STATE OF NORTH CAROLINA
UTILITIES COMMISSION
RALEIGH

DOCKET NO. W-218, SUB 526

BEFORE THE NORTH CAROLINA UTILITIES COMMISSION

IN THE MATTER OF
APPLICATION BY AQUA NORTH CAROLINA, INC.,
202 MACKENAN COURT, CARY, NORTH CAROLINA 27511
FOR AUTHORITY TO ADJUST AND INCREASE RATES FOR WATER
AND SEWER UTILITY SERVICE IN ALL SERVICE AREAS IN
NORTH CAROLINA

PREFILED REBUTTAL TESTIMONY OF
SHANNON BECKER AND JOSEPH PEARCE
ON BEHALF OF
AQUA NORTH CAROLINA, INC.

June 13, 2020

Q. MR. BECKER, PLEASE STATE FOR THE RECORD YOUR NAME, ADDRESS, AND PRESENT POSITION.

A. My name is Shannon Becker and my business address is 202 MacKenan Court, Cary, North Carolina. I am the President of Aqua North Carolina, Inc. ("Aqua" or "Company").

Q. MR. BECKER, HAVE YOU PREVIOUSLY PROVIDED TESTIMONY IN THIS CASE?

A. Yes, I filed Direct testimony on December 31, 2019 with the Company's Application to discuss Aqua's position on Excess Capacity, among other items.

Q. MR. PEARCE, PLEASE STATE FOR THE RECORD YOUR NAME, ADDRESS, AND PRESENT POSITION.

A. My name is Joseph Pearce and my business address is 202 MacKenan Court, Cary, North Carolina. I currently serve as the Director of Operations for Aqua North Carolina, Inc.

Q. MR. PEARCE, HAVE YOU PREVIOUSLY PROVIDED TESTIMONY IN THIS CASE?

A. Yes, I filed Direct Testimony addressing water loss with the Company's Application, on December 31, 2019 and I filed Rebuttal Testimony with Mr. George Kunkel, on June 12, addressing "water loss."

Q. MR. PEARCE, DO YOU HAVE EXPERTISE IN THE CALCULATION OF DESIGN FLOW AS THAT IS A DETERMINANT OF THE APPROPRIATE LEVEL OF CAPACITY IN WASTEWATER PLANTS?

A. Yes, I am a licensed North Carolina Professional Engineer and was employed as an Environmental Engineer II by the North Carolina Department of Environment and Natural Resources in the Non-Discharge Permitting Unit and On-Site Wastewater Program for greater than eight (8) years. As part of this employment, the review of wastewater treatment plant contributory design flow was a routine part of the work. I estimate that I have either completed or reviewed these types of calculations more than one hundred times.

Q. WHAT ISSUES DO YOU ADDRESS IN YOUR REBUTTAL TESTIMONY?

A. We rebut the testimony of Public Staff witness Junis regarding Excess Capacity in the Carolina Meadows, The Legacy at Jordan Lake, and the Westfall wastewater treatment plants.

Q. MR. BECKER, WHY ARE YOU PROVIDING JOINT TESTIMONY?

A. There are two professional disciplines involved in the determination of excess capacity: accounting and engineering. I will provide testimony regarding the appropriateness of the accounting for excess capacity adjustments. Mr. Pearce will provide testimony regarding the appropriateness of the engineering calculation of excess capacity as it relates to contributory design flows.

Q. WHAT IS EXCESS CAPACITY?

A. Excess capacity is considered the difference between wastewater treatment plant design flow and the contributory design flows from the

customers. This calculation, in a few select circumstances, may be considered to exclude certain asset balances from rate base recovery.

Q. MR. BECKER, DO YOU HAVE ISSUES WITH WITNESS JUNIS' JUSTIFICATION FOR EXCESS CAPACITY ADJUSTMENTS?

A. Yes. There is a significant issue with witness Junis' application of Excess Capacity Adjustments for capital expended to ensure wastewater treatment compliance for the existing customers of these facilities. Witness Junis notes in his testimony (p. 7, lines 1-4) that:

> "The Public Staff does not recommend excess capacity adjustments be made against all overbuilt plant. Commonly, the developer of a system bears a majority of the initial cost and risk associated with plant infrastructure to serve future projected customer growth."

Assuming the Commission agreed with this statement, it could then be comprehensible to assign an excess capacity calculation applied to the **original cost** of rate base that was acquired from the developer as part of that transaction, as the utility would be assumed to step into the developer's shoes. However, witness Junis specifically states that "the developer of a system bears a majority of the **initial** cost and risk associated with plant infrastructure to serve future projected growth." [emphasis added] It can, therefore, be logically assumed that witness Junis is referring to the developer's cost of the initial plant construction and that any resultant excess capacity is therefore born by the developer, or the acquiring utility. Given this statement, any post-acquisition capital costs incurred that are necessary to ensure the compliance of the plant necessary to provide

on-going reliable service to the existing customers and protect the health of our communities and the environment should be fully recoverable.

Q. PLEASE EXPAND ON THE IMPACTS OF THIS ADJUSTMENT.

A. The application of excess capacity to any post-acquisition capital effectively penalizes the Company, beyond the last rate base of its original plant cost, for continuing to service its customers responsibly. It is a disincentive for a utility to make necessary repairs, replacements, or upgrades when it knows that a percentage of that cost will be unrecoverable. Because the Commission applied an excess capacity adjustment to fifty percent (50%) of the Carolina Meadows upgrades (the investment totaled approximately $1.7 million) in the Sub 497 rate case, the application of the excess capacity calculation effectively resulted in Aqua funding a necessary investment exceeding $250,000 that the Company will never recover – this assumes excess capacity deductions will continue to be allowed in this case and the adjustments are also allowed to be applied to post-acquisition investments. This exacerbates the "penalty," is not constructive or aligned with the reality of required investment, and could actually serve to promote non-compliance.

Q. MR. BECKER, WHAT IS AQUA'S POSITION IN THIS CASE WITH RESPECT TO DISALLOWANCES FOR WHAT IN THE PAST HAS BEEN DESCRIBED AS EXCESS CAPACITY FOR WASTEWATER TREATMENT PLANTS ACQUIRED FROM DEVELOPERS?

A. The Commission should not approve excess capacity disallowances for developer-installed systems that Aqua, or its predecessors, have acquired at original cost. In particular, the Public Staff proposes an "excess capacity" adjustment for the original cost of the three previously mentioned wastewater treatment plants, including subsequent repairs and replacements necessary to maintain compliance since the plant was initially acquired. The decisions to construct the WWTPs were reasonable and prudent, they were designed according to North Carolina standards and appropriately sized by Professional Engineers ("PE's"), and Aqua was prudent when it acquired them. Aqua's investments in the plants at issue on a per connection basis are reasonable. Requiring Aqua to take depreciation expense on its books without actual recovery of that expense through rates, and foregoing a return on a portion of this plant investment, is inconsistent with the Commission's policy of encouraging acquisition of developer-owned systems and application of the uniform rate structure. It is also a barrier to Aqua's fair opportunity, even under good management, to earn its authorized return.

Q. DO YOU BELIEVE THAT INDIVIDUAL WWTP PLANTS SHOULD BE SELECTIVELY CONSIDERED FOR EXCESS CAPACITY ADJUSTMENTS?

A. No. The three plants that have received excess capacity treatment in the past are all included in the Aqua North Carolina ("ANC") Wastewater consolidated rate entity. Aqua's state-wide wastewater system ownership

is made up of 59 wastewater treatment plants that were acquired through acquisition or individual developer contracts. These agreements have resulted in a footprint of assets and a range of costs per customer that are included in the two consolidated Aqua rate divisions. The negotiated developer agreements have resulted in a range of average rate base per customer costs that provides the Company with varying amounts of investment upon which to earn, but similar operational requirements, expense, and risk exist for all. The majority of Aqua's wastewater systems reflect agreements where a significant portion of the asset balances are contributed, and customers benefit from the Company's negotiation of those agreements via lower rates.

Aqua North Carolina Sewer is a consolidated rate entity and offers customers the protections afforded through a spreading of costs and the benefits of reduced costs realized through economies to scale. However, the elimination of rate base costs associated with these three "excess capacity" plants, simply because the reasonably anticipated, planned growth may not have occurred on these systems, is inappropriate.

Q. IF THESE EXCESS CAPACITY ADJUSTMENTS WITH RESPECT TO PLANT ARE DETERMINED TO BE APPROPRIATE (CONTRARY TO AQUA'S STATED POSITION) SHOULD THE EXCESS CAPACITY ADJUSTMENTS BE APPLIED TO POST-ACQUISITION REPAIRS, REPLACEMENTS, OR UPGRADES TO THOSE PLANTS?

A. No. Post-acquisition costs incurred to make necessary upgrades and maintain the three plants under discussion are done to serve the customers on this system - not future customers - yet these additions are also subjected to the Public Staff's excess capacity calculation. These customers are afforded the same level of protections and service as the rest of the customers in their consolidated rate entity; yet under the Public Staff's rigid construct, the Company must absorb the alleged "excess" loss. In the Final Order issued in Aqua's Sub 497 rate case, the Commission concluded as follows *(See Discussion and Conclusions on p. 71 of the Final Order)*:

> As a rate base/rate of return utility, Aqua NC should have in its rate base a reasonable level of investment per connection and should otherwise seek to maximize its CIAC. However, the Company has a uniform wastewater rate structure. All of its investment in WWTPs, wherever located, is consolidated into the Plant in Service account. Designations for individual plants or other facilities owned by the utility are lost for ratemaking purposes….

Q. MR. BECKER, WAS ALL OF THE RECENT PERIOD CAPITAL SPEND FOR THE CAROLINA MEADOWS, THE LEGACY, AND THE WESTFALL FACILITIES DIRECTLY CORRRELATED WITH THE ALLEGED "EXCESS" CAPACITIES OF THE ACTUAL WASTEWATER TREATMENT PLANTS?

A. No. Review of the capital expenditures for Carolina Meadows for the period between July 1, 2018 and March 1, 2020 indicates total capital charges were $216,478.39. Of this amount, only $72,965 (34%) was spent on the Carolina Meadows WWTP. The other 66 percent was expended on lift

station/pump repairs, driveway repair, protective bollards, generator repair, a generator quick connect, and a sewer flowmeter.

Review of the capital expenditures for The Legacy for the period between July 1, 2018 and March 1, 2020 indicates the total capital charges were $237,240. Of this amount, only $90,845 (38%) was spent on The Legacy WWTP. The other 62 percent was expended on grinder pump repairs, spray pumps, generator repairs, remote monitoring repairs, and force main repair.

Review of the capital expenditures for Westfall for the period between July 1, 2018 and March 1, 2020 indicates the total capital charges were $130,935. Of this amount, only $49,173 (38%) was spent on the Westfall WWTP. The other 62 percent was expended on grinder pumps, spray pumps, generator repairs, lift station repairs, and power monitor.

As demonstrated, only a portion of the capital spend for each of these systems is for the wastewater treatment plants. I do not believe it is proper to reduce rate base capital for expenditures that are not for the wastewater treatment plant itself. There is no relevant nexus between all of these expenditures and the wastewater treatment plant, which in the first instance is wrongly described as "excess." Nonetheless, per witness Junis' testimony, all capital expenditures at the facility would be subject to excess capacity adjustments. Aqua disagrees.

Q. MR. PEARCE, DO YOU AGREE WITH THE METHODOLOGY USED BY THE PUBLIC STAFF TO CALCULATE ITS PROPOSED EXCESS CAPACITY ADJUSTMENT?

A. No. The methodology being used by the Public Staff in this case, and the last several rate cases, to estimate excess capacity is flawed. Although the base formula used to calculate excess capacity[1] is appropriate, the Public Staff attempts to estimate the contributory design flow component of this calculation incorrectly. Wastewater treatment plants are designed for maximum flow potential based on meeting the estimated needs for designed **bedrooms per dwelling unit, not residential equivalency units ("REU's")**. There is always meant to be enough capacity for a plant to handle the maximum flows for the types of buildings included within a particular development's footprint for which that wastewater plant serves. Witness Junis uses REU's that are based on water meter sizes and the Public Staff's generalized estimate (400 gpd) of the gallons needed to support each REU to calculate the contributory design flow component of the excess capacity calculation. In the case of the three plants in question, this results in a smaller numerator and an overestimation of excess capacity for which the plant was purposely designed – according to NCDEQ regulations for Design Flow as contained in 15A NCAC 02T .0114 Wastewater Design Flow Rates, attached as *Becker/Pearce Rebuttal Exhibit 1*. The code provides engineers a prescriptive value necessary to

[1] 1-[contributory design flow / Permitted Capacity] = excess capacity %

calculate the design flow capacity and the resultant plant size needed to support the developer's approved plan.

The application of an appropriately determined contributory design flow will illustrate that the three wastewater treatment plants in question should result in **no** excess capacity adjustments in this case. I will provide the detailed contributory design calculations in accordance with 15A NCAC 02T .0114 later in my testimony, and they will illustrate this point.

Q. WHAT IS THE BASIS FOR THE PUBLIC STAFF'S CALCULATION OF EXCESS CAPACITY?

A. Witness Junis, at p. 7 of his testimony, references the Commission's decision in its Order in the 2011 Docket No. W-218, Sub 319 as the basis for his recommendation to continue the utilization of the Public Staff's calculations for calculating excess capacity in this case. However, the Commission in the 2018 Sub 497 case requested Aqua and other parties to provide other formulas for excess capacity adjustment in future cases. Specifically, "The Commission advises the parties that should this issue arise in a future rate case proceeding, the Commission requests that more evidence be presented by the parties regarding other formulas or methods for making excess capacity adjustments such that the Commission could determine by the weight of the evidence presented whether future growth projections or any other additional factors should be included in the approved methodology." *Order of December 2018 in Docket No. W-218, Sub 497, page 48.*

My rebuttal testimony presents an alternative methodology that replaces the use of REU's and an approximation of gallons per day ("gpd") with the metric that is used as the foundation to determine the appropriate sizing of a wastewater treatment plant.

Q. WHY IS IT INCORRECT TO UTILIZE AN REU IN THE CALCULATION TO ESTIMATE CONTRIBUTORY DESIGN FLOW?

A. The Public Staff uses water meter sizing to approximate a residential equivalency unit. Water meter sizing calculations do not properly approximate the number of bedrooms per residence, or other recreational facilities for which a wastewater plant was designed. Additionally, REU's are a poor approximation for commercial facilities' wastewater use.

In my opinion, a water meter size is a poor estimate for a wastewater contributory design flow for a facility, and to my knowledge its use is not endorsed by any environmental regulatory authority or wastewater treatment plant design expert.

Q. DO YOU KNOW WHY THE PUBLIC STAFF USES A WATER DESIGN STANDARD FOR A WASTEWATER TREATMENT PLANT'S CONTRIBUTORY DESIGN FLOW CALCULATION AND A 400 GPD ESTIMATE FOR EACH REU?

A. The Public Staff uses a 400 GPD estimate for each REU. In witness Junis' response to Data Request 2 (*Becker/Pearce Rebuttal Exhibit 2)* to the Company regarding his Direct testimony, he states: "The water design standard is 400 gallon/connection for a residential service, per 15A NCAC

18C .0409." It should be noted that 15A NCAC 18C .0400 regulations are water supply design regulations and are not wastewater treatment plant design regulations. The wastewater treatment plant design regulations are provided in 15A NCAC 02T .0114 and they are not equivalent. In making an excess capacity evaluation, it is appropriate to use the wastewater design regulations since we are assessing wastewater capacity. It is not appropriate to use water supply design regulations to evaluate WWTP contributory design flow.

Q. WHY IS IT APPROPRIATE TO USE 15A NCAC 02T .0114 TO DETERMINE THE CONTRIBUTORY DESIGN FLOW COMPONENT OF THE EXCESS CAPACITY CALCULATION?

A. The code, 15A NCAC 02T .0114, provides engineers who are designing a wastewater treatment facility the sizing requirements for plant design and permitting. For residential units, the code prescribes a 120 gpd requirement per bedroom with a 240 gpd minimum for each dwelling unit. The code additionally includes predetermined gpd amounts that are to be used for various other commercial facilities. Developers rely on these estimates to determine the proper sizing of the plants as they want to be sure to properly size the plant – not over, not under. Therefore, the determination as to whether a plant is "overbuilt" or has excess capacity should be based on the same understanding that was used to size the plant under North Carolina regulations.

An example of the notable disparity between the Public Staff's and Aqua's proposed calculations of contributory design flow is demonstrated through the following example. A 5/8" water meter is installed to provide water to most residences in any development. The wastewater contributory design flow assigned and allowed as calculated by the Public Staff using this meter will result in one REU x 400 gpd or 400 gpd, no matter what the size of the home may be. The developer plan, however, was for this residence to be a five-bedroom home. In this case, the engineer designing this plant must account for wastewater capacity necessary to meet maximum flow needs for five bedrooms at 120 gpd, or 600 gpd. While a general assumption is commonly made to assume an average of three-bedrooms per home, or a wastewater capacity need of 360 gpd (or even the slightly higher 400 gpd estimate currently used by the Public Staff) per residential unit, this assumption should not be applied blindly as can be seen in the example above.

Q. CAN YOU PROVIDE ANOTHER EXAMPLE OF WHY AQUA NORTH CAROLINA'S METHODOLOGY IS MORE APPROPRIATE?

A. Another example, more specific to our issue at hand, where the Contributory Design calculation by witness Junis to determine the excess capacity is significantly off, is the application of Public Staff's REU and gpd assumptions for the six-inch (6") wastewater flow meter used to collect wastewater for Carolina Meadows Senior Care facility. This six-inch wastewater flow meter was considered equivalent to a six-inch water meter

and was therefore assigned a value of 50 REU's and then multiplied by the 400 gpd usage estimate to arrive at a contributory design flow of 20,000 gpd. As will be discussed later in my testimony and shown in *Becker/Pearce Rebuttal Exhibit 5*, the actual contributory design flow for the Carolina Meadows Senior Care facility is 128,665 gpd. Water meter sizing calculations are not reliable approximations of the contributory design flow used to determine the size of a wastewater plant and they should not be used to assess excess capacity. REU's do not consistently allow for an accurate representation of the number of bedrooms per residence and are a poor approximation for commercial facilities. This misapplication alone has resulted in at least a 100,000 gpd error that, if added to witness Junis' current 240,400 contributory design flow calculation for the 350,000 gpd Carolina Meadows wastewater treatment plant, clearly demonstrates that the current plant is at near full contributory design flow capacity. The Carolina Meadows plant was built to facilitate its existing active customer base and should result in $0 excess capacity adjustments.

As was demonstrated, REU's are not good estimates of contributory design flow necessary to properly determine if there is any excess capacity within any wastewater treatment plant. REU's and a static gpd estimate based on meter sizes do not properly approximate excess capacity and the use of any methodology that is not in line to utilize the sizing parameters by which the wastewater plant was required to be built is inappropriate.

Q. MR. PEARCE, HAS THE COMPANY INFORMED THE PUBLIC STAFF OF THE FLAW IN THEIR METHODOLOGY TO CALCULATE CONTRIBUTORY DESIGN FLOW?

A. Yes. In response to Public Staff Data Request 116 Q3, attached as *Becker/ Pearce Rebuttal Exhibit 3,* Aqua provided an excerpt from and a reference to 15A NCAC 02T .0114 for Wastewater Design Flow Rates. For one of the wastewater plants in question, The Legacy, Aqua additionally provided an explanation supporting the specific estimation of bedrooms and amenities to be served and the application of the code with Aqua's conclusion which stated: "On a design flow basis, the water treatment plant is over its design flow capacity."

Q. WHAT WOULD THE RESULTS OF THE EXCESS CAPACITY CALCULATIONS BE IF CONTRIBUTORY FLOW WAS CALCULATED USING THE DESIGN STANDARDS SET BY 15A NCAC 02T .0114?

A. Aqua has completed calculations in accordance with 15A NCAC 02T .0114(b) for Carolina Meadows *(Becker/Pearce Rebuttal Exhibit 5),* The Legacy *(Becker/Pearce Rebuttal Exhibit 10),* and Westfall *(Becker/Pearce Rebuttal Exhibit 15)*. These calculations indicate that the Carolina Meadows wastewater treatment plant current contributory design flow is 391,669 gpd for a 350,000 gpd facility, The Legacy's wastewater treatment plant's current contributory design flow is 164,990 gpd for a 120,000 gpd facility, and the Westfall wastewater treatment plant's current contributory

design flow is 91,783 gpd for a facility with maximum permitted wastewater treatment capacity of 90,000 gpd.

As proposed in witness Junis' testimony, the reduction in revenue for Excess Capacity using the Public Staff's methodology for contributory design capacity is an approximate $190,000 annual reduction to Aqua's revenue requirement (dependent on the final authorized ROE approved in this case). If the calculations are done in accordance with the North Carolina Department of Environmental Quality ("DEQ") regulatory design flow standard, there would be no adjustment.

Q. PLEASE DESCRIBE THE CAROLINA MEADOWS DEVELOPMENT AND EXPLAIN YOUR DESIGN FLOW CALCULATIONS.

A. Based on the detailed description of the development, I will calculate the applicable design flowrates using the standards for each contributing facility as prescribed in 15A NCAC 02T .0114. The Carolina Meadows wastewater treatment plant receives wastewater from the Carolina Meadows senior facility, the Camden Apartment complex, a commercial area, and single-family residences. An aerial photo of the area is provided as *Becker/Pearce Rebuttal Exhibit 4* and shows the relatively dense level of development that our Carolina Meadows wastewater plant serves. *Becker/Pearce Rebuttal Exhibit 5* summarizes the calculations to determine the contributory design flow for each of the separately identifiable areas served by the Carolina Meadows wastewater treatment plant as follows:

- The Carolina Meadows Senior Care facility is a 168-acre development with 287 one- and two-bedroom homes, 162 one- and two- bedroom apartments, 169 assisted living and nursing home beds with laundry, and a beauty shop. The information for the current facilities at Carolina Meadows was provided by their Vice President of Operations. Using the applicable facility design flowrate values prescribed by 15A NCAC 02T .0114 of 240 gallon per day per dwelling unit minimum, 120 gallons per bed for nursing home beds, and 125 gallon per bowl for the beauty shop produces the following result: **The total contributory design flow for the Carolina Meadows Senior Care facility is 128,665 gpd.**
- The Camden Apartment Complex, or Camden at Carolina Meadows Apartment Complex, exists within the Governor's Village multi-use facility. This apartment complex has 201 one- and two- bedroom apartments, and 41 three-bedroom apartments. The facility information was provided by the Camden Community Manager. Using the same prescribed design flow values of 240 gallon per day per dwelling unit minimum and the 360 gallon per day per three-bedroom dwelling unit, **the total contributory design flow for the Camden at Carolina Meadows Apartment Complex is 63,000 gpd**.
- The Commercial area within the Governor's Village multi-use facility includes a full-size Food Lion supermarket, three (single-service)

restaurants, two (full-service) restaurants, a nail salon, a dry cleaners, a dentist office, a veterinary office, a dance studio, a bank, a Montessori Charter School, a preschool, a hair salon, a pharmacy, and an ABC store. There is also significant additional office space for which usage could not be readily determined and for which design flow calculations were not included. From a personally completed field survey, I determined the relevant facility counts for these facilities and applied the appropriate design basis using 15A NCAC 02T .0114. For five of these facilities, I used my best professional judgment to apply conservative design flow estimates; the total for these design flow estimates is 1100 gpd. **The total contributory design flow for the commercial area is 15,955 gpd**.

- There are several other types of single-family residential units within the Carolina Meadows Service Area, including townhouses, standard homes, and custom homes. For each of our single family residential customer addresses, we completed a Multiple Listing Service review, *Becker/Pearce Rebuttal Exhibit 6,* to determine the proper number of bedrooms for these customers. The number of bedrooms was determined for 355 of 442, or eighty percent (80%) percent of the residences. The average number of bedrooms per single family residence is 3.47 bedrooms per residence. With 442 residences, 120 gpd per bedroom, and an average of 3.47 bedrooms

per residence, **the total contributory design flow for the residences is 184,049 gpd**.

The Grand Total of the design flows for all of the Carolina Meadows Wastewater Treatment Plant contributory facilities described above is 391,669 gpd. This calculates to a twelve percent (12%) **excess** of the 350,000 gallon per day NPDES permit for this facility.

Q. HOW DOES YOUR CALCULATION OF CONTRIBUTORY DESIGN FLOW COMPARE TO WITNESS JUNIS' CALCULATION OF CONTRIBUTORY DESIGN FLOW?

A. In Junis Testimony Table 2, witness Junis provides a value of 234,400 gpd for flow based on an REU value of 586 REUs for the Carolina Meadows wastewater treatment plant. In witness Junis' response to Aqua's Data Request No. 2, attached as *Becker/Pearce Rebuttal Exhibit 2,* he states "The practice for ratemaking purposes has been the meter size is multiplied by a factor, see table below, for the calculation of base facilities charges and REUs".

Meter Size	AWWA Factor based on 5/8
5/8 inch	1.00
3/4 inch	1.50
1 inch	2.50
1-1/2 inch	5.00
2 inch	8.00
3 inch	15.00
4 inch	25.00

6 inch	50.00
8 inch	80.00
10 inch	115.00
12 inch	215.00

During my review of the excess capacity calculation for Carolina Meadows, I recently discovered an error in the "REU" estimation information that was based on meter sizing information provided by Aqua personnel for the Carolina Meadows senior care facility. The Carolina Meadows senior care facility REU count was based upon a single 6-inch wastewater meter for the entire facility and provided an REU count of only 50. A review of the January 2, 2019 Master Water Billing Account Summary for Carolina Meadows Care *(Becker/Pearce Rebuttal Exhibit 7)* indicated that a total of 278 active accounts exist: 232 residential, 10 commercial, and 36 multifamily. As such, it can be assumed the REU count would have been at least 278 for the Carolina Meadows Senior Care facility versus the 50 that were assigned through the REU to meter conversion performed to estimate contributory design flow. The revised REU count used by the Public Staff for the Carolina Meadows Wastewater Treatment Plant should have been, at a minimum, 814 REU's ((586 + 278 – 50) = 814). Even using the Public Staff's REU methodology, upon correction for the significant error resulting from the REU assumption for a 6" wastewater meter, produces 814 REU's at 400 gpd is 325,600 gpd or 93% capacity – full capacity.

Q. MR. PEARCE, PLEASE EXPLAIN THE APPLICATION OF 15A NCAC 02T .0114 CALCULATIONS FOR THE LEGACY WASTEWATER

CUSTOMERS AND THE SUBSTANTIAL DIFFERENCE BETWEEN THE VALUES CALCULATED UNDER THE ALTERNATIVE METHODOLOGIES.

A. The Legacy Wastewater Treatment Plant serves a residential community with 241 dwelling units, an amenity center, and a guard house. An aerial photo of the wastewater contributory area is provided in *Becker/Pearce Rebuttal Exhibit 8.*

As the exact count of bedrooms for every dwelling unit is not known and could not be located within the Chatham County online datasets, Aqua staff searched Trulia.com and Zillow.com for real estate information for every dwelling unit address. A table of addresses and bedrooms per address is included in *Becker/Pearce Rebuttal Exhibit 9*. Through the Trulia.com and Zillow.com search, bedroom data was found for 173 of 241 addresses. From this large representative sample (71% of entire population), the average number of bedrooms per dwelling unit in The Legacy service area is 4.503. With 241 dwelling units, 4.503 bedrooms per dwelling unit, and each bedroom with a design flow of 120 gpd, the dwelling unit design flow is 130,224 gpd. There is also a guardhouse (rated at 100 gpd) and an amenity center (rated at 1450 gpd) supporting the contributory design flow to The Legacy wastewater treatment plant. The total contributory design flow is 131,774 gpd and is summarized at *Becker/Pearce Rebuttal Exhibit 10.*

Witness Junis' testimony, in Table 2 on Page 9, calculates the contributory design flow value as 96,400 gpd for The Legacy wastewater treatment plant. The primary reason for the difference is witness Junis' use of the Public Staff's non-specific and not applicable 400 gpd flow estimate per dwelling unit that, as previously mentioned in my testimony, is a value based on water design regulations and not wastewater treatment plant design regulations.

Additionally, the permit issued to The Legacy wastewater treatment facility in March 22, 2005, attached in full as *Becker/Pearce Rebuttal Exhibit 11,* included the following:

FOR THE

construction and operation of a 165,000 gallons per day (GPD) wastewater treatment and reclaimed water irrigation system consisting of the following:

a 120,000 GPD Phase I wastewater treatment system serving up to 999 bedrooms and a 100 GPD guardhouse and consisting of a 42,000 gallon flow equalization tank with two (2) 135 gallon per minute (GPM) pumps and one (1) 175 cubic feet per minute (cfm) blower, a manually cleaned bar screen, a flow splitter box, two (2) 98,000 gallon aeration basins with two (2) 500 cfm blowers each, two (2) 15,400 gallon clarifiers each with one (1) variable rate sludge pump, one (1) 31,600 gallon sludge holding basin, two (2) 7.5 feet by 7.5 feet tertiary filters, a clearwell with three (3) 425 GPM pumps, a mudwell with two (2) 150 GPM pumps, two (2) UV disinfection units with eight (8) bulbs each, a chlorine contact basin, dechlorination, and an ultrasonic effluent flow measuring device;

a 60,000 GPD Phase II wastewater treatment system serving up to 363 additional bedrooms and a 1,450 GPD tennis/swim amenity area and consisting of a 20,600 gallon flow equalization tank and one (1) 175 cubic foot per minute (cfm) blower, one (1) 98,000 gallon aeration basin with one (1) 500 cfm blower, one (1) 15,400 gallon clarifier with one (1) variable rate sludge pump, one (1) 15,800 gallon sludge holding basin, one 7.5 feet by 7.5 feet tertiary filter, a 4,222 gallon clearwell, and 5,000 gallon mudwell, a 2,975 gallon chlorine contact chamber, and a 1,775 dechlorination chamber;

This permit specified the number of bedrooms to be served by the facilities and the comparative design flow. The 120,000 gallon per day Phase I facility was permitted to serve 999 bedrooms and a guardhouse. The design flow is derived by multiplying 999 (the bedrooms) by the 120 gallon per day per bedroom design flow and calculates to a total of 119,880 gpd

design flow. With the additional 100 gpd for the guardhouse, the total flow would be 119,980 gpd - presumably rounded to the 120,000 gpd plant capacity. Based on the design flow calculations above for the actual connections, supported by 15A NCAC 02T .0114, approximately 1085 bedrooms (241 x 4.503 = 1085), are currently contributory to The Legacy wastewater treatment plant and in excess of the 999 bedrooms referenced in the permit. It is obvious, based on the appropriate method of calculation of design flows, that Aqua was correct in not including excess capacity adjustments for The Legacy wastewater treatment plant.

Q. PLEASE EXPLAIN THE APPLICATION OF 15A NCAC 02T .0114 CALCULATIONS FOR THE WESTFALL WASTEWATER CUSTOMERS AND THE SUBSTANTIAL DIFFERENCE BETWEEN THE VALUES CALCULATED UNDER THE ALTERNATIVE METHODOLOGIES.

A. The Westfall Wastewater Treatment Plant serves a residential community with 181 dwelling units, an amenity center, and a guard house. An aerial photo of the wastewater contributory area is provided in *Becker*/*Pearce Rebuttal Exhibit 12.*

As the exact count of bedrooms for every dwelling unit is not known and could not be located within the Chatham County online datasets, Aqua administrative staff searched Trulia.com and Zillow.com for real estate information for every dwelling unit address. A table of addresses and bedrooms per address is included in *Becker/Pearce Rebuttal Exhibit 13.* Through the Trulia.com and Zillow.com search, bedroom data was found

for 110 of 180 addresses. From this large representative sample (61% of entire population), the average number of bedrooms per dwelling unit in the Westfall service area was calculated to be 4.06. With 181 dwelling units, 4.06 bedrooms per dwelling unit, and each bedroom with a design flow of 120 gpd, the dwelling unit contributory design flow is estimated at 88,262 gpd. There is also a community pool in this service area which was not included in this calculation.

The northwest area of the Westfall community is currently in a rapid growth phase, with several dwelling units under construction. I have personally visited this site and was able to obtain visual verification of the bedroom counts where possible. The dwelling units under construction, *Becker/ Pearce Rebuttal Exhibit 14*, include: one "finished" dwelling unit – assumed to be four (4) bedrooms; three (3) units under construction with 14 bedrooms total; and three (3) additional lots with foundations underway, which we assume, based on our previous survey, to have four (4) bedrooms per unit or 12 bedrooms total. The seven dwelling units under construction have an assumed minimum of 30 bedrooms and would have an additional contributory design flow of 3600 gpd. With the inclusion of dwelling units under construction, the grand total contributory design flow is 91,862 gpd. and is summarized in *Becker/Pearce Rebuttal Exhibit 15.*

Junis Testimony Table 2 on Page 9 calculates the value as 73,400 gpd for the Westfall design flow. The primary reason for the difference is witness Junis' use of the Public Staff's non-specific and not applicable

400 gpd flow estimate per dwelling unit that, as previously mentioned in my testimony, is a value based on water design regulations and not wastewater treatment plant design regulations.

Based on the appropriate method of calculation of design flows and the additional residential growth in Westfall, Aqua was correct in not including excess capacity adjustments for the Westfall wastewater treatment plant.

Q. MR PEARCE, WHAT IS YOUR RECOMMENDATION FOR EXCESS CAPACITY ADJUSTMENTS?

A. No excess capacity adjustments should be made for the Carolina Meadows WWTP, The Legacy WWTP, or the Westfall WWTP due to the fact that the existing, or soon to be, contributory design flows, calculated in accordance with NC Administrative Codes for wastewater, are greater than the permitted capacities for each of the three wastewater treatment plants. Below is a summary table of my testimony. A negative excess capacity value means that excess capacity does not exist.

A	B	C	D (1-C/B)
Plant Name	**Capacity (gpd)**	**Contributory Design Flow (gpd)**	**Excess Capacity**
Carolina Meadows	350,000	391,669	-11.9 %

The Legacy at Jordan Lake	120,000	131,774	-17.7%
Westfall	90,000	91,862	-2.1%

Q. MR BECKER, DO YOU HAVE ANY ADDITIONAL RECOMMENDATIONS REGARDING EXCESS CAPACITY ADJUSTMENT?

I concur with witness Pearce's calculations on the contributory design flow component of excess capacity. As was indicated in my Direct Testimony, the Company believes that the Commission should not make excess capacity disallowances for systems Aqua or its predecessor has acquired or installed. The decisions to construct the three wastewater treatment plants, for which disallowances have been made in past cases, were reasonable and prudent. The plants were appropriately sized and Aqua was prudent when it acquired them. Aqua's investments in the plants at issue on a per connection basis are reasonable. Requiring Aqua to take depreciation expense on its books without actual recovery through rates and foregoing return on a portion of this plant investment, already reduced by CIAC, is inconsistent with the Commission's encouraging the acquisition of developer-owned systems and the uniform rate structure. It is a factor preventing Aqua from earning its authorized return.

Q. DOES THIS CONCLUDE YOUR REBUTTAL TESTIMONY?

A. Yes, it does.