

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

20 **Q. WHAT IS EXCESS CAPACITY?**

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

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

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

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

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

14
15 Assuming the Commission agreed with this statement, it could then be
16 comprehensible to assign an excess capacity calculation applied to the
17 **original cost** of rate base that was acquired from the developer as part of
18 that transaction, as the utility would be assumed to step into the developer's
19 shoes. However, witness Junis specifically states that "the developer of a
20 system bears a majority of the **initial** cost and risk associated with plant
21 infrastructure to serve future projected growth." [emphasis added] It can,
22 therefore, be logically assumed that witness Junis is referring to the
23 developer's cost of the initial plant construction and that any resultant
24 excess capacity is therefore born by the developer, or the acquiring utility.
25 Given this statement, any post-acquisition capital costs incurred that are
26 necessary to ensure the compliance of the plant necessary to provide

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

3 **Q. PLEASE EXPAND ON THE IMPACTS OF THIS ADJUSTMENT.**

4 A. The application of excess capacity to any post-acquisition capital effectively
5 penalizes the Company, beyond the last rate base of its original plant cost,
6 for continuing to service its customers responsibly. It is a disincentive for a
7 utility to make necessary repairs, replacements, or upgrades when it knows
8 that a percentage of that cost will be unrecoverable. Because the
9 Commission applied an excess capacity adjustment to fifty percent (50%)
10 of the Carolina Meadows upgrades (the investment totaled approximately
11 \$1.7 million) in the Sub 497 rate case, the application of the excess capacity
12 calculation effectively resulted in Aqua funding a necessary investment
13 exceeding \$250,000 that the Company will never recover – this assumes
14 excess capacity deductions will continue to be allowed in this case and the
15 adjustments are also allowed to be applied to post-acquisition investments.
16 This exacerbates the “penalty,” is not constructive or aligned with the reality
17 of required investment, and could actually serve to promote non-
18 compliance.

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

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

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

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

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

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

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

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

10 As a rate base/rate of return utility, Aqua NC should
11 have in its rate base a reasonable level of investment per
12 connection and should otherwise seek to maximize its CIAC.
13 However, the Company has a uniform wastewater rate
14 structure. All of its investment in WWTPs, wherever located,
15 is consolidated into the Plant in Service account.
16 Designations for individual plants or other facilities owned by
17 the utility are lost for ratemaking purposes....
18

19 **Q. MR. BECKER, WAS ALL OF THE RECENT PERIOD CAPITAL SPEND**
20 **FOR THE CAROLINA MEADOWS, THE LEGACY, AND THE WESTFALL**
21 **FACILITIES DIRECTLY CORRELATED WITH THE ALLEGED**
22 **"EXCESS" CAPACITIES OF THE ACTUAL WASTEWATER**
23 **TREATMENT PLANTS?**

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

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

3 Review of the capital expenditures for The Legacy for the period between
4 July 1, 2018 and March 1, 2020 indicates the total capital charges were
5 \$237,240. Of this amount, only \$90,845 (38%) was spent on The Legacy
6 WWTP. The other 62 percent was expended on grinder pump repairs,
7 spray pumps, generator repairs, remote monitoring repairs, and force main
8 repair.

9 Review of the capital expenditures for Westfall for the period between July
10 1, 2018 and March 1, 2020 indicates the total capital charges were
11 \$130,935. Of this amount, only \$49,173 (38%) was spent on the Westfall
12 WWTP. The other 62 percent was expended on grinder pumps, spray
13 pumps, generator repairs, lift station repairs, and power monitor.

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

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

4 A. No. The methodology being used by the Public Staff in this case, and the
5 last several rate cases, to estimate excess capacity is flawed. Although the
6 base formula used to calculate excess capacity¹ is appropriate, the Public
7 Staff attempts to estimate the contributory design flow component of this
8 calculation incorrectly. Wastewater treatment plants are designed for
9 maximum flow potential based on meeting the estimated needs for
10 designed **bedrooms per dwelling unit, not residential equivalency units**
11 **("REU's")**. There is always meant to be enough capacity for a plant to
12 handle the maximum flows for the types of buildings included within a
13 particular development's footprint for which that wastewater plant serves.
14 Witness Junis uses REU's that are based on water meter sizes and the
15 Public Staff's generalized estimate (400 gpd) of the gallons needed to
16 support each REU to calculate the contributory design flow component of
17 the excess capacity calculation. In the case of the three plants in question,
18 this results in a smaller numerator and an overestimation of excess capacity
19 for which the plant was purposely designed – according to NCDEQ
20 regulations for Design Flow as contained in 15A NCAC 02T .0114
21 Wastewater Design Flow Rates, attached as *Becker/Pearce Rebuttal*
22 *Exhibit 1*. The code provides engineers a prescriptive value necessary to

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

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

3 The application of an appropriately determined contributory design flow will
4 illustrate that the three wastewater treatment plants in question should
5 result in **no** excess capacity adjustments in this case. I will provide the
6 detailed contributory design calculations in accordance with 15A NCAC 02T
7 .0114 later in my testimony, and they will illustrate this point.

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

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

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

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

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

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

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

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

1 18C .0409.” It should be noted that 15A NCAC 18C .0400 regulations are
2 water supply design regulations and are not wastewater treatment plant
3 design regulations. The wastewater treatment plant design regulations are
4 provided in 15A NCAC 02T .0114 and they are not equivalent. In making
5 an excess capacity evaluation, it is appropriate to use the wastewater
6 design regulations since we are assessing wastewater capacity. It is not
7 appropriate to use water supply design regulations to evaluate WWTP
8 contributory design flow.

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

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

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

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

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

1 and was therefore assigned a value of 50 REU's and then multiplied by the
2 400 gpd usage estimate to arrive at a contributory design flow of
3 20,000 gpd. As will be discussed later in my testimony and shown in
4 *Becker/Pearce Rebuttal Exhibit 5*, the actual contributory design flow for the
5 Carolina Meadows Senior Care facility is 128,665 gpd. Water meter sizing
6 calculations are not reliable approximations of the contributory design flow
7 used to determine the size of a wastewater plant and they should not be
8 used to assess excess capacity. REU's do not consistently allow for an
9 accurate representation of the number of bedrooms per residence and are
10 a poor approximation for commercial facilities. This misapplication alone
11 has resulted in at least a 100,000 gpd error that, if added to witness Junis'
12 current 240,400 contributory design flow calculation for the 350,000 gpd
13 Carolina Meadows wastewater treatment plant, clearly demonstrates that
14 the current plant is at near full contributory design flow capacity. The
15 Carolina Meadows plant was built to facilitate its existing active customer
16 base and should result in \$0 excess capacity adjustments.

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

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

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

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

15 A. Aqua has completed calculations in accordance with 15A NCAC 02T
16 .0114(b) for Carolina Meadows (*Becker/Pearce Rebuttal Exhibit 5*), The
17 Legacy (*Becker/Pearce Rebuttal Exhibit 10*), and Westfall (*Becker/Pearce*
18 *Rebuttal Exhibit 15*). These calculations indicate that the Carolina
19 Meadows wastewater treatment plant current contributory design flow is
20 391,669 gpd for a 350,000 gpd facility, The Legacy's wastewater treatment
21 plant's current contributory design flow is 164,990 gpd for a 120,000 gpd
22 facility, and the Westfall wastewater treatment plant's current contributory

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

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

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

12 A. Based on the detailed description of the development, I will calculate the
13 applicable design flowrates using the standards for each contributing facility
14 as prescribed in 15A NCAC 02T .0114. The Carolina Meadows wastewater
15 treatment plant receives wastewater from the Carolina Meadows senior
16 facility, the Camden Apartment complex, a commercial area, and
17 single-family residences. An aerial photo of the area is provided as
18 *Becker/Pearce Rebuttal Exhibit 4* and shows the relatively dense level of
19 development that our Carolina Meadows wastewater plant serves.
20 *Becker/Pearce Rebuttal Exhibit 5* summarizes the calculations to determine
21 the contributory design flow for each of the separately identifiable areas
22 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)

1 restaurants, two (full-service) restaurants, a nail salon, a dry
2 cleaners, a dentist office, a veterinary office, a dance studio, a bank,
3 a Montessori Charter School, a preschool, a hair salon, a pharmacy,
4 and an ABC store. There is also significant additional office space
5 for which usage could not be readily determined and for which design
6 flow calculations were not included. From a personally completed
7 field survey, I determined the relevant facility counts for these
8 facilities and applied the appropriate design basis using 15A NCAC
9 02T .0114. For five of these facilities, I used my best professional
10 judgment to apply conservative design flow estimates; the total for
11 these design flow estimates is 1100 gpd. **The total contributory
12 design flow for the commercial area is 15,955 gpd.**

- 13 • There are several other types of single-family residential units within
14 the Carolina Meadows Service Area, including townhouses,
15 standard homes, and custom homes. For each of our single family
16 residential customer addresses, we completed a Multiple Listing
17 Service review, *Becker/Pearce Rebuttal Exhibit 6*, to determine the
18 proper number of bedrooms for these customers. The number of
19 bedrooms was determined for 355 of 442, or eighty percent (80%)
20 percent of the residences. The average number of bedrooms per
21 single family residence is 3.47 bedrooms per residence. With 442
22 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

1 **CUSTOMERS AND THE SUBSTANTIAL DIFFERENCE BETWEEN THE**
2 **VALUES CALCULATED UNDER THE ALTERNATIVE**
3 **METHODOLOGIES.**

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

8 As the exact count of bedrooms for every dwelling unit is not known and
9 could not be located within the Chatham County online datasets, Aqua staff
10 searched Trulia.com and Zillow.com for real estate information for every
11 dwelling unit address. A table of addresses and bedrooms per address is
12 included in *Becker/Pearce Rebuttal Exhibit 9*. Through the Trulia.com and
13 Zillow.com search, bedroom data was found for 173 of 241 addresses.
14 From this large representative sample (71% of entire population), the
15 average number of bedrooms per dwelling unit in The Legacy service area
16 is 4.503. With 241 dwelling units, 4.503 bedrooms per dwelling unit, and
17 each bedroom with a design flow of 120 gpd, the dwelling unit design flow
18 is 130,224 gpd. There is also a guardhouse (rated at 100 gpd) and an
19 amenity center (rated at 1450 gpd) supporting the contributory design flow
20 to The Legacy wastewater treatment plant. The total contributory design
21 flow is 131,774 gpd and is summarized at *Becker/Pearce Rebuttal Exhibit*
22 *10*.

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

8 Additionally, the permit issued to The Legacy wastewater treatment facility
9 in March 22, 2005, attached in full as *Becker/Pearce Rebuttal Exhibit 11*,
10 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;

11
12 This permit specified the number of bedrooms to be served by the facilities
13 and the comparative design flow. The 120,000 gallon per day Phase I
14 facility was permitted to serve 999 bedrooms and a guardhouse. The
15 design flow is derived by multiplying 999 (the bedrooms) by the 120 gallon
16 per day per bedroom design flow and calculates to a total of 119,880 gpd

1 design flow. With the additional 100 gpd for the guardhouse, the total flow
2 would be 119,980 gpd - presumably rounded to the 120,000 gpd plant
3 capacity. Based on the design flow calculations above for the actual
4 connections, supported by 15A NCAC 02T .0114, approximately
5 1085 bedrooms ($241 \times 4.503 = 1085$), are currently contributory to The
6 Legacy wastewater treatment plant and in excess of the 999 bedrooms
7 referenced in the permit. It is obvious, based on the appropriate method of
8 calculation of design flows, that Aqua was correct in not including excess
9 capacity adjustments for The Legacy wastewater treatment plant.

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

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

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

1 for 110 of 180 addresses. From this large representative sample (61% of
2 entire population), the average number of bedrooms per dwelling unit in the
3 Westfall service area was calculated to be 4.06. With 181 dwelling units,
4 4.06 bedrooms per dwelling unit, and each bedroom with a design flow of
5 120 gpd, the dwelling unit contributory design flow is estimated at 88,262
6 gpd. There is also a community pool in this service area which was not
7 included in this calculation.

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

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

1 400 gpd flow estimate per dwelling unit that, as previously mentioned in my
2 testimony, is a value based on water design regulations and not wastewater
3 treatment plant design regulations.

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

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

9 A. No excess capacity adjustments should be made for the Carolina Meadows
10 WWTP, The Legacy WWTP, or the Westfall WWTP due to the fact that the
11 existing, or soon to be, contributory design flows, calculated in accordance
12 with NC Administrative Codes for wastewater, are greater than the
13 permitted capacities for each of the three wastewater treatment plants.
14 Below is a summary table of my testimony. A negative excess capacity
15 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.

15A NCAC 02T .0114 WASTEWATER DESIGN FLOW RATES

(a) This Rule shall be used to determine wastewater flow rates for all systems governed by this Subchapter unless alternate criteria are provided by a program-specific rule or for flow used for the purposes of 15A NCAC 02H .0105. Higher flow rates shall be required where usage and occupancy are atypical, including those in Paragraph (e) of this Rule. Wastewater flow calculations shall take hours of operation and anticipated maximum occupancies and usage into account when calculating peak flows for design.

(b) In determining the volume of sewage from dwelling units, the flow rate shall be 120 gallons per day per bedroom. The minimum volume of sewage from each dwelling unit shall be 240 gallons per day and each additional bedroom above two bedrooms shall increase the volume by 120 gallons per day. Each bedroom or any other room or addition that can function as a bedroom shall be considered a bedroom for design purposes. When the occupancy of a dwelling unit exceeds two persons per bedroom, the volume of sewage shall be determined by the maximum occupancy at a rate of 60 gallons per person per day.

(c) The following table shall be used to determine the minimum allowable design daily flow of wastewater facilities. Design flow rates for establishments not identified below shall be determined using available flow data, water-using fixtures, occupancy or operation patterns, and other measured data.

Type of Establishments	Daily Flow For Design
Barber and beauty shops	
Barber Shops	50 gal/chair
Beauty Shops	125 gal/booth or bowl
Businesses, offices and factories	
General business and office facilities	25 gal/employee/shift
Factories, excluding industrial waste	25 gal/employee/shift
Factories or businesses with showers or food preparation	35 gal/employee/shift
Warehouse	100 gal/loading bay
Warehouse – self storage (not including caretaker residence)	1 gal/unit
Churches	
Churches without kitchens, day care or camps	3 gal/seat
Churches with kitchen	5 gal/seat
Churches providing day care or camps	25 gal/person (child & employee)
Fire, rescue and emergency response facilities	
Fire or rescue stations without on site staff	25 gal/person
Fire or rescue stations with on-site staff	50 gal/person/shift
Food and drink facilities	
Banquet, dining hall	30 gal/seat
Bars, cocktail lounges	20 gal/seat
Caterers	50 gal/100 sq ft floor space
Restaurant, full Service	40 gal/seat
Restaurant, single service articles	20 gal/seat
Restaurant, drive-in	50 gal/car space
Restaurant, carry out only	50 gal/100 sq ft floor space
Institutions, dining halls	5 gal/meal
Deli	40 gal/100 sq ft floor space
Bakery	10 gal/100 sq ft floor space
Meat department, butcher shop or fish market	75 gal/100 sq ft floor space
Specialty food stand or kiosk	50 gal/100 sq ft floor space
Hotels and Motels	
Hotels, motels and bed & breakfast facilities, without in-room cooking facilities	120 gal/room
Hotels and motels, with in-room cooking facilities	175 gal/room
Resort hotels	200 gal/room
Cottages, cabins	200 gal/unit
Self service laundry facilities	500 gal/machine
Medical, dental, veterinary facilities	
Medical or dental offices	250 gal/practitioner/shift
Veterinary offices (not including boarding)	250 gal/practitioner/shift

Veterinary hospitals, kennels, animal boarding facilities	20 gal/pen, cage, kennel or stall
Hospitals, medical	300 gal/bed
Hospitals, mental	150 gal/bed
Convalescent, nursing, rest homes without laundry facilities	60 gal/bed
Convalescent, nursing, rest homes with laundry facilities	120 gal/bed
Residential care facilities	60 gal/person
Parks, recreation, camp grounds, R-V parks and other outdoor activity facilities	
Campgrounds with comfort station, without water or sewer hookups	75 gal/campsite
Campgrounds with water and sewer hookups	100 gal/campsite
Campground dump station facility	50 gal/space
Construction, hunting or work camps with flush toilets	60 gal/person
Construction, hunting or work camps with chemical or portable toilets	40 gal/person
Parks with restroom facilities	250 gal/plumbing fixture
Summer camps without food preparation or laundry facilities	30 gal/person
Summer camps with food preparation and laundry facilities	60 gal/person
Swimming pools, bathhouses and spas	10 gal/person
Public access restrooms	325 gal/plumbing fixture
Schools, preschools and day care	
Day care and preschool facilities	25 gal/person (child & employee)
Schools with cafeteria, gym and showers	15 gal/student
Schools with cafeteria	12 gal/student
Schools without cafeteria, gym or showers	10 gal/student
Boarding schools	60 gal/person (student & employee)
Service stations, car wash facilities	
Service stations, gas stations	250 gal/plumbing fixture
Car wash facilities	1200 gal/bay
Sports centers	
Bowling center	50 gal/lane
Fitness, exercise, karate or dance center	50 gal/100 sq ft
Tennis, racquet ball	50 gal/court
Gymnasium	50 gal/100 sq ft
Golf course with only minimal food service	250 gal/plumbing fixture
Country clubs	60 gal/member or patron
Mini golf, putt-putt	250 gal/plumbing fixture
Go-kart, motocross	250 gal/plumbing fixture
Batting cages, driving ranges	250 gal/plumbing fixture
Marinas without bathhouse	10 gal/slip
Marinas with bathhouse	30 gal/slip
Video game arcades, pool halls	250 gal/plumbing fixture
Stadiums, auditoriums, theaters, community centers	5 gal/seat
Stores, shopping centers, malls and flea markets	
Auto, boat, recreational vehicle dealerships/showrooms with restrooms	125 gal/plumbing fixture
Convenience stores, with food preparation	60 gal/100 sq ft
Convenience stores, without food preparation	250 gal/plumbing fixture
Flea markets	30 gal/stall
Shopping centers and malls with food service	130 gal/1000 sq ft
Stores and shopping centers without food service	100 gal/1000 sq ft
Transportation terminals – air, bus, train, ferry, port and dock	5 gal/passenger

(d) Design daily flow rates for proposed non-residential developments where the types of use and occupancy are not known shall be designed for a minimum of 880 gallons per acre, or the applicant shall specify an anticipated flow based upon anticipated or potential uses.

(e) Design daily flow rates for residential property on barrier islands and similar communities located south or east of the Atlantic Intracoastal Waterway and used as vacation rental as defined in G.S. 42A-4 shall be 120 gallons per day per habitable room. Habitable room shall mean a room or enclosed floor space used or intended to be used for living or sleeping, excluding kitchens and dining areas, bathrooms, shower rooms, water closet compartments, laundries, pantries, foyers, connecting corridors, closets, and storage spaces.

(f) An adjusted daily sewage flow design rate shall be granted for permitted but not yet tributary connections and future connections tributary to the system upon showing that the capacity of a sewage system is adequate to meet actual daily wastewater flows from a facility included in Paragraph (b) or (c) of this Rule without causing flow violations at the receiving wastewater treatment plant or capacity-related sanitary sewer overflows within the collection system as follows:

- (1) Documented, representative data from that facility or a comparable facility shall be submitted by an authorized signing official in accordance with Rule .0106 of this Section to the Division for all flow reduction requests, as follows:
 - (A) dates of flow meter calibrations during the time frame evaluated and indication if any adjustments were necessary;
 - (B) a breakdown of the type of connections (e.g. two bedroom units, three bedroom units) and number of customers for each month of submitted data as applicable. Identification of any non-residential connections including subdivision clubhouses and pools, restaurants, schools, churches and businesses. For each non-residential connection, information identified in Paragraph (c) of this Rule (e.g. 200 seat church, 40 seat restaurant, 35 person pool bathhouse);
 - (C) a letter of agreement from the owner or an official, meeting the criteria of Rule .0106 of this Section, of the receiving collection system or treatment works accepting the wastewater and agreeing with the adjusted design rate;
 - (D) age of the collection system;
 - (E) analysis of inflow and infiltration within the collection system or receiving treatment plant, as applicable;
 - (F) if a dedicated wastewater treatment plant serves the specific area and is representative of the residential wastewater usage, at least the 12 most recent consecutive monthly average wastewater flow readings and the daily total wastewater flow readings for the highest average wastewater flow month per customers, as reported to the Division;
 - (G) if daily data from a wastewater treatment plant cannot be used or is not representative of the project area: 12 months worth of monthly average wastewater flows from the receiving treatment plant shall be evaluated to determine the peak sewage month. Daily wastewater flows shall then be taken from a flow meter installed at the most downstream point of the collection area for the peak month selected that is representative of the project area. Justification for the selected placement of the flow meter shall also be provided; and
 - (H) an estimated design daily sewage flow rate shall be determined by calculating the numerical average of the top three daily readings for the highest average flow month. The calculations shall also account for seasonal variations, excessive inflow and infiltration, age and suspected meter reading and recording errors.
- (2) The Division shall evaluate all data submitted but shall also consider other factors in granting, with or without adjustment, or denying a flow reduction request including: applicable weather conditions during the data period (i.e. rainy or drought), other historical monitoring data for the particular facility or other similar facilities available to the Division, the general accuracy of monitoring reports and flow meter readings, and facility usage, such as whether the facility is in a resort area.
- (3) Flow increases shall be required if the calculations required by Subparagraph (f)(1) of this Rule yield design flows higher than that specified in Paragraphs (b) or (c) of this Rule.
- (4) The permittee shall retain the letter of any approved adjusted daily design flow rate for the life of the facility and shall transfer such letter to a future permittee.

History Note: Authority G.S. 143-215.1; 143-215.3(a)(1);
Eff. September 1, 2006;
Readopted Eff. September 1, 2018.

**PUBLIC STAFF
RESPONSE TO
AQUA NORTH CAROLINA, INC.
DATA REQUEST NO. 2 TO PUBLIC STAFF**

DOCKET NO. W-218, SUB 526

**DATE OF REQUEST: FRIDAY, MAY 29, 2020 (MODIFIED ON JUNE 1, 2020)
DATE OF RESPONSE: THURSDAY, JUNE 4, 2020**

☐

CONFIDENTIAL

☒

NOT CONFIDENTIAL

The individual making the response and responsible for the subject matter addressed in herein is Charles Junis, Engineer with the Water, Sewer, and Telephone Division of the Public Staff.

Subject of Data Request: Excess Capacity

Request:

1. In Aqua's review of the 15A NCAC 02T .0114, the Company could not locate a definition of REU. Please provide the exact administrative code that uses this term and its definition.

Response:

Residential equivalent unit (REU) is a common term to compare different customer types and is widely used to determine base facilities charges and connection fees. For the purposes of excess capacity, REUs is used to compare end of period customers (connected customers paying for recovery of the plant) and the capacity of the plant. The water design standard is 400 gallon/connection for a residential service, per 15A NCAC 18C .0409. The wastewater design standard is a "minimum volume of sewage from each dwelling unit shall be 240 gallons per day and each additional bedroom above two bedrooms shall increase the volume by 120 gallons per day," per 15A NCAC 02T .0114. It's our understanding there are exceptions to the rule for which Division of Water Resources has approved design capacity that is less than the requirement referenced above, and/or the preceding rule, for new construction and expansions of WWTPs. The design standards have additional requirements for other types of connections such as restaurants, hair salons, and churches, however, those have typically not been utilized when setting rates. With limited time to provide responses, an example is Hawthorne at the Greene, which was a negotiated rate structure approved by the Commission. 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

AWWA Manual M6 and Manual M1; WEF Manual of Practice 27.

Request:

2. Are 15A NCAC 02T .0114 design flow values based on average flows or peak daily flows?

Response:

Peak daily flows.

Request:

3. If 15A NCAC 02T .0114 is based on peak daily flow, would it be expected that average flows at a wastewater treatment plant would be significantly lower than the design rate?

Response:

The average flows at a wastewater treatment plant are dependent on the collection system and users tributary to that WWTP. On page 29 of its Sub 319 Order, the Commission states as follows:

The Commission considers that there is a fundamental flaw in utilizing the actual flow (whether it is maximum-daily flow, maximum monthly-average flow, annual-average flow, etc.) in the plant to compute a used and useful percentage of the plant. At different times (different rate cases for instance), the same number of REUs could produce different flows to the plant. At one time, the service area may be populated by families with several older children producing a high volume of water usage per REU and at a later time, the families may have matured with children having left home, leaving

behind a service area populated with empty nesters with a lower volume of water usage per REU. In this example, if the actual flow to the plant is used to compute used and useful plant, there would be a larger excess capacity adjustment in the latter rate case for the identical number of REUs connected to the plant. The Commission does not believe it would be appropriate to find that the plant is less used and useful because the demographics of the households changed over time (nor would it be appropriate to find the plant to be more used and useful if the flow increased over time without the number of REUs connected increasing).

On page 30, the Sub 319 Order states, "The Commission finds and concludes that the determination of excess capacity should be based upon the number of end-of-period REUs."

Request:

4. Per 15A NCAC 02T .0114, how many gallons per day are assigned to a four-bedroom dwelling unit?

Response:

480 gallons per day.

Request:

5. Per 15A NCAC 02T .0114, how many gallons per day are assigned to a five-bedroom dwelling unit?

Response:

600 gallons per day.

Request:

6. Per 15A NCAC 02T .0114, how many gallons per day are assigned to a one-bedroom dwelling unit?

Response:

240 gallons per day.

Request:

7. Does 15A NCAC 02T.0114 provide a schedule of design flows for other facilities such as nursing homes, supermarkets, and restaurants which are not based on bedrooms?

Response:

Yes. Please see the response to item 1 above.

Request:

8. What is the source of the Public Staff's expertise in conducting design wastewater treatment plant flows in accordance with 15A NCAC 02T .0114?

Response:

Public Staff engineer Junis worked primarily on water and wastewater system design and construction projects for an engineering consulting firm for two years. Public Staff attorney Grantmyre was the president of a water and wastewater utility for over 27 years.

Request:

9. Aqua questions whether the Public Staff's capacity calculations have been completed incorrectly for several rate cases. Does the Public Staff agree that the capacity calculations provided in Public Staff testimony in prior cases and in this case are not consistent with and in accordance with the North Carolina Administrative Code? If the Public Staff does not agree, please state why.

Response:

Since the issuance of the Commission's Order in Docket No. W-218, Sub 319, dated November 3, 2011, the excess capacity calculations have been calculated consistent with the Order. Prior calculations as proposed in the Sub 274 (agreed to in stipulation) and Sub 319, attempted to quantify maximum daily flow or peak monthly-average daily flow for comparison to the plant capacity. The North Carolina Administrative Code does not set standards for how to calculate excess capacity for the purpose of setting just and reasonable rates.

Request:

10. Did Aqua's response to DR 116 Q3 provide wastewater treatment plant design flow calculations for The Legacy wastewater treatment plant in accordance with 15A NCAC 02T .0114?

Response:

Yes, the 2005 permit language was provided which was based on a discrete set of assumptions.

Request:

11. 15A NCAC 02T .0114 is available to the public and was documented in the footnote to Junis testimony on Page 8 line 3. A specific calculation showing its use was provided to the Public Staff in the Company's response to DR 116 Q3. Does the Public Staff agree that the referenced calculation was completed in accordance with the regulation? If not, please explain your answer. If the Public Staff does agree that Aqua's calculation was correct, please explain why the Public Staff did not use it.

Response:

If in reference to the calculations provided regarding The Legacy and bedrooms, yes. However, Aqua did not provide any supporting documentation for the number of bedrooms utilized in its calculation. In addition, the Company has failed to show that these residential customers which it claims on average represent a design capacity demand of 150% of an REU are paying connection fees and monthly rates equivalent to 150% of an REU. The residential ANC Sewer rates are flat while the commercial rate is either per REU or volumetric. If a four-bedroom home pays the same flat rate as a three-bedroom home, it would be reasonable that the calculation of excess capacity for ratemaking would also quantify them as equivalent. On page 8, lines 1-6, of his testimony, Public Staff witness Junis states, "While I have considered utilizing 90% of the capacity⁷ as the denominator and end of period residential equivalent units (REUs) multiplied by 360 gallons per day⁸ as the numerator to be more consistent with DEQ regulations, these adjustments would net the exact same excess capacity adjustment percentages." The purpose of the excess capacity adjustment is to determine the portion of the plant that is used and useful to end of period customers and that customers are not unfairly paying for a disproportional share of the plant cost. The overbuilt plant cost is not appropriate for rate recovery because Aqua took on avoidable risk from developers.

Request:

12. Did Aqua's response to DR 116 Q3 indicate that the design flow for The Legacy is greater than 130,000 gallons per day?

Response:

Under the design assumptions listed, yes. Please see the Public Staff's response to item 11 above.

Request:

13. Does the Public Staff agree that, if the calculations are done in accordance with 15A NCAC 02T .0114, Carolina Meadows' design flow may be in excess of 400,000 gallons per day and that Westfall's design flow may be in excess of 88,000 gallons per day? If the Public Staff does not agree, please explain your answer.

Response:

The Public Staff objects to this question, as it calls for undue speculation regarding calculations on which the Public Staff has not been afforded the opportunity to conduct appropriate discovery. Notwithstanding, but subject to the above stated objection, the Public Staff notes that the June 1, 2020, calculations are essentially a supplement to the Company's application and direct testimony that is subject to discovery. Therefore the Company should address this subject matter in its rebuttal testimony or it will need to provide the following information for the Public Staff to provide any additional response:

1. Please provide a detailed explanation of how the Company determined the number of bedrooms of the homes that it surveyed.
2. Please provide the number of REUs quantified in the Company's response to Public Staff Data Request No. 49 associated with each commercial customer and groups of residential customers listed in the June 1, 2020, calculations. In addition, please provide the number of active and inactive REUs separately.
3. Please provide the Company's criteria for a customer/connection/REU to be considered active versus inactive.
4. For March 2020, please provide the wastewater utility service rate charged to each commercial customer and groups of residential customers listed in the June 1, 2020, calculations.
5. Please provide a copy of all authorization to construct permits, with associated design flow calculations from the application, issued by NCDEQ for the construction and/or expansion of the Carolina Meadows, The Legacy, and Westfall WWTPs.
6. For Camden Apartments, please provide the billing ledger for the 12-month periods ending September 30, 2019 and March 31, 2020.

Request:

14. At a design flow of more than 400,000 gallons per day for Carolina Meadows, more than 88,000 gallons per day for Westfall, and more than 130,000 gallons per day for The Legacy, would excess capacity charges be appropriate?

Response:

Please see the response to item 13 above.

Aqua North Carolina, Inc.
Docket No. W-218, Sub 526
Public Staff Data Request No. 116
Date Sent: May 1, 2020
Date Requested: May 8, 2020

Public Staff Technical Contact:

Charles Junis
Phone #: (919) 733-0891
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Subject of Data Request: Direct Testimony – Becker Non-ROE Follow-up to DR 99

Question 3

- Q. Regarding the Company's response to DR 99 Q7, please provide the assumptions of future usage (i.e., growth by year and capacity per SFRE) that the WWTPs' built-out capacities were "appropriately sized" for. In addition, please indicate whether the balance of risk and contract terms between the utility and developer for systems that have an excess capacity adjustment are different from the "regularly enter[ed] into arms-length transactions" and provide supporting documentation (i.e., contract terms).
- A. There are three wastewater treatment plants, Carolina Meadows, The Legacy and Westfall to be specifically discussed regarding appropriate sizing.

With respect to Carolina Meadows, attached please find PS DR 116 Q3 Carolina meadows WWTP NPDES AdInfo.pdf - a submission from November 4, 1993 to Ms. Colleen Sullins, NC Division of Environmental Management NPDES Supervisor from the development company and their engineers. This letter specifies the growth plan to 357,000 gallons per day. There is a specific schedule of facilities to be constructed at each phase of development. The justification for the flow was vetted by four well-qualified Division of Environmental Management staff.

With respect to The Legacy, the NPDES permit issued on March 22, 2005, included the following verbiage:

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 document provided for The Legacy Wastewater Treatment Plant to serve up to 1362 bedrooms, a guardhouse, and an amenity center. In accordance with 15A NCAC 02T .0114, each bedroom is rated at 120 gallons per day. The pertinent section of the rule is provided below:

15A NCAC 02T .0114 WASTEWATER DESIGN FLOW RATES

(a) This Rule shall be used to determine wastewater flow rates for all systems governed by this Subchapter unless alternate criteria are provided by a program-specific rule or for flow used for the purposes of 15A NCAC 02H .0105. Higher flow rates shall be required where usage and occupancy are atypical, including those in Paragraph (e) of this Rule. Wastewater flow calculations shall take hours of operation and anticipated maximum occupancies and usage into account when calculating peak flows for design.

(b) In determining the volume of sewage from dwelling units, the flow rate shall be 120 gallons per day per bedroom. The minimum volume of sewage from each dwelling unit shall be 240 gallons per day and each additional bedroom above two bedrooms shall increase the volume by 120 gallons per day. Each bedroom or any other room or addition that can function as a bedroom shall be considered a bedroom for design purposes. When the occupancy of a dwelling unit exceeds two persons per bedroom, the volume of sewage shall be determined by the maximum occupancy at a rate of 60 gallons per person per day.

The design flow rate of 1362 bedrooms at 120 gallons per day (163,440 gallons for bedrooms), a guardhouse rated at 100 gallons per day, and an amenity center rated at 1450 gallons per day is 164,990 gallons. The facility as constructed is currently permitted for 120,000 gallons per day. It must be noted that The Legacy is not a typical neighborhood, and many homes have 5 bedrooms and at least one has seven bedrooms. At this time, there are 241 residential homes, a guardhouse, and an amenity center. We currently do not have a count of the number of bedrooms in each home; however, based on a 70 percent survey of The Legacy homes, the average number of bedrooms is 4.5 bedrooms per home. 242 homes at 4.5 bedrooms each is 1089 bedrooms. 1089 bedrooms with a design flow of 120 gallons per bedroom is 130,680 gallons per day. 130,680 gallons per day from the residences plus 100 gallons per day (guardhouse) and 1450 gallons per day from

the amenity center equals 132,230 gallons per day in a facility rated for 120,000 gallons per day. On a design flow basis, the wastewater treatment plant is over its design flow capacity. To consider this plant as having excess capacity, is absolutely incorrect. Due to the difficulties in tracking the number of bedrooms and ancillary buildings, the NCDEQ Division of Water Quality monitors actual flows and effluent quality. If the actual hydraulic flows reach 80% of permitted capacity, then a plan is required. If effluent limits cannot be met due to excessive wastewater conventional pollutant load, the regulators will take enforcement action. To date, The Legacy wastewater treatment plant has not had compliance issues.

Lastly, with respect to Westfall, below is an excerpt from the current Non-Discharge Permit for the facility.

operation of a 20,000 gallon per day (GPD) reclaimed water generation and dedicated utilization facility consisting of the:

The wastewater treatment plant as currently constructed is only constructed to treat 20,000 gallons per day, and the permit limits Aqua to no more than 20,000 gallons per day. The design flow calculations, were based on 15A NCAC 2H .0219. Specifically, per a permit application on May, 4, 2005, it was based on 180 lots at 360 gallons per day per lot plus 1200 gallons per day for amenities for a total wastewater flow of 66,000 gallons per day. 15A NCAC 2H .0219 was repealed September 1, 2006. Based upon my (Joe Pearce) memory, 15A NCAC 2H .0219 was very similar if not identical to the current 15A NCAC 2T .0114 regulations, which became effective on September 1, 2006. Please note that the wastewater treatment plant 12-month rolling average flow is 10,583 (as of March 2020) gallons per day, and the community is currently in a growth phase.

To address the data request component of Question #3 regarding, the balance of risk and contract terms between the utility and developer for systems that have an excess capacity adjustment are different from the “regularly enter[ed] into arms-length transactions” and provide supporting documentation (i.e., contract terms), Aqua provides the following:

Witness Becker did not provide a position on the risk between contract terms between varying developer contracts. It is difficult to fully assess the reasoning behind the use of varying contracts used at a time in history as consideration must be given to influences within the business and regulatory environment at the time of contract.

As noted in Aqua’s response to DR #99 Q7, Aqua’s assumptions are “based on Aqua’s considerable experience working with engineers who review the size and cost of a WWTP capacity and in the negotiation of developer contracts”. Given that experience, contracts are entered into between two parties as an arm’s length transaction. The parties review and agree to the terms and conditions set forth in the agreements upon the parties contemplating and negotiating through various scenarios.

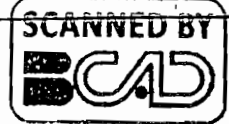
Prepared by:

Joseph Pearce, P.E.
Shannon V. Becker



Carolina Meadows

100 CAROLINA MEADOWS • CHAPEL HILL, NC 27514-8505



November 4, 1993

Ms. Coleen Sullins, PE
Supervisor, NPDES Permits Group
Division of Environmental Management
Post Office Box 29535
Raleigh, North Carolina 27626-0535

Re: Carolina Meadows Wastewater Treatment Plant
NPDES Permit No. NC0056413
CMI-9250

Dear Ms. Sullins:

The following is a restatement of Carolina Meadows' request for a renewal of NPDES Permit No. NC0056413 for 350,000 gpd at the Carolina Meadows Wastewater Treatment Plant in Chatham County.

The original application letter, dated March 29, 1993, included a completed application form (in triplicate), a check for the processing fee, an Engineering Alternatives Analysis for future phases of the treatment plant, and a copy of the contract between Carolina Meadows and their sludge hauler.

Pursuant to subsequent discussions and meetings with DEM regarding our wastewater allocation and the permit renewal in general, we herewith provide the following:

- 1) Additional documentation concerning Carolina Meadows' need for the full 350,000 gpd allocation; and

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- 2) Additional documentation concerning engineering alternatives.

Carolina Meadows' need for the full 350,000 gpd allocation is addressed in this letter. Item 2) is addressed in the attached Engineering Alternatives Analysis prepared by The John R. McAdams Company:

Carolina Meadows' need for a wastewater allocation of 350,000 gpd is based on the following:

- an ultimate land use plan which shows that we are in the midst of a total development plan that has been firmly committed to; and
- wastewater flow projections for the ultimate land use plan which show that a wastewater allocation of 350,000 gpd has been relied upon since the inception of the plan.

The Carolina Meadows Retirement Community is in the midst of a phased development. Phases I and II have been completed, and Phase III is approximately half way through construction with completion targeted for 1995. Phase III will bring the retirement community to 429 units, and with amenities will generate a wastewater projection of 108,960 gpd (please see attached spreadsheet). We have a conditional use permit from Chatham County to build an additional 421 units (Phase IV), which will bring the Carolina Meadows projected wastewater flow to 194,000 gpd.

An ultimate land use plan produced in 1979, for Chatham Farms, of which Carolina Meadows is a part, shows an additional 482 units which Carolina Meadows had planned to serve at the treatment plant. The total projected wastewater flow including these units is 357,000 gpd.

As you can see, it is necessary that our full wastewater allocation of 350,000 gpd is preserved in the permit renewal.

The attached Engineering Alternatives Analysis recommends that the Carolina Meadows Wastewater Treatment Plant ultimately discharge to

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Ms. Coleen Sullins, PE
November 4, 1993
Page Three

Morgan Creek with tertiary treated effluent. We agree with this assessment, however, due to the large costs involved, Carolina Meadows will find it necessary to make the recommended improvements in stages.

We propose the following schedule for implementation of the recommended improvements to the Carolina Meadows Wastewater Treatment Plant.

As a first stage, Carolina Meadows would construct a second 90,000 gpd treatment train with flow equalization and an effluent pump station and force main to relocate the discharge point to Morgan Creek.

The second stage would begin with expansion of the plant beyond 180,000 gpd, at which time the entire plant would be improved to tertiary treatment.

It is our hope that, after review of this letter and the Engineering Alternatives Analysis, DEM will support the expansion of the Carolina Meadows Wastewater Treatment Plant to a 350,000 gpd tertiary plant and that our new permit will be written accordingly. Please call us if you have any questions or require further information.

Sincerely,



Robert J. Boening
Executive Director

RJB/lm

cc: John McAdams

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RECEIVED 11/13/93

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CAROLINA MEADOWS WASTEWATER FLOW PROJECTIONS**EXISTING DEVELOPMENT (PHASE 1 AND 2)**

PHASE 1	—	125 DU	@	240 GPD/DU	30,000 GPD
PHASE 2	—	163 DU	@	240 GPD/DU	39,120 GPD
CLUB		3 DU	@	240 GPD/DU	720 GPD
HEALTH		50 BEDS	@	80 GPD/BED	4,000 GPD
EXTRACTORS		2 EA	@	1000 GPD/EA	<u>2,000 GPD</u>

SUBTOTAL PHASES 1 AND 2 75,840 GPD

PHASE 3 DEVELOPMENT

HOUSING		101 DU	@	240 GPD/DU	24,240 GPD
HEALTH		40 BEDS	@	80 GPD/BED	3,200 GPD
ASSISTED		40 UNITS	@	80 GPD/UNIT	3,200 GPD
CLUB		4 DU	@	120 GPD/UNIT	480 GPD
LAUNDRY		4 UNITS	@	500 GPD/UNIT	<u>2,000 GPD</u>

SUBTOTAL PHASE 3 33,120 GPD

PHASE 4 DEVELOPMENT

APARTMENTS		216 DU	@	240 GPD/DU	51,840 GPD
TH'S		105 DU	@	240 GPD/DU	25,200 GPD
ASSISTED		100 UNITS	@	80 GPD/UNIT	<u>8,000 GPD</u>

SUBTOTAL PHASE 4 85,040 GPD

CHATHAM COUNTY FARMS

PHASE 2		48 DU	@	400 GPD/DU	19,200 GPD
PHASE 3		88 DU	@	400 GPD/DU	35,200 GPD
PHASE 4		346 DU	@	300 GPD/DU	103,800 GPD
PHASE 5		204 DU	@	25 GPD/DU	<u>5,100 GPD</u>

SUBTOTAL CHATHAM COUNTY FARMS 163,300 GPD

TOTAL ENTIRE PROJECT 357,300 GPD

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001137-9 7/11/03

001137-9 7/11/03

Request # 7652,7653

Facility Name: Carolina Meadows, Inc./Carolina Meadows Retirement Community
 NPDES No.: NC0056413
 Type of Waste: Domestic - 100%
 Facility Status: Existing
 Permit Status: Modification
 Receiving Stream: Morgan Creek
 Stream Classification: WS-IV NSW
 Subbasin: 030606
 County: Chatham
 Regional Office: Raleigh
 Requestor: Shanklin
 Date of Request: 4/15/93
 Topo Quad: D22SE

Stream Characteristic: yields from
 USGS # OWASA flow site
 Date: 1990
 Drainage Area (mi²): 46.1
 Summer 7Q10 (cfs): 1.1
 Winter 7Q10 (cfs): 3.4
 Average Flow (cfs): 48
 30Q2 (cfs): 6.3
 IWC (%): 33

Wasteload Allocation Summary
 (approach taken, correspondence with region, EPA, etc.)

This request is for a relocation of the discharge pipe to Morgan Creek and a reinstatement of the 0.35 MGD permit limit. Since this facility could continue to discharge at their existing point (UT to Morgan Creek) with no changes in limits, identical limits will be given for the 0.18 MGD flow when the pipe is relocated to Morgan Creek with the exception of total residual chlorine (TRC). A TRC limit of 28 µg/l will be given for flows above 0.09 MGD. The limit for total phosphorus may be lowered upon basinwide management strategy for the Cape Fear River (1996).

Special Schedule Requirements and additional comments from Reviewers:

Recommended by: David J. Smith Date: 12/8/93

Reviewed by

Instream Assessment: Carla Anderson Date: 12/8/93

Regional Supervisor: John Smith Date: 12/10/93

Permits & Engineering: John Smith Date: 12/10/93

RETURN TO TECHNICAL SERVICES BY: JAN 07 1994

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FROM THE REGIONAL RO

PARAMETERS

W-218 Sub 526

Existing Limits:

Monthly Average

Wasteflow (MGD):	0.35
BOD5 (mg/l):	23.0
NH3N (mg/l):	14.0
DO (mg/l):	6.0*
TSS (mg/l):	30.0
Fecal Col. (/100 ml):	1000.0
pH (SU):	6-9
Residual Chlorine (µg/l):	monitor
Temperature (°C):	monitor
TP (mg/l):	2.0**
TN (mg/l):	monitor

*Minimum daily average

**Quarterly average limitation

Recommended Limits:Monthly Average
(except for TRC,
applies to both sites)Monthly Average
(applicable for the discharge
to Morgan Creek only)

		Summer	Winter	WQ/EL
Wasteflow (MGD):	0.18	0.35	0.35	
BOD5 (mg/l):	23.0	5.0	10.0	WQ
NH3N (mg/l):	14.0	2.0	4.0	WQ
DO (mg/l):	6.0*	6.0*	6.0*	WQ
TSS (mg/l):	30.0	30.0	30.0	EL
Fecal Col. (/100 ml):	200.0	200.0	200.0	
pH (SU):	6-9	6-9	6-9	
Residual Chlorine (µg/l):	28.0***	28.0	28.0	WQ
Temperature (°C):	monitor	monitor	monitor	
TP (mg/l):	2.0**	2.0**	2.0**	WQ
TN (mg/l):	monitor	monitor	monitor	

*Minimum daily average

**Quarterly average limitation

***Monitoring only for TRC will be given until the plant is physically expanded above 0.09 MGD.

PLEASE NOTE THAT THE DISCHARGE SHALL BE RELOCATED TO MORGAN CREEK UPON EXPANSION. THIS SHOULD BE MADE CLEAR IN THE PERMIT.

x Parameter(s) are water quality limited. For some parameters, the available load capacity of the immediate receiving water will be consumed. This may affect future water quality based effluent limitations for additional dischargers within this portion of the watershed.

INSTREAM MONITORING REQUIREMENTS

Upstream Location:	Morgan Creek approx. 50' upstream of the outfall
Downstream Location:	Morgan Creek at Morgan Creek Road
Parameters:	Temperature, DO, Fecal, Conductivity

93 DEC 29 AM 11:15

CITY OF PEARCE
WATER & SEWER DEPT.

12/17/93
BIOLOGICAL

From: Dave Goodrich
Date: Sat, Dec 4, 1993 3:18 PM
Subject: CAROLINA MEADOWS
To: Susan Wilson
Cc: Coleen Sullins

Susan -

In case I don't get a chance to talk with you about this one, here's the deal as I see it:

- Their existing WWTP has been designed for 0.09 MGD.
- They go into a zero-flow stream, so I said they can't expand to the zero-flow stream above the 0.09 MGD even though they have a permit for 0.35 MGD and an ATC for 0.18 MGD.
- Timmy D. and Babette said they can discharge up to 0.18 MGD to the zero-flow stream because they had an ATC for that amount.
- These guys met with us and said they absolutely have to have the 0.35 MGD. We said ok we believe you, but do an alternatives analysis to see what can be done with the discharge. They're close to OWASA but OWASA won't take them. Their golf course doesn't provide them with much relief, so they have convinced us of a discharge to Morgan Creek.

Now, I said they need to meet tertiary limits at 0.18 MGD if they go to Morgan Creek but Raleigh R.O. said they could have existing limits after the relocation until they expand above 0.18 MGD. I agree with that since we're treating the 0.18 MGD flow as existing in the zero-flow stream, so technically, they could stay in the zero-flow stream at existing limits anyway. I'm ready to get this one out of here.

- Dave

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**Staff Review and Evaluation
NPDES Wastewater Permit****FACILITY INFORMATION**

Facility Carolina Meadows
NPDES No. NC0056413
Design Flow (MGD) 0.09/0.18/0.35
Facility Class II?

STREAM CHARACTERISTICS

Stream Name Morgan Creek
Stream Class WS-IV NSW CA
Sub-basin 030606
Drainage Area (mi²) 46.1
S7Q10 (cfs) 1.1
W7Q10 (cfs) 3.4
30Q2 (cfs) 6.3
IWC (%)

Proposed Changes	Parameters Affected	Basis for change(s)
None		

Compliance Schedule: N/A

Special Condition(s):

Permits & Engineering Comments:

The current permit has 3 limit pages; one for 0.09 MGD with discharge to an UT to Morgan Creek, one for an expansion to 0.18 MGD with relocated discharge to Morgan Creek, and one for an expansion to 0.35 MGD. This facility has difficulty maintaining compliance with the fecal effluent limit and instream fecal levels fluctuate wildly although there does not appear to be any correlation between the effluent fecal concentration and the instream fluctuations. Recommend renewal of existing permit limits. Existing limits at 0.18 MGD should provide an incentive to relocate the outfall immediately. Regional office should comment on treatment plant class and monitoring frequencies - previous staff report indicates Class II, but Class III frequencies were given.

Prepared by: Janette Powell

Regional Office Evaluation and Recommendations:

The treatment facility is rated as a Class II facility as determined by the attached Rating scale. Therefore, monitoring frequencies should reflect that of a Class II facility.

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Carolina Meadows
NC0056413

S7Q10: 1.1 cfs

Background

The current permit has 3 limit pages; one for 0.09 MGD with discharge to an UT to Morgan Creek, one for an expansion to 0.18 MGD with relocated discharge to Morgan Creek, and one for an expansion to 0.35 MGD. The facility requested that existing limits be retained upon relocation of the discharge and expansion to 0.18 MGD and proposes to meet tertiary limits at the expanded 0.35 MGD flow. Existing limits were renewed for 0.09 MGD except fecal was updated to 200.0/100 ml from 1000.0/ 100 ml. Existing limits were given for 0.09 MGD - 0.18 MGD with the addition of a TRC limit of 28.0 µg/l. The existing limits were renewed as an incentive to expand and relocate discharge.

Instream Data

Based upon a review of effluent and downstream data, it appears there may be a significant fecal source between the discharge and the downstream location. This facility has difficulty maintaining compliance with the fecal effluent limit and instream fecal levels fluctuate wildly, often with measurements in the thousands. There does not appear to be any correlation between the effluent fecal concentration and the instream fluctuations.

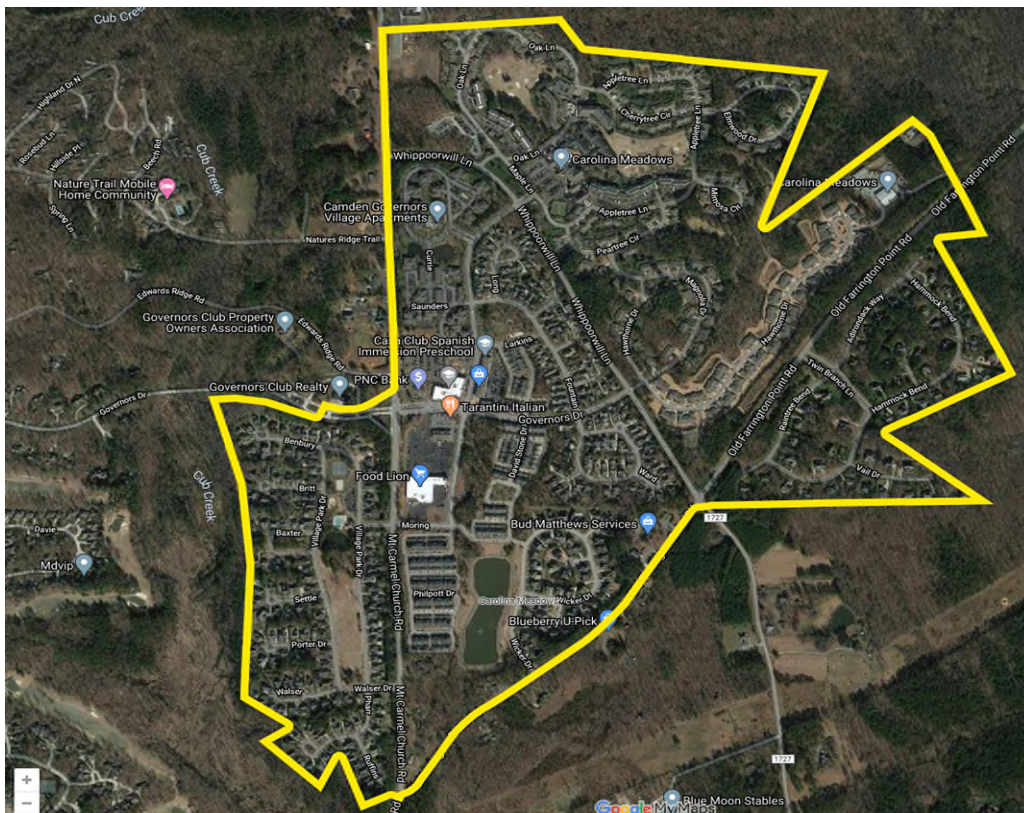
Recommendations

Recommend renewal of existing permit limits. To give this facility lower limits for the 0.18 MGD when discharging to Morgan Creek would provide a disincentive to relocate the outfall immediately. Based on the field study done in May 1993, the wastewater should be removed from the UT ASAP. Limits above 0.18 MGD are BAT.

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REC'D - 11/13/96

Carolina Meadows Service Area



Becker / Pearce Excess Capacity Rebuttal Exhibit 5
W-218 Sub 526

Carolina Meadows Design Flow Summary

Completed by Joseph Pearce PE

Carolina Meadows Senior Care	128665	gpd
Camden Apartment Complex	63000	gpd
Commercial	15955	gpd
Single Family Residences	184049	gpd
Grand Total	391669	gpd

Carolina Meadows Senior Care

Facility Info Provided by Dan Camara, VP Operations of Carolina Meadows.

	Count	Design Basis	Design Flow (gpd)
Assisted Living and Nursing Home Beds with Laundry	169	120 gpd/bed	20280
Beauty Shop	5	125 gpd/bowl	625
1 and 2 bedroom homes	287	240 gpd	68880
1 and 2 bedroom apartments	162	240 gpd	38880
	Total		128665

Camden at Carolina Meadows Apartment Complex

Facility Info Provided by Lauren Blankenship, Camden Community Manager

	Count	Design Basis	Design Flow (gpd)
1 and 2 bedroom apartments	201	240 gpd	48240
3 bedroom apartments	41	360 gpd	14760
	Total		63000

Commercial

Completed by field survey by Joe Pearce PE

	Count	Design Basis	Design Flow (gpd)	
Food Lion w meat and produce			500	best professional judgment
Papa Johns			250	best professional judgment
Nail Salon(booths)	12	125 gpd	1500	
Cleaners			200	best professional judgment
Subway (Single Service)	24	20 gpd/seat	480	
Al's Burger Shack (Single Service)	48	20 gpd/seat	960	
Flair (Full Service)	70	40 gpd/seat	2800	
Dentist	2	250 gpd/practitioner	500	
Village Vet	2	250 gpd/practitioner	500	
Bravo Dance			100	best professional judgment
Tarantini Italian	100	40 gpd/seat	4000	best professional judgment
PNC Bank	6	25 gal/employee/shift	150	
Montessori School	209	10 gal/student	2090	
Blue Bamboo Hair Salon	10	125 gpd/booth	1250	
Casa Club Preschool and Daycare	23	25 gal/student&staff	575	
Pharmacy			50	best professional judgment
ABC Store	2	25 gpd/staff	50	
		Total	15955	

Single Family Residences

Based on MLS Survey of 80% of Single Family Residences

Number of Single Family Residences	442
Average # of Bedrooms/home	3.47
Design Basis (gpd/bedroom)	120
Single Family Residential Total Flow	184049

Becker/Pearce Excess Capacity Rebuttal Exhibit 6

W-218 Sub 526

Carolina Meadows Service Area Bedroom Survey

Bedrooms per address determined by MLS searh

Address	# of Bedrooms
10009 HAMMOCK BND 267 CHAPEL HILL	Not in MLS
10004 SAND CREEK CT 291 CHAPEL HI	4
10000 ADIRONDACK WAY 277 CHAPEL H	5
10000 CRYSTAL CV 273 CHAPEL HILL,	5
10008 HAMMOCK BND 255 CHAPEL HILL	Not in MLS
10001 CRYSTAL CV 269 CHAPEL HILL,	4
10001 HAMMOCK BND 249 CHAPEL HILL	4
10001 RAINTREE BND 245 CHAPEL HIL	Not in MLS
10001 SAND CREEK CT 288 CHAPEL HI	4
10001 VAIL DR 263 CHAPEL HILL, NC	4
10002 ADIRONDACK WAY 278 CHAPEL H	4
10002 CRYSTAL CV 272 CHAPEL HILL,	4
10002 SAND CREEK CT 290 CHAPEL HI	5
10002 VAIL DR 256 CHAPEL HILL, NC	Not in MLS
10003 CRYSTAL CV 270 CHAPEL HILL,	4
10003 HAMMOCK BND 264 CHAPEL HILL	Not in MLS
10003 RAINTREE BND 246 CHAPEL HIL	4
10003 SAND CREEK CT 289 CHAPEL HI	Not in MLS
10003 VAIL DR 262 CHAPEL HILL, NC	4
10004 ADIRONDACK WAY 279 CHAPEL H	5
10004 CRYSTAL CV 271 CHAPEL HILL,	4
10004 HAMMOCK BND 253 CHAPEL HILL	Not in MLS
10004 VAIL DR 257 CHAPEL HILL, NC	6
10005 HAMMOCK BND 265 CHAPEL HILL	Not in MLS
10005 RAINTREE BND 247 CHAPEL HIL	4
10005 VAIL DR 261 CHAPEL HILL, NC	5
10006 ADIRONDACK WAY 280 CHAPEL H	4
10006 HAMMOCK BND 254 CHAPEL HILL	5
10006 VAIL DR 258 CHAPEL HILL, NC	5
10007 HAMMOCK BND 266 CHAPEL HILL	Not in MLS
10007 RAINTREE BND 248 CHAPEL HIL	5
10008 ADIRONDACK WAY 281 CHAPEL H	4
10008 VAIL DR 259 CHAPEL HILL, NC	5
10010 ADIRONDACK WAY 282 CHAPEL H	4
10010 VAIL DR 260 CHAPEL HILL, NC	Not in MLS
10011 HAMMOCK BND 268 CHAPEL HILL	5
10011 RAINTREE BND 251 CHAPEL HIL	Not in MLS
10030 HAMMOCK BND 284 CHAPEL HILL	4
10012 HAMMOCK BND 295 CHAPEL HILL	4

10013 RAINTREE BND 250 CHAPEL HIL	4
10014 ADIRONDACK WAY 283 CHAPEL H	4
10014 HAMMOCK BND 294 CHAPEL HILL	4
10016 HAMMOCK BND 293 CHAPEL HILL	4
10017 HAMMOCK BND 274 CHAPEL HILL	3
10018 HAMMOCK BND 292 CHAPEL HILL	6
10019 HAMMOCK BND 275 CHAPEL HILL	3
10021 HAMMOCK BND 276 CHAPEL HILL	5
10024 HAMMOCK BND 287 CHAPEL HILL	5
10026 HAMMOCK BND 286 CHAPEL HILL	Not in MLS
10028 HAMMOCK BND 285 CHAPEL HILL	4
10002 HAMMOCK BND 252 CHAPEL HILL	4
20022 BOYD 056 CHAPEL HILL, NC 2	Not in MLS
1002 CHRISTOPHER DR 1 CHAPEL HILL	3
1004 CHRISTOPHER DR 2 CHAPEL HILL	3
1006 CHRISTOPHER DR 3 CHAPEL HILL	3
1010 CHRISTOPHER DR 5 CHAPEL HILL	2
1012 CHRISTOPHER DR 6 CHAPEL HILL	3
1016 CHRISTOPHER DR 8 CHAPEL HILL	3
1018 CHRISTOPHER DR 9 CHAPEL HILL	2
1020 CHRISTOPHER DR 10 CHAPEL HIL	3
1022 CHRISTOPHER DR 11 CHAPEL HIL	2
1024 CHRISTOPHER DR 12 CHAPEL HIL	3
1029 CHRISTOPHER DR 13 CHAPEL HIL	2
1027 CHRISTOPHER DR 14 CHAPEL HIL	3
1025 CHRISTOPHER DR 15 CHAPEL HIL	2
1023 CHRISTOPHER DR 16 CHAPEL HIL	2
1019 CHRISTOPHER DR 18 CHAPEL HIL	3
1017 CHRISTOPHER DR 19 CHAPEL HIL	3
1015 CHRISTOPHER DR 20 CHAPEL HIL	2
1013 CHRISTOPHER DR 21 CHAPEL HIL	2
1011 CHRISTOPHER DR 22 CHAPEL HIL	2
1009 CHRISTOPHER DR 23 CHAPEL HIL	3
1007 CHRISTOPHER DR 24 CHAPEL HIL	3
1005 CHRISTOPHER DR 25 CHAPEL HIL	2
1003 CHRISTOPHER DR 26 CHAPEL HIL	3
1035 PHILPOTT DR 30 CHAPEL HILL,	3
1037 PHILPOTT DR 31 CHAPEL HILL,	2
1039 PHILPOTT DR 32 CHAPEL HILL,	3
1041 PHILPOTT DR 33 CHAPEL HILL,	3
1043 PHILPOTT DR 34 CHAPEL HILL,	2
1045 PHILPOTT DR 35 CHAPEL HILL,	2
1047 PHILPOTT DR 36 CHAPEL HILL,	3
1049 PHILPOTT DR 37 CHAPEL HILL,	2
1051 PHILPOTT DR 38 CHAPEL HILL,	2
1053 PHILPOTT DR 39 CHAPEL HILL,	2
1057 PHILPOTT DR 41 CHAPEL HILL,	3

1026 PHILPOTT DR 53 CHAPEL HILL,	2
1032 PHILPOTT DR 50 CHAPEL HILL,	3
1036 PHILPOTT DR 48 CHAPEL HILL,	Not in MLS
1040 PHILPOTT DR 46 CHAPEL HILL,	3
1042 PHILPOTT DR 45 CHAPEL HILL,	3
1044 PHILPOTT DR 44 CHAPEL HILL,	2
1046 PHILPOTT DR 43 CHAPEL HILL,	2
1048 PHILPOTT DR 42 CHAPEL HILL,	3
1059 PERDUE DR 54 CHAPEL HILL, NC	3
1061 PERDUE DR 55 CHAPEL HILL, NC	2
1063 PERDUE DR 56 CHAPEL HILL, NC	2
1069 PERDUE DR 59 CHAPEL HILL, NC	3
1071 PERDUE DR 60 CHAPEL HILL, NC	3
1073 PERDUE DR 61 CHAPEL HILL, NC	2
1077 PERDUE DR 63 CHAPEL HILL, NC	2
1079 PERDUE DR 64 CHAPEL HILL, NC	3
1050 PERDUE DR 76 CHAPEL HILL, NC	2
1054 PERDUE DR 74 CHAPEL HILL, NC	2
1056 PERDUE DR 73 CHAPEL HILL, NC	2
1058 PERDUE DR 72 CHAPEL HILL, NC	2
1060 PERDUE DR 71 CHAPEL HILL, NC	3
1062 PERDUE DR 70 CHAPEL HILL, NC	3
1064 PERDUE DR 69 CHAPEL HILL, NC	2
1070 PERDUE DR 66 CHAPEL HILL, NC	2
1072 PERDUE DR 65 CHAPEL HILL, NC	3
10000 FOUNTAIN 033 CHAPEL HILL,	Not in MLS
10001 DAVID STONE DR 015 CHAPEL H	2
10001 FOUNTAIN 001 CHAPEL HILL,	3
10002 FOUNTAIN 032 CHAPEL HILL,	Not in MLS
10003 DAVID STONE DR 014 CHAPEL H	2
10003 FOUNTAIN 034 CHAPEL HILL,	3
10004 FOUNTAIN 031 CHAPEL HILL,	4
10005 DAVID STONE DR 013 CHAPEL H	3
10005 FOUNTAIN 044 CHAPEL HILL,	Not in MLS
10006 CREW 030 CHAPEL HILL, NC 2	Not in MLS
10007 DAVID STONE DR 012 CHAPEL H	2
10007 FOUNTAIN 043 CHAPEL HILL,	3
10008 CREW 029 CHAPEL HILL, NC 2	4
10009 DAVID STONE DR 011 CHAPEL H	3
10009 FOUNTAIN 042 CHAPEL HILL,	3
10010 CREW 028 CHAPEL HILL, NC 2	3
10011 DAVID STONE DR 010 CHAPEL H	3
10012 CREW 027 CHAPEL HILL, NC 2	3
10013 DAVID STONE DR 009 CHAPEL H	Not in MLS
10013 FOUNTAIN 040 CHAPEL HILL,	3
10014 CREW 026 CHAPEL HILL, NC 2	3
10015 DAVID STONE DR 008 CHAPEL H	3

10015 FOUNTAIN 039 CHAPEL HILL,	4
10016 FOUNTAIN 025 CHAPEL HILL,	Not in MLS
10017 DAVID STONE DR 007 CHAPEL H	2
10017 FOUNTAIN 038 CHAPEL HILL,	Not in MLS
10021 FOUNTAIN 037 CHAPEL HILL,	3
10020 FOUNTAIN 023 CHAPEL HILL,	Not in MLS
10021 DAVID STONE DR 005 CHAPEL H	3
10023 FOUNTAIN 036 CHAPEL HILL,	4
10023 DAVID STONE DR 004 CHAPEL H	2
10025 DAVID STONE DR 003 CHAPEL H	2
10025 FOUNTAIN 035 CHAPEL HILL,	4
10026 WARD 020 CHAPEL HILL, NC 2	4
10028 WARD 019 CHAPEL HILL, NC 2	4
10030 WARD 018 CHAPEL HILL, NC 2	4
10032 WARD 017 CHAPEL HILL, NC 2	Not in MLS
10034 WARD 016 CHAPEL HILL, NC 2	3
10038 WARD 014 CHAPEL HILL, NC 2	4
10040 WARD 013 CHAPEL HILL, NC 2	3
10042 WARD 012 CHAPEL HILL, NC 2	Not in MLS
10044 FOUNTAIN 011 CHAPEL HILL,	3
10046 FOUNTAIN 010 CHAPEL HILL,	3
10048 FOUNTAIN 009 CHAPEL HILL,	4
10050 FOUNTAIN 008 CHAPEL HILL,	4
10052 FOUNTAIN 007 CHAPEL HILL,	Not in MLS
10054 BOST 006 CHAPEL HILL, NC 2	3
10056 BOST 005 CHAPEL HILL, NC 2	4
10058 BOST 004 CHAPEL HILL, NC 2	3
10060 FOUNTAIN 003 CHAPEL HILL,	3
10062 FOUNTAIN 002 CHAPEL HILL,	4
11001 DAVID STONE DR 084 CHAPEL H	2
11003 DAVID STONE DR 083 CHAPEL H	3
11005 DAVID STONE DR 082 CHAPEL H	2
11007 DAVID STONE DR 081 CHAPEL H	3
11015 DAVID STONE DR 077 CHAPEL H	3
11017 DAVID STONE DR 076 CHAPEL H	Not in MLS
11022 DAVID STONE DR 065 CHAPEL H	3
11024 DAVID STONE DR 064 CHAPEL H	Not in MLS
11026 DAVID STONE DR 063 CHAPEL H	2
11028 DAVID STONE DR 062 CHAPEL H	Not in MLS
11030 DAVID STONE DR 056 CHAPEL H	Not in MLS
11031 DAVID STONE DR 047 CHAPEL H	3
11032 DAVID STONE DR 055 CHAPEL H	2
11034 DAVID STONE DR 054 CHAPEL H	2
11035 DAVID STONE DR 045 CHAPEL H	2
11036 DAVID STONE DR 053 CHAPEL H	3
11038 DAVID STONE DR 052 CHAPEL H	2
11039 DAVID STONE DR 043 CHAPEL H	3

11040 DAVID STONE DR 051 CHAPEL H	2
11043 DAVID STONE DR 041 CHAPEL H	3
11044 DAVID STONE DR 049 CHAPEL H	2
11045 DAVID STONE DR 040 CHAPEL H	Not in MLS
11046 DAVID STONE DR 048 CHAPEL H	2
12002 WICKER DR 1 CHAPEL HILL, NC	3
12004 WICKER DR 2 CHAPEL HILL, NC	4
12006 WICKER DR 3 CHAPEL HILL, NC	4
12010 WICKER DR 5 CHAPEL HILL, NC	4
12012 WICKER DR 6 CHAPEL HILL, NC	3
12014 WICKER DR 46 CHAPEL HILL, N	Not in MLS
12016 WICKER DR 47 CHAPEL HILL, N	4
12018 WICKER DR 48 CHAPEL HILL, N	Not in MLS
12020 WICKER DR 49 CHAPEL HILL, N	Not in MLS
12021 WICKER DR 31 CHAPEL HILL, N	Not in MLS
12022 WICKER DR 32 CHAPEL HILL, N	Not in MLS
12023 WICKER DR 30 CHAPEL HILL, N	5
12024 WICKER DR 33 CHAPEL HILL, N	Not in MLS
12025 WICKER DR 29 CHAPEL HILL, N	4
12026 WICKER DR 34 CHAPEL HILL, N	4
12027 WICKER DR 28 CHAPEL HILL, N	Not in MLS
12028 WICKER DR 35 CHAPEL HILL, N	4
12029 WICKER DR 27 CHAPEL HILL, N	3
12033 WICKER DR 20 CHAPEL HILL, N	4
12035 WICKER DR 19 CHAPEL HILL, N	Not in MLS
12037 WICKER DR 18 CHAPEL HILL, N	3
12039 WICKER DR 17 CHAPEL HILL, N	4
12040 WICKER DR 41 CHAPEL HILL, N	Not in MLS
12041 WICKER DR 16 CHAPEL HILL, N	4
12042 WICKER DR 42 CHAPEL HILL, N	4
12043 WICKER DR 15 CHAPEL HILL, N	4
12044 WICKER DR 43 CHAPEL HILL, N	Not in MLS
12045 WICKER DR 14 CHAPEL HILL, N	3
12046 WICKER DR 44 CHAPEL HILL, N	4
13001 DROUGHTON CT 36 CHAPEL HILL	Not in MLS
13002 DROUGHTON CT 37 CHAPEL HILL	Not in MLS
13003 DROUGHTON CT 38 CHAPEL HILL	Not in MLS
13004 DROUGHTON CT 39 CHAPEL HILL	4
13005 DROUGHTON CT 40 CHAPEL HILL	Not in MLS
14001 REYNOLDS CT 26 CHAPEL HILL,	3
14002 REYNOLDS CT 25 CHAPEL HILL,	4
14003 REYNOLDS CT 24 CHAPEL HILL,	5
14004 REYNOLDS CT 23 CHAPEL HILL,	Not in MLS
14005 REYNOLDS CT 22 CHAPEL HILL,	4
15001 BARNHARDT CT 7 CHAPEL HILL,	4
15003 BARNHARDT CT 9 CHAPEL HILL,	Not in MLS
15004 BARNHARDT CT 10 CHAPEL HILL	5

15005 BARNHARDT CT 11 CHAPEL HILL	4
15006 BARNHARDT CT 12 CHAPEL HILL	5
15007 BARNHARDT CT 13 CHAPEL HILL	3
20000 FOUNTAIN 045 CHAPEL HILL,	Not in MLS
20001 FOUNTAIN 100 CHAPEL HILL,	3
20002 FOUNTAIN 046 CHAPEL HILL,	3
20003 FOUNTAIN 099 CHAPEL HILL,	4
20003 ROARK HOEY LOOP 073 CHAPEL	2
20004 GRIER 047 CHAPEL HILL, NC	3
20005 FOUNTAIN 098 CHAPEL HILL,	3
20005 ROARK HOEY LOOP 072 CHAPEL	Not in MLS
20007 FOUNTAIN 097 CHAPEL HILL,	4
20009 FOUNTAIN 096 CHAPEL HILL,	3
20009 ROARK HOEY LOOP 070 CHAPEL	3
20010 GRIER 050 CHAPEL HILL, NC	3
20011 FOUNTAIN 095 CHAPEL HILL,	3
20011 ROARK HOEY LOOP 069 CHAPEL	2
20013 FOUNTAIN 094 CHAPEL HILL,	3
20013 ROARK HOEY LOOP 068 CHAPEL	3
20014 GRIER 052 CHAPEL HILL, NC	Not in MLS
20015 FOUNTAIN 093 CHAPEL HILL,	4
20015 ROARK HOEY LOOP 067 CHAPEL	2
20016 FOUNTAIN 053 CHAPEL HILL,	4
20017 FOUNTAIN 092 CHAPEL HILL,	3
20018 FOUNTAIN 054 CHAPEL HILL,	4
20019 FOUNTAIN 091 CHAPEL HILL,	4
20019 ROARK HOEY LOOP 057 CHAPEL	3
20020 FOUNTAIN 055 CHAPEL HILL,	5
20021 ROARK HOEY LOOP 058 CHAPEL	3
20023 ROARK HOEY LOOP 059 CHAPEL	2
20024 BOYD 057 CHAPEL HILL, NC 2	3
20025 ROARK HOEY LOOP 060 CHAPEL	3
20026 BOYD 058 CHAPEL HILL, NC 2	3
20027 ROARK HOEY LOOP 061 CHAPEL	Not in MLS
20028 BOYD 059 CHAPEL HILL, NC 2	4
20030 FOUNTAIN 060 CHAPEL HILL,	4
20032 FOUNTAIN 061 CHAPEL HILL,	4
20034 FOUNTAIN 062 CHAPEL HILL,	Not in MLS
20036 WEBB 063 CHAPEL HILL, NC 2	3
20038 WEBB 064 CHAPEL HILL, NC 2	5
20042 WEBB 066 CHAPEL HILL, NC 2	4
20044 WEBB 067 CHAPEL HILL, NC 2	3
20046 WEBB 068 CHAPEL HILL, NC 2	3
20048 WEBB 069 CHAPEL HILL, NC 2	4
20050 FOUNTAIN 070 CHAPEL HILL,	3
20052 FOUNTAIN 071 CHAPEL HILL,	4
20054 FOUNTAIN 072 CHAPEL HILL,	4

20056 LONG 073 CHAPEL HILL, NC 2	4
20058 LONG 074 CHAPEL HILL, NC 2	4
20060 LONG 075 CHAPEL HILL, NC 2	4
20062 LONG 076 CHAPEL HILL, NC 2	4
20064 LONG 077 CHAPEL HILL, NC 2	4
20066 LONG 078 CHAPEL HILL, NC 2	5
20068 LONG 079 CHAPEL HILL, NC 2	4
20070 LONG 080 CHAPEL HILL, NC 2	3
20072 LONG 081 CHAPEL HILL, NC 2	3
20074 LONG 082 CHAPEL HILL, NC 2	4
20076 LONG 083 CHAPEL HILL, NC 2	4
20080 LONG 085 CHAPEL HILL, NC 2	3
20084 LONG 087 CHAPEL HILL, NC 2	4
20086 LONG 088 CHAPEL HILL, NC 2	3
20088 LONG 089 CHAPEL HILL, NC 2	4
20090 FOUNTAIN 090 CHAPEL HILL,	4
30000 VILLAGE PARK DR 173 CHAPEL	4
30002 VILLAGE PARK DR 172 CHAPEL	4
30004 VILLAGE PARK DR 171 CHAPEL	Not in MLS
30006 VILLAGE PARK DR 170 CHAPEL	4
30008 VILLAGE PARK DR 169 CHAPEL	4
30010 VILLAGE PARK DR 168 CHAPEL	3
30072 BENBURY 120 CHAPEL HILL, N	4
30012 VILLAGE PARK DR 167 CHAPEL	5
30014 VILLAGE PARK DR 166 CHAPEL	Not in MLS
30016 VILLAGE PARK DR 165 CHAPEL	Not in MLS
30018 VILLAGE PARK DR 164 CHAPEL	5
30020 VILLAGE PARK DR 163 CHAPEL	5
30022 VILLAGE PARK DR 162 CHAPEL	4
30024 VILLAGE PARK DR 161 CHAPEL	Not in MLS
30028 VILLAGE PARK DR 159 CHAPEL	4
30030 VILLAGE PARK DR 158 CHAPEL	9
30032 VILLAGE PARK DR 157 CHAPEL	4
30034 VILLAGE PARK DR 101 CHAPEL	4
30036 VILLAGE PARK DR 102 CHAPEL	5
30038 VILLAGE PARK DR 103 CHAPEL	4
30042 VILLAGE PARK DR 105 CHAPEL	5
30044 VILLAGE PARK DR 106 CHAPEL	Not in MLS
30046 VILLAGE PARK DR 107 CHAPEL	3
30050 VILLAGE PARK DR 109 CHAPEL	4
30052 VILLAGE PARK DR 110 CHAPEL	4
30054 VILLAGE PARK DR 111 CHAPEL	5
30056 VILLAGE PARK DR 112 CHAPEL	3
30058 BENBURY 113 CHAPEL HILL, N	4
30059 BENBURY 127 CHAPEL HILL, N	4
30060 BENBURY 114 CHAPEL HILL, N	4
30061 BENBURY 126 CHAPEL HILL, N	4

30062 BENBURY 115 CHAPEL HILL, N	Not in MLS
30063 BENBURY 125 CHAPEL HILL, N	3
30064 BENBURY 116 CHAPEL HILL, N	Not in MLS
30065 BENBURY 124 CHAPEL HILL, N	5
30068 BENBURY 118 CHAPEL HILL, N	4
30069 BENBURY 122 CHAPEL HILL, N	5
30070 BENBURY 119 CHAPEL HILL, N	4
30071 BENBURY 121 CHAPEL HILL, N	Not in MLS
30074 VILLAGE PARK DR 128 CHAPEL	4
30076 VILLAGE PARK DR 129 CHAPEL	4
30077 BRITT 142 CHAPEL HILL, NC	5
30078 BRITT 130 CHAPEL HILL, NC	5
30079 BRITT 141 CHAPEL HILL, NC	4
30080 BRITT 131 CHAPEL HILL, NC	Not in MLS
30082 BRITT 132 CHAPEL HILL, NC	4
30085 BRITT 138 CHAPEL HILL, NC	Not in MLS
30086 BRITT 134 CHAPEL HILL, NC	Not in MLS
30087 BRITT 137 CHAPEL HILL, NC	5
30088 BRITT 135 CHAPEL HILL, NC	5
30089 BRITT 136 CHAPEL HILL, NC	Not in MLS
30090 VILLAGE PARK DR 143 CHAPEL	5
30092 VILLAGE PARK DR 144 CHAPEL	Not in MLS
30094 BAXTER 145 CHAPEL HILL, NC	6
30095 BAXTER 155 CHAPEL HILL, NC	4
30097 BAXTER 154 CHAPEL HILL, NC	Not in MLS
30098 BAXTER 147 CHAPEL HILL, NC	4
30099 BAXTER 153 CHAPEL HILL, NC	4
30100 BAXTER 148 CHAPEL HILL, NC	3
30101 BAXTER 152 CHAPEL HILL, NC	4
30103 BAXTER 151 CHAPEL HILL, NC	Not in MLS
30104 BAXTER 150 CHAPEL HILL, NC	4
30106 VILLAGE PARK DR 156 CHAPEL	5
30108 VILLAGE PARK DR 244 CHAPEL	3
30109 SETTLE DR 233 CHAPEL HILL,	Not in MLS
30110 SETTLE DR 243 CHAPEL HILL,	Not in MLS
30112 SETTLE DR 242 CHAPEL HILL,	4
30113 SETTLE DR 235 CHAPEL HILL,	4
30114 SETTLE DR 241 CHAPEL HILL,	4
30115 SETTLE DR 236 CHAPEL HILL,	3
30116 SETTLE DR 240 CHAPEL HILL,	4
30117 SETTLE DR 237 CHAPEL HILL,	4
30119 SETTLE DR 238 CHAPEL HILL,	Not in MLS
30120 VILLAGE PARK DR 232 CHAPEL	5
30124 PORTER DR 230 CHAPEL HILL,	4
30125 PORTER DR 219 CHAPEL HILL,	Not in MLS
30126 PORTER DR 229 CHAPEL HILL,	Not in MLS
30127 PORTER DR 220 CHAPEL HILL,	5

30128 PORTER DR 228 CHAPEL HILL,	Not in MLS
30129 PORTER DR 221 CHAPEL HILL,	4
30130 PORTER DR 227 CHAPEL HILL,	4
30131 PORTER DR 222 CHAPEL HILL,	Not in MLS
30132 PORTER DR 226 CHAPEL HILL,	3
30133 PORTER DR 223 CHAPEL HILL,	4
30134 PORTER DR 225 CHAPEL HILL,	Not in MLS
30135 PORTER DR 224 CHAPEL HILL,	Not in MLS
30136 VILLAGE PARK DR 217 CHAPEL	4
30139 WALSER DR 201 CHAPEL HILL,	3
30140 WALSER DR 215 CHAPEL HILL,	4
30141 WALSER DR 202 CHAPEL HILL,	4
30142 WALSER DR 214 CHAPEL HILL,	Not in MLS
30144 WALSER DR 213 CHAPEL HILL,	Not in MLS
30145 WALSER DR 204 CHAPEL HILL,	4
30147 WALSER DR 205 CHAPEL HILL,	3
30148 WALSER DR 211 CHAPEL HILL,	4
30149 WALSER DR 206 CHAPEL HILL,	4
30150 WALSER DR 210 CHAPEL HILL,	3
30151 WALSER DR 207 CHAPEL HILL,	4
30152 WALSER DR 209 CHAPEL HILL,	3
30154 PHARR DR 200 CHAPEL HILL, N	3
30155 PHARR DR 174 CHAPEL HILL, N	Not in MLS
30157 PHARR DR 175 CHAPEL HILL, N	4
30158 PHARR DR 198 CHAPEL HILL, N	4
30159 PHARR DR 176 CHAPEL HILL, N	4
30160 PHARR DR 197 CHAPEL HILL, N	5
30162 PHARR DR 196 CHAPEL HILL, N	3
30163 PHARR DR 186 CHAPEL HILL, N	4
30164 PHARR DR 195 CHAPEL HILL, N	Not in MLS
30165 PHARR DR 187 CHAPEL HILL, N	4
30166 PHARR DR 194 CHAPEL HILL, N	Not in MLS
30167 PHARR DR 188 CHAPEL HILL, N	4
30168 PHARR DR 193 CHAPEL HILL, N	3
30169 PHARR DR 189 CHAPEL HILL, N	5
30170 PHARR DR 192 CHAPEL HILL, N	3
30171 PHARR DR 190 CHAPEL HILL, N	4
30172 PHARR DR 191 CHAPEL HILL, N	4
30174 RUFFINS DR 185 CHAPEL HILL,	Not in MLS
30175 RUFFINS DR 179 CHAPEL HILL,	4
30176 RUFFINS DR 184 CHAPEL HILL,	4
30177 RUFFINS DR 180 CHAPEL HILL,	4
30180 RUFFINS DR 182 CHAPEL HILL,	3
30182 RUFFINS DR 181 CHAPEL HILL,	Not in MLS
50300 GOVERNORS DR 039 CHAPEL HIL	Not in MLS
50302 GOVERNORS DR 038 CHAPEL HIL	2
50304 GOVERNORS DR 037 CHAPEL HIL	Not in MLS

50305 GOVERNORS DR 018 CHAPEL HIL	3
50307 GOVERNORS DR 019 CHAPEL HIL	3
50310 GOVERNORS DR 034 CHAPEL HIL	Not in MLS
50311 GOVERNORS DR 021 CHAPEL HIL	2
50404 GOVERNORS DR 031 CHAPEL HIL	2
50405 GOVERNORS DR 024 CHAPEL HIL	2
50406 GOVERNORS DR 030 CHAPEL HIL	2
50407 GOVERNORS DR 025 CHAPEL HIL	2
50409 GOVERNORS DR 026 CHAPEL HIL	3
50410 GOVERNORS DR 028 CHAPEL HIL	Not in MLS
50411 GOVERNORS DR 027 CHAPEL HIL	2
1031 PHILPOTT DR 28 CHAPEL HILL,	2
1028 PHILPOTT DR 52 CHAPEL HILL,	3
1038 PHILPOTT DR 47 CHAPEL HILL,	2
1066 PERDUE DR 68 CHAPEL HILL, NC	2
10029 DAVID STONE DR CHAPEL HILL	2
11019 DAVID STONE DR 075 CHAPEL H	2
12031 WICKER DR 21 CHAPEL HILL, N	4
15002 BARNHARDT CT 8 CHAPEL HILL,	4
20007 ROARK HOEY LOOP 071 CHAPEL	3
20040 WEBB 065 CHAPEL HILL, NC 2	3
20078 LONG 084 CHAPEL HILL, NC 2	4
30084 BRITT 133 CHAPEL HILL, NC	4
30122 VILLAAE PARK DR 231 CHAPEL	4
30138 VILLAGE PARK DR 216 CHAPEL	4
30153 WALSER DR 208 CHAPEL HILL,	3
Average	3.47
# Surveyed	355
# Properties	442
% Surveyed	80%
#Bedrooms	1533
Design Basis (gpd/bedroom)	120
Residential Design Flow	183922

PREPARED 1/02/19, 20:01:15
 PROGRAM UT420L1
 CHATHAM COUNTY WATER

Update Master Account Off Cycle Billing Register
 BILLING DATE - 1/03/19

MASTER LOCATION ID/ ADDR MASTER CUSTOMER ID/ NAME	LOCATION ID/ CUSTOMER ID/	ADDRESS/ NAME BILL DATE	RATE GROUP	SERVICE CODE/ COMP	DESCRIPTION	CO
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TOTALS FOR MASTER ACCOUNT 3654 CAROLINA MEADOWS

PREVIOUS BALANCE . : .00
 CURRENT CHARGES . : 14,149.00
 NEW BALANCE . : 14,149.00

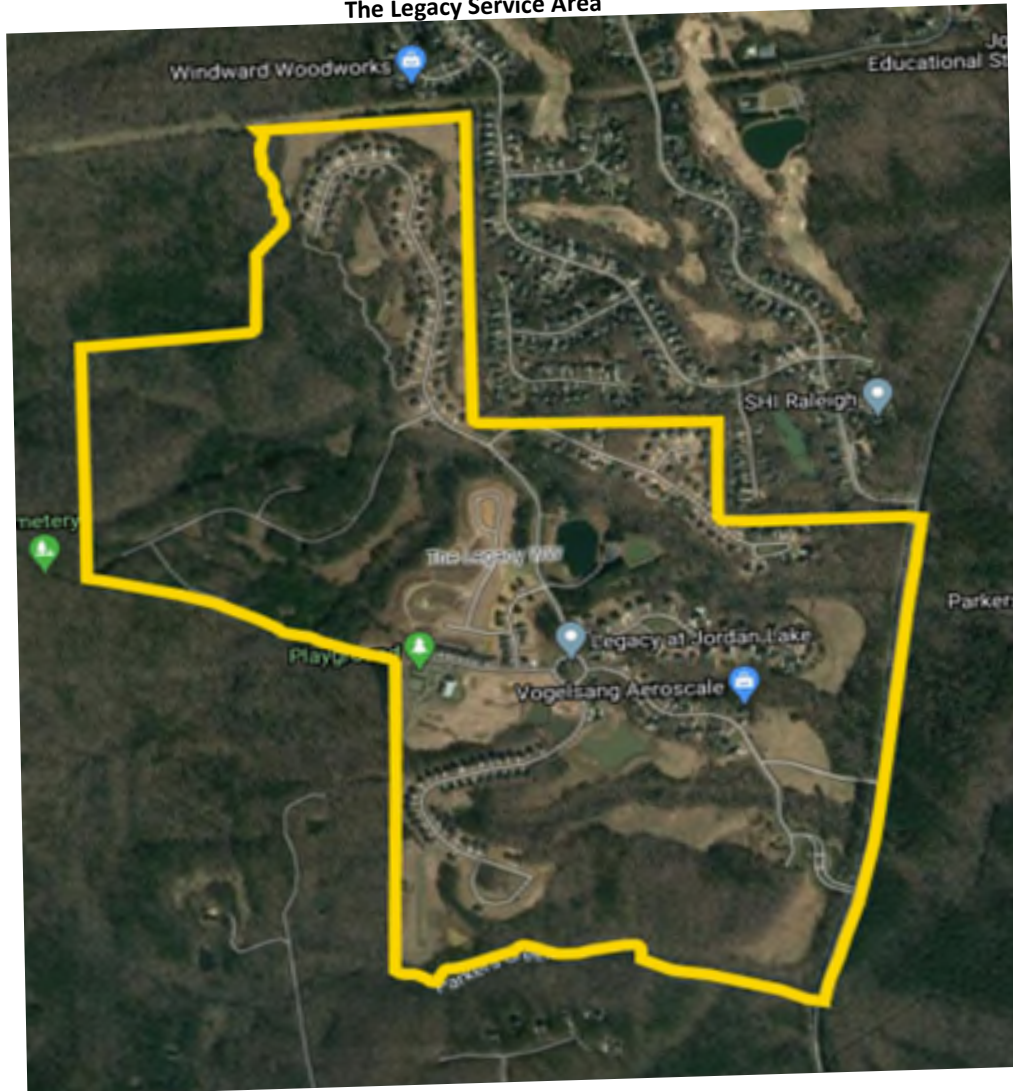
CLASSIFICATION	COUNT	NO. BILLED	ACT CONS BILLED	DMD CONS BILLED	AMOUNT BILLED
RESIDENTIAL	232	232	522000.00		7,236.00
COMMERCIAL - SMALL	10	10	182000.00		1,893.50
MULTIFAMILY	36	36	638000.00		5,019.50
			1342000.00		14,149.00

CUST/LOC STATUS	COUNT	NO. BILLED	ACT CONS BILLED	DMD CONS BILLED	AMOUNT BILLED
ACTIVE	278	278	1342000.00		14,149.00
			1342000.00		14,149.00

TRN TYPE	SVC	COMP	RATE	RCV	DESCRIPTION	COUNT	NO. BILLED	ACT CONS BILLED	DMD CONS BILLED
	WA	BASE	CH/R/I/	WS	ADMINISTRATIVE FEE	5	5		
	WA	CON1	CH/R/I/	WS	0 - 5,000 GALLONS	205	205	479000.00	
	WA	BASE	CH/R/I/075	WS	ADMINISTRATIVE FEE	222	222		
	WA	BASE	CH/CS/I/075	WS	ADMINISTRATIVE FEE	6	6		
	WA	BASE	CH/MF/I/075	WS	ADMINISTRATIVE FEE	29	29		
	WA	CON1	CH/MF/I/	WS	0 - 5,000 GALLONS	28	28	632000.00	
	WA	BASE	CH/CS/I/300	WS	ADMINISTRATIVE FEE	1	1		
	WA	BASE	CH/CS/I/	WS	ADMINISTRATIVE FEE	2	2		
	WA	CON1	CH/CS/I/	WS	0 - 5,000 GALLONS	6	6	21000.00	
	WA	BASE	CH/MF/I/200	WS	ADMINISTRATIVE FEE	5	5		
	WA	BASE	CH/R/I/300	WS	ADMINISTRATIVE FEE	3	3		
	WA	CON2	CH/R/I/	WS	NEXT 3,000 GALLONS	10	10	18000.00	
	WA	CON2	CH/CS/I/	WS	NEXT 3,000 GALLONS	3	3	9000.00	
	WA	CON3	CH/CS/I/	WS	OVER 8000 GALLONS	3	3	152000.00	
	WA	CON3	CH/R/I/	WS	OVER 8,000 GALLONS	2	2	25000.00	
	WA	BASE	CH/R/I/200	WS	ADMINISTRATIVE FEE	2	2		
	WA	BASE	CH/CS/I/200	WS	ADMINISTRATIVE FEE	1	1		
	WA	BASE	CH/MF/I/	WS	ADMINISTRATIVE FEE	1	1		

Becker / Pearce Excess Capacity Rebuttal Exhibit 8
W-218 Sub 526

The Legacy Service Area



Becker / Pearce Excess Capacity Exhibit 9
W-218 Sub 526

The Legacy Service Area Bedroom Survey
Bedrooms per address determined by Trulia or Zillow

Address	Bedrooms	Address	Bedrooms	Address	Bedrooms	Address	Bedrooms
566 STONEY CREEK WAY 81 CHAPEL HI	5	41 BRIDGEWATER CT 100 CHAPEL HILL	6	1128 COVERED BRIDGE TRL 128 CHAPE	5	528 LEGACY FALLS S DR 372 CHAPEL H	5
385 LEGACY FALLS DR 5 CHAPEL HILL		370 ROLLING MEADOWS LN 40 CHAPEL	4	614 LEGACY FALLS DR 25 CHAPEL HIL	4	147 VILLAGE WALK DR 223 CHAPEL HI	3
57 BRIDGEWATER CT 99 CHAPEL HILL	5	313 LEGACY FALLS DR 3 CHAPEL HILL		498 LEGACY FALLS DR 23 CHAPEL HIL	5	133 VILLAGE WALK DR 224 CHAPEL HI	5
372 LEGACY FALLS N DR 18 CHAPEL HI		293 ROLLING MEADOWS LN 50 CHAPEL		1152 COVERED BRIDGE TRL 129 CHAPE	4	85 VILLAGE WALK DR 228 CHAPEL HIL	3
547 STONEY CREEK WAY 86 CHAPEL HI	4	259 BROWN BEAR 136 CHAPEL HILL,	5	1192 COVERED BRIDGE TRL 131 CHAPE	4	71 VILLAGE WALK DR 229 CHAPEL HIL	
342 STONEY CREEK WAY 71 CHAPEL HI	4	156 STONEY CREEK WAY 63 CHAPEL HI	4	1204 COVERED BRIDGE TRL 132 CHAPE	4	138 LEGACY CLUB DR 310 CHAPEL HIL	4
187 STONEY CREEK WAY 104 CHAPEL H	5	872 COVERED BRIDGE TRL 118 CHAPEL	4	1185 COVERED BRIDGE TRL 141 CHAPE		166 LEGACY CLUB DR 312 CHAPEL HIL	3
515 STONEY CREEK WAY 87 CHAPEL HI	4	88 ROLLING MEADOWS LN 34 CHAPEL H	5	1117 COVERED BRIDGE TRL 143 CHAPE		42 VILLAGE WALK DR 323 CHAPEL HIL	
582 STONEY CREEK WAY 82 CHAPEL HI	4	363 ROLLING MEADOWS LN 47 CHAPEL		829 LEGACY FALLS S DR 345 CHAPEL H	4	50 VILLAGE WALK DR 324 CHAPEL HIL	4
445 LEGACY FALLS DR 7 CHAPEL HILL	4	887 COVERED BRIDGE TRL 149 CHAPEL	7	908 LEGACY FALLS S DR 352 CHAPEL H	3	163 VILLAGE WALK DR 222 CHAPEL HI	5
396 ROLLING MEADOWS LN 41 CHAPEL	7	912 COVERED BRIDGE TRL 120 CHAPEL	5	799 LEGACY FALLS S DR 347 CHAPEL H		117 VILLAGE WALK DR 225 CHAPEL HI	5
493 LEGACY FALLS DR 9 CHAPEL HILL		412 STONEY CREEK WAY 73 CHAPEL HI	5	844 LEGACY FALLS S DR 356 CHAPEL H	4	95 VILLAGE WALK DR 227 CHAPEL HIL	4
468 LEGACY FALLS DR 22 CHAPEL HIL		950 COVERED BRIDGE TRL 121 CHAPEL		885 LEGACY FALLS S DR 341 CHAPEL H	4	30 VILLAGE WALK DR 322 CHAPEL HIL	4
50 ROLLING MEADOW LN 28 CHAPEL HI	5	619 COVERED BRIDGE TRL 157 CHAPEL	7	875 LEGACY FALLS S DR 342 CHAPEL H	4	60 VILLAGE WALK DR 325 CHAPEL HIL	4
526 LEGACY FALLS DR 24 CHAPEL HIL	6	585 STONEY CREEK WAY 84 CHAPEL HI	4	851 LEGACY FALLS S DR 343 CHAPEL H		80 VILLAGE WALK DR 326 CHAPEL HIL	5
40 ROLLING MEADOWS S LN 32 CHAPEL		352 ROLLING MEADOWS LN 39 CHAPEL	5	896 LEGACY FALLS S DR 353 CHAPEL H	3	100 VILLAGE WALK DR 327 CHAPEL HI	4
15 ROLLING MEADOWS LN 61 CHAPEL H	4	586 COVERED BRIDGE TRL 108 CHAPEL		832 LEGACY FALLS S DR 357 CHAPEL H	4	170 VILLAGE WALK DR 330 CHAPEL HI	3
409 ROLLING MEADOWS LN 44 CHAPEL	5	814 COVERED BRIDGE TRL 116 CHAPEL	5	683 LEGACY FALLS S DR 378 CHAPEL H		572 LEGACY FALLS S DR 369 CHAPEL H	4
412 ROLLING MEADOWS LN 43 CHAPEL	6	1012 COVERED BRIDGE TRL 123 CHAPE		788 LEGACY FALLS S DR 360 CHAPEL H	4	562 LEGACY FALLS S DR 370 CHAPEL H	5
165 STONEY CREEK WAY 105 CHAPEL H	6	1265 COVERED BRIDGE TRL 138 CHAPE	5	739 LEGACY FALLS S DR 374 CHAPEL H	4	550 LEGACY FALLS S DR 371 CHAPEL H	5
120 ROLLING MEADOW DR 36 CHAPEL H		189 ROLLING MEADOWS LN 54 CHAPEL	6	591 COVERED BRIDGE TRL 158 CHAPEL	5	522 STONEY CREEK WAY 78 CHAPEL HI	4
385 ROLLING MEADOWS LN 46 CHAPEL		701 COVERED BRIDGE TRL 155 CHAPEL	5	567 COVERED BRIDGE TRL 159 CHAPEL		515 LEGACY FALLS DR 10 CHAPEL HIL	4
103 BRIDGEWATER CT 96 CHAPEL HILL	4	1258 COVERED BRIDGE TRL 135 CHAPE	5	530 COVERED BRIDGE TRL 106 CHAPEL	6	339 ROLLING MEADOWS LN 48 CHAPEL	
32 BRIDGEWATER CT 92 CHAPEL HILL,		959 COVERED BRIDGE TRL 147 CHAPEL	4	971 COVERED BRIDGE TRL 146 CHAPEL		28 TWO CREEKS LOOP 230 CHAPEL HIL	4
134 STONEY CREEK WAY 62 CHAPEL HI	4	630 COVERED BRIDGE TRL 110 CHAPEL	4	753 COVERED BRIDGE TRL 154 CHAPEL	5	40 TWO CREEKS LOOP 231 CHAPEL HIL	5
75 BRIDGEWATER CT 98 CHAPEL HILL,	5	237 ROLLING MEADOWS LN 51 CHAPEL		862 LEGACY FALLS S DR 355 CHAPEL H	4	48 TWO CREEKDS LOOP 232 CHAPEL HI	4
91 BRIDGEWATER CT 97 CHAPEL HILL,		935 COVERED BRIDGE TRL 148 CHAPEL	4	818 LEGACY FALLS DR 358 CHAPEL HI	4	56 TWO CREEKS LOOP 233 CHAPEL HIL	5
80 BRIDGEWATER CT 93 CHAPEL HILL,		1038 COVERED BRIDGE TRL 124 CHAPE		796 LEGACY FALLS S DR 359 CHAPEL H	4	68 TWO CREEKS LOOP 234 CHAPEL HIL	3
363 STONEY CREEK WAY 90 CHAPEL HI	5	1242 COVERED BRIDGE TRL 134 CHAPE	5	729 LEGACY FALLS S DR 375 CHAPEL H	3	81 SWEET BRIAR LN 301 CHAPEL HILL	4
571 STONEY CREEK WAY 85 CHAPEL HI	5	390 STONEY CREEK WAY 72 CHAPEL HI		351 LEGACY FALLS N DR 4 CHAPEL HIL	3	67 SWEET BRIAR LN 302 CHAPEL HILL	5
108 BRIDGEWATER CT 95 CHAPEL HILL		941 LEGACY FALLS S DR 338 CHAPEL H	4	963 LEGACY FALLS S DR 337 CHAPEL H		55 SWEET BRIAR LN 303 CHAPEL HILL	4
410 ROLLING MEADOWS LN 42 CHAPEL	4	1249 COVERED BRIDGE TRL 139 CHAPE		919 LEGACY FALLS S DR 339 CHAPEL H	4	43 SWEET BRIAR LN 304 CHAPEL HIL	4
318 ROLLING MEADOWS LN 38 CHAPEL		1001 COVERED BRIDGE TRL 145 CHAPE	5	841 LEGACY FALLS S DR 344 CHAPEL H		31 SWEET BRIAR LN 305 CHAPEL HILL	4
463 STONEY CREEK WAY 88 CHAPEL HI		980 COVERED BRIDGE TRL 122 CHAPEL		785 LEGACY FALLS S DR 348 CHAPEL H	5	130 VILLAGE WALK DR 328 CHAPEL HI	4
16 ROLLING MEADOWS LN 31 CHAPEL H		1033 COVERED BRIDGE TRL 144 CHAPE		710 LEGACY FALLS S DR 361 CHAPEL H	3	58 HIDDEN BLUFF DR 398 CHAPEL HIL	5
19 BRIDGEWATER CT 101 CHAPEL HILL		1290 COVERED BRIDGE TRL 136 CHAPE		696 LEGACY FALLS S DR 362 CHAPEL H	4	240 TWO CREEKS LOOP 250 CHAPEL HI	3
331 STONEY CREEK WAY 91 CHAPEL HI	6	1166 COVERED BRIDGE TRL 130 CHAPE	5	676 LEGACY FALLS S DR 363 CHAPEL H	3	234 TWO CREEKS LOOP 249 CHAPEL HI	5
534 STONEY CREEK WAY 79 CHAPEL HI	6	558 COVERED BRIDGE TRL 107 CHAPEL	5	717 LEGACY FALLS S DR 376 CHAPEL H	5	162 TWO CREEKS LOOP 242 CHAPEL HI	5
430 STONEY CREEK WAY 74 CHAPEL HI	7	274 STONEY CREEK WAY 68 CHAPEL HI		1074 LEGACY FALLS S DR 16 CHAPEL H		103 VILLAGE WALK DR 226 CHAPEL HI	3
176 STONEY CREEK WAY 64 CHAPEL HI	5	216 STONEY CREEK WAY 66 CHAPEL HI	5	1090 LEGACY FALLS DR 15 CHAPEL HI		106 TWO CREEKS LOOP 237 CHAPEL HI	3
320 STONEY CREEK WAY 70 CHAPEL HI		590 STONEY CREEK WAY 83 CHAPEL HI		182 LEGACY CLUB DR 313 CHAPEL HIL	4	118 TWO CREEKS LOOP 238 CHAPEL HI	4
67 ROLLING MEADOWS LN 59 CHAPEL H		640 LEGACY FALLS DR 26 CHAPEL HIL	4	196 LEGACY CLUB DR 314 CHAPEL HIL	4	174 TWO CREEKS LOOP 243 CHAPEL HI	5
252 STONEY CREEK WAY 67 CHAPEL HI		745 LEGACY FALLS S DR 373 CHAPEL H	4	210 LEGACY CLUB DR 315 CHAPEL HIL	5	186 TWO CREEKS LOOP 244 CHAPEL HI	4
64 ROLLING MEADOWS LN 33 CHAPEL H		1104 COVERED BRIDGE TRL 127 CHAPE	6	66 LEGACY CLUB DR 321 CHAPEL HILL	3	258 TWO CREEKS LOOP 252 CHAPEL HI	5
604 COVERED BRIDGE TRL 109 CHAPEL	6	1293 COVERED BRIDGE TRL 137 CHAPE	6	21 VILLAGE WALK DR 308 CHAPEL HIL	3	266 TWO CREEKS LOOP 253 CHAPEL HI	4
104 BRIDGEWATER CT 94 CHAPEL HILL		1090 COVERED BRIDGE TRL 126 CHAPE		232 LEGACY CLUB DR 317 CHAPEL HIL	4	550 STONEY CREEK WAY 80 CHAPEL HI	
829 COVERED BRIDGE TRL 151 CHAPEL	4	1220 COVERED BRIDGE TRL 133 CHAPE	6	51 VILLAGE WALK DR 306 CHAPEL HIL	4	617 LEGACY FALLS S DR 382 CHAPEL H	4
101 ROLLING MEADOWS LN 58 CHAPEL	6	315 ROLLING MEADOWS LN 49 CHAPEL	4	33 VILLAGE WALK DR 307 CHAPEL HIL	3	636 LEGACY FALLS S DR 365 CHAPEL H	5
35 ROLLING MEADOWS LN 60 CHAPEL H		1143 COVERED BRIDGE TRL 142 CHAPE	5	222 LEGACY CLUB DR 316 CHAPEL HIL	4	128 TWO CREEKS LOOP 239 CHAPEL HI	5
151 ROLLING MEADOWS LN 56 CHAPEL		470 STONEY CREEK WAY 76 CHAPEL HI	5	244 LEGACY CLUB DR 318 CHAPEL HIL	4	80 TWO CREEKS LOOP 235 CHAPEL HIL	5
405 ROLLING MEADOWS LN 45 CHAPEL	4	899 LEGACY FALLS DR 340 CHAPEL HI		154 VILLAGE WALK DR 329 CHAPEL HI	5	94 TWO CREEKS LOOP 236 CHAPEL HIL	4
900 COVERED BRIDGE TRL 119 CHAPEL		763 LEGACY FALLS DR 350 CHAPEL HI	5	1114 LEGACY FALLS DR 14 CHAPEL HI		226 TWO CREEKS LOOP 248 CHAPEL HI	5
844 COVERED BRIDGE TRL 117 CHAPEL	4	922 LEGACY FALLS DR 351 CHAPEL HI		300 STONEY CREEK WAY 69 CHAPEL HI		105 WINDING CREEK LOOP 387 CHAPEL	4
776 COVERED BRIDGE TRL 114 CHAPEL		662 LEGACY FALLS DR 364 CHAPEL HI	5	584 LEGACY FALLS S DR 368 CHAPEL H	5	414 LEGACY FALLS DR NORTH 20 CHA	
744 COVERED BRIDGE TRL 113 CHAPEL	5	707 LEGACY FALLS DR 377 CHAPEL HI	4	629 LEGACY FALLS S DR 381 CHAPEL H	5	595 LEGACY FALLS DR NORTH 11 CHA	
712 COVERED BRIDGE TRL 112 CHAPEL		673 LEGACY FALLS S DR 379 CHAPEL H	5	620 LEGACY FALLS S DR 366 CHAPEL H	5	78 ROLLING MEADOWS LN 29 CHAPEL H	4
686 COVERED BRIDGE TRL 111 CHAPEL	4	438 LEGACY FALLS DR 21 CHAPEL HIL	4	93 WINDING CREEK LOOP 388 CHAPEL	6	1046 COVERED BRIDGE TRL 125 CHAPE	5
787 COVERED BRIDGE TRL 152 CHAPEL		759 COVERED BRIDGE TRL 153 CHAPEL	6	610 LEGACY FALLS S DR 367 CHAPEL H	4	39 LEGACY WAY GATEHO CHAPEL HILL,	NA
133 ROLLING MEADOWS LN 57 CHAPEL	5	1217 COVERED BRIDGE TRL 140 CHAPE	5	417 LEGACY FALLS N DR 6 CHAPEL HIL		Average	4.503
863 COVERED BRIDGE TRL 150 CHAPEL		773 LEGACY FALLS S DR 349 CHAPEL H	4	300 ROLLING MEADOWS LN 37 CHAPEL		# surveyed	173
802 COVERED BRIDGE 115 CHAPEL HI		880 LEGACY FALLS S DR 354 CHAPEL H	4	194 STONEY CREEK WAY 65 CHAPEL HI		% Surveyed	71%
802 COVERED BRIDGE 115 CHAPEL HI		815 LEGACY FALLS S DR 346 CHAPEL H		450 STONEY CREEK WAY 75 CHAPEL HI	4	# of Dwelling Units	241

Becker / Pearce Excess Capacity Rebuttal Exhibit 10

W-218 Sub 526

The Legacy Service Area Design Flow Summary

Completed by Joseph Pearce PE

Number of Dwelling Units	241
Number of Bedrooms per Dwelling Unit	4.503
Design Standard	120 gpd per bedroom
Dwelling Unit Design Flow	130224 gallons per day
Amenity Center	1450 gpd per original permit
Guard House	100 gpd per original permit
Total Contributory Design Flow	131774 gpd



March 22, 2005

Jerry H. Tweed
Heater Utilities, Inc.
202 MacKenan Court
Cary, NC 27511

Subject: Permit No. WQ0024884
Homestead Development
Wastewater Treatment and
Reclaimed Water Utilization System
Chatham County

Dear Mr. Tweed:

In accordance with your permit application received February 3, 2005, and subsequent additional information received March 3, 2005, we are forwarding herewith Permit Number. WQ0024884, dated March 22, 2005, to Heater Utilities, Inc. for the construction and operation of the subject wastewater treatment and reclaimed water utilization system.

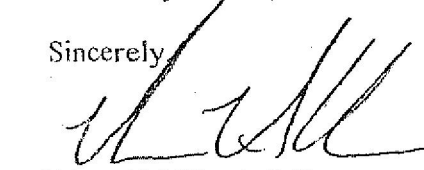
This permit shall be effective from the date of issuance until February 28, 2010, and shall be subject to the conditions and limitations as specified therein. Please pay particular attention to the monitoring requirements in this permit. Failure to establish an adequate system for collecting and maintaining the required operational information will result in future compliance problems. **Please note that a sedimentation and erosion control plan must be submitted and approved by the Land Quality Section prior to construction. In addition, any changes required by the Dam Safety Permit shall be approved by the Division of Water Quality prior to construction (See Condition I.10). The Permittee shall also complete an amended site evaluation performed after the irrigation areas are constructed and await written permission from the Division prior to operation (Condition I.12).**

If any parts, requirements, or limitations contained in this permit are unacceptable, you have the right to request an adjudicatory hearing upon written request within thirty (30) days following receipt of this permit. This request must be in the form of a written petition, conforming to Chapter 150B of the North Carolina General Statutes, and filed with the Office of Administrative Hearings, 6714 Mail Service Center, Raleigh, NC 27699-6714. Unless such demands are made this permit shall be final and binding.

One
North Carolina
Naturally

One set of approved plans and specifications is being forwarded to you. If you need additional information concerning this matter, please contact Michelle McKay at (919) 715-6187.

Sincerely,


Alan W. Klimek, P.E.

cc: Chatham County Health Department
Raleigh Regional Office, Aquifer Protection Section
W. Lee Fleming, J.R., P.E.
Jim Beeson, S&EC, P.A.
Alan Gaines, Jordon Lake, LLC
Scott Frederick, SW & E Group, LLC
Mark Ashness, CE Group, Inc.
Ed Andrew, Edwin Andrews & Assoc., P.C.
Steven Levitas, Kilpatrick Stockton, LLP
Technical Assistance and Certification Unit
Aquifer Protection Central Files
LAU Files

NORTH CAROLINA

ENVIRONMENTAL MANAGEMENT COMMISSION

DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES

RALEIGH

WASTEWATER TREATMENT AND RECLAIMED WATER UTILIZATION PERMIT

In accordance with the provisions of Article 21 of Chapter 143, General Statutes of North Carolina as amended, and other applicable Laws, Rules, and Regulations

PERMISSION IS HEREBY GRANTED TO

Heater Utilities, Inc.

Chatham County

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;

a 16.9 million gallon (MG) storage pond, manual valves to redirect flow if turbidity is greater than 10 NTU to a 0.89 MG five day upset pond, a 130.8 acre irrigation area consisting of 34 zones and an onsite generator with automatic transfer switch capable of powering all essential units to serve the Homestead Development with no discharge of wastes to the surface waters, pursuant to the application received February 3, 2005 and subsequent additional information received by the Division, and in conformity with the project plan, specifications, and other supporting data subsequently filed and approved by the Department of Environment and Natural Resources and considered a part of this permit.

This permit shall be effective from the date of issuance until February 28, 2010, and shall be subject to the following specified conditions and limitations:

I. PERFORMANCE STANDARDS

1. Upon completion of construction and prior to operation of this permitted facility, a certification must be received from a professional engineer certifying that the permitted facility has been installed in accordance with this permit, the approved plans and specifications, and other supporting materials. If this project is to be completed in phases and partially certified, you shall retain the responsibility to track further construction approved under the same permit and shall provide a final certificate of completion once the entire project has been completed. Mail the Certification to the Land Application Unit, 1636 Mail Service Center, Raleigh, NC 27699-1636.
2. The Raleigh Regional Office, telephone number (919) 571-4700, shall be notified at least forty-eight (48) hours in advance of operation of the installed facilities so that an in-place inspection can be made. Such notification to the regional supervisor shall be made during the normal office hours from 8:00 a.m. until 5:00 p.m. on Monday through Friday, excluding State Holidays.
3. The reclaimed water utilization facilities shall be effectively maintained and operated at all times so that there is no discharge to the surface waters, nor any contamination of ground waters, which will render them unsatisfactory for normal use. In the event that the facilities fail to perform satisfactorily, including the creation of nuisance conditions or failure of the irrigation area to adequately assimilate the wastewater, the Permittee shall take immediate corrective actions including those actions that may be required by the Division of Water Quality (Division), such as the construction of additional or replacement wastewater treatment and disposal facilities.
4. The issuance of this permit shall not relieve the Permittee of the responsibility for damages to surface water or ground water resulting from the operation of this facility.
5. The residuals generated from these treatment facilities must be disposed in accordance with General Statute 143-215.1 and in a manner approved by the Division.
6. Diversion or bypassing of the untreated wastewater from the treatment facilities is prohibited.
7. The following buffers shall be maintained:
 - a. 100 feet between wetted areas and water supply wells,
 - b. 100 feet between wetted areas and waters classified as SA,
 - c. 25 feet between wetted areas and surface waters not classified as SA,
 - d. 100 feet between wastewater treatment units and wells,
 - e. 50 feet between reclaimed water storage/irrigation ponds and property lines, and
 - f. 50 feet between wastewater treatment units and property lines.
8. Public access to the irrigation sites shall be controlled during active site use. Such controls may include the posting of signs showing the activities being conducted at each site. A sign shall be posted in plain sight in the guardhouse showing these activities.
9. The disposal system shall be connected to a rain or moisture sensor that shall indicate when wastewater application is not appropriate in accordance with Condition II(4) of this permit.
10. Prior to construction, the Division of Water Quality shall approve any changes to the inclement weather storage pond required from a dam safety permit issued by the Division of Land Resources.

11. The following shall be requirements for the reclaimed water distribution, storage, and utilization facilities:

- a. All reclaimed water valves, storage facilities, and outlets shall be tagged or labeled to warn the public or employees that the water is not intended for drinking. Where appropriate, such warning shall inform the public or employees to avoid contact with the water.
 - b. All reclaimed water piping, valves, outlets, and other appurtenances shall be color-coded, taped, or otherwise marked to identify the source of the water as being reclaimed water.
 - i. All reclaimed water piping and appurtenances shall be either colored purple (i.e., Pantone 522) and embossed or integrally stamped or marked "CAUTION: RECLAIMED WATER - DO NOT DRINK" or be installed with a purple (i.e., Pantone 522) identification tape or polyethylene vinyl wrap. The warning shall be stamped on opposite sides of the pipe and repeated every three feet or less.
 - ii. Identification tape shall be at least three inches wide and have white or black lettering on purple (i.e., Pantone 522) field stating "CAUTION: RECLAIMED WATER - DO NOT DRINK." Identification tape shall be installed on top of reclaimed water pipelines, fastened at least every 10 feet to each pipe length and run continuously the entire length of the pipe.
 - c. All reclaimed water valves and outlets shall be of a type, or secured in a manner, that permits operation by authorized personnel only.
 - d. Above-ground hose bibs (i.e., spigots or other hand-operated connections) shall not be present. Hose bibs shall be located in locked below-grade vaults that shall be clearly labeled as being of non-potable quality. As an alternative to the use of locked below-grade vaults with standard hose bibs services, hose bibs, which can only be operated by a special tool or connected to a special hose connection, may be placed in non-lockable underground services boxes clearly labeled as non-potable water.
12. Upon completion of site grading and shaping, an amended site evaluation will be conducted by a licensed soil scientist, and an amended site evaluation report shall be submitted to the Division of Water Quality. This report shall specifically address, but not be limited to, the effects of grading/construction upon the original site evaluation. The evaluation should include an investigation of key areas of grading, including soil features such as depth to seasonal high water table, depth to fractured bedrock, soil series, and similar soil features. The report should address the site suitability to ensure the protection of groundwater and the appropriateness of the permitted irrigation rate. Upon completion of site grading and shaping, the Division of Water Quality, Raleigh Regional Office, telephone number (919) 571-4700, and the Division of Water Quality, Groundwater Section, telephone number 919-715-3221, shall be notified. Such notification shall be made during the normal office hours from 8:00 a.m. until 5:00 p.m. on Monday through Friday, excluding State Holidays. No wastewater shall be introduced into the treatment system until written approval from the Division of Water Quality is received.

II. OPERATION AND MAINTENANCE REQUIREMENTS

1. The facilities shall be properly maintained and operated at all times.
2. Upon classification of the wastewater treatment and irrigation facilities by the Water Pollution Control System Operators Certification Commission (WPCSOCC), the Permittee shall designate and employ a certified operator to be in responsible charge (ORC) and one or more certified operator(s) to be back-up ORC(s) of the facilities in accordance with 15A NCAC 8G .0201. The ORC shall visit the facilities in accordance with 15A NCAC 8G .0204 or as specified in this permit and shall comply with all other conditions specified in these rules.
3. A suitable, year-round vegetative cover shall be maintained on the irrigation areas.

4. Irrigation shall not be performed during inclement weather or when the ground is in a condition that will cause runoff.
5. Adequate measures shall be taken to prevent wastewater runoff from the irrigation field.
6. The facilities shall be effectively maintained and operated as a non-discharge system to prevent the discharge of any wastewater resulting from the operation of this facility.
7. The application rates for each irrigation zone shall not exceed the cumulative loadings listed in the table below over any twelve (12) month period at an instantaneous application rate not to exceed 0.1 inch/dose.

Zone	Acreage	Application Rate (in/yr)
1A	5.7	5.2
1B	7	25.6
2A	2.2	5.2
2B	7.7	14.8
2C	2.4	14.8
2D	3.3	25.6
2E	4.4	25.6
3A	10	14.8
3B	6.9	25.6
4A	3.6	14.8
4B	8.3	25.6
5A	1.7	5.2
5B	2.1	5.2
5C	2.2	5.2
5D	2.5	14.8
5E	7.5	14.8
6A	3.6	5.2
6B	4.5	14.8
6C	1.3	14.8
6D	5	25.6
7A	1.2	5.2
7B	2.2	14.8
7C	2.3	14.8
7D	3.2	25.6
8A	3	5.2
8B	3.1	14.8
8C	6.2	14.8
8D	3.9	25.6
9A	5.3	14.8
9B	1.9	25.6
9C	1.8	25.6
10A	1.5	5.2
10B	0.8	14.8
10C	1.5	14.8

8. An automatically activated standby power source shall be on site and operational at all times. If a generator is employed as an alternate power supply, it shall be tested weekly by interrupting the primary power source.
9. No type of wastewater other than that from Homestead Development shall be irrigated onto the irrigation area.
10. Freeboard in the storage and upset pond shall not be less than two feet at any time.
11. A waste-level gauge, to monitor waste levels in the storage pond and upset pond, shall be installed prior to operation of this facility. This gauge shall have readily visible permanent markings indicating the maximum liquid level at the top of the temporary liquid storage volume, minimum liquid level at the bottom of the temporary liquid storage volume, and top of the dam elevations. Caution must be taken not to damage the integrity of the liner when installing the gauge.
12. A protective vegetative cover shall be established and maintained on all earthen basin embankments (outside toe of embankment to maximum pumping elevation), berms, pipe runs, erosion control areas, and surface water diversions. Trees, shrubs, and other woody vegetation shall not be allowed to grow on the earthen basin dikes or embankments. Earthen basin embankment areas shall be kept mowed or otherwise controlled and accessible.
13. All wastewater shall be routed to the five-day holding pond should the limit for fecal coliform (daily maximum concentration of 25 per 100 ml) or turbidity (instantaneous maximum of 10 NTU) be exceeded, until such time that the problems associated with the treatment capability of the wastewater treatment plant have been corrected. The wastewater in the five-day holding pond shall be pumped back to the treatment plant for re-treatment or treated in the five-day pond prior to discharge to the storage pond.
14. The chlorine tablets used in the disinfection facility shall be of the kind and type specified in the Division approved plans and specifications.

III. MONITORING AND REPORTING REQUIREMENTS

1. Any monitoring (including groundwater, surface water, soil or plant tissue analyses) deemed necessary by the Division to insure surface and ground water protection will be established and an acceptable sampling reporting schedule shall be followed.
2. Influent flow shall be continuously monitored and daily flow values shall be reported on Form NDMR. Influent flow may be represented by effluent flow from the wastewater treatment system prior to storage.

The Permittee shall install an appropriate flow measurement device consistent with approved engineering and scientific practices to ensure the accuracy and reliability of influent flow measurement. Flow measurement devices selected shall be capable of measuring flows with a maximum deviation of less than 10 percent from true flow, accurately calibrated at a minimum of once per year, and maintained to ensure that the accuracy of the measurements is consistent with the accepted capability of that type of device. The Permittee shall keep records of flow measurement device calibration on file for a period of at least three years. At a minimum, data to be included in this documentation shall be:

- a. Date of flow measurement device calibration
- b. Name of person performing calibration
- c. Percent from true flow

3. As an indicator of proper operation and maintenance, the facility shall produce an effluent in compliance with the following limitations:

Parameter	Monthly Average ^a	Daily (Instantaneous) Maximum ^c
Flow	120,000 GPD	
BOD ₅ (5-day, 20°C)	10 mg/l	15 mg/l
NH ₃ as N	4 mg/l	6 mg/l
TSS	5 mg/l	10 mg/l
Fecal Coliform	14 per 100 ml ^b	25 per 100 ml
Turbidity		10 NTU

The effluent pH shall not be less than 6.0 standard units nor greater than 9.0 standard units.

^a Monthly averages for all but fecal coliform shall be the arithmetic mean of all samples collected during the reporting period.

^b Monthly average for fecal coliform shall be the geometric mean of all samples collected during the reporting period.

^c Daily maximum shall be the maximum value of all samples collected during the reporting period.

The Permittee shall monitor the effluent from the subject facilities at a point prior to irrigation for the following parameters:

Parameter	Sampling Point	Sampling Frequency	Type of Sample
Flow	Influent or Effluent	Continuous	Recording
Turbidity	Effluent	Continuous	Recording
BOD ₅ (5-day, 20°C)	Effluent	*2/Month	Composite
NH ₃ as N	Effluent	*2/Month	Composite
TSS	Effluent	*2/Month	Composite
Fecal Coliform	Effluent	*2/Month	Grab
Settleable Matter	Effluent	Daily	Grab
Residual Chlorine	Effluent	Daily	Grab
NO ₃	Effluent	**Triannually	Grab
TDS	Effluent	**Triannually	Grab
TOC	Effluent	**Triannually	Grab
Chloride	Effluent	**Triannually	Grab
PH	Effluent	**Triannually	Grab

* 2/Month sampling frequency only during the months of April through October. During the remainder of the year, these parameters shall be monitored monthly.

** Triannually sampling shall be conducted during March, July, and November.

If Groundwater sampling indicates or predicts problems with the compliance with Groundwater Standards, this permit will be modified to include additional and/or more restrictive limitations.

4. The Permittee shall maintain adequate records tracking the amount of wastewater disposed. These records shall include, but are not necessarily limited to the following information:
- a. Date and time of irrigation,
 - b. Volume of wastewater irrigated,
 - c. Zone irrigated,
 - d. Length of time zone is irrigated,
 - e. Continuous weekly, monthly, and year-to-date hydraulic (inches/acre) loadings for each zone,
 - f. Weather conditions, and
 - g. Maintenance of cover crops.
5. Freeboard in the storage ponds shall be recorded weekly.
6. Three (3) copies of all monitoring data [as specified in Conditions III(2) and III(3)] on Form NDMR-1 and three (3) copies of all operation and disposal records [as specified in Conditions III(4) and III(5)] on Form NDAR-1 shall be submitted monthly on or before the last day of the following month. All information shall be submitted to the following address:

NC Division of Water Quality
Information Processing Unit
1617 Mail Service Center
Raleigh, North Carolina 27699-1617

7. A record shall be maintained of all residuals removed from this facility. This record shall include the name of the hauler, permit authorizing the disposal or a letter from a municipality agreeing to accept the residuals, date the residuals were hauled, and volume of residuals removed.
8. A maintenance log shall be maintained at this facility including but not limited to the following items:
- a. Daily sampling results of dissolved oxygen in the aeration basin and at the clarifier weir.
 - b. Visual observations of the plant and plant site.
 - c. Record of preventative maintenance (changing of filters, adjusting belt tensions, alarm testing, diffuser inspections and cleanings, etc.).
 - d. Date of calibration of flow measurement device.
 - e. Date and results of power interruption testing on alternate power supply.

9. Noncompliance Notification:

The Permittee shall report by telephone to the Raleigh Regional Office, telephone number (919) 571-4700, as soon as possible, but in no case more than 24 hours or on the next working day following the occurrence or first knowledge of the occurrence of any of the following:

- a. Any occurrence at the wastewater treatment facility which results in the treatment of significant amounts of wastes which are abnormal in quantity or characteristic, such as the dumping of the contents of a sludge digester; the known passage of a slug of hazardous substance through the facility; or any other unusual circumstances.
- b. Any process unit failure, due to known or unknown reasons, that render the facility incapable of adequate wastewater treatment such as mechanical or electrical failures of pumps, aerators, compressors, etc.
- c. Any failure of a pumping station, sewer line, or treatment facility resulting in a by-pass directly to receiving waters without treatment of all or any portion of the influent to such station or facility.

- d. Any time that self-monitoring information indicates that the facility has gone out of compliance with its permit limitations.

Occurrences outside normal business hours may also be reported to the Division's Emergency Response personnel at telephone number (800) 662-7956, (800) 858-0368, or (919) 733-3300. Persons reporting such occurrences by telephone shall also file a written report in letter form within five (5) days following first knowledge of the occurrence. This report must outline the actions taken or proposed to be taken to ensure that the problem does not recur.

IV. GROUNDWATER REQUIREMENTS

1. Waste shall not be applied or discharged onto or below the land surface when the vertical separation between the waste and the seasonal high water table is less than one (1) foot.
2. Groundwater quality monitoring, as deemed necessary by the Division, shall be provided.
3. The five day upset pond shall have either a liner of natural material at least one (1) foot in thickness and having a hydraulic conductivity of no greater than 1×10^{-6} centimeters per second when compacted, or a synthetic liner of sufficient thickness to exhibit structural integrity and an effective hydraulic conductivity no greater than that of the natural material liner, according to 15A NCAC 2H .0219(f).
4. The Compliance Boundary and Review Boundary for the waste disposal area(s) is specified in regulations in 15A NCAC 2H, Waste Not Discharged to Surface Waters, specifically, .0219(k)(1)(C)(i)(III). The Compliance Boundary and Review Boundary for groundwater shall be established at the property boundary. An exceedance of Groundwater Quality Standards at or beyond the Compliance Boundary is subject to remediation action according to 15A NCAC 2L .0106(d)(2).

V. INSPECTIONS


1. Adequate inspection, maintenance, and cleaning shall be provided by the Permittee to insure proper operation of the subject facilities.
2. The Permittee or his designee shall inspect the wastewater treatment and disposal facilities to prevent malfunctions and deterioration, operator errors and discharges which may cause or lead to the release of wastes to the environment, a threat to human health, or a nuisance. The Permittee shall keep an inspection log or summary including at least the date and time of inspection, observations made, and any maintenance, repairs, or corrective actions taken by the Permittee. This log of inspections shall be maintained by the Permittee for a period of three years from the date of the inspection and shall be made available upon request to the Division or other permitting authority.
3. Any duly authorized officer, employee, or representative of the Division may, upon presentation of credentials, enter and inspect any property, premises or place on or related to the disposal site or facility at any reasonable time for the purpose of determining compliance with this permit; may inspect or copy any records that must be maintained under the terms and conditions of this permit, and may obtain samples of groundwater, surface water, or leachate.

VI. GENERAL CONDITIONS

1. This permit shall become voidable unless the facilities are constructed in accordance with the conditions of this permit, the approved plans and specifications, and other supporting data.
2. This permit is effective only with respect to the nature and volume of wastes described in the application and other supporting data.
3. This permit is not transferable. In the event there is a desire for the facilities to change ownership, or there is a name change of the Permittee, a formal permit request must be submitted to the Division accompanied by an application fee, documentation from the parties involved, and other supporting materials as may be appropriate. The approval of this request will be considered on its merits and may or may not be approved.
4. Failure to abide by the conditions and limitations contained in this permit may subject the Permittee to an enforcement action by the Division in accordance with North Carolina General Statute 143-215.6A to 143-215.6C.
5. The issuance of this permit does not exempt the Permittee from complying with any and all statutes, rules, regulations, or ordinances which may be imposed by other government agencies (local, state, and federal) which have jurisdiction, including but not limited to applicable river buffer rules in 15A NCAC 2B.0200, erosion and sedimentation control requirements in 15A NCAC Chapter 4 and under the Division's General Permit NCG010000, and any requirements pertaining to wetlands under 15A NCAC 2B .0200 and 2H .0500.
6. The Permittee shall retain a set of approved plans and specifications for the subject facility for the life of the project.
7. The Permittee shall pay the annual administering and compliance fee within thirty days of being billed by the Division. Failure to pay the fee accordingly may cause the Division to initiate action to revoke this permit as specified by 15 NCAC 2H .0205 (c)(4).
8. The Permittee, at least six (6) months prior to the expiration of this permit, shall request its extension. Upon receipt of the request, the Commission will review the adequacy of the facilities described therein, and if warranted, will extend the permit for such period of time and under such conditions and limitations as it may deem appropriate.

Permit issued this the 22nd Day of March, 2005

NORTH CAROLINA ENVIRONMENTAL MANAGEMENT COMMISSION



Alan W. Klimek, P.E., Director

Division of Water Quality

By Authority of the Environmental Management Commission

Permit Number WQ0024844

Permit No. WQ0024844

March 22, 2005

ENGINEER'S CERTIFICATION

_____ Partial _____ Final

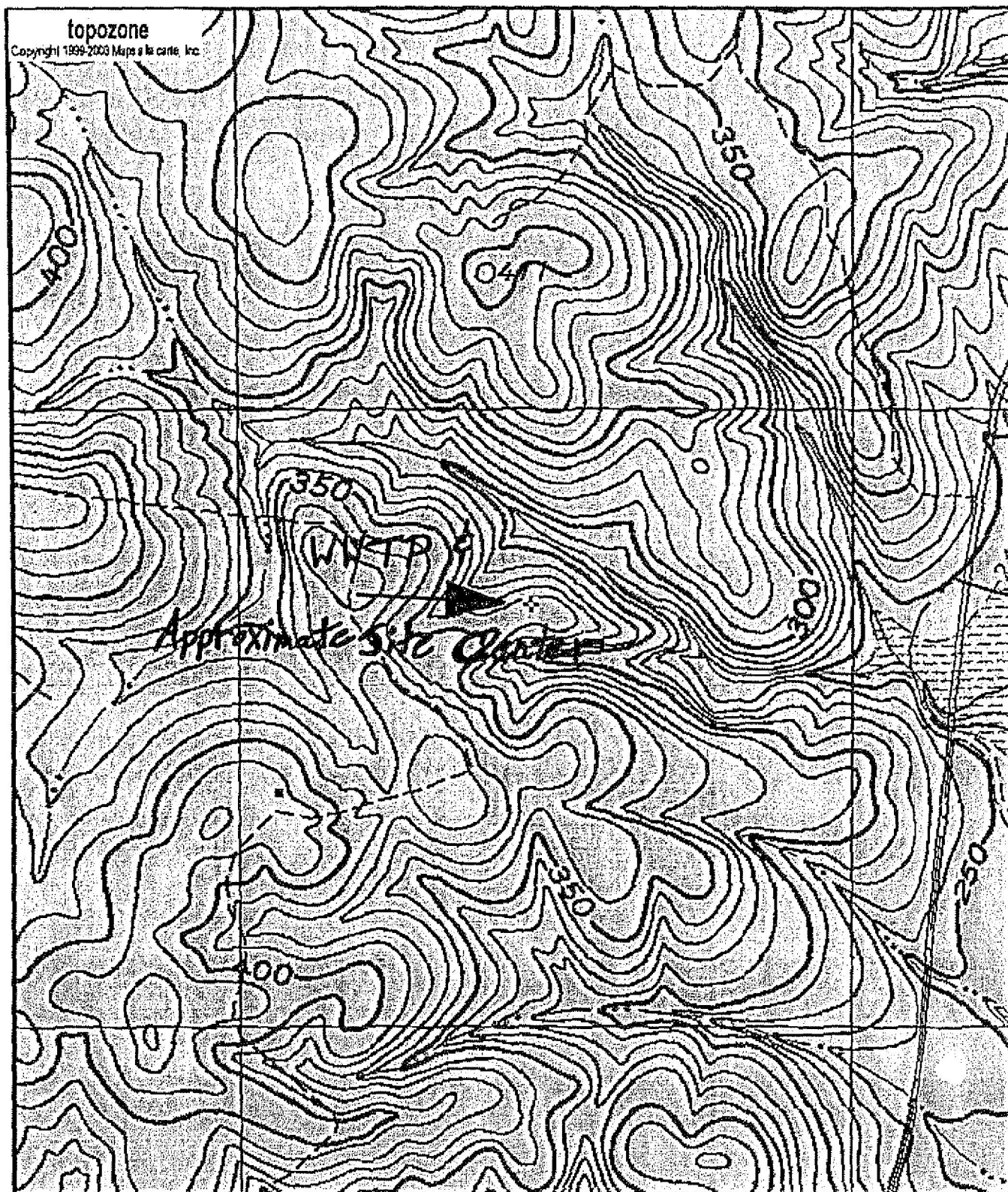
I, _____, as a duly registered Professional Engineer in the State of North Carolina, having been authorized to observe (periodically, weekly, full time) the construction of the project,

*Project Name*_____
Location and County

for the Permittee hereby state that, to the best of my abilities, due care and diligence was used in the observation of the construction such that the construction was observed to be built within substantial compliance and intent of this permit, the approved plans and specifications, and other supporting materials.

Signature _____ Registration No. _____

Date _____



0 0.1 0.2 0.3 0.4 0.5 km
0 0.09 0.18 0.27 0.36 0.45 mi

Map center is 35° 45' 56"N, 79° 03' 32"W (WGS84/NAD83)

Farrington quadrangle D22 SE

Projection is UTM Zone 17 NAD83 Datum



M=-8.552
G=1.135

Homestead Development
WQ 00 24844

**WATER POLLUTION CONTROL SYSTEM OPERATORS
CERTIFICATION COMMISSION**

**CLASSIFICATION
RATING SHEET FOR WATER POLLUTION CONTROL SYSTEMS**

FACILITY INFORMATION:

NAME OF FACILITY: Heater Utilities, Inc. – Homestead Development

MAILING ADDRESS: 202 MacKenna Ct., Cary, NC 27511

COUNTY: Chatham

CONTACT PERSON: Jerry Tweed TELEPHONE: 910/467-8712, ext. 37

PERMIT NO.: WQ0024884 Check One: NC WQ ☒ HEALTH DP

ORC: TELEPHONE:

RATING INFORMATION: (Before completing this section, please refer to pages 2-4)

PERMITTED FLOW: 165,000 GPD BNR? YES NO

CHECK CLASSIFICATION: WASTEWATER: 1 2 ☒ 3 4

COLLECTION: 1 2 3 4

SPRAY IRRIGATION ☒ SUBSURFACE LAND APPLICATION

PHYSICAL/CHEMICAL GRADE I GRADE II

RATED BY: Randy Jones REGION: RRO DATE: 3/7/05

REGIONAL OFFICE TELEPHONE NUMBER: 919/571-4700 EXT: 255

Classification of Biological Water Pollution Control Treatment Systems:**Grade I Biological WPCS**

- Septic tank/sand filter systems
- Biological lagoon systems
- Constructed wetlands and associated appurtenances

✓

Grade II Biological WPCS

- Systems that utilize an activated sludge or fixed growth process with a permitted flow less than or equal to 0.5 million gallons per day (mgd)

Grade III Biological WPCS

- Systems that utilize an activated sludge or fixed growth process with a permitted flow of greater than 0.5 through 2.5 million gallons per day (mgd)
- Grade II systems that are required to achieve biological nutrient reduction *

Grade IV Biological WPCS

- Systems that utilize an activated sludge or fixed growth process with a permitted flow of greater than 2.5 million gallons per day (mgd)
- Grade III systems that are required to achieve biological nutrient reduction *

* *Biological Nutrient Reduction -*

The reduction of total nitrogen or total phosphorus by an activated sludge or fixed growth process as required by the facilities permit.

Classification of Collection Water Pollution Control Systems:

(whichever provides lowest grade)

Same grade as biological water pollution control system. Grade of system:

Based on population served:

1,500 or Less = Grade I

1,501 to 15,000 = Grade II

15,001 to 50,000 = Grade III

50,001 or more = Grade IV

Classification of Spray Irrigation Water Pollution Control Systems:

- ☒ Systems which utilize spray irrigation for the reuse or disposal of wastewater. These systems include: septic tanks, sand filter, oil/water separators, lagoons, storage basins, screening, sedimentation. Systems other than those listed above shall be subject to additional classification.
-

Classification of Land Application of Residuals Systems:

- ☐ Systems permitted and dedicated for the land application of residuals that are produced by a water pollution control system or contaminated soils.
-

Classification of Physical/Chemical Water Pollution Control Treatment Systems:

- ☐ Grade I Physical/Chemical: Any water pollution control system that utilizes a primarily physical process to treat wastewater. This classification includes groundwater remediation systems **
- ☐ Grade II Physical/Chemical: Any water pollution control system that utilizes a primarily chemical process to treat wastewater. This classification includes reverse osmosis, electrodialysis, and ultrafiltration systems. **

*** Any water pollution control system that utilizes a physical/chemical process to enhance an activated sludge or fixed growth process, shall not be subject to additional classification*

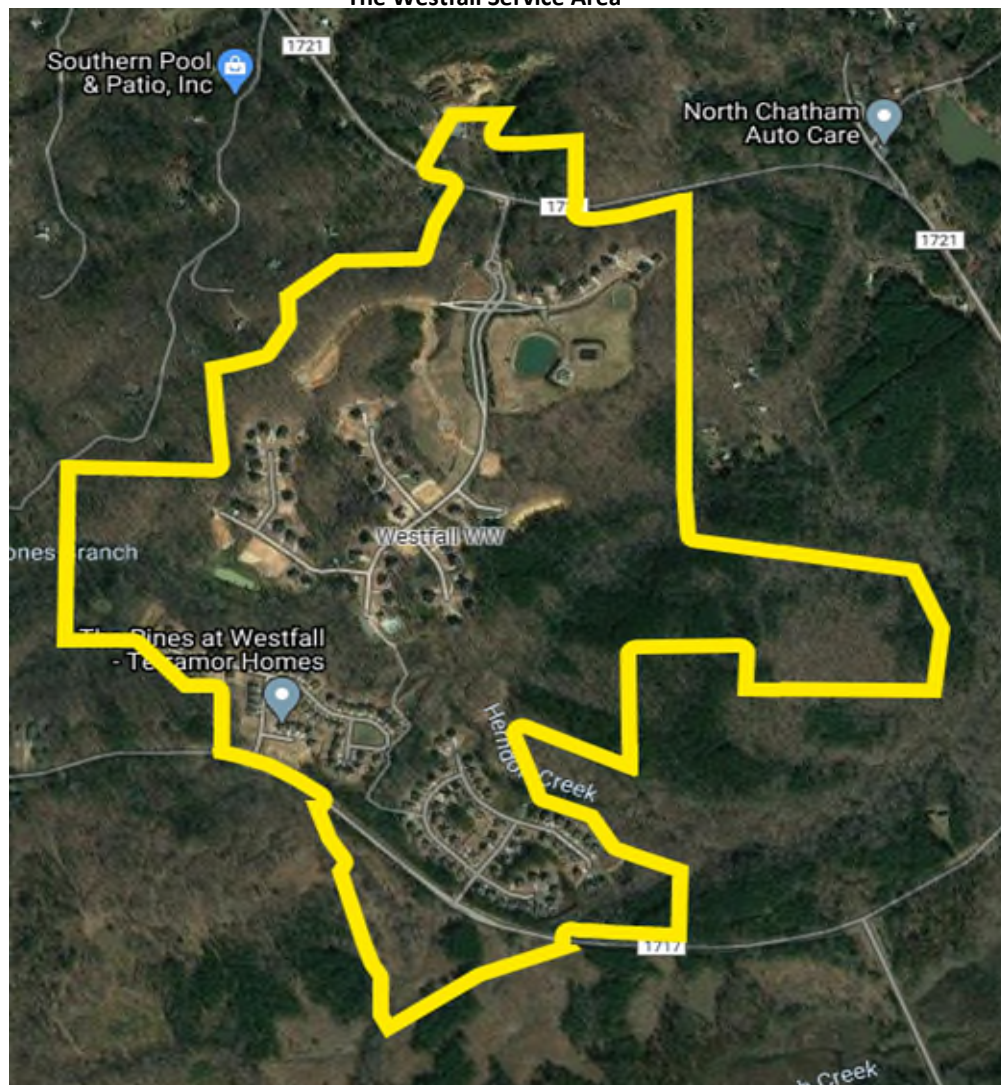
.....

Classification of Subsurface Water Pollution Control Systems:

- ☐ Systems which utilize the soil for subsurface treatment and disposal of wastewater and/or are required to have a certified operator under 15A NCAC 18A.1961. ***
- *** Any subsurface system that has as part of its treatment process a water pollution control system that may be classified under Rules .0302 through .0307 of this section shall be subject to additional classification.*

Becker / Pearce Excess Capacity Rebuttal Exhibit 12
W-218 Sub 526

The Westfall Service Area



Additional Homes Under Construction		Design Flow
Homes with definite bedroom counts	3 DU with 14 BR	1680
New Building (Locked)	4 BR expected minimum	480
Foundations underway	3 DU with 12 BR- expected minimum	1440
		3600

64 West Beech Slope Court

Lot #133 Unknown, 4+ probable BR



33 Futrell Ridge

Lot #18 Foundation Only Unknown, 4+ probable



103 Futrell Ridge

4 BR



158 Futrell Ridge

5 bedroom



Lot beside 139 Lystra Ridge

New Foundation - fresh work - bobcat tracks visible, 4 BR+



139 Lystra Ridge

5 BR

50% Complete - Just painted interior



65 Lystra Grant

Preparing for foundation, 4 BR+ probable



v

gpd

gpd

gpd

gpd

: BR

Becker / Pearce Excess Capacity Rebuttal Exhibit 13
W-218 Sub 526

The Westfall Service Area Bedroom Survey
Bedrooms per address determined by Trulia or Zillow

Address		Bedrooms	Address		Bedrooms	Address		Bedrooms	Address		Bedrooms
675 WESTFALL WAY AMNTY CHAPEL HIL			73 MILLERS GAP CT 202 CHAPEL HILL			108 TIMBER CREEK PATH 195 CHAPEL	4		224 BEECH SLOPE CT 13 CHAPEL HILL	3	
41 S FARNLEIGH DR 129 CHAPEL HILL,			131 TIMBER CREEK PATH 211 CHAPEL			94 TIMBER CREEK PATH 193 CHAPEL H			47 DOVER RIDGE CT 181 CHAPEL HILL	4	
317 FARNLEIGH DR 177 CHAPEL HILL,	4		86 RENWOOD GRANT CT 121 CHAPEL HI			177 TIMBER CREEK PATH 207 CHAPEL	4		68 W TIMBER CREEK PATH 220 CHAPEL		
129 WOOD LAUREL LN 179 CHAPEL HIL	3		97 RENWOOD GRANT CT 118 CHAPEL HI	5		125 EAGLES WATCH LN 47 CHAPEL HIL	5		78 W TIMBER CREEK PATH 221 CHAPEL	3	
111 WOOD LAUREL LN 180 CHAPEL HIL			100 RENWOOD GRANT CT 119 CHAPEL H			116 EAGLES WATCH LN 48 CHAPEL HIL	6		65 BEECH SLOPE CT 2 CHAPEL HILL,	4	
78 WOOD LAUREL LN 168 CHAPEL HILL			64 MILLERS GAP CT 199 CHAPEL HILL			214 LYSTRA RIDGE RD 68 CHAPEL HIL			623 WESTFALL WAY 51 CHAPEL HILL,	4	
75 WOOD LAUREL LN 170 CHAPEL HILL	3		31 TIMBER CREEK PATH 217 CHAPEL H	4		110 LYSTRA GRANT CT 78 CHAPEL HIL	5		54 DOVER RDG 159 CHAPEL HILL, NC	3	
381 FARNLEIGH DR 142 CHAPEL HILL,			59 TIMBER CREEK PATH 214 CHAPEL H			86 LEATHERWOOD CT 91 CHAPEL HILL,			85 HERNDON CREEK WAY 237 CHAPEL H	3	
100 WOOD LAUREL LN 167 CHAPEL HIL			83 LEATHERWOOD CT 84 CHAPEL HILL,			58 LYSTRA GRANT CT 95 CHAPEL HILL			23 LEATHERWOOD LN 82 CHAPEL HILL,	4	
95 WOOD LAUREL LN 169 CHAPEL HILL			79 LYSTRA RIDGE RD 53 CHAPEL HILL			165 TIMBER CREEK PATH 208 CHAPEL	4		109 W TIMBER CREEK PATH 229 CHAPEL		
58 S FARNLEIGH DR 171 CHAPEL HILL,	6		105 LYSTRA GRANT CT 72 CHAPEL HIL			200 BEECH SLOPE CT 15 CHAPEL HILL	5		51 W TIMBER CREEK PATH 234 CHAPEL	3	
93 FARNLEIGH DR 133 CHAPEL HILL,			125 LYSTRA GRANT CT 73 CHAPEL HIL			215 BEECH SLOPE CT 8 CHAPEL HILL,	4		51 HERNDON CREEK WAY 240 CHAPEL H	3	
99 FARNLEIGH DR 134 CHAPEL HILL,			137 LYSTRA GRANT CT 75 CHAPEL HILL	5		665 WESTFALL WAY 52 CHAPEL HILL,	5		161 LEATHERWOOD LN 87 CHAPEL HILL	5	
113 FARNLEIGH DR 135 CHAPEL HILL,			130 LYSTRA GRANT CT 76 CHAPEL HIL			584 WESTFALL WAY 81 CHAPEL HILL,	6		49 EAGLES WATCH LN 43 CHAPEL HILL		
119 FARNLEIGH DR 136 CHAPEL HILL,			113 TIMBER CREEK PATH 212 CHAPEL			125 LEATHERWOOD LN 85 CHAPEL HILL			112 W TIMBER CREEK PATH 223 CHAPEL	3	
377 FARNLEIGH DR 141 CHAPEL HILL,			19 TIMBER CREEK PATH 218 CHAPEL H			18 RENWOOD GRANT CT 126 CHAPEL HI			128 W TIMBER CREEK PATH 224 CHAPEL	4	
72 S FARNLEIGH DR 172 CHAPEL HILL,			94 RENWOOD GRANT CT 120 CHAPEL HI	5		17 S FARLEIGH DR 127 CHAPEL HILL,			30 LEATHERWOOD LN 93 CHAPEL HILL,	3	
301 FARNLEIGH DR 178 CHAPEL HILL,	6		100 DOVER GRANT CT 156 CHAPEL HIL			79 RENWOOD GRANT CT 116 CHAPEL HI			133 LYSTRA GRANT CT 74 CHAPEL HIL	4	
41 BEECH SLOPE CT 18 CHAPEL HILL,	4		59 DOVER GRANT CT 149 CHAPEL HIL	4		139 DOVER GRANT CT 154 CHAPEL HIL	5		96 W TIMBER CREEK PATH 222 CHAPEL	3	
28 RAVEN RIDGE CT 41 CHAPEL HILL,	6		77 DOVER CT 150 CHAPEL HILL, NC 2			124 DOVER GRANT CT 155 CHAPEL HIL	5		99 W TIMBER CREEK PATH 230 CHAPEL	3	
367 FARNLEIGH DR 140 CHAPEL HILL,			105 DOVER GRANT CT 152 CHAPEL HIL			157 BEECH SLOPE CT 6 CHAPEL HILL,	4		43 HERNDON CREEK WAY 241 CHAPEL H	3	
133 FARNLEIGH DR 137 CHAPEL HILL,	3		66 DOVER GRANT CT 115 CHAPEL HILL			199 BEECH SLOPE CT 7 CHAPEL HILL,	3		95 HERNDON CREEK WAY 236 CHAPEL H	4	
338 FARNLEIGH DR 144 CHAPEL HILL,			91 DOVER GRANT CT 151 CHAPEL HILL			50 TIMBER CREEK PATH 189 CHAPEL H	4		37 W TIMBER CREEK PATH 235 CHAPEL		
142 WOOD LAUREL LN 165 CHAPEL HIL			91 RENWOOD GRANT CT 117 CHAPEL HI			54 HERNDON CREEK WAY 185 CHAPEL H			121 W TIMBER CREEK PATH 228 CHAPEL	3	
144 FARNLEIGH DR 175 CHAPEL HILL,			17 EAGLES WATCH LN 42 CHAPEL HILL	4		70 HERNDON CREEK WAY 186 CHAPEL H	5		146 W TIMBER CREEK PATH 227 CHAPEL	3	
62 RAVEN RIDGE CT 40 CHAPEL HILL,	6		67 EAGLES WATCH LN 44 CHAPEL HILL	5		78 HERNDON CREEK WAY 187 CHAPEL H			138 W TIMBER CREEK PATH 225 CHAPEL	3	
101 EAGLES WATCH LN 45 CHAPEL HIL	5		55 LEATHERWOOD LN 83 CHAPEL HILL,			90 HERNDON CREEK WAY 188 CHAPEL H	4		26 DOVER RIDGE CT 163 CHAPEL HILL	3	
29 S FARNLEIGH DR 128 CHAPEL HILL,			94 LYSTRA GRANT CT 79 CHAPEL HILL			58 LEATHERWOOD LN 92 CHAPEL HILL,	3		38 DOVER RIDGE CT 162 CHAPEL HILL	3	
55 S FARNLEIGH DR 130 CHAPEL HILL,	6		36 MILLERS GAP CT 197 CHAPEL HILL	4		62 RENWOOD GRANT CT 123 CHAPEL HI	3		44 DOVER RIDGE CT 161 CHAPEL HILL	4	
67 S FARNLEIGH DR 131 CHAPEL HILL,			52 MILLERS GAP CT 198 CHAPEL HILL			48 RENWOOD GRANT CT 124 CHAPEL HI			233 BEECH SLOPE CT 11 CHAPEL HILL	4	
79 S FARNLEIGH DR 132 CHAPEL HILL,			69 MILLERS GAP CT 203 CHAPEL HILL	4		82 DOVER GRANT CT 157 CHAPEL HILL			77 BEECH SLOPE CT 3 CHAPEL HILL,	4	
147 S FARNLEIGH DR 138 CHAPEL HILL	4		61 MILLERS GAP CT 204 CHAPEL HILL	5		220 BEECH SLOPE CT 14 CHAPEL HILL	3		151 TIMBER CREEK PATH 209 CHAPEL	3	
372 FARNLEIGH DR 143 CHAPEL HILL,			91 TIMBER CREEK PATH 213 CHAPEL H	3		47 TIMBER CREEK PATH 215 CHAPEL H	4		15 HERNDON CREEK WAY 16 CHAPEL HI	4	
320 FARNLEIGH DR 145 CHAPEL HILL,			650 WESTFALL WAY 55 CHAPEL HILL,	5		217 TIMBER CREEK PATH 205 CHAPEL	3		21 HERNDON CREEK WAY 17 CHAPEL HI	3	
290 FARNLEIGH DR 146 CHAPEL HILL,	4		126 LYSTRA RIDGE RD 98 CHAPEL HIL			44 DOVER GRANT CT 114 CHAPEL HILL	5		50 DOVER RIDGE CT 160 CHAPEL HILL	4	
95 LYSTRA RIDGE RD 54 CHAPEL HILL			108 LYSTRA RIDGE RD 99 CHAPEL HIL			602 WESTFALL WAY 80 CHAPEL HILL,	3		18 DOVER RIDGE CT 164 CHAPEL HILL	4	
145 TIMBER CREEK PATH 210 CHAPEL			33 DOVER GRANT CT 147 CHAPEL HILL			77 HERNDON CREEK WAY 238 CHAPEL H	3		15 DOVER RIDGE CT 184 CHAPEL HILL	4	
37 TIMBER CREEK PATH 216 CHAPEL H	4		137 DOVER GRANT CT 153 CHAPEL HIL	5		100 TIMBER CREEK PATH 194 CHAPEL	3		91 W TIMBER CREEK PATH 231 CHAPEL	4	
74 MILLERS GAP CT 201 CHAPEL HILL			187 TIMBER CREEK PATH 206 CHAPEL			84 TIMBER CREEK PATH 192 CHAPEL H	4		65 W TIMBER CREEK PATH 233 CHAPEL	3	
70 MILLERS GAP CT 200 CHAPEL HILL			122 LEATHERWOOD LANE 90 CHAPEL HI	5		29 DOVER RIDGE CT 183 CHAPEL HILL	3		31 HERNDON CREEK WAY 242 CHAPEL H	4	
151 FARNLEIGH DR 139 CHAPEL HILL,			190 LYSTRA RIDGE RD 69 CHAPEL HIL	5		51 DOVER RIDGE CT 158 CHAPEL HILL	4		132 FUTRELL RIDGE CT 28 CHAPEL HI	4	
119 EAGLES WATCH LN 46 CHAPEL HIL	6		150 LYSTRA RIDGE RD 97 CHAPEL HIL	4		41 DOVER RIDGE CT 182 CHAPEL HILL	4		76 LYSTRA GRANT CT 94 CHAPEL HILL	4	
587 WESTFALL WAY 50 CHAPEL HILL,	6		87 LYSTRA GRANT CT 71 CHAPEL HILL	4		118 TIMBER CREEK PATH 196 CHAPEL	5		120 WOOD LAUREL LN 166 CHAPEL HIL	4	
104 S FARNLEIGH DR 173 CHAPEL HILL			47 DOVER GRANT CT 148 CHAPEL HILL	5		65 HERNDON CREEK WAY 239 CHAPEL H	3				
34 RENWOOD GRANT CT 125 CHAPEL HI	5		62 TIMBER CREEK PATH 190 CHAPEL H	4		7 TIMBER CREEK PATH 219 CHAPEL HI	3				
74 RENWOOD GRANT CT 122 CHAPEL HI	6		74 TIMBER CREEK PATH 191 CHAPEL H			144 W TIMBER CREEK PATH 226 CHAPEL	3				

Additional Homes Under Construction
Homes with definite bedroom counts
New Building (Locked)
Foundations underway

3 DU with 14 BR
4 BR expected minimum
3 DU with 12 BR- expected minimum

Design Flow
1680
480
1440
3600

64 West Beech Slope Court

Lot #133 Unknown, 4+ probable BR



33 Futrell Ridge

Lot #18 Foundation Only

Unknown, 4+ probable



103 Futrell Ridge

4 BR



158 Futrell Ridge

5 bedroom



Lot beside 139 Lystra Ridge

New Foundation - fresh work - bobcat tracks visible, 4 BR+



139 Lystra Ridge

5 BR

50% Complete - Just painted interior



65 Lystra Grant

Preparing for foundation, 4 BR+ probable



v

gpd

gpd

gpd

gpd

: BR

Becker / Pearce Excess Capacity Rebuttal Exhibit 14
W-218 Sub 526

Westfall Growth in Progress

Homes with definite bedroom counts	3 DU with 14 BR	Design Flow	1680 gpd
New Building (Locked)	4 BR expected minimum		480 gpd
Foundations underway	3 DU with 12 BR- expected minimum		1440 gpd
			3600 gpd

<p>64 West Beech Slope Court Unknown, 4+ probable BR</p> 	<p>33 Futrell Ridge Unknown, 4+ probable BR</p> 
<p>103 Futrell Ridge 4 bedroom</p> 	<p>158 Futrell Ridge 5 bedroom</p> 
<p>Lot beside 139 Lystra Ridge Foundation - fresh work - bobcat tracks visible 4 bedroom + probably</p> 	<p>139 Lystra Ridge 5 bedroom Interior Just Painted</p> 
<p>65 Lystra Grant Prepping Foundation Area - 4 Bedroom, probable</p> 	

Becker / Pearce Excess Capacity Rebuttal Exhibit 15
W-218 Sub 526

The Westfall Service Area Design Flow Summary

Completed by Joseph Pearce PE

Number of Dwelling Units	181
Number of Bedrooms per Dwelling Unit	4.06
Design Standard	120 gpd per bedroom
Dwelling Unit Design Flow	88183 gpd
Dwelling Units Under Construction	3600 gpd
Total Dwelling Units (incl in progress)	91783
*Did not include a value for pool/recreation area	