Safety Improvements shown on Exhibit PM-1.

A. The following Storage Safety Improvements are addressed:

1. **Spring Valley Standpipe**

   SWNY is currently performing extensive structural improvements at the Spring Valley Standpipe. The work is underway and expected to be completed shortly. Because the structural work needed to be complete before the tank painting we plan to paint the Standpipe in 2019.

2. **Safety Improvements:**

   The Company regularly performs safety improvements and upgrades on storage tanks when the tanks are taken out of service for painting to ensure compliance with the most up to date OSHA Regulations.

3. Other future projects:

The Company plans to build additional storage in the system. These projects are discussed in the SIC section of this testimony.

Operations Improvements

Q. Please explain in more detail the operations improvements shown on Exhibit PM-1.

A. The following operations improvements are addressed:

1. Upgrades at Operating Facilities

SWNY will perform upgrades at its operating facilities over the next few years including paving driveways, roof replacement, electrical upgrades, and other work as deemed necessary.

2. Electrical Improvements

SWNY will continue to upgrade the electrical service at the Spring Valley Well Field. The Spring Valley Well Field is one of the oldest well field sites in the system and SWNY has been making improvements at this site to ensure continued, uninterrupted supply. The transfer switch was recently updated to cover the entire well field, and other electrical upgrades are being performed including replacing electrical services and panels.

Other Capital Projects

Q. Please generally describe the Company's other capital projects included in Exhibit PM-1.

A. The remaining capital projects included in Exhibit PM-1 are more self-explanatory and are required to maintain asset conditions to meet customer service standards and regulatory requirements. Below is a general description of these projects by major category.

1. **Treatment**: This category includes replacement of chemical equipment and other treatment equipment as needed to maintain the treatment production capability and meet water quality standards / regulations.

2. **Pumping**: This category includes replacement of pumping facilities to meet the system water demands, and replacement / upgrade of existing SCADA equipment required to provide effective system monitoring and control.

3. **Transmission and Distribution**: This category includes new and replacement water mains, valves, and hydrants. These projects are needed to meet the demands in the distribution system, improve fire flow, maintain water quality and provide adequate service pressure to customers.

4. **Services**: This category includes the installation of new domestic and fire services to meet the growth in the system and replacement services to improve water quality and maintain supply / pressure.

5. **Meters**: This category includes the installation of meters for new customers and replacing meters in accordance with regulatory requirements. Replacement meter reading equipment is also included to maintain efficient and effective meter reading operations and allow AMI to be implemented throughout the system.

6. **Information Technology**: This category includes GIS improvements, printers/plotters and other computer equipment that is required to maintain efficient operations.

7. **Safety and Security**: This category includes safety and security improvements including cameras, building improvements, fencing, and arc flash. These projects are required to maintain security of our facilities and supplies, and provide for a safe work environment for our employees and our customers.

8. **General**: This category includes new and replacement tools and work equipment, and replacement office furniture as required for efficient operations.

System Improvement Charge

Q. Is the Company looking to continue the System Improvement Charge or SIC mechanism?

A. Yes. The Company is proposing to continue the SIC surcharge mechanism for system improvement.

Q. What is the goal of the SIC mechanism?

A. The Company utilizes this surcharge for projects that increase the water supply as well as projects that have significant permitting or other difficult regulatory issues impacting timing.

Q: How does the Company select projects for inclusion in the SIC for recovery?

A: We propose to recover through the SIC certain large, long-term or multi-year capital projects pertaining to the Company's, dams, storage, and treatment facilities that are scheduled to be in service at a date beyond the Rate Year.

Q: Would the SIC benefit the Company as well as its customers?

A: Yes. The SIC approach provides the Company financial flexibility to undertake significant construction while protecting ratepayers against the possibility of slippage in scheduled construction because no allowance for carrying charges on the designated projects is included in rates and the SIC

surcharge cannot be imposed until all work is completed and verified by PSC Staff.

Q. Would these SIC projects be included in the Company's base rates?

A. Not initially. The projects planned to be included in the SIC would be removed from the planned capital additions in the current rate filing. Only when the projects have been put in service and fully reviewed and approved by Commission Staff would the SIC surcharge be implemented The SIC projects would eventually be moved into base rates in a future rate case.

Q. Please describe the type of projects on the proposed SIC list of projects?

A. The Company has included projects in the SIC that may require substantial permitting. We estimate when the project will be in service based on anticipated permitting timeframes. However some projects, specifically new tank construction and major dam improvement can have unpredictable permitting timeframes and including these projects into the SIC will ensure the required upgrades are not including as capital additions prematurely.

Q. Please explain how permitting can delay a project?

A. Extensive regulatory review or planning board approvals can cause unexpected delays to a project schedule. Some treatment and storage tank projects can invoke significant public involvement that requires many additional hearings and discussion before the project can proceed. The Company is looking to include

these projects in the SIC so the projects are not included in rates until the project is fully in service.

Q. Have you prepared a list of projects that are proposed to be made part of the SIC?

A. Yes. Please refer to Exhibit PM-2. Below is a description of projects identified to be made part of the SIC and a description of the project:

- **Troublesome Brook Disinfection Plant:** Please refer to previous testimony for additional information on this project. SWWC RD#1 is required to construct a disinfection station at the Troublesome Brook Pump Station to comply with CT regulations in Westchester after the NYCDEP ceases chlorination at Kensico. This project involves rebuilding the existing pump station to allow onsite chlorination equipment and replacing several large water mains at the station. The water mains at this site are part of the main system supply and cannot be out of service more than a few hours. We anticipate that the station will be in service by November, 2022, however because this is a significant project that will require extensive Department of Health and Planning Board permitting, delays in permitting could affect the in service date for the project.
- **Sterling Lakes Tank:** This project involves the replacement of the Sterling Lakes Tank. The Sterling Lakes Tank has reached the end of the useful life and requires replacement. The new tank is currently

planned as an equalization tank. SWNY is working with the Home Owners Association and the Town of Warwick on the project.

- **New Haverstraw Storage Tank:** This project involves the installation of a new 2 MG storage tank near the existing Haverstraw Tank to better serve the system and allow for maintenance on the existing Haverstraw Tank. Although this is not a water supply project, this project is appropriate for inclusion in the SIC because the Planning Board approval process may take longer than expected. Construction is expected to be completed in 2021 and cost approximately $4.2 million.
- **New Monsey Storage Tank:** This project involves the installation of a new 1.5 MG storage tank at the site of the former Monsey Storage Tank. This tank will allow pressure to be reduced in the area while maintaining adequate fire flow. Although this is not a water supply project, we are requesting to include this project in the SIC because the Planning Board approval process may take longer than expected and including this project as part of the SIC will provide better service for our customers by allowing accurate cost recovery for the required work when the project is placed in service. Construction is expected to be completed in 2023 and cost approximately $2.6 million.
- **Well Treatment in Forest Park:** Forest Park is currently working with the Putnam County Department of Health ("PCDOH") to install treatment at the Mahopac system, which is further detailed in the Water Treatment and Supply Improvements section of this testimony. Since the Company

was made licensed operator in 2016, and later agreed to acquire the Forest Park system, the Company has been working closely with the PCDOH to ensure the system is compliant with regulations. The PCDOH may require additional treatment on the system wells if it is deemed necessary.

- **Stony Point Dam:** The Stony Point Dam was constructed in 1902 to provide water for the Stony Point Treatment Plant. The Stony Point Treatment Plant has been removed from service. SWNY has worked with Dam Safety at the New York State Department of Environmental Conservation to determine that the best solution for this dam is to breach it and return the Cedar Pond Brook to its natural state. This project is planned to be included as part of the SIC because SWNY is still working with Dam Safety on the required permits. Because the dam will be breached, there will be very little capital costs for this project and the majority of the work will be costs related to removal of the structure.
- **Indian Kill Dam Improvements:** This project does not increase water supply directly, but is necessary to continue operating the Indian Kill Water Treatment Plant. The scope and schedule for this project has not been established by Dam Safety, although the Engineering Assessment was submitted in 2015 as required for this class of dam. This project is planned to be included as part of the SIC to provide better service for our customers by allowing accurate cost recovery for the required work rather than including an engineering estimate in the rate filing that may

change when the project scope is finalized. Dam Safety considers this dam to be jointly owned, therefore any improvements at this site are expected to be shared between all three owners. SWNY's cost for this work is currently estimated at $5.8 million with an anticipated construction date of 2021. The cost for this work is dependent upon Dam Safety's recommendations for this site.

- **Sludge Handling of Lake DeForest Treatment Plant Residuals:** The solids handling system is being evaluated and will need to be upgraded to ensure continued compliance and reduce operating costs associated with disposal of the lagoon sludge. There are several potential alternatives being evaluated as a long-term solution to handling lagoon residuals. The final solution is currently expected to be constructed in 2021; however, that timeline could be reduced if permitting issues are resolved faster than anticipated. The cost of this project will vary depending on the alternative selected.
- **Dam Stability Improvements at Lake DeForest Dam:** This project, which was originally proposed in SWNY's last rate case, does not increase water supply directly, but is necessary to continue operating the Lake DeForest Water Treatment Plant. The current Dam Safety regulations require an engineering assessment ("EA") to have been completed for High Hazard Class C dams by August 2012 to ensure the dams meet the current standards. The EA was completed at the Lake DeForest Dam and submitted for further assessment to the DEC Dam

Safety Group ("DEC" or "Dam Safety"). The EA included visual and underwater inspections, geotechnical analysis including rock corings of the dam, installation of piezometers, spillway analysis updated for the revised site specific probable maximum flood, and an embankment analysis. Based on the initial analysis, it is projected that the DEC will require capital improvements be made to the Lake DeForest Dam to meet the revised DEC regulations including 6 NYCRR Part 673 Dam Safety Regulations. SWNY anticipates that Dam Safety will require upgrades to the Dam, but the scope and schedule have not been finalized.

Q. Has there been changes to the scope of this project since it was proposed in Case 16-W-0130?

A. Yes. SWNY has done additional exploration work and worked with additional dam experts and Dam Safety to determine if the original scope was necessary to comply with the current regulations. Based on this additional work and the findings of the dam experts, the likely scope of the project has been reduced from $27 million down to $7 million. SWNY is still working with Dam Safety on this project.

Q. What caused the significant cost reduction at Lake DeForest Dam?

A. The original scope of the dam work included rock anchors and grouting. SWNY engaged the services of an additional consulting engineer, Gannett Fleming.

Gannett Fleming has reviewed the original construction photos and determined that, based on actual construction conditions, rock anchors will not be required. SWNY and Gannett Fleming have presented the findings to Dam Safety and continue to evaluate the dam to ensure the initial findings are consistent with the existing subsurface.

Q. Does the Company have additional SIC projects proposed?

A. No. This is a full list of the current proposed SIC projects. If additional projects develop during the rate plan, the Company will petition the Commission for recovery of the capital expenditures

Q. Does the Company have any plans to paint tanks?

A. Yes. The Company plans to paint the following tanks in the rate year:

- Spring Valley Standpipe – SWNY
- Letchworth Backwash Tank - SWNY
- Indian Kill - SWNY
- Hillside - SWWC RD#1
- Ardsley - SWWC RD#1
- Summit - SWWC RD#2

Q. Does the Company plan to utilize more innovative solutions as part of its implementation of capital additions?

A. Yes, the Company utilizes innovative solutions to resolve operational issues in the most cost effective manner. Given the pressures on our water sources from such factors as drought, pollution, population growth and climate change, technology innovations are necessary to ensure a sustainable water supply. Some examples of innovative techniques utilized by engineering are:

- With further exploratory efforts and working to ensure the best possible project for our customers, SWNY expects to save $20 million dollars for our customers on the Lake DeForest Dam project. For additional information on this project, please refer to the System Improvement Charge section of this testimony
- Evaluation of new technologies to optimize infrastructure replacement. The Company is evaluating Optimatics to optimize the water system operation and has started utilizing Fracta, a machine learning tool that evaluates the distribution system to optimize water main replacements. We are also piloting several rehabilitation technologies to evaluate the systems and determine which option is the best fit for our systems.
- Drones – The Company is evaluating piloting drones to perform facility inspections. Drones have been used at other Company sites to perform facility inspections and SWNY is evaluating the purchase of a drone for reservoir inspection to optimize treatment

of the reservoir and for inspection of dams and other facilities to improve inspections and allow for safer operation.

- Trenchless technologies – The Company has used trenchless technologies to install new water mains and services. Specifically with DOT roadways, trenchless technology provides a large savings over typical open cut replacements. Trenchless technologies can be a more environmentally friendly technique because there is less pavement disturbed and in high traffic areas traffic backups are reduced. The Company routinely evaluates alternative technologies to find the best solution for our projects.
- DMAs and AMI – This technology was successfully implemented in our SWWC and SWNY systems to reduce the “find to fix” times for water main breaks and help select water mains for replacement.
- Use of crushed glass as backfill. SWNY received an NAWC award for the use of crushed glass as backfill for water main replacement projects. The crushed glass is obtained from the Rockland County Solid Waste Authority and used in place of stone in the trench. Crushed glass will be used along with traditional fill in the new office building during construction of the Yard facility
- Carbon Footprint – To reduce our carbon footprint, The Company has performed energy audits at our facilities, revaluated our meter

reading routes, routinely replace pumps and motors that are off their efficiency curve and changed out lighting fixture to more energy efficient lighting. We have also installed solar equipment at some AMI sites as an alternative to connecting to the power grid.

Q. Does this conclude your testimony at this time?

A. Yes.